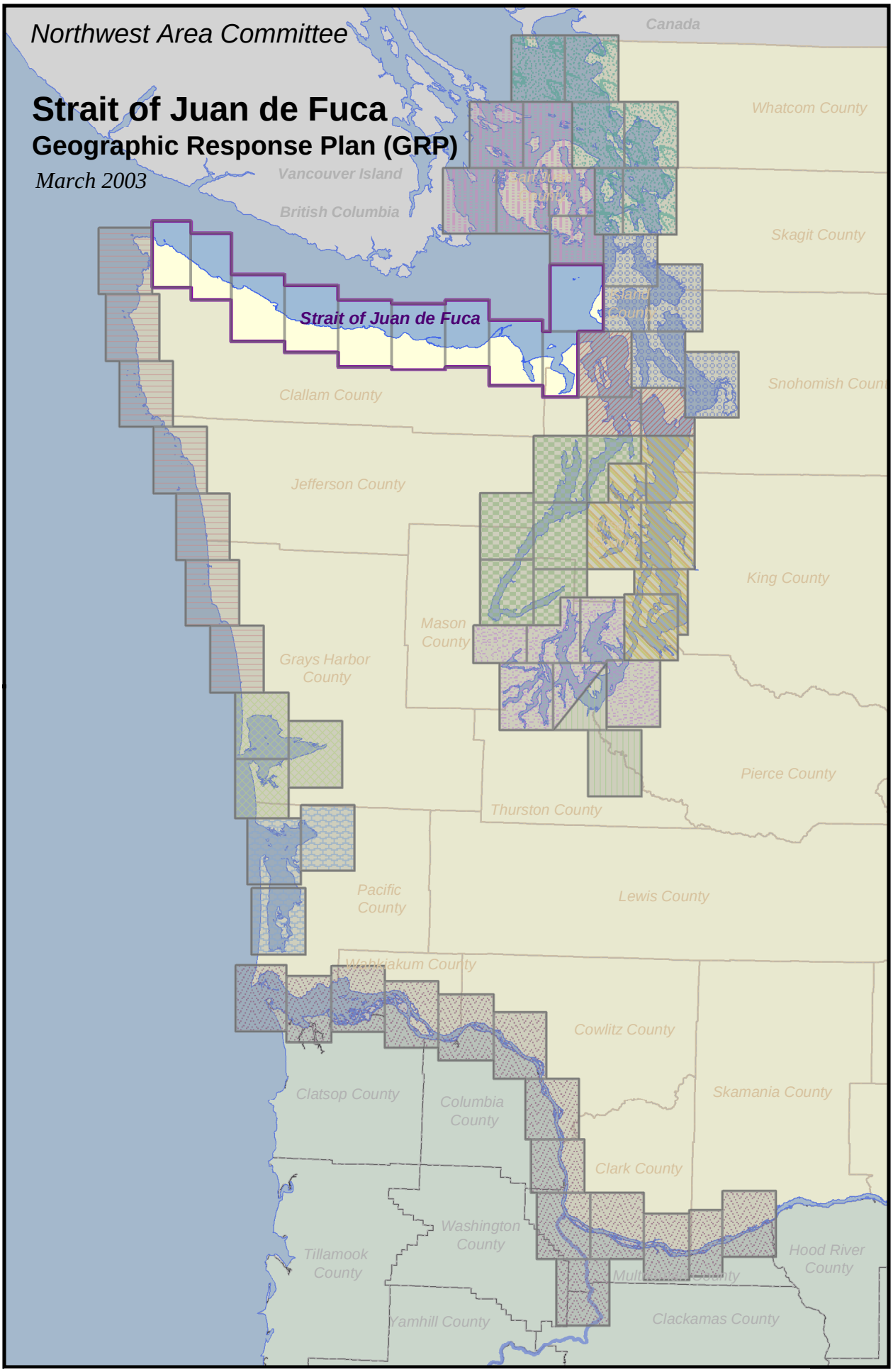


SPILL RESPONSE CONTACT SHEET

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

Jamestown S'Klallam Tribe

Tribal Office	(360) 683-1109
After Hours Emergencies	(360) 452-5150

Lower Elwha Klallam Tribe

Tribal Office	(360) 452-8471
After Hours Emergencies	(360) 417-2259

Makah Tribe

Tribal Office	(360) 645-2201
After Hours Emergencies	(360) 645-2701

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
Island Oil Spill Association	(360) 378-5322
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**

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).

Strait of Juan de Fuca

Geographic Response Plan

Record of Changes

Date	Change Number	Summary of Changes	Person Making Changes
July 1, 1993	Original Release	N/A	N/A
March 15, 1996	Change 1	Replacement of document - includes new chapters and revised Chapter 4 based on field verification	--
March 2003	Change 2	Update of Chapter 4 using GIS based maps, and new priority tables based on trajectory modeling.	D. Davis
November 2011	Change 3	Chapter 3 removed - information conflicted with updated information in Chapter 4. Table of Contents and Record of Changes updated.	H. Chichester

Table of Contents

Strait of Juan de Fuca, Washington

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 safehavens;
- Vessel repairs & cleaning;
- Response times for bringing equipment in from other areas.

2. SITE DESCRIPTION

The Strait of Juan de Fuca is located in the northwest corner of Washington State along the U.S./Canadian border. The Strait is a deep water body connecting the Pacific Ocean and the inland waters of Washington State.[1] It is generally divided into two subregions: the outer strait - west of Ediz Hook - and the inner strait.

The outer strait supports significant populations of groundfish, clams, shrimp, sea urchins, and Dungeness crab, as well as other fisheries resources. The inner strait is also very productive and species-rich area, supporting large populations of birds, mammals, fish, and shellfish. It is one of the major habitats for marine birds on the Pacific coast of North America. Local economies are based primarily on natural resource use and tourism.

Refer to Chapter 6 for more detailed natural resource information.

2.1. Physical Features

The two subregions of the Strait of Juan de Fuca may include the following shoreline habitats:

Exposed rocky headlands
Wave-cut platforms
Pocket beaches along exposed rocky shores
Sand beaches
Sand and gravel beaches
Sand and cobble beaches
Exposed tidal flats
Sheltered rocky shores
Sheltered tidal flats
Sheltered marshes

Two important features within the inner strait are Ediz Hook and Dungeness Spit. They are accreted gravel spits which protect embayments. The bay inside of Ediz Hook has been dominated by commercial activity from the Port Angeles harbor. Dungeness Spit and Bay are located inside a national wildlife refuge. Activities there include oyster-farming and recreation. The extensive tideflats in this area support a diverse body of marine organisms and shorebirds[2].

2.2. Hydrology

The Strait of Juan de Fuca is characterized hydrographically as a two-layer system. The upper 30 meter layer is relatively fresh water and the lower layer more saline. The Strait receives a large freshwater influx from the Fraser River and Puget Sound drainages. The two periods of high freshwater runoff occur during spring now melt and late fall and winter.[3]

[1] Kittle, L.J. , Marine Resource Damage Assessment Report for the *Arco Anchorage* Oil Spill. (1987).
[2] Ibid.
[3] Ibid.

2.3. Currents and Tides

Tidal ranges average between four and ten feet producing strong tidal currents. Currents in the Strait may reach two to four knots, depending on tidal range and prevailing winds. North and west-facing shorelines along the Strait are subject to the largest waves and are high energy areas.[4]

2.4. Winds

The Strait of Juan de Fuca is affected by strong winds, most notably from the west. These winds occur when high pressure is pushing strongly behind the passage of a cold front from the west. The westerlies often reach gale force.

A strong east wind is possible when an Arctic cold front pushes south from interior British Columbia into Western Washington. These conditions may contribute to strong easterlies at certain times of year. These winds may also reach gale force.[5]

2.5. Climate

The area has a maritime climate with cool summers and mild winters. The winds are variable and the annual precipitation rate is between 18 and 50 inches.

[4] Kittle, L.J. Marine Resource Damage Assessment Report for the *Arco Anchorage* Oil Spill. (1987).
[5] Doug McDonnal, National Weather Service. Personal Communication. (1993)

Strait of Juan de Fuca
Geographic Response Plan

Chapter 3 – (Reserved)

STRAIT OF JUAN DE FUCA

GEOGRAPHIC RESPONSE PLAN

(STR GRP)

May 02, 2008

TABLE OF CONTENTS

4.0 GENERAL PROTECTION/COLLECTION STRATEGIES

4.1 Chapter Overview

Geographic Response Plans (GRPs) are:

- Triggered in the first hours (usually 6-24) following an oil spill.
- Targeted at shielding sensitive resources that lie close to the reported spill source.

On-site Considerations

Before deploying a GRP strategy, responders should ask:

- Are conditions safe?
- Has initial control and containment been sufficiently achieved?
- Underflow dams and culvert blocks require Emergency Hydraulic Project Approval (HPA) prior to implementation. These response tactics will reduce, interrupt, or divert the water flow of streams that can be damaging to sensitive fish life and habitat. Responders must receive Emergency HPA from the Washington State Department of Fish and Wildlife **before** using culvert blocks and underflow dams. The Hydraulic Code (RCW 75-20.11-160) provides for immediate verbal approval in emergency situations. For emergency HPA contact 360-534-8233 (24 hour pager).

During the initial GRP-response phase, responders should be aware that:

- Challenging field conditions may require them to modify strategies, and later notify the command center.
- Certain strategies may call for access points or staging areas that are not easily reached at all times of the year or in all conditions.
- All strategies were designed for use with persistent, heavy oils and may not be suitable for other petroleum products or hazardous materials.
- Boom deployment may require around-the-clock tending and/or precise anchoring techniques.

- The sequence of deployments is pre-determined in a booming priority table. The appropriate table is found by finding which "Potential Spill Origin" point (orange boxes on the maps) lies closest to the actual (or reported) spill site.

After considerably more is known about the spill and surrounding area:

- Other techniques for recovery or containment (skimming, in situ burning, or dispersants) may be applied.
- GRP strategies are likely to be refined as a result of lessons learned.

Straits booming strategy sites are numbered from East to West.

4.2 Strategy and Access Locations Overview

Strait of Juan de Fuca
Strategy Locations

124°40'W 124°30'W 124°20'W 124°10'W 124°0'W 123°50'W 123°40'W 123°30'W 123°20'W 123°10'W 123°0'W 122°50'W 122°40'W

48°40'N 48°30'N 48°20'N 48°10'N 48°0'N 47°50'N

Neah Bay
Map # STR-1

Sekiu and Hoko Rivers
Map # STR-2

Clallam Bay_Pysht River
Map # STR-3

Twin Rivers
Map # STR-4

Salt Creek
Map # STR-5

Elwha River
Map # STR-6

Port Angeles
Map # STR-7

Dungeness
Map # STR-8

Sequim Bay
Map # STR-9

Cape George
Map # STR-10

Discovery Bay
Map # STR-11

Smith Island
Map # STR-12

Fort Ebey
Map # STR-13

Strategy Locations

1 inch equals 6.41 miles

Friday Harbor
San Juan County
Anacortes
Skagit County
Pacific Ocean/Puget Sound
Oak Harbor
Island County
Coupeville
Port Townsend
Sequim
Port Angeles
Forks
Clallam County
Jefferson County
Kitsap County
Lake Ozette
Crescent, Lake
Big River
Pysht River
Bear Creek
Falls Creek
North Fork Calawah River
South Fork Calawah River
Calawah River
Sitkum River
Bogachiel River
Soleduck River
North Fork Soleduck River
Hoh River
South Fork Hoh River
Queets River
Elwha River
Lillian River
Gray Wolf River
Snow Creek
Little Quilcene River
Big Quilcene River
Dungeness River
Dosewallips River
Chimacum Creek
Morse Creek
McDonald Creek
Lyre River
Clallam River
Ozette River
West Fork Dickey River
East Fork Dickey River
Soose River
Hoko River
Hoh River

Strait of Juan de Fuca

Boat Launch and Staging Area Locations

124°40'W 124°30'W 124°20'W 124°10'W 124°0'W 123°50'W 123°40'W 123°30'W 123°20'W 123°10'W 123°0'W 122°50'W 122°40'W

48°40'N 48°30'N 48°20'N 48°10'N 48°0'N 47°50'N

Neah Bay
Map # STR-1

Sekiu and Hoko Rivers
Map # STR-2

Clallam Bay_Pysht River
Map # STR-3

Twin Rivers
Map # STR-4

Salt Creek
Map # STR-5

Elwha River
Map # STR-6

Port Angeles
Map # STR-7

Dungeness
Map # STR-8

Sequim Bay
Map # STR-9

Cape George
Map # STR-10

Discovery Bay
Map # STR-11

Smith Island
Map # STR-12

Fort Ebey
Map # STR-13

STR-N.B.C.G.
OC-03
OC-Forks AP
OC-15

Boat Launch
Staging Locations

1 inch equals 6.41 miles

Friday Harbor
Skagit County
Anacortes
San Juan County
Pacific Ocean/Puget Sound
Island County
Oak Harbor
Coupeville
Port Townsend
Sequim
Port Angeles
Forks
Clallam County
Jefferson County
Kitsap County
Lake Ozette
Crescent, Lake
Hoh River

4.3 Strategy Priorities

The sequence of deployments is pre-determined in a booming priority table. The appropriate table is found by finding which 'Potential Spill Origin' point (orange boxes on the maps) lies closest to the actual (or reported) spill site.

Strait of Juan de Fuca
Potential Spill Origin Locations

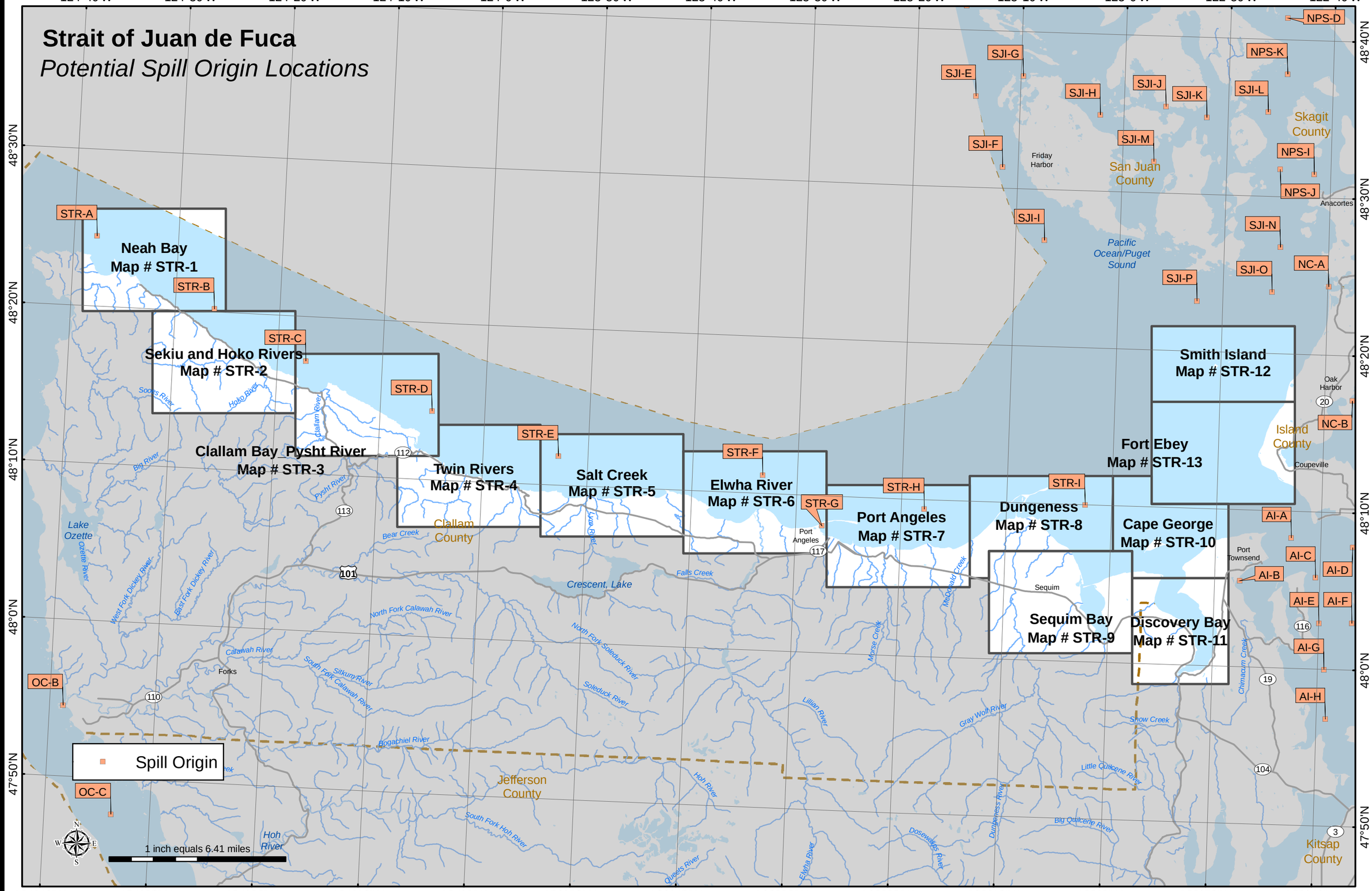


Table 4-1: STR-A, W of Neah Bay, Potential Spill Origin Booming Priority

Booming Priority	Strategy Number	Sector Map Page Number	Sector Matrix Page Number	Strategy Details Page Number
SOURCE CONTROL AND CONTAINMENT ARE ALWAYS PRIORITY ONE				
1	STR-1	4- 15	4- 29	4- 60
2	STR-2	4- 15	4- 29	4- 62
3	STR-3	4- 15	4- 30	4- 64
4	STR-8	4- 16	4- 32	4- 74
5	STR-7	4- 16	4- 31	4- 72
6	STR-4	4- 16	4- 30	4- 66
7	STR-5	4- 16	4- 31	4- 68
8	STR-6	4- 16	4- 31	4- 70

Table 4-2: STR-B, Off Shipwreck Point, Potential Spill Origin Booming Priority

Booming Priority	Strategy Number	Sector Map Page Number	Sector Matrix Page Number	Strategy Details Page Number
SOURCE CONTROL AND CONTAINMENT ARE ALWAYS PRIORITY ONE				
1	STR-8	4- 16	4- 32	4- 74
2	STR-7	4- 16	4- 31	4- 72
3	STR-1	4- 15	4- 29	4- 60
4	STR-2	4- 15	4- 29	4- 62
5	STR-3	4- 15	4- 30	4- 64
6	STR-4	4- 16	4- 30	4- 66
7	STR-5	4- 16	4- 31	4- 68
8	STR-6	4- 16	4- 31	4- 70

Table 4-3: STR-C, Off Clallam Bay, Potential Spill Origin Booming Priority

Booming Priority	Strategy Number	Sector Map Page Number	Sector Matrix Page Number	Strategy Details Page Number
SOURCE CONTROL AND CONTAINMENT ARE ALWAYS PRIORITY ONE				
1	STR-8	4- 16	4- 32	4- 74
2	STR-7	4- 16	4- 31	4- 72
3	STR-10	4- 17	4- 33	4- 78
4	STR-6	4- 16	4- 31	4- 70
5	STR-5	4- 16	4- 31	4- 68
6	STR-4	4- 16	4- 30	4- 66
7	STR-9	4- 17	4- 32	4- 76

Table 4-4: STR-D, Off Pillar Point, Potential Spill Origin Booming Priority

Booming Priority	Strategy Number	Sector Map Page Number	Sector Matrix Page Number	Strategy Details Page Number
SOURCE CONTROL AND CONTAINMENT ARE ALWAYS PRIORITY ONE				
1	STR-11	4- 17	4- 33	4- 80
2	STR-14	4- 17	4- 35	4- 86
3	STR-15	4- 17	4- 35	4- 88
4	STR-13	4- 17	4- 34	4- 84
5	STR-12	4- 17	4- 34	4- 82
6	STR-16	4- 17	4- 36	4- 90
7	STR-17	4- 18	4- 36	4- 92
8	STR-10	4- 17	4- 33	4- 78
9	STR-9	4- 17	4- 32	4- 76

Table 4-5: STR-E, Off Twin Rivers, Potential Spill Origin Booming Priority

Booming Priority	Strategy Number	Sector Map Page Number	Sector Matrix Page Number	Strategy Details Page Number
SOURCE CONTROL AND CONTAINMENT ARE ALWAYS PRIORITY ONE				
1	STR-20	4- 18	4- 37	4- 98
2	STR-19	4- 18	4- 37	4- 96
3	STR-21	4- 19	4- 37	4- 100
4	STR-18	4- 18	4- 36	4- 94
5	STR-17	4- 18	4- 36	4- 92
6	STR-23	4- 19	4- 38	4- 104
7	STR-22	4- 19	4- 38	4- 102

Table 4-6: STR-F, Off Elwha River, Potential Spill Origin Booming Priority

Booming Priority	Strategy Number	Sector Map Page Number	Sector Matrix Page Number	Strategy Details Page Number
SOURCE CONTROL AND CONTAINMENT ARE ALWAYS PRIORITY ONE				
1	STR-24	4- 20	4- 39	4- 106
2	STR-23	4- 19	4- 38	4- 104
3	STR-22	4- 19	4- 38	4- 102
4	STR-21	4- 19	4- 37	4- 100
5	STR-36	4- 22	4- 44	4- 130
6	STR-37	4- 22	4- 44	4- 132
7	STR-44	4- 22	4- 48	4- 146
8	STR-40	4- 22	4- 46	4- 138

Table 4-7: STR-G, Port Angeles, Tesoro, Potential Spill Origin Booming Priority

Booming Priority	Strategy Number	Sector Map Page Number	Sector Matrix Page Number	Strategy Details Page Number
SOURCE CONTROL AND CONTAINMENT ARE ALWAYS PRIORITY ONE				
1	STR-29	4- 21	4- 41	4- 116
2	STR-27	4- 21	4- 40	4- 112
3	STR-28	4- 21	4- 41	4- 114
4	STR-30	4- 21	4- 41	4- 118
5	STR-25	4- 20	4- 39	4- 108
6	STR-26	4- 20	4- 40	4- 110
7	STR-44	4- 22	4- 48	4- 146
8	STR-33	4- 21	4- 43	4- 124
9	STR-31	4- 21	4- 42	4- 120
10	STR-34	4- 21	4- 43	4- 126
11	STR-35	4- 22	4- 43	4- 128

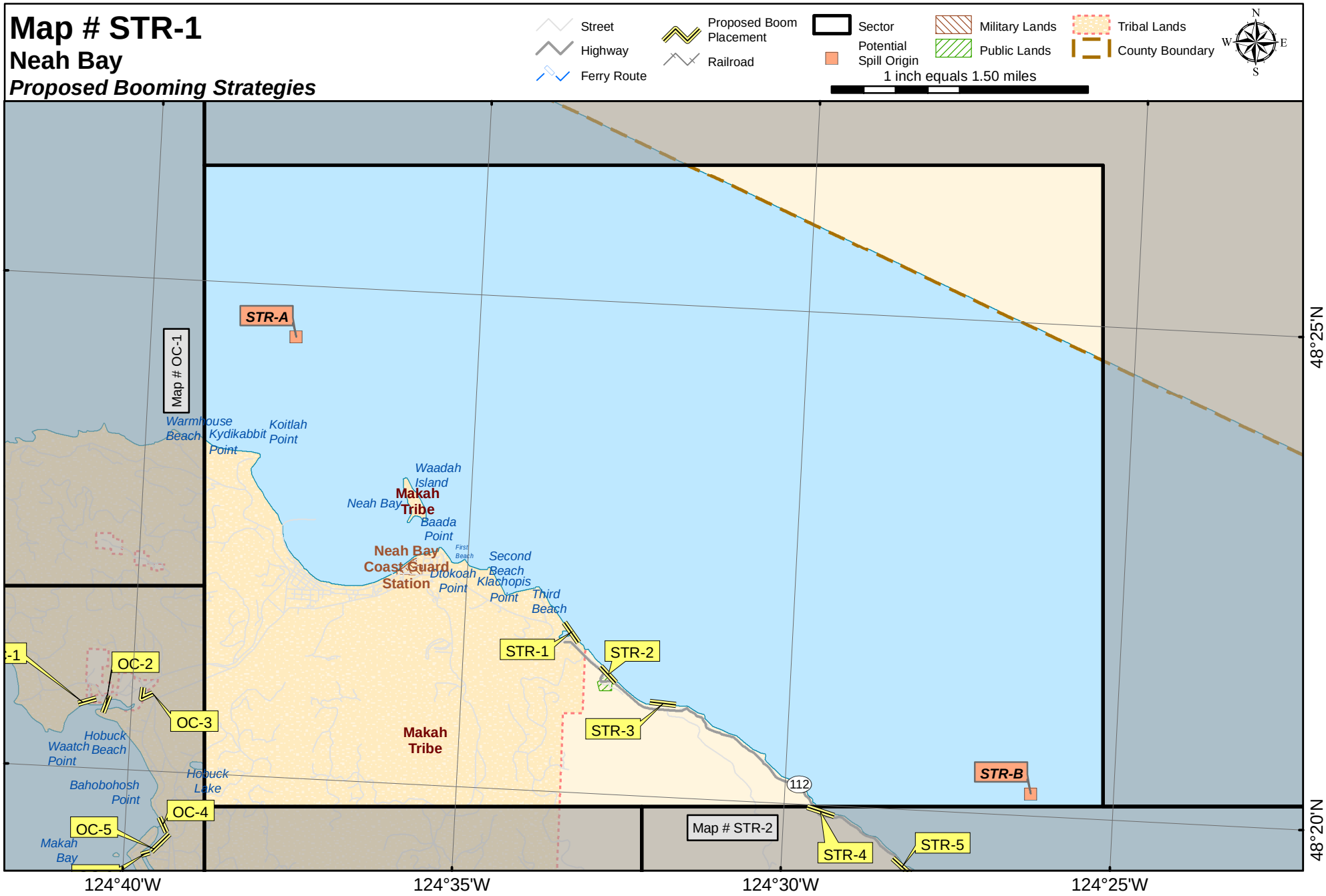
Table 4-8: STR-H, NE of Port Angeles, Potential Spill Origin Booming Priority

Booming Priority	Strategy Number	Sector Map Page Number	Sector Matrix Page Number	Strategy Details Page Number
SOURCE CONTROL AND CONTAINMENT ARE ALWAYS PRIORITY ONE				
1	STR-44	4- 22	4- 48	4- 146
2	STR-36	4- 22	4- 44	4- 130
3	STR-37	4- 22	4- 44	4- 132
4	STR-33	4- 21	4- 43	4- 124
5	STR-38	4- 22	4- 45	4- 134
6	STR-40	4- 22	4- 46	4- 138
7	STR-34	4- 21	4- 43	4- 126
8	STR-35	4- 22	4- 43	4- 128
9	STR-39	4- 22	4- 45	4- 136
10	STR-41	4- 22	4- 46	4- 140
11	STR-42	4- 22	4- 47	4- 142
12	STR-45	4- 22	4- 48	4- 148
13	STR-32	4- 21	4- 42	4- 122

Table 4-9: STR-I, E of Dungeness, Potential Spill Origin Booming Priority

Booming Priority	Strategy Number	Sector Map Page Number	Sector Matrix Page Number	Strategy Details Page Number
SOURCE CONTROL AND CONTAINMENT ARE ALWAYS PRIORITY ONE				
1	STR-40	4- 22	4- 46	4- 138
2	STR-37	4- 22	4- 44	4- 132
3	STR-38	4- 22	4- 45	4- 134
4	STR-36	4- 22	4- 44	4- 130
5	STR-44	4- 22	4- 48	4- 146
6	STR-39	4- 22	4- 45	4- 136
7	STR-41	4- 22	4- 46	4- 140
8	STR-42	4- 22	4- 47	4- 142
9	STR-45	4- 22	4- 48	4- 148

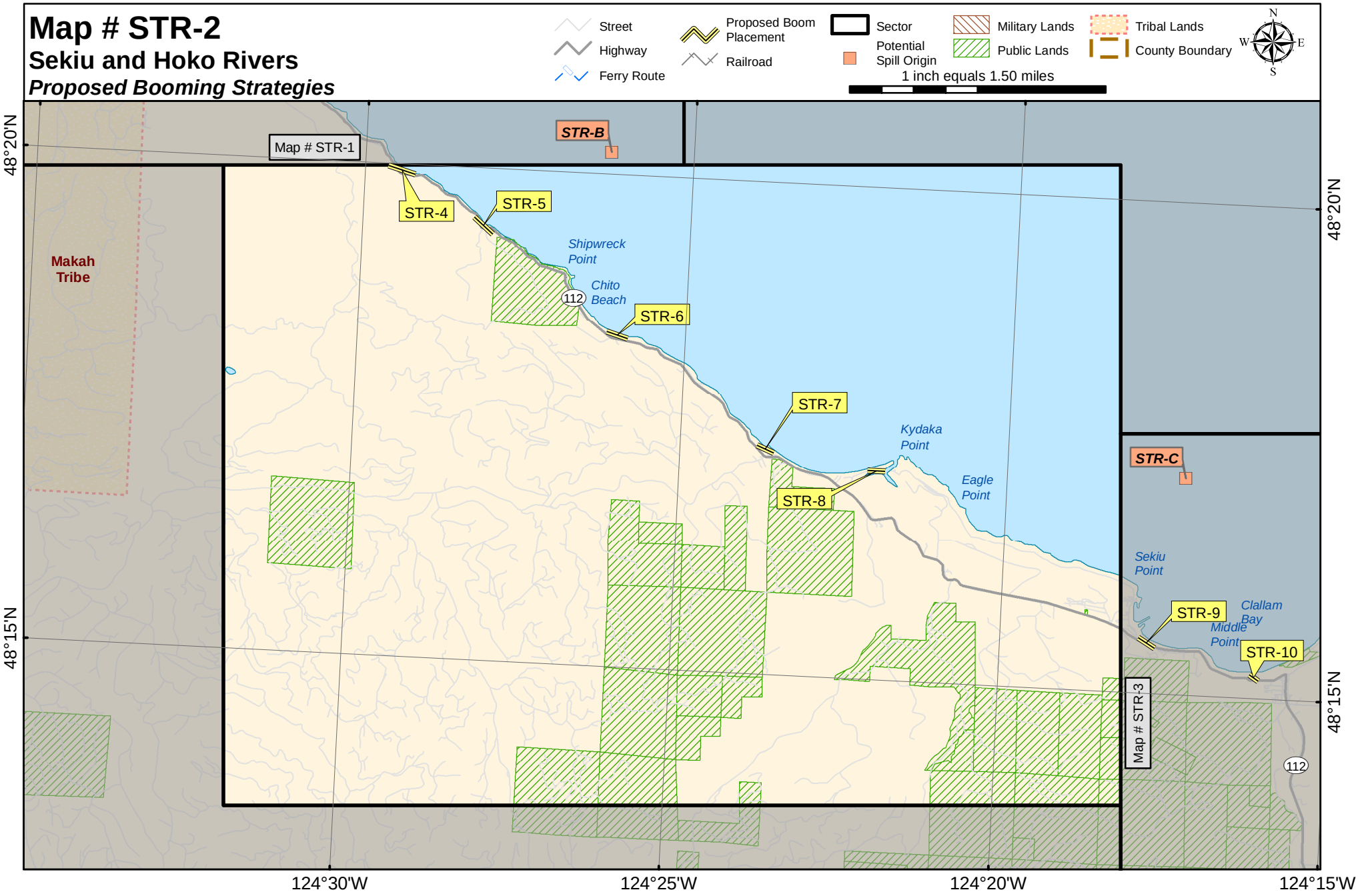
4.4 Proposed Booming and Collection Strategies - Maps


Map # STR-1
Neah Bay
Proposed Booming Strategies
Street
Highway
Ferry Route
Proposed Boom Placement
Railroad
Sector
Potential Spill Origin
Military Lands
Public Lands
Tribal Lands
County Boundary
1 inch equals 1.50 miles
N
S
E
W
48°25'N
48°20'N
124°40'W
124°35'W
124°30'W
124°25'W
STR-A
STR-B
Map # OC-1
Map # STR-2
Warmhouse Beach
Kydikabbit Point
Koitlah Point
Waadah Island
Neah Bay
Makah Tribe
Baada Point
Neah Bay Coast Guard Station
First Beach
Second Beach
Third Beach
Dtokoah Point
Klashopis Point
Hobuck Beach
Waatch Point
Hobuck Lake
Bahobohosh Point
Makah Bay
OC-2
OC-3
OC-4
OC-5
STR-1
STR-2
STR-3
STR-4
STR-5
112

Map # STR-2

Sekiu and Hoko Rivers

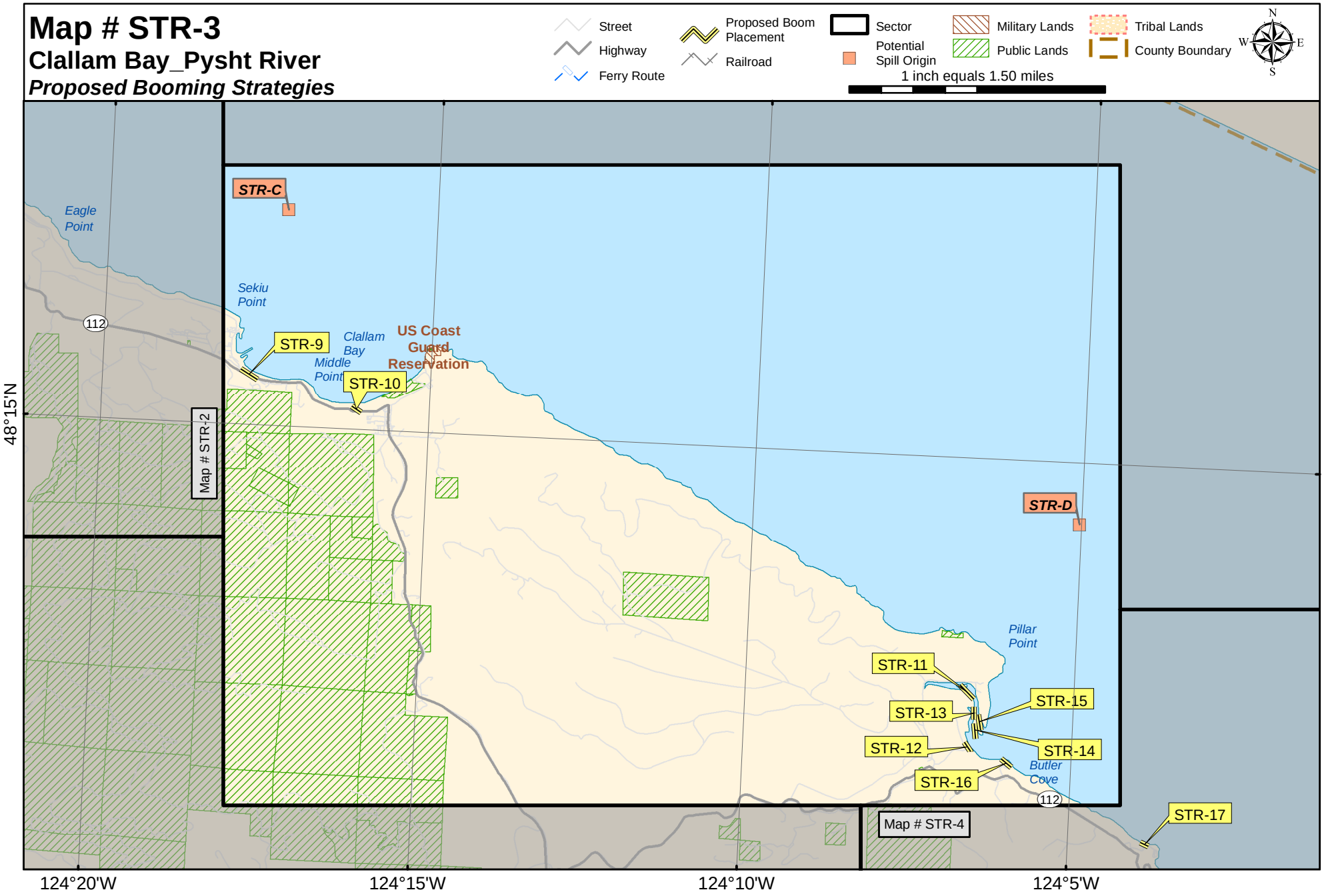
Proposed Booming Strategies



Map # STR-3

Clallam Bay_Pysht River

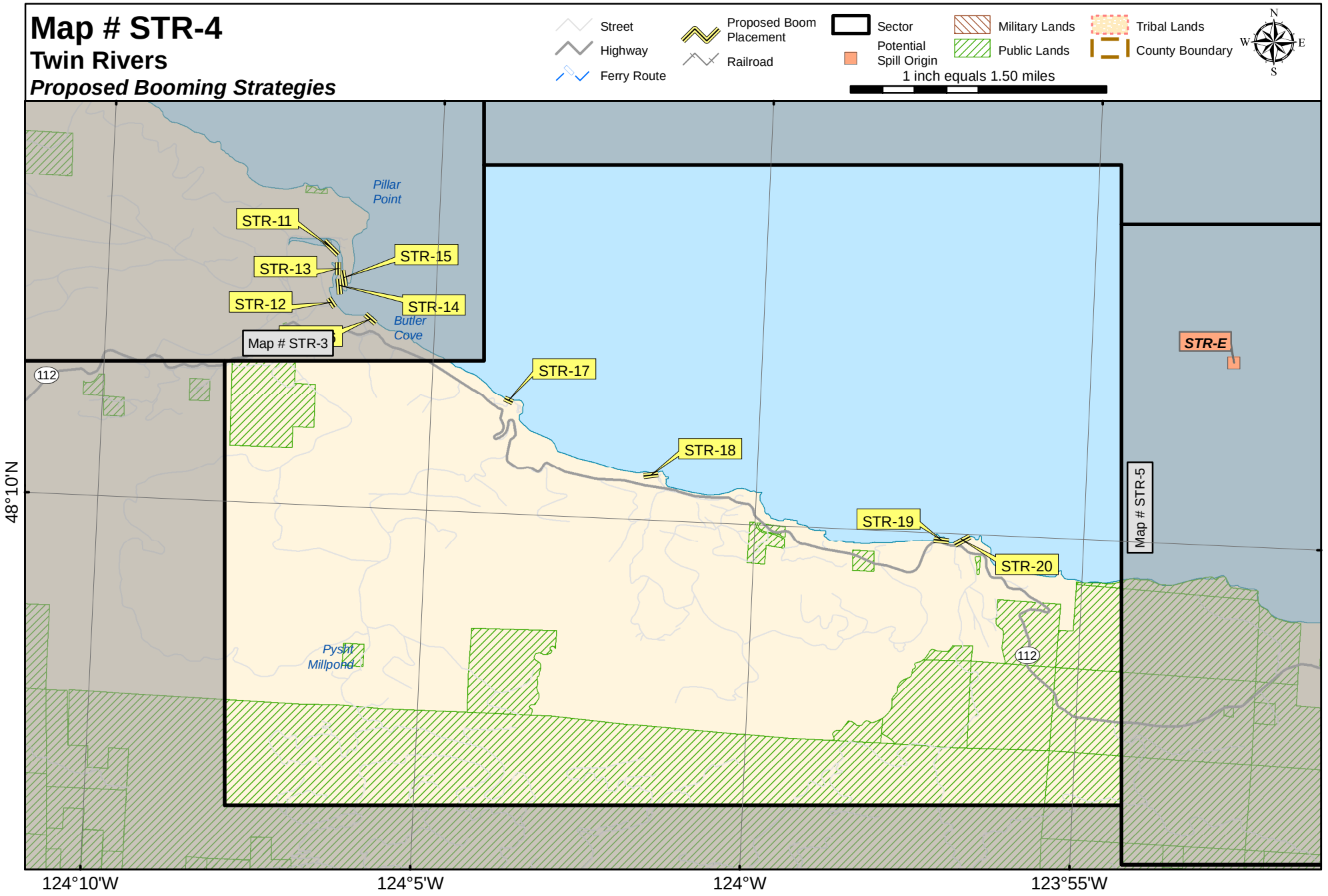
Proposed Booming Strategies

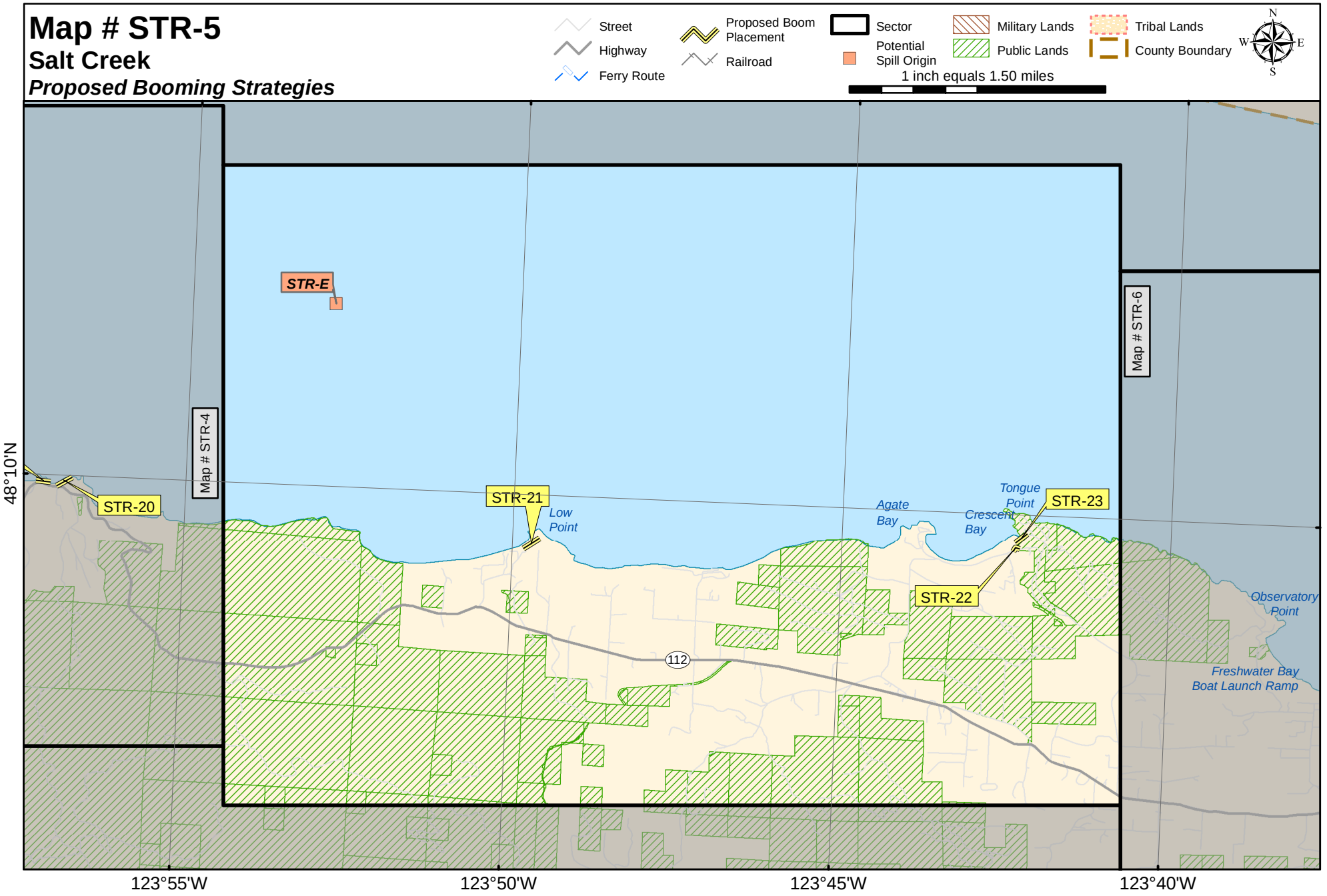


Map # STR-4

Twin Rivers

Proposed Booming Strategies

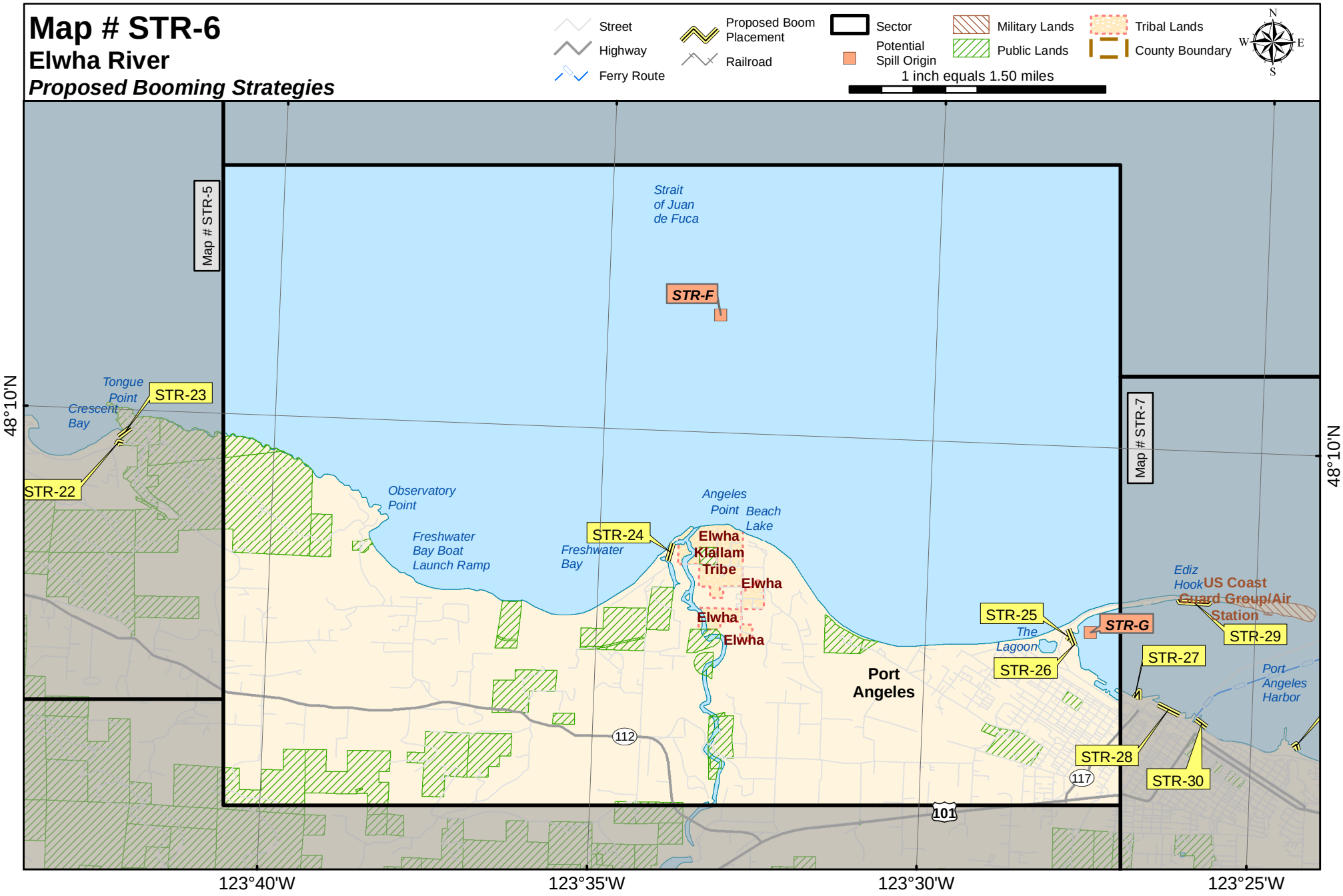


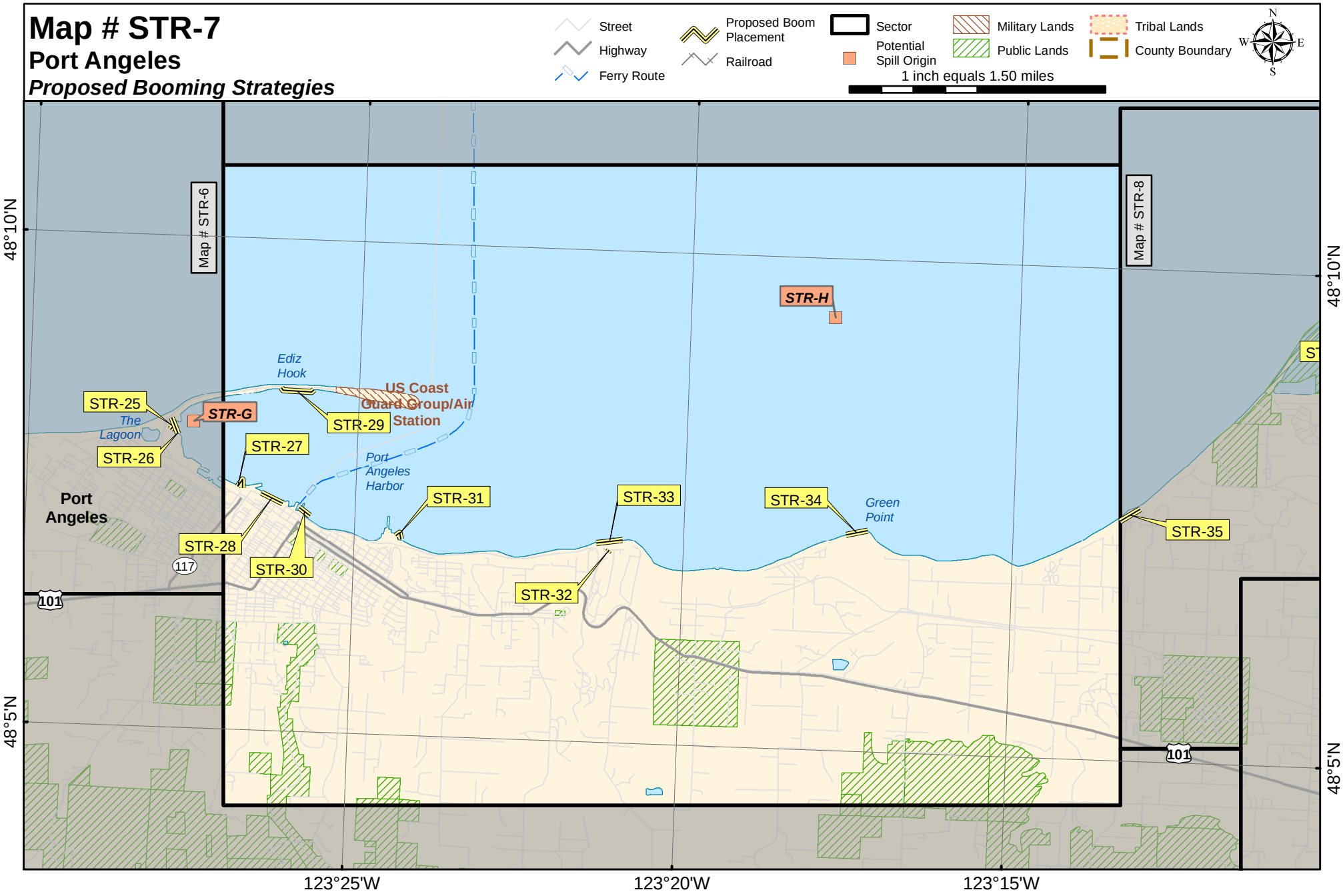

Map # STR-5
Salt Creek
Proposed Booming Strategies
Street
Highway
Ferry Route
Proposed Boom Placement
Railroad
Sector
Potential Spill Origin
Military Lands
Public Lands
Tribal Lands
County Boundary
1 inch equals 1.50 miles
N
W
E
S
STR-E
STR-20
STR-21
STR-22
STR-23
Low Point
Agate Bay
Crescent Bay
Tongue Point
Observatory Point
Freshwater Bay Boat Launch Ramp
112
Map # STR-4
Map # STR-6
48°10'N
123°55'W
123°50'W
123°45'W
123°40'W

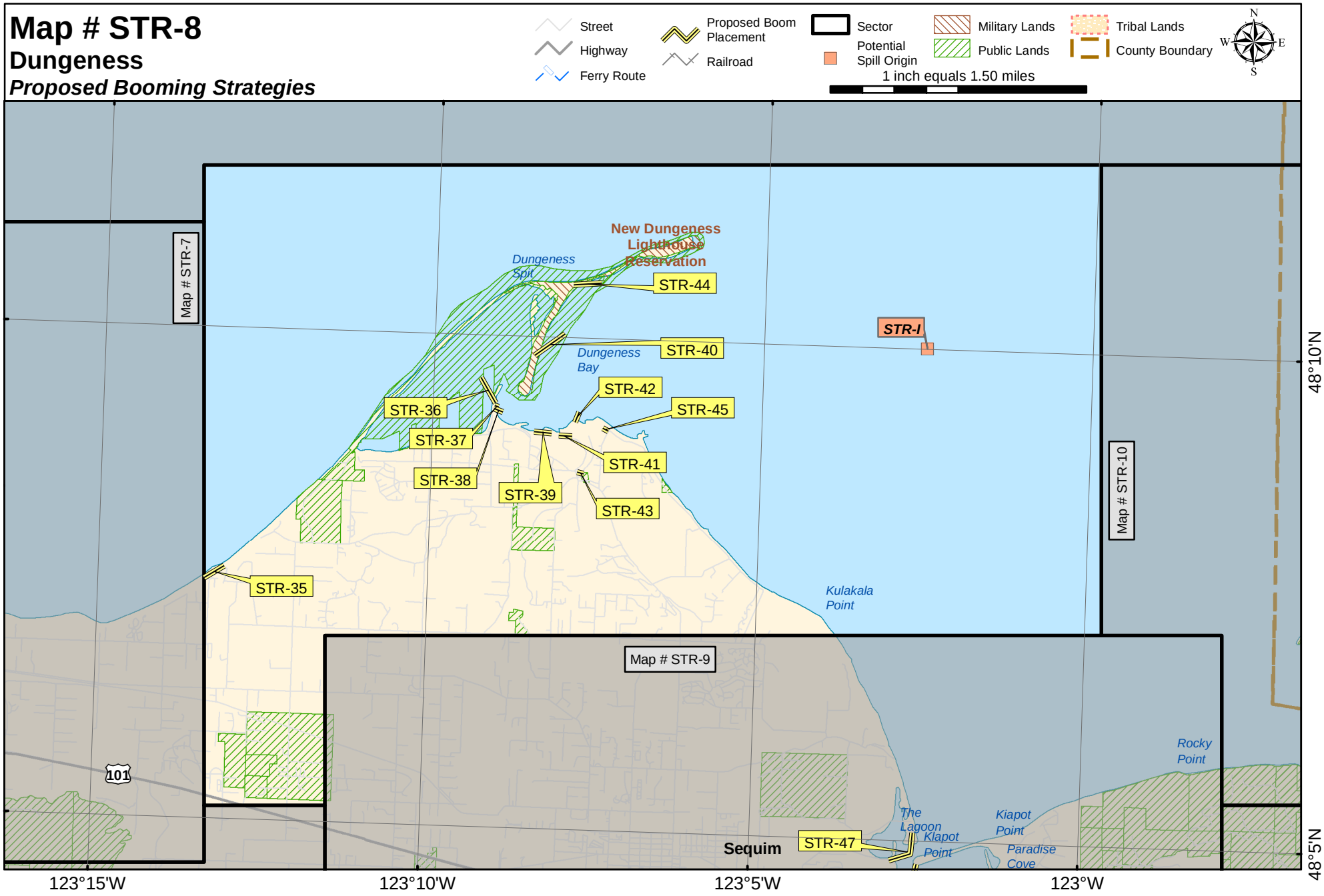
Map # STR-6

Elwha River

Proposed Booming Strategies



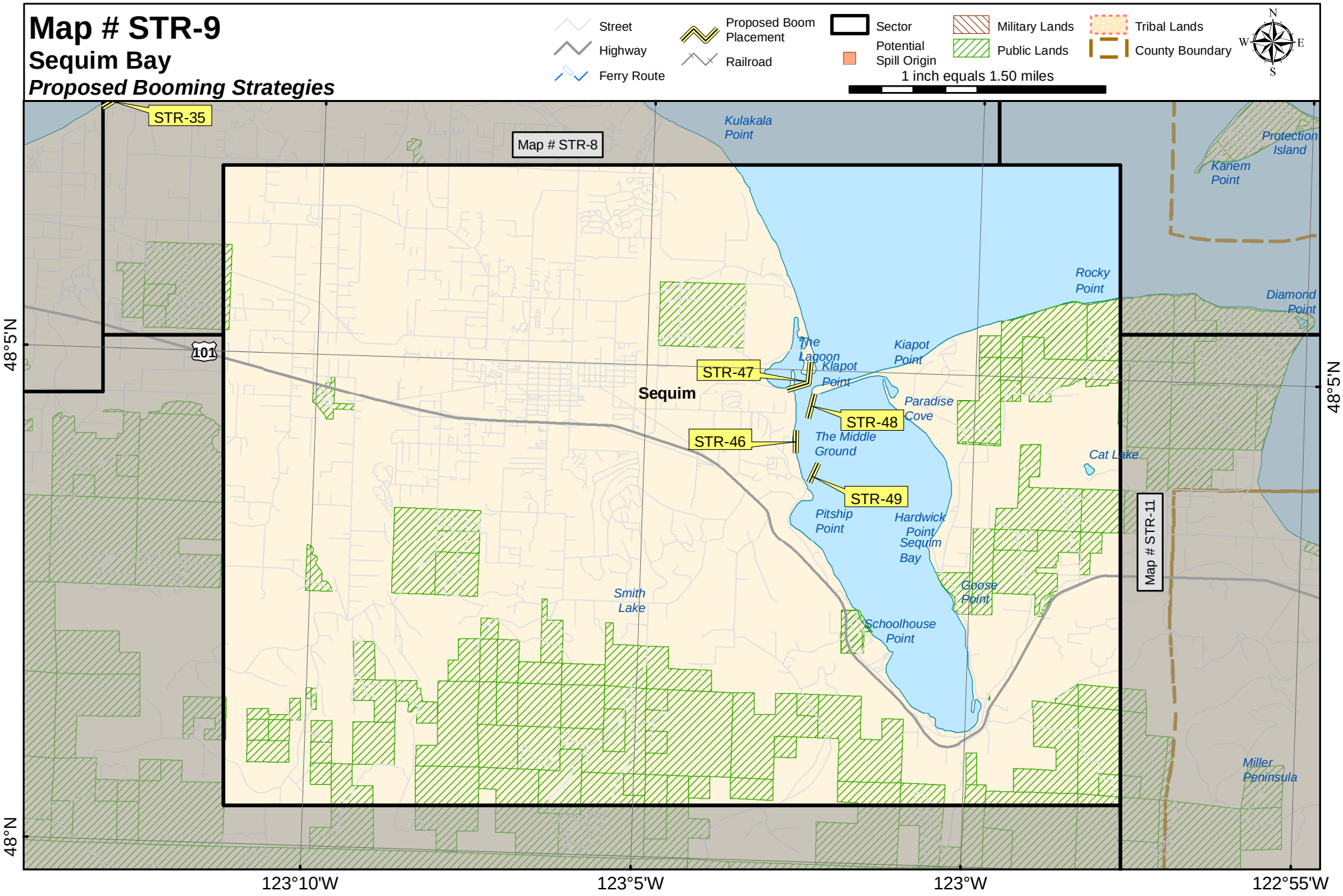

Map # STR-7
Port Angeles
Proposed Booming Strategies
Street
Highway
Ferry Route
Proposed Boom Placement
Railroad
Sector
Potential Spill Origin
Military Lands
Public Lands
Tribal Lands
County Boundary
1 inch equals 1.50 miles
N
S
E
W
Map # STR-6
Map # STR-8
48°10'N
48°5'N
123°25'W
123°20'W
123°15'W
STR-H
STR-G
STR-25
STR-26
STR-27
STR-28
STR-29
STR-30
STR-31
STR-32
STR-33
STR-34
STR-35
Ediz Hook
The Lagoon
US Coast Guard Group/Air Station
Port Angeles Harbor
Port Angeles
Green Point
117
101

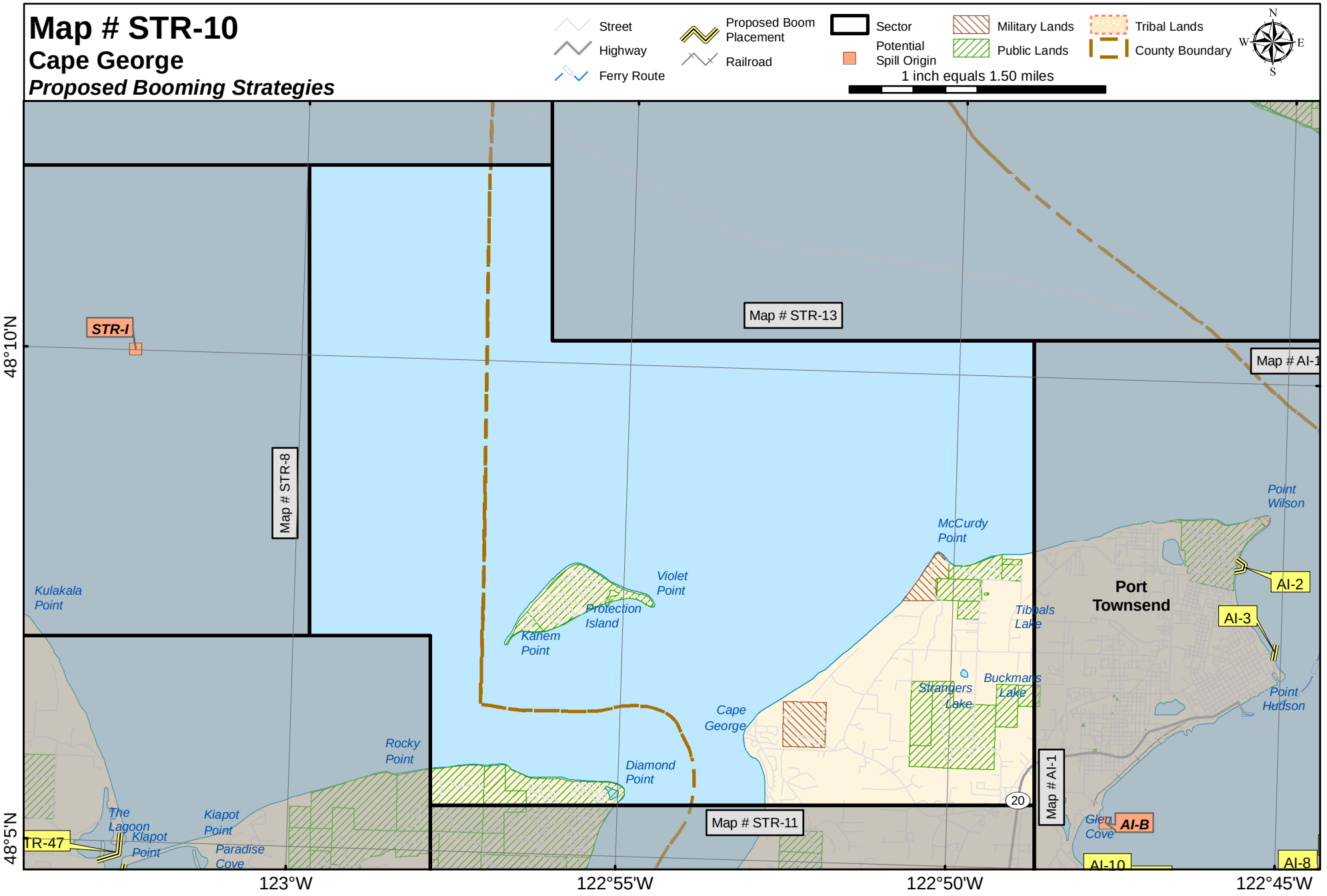

Map # STR-8
Dungeness
Proposed Booming Strategies
Street
Highway
Ferry Route
Proposed Boom Placement
Railroad
Sector
Potential Spill Origin
Military Lands
Public Lands
Tribal Lands
County Boundary
1 inch equals 1.50 miles
N
S
E
W
Map # STR-7
Map # STR-9
Map # STR-10
New Dungeness Lighthouse Reservation
Dungeness Spit
Dungeness Bay
STR-I
STR-35
STR-36
STR-37
STR-38
STR-39
STR-40
STR-41
STR-42
STR-43
STR-44
STR-45
STR-47
Kulakala Point
Rocky Point
The Lagoon
Klapot Point
Kiapot Point
Paradise Cove
Sequim
101
48°10'N
48°5'N
123°15'W
123°10'W
123°5'W
123°W

Map # STR-9

Sequim Bay

Proposed Booming Strategies

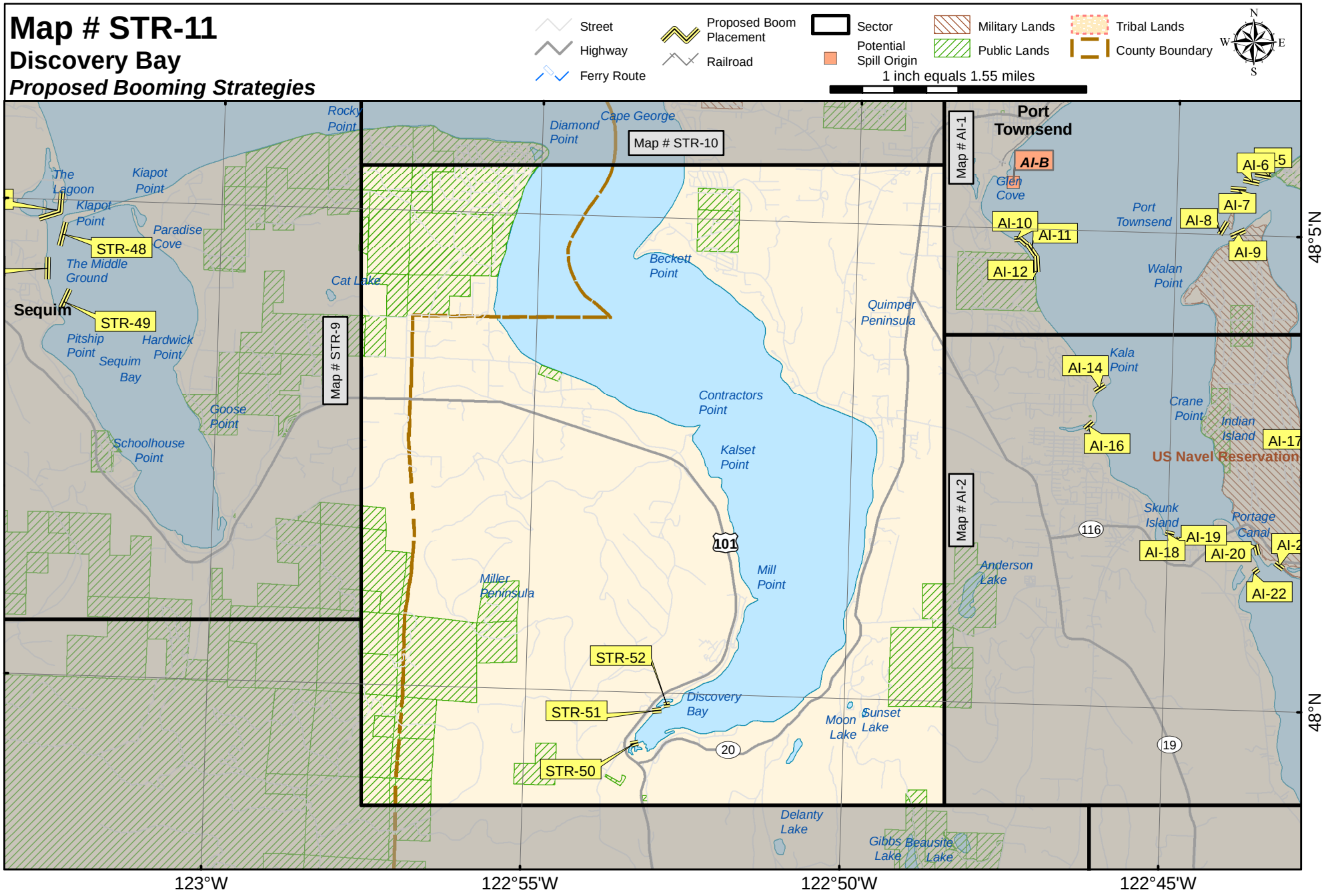


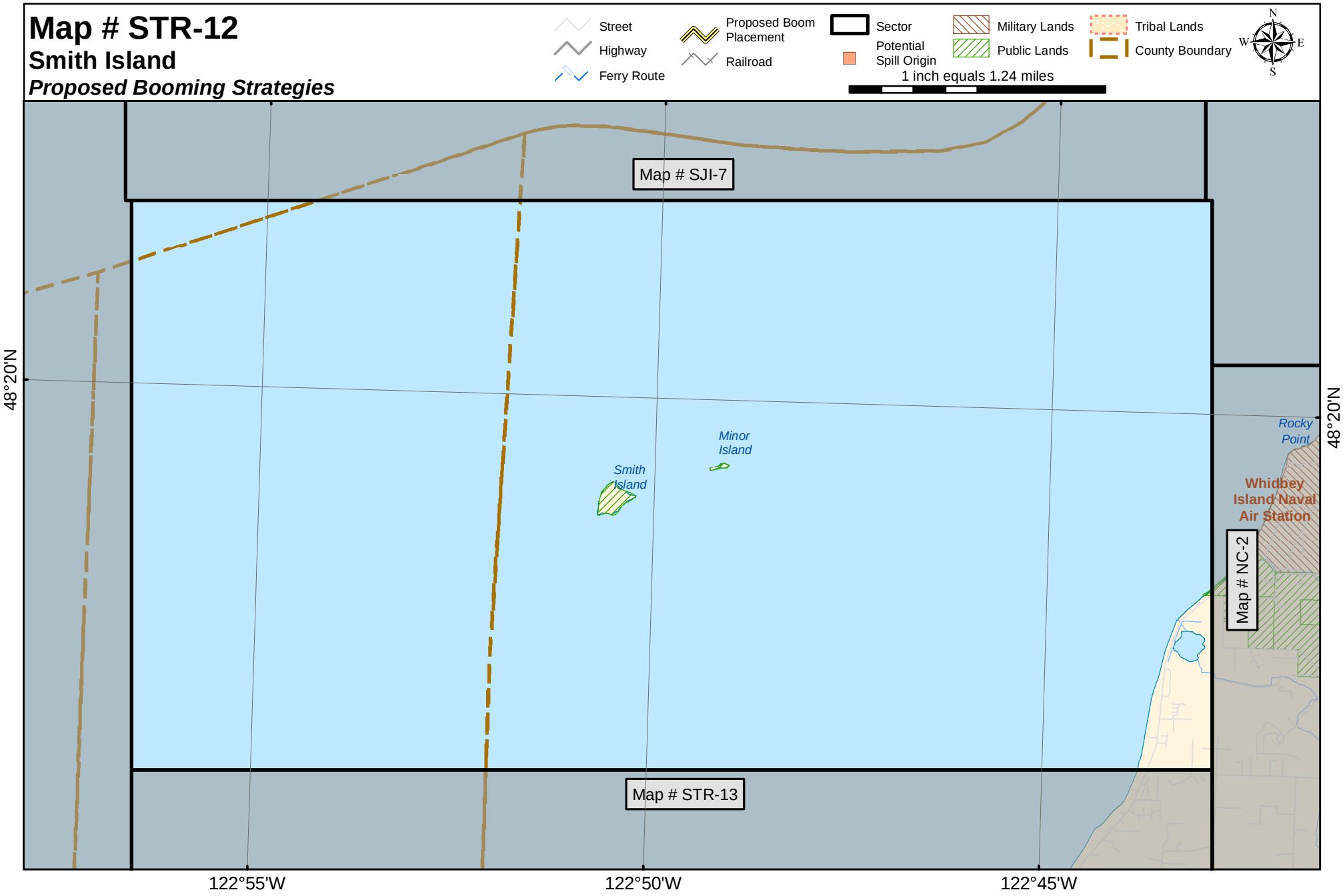

Map # STR-10
Cape George
Proposed Booming Strategies
Street
Highway
Ferry Route
Proposed Boom Placement
Railroad
Sector
Potential Spill Origin
Military Lands
Public Lands
Tribal Lands
County Boundary
1 inch equals 1.50 miles
N
S
W
E
STR-I
Map # STR-13
Map # AI-1
Map # STR-8
Map # STR-11
Map # AI-1
Kulakala Point
Violet Point
Protection Island
Kanem Point
McCurdy Point
Tibbals Lake
Port Townsend
Point Wilson
AI-2
AI-3
Point Hudson
Buckmans Lake
Strangers Lake
Cape George
Diamond Point
Rocky Point
The Lagoon
Klapot Point
Kiapot Point
Paradise Cove
TR-47
20
Glen Cove
AI-B
AI-10
AI-8
48°10'N
48°5'N
123°W
122°55'W
122°50'W
122°45'W

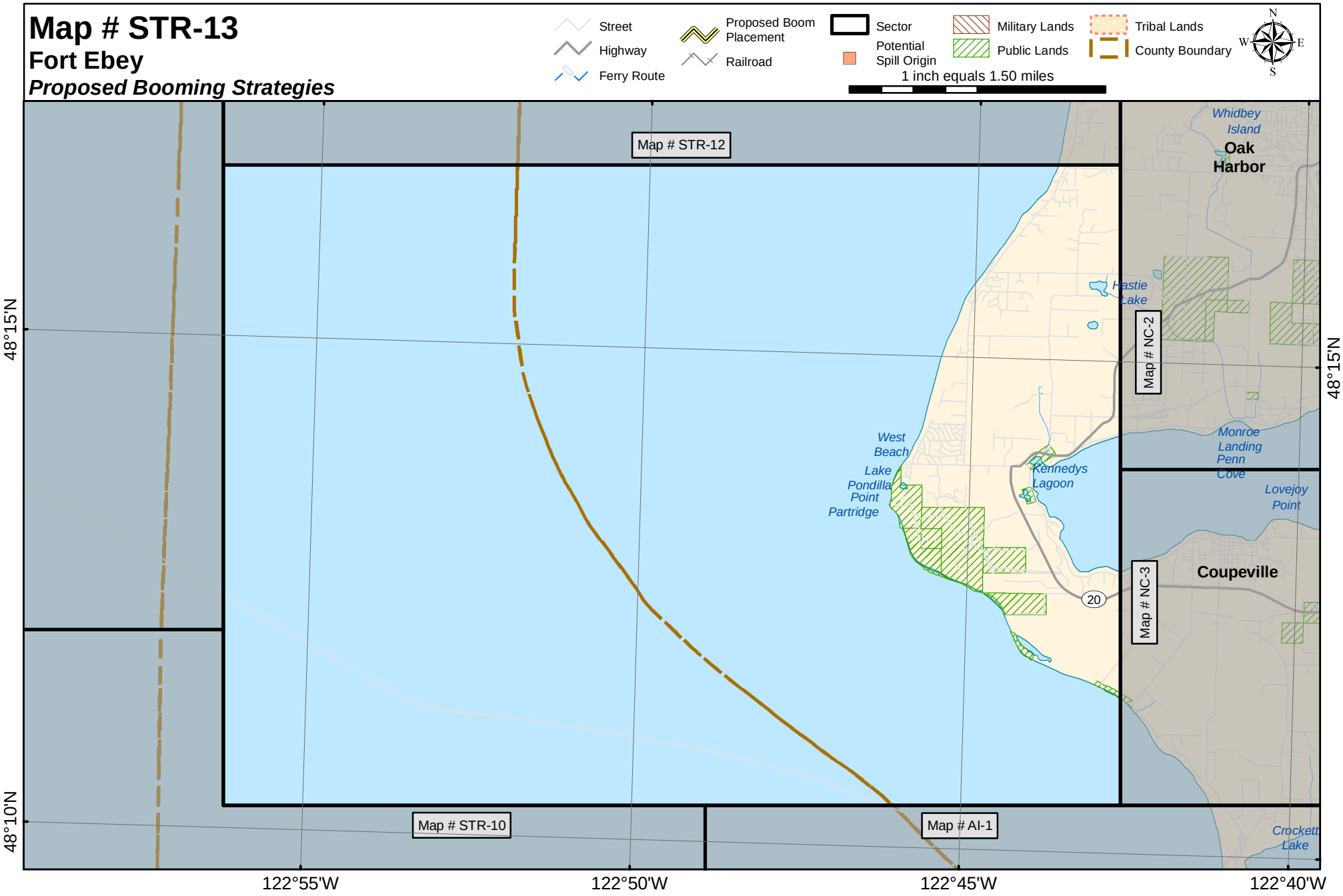
Map # STR-11

Discovery Bay

Proposed Booming Strategies




Map # STR-12
Smith Island
Proposed Booming Strategies
Street
Highway
Ferry Route
Proposed Boom Placement
Railroad
Sector
Potential Spill Origin
Military Lands
Public Lands
Tribal Lands
County Boundary
1 inch equals 1.24 miles
N
W
E
S
Map # SJI-7
Map # STR-13
Map # NC-2
Minor Island
Smith Island
Rocky Point
Whidbey Island Naval Air Station
48°20'N
48°20'N
122°55'W
122°50'W
122°45'W


Map # STR-13
Fort Ebey
Proposed Booming Strategies
Street
Highway
Ferry Route
Proposed Boom Placement
Railroad
Sector
Potential Spill Origin
Military Lands
Public Lands
Tribal Lands
County Boundary
1 inch equals 1.50 miles
N
W
E
S
Map # STR-12
Map # STR-10
Map # AI-1
Map # NC-2
Map # NC-3
Whidbey Island
Oak Harbor
Hastie Lake
West Beach
Lake Pondilla
Point Partridge
Kennedys Lagoon
Monroe Landing
Penn Cove
Lovejoy Point
Coupeville
Crockett Lake
20
48°15'N
48°10'N
122°55'W
122°50'W
122°45'W
122°40'W

4.5 Proposed Booming and Collection Strategies - Matrices

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-10: Proposed Booming Strategies and Resources Targeted

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION DO IT, THEN NOTIFY COMMAND							
STR-1	Visited and Not Tested 05/09/2007	**Sail River** **N 48° 21.631'** **W 124° 33.369'** **map page 4-15** **Chart #: 18460**	Exclusion - keep oil out of the river mouth and cove.	300ft B3 - Contractor Boom	Have police escort - Deploy boom across the entrance to the small inlet at the mouth of the cove in a chevron. A small workboat or skiff will be required. Move the boom further into the inlet if heavy seas prevent deployment at the entrance. Contact immediately or before entering: Lloyd Lee, Makah Tribal Police, (H) 360 645-2701, After hours contact	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0430	salmonids (anadromous), sensitive habitat
STR-2	Visited and Not Tested 05/09/2007	**Snow Creek** **N 48° 21.223'** **W 124° 32.776'** **map page 4-15** **Chart #: 18460**	Exclusion - keep oil out of the creek mouth.	100ft Snare Boom, 100ft Sorbent Boom	Deploy sorbent boom from land across the mouth of the creek, snake back and forth. If oil is present, deploy snare-boom along beach. Contact immediately or before entering: Snow Creek Resort, (W) 800-883-1464	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0428	salmonids (anadromous)

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-10: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION DO IT, THEN NOTIFY COMMAND							
STR-3	Visited and Not Tested 05/09/2007	**Bullman Creek** **N 48° 20.957'** **W 124° 31.920'** **map page 4-15** **Chart #: 18460**	Exclusion - keep oil out of the creek mouth.	100ft B3 - River Boom, or other appropriate type, 150ft Snare Boom	Deploy contractor boom from land as close to the mouth of the creek as conditions allow. If oil is present, deploy snare-boom along beach. Need equipment to clear brush. Contact immediately or before entering: MAKAH TRIBE, (W) 360 645-2701	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0425	salmonids (anadromous)
STR-4	Visited and Not Tested 05/09/2007	**Rasmussen Creek** **N 48° 19.943'** **W 124° 29.440'** **map page 4-16** **Chart #: 18460**	Exclusion - keep oil out of the creek mouth.	200ft Snare Boom, 100ft Sorbent Boom	Deploy sorbent boom from land across the mouth of the creek, snake back and forth. If oil is present, deploy snare-boom along beach.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0417	salmonids (anadromous)

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-10: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION DO IT, THEN NOTIFY COMMAND							
STR-5	Visited and Not Tested 05/09/2007	**Jansen Creek** **N 48° 19.423'** **W 124° 28.157'** **map page 4-16** **Chart #: 18460**	Exclusion - keep oil out of the creek mouth.	100ft Snare Boom, 300ft Sorbent Boom	The creek discharges through two culverts, and the creek flow will prevent oil from entering the culverts most of the year. If the creek flow is low, deploy sorbent boom from land across the mouth of the creek, snake back and forth. If oil is present, deploy snare-boom along beach.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0414	salmonids (anadromous)
STR-6	Visited and Not Tested 05/09/2007	**Olsen Creek** **N 48° 18.376'** **W 124° 26.041'** **map page 4-16** **Chart #: 18460**	Exclusion - keep oil out of creek.	300ft Snare Boom, 50ft Sorbent Boom	On the south side of HWY 112 deploy sorbent boom across the two culverts. If oil is present, deploy snare-boom along beach.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0408	salmonids (anadromous)
STR-7	Visited and Not Tested 05/09/2007	**Sekiu River** **N 48° 17.287'** **W 124° 23.737'** **map page 4-16** **Chart #: 18460**	Exclusion - keep oil out of mouth of river.	500ft B3 - River Boom, or other appropriate type, 400ft Snare Boom	Deploy boom from land across the mouth of the river. If oil is present, deploy snare-boom along beach.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0401	salmonids (anadromous), sensitive habitat, tribal lands/resources

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-10: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION DO IT, THEN NOTIFY COMMAND							
STR-8	Visited and Tested 07/26/2007	**Hoko River** **N 48° 17.133'** **W 124° 22.004'** **map page 4-16** **Chart #: 18460**	Exclusion - keep oil out of the river mouth and estuary.	500ft B3 - River Boom, or other appropriate type, 400ft Snare Boom	Bank next to parking is gentle enough to allow for launch of shallow bottom skift. Use side channel to float boom down to actual deployment site. Deploy boom from the west bank at an angle to the tidal push. Use anchors and lines as needed to maintain an effective angle. The actual location will depend on real time conditions, adjust as needed. If oil is present, deploy snare-boom along beach.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0396	waterfowl, shorebirds, salmonids (anadromous), tribal lands/resources
STR-9	Visited and Not Tested 05/09/2007	**Falls Creek** **N 48° 15.513'** **W 124° 17.766'** **map page 4-17** **Chart #: 18460**	Exclusion - keep oil out of creek mouth.	200ft Snare Boom, 100ft Sorbent Boom	Deploy boom from land across the mouth of the creek. If oil is present, deploy snare-boom along beach. Both to be deployed on down stream side of foot bridge.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0380	salmonids (anadromous)

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-10: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION DO IT, THEN NOTIFY COMMAND							
STR-10	Visited and Not Tested 05/09/2007	**Clallam River** **N 48° 15.212'** **W 124° 16.110'** **map page 4-17** **Chart #: 18460**	Exclusion - keep oil out of the river.	200ft B3 - River Boom, or other appropriate type	Deploy boom as necessary to keep oil out of the river mouth and the channel behind the sand spit. The position of the river mouth is variable and can be anywhere along the sand spit. On the date of the visit - the best site was down stream from side channel towards the mouth of the river.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0374	salmonids (anadromous), public lands/facilities
STR-11	Visited and Not Tested 07/24/2007	**Pysht River collection strategy** **N 48° 12.633'** **W 124° 6.637'** **map page 4-17** **Chart #: 18460**	Exclusion, collection - keep oil out of the river, and collect oil shoreside for vac truck.	200ft B3 - River Boom, or other appropriate type	Deploy boom across the river. Angle the boom to direct oil to the east side of the river for possible collection. Site in front of house is vac truck accessible. Contact immediately or before entering: Ring Merril and Ring Physt Tree Farm, (W) 800-827-2367	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0342	waterfowl, shorebirds, baitfish, salmonids (anadromous), shellfish, raptors, sensitive habitat

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-10: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION DO IT, THEN NOTIFY COMMAND							
STR-12	New - visited but not tested 07/24/2007	**Pysht River Indian Creek** **N 48° 12.062'** **W 124° 6.581'** **map page 4-17** **Chart#: 18460**	Exclusion - keep oil out of creek and wetlands fed by creek.	200ft B3 - River Boom, or other appropriate type	Deploy exclusion boom across creek mouth, angle so that boom is not perpendicular to the push of the tide. Exclusion boom can be supplemented with sorbent boom. If oil is present, deploy snare-boom along beach. Contact immediately or before entering: Ring Merril and Ring Physt Tree Farm, (W) 800-827-2367	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0338	waterfowl, shorebirds, baitfish, salmonids (anadromous), shellfish, raptors, sensitive habitat
STR-13	New - visited but not tested 07/24/2007	**Pysht River W bank side channel** **N 48° 12.417'** **W 124° 6.509'** **map page 4-17** **Chart #: 18460**	Exclusion - keep oil out of side channel and in main channel for collection upstream	800ft B3 - River Boom, or other appropriate type	Deploy boom parallel to the main channel on the west bank. Position boom so that opening to side channel is blocked off. Will need boat to get to west bank. Contact immediately or before entering: Ring Merril and Ring Physt Tree Farm, (W) 800-827-2367	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0340	waterfowl, shorebirds, salmonids (anadromous), baitfish, raptors, sensitive habitat, shellfish

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-10: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION DO IT, THEN NOTIFY COMMAND							
STR-14	Visited and Not Tested 07/24/2007	**Pysht River W bank near mouth** **N 48° 12.247'** **W 124° 6.485'** **map page 4-17** **Chart #: 18460**	Collection - keep oil in the main channel for collection upstream	800ft B3 - River Boom, or other appropriate type	Deploy boom parallel to the main channel on the west bank. Will need boat to get to the west bank. At low tide most of area is mud - bring waders. Contact immediately or before entering: Ring Merril and Ring Physt Tree Farm, (W) 800-827-2367	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0340	waterfowl, shorebirds, baitfish, salmonids (anadromous), shellfish, sensitive habitat
STR-15	Visited and Not Tested 07/24/2007	**Pysht River E bank near mouth** **N 48° 12.327'** **W 124° 6.418'** **map page 4-17** **Chart #: 18460**	Exclusion - keep oil in the main river channel for collection up stream and keep oil out of tidal pond to the east.	1000ft B3 - River Boom, or other appropriate type	Deploy boom parallel to the main channel on the east bank to block off opening of pond and keep oil in main channel. Sticky mud bring waders. Contact immediately or before entering: Ring Merril and Ring Physt Tree Farm, (W) 800-827-2367	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0342	waterfowl, shorebirds, salmonids (anadromous), baitfish, shellfish, raptors, sensitive habitat

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-10: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION DO IT, THEN NOTIFY COMMAND							
STR-16	Visited and Not Tested 07/23/2007	**Butler Creek** **N 48° 11.923'** **W 124° 5.979'** **map page 4-17** **Chart #: 18460**	Exclusion - keep oil out of the creek mouth.	100ft Snare Boom, 50ft Sorbent Boom	The creek discharges through a culvert, and the stream flow will prevent oil from entering the culvert most of the year. If the stream flow is low, deploy boom to keep oil from entering the culvert at high tide. If oil is present, deploy snare-boom along beach.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0338	salmonids (anadromous), public lands/facilities
STR-17	Visited and Not Tested 07/23/2007	**Jim Creek** **N 48° 11.159'** **W 124° 3.827'** **map page 4-18** **Chart#: 18460**	Exclusion - keep oil of creek.	300ft B3 - River Boom, or other appropriate type, 300ft Snare Boom	Deploy boom across the mouth at an angle to tidal push. If oil is present, deploy snare-boom along beach. The actual location will be dependent on real time conditions, adjust as needed.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0332	salmonids (anadromous), shorebirds
STR-18	Visited and Not Tested 07/23/2007	**Deep Creek Mouth** **N 48° 10.464'** **W 124° 1.606'** **map page 4-18** **Chart #: 18460**	Exclusion - keep oil out of the creek mouth.	300ft B3 - River Boom, or other appropriate type, 400ft Snare Boom	Deploy boom from land across the mouth of the creek at an angle to the tidal push. If oil is present, deploy snare-boom along beach. Will need small boat to get to other side, or can wade on beach side.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0326	salmonids (anadromous)

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-10: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION DO IT, THEN NOTIFY COMMAND							
STR-19	Visited and Not Tested 07/23/2007	**Twin River West** **N 48° 9.931'** **W 123° 57.164'** **map page 4-18** **Chart #: 18460**	Exclusion - keep oil out of the river mouth.	200ft B3 - River Boom, or other appropriate type, 300ft Snare Boom	Deploy boom from land across the mouth of the river at an angle to the tidal push. If oil is present, deploy snare-boom along beach.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0315	salmonids (anadromous)
STR-20	Visited and Not Tested 07/23/2007	**Twin River East** **N 48° 9.937'** **W 123° 56.842'** **map page 4-18** **Chart #: 18460**	Exclusion - keep oil out of the river mouth.	100ft B3 - River Boom, or other appropriate type, 200ft Snare Boom	Deploy exclusion boom from land across the mouth of the river at an angle to the tidal push. If oil is present, deploy snare-boom along beach. Access to the river mouth is through private property.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0314	salmonids (anadromous)
STR-21	Visited and Not Tested 07/23/2007	**Lyre River** **N 48° 9.510'** **W 123° 49.718'** **map page 4-19** **Chart #: 18465, 18460**	Exclusion - keep oil out of the river mouth.	300ft B3 - River Boom, or other appropriate type, 400ft Snare Boom	Deploy boom from land across the mouth of the river at an angle to the tidal push. Access to the river mouth is from the campground on the west side of the river. Seasonal strategy, high river flow will keep oil out of the mouth.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0295	salmonids (anadromous), shorebirds

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-10: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION DO IT, THEN NOTIFY COMMAND							
STR-22	New - visited but not tested 07/23/2007	**Salt Creek Bridge** **N 48° 9.670'** **W 123° 42.365'** **map page 4-19** **Chart #: 18465**	Exclusion, collection - keep oil out of Salt Creek and collect from bridge area.	200ft B3 - River Boom, or other appropriate type	This is a back-up to the Salt Creek beach strategy. Deploy boom in front of bridge at an angle to the tidal push so that oil collects near bridge. May want to use bridge pillars to assist with holding the boom in place. Use vac tuck to suck up collected oil.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0270	waterfowl, shorebirds, salmonids (anadromous), public lands/facilities, sensitive habitat, special protection area
STR-23	Visited and Not Tested 07/23/2007	**Salt Creek closest to beach** **N 48° 9.769'** **W 123° 42.275'** **map page 4-19** **Chart #: 18465**	Exclusion - keep oil out of the creek.	200ft B3 - River Boom, or other appropriate type, 300ft Snare Boom	Deploy boom from land across the mouth of the creek. In rough weather, deploy the boom further up the creek if necessary. If oil is present, deploy snare-boom along beach.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0270	waterfowl, salmonids (anadromous), shorebirds, sensitive habitat, public lands/facilities, special protection area

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-10: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION DO IT, THEN NOTIFY COMMAND							
STR-24	Visited and Not Tested 07/24/2007	**Elwha River** **N 48° 8.779'** **W 123° 33.915'** **map page 4-20** **Chart #: 18465**	Exclusion - keep oil out of the river mouth.	500ft B3 - River Boom, or other appropriate type	Deploy boom across the mouth of the river at an angle to the tidal push. Use anchors and lines as needed to maintain an effective angle. Necessary only with low river flow and high tide. The actual location will be dependent on real time conditions, adjust as needed. Contact immediately or before entering: LOWER ELWHA KLALLAM TRIBE, (W) 360/452-8471, (M) 360/417-2259	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0241	waterfowl, salmonids (anadromous), sensitive habitat, tribal lands/resources
STR-25	Visited and Tested 04/04/2007	**Nippon Paper Indus. Lagoon - Inner Strategy** **N 48° 8.061'** **W 123° 27.803'** **map page 4-20** **Chart#: 18468**	Exclusion, collection - keep oil out of the lagoon.	300ft B3 - Contractor Boom	Deploy boom across the lagoon entrance at an angle to the tidal push. As channel is narrow a chevron may be the best boom configuration. If oil does collect this site is vac truck accessible.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0197	waterfowl, shorebirds - minimal

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-10: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION DO IT, THEN NOTIFY COMMAND							
STR-26	Visited and Tested 04/04/2007	**Nippon Paper Indus. - Outer Strategy** **N 48° 8.063'** **W 123° 27.784'** **map page 4-20** **Chart#: 18468**	Exclusion, collection - keep oil out of lagoon, and direct oil to south for possible collection.	800ft B3 - Contractor Boom	Deploy boom from the seawall SE of the lagoon entrance to the shoreline to the north. Angle boom to collect oil at parking area on south. This area would be vac truck accessible.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0200	waterfowl, shorebirds - minimal
STR-27	Visited and Not Tested 08/16/2007	**Tumwater Creek** **N 48° 7.540'** **W 123° 26.730'** **map page 4-21** **Chart #: 18468**	Exclusion - keep oil out of the creek mouth.	200ft B3 - River Boom, or other appropriate type, 200ft Snare Boom	Deploy boom across the creek mouth at an angle to tidal push. If oil is present, deploy snare-boom along beach.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0194	salmonids (anadromous)

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-10: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION DO IT, THEN NOTIFY COMMAND							
STR-28	Visited and Not Tested 08/16/2007	**Valley Creek - City Park** **N 48° 7.366'** **W 123° 26.267'** **map page 4-21** **Chart #: 18468**	Exclusion - keep oil out of the creek mouth and public beach area at the mouth.	600ft B3 - River Boom, or other appropriate type	Deploy boom across the entrance to the small inlet at the city park and beach at the creek mouth.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0193	public lands/facilities, salmonids (anadromous)
STR-29	Visited and Not Tested 08/16/2007	**Ediz Hook Beach** **N 48° 8.462'** **W 123° 25.941'** **map page 4-21** **Chart #: 18468**	Exclusion - keep oil off the sand lance spawning beach.	2500ft B3 - Contractor Boom	Deploy boom from the old boat ramp on the inside beach of Ediz Hook at 48°-8.500'N 123°-25.642'W to protect as much beach as possible to the west of the boat ramp.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0218	baitfish
STR-30	Visited and Not Tested 08/16/2007	**Peabody Creek** **N 48° 7.238'** **W 123° 25.766'** **map page 4-21** **Chart #: 18468**	Exclusion - keep oil out of the creek mouth.	300ft B3 - River Boom, or other appropriate type, 300ft Snare Boom	Deploy boom across the entrance to the creek mouth at an angle to the tidal push, from the northern end of the riprap on the west side to the base of the pier on the east side. The boom can be deployed from land without a boat. If oil is present, deploy snare-boom along beach.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0191	salmonids (anadromous)

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-10: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION DO IT, THEN NOTIFY COMMAND							
STR-31	New - visited but not tested 07/24/2007	**Ennis Creek** **N 48° 7.057'** **W 123° 24.313'** **map page 4-21** **Chart#: 18468**	Exclusion - keep oil out of Ennis Creek	400ft B3 - River Boom, or other appropriate type, 400ft Snare Boom	Deploy boom across the creek mouth at an angle to tidal push. If oil is present, deploy snare-boom along beach. Contact immediately or before entering: Anderson Rayonier Ennis Creek, (W) 360 457 2329, (H) 912 427 5354, has key to gate for Ennis creek Dubuc Ken, Port Angeles fire department, (W) 360 417-4680, has key to gate for Ennis creek.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0186	salmonids (anadromous)
STR-32	New - visited but not tested 07/24/2007	**Morse Creek Upper** **N 48° 6.953'** **W 123° 21.133'** **map page 4-21** **Chart#: 18465**	Exclusion, collection - keep oil out of Morse creek	100ft B3 - River Boom, or other appropriate type	Deploy boom at an angle to tidal push near golf course bridge. If oil collects this area is vac truck accessible.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0178	salmonids (anadromous), waterfowl, shorebirds

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-10: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION DO IT, THEN NOTIFY COMMAND							
STR-33	Visited and Not Tested 07/24/2007	**Morse Creek Lower** **N 48° 7.049'** **W 123° 21.122'** **map page 4-21** **Chart#: 18465**	Exclusion - keep oil out of the creek mouth.	400ft B3 - River Boom, or other appropriate type, 400ft Snare Boom	Deploy boom across the creek mouth at an angle to tidal push. If heavy seas prevent deployment as described, back up into the creek mouth as necessary. If oil is present, deploy snare-boom along beach.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0178	shorebirds, salmonids (anadromous), waterfowl
STR-34	Visited and Not Tested 07/24/2007	**Siebert Creek** **N 48° 7.229'** **W 123° 17.374'** **map page 4-21** **Chart #: 18465**	Exclusion - keep oil out of the creek mouth.	200ft B3 - River Boom, or other appropriate type, 200ft Snare Boom	Deploy boom across the creek mouth at an angle to tidal push. If oil is present, deploy snare-boom along beach.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0166	salmonids (anadromous)
STR-35	Visited and Not Tested 07/24/2007	**McDonald Creek** **N 48° 7.503'** **W 123° 13.227'** **map page 4-22** **Chart #: 18465**	Exclusion - keep oil out of the creek mouth.	200ft B3 - River Boom, or other appropriate type, 200ft Snare Boom	Deploy boom across the creek mouth at an angle to tidal push. If oil is present, deploy snare-boom along beach.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0152	salmonids (anadromous)

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-10: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION DO IT, THEN NOTIFY COMMAND							
STR-36	Visited and Tested 10/04/2007	**Cline Spit - W side** **N 48° 9.463'** **W 123° 9.187'** **map page 4-22** **Chart #: 18471**	Deflection - keep oil out of Dungeness Bay.	600ft B3 - Contractor Boom	Deploy boom from near the east side of the end of Cline spit. Angle the boom towards the 'sand island' about 600 feet off shore from the spit to the northwest. If oil is spotted in the area this boom could be used for enhanced skimming once a skimmer arrives. Contact immediately or before entering: San Juan Club, (W) 360 638-4046, duck club on Cline Spit	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0115	public lands/facilities, marine birds, salmonids (anadromous), sensitive habitat, shellfish, shorebirds, special protection area, waterfowl
STR-37	New - visited but not tested 10/04/2007	**Cline Spit - E side secondary** **N 48° 9.283'** **W 123° 9.031'** **map page 4-22** **Chart#: 18471**	Collection - keep oil out of Dungeness Bay	100ft B3 - Contractor Boom	Deploy this strategy down current from the primary strategy to collect any oil which is entrapped. Deploy at an angle to the current and use anchor to maintain effective angle. Contact immediately or before entering: San Juan Club, (W) 360 638-4046, duck club on Cline Spit	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0114	waterfowl, special protection area, sensitive habitat, shorebirds, salmonids (anadromous), public lands/facilities

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-10: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION DO IT, THEN NOTIFY COMMAND							
STR-38	Visited and Tested 10/04/2007	**Cline Spit E side primary** **N 48° 9.244'** **W 123° 9.007'** **map page 4-22** **Chart #: 18471**	Collection - keep oil out of Dungeness Bay and collect oil on Cline Spit.	600ft B3 - Contractor Boom	Deploy boom from the east bank at an angle to the tidal push. Use anchors and lines as needed to maintain an effective angle. May want to use old pilings for shoreline anchor point. Contact immediately or before entering: San Juan Club, (W) 360 638-4046, duck club on Cline Spit	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0114	waterfowl, habitat restoration/mitigation site, shorebirds, sensitive habitat, salmonids (anadromous), public lands/facilities
STR-39	Visited and Not Tested 10/07/2007	**Old Town Slough** **N 48° 9.059'** **W 123° 8.327'** **map page 4-22** **Chart #: 18471**	Exclusion - keep oil out of the slough.	300ft B3 - River Boom, or other appropriate type, 300ft Snare Boom	Deploy boom across the slough mouth at an angle to tidal push. Boom can be deployed from land from the Oyster House boat ramp parking area (the slough is a short distance to the east of the lot). If oil is present, deploy snare-boom along beach.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0112	waterfowl, shorebirds, sensitive habitat, salmonids (anadromous)

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-10: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION DO IT, THEN NOTIFY COMMAND							
STR-40	New - visited and tested 10/04/2007	**Dungeness Spit E side** **N 48° 9.935'** **W 123° 8.260'** **map page 4-22** **Chart#: 18471**	Collection - keep oil out of Dungeness Bay	500ft B3 - Contractor Boom	Deploy boom from the east bank at an angle to the tidal push. Use anchors and lines as needed to maintain an effective angle. Contact immediately or before entering: Dungeness National Wildlife Refuge, (W) 360 971 6000, (H) 360 457-8451	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0125	waterfowl, shorebirds, sensitive habitat, salmonids (anadromous), public lands/facilities
STR-41	Visited and Not Tested 10/16/2007	**Dungeness River Mouth W Channel** **N 48° 9.005'** **W 123° 7.978'** **map page 4-22** **Chart#: 18471**	Exclusion - keep oil out of the Dungeness River.	200ft B3 - Contractor Boom	Deploy boom across the west channel of the Dungeness River as near to the mouth as possible. The position of the mouth is variable due to shifting delta sediments.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0111	salmonids (anadromous), waterfowl, shorebirds, sensitive habitat

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-10: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION DO IT, THEN NOTIFY COMMAND							
STR-42	Visited and Not Tested 10/16/2007	**Dungeness River Mouth E Channel** **N 48° 9.191'** **W 123° 7.820'** **map page 4-22**	Exclusion - keep oil out of the Dungeness River.	200ft B3 - Contractor Boom	Deploy boom across the east channel of the Dungeness River as near to the mouth as possible. The position of the mouth is variable due to shifting delta sediments. Ensure that the boom also blocks the mouth of Meadowbrook Creek.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0110	salmonids (anadromous), sensitive habitat, waterfowl, shorebirds
STR-43	Visited and Not Tested 08/16/2007	**Dungeness River at Marine Drive** **N 48° 8.612'** **W 123° 7.765'** **map page 4-22** **Chart#: 18471**	Exclusion - keep oil out of the Dungeness River.	200ft B3 - River Boom, or other appropriate type	Deploy boom across the river at an angle to tidal push, at the bridge on Marine Drive.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0109	salmonids (anadromous), waterfowl

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-10: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION DO IT, THEN NOTIFY COMMAND							
STR-44	Visited and Tested 10/04/2007	**Dungeness Spit cove** **N 48° 10.558'** **W 123° 7.715'** **map page 4-22** **Chart #: 18471**	Exclusion - keep oil out of the small cove.	600ft B3 - Contractor Boom, 600ft Snare Boom	Deploy boom across the entrance to the small cove midway down the east side of Dungeness Spit. The actual location will be dependent on real time conditions, adjust as needed. Deploy boom at an angle to tidal push. If oil is present, deploy snare-boom along beach. Contact immediately or before entering: Dungeness National Wildlife Refuge, (W) 360 971 6000, (H) 360 457-8451	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0131	waterfowl, shorebirds, sensitive habitat, special protection area, marine birds
STR-45	Visited and Not Tested 10/07/2007	**Meadowbrook Creek** **N 48° 9.032'** **W 123° 7.352'** **map page 4-22** **Chart#: 18471**	Exclusion - keep oil out of the creek.	100ft B3 - River Boom, or other appropriate type	Deploy boom across the creek mouth at an angle to tidal push. If conditions require - move the strategy further upstream. If oil is present, deploy snare-boom along beach.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0109	salmonids (anadromous)

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-10: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION DO IT, THEN NOTIFY COMMAND							
STR-46	Visited and Not Tested 07/25/2007	**Sequim Bay W bank, S of lab** **N 48° 4.286'** **W 123° 2.704'** **map page 4-23** **Chart #: 18471**	Exclusion, diversion - keep oil off of shoreline and divert oil to main channel for collection further south.	1000ft B3 - Contractor Boom, 1000ft Snare Boom	Deploy boom parallel to the main channel on the west bank. Contact immediately or before entering: JAMESTOWN S'KLALLAM TRIBE, (W) 360/683-1109, (M) 360/683-9758, (H) 360/452-5150	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0079	tribal lands/resources
STR-47	Visited and Not Tested 07/25/2007	**Sequim Bay, Bell Creek Lagoon, near Gibson Spit** **N 48° 4.859'** **W 123° 2.594'** **map page 4-23** **Chart #: 18471**	Exclusion - keep oil out of the lagoon behind Gibson Spit.	1000ft B3 - Contractor Boom	Deploy boom across the lagoon opening at an angle to tidal push. If tidal push is strong may need to use chevron configuration. Contact immediately or before entering: JAMESTOWN S'KLALLAM TRIBE, (W) 360/683-1109, (M) 360/683-9758, (H) 360/452-5150	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0084	waterfowl, salmonids (anadromous), sensitive habitat

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-10: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION DO IT, THEN NOTIFY COMMAND							
STR-48	Visited and Not Tested 07/25/2007	**Sequim Bay, Travis Spit to Middle Ground** **N 48° 4.642'** **W 123° 2.487'** **map page 4-23** **Chart #: 18471**	Diversion - divert oil entering bay to the west channel for collection at Pitship Point.	1700ft B3 - Contractor Boom	Deploy boom from the southwestern tip of Travis Spit to the Middle Ground to direct the oil to the west and south for collection at Pitship Point. The Middle Ground is often covered at high tide.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0034	waterfowl, shorebirds, shellfish, sensitive habitat
STR-49	Visited and Not Tested 07/25/2007	**Sequim Bay, Pitship Point (John Wayne Marina)** **N 48° 3.964'** **W 123° 2.415'** **map page 4-23** **Chart #: 18471**	Collection - use currents and boom to collect oil.	1300ft B3 - Contractor Boom	Deploy boom from the northeast corner of Pitship Point at a northeasterly direction to collect oil diverted by other strategies. Deploy boom at an angle to the tidal push. Use anchors and lines as needed to maintain an effective angle. Area has paved parking for vac truck access. Contact immediately or before entering: JAMESTOWN S'KLALLAM TRIBE, (W) 360/683-1109, (M) 360/683-9758, (H) 360/452-5150	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=CLA0076	waterfowl, shorebirds, shellfish, sensitive habitat

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-10: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION DO IT, THEN NOTIFY COMMAND							
STR-50	New - visited and tested 11/06/2007	**Discovery Bay, near bridge over 101** **N 47° 59.463'** **W 122° 53.268'** **map page 4-25** **Chart#: 18471**	Collection, exclusion - keep oil out of upper marsh area and side channels	500ft B3 - Contractor Boom	Deploy boom across the creek mouth at an angle to tidal push so that oil would collect on the west corner of boom. Use anchors and line to insure effective angle. Be sure to have west anchor point set to keep oil out of side channel on the west side of main channel. Use the point of 'island' on the east side for eastern attachment point.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=JEF0699	waterfowl, shorebirds, sensitive habitat, shellfish

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-10: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION DO IT, THEN NOTIFY COMMAND							
STR-51	New - visited and tested 11/06/2008	**Discovery Bay W bank collection** **N 47° 59.820'** **W 122° 52.937'** **map page 4-25** **Chart #: 18471**	Collection - keep oil out of Discovery bay.	2000ft B3 - Contractor Boom	Deploy boom across the narrowest part of the entrance to Port Discovery. Port Discovery becomes a mudflat at low tide. Deploy boom along the eastern edge of the mudflat so the boom remains in water at low tide. If required block culvert with ply-wood, be sure to get emergency permit from WDFW. Contact immediately or before entering: WDFW Emergency Hydraulic Project Approval, (M) 360-534-8233, 24-hour pager number. Responders must receive Emergency HPA from the WDFW prior to using culvert blocks and underflow dams.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=JEF0700	waterfowl, shorebirds, sensitive habitat

4.5 Proposed Booming and Collection Strategies - Matrices

Table 4-10: Proposed Booming Strategies and Resources Targeted (Cont)

Strategy	Current Status	Location (NAD83 HARN)	Response Objective	Feet of Boom	Strategy Implementation	Shoreline Oblique Photo	Resources Targeted
IF FIELD CONDITIONS REQUIRE MODIFICATION DO IT, THEN NOTIFY COMMAND							
STR-52	Visited and Tested 11/07/2007	**Discovery Bay, W bank pond** **N 47° 59.885'** **W 122° 52.774'** **map page 4-25** **Chart #: 18471**	Exclusion - keep oil out of pond.	500ft B3 - Contractor Boom	Deploy boom across the pond mouth at an angle to tidal push. Use anchors and line to insure effect angle. Use tip of point NE of old bridge as upper anchor point.	http://apps.ecy.wa.gov/shorephotos/scripts/bigphoto.asp?id=JEF0703	waterfowl, shorebirds, sensitive habitat, shellfish

APPENDIX A - BOAT LAUNCH LOCATIONS SUMMARY

Appendix A: Boat Launch Locations Summary

Reference Number	Site Name	Location	Facility Description
Motorboat Launch Inventory			
BL-162	West Wind Resort	Sector Map STR-1 N 48° 22.000'/ W 124° 37.050' Neah Bay	Car Parking, Gravel - 5 Launches, Ramp - concrete, solid - 1 Trailer Parking, Gravel - 5 Waste Disposal, Trash receptacle - 1
BL-163	Big Salmon	Sector Map STR-1 N 48° 21.950'/ W 124° 36.750' Neah Bay	Car Parking, Gravel - Launches, Loading float - 1 Launches, Ramp - concrete, solid - 1 Trailer Parking, Gravel -
BL-166	Snow Creek Boat Ramp (Clallam)	Sector Map STR-1 N 48° 21.233'/ W 124° 32.817' Discovery Bay	Fencing, Gates - 1 Launches, Hoist - fixed - 1 Launches, Loading float - 1 Restrooms, Restrooms w/ showers - 1
BL-187	Olsen's Marina	Sector Map STR-3 N 48° 15.933'/ W 124° 17.933' Clallam Bay	Car Parking, Gravel - 100 Launches, Loading float - 4 Launches, Ramp - concrete, solid - 8 Trailer Parking, Gravel - 150 Waste Disposal, Pumpout -
BL-188	Van Riper's Resort	Sector Map STR-3 N 48° 15.833'/ W 124° 18.017' Clallam Bay	Car Parking, Gravel - 10 Launches, Ramp - concrete, solid - 1 Trailer Parking, Gravel - 20
BL-190	Coho Resort	Sector Map STR-3 N 48° 15.550'/ W 124° 17.033' Clallam Bay	Car Parking, Gravel - 10 Launches, Loading float - 1 Launches, Ramp - concrete, solid - 3 Trailer Parking, Gravel - 10
BL-198	Hastie Lake	Sector Map STR-13 N 48° 15.883'/ W 122° 44.833' Strait of Juan de Fuca	Car Parking, Paved no striping - 5 Launches, Ramp - concrete, solid - 1 Trailer Parking, Paved no striping - 10

Appendix A: Boat Launch Locations Summary

Reference Number	Site Name	Location	Facility Description
Motorboat Launch Inventory			
BL-207	Pillar Point County Park	Sector Map STR-3 N 48° 11.933'/ W 124° 6.000' Strait of Juan de Fuca	Car Parking, Gravel - 5 Launches, Ramp - concrete, plank - 1 Trailer Parking, Gravel - 20
BL-209	Jim Creek Fishing Access (WDFW)	Sector Map STR-4 N 48° 11.150'/ W 124° 3.650' Strait of Juan de Fuca	Car Parking, Gravel - 30 Launches, Ramp - concrete, plank - 4 Restrooms, Portable sani-cans - 2 Trailer Parking, Gravel - 20
BL-220	Whiskey Creek Beach Resort	Sector Map STR-5 N 48° 9.300'/ W 123° 46.700' Strait of Juan de Fuca	Launches, Ramp - concrete, solid - 1
BL-224	Freshwater Bay County Park	Sector Map STR-6 N 48° 8.733'/ W 123° 38.533' Freshwater Bay	Car Parking, Paved and striped - 11 Launches, Ramp - concrete, solid - 1 Restrooms, Vault - 1 Trailer Parking, Paved no striping - 10
BL-225	Cline Spit County Park	Sector Map STR-8 N 48° 9.100'/ W 123° 9.117' Dungeness Bay	Car Parking, Gravel - 2 Fencing, Perimeter fence - 2 Launches, Ramp - concrete, solid - 1 Restrooms, Vault - 2 Trailer Parking, Paved and striped - 10
BL-226	Dungeness Boat Launch Ramp	Sector Map STR-8 N 48° 9.100'/ W 123° 8.700' Dungeness Bay	Car Parking, Gravel - 50 Launches, Loading float - 2 Launches, Ramp - concrete, solid - 2 Restrooms, Flush - 1 Trailer Parking, Gravel - 100
BL-228	Thunderbird Boat House	Sector Map STR-7 N 48° 8.483'/ W 123° 25.717' Port Angeles Harbor	Car Parking, Gravel - 5 Launches, Ramp - Washed Out - 1

Appendix A: Boat Launch Locations Summary

Reference Number	Site Name	Location	Facility Description
Motorboat Launch Inventory			
BL-230	Ediz Hook Boat Launch	Sector Map STR-7 N 48° 8.483'/ W 123° 24.717' Port Angeles Harbor	Car Parking, Paved and striped - 10 Launches, Loading float - 2 Launches, Ramp - concrete, solid - 5 Trailer Parking, Gravel - 50 Trailer Parking, Paved and striped - 50
BL-235	Boat Haven West Ramp (Port Angeles)	Sector Map STR-6 N 48° 7.667'/ W 123° 27.350' Port Angeles Harbor	Car Parking, Paved and striped - 60 Fencing, Perimeter fence - 2 Launches, Loading float - 2 Launches, Ramp - asphalt - 2 Restrooms, Flush - 1 Trailer Parking, Paved and striped - 38 Waste Disposal, Trash receptacle - 3
BL-237	Boat Haven East Ramp (Port Angeles)	Sector Map STR-6 N 48° 7.500'/ W 123° 26.950' Port Angeles Harbor	Car Parking, Paved and striped - 5 Fencing, Perimeter fence - 3 Launches, Loading float - 1 Launches, Ramp - concrete, solid - 1 Restrooms, Restrooms w/ showers - 1 Trailer Parking, Paved and striped - 10
BL-254	Marlyn Nelson Park at Port Williams	Sector Map STR-9 N 48° 5.833'/ W 123° 2.833' Dungeness Bay	Car Parking, Gravel - 1 Car Parking, Paved no striping - 25 Launches, Ramp - concrete, solid - 1 Restrooms, Vault - 1 Trailer Parking, Paved no striping - 10

Appendix A: Boat Launch Locations Summary

Reference Number	Site Name	Location	Facility Description
Motorboat Launch Inventory			
BL-264	John Wayne Marina	Sector Map STR-9 N 48° 3.750'/ W 123° 2.367' Sequim Bay	Car Parking, Paved and striped - 200 Launches, Loading float - 1 Launches, Ramp - concrete, solid - 2 Restrooms, Flush - 1 Restrooms, Restrooms w/ showers - 1 Trailer Parking, Paved and striped - 52 Waste Disposal, Pumpout - 1
BL-267	Gardiner Boat Launch	Sector Map STR-11 N 48° 3.467'/ W 122° 55.000' Discovery Bay	Car Parking, Gravel - 5 Launches, Ramp - concrete, solid - 1 Restrooms, Portable sani-cans - 1 Trailer Parking, Gravel - 12
BL-274	Sequim Bay State Park	Sector Map STR-9 N 48° 2.583'/ W 123° 1.683' Sequim Bay	Launches, Loading float - 1 Launches, Ramp - concrete, solid - 1 Restrooms, Restrooms w/ showers - 1 Trailer Parking, Paved and striped - 7 Waste Disposal, Pumpout -

APPENDIX B - DETAILED STRATEGY LOCATIONS AND DESCRIPTIONS

Site Lat/Long:	N 48° 21.631' / W 124° 33.369', Sector Map STR-1
Strategy Objective:	Exclusion - keep oil out of the river mouth and cove.
Implementation:	Have police escort - Deploy boom across the entrance to the small inlet at the mouth of the cove in a chevron. A small workboat or skiff will be required. Move the boom further into the inlet if heavy seas prevent deployment at the entrance.
Site Safety Note:	Danger - property is posted, and locals report owner is armed. Do not enter without police support.
Staging Area:	Staging Area Neah Bay C.G., STR-N.B.C.G.-staging
Field Notes:	Vehicle access from Highway 112, about 2 miles southeast of Neah Bay.
Resources Targeted:	salmonids (anadromous), sensitive habitat
Fixed Anchors:	83: N 48° 21.640' / W 124° 33.389', west bank of cove near mouth, adjust as needed
Watercourse Description:	River with tidal influence, cove, with opening to the Straits, Field Visit Width ~ 230ft, mud, sand. Rock

Suggested Equipment	
Quantity	**Description**
300 ft	B3 - Contractor Boom
1 each	Jon Boat(s)
4 each	Stake(s)
Suggested Personnel	
1	Boat Operator (s)
2	Laborer (s)

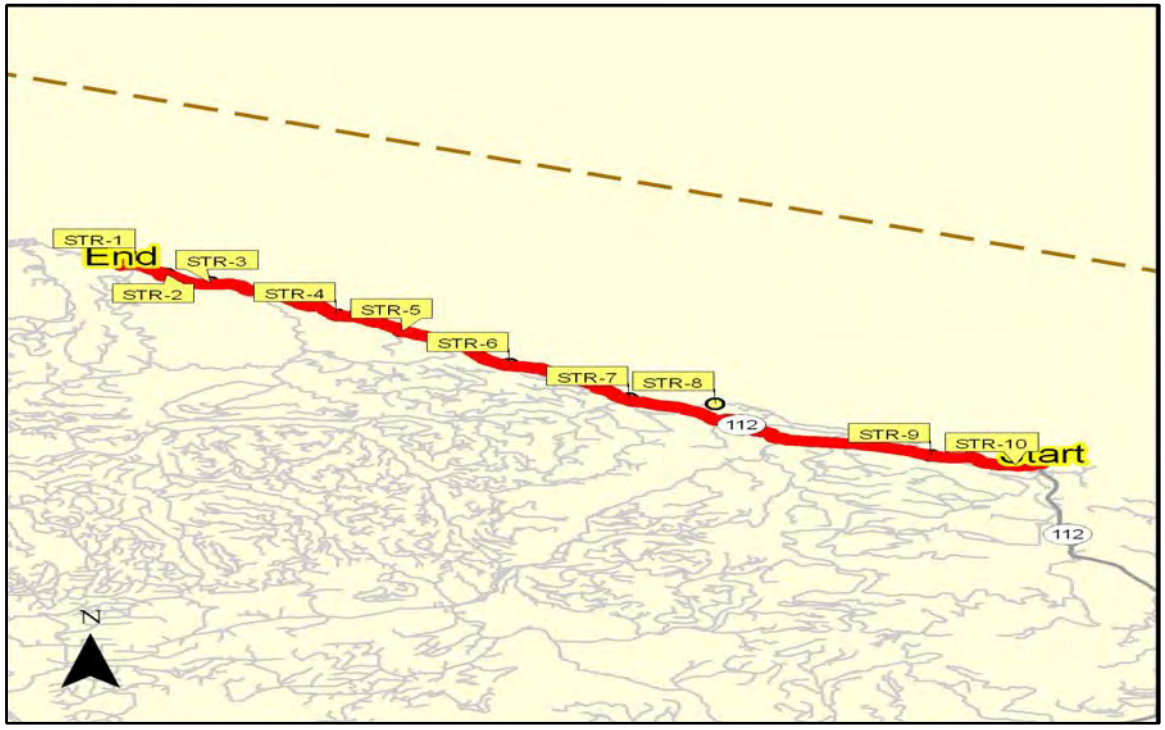
Status: Visited and Not Tested 05/09/2007

Image-841: Sail River, from road pull out

Image-1066: Sail River overview

Site Contact Information

High Priority - contact immediate or before entering:
Lloyd Lee, Makah Tribal Police, (H) 360 645-2701, After hours contact



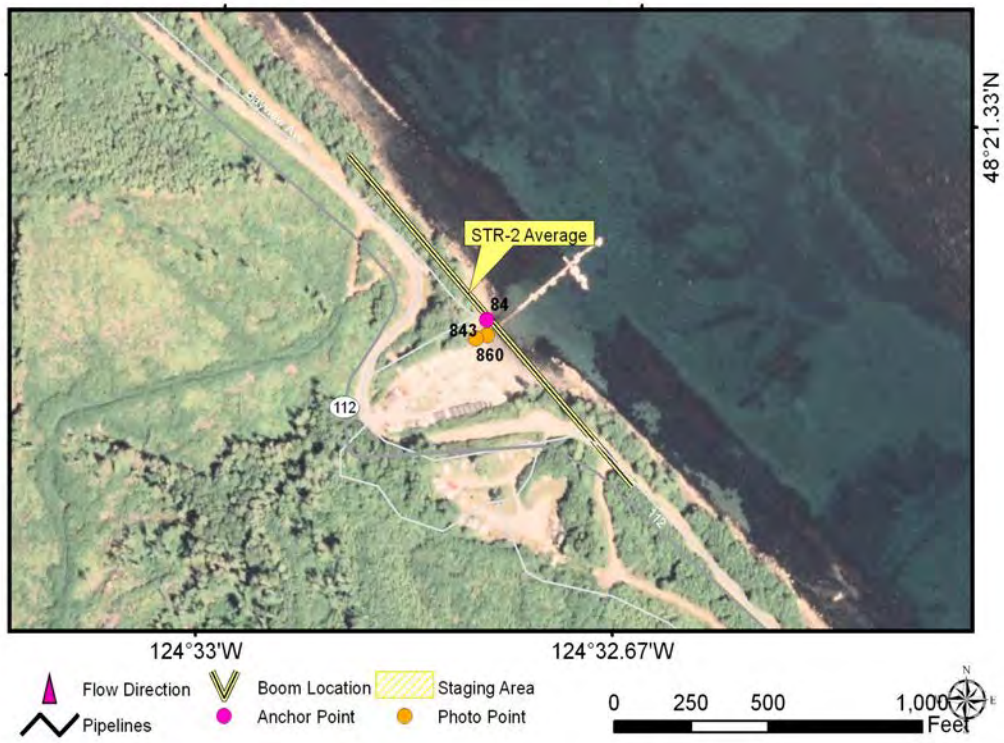
Closest Address:

11491 SR 112, Dirt Road Posted near point, Sekiu, 98381

Driving Directions:

Depart Clallam Bay
1. Go South West on Frontier St toward SR 112 (0.04 Mile(s))
2. Turn right on SR 112 (HWY 112) (16.87 Mile(s))
Arrive at 11491 SR 112, Sekiu, WA, 98381, on the right

Site Lat/Long:	N 48° 21.223' / W 124° 32.776', Sector Map STR-1
Strategy Objective:	Exclusion - keep oil out of the creek mouth.
Implementation:	Deploy sorbent boom from land across the mouth of the creek, snake back and forth. If oil is present, deploy snare-boom along beach.
Site Safety Note:	High traffic area, take appropriate precautions.
Staging Area:	Staging Area Neah Bay C.G., STR-N.B.C.G.-staging
Field Notes:	Vehicle access from Highway 112, Mile Post 0.7. Stage in the Snow Creek Resort. Off of HWY 112, (48.35708, 124.55276) Resort has rail launch (10k limit), water. Wi-fi, bathrooms.
Resources Targeted:	salmonids (anadromous)
Fixed Anchors:	84: N 48° 21.223' / W 124° 32.779', Water Depth 0ft, west bank near beach, adjust as needed
Watercourse Description:	Creek, small creek, with tidal influence, Field Visit Width ~ 40ft, boulders, rock, sand



Suggested Equipment	
Quantity	**Description**
100 ft	Snare Boom
100 ft	Sorbent Boom
2 each	Stake(s)
Suggested Personnel	
1	Laborer (s)

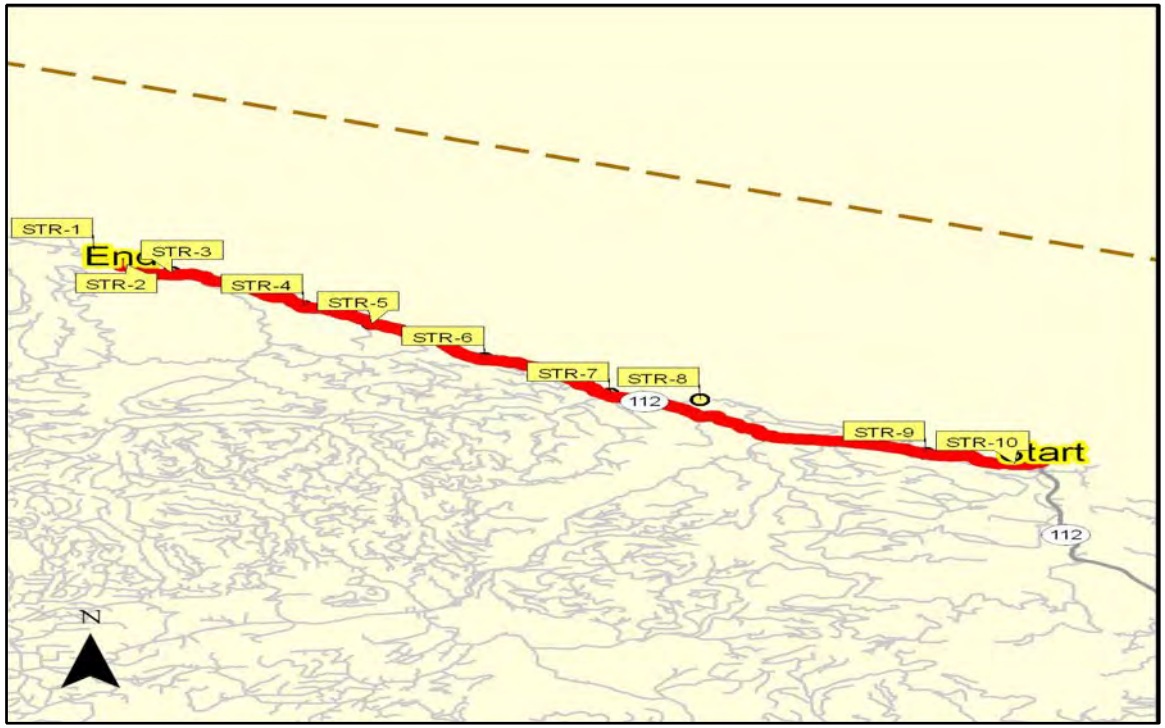
Status: Visited and Not Tested 05/09/2007

Image-843: Snow Creek Resort Staging Overview

Image-860: Snow Creek Boom Location

Site Contact Information

High Priority - contact immediate or before entering:
Snow Creek Resort, (W) 800-883-1464



Closest Address:

9998 SR 112, Side road near here., Sekiu, 98381

Driving Directions:

Depart Clallam Bay
1. Go South West on Frontier St toward SR 112 (0.04 Mile (s))
2. Turn right on SR 112 (HWY 112) (16 Mile(s))
Arrive at 9998 SR 112, Sekiu, WA, 98381, on the left

Site Lat/Long:	N 48° 20.957' / W 124° 31.920', Sector Map STR-1
Strategy Objective:	Exclusion - keep oil out of the creek mouth.
Implementation:	Deploy contractor boom from land as close to the mouth of the creek as conditions allow. If oil is present, deploy snare-boom along beach. Need equipment to clear brush.
Site Safety Note:	High Traffic area use caution - recommend cones and other safety precautions.
Staging Area:	Staging Area Neah Bay C.G., STR-N.B.C.G.-staging
Field Notes:	Vehicle access from Highway 112, Mile Post 1.5. Carry equipment for bushwacking. Near by street address - 1601 Hwy 112, small pull out on east side of bridge.
Resources Targeted:	salmonids (anadromous)
Fixed Anchors:	85: N 48° 20.903' / W 124° 31.890', Water Depth 0ft, bank near bridge, bring bushwacking gear, adjust as needed
Watercourse Description:	Creek, with tidal influence, bushy steep banks, Field Visit Width ~ 40ft, Field Visit Depth ~ 6ft,

Suggested Equipment	
Quantity	**Description**
100 ft	B3 - River Boom, or other appropriate type
1	Machete
150 ft	Snare Boom
4 each	Stake(s)
Suggested Personnel	
2	Laborer (s)

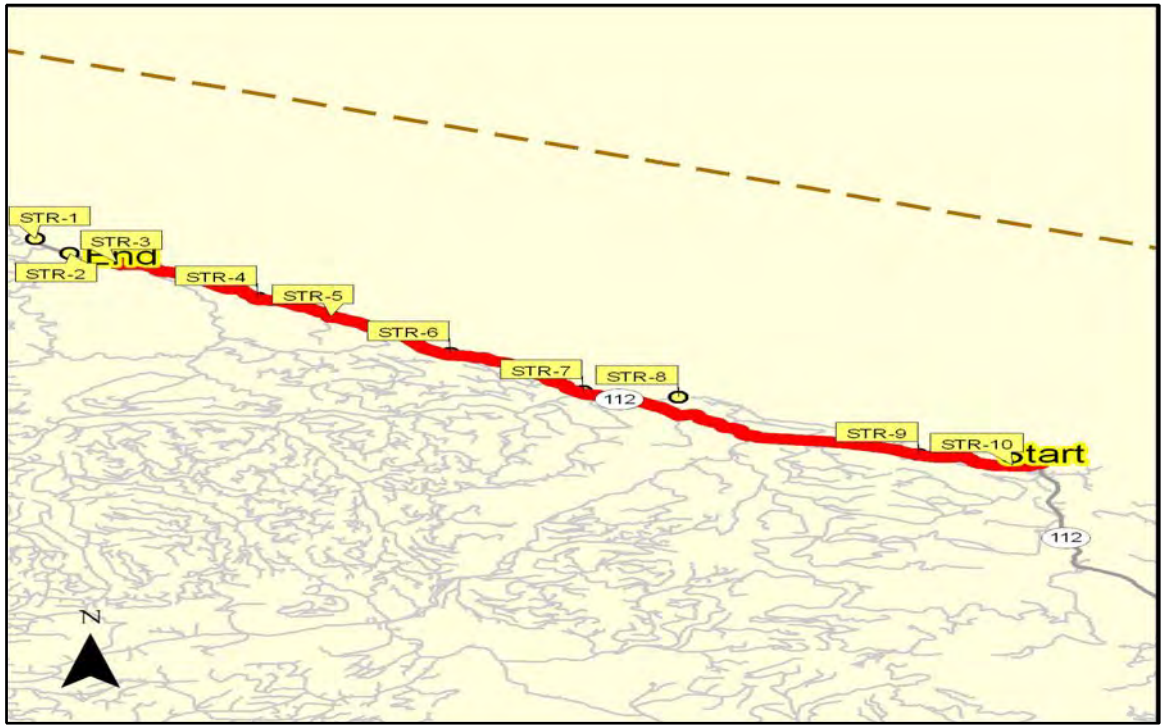
Status: Visited and Not Tested 05/09/2007

Image-861: Bullman Creek Boom Location

Image-825: Bullman Creek Downstream

Site Contact Information

High Priority - contact immediate or before entering:
MAKAH TRIBE, (W) 360 645-2701



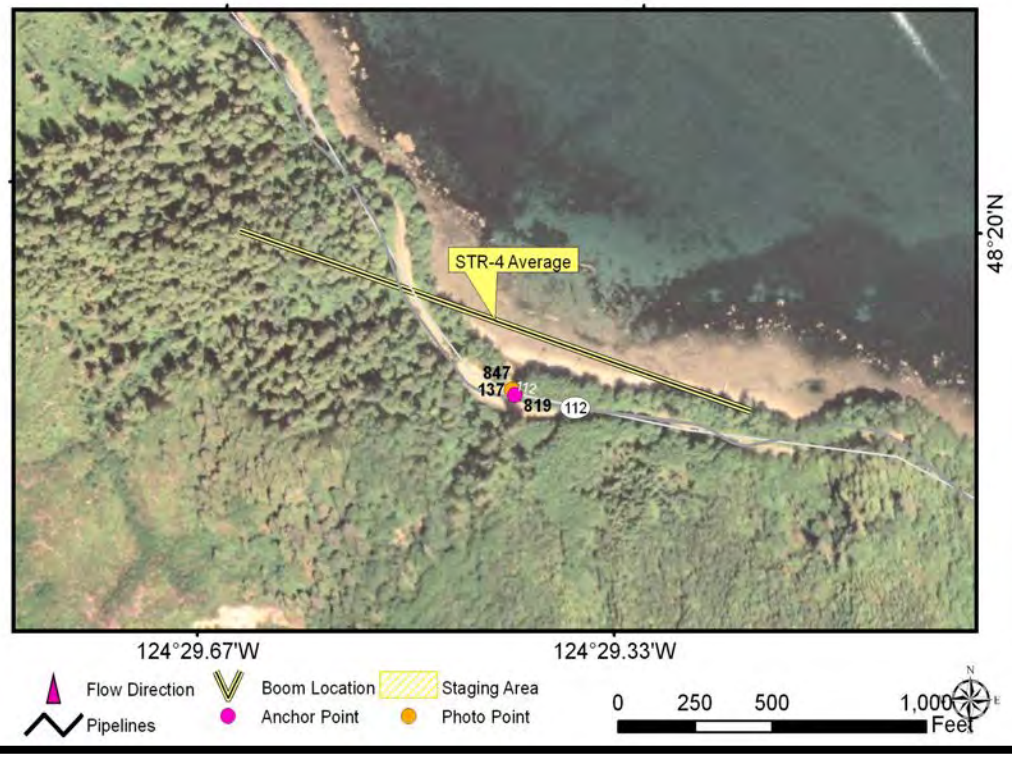
Closest Address:

8782 Hwy 112, Sekiu, 98381

Driving Directions:

Depart Clallam Bay
1. Go South West on Frontier St toward SR 112 (0.04 Mile(s))
2. Turn right on SR 112 (HWY 112) (15.11 Mile(s))
Arrive at 8782 Hwy 112, Sekiu, WA, 98381, on the left

Site Lat/Long:	N 48° 19.943' / W 124° 29.440', Sector Map STR-2
Strategy Objective:	Exclusion - keep oil out of the creek mouth.
Implementation:	Deploy sorbent boom from land across the mouth of the creek, snake back and forth. If oil is present, deploy snare-boom along beach.
Site Safety Note:	High traffic area, take appropriate precautions. Bring brush clearing equipment.
Staging Area:	Staging Area Neah Bay C.G., STR-N.B.C.G.-staging
Field Notes:	Vehicle access from Highway 112, Mile Post 3.9. Turn out on west side of Hwy bridge, gentle grade, easy foot access.
Resources Targeted:	salmonids (anadromous)
Fixed Anchors:	137: N 48° 19.907' / W 124° 29.422', Water Depth 0ft, Suggested snare boom location.
Watercourse Description:	Creek, small creek, with highly varible flow, Field Visit Width ~ 30ft,



Suggested Equipment	
Quantity	**Description**
200 ft	Snare Boom
100 ft	Sorbent Boom
4 each	Stake(s)
Suggested Personnel	
1	Laborer (s)

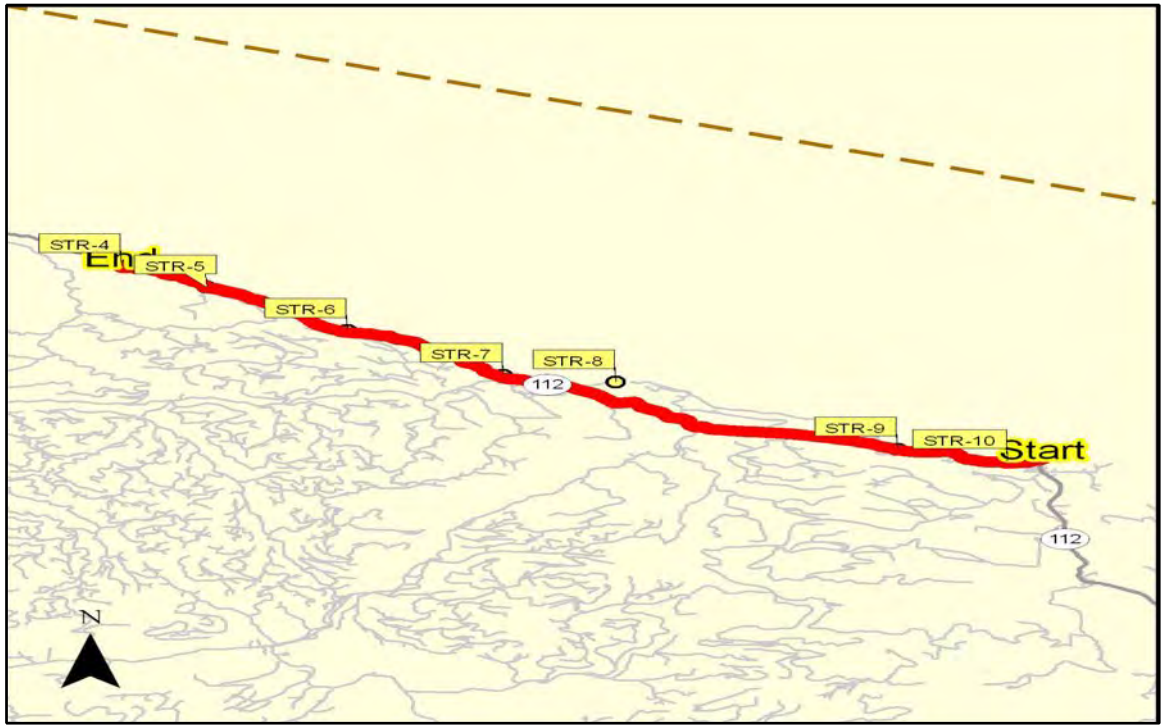
Status: Visited and Not Tested 05/09/2007

Image-847: Rasmussen Creek Boom Location

Image-819: Rasmussen Creek snare-boom Location

Site Contact Information

No contact information available.



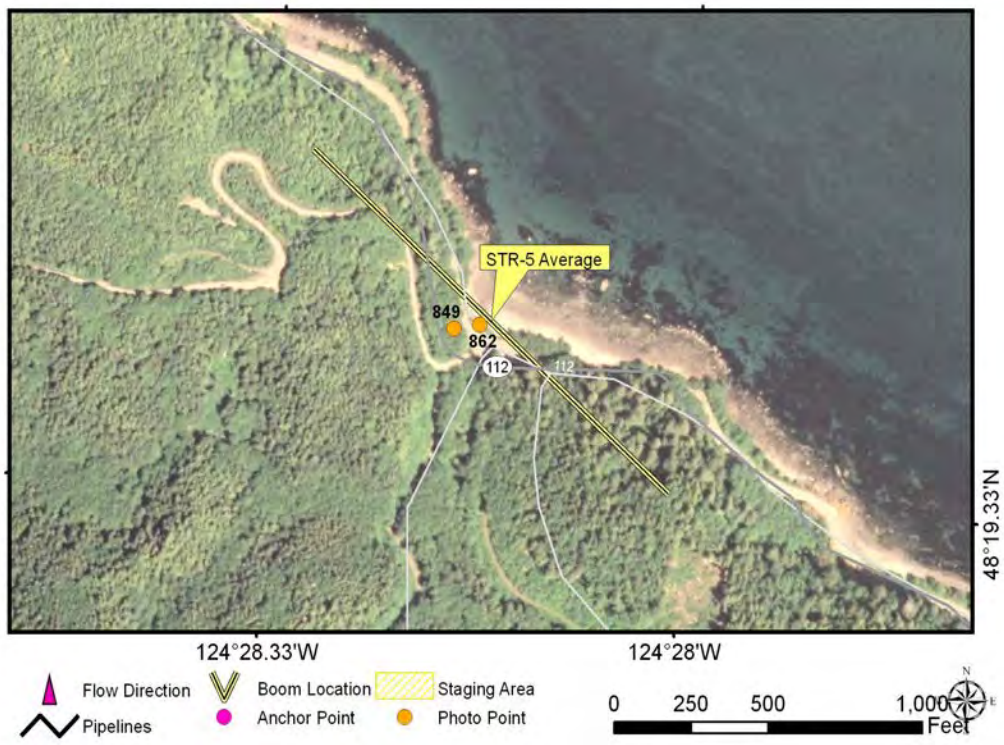
Closest Address:

8300 SR 112, Sekiu, 98381

Driving Directions:

Depart Clallam Bay
1. Go South West on Frontier St toward SR 112 (0.04 Mile(s))
2. Turn right on SR 112 (HWY 112) (12.76 Mile(s))
Arrive at 8300 SR 112, Sekiu, WA, 98381, on the left

Site Lat/Long:	N 48° 19.423' / W 124° 28.157', Sector Map STR-2
Strategy Objective:	Exclusion - keep oil out of the creek mouth.
Implementation:	The creek discharges through two culverts, and the creek flow will prevent oil from entering the culverts most of the year. If the creek flow is low, deploy sorbent boom from land across the mouth of the creek, snake back and forth. If oil is present, deploy snare-boom along beach.
Site Safety Note:	At high flow - do not deploy strategies. High traffic area, take appropriate precautions.
Staging Area:	Staging Area Neah Bay C.G., STR-N.B.C.G.-staging
Field Notes:	Vehicle access from Highway 112, Mile Post 5.1. Pull out on East side of bridge. Bring brush clearing equipment.
Resources Targeted:	salmonids (anadromous)
Fixed Anchors:	86: N 48° 19.898' / W 124° 29.433', west bank of creek, upstream of culvert, adjust as needed
Watercourse Description:	Creek, flow highly variable, discharges through two culverts, Field Visit Width ~ 55ft, Field Visit Depth ~ 3ft, gravel and rock



Suggested Equipment	
Quantity	**Description**
100 ft	Snare Boom
300 ft	Sorbent Boom
6 each	Stake(s)
Suggested Personnel	
2	Laborer (s)

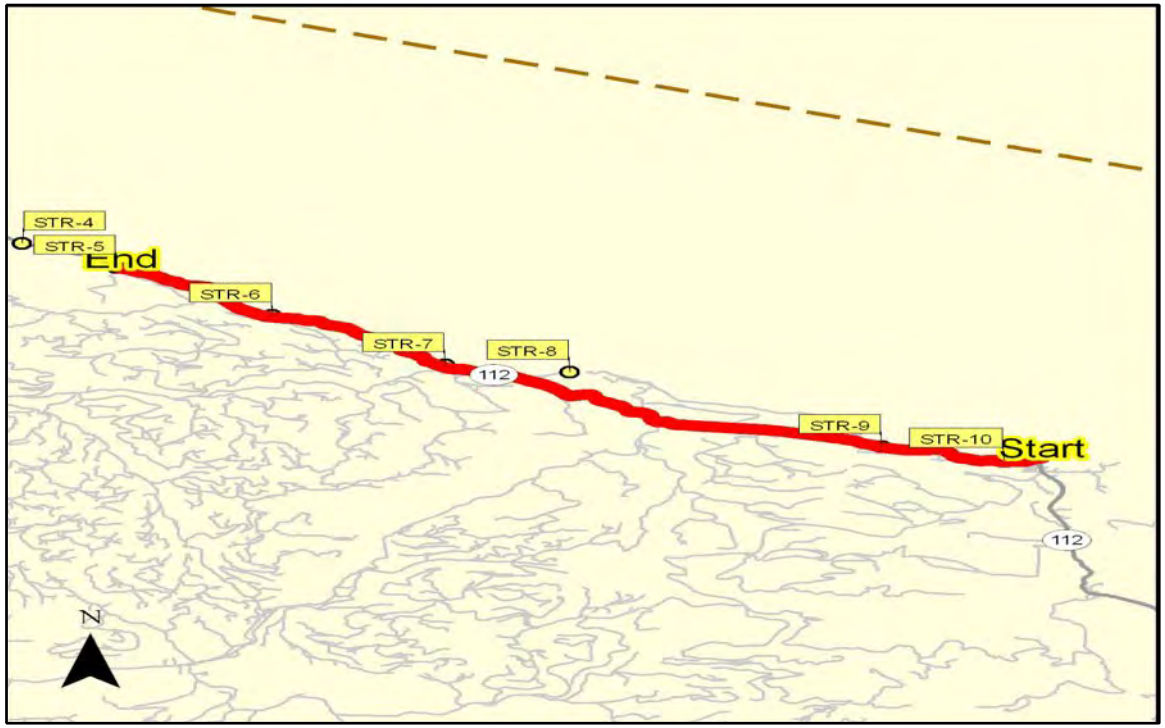
Status: Visited and Not Tested 05/09/2007

Image-849: Jansen Creek Culverts, Boom Deployment

Image-862: Jansen Creek Pom Pom Deployment Site

Site Contact Information

No contact information available.



Closest Address:

8091 SR 112, Sekiu, 98381

Driving Directions:

Depart Clallam Bay
1. Go South West on Frontier St toward SR 112 (0.04 Mile(s))
2. Turn right on SR 112 (HWY 112) (11.48 Mile(s))
Arrive at 8091 SR 112, Sekiu, WA, 98381, on the right

Site Lat/Long:	N 48° 18.376' / W 124° 26.041', Sector Map STR-2
Strategy Objective:	Exclusion - keep oil out of creek.
Implementation:	On the south side of HWY 112 deploy sorbent boom across the two culverts. If oil is present, deploy snare-boom along beach.
Site Safety Note:	At high flow do not deploy strategies. High traffic area, take appropriate precautions.
Staging Area:	Staging Area Neah Bay C.G., STR-N.B.C.G.-staging
Field Notes:	Vehicle access from Highway 112, Mile Post 7.2. Near by street address - 7273 HWY 112 (east side of creek), 7331 HWY 112 (west side of creek)
Resources Targeted:	salmonids (anadromous)
Watercourse Description:	River with tidal influence

Suggested Equipment	
Quantity	**Description**
300 ft	Snare Boom
50 ft	Sorbent Boom
Suggested Personnel	
1	Laborer (s)

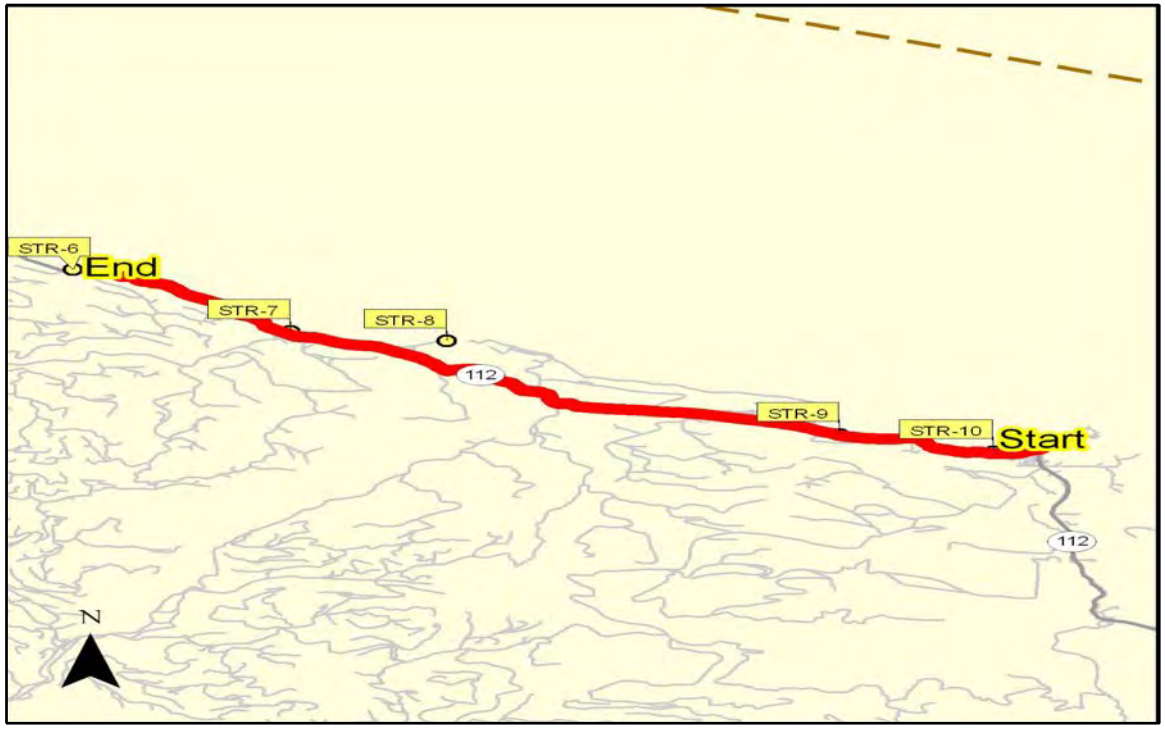
Status: Visited and Not Tested 05/09/2007

Image-838: Olsen Creek snare-boom site

Image-829: Olsen Creek one of two culverts

Site Contact Information

No contact information available.



Closest Address:

7200 SR 112, Sekiu, 98381

Driving Directions:

Depart Clallam Bay
1. Go South West on Frontier St toward SR 112 (0.04 Mile(s))
2. Turn right on SR 112 (HWY 112) (8.96 Mile(s))
Arrive at 7200 SR 112, Sekiu, WA, 98381, on the left

Site Lat/Long:	N 48° 17.287' / W 124° 23.737', Sector Map STR-2
Strategy Objective:	Exclusion - keep oil out of mouth of river.
Implementation:	Deploy boom from land across the mouth of the river. If oil is present, deploy snare-boom along beach.
Site Safety Note:	At high flow do not deploy strategies. High traffic area, take appropriate precautions.
Staging Area:	Staging Area Neah Bay C.G., STR-N.B.C.G.-staging
Field Notes:	Vehicle access from Highway 112, Mile Post 9.5. Near by street address 9572 HWY 112. Pull out way point - 48.28852 -124.39708
Resources Targeted:	salmonids (anadromous), sensitive habitat, tribal lands/resources
Fixed Anchors:	87: N 48° 17.272' / W 124° 23.735', Water Depth 0ft, west bank, downstream side of bridge, adjust as needed
Watercourse Description:	River with tidal influence, At high flow do not deploy strategies, highly variable flow, Field Visit Width ~ 150ft, Field Visit Depth ~ 8ft, gravel, rock, sand

Suggested Equipment	
Quantity	**Description**
500 ft	B3 - River Boom, or other appropriate type
400 ft	Snare Boom
10 each	Stake(s)
Suggested Personnel	
3	Laborer (s)

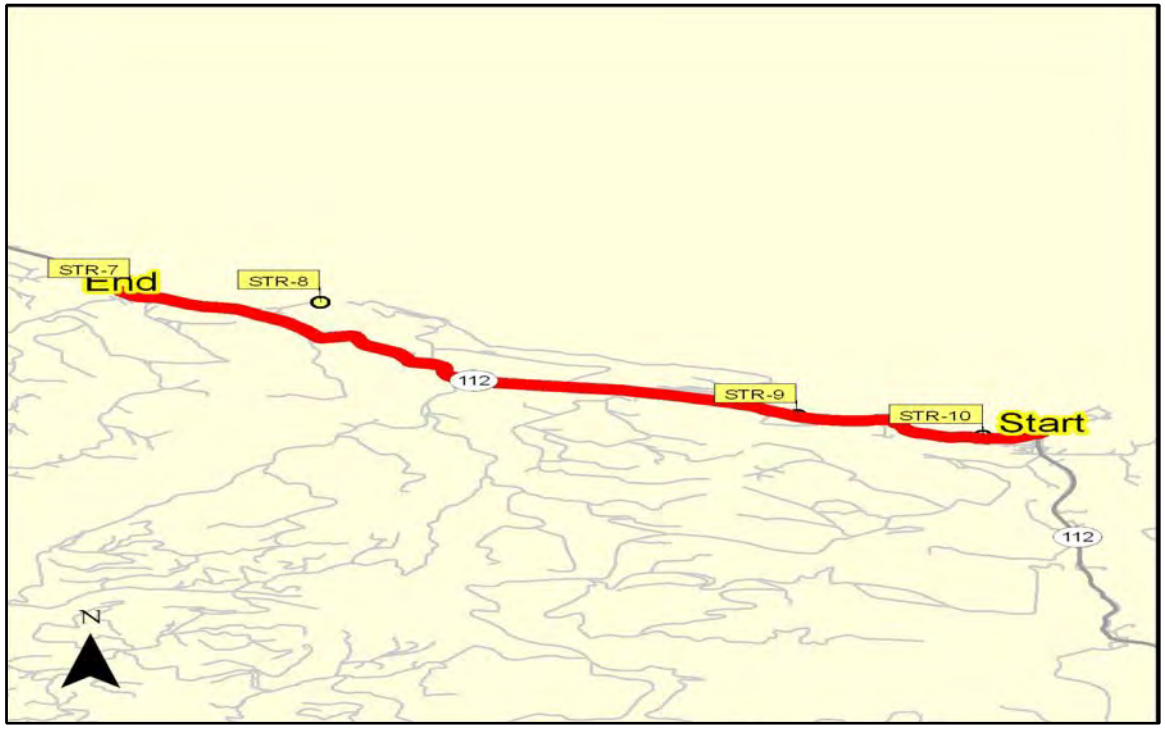
Status: Visited and Not Tested 05/09/2007

Image-820: Sekiu River Boom Site

Image-830: Sekiu River Downstream

Site Contact Information

No contact information available.



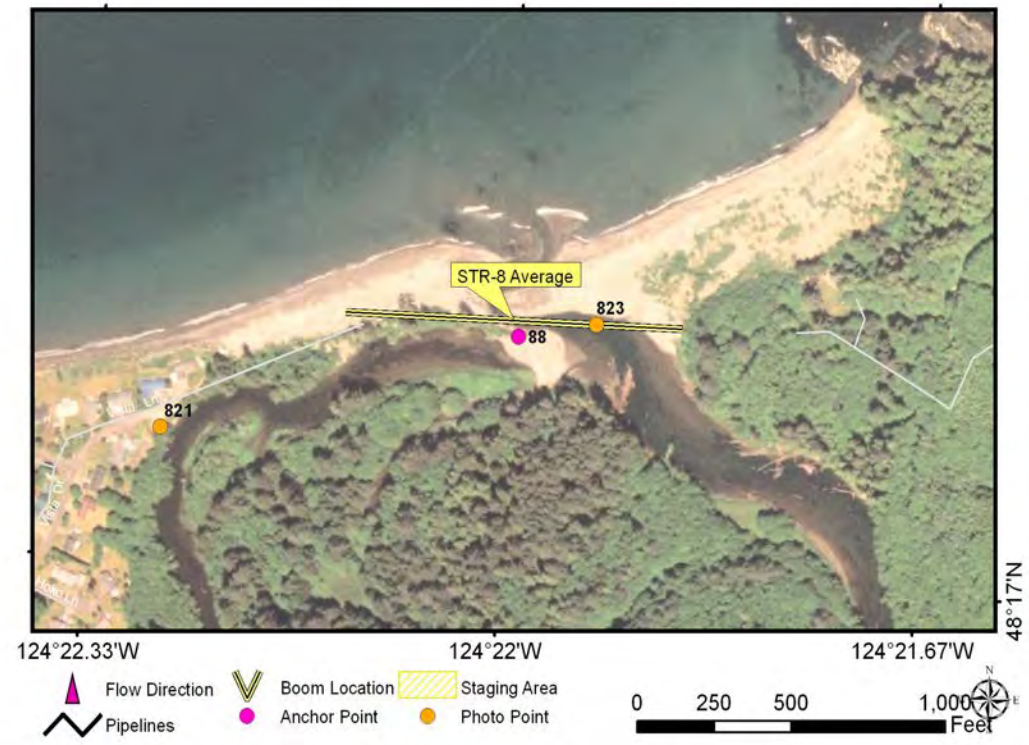
Closest Address:

6814 SR 112, Sekiu, 98381

Driving Directions:

Depart Clallam Bay
1. Go South West on Frontier St toward SR 112 (0.04 Mile(s))
2. Turn right on SR 112 (HWY 112) (7.15 Mile(s))
Arrive at 6814 SR 112, Sekiu, WA, 98381, on the left

Site Lat/Long:	N 48° 17.133' / W 124° 22.004', Sector Map STR-2
Strategy Objective:	Exclusion - keep oil out of the river mouth and estuary.
Implementation:	Bank next to parking is gentle enough to allow for launch of shallow bottom skift. Use side channel to float boom down to actual deployment site. Deploy boom from the west bank at an angle to the tidal push. Use anchors and lines as needed to maintain an effective angle. The actual location will depend on real time conditions, adjust as needed. If oil is present, deploy snare-boom along beach.
Site Safety Note:	Sneaker waves, high tides, and beach logs can all be safety concerns for this area.
Staging Area:	Staging Area Neah Bay C.G., STR-N.B.C.G.-staging
Field Notes:	First right after mile post 11 on HWY 112, turn onto Vista 48.28231 -124.37454, follow vista to end of county road 48.28452 -124.37128, parking area next to river.
Resources Targeted:	waterfowl, shorebirds, salmonids (anadromous), tribal lands/resources
Fixed Anchors:	88: N 48° 17.121' / W 124° 21.991', Water Depth 0ft, west bank Hoko river near confluence of side channel, adjust as needed
Watercourse Description:	River with tidal influence, mouth moves frequently, side channel connects intermittently, Field Visit Width ~ 350ft, Field Visit Depth ~ 6ft, sand, gravel, mud



Suggested Equipment	
Quantity	**Description**
500 ft	B3 - River Boom, or other appropriate type
1 each	Jon Boat(s)
400 ft	Snare Boom
6 each	Stake(s)
Suggested Personnel	
1	Boat Operator (s)
2	Laborer (s)

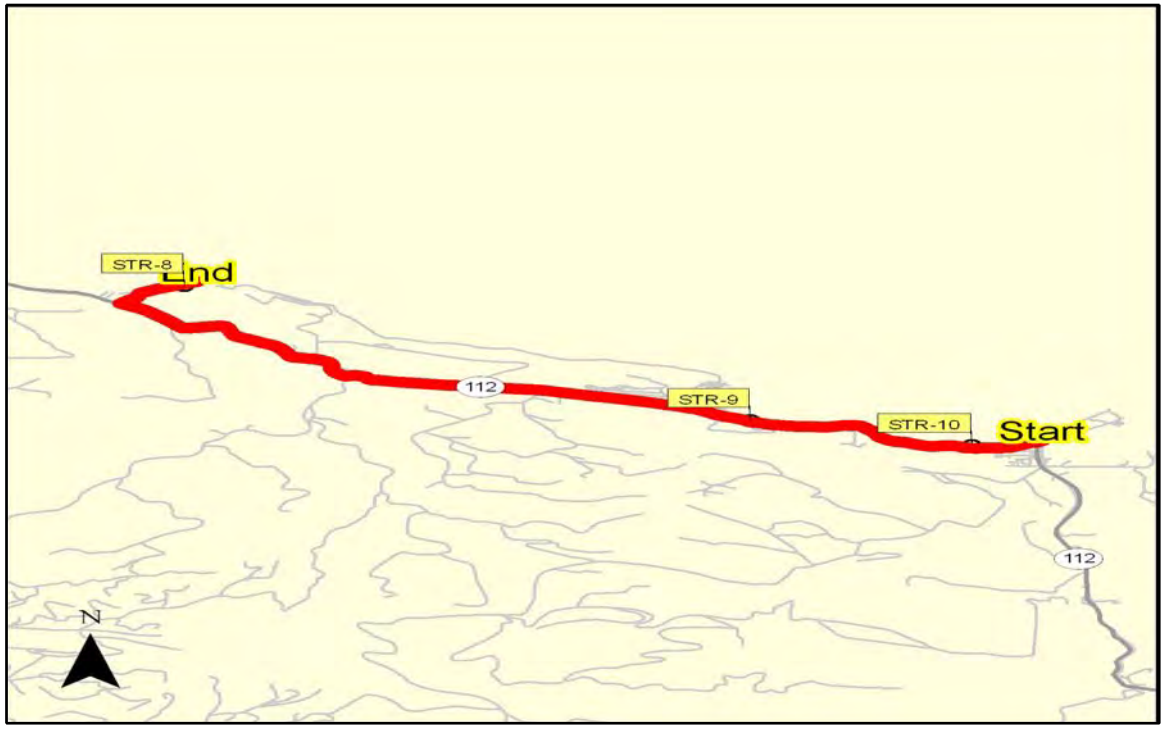
Status: Visited and Tested 07/26/2007

Image-821: Hoko River 'Boat launch'

Image-823: Hoko River Boom Site

Site Contact Information

No contact information available.



Closest Address:

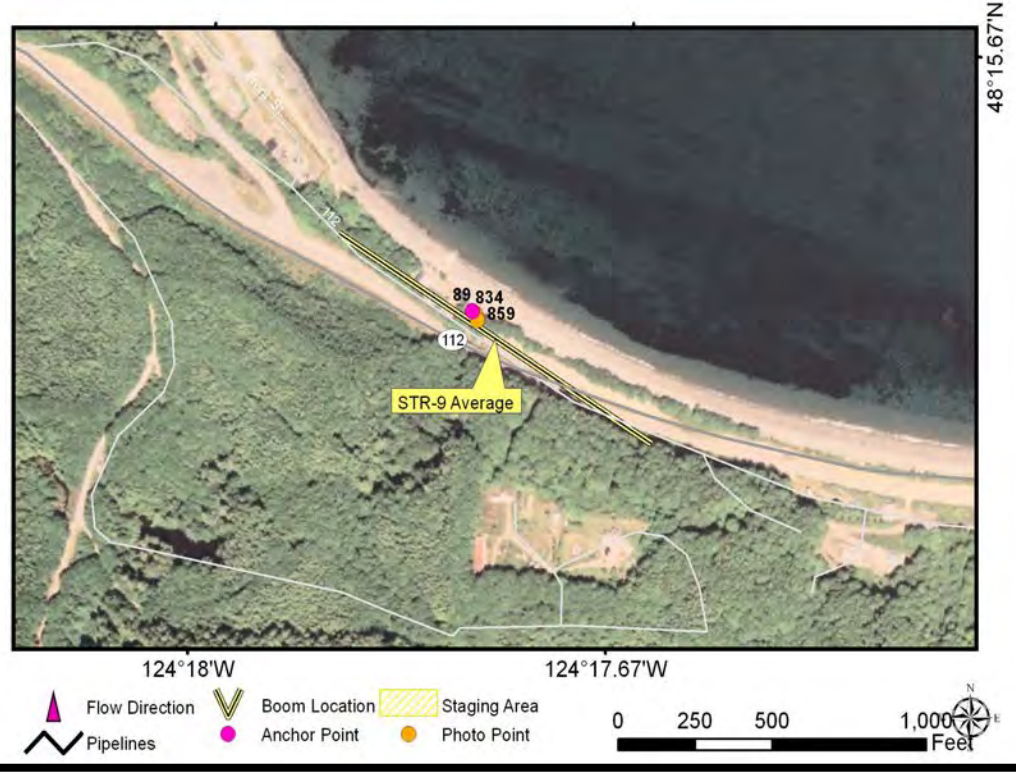
97 Vista Ln., Sekiu, 98381

Driving Directions:

Depart Clallam Bay
1. Go South West on Frontier St toward SR 112 (0.04 Mile(s))
2. Turn right on SR 112 (HWY 112) (6.04 Mile(s))
3. Make sharp right on Vista Dr (0.18 Mile(s))
4. Bear right on Vista Ln (Olympic National Park) (0.37 Mile(s))

Arrive at 97 Vista Ln., Sekiu, WA, 98381, on the right

Site Lat/Long:	N 48° 15.513' / W 124° 17.766', Sector Map STR-3
Strategy Objective:	Exclusion - keep oil out of creek mouth.
Implementation:	Deploy boom from land across the mouth of the creek. If oil is present, deploy snare-boom along beach. Both to be deployed on down stream side of foot bridge.
Site Safety Note:	Caution - very steep grade under HWY 112 bridge. Thick brush, ruts, and mud can make road impassable. At high flow do not deploy strategies.
Field Notes:	Vehicle access from Highway 112, Mile Post 14.8. Take the Sekiu exit and drive back to the creek through the treatment plant lot. Near by street address 15053 HWY 112.
Resources Targeted:	salmonids (anadromous)
Fixed Anchors:	89: N 48° 15.526' / W 124° 17.785', Water Depth 0ft, west bank, near base of wooden bridge, adjust as needed
Watercourse Description:	Creek, highly variable flow, Field Visit Width ~ 30ft, Field Visit Depth ~ 2ft, gravel, sand, rock



Suggested Equipment	
Quantity	**Description**
200 ft	Snare Boom
100 ft	Sorbent Boom
4 each	Stake(s)
Suggested Personnel	
2	Laborer (s)

Status: Visited and Not Tested 05/09/2007

Image-859: Fall Creek Boom Location

Image-834: Fall Creek Downstream

Site Contact Information

No contact information available.

Closest Address:

Front St. and SR 112, Clallum Bay, 98326

Driving Directions:

Depart Clallam Bay
1. Go South West on Frontier St toward SR 112 (0.04 Mile(s))
2. Turn right on SR 112 (HWY 112) (1.94 Mile(s))
3. Turn right on Front St (0.2 Mile(s))

Arrive at Front St. and SR 112, Clallum Bay, WA, 98326, on the right

Site Lat/Long:	N 48° 15.212' / W 124° 16.110', Sector Map STR-3
Strategy Objective:	Exclusion - keep oil out of the river.
Implementation:	Deploy boom as necessary to keep oil out of the river mouth and the channel behind the sand spit. The position of the river mouth is variable and can be anywhere along the sand spit. On the date of the visit - the best site was down stream from side channel towards the mouth of the river.
Site Safety Note:	At high flow do not deploy strategies. High traffic area, take appropriate precautions.
Field Notes:	Boat access from Sekiu. Vehicle access from Highway 112, Mile Post 16.7. Callam County Park - has parking and rest rooms.
Resources Targeted:	salmonids (anadromous), public lands/facilities
Fixed Anchors:	90: N 48° 15.230' / W 124° 16.150', Water Depth 0ft, ocean bank of river at time of visit, adjust as needed
Watercourse Description:	River with tidal influence, mouth moves seasonally,, Field Visit Width ~ 200ft, Field Visit Depth ~ 8ft, mud, sand, gravel

Suggested Equipment	
Quantity	**Description**
200 ft	B3 - River Boom, or other appropriate type
1 each	Jon Boat(s)
4 each	Stake(s)
Suggested Personnel	
1	Boat Operator (s)
2	Laborer (s)

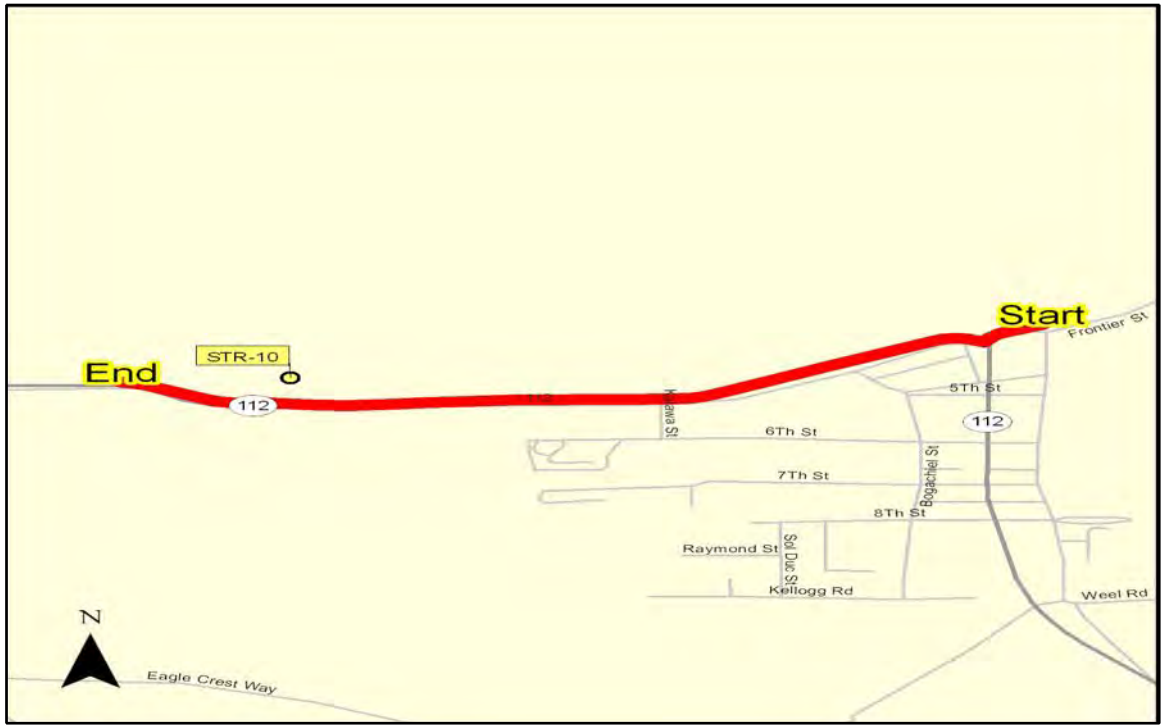
Status: Visited and Not Tested 05/09/2007

Image-855: Clallam Day Park - Staging and Access

Image-865: Clallam River Side Channel near mouth

Site Contact Information

Responsible party or alternate contact:
Clallam County Parks Dept., (W) 360-417-2291, access to the Clallam River, a picnic area and a full-service restroom



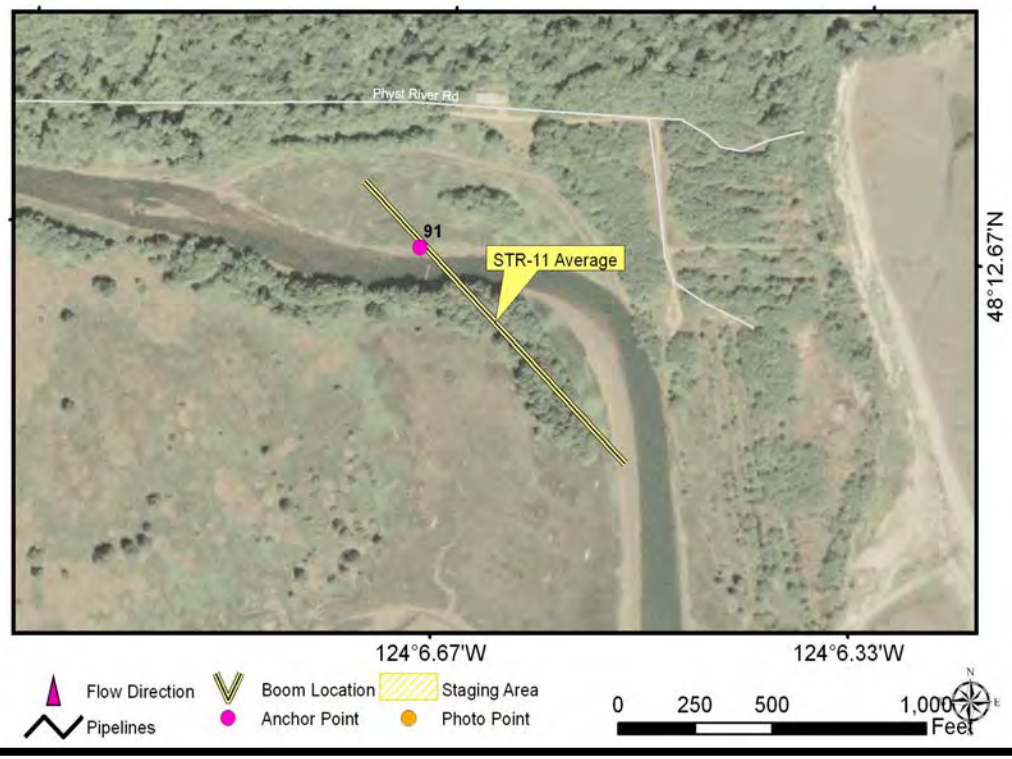
Closest Address:

16533 SR 112, near address, Clallum Bay, 98326

Driving Directions:

Depart Clallam Bay
1. Go South West on Frontier St toward SR 112 (0.04 Mile (s))
2. Turn right on SR 112 (HWY 112) (0.49 Mile(s))
Arrive at 16533 SR 112, Clallum Bay, WA, 98326, on the right

Site Lat/Long:	N 48° 12.633' / W 124° 6.637', Sector Map STR-3
Strategy Objective:	Exclusion, Collection - keep oil out of the river, and collect oil shoreside for vac truck.
Implementation:	Deploy boom across the river. Angle the boom to direct oil to the east side of the river for possible collection. Site in front of house is vac truck accessible.
Site Safety Note:	Beware of submerged logs and shallows. Recommend jet boat. Area can have high mosquito concentrations.
Field Notes:	The nearby Pillar Point County Park ramp boat launch is useful only at high tides. Might be better to contact Merril and Ring to get direct road access.
Resources Targeted:	waterfowl, shorebirds, baitfish, salmonids (anadromous), shellfish, raptors, sensitive habitat
Fixed Anchors:	91: N 48° 12.663' / W 124° 6.688', bank near house, adjust as needed
Watercourse Description:	River with tidal influence, collection area at bend in river, Field Visit Width ~ 150ft, Field Visit Depth ~ 8ft, mud, gravel, sand



Suggested Equipment	
Quantity	**Description**
100 ft	1/2 poly line
3 each	Anchor(s) for strong currents - ie. SARCA
200 ft	B3 - River Boom, or other appropriate type
1 each	Jon Boat(s)
Suggested Personnel	
1	Boat Operator (s)
2	Laborer (s)

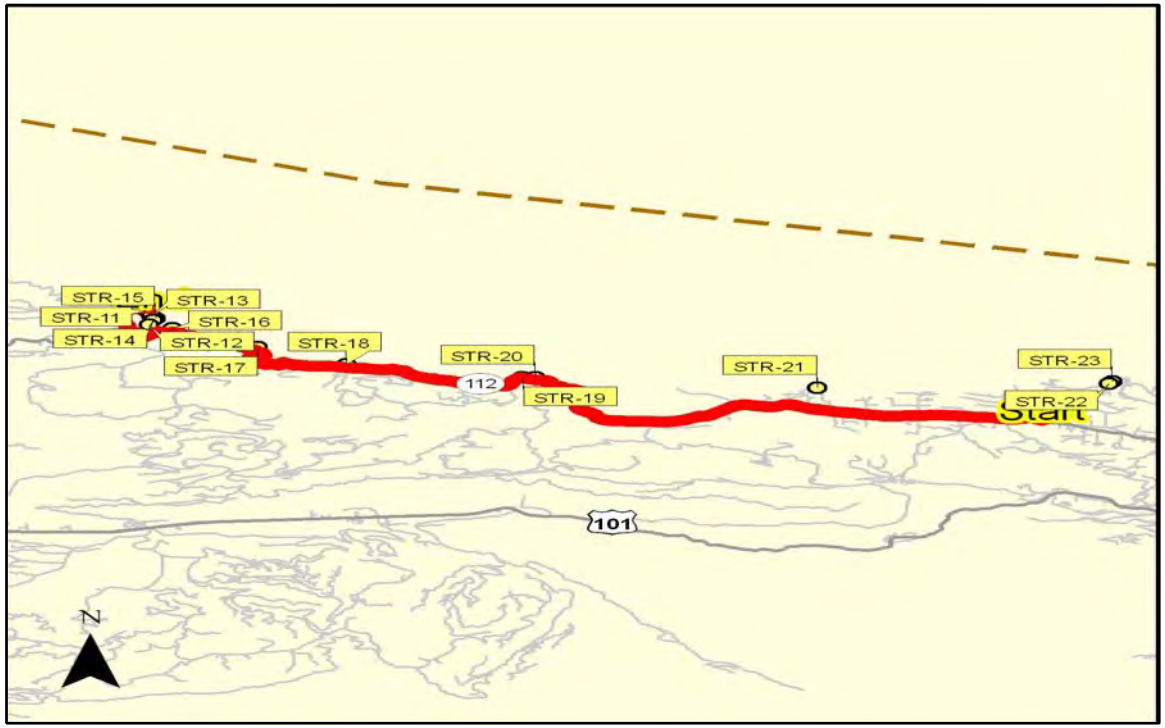
Status: Visited and Not Tested 07/24/2007

Image-993: Pysht - view upstream from mouth

Image-999: Over view, collection site in bend on upper right

Site Contact Information

High Priority - contact immediate or before entering:
Ring Merril and Ring Physt Tree Farm, (W) 800-827-2367



Closest Address:

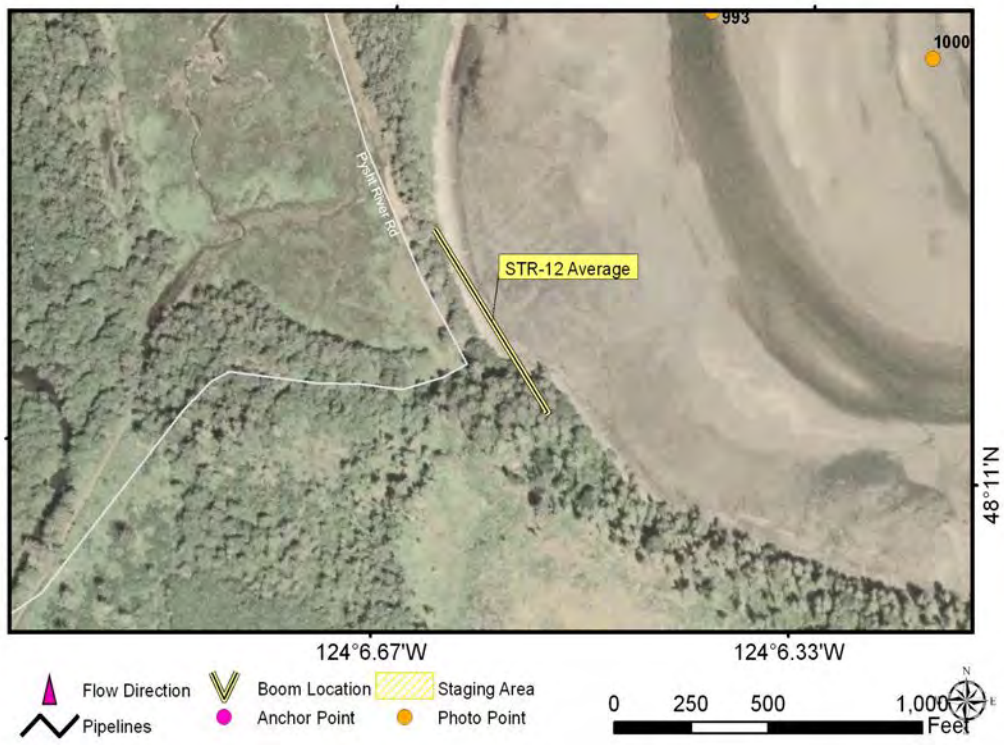
1488 Pysht River Rd, Clallam Bay, 98326

Driving Directions:

Depart Joyce
1. Go North West on Agate Beach Rd toward Crescent Beach Rd (0.26 Mile(s))
2. Turn left on Crescent Beach Rd (0.33 Mile(s))
3. Bear right on SR 112 (HWY 112) (21.71 Mile(s))
4. Make sharp right on Pysht River Rd (1.62 Mile(s))

Arrive at 1488 Pysht River Rd, Clallam Bay, WA, 98326, on the left

Site Lat/Long:	N 48° 12.062' / W 124° 6.581', Sector Map STR-3
Strategy Objective:	Exclusion - keep oil out of creek and wetlands fed by creek.
Implementation:	Deploy exclusion boom across creek mouth, angle so that boom is not perpendicular to the push of the tide. Exclusion boom can be supplemented with sorbent boom. If oil is present, deploy snare-boom along beach.
Site Safety Note:	Beware of submerged logs and shallows. Recommend jet boat. Area can have high mosquito concentrations. No need to go to Crescent Beach to get to Pysht.
Field Notes:	The nearby Clallam park boat launch is only useful at high tides. Might be better to contact Merril and Ring to get direct road access to river bank.
Resources Targeted:	waterfowl, shorebirds, baitfish, salmonids (anadromous), shellfish, raptors, sensitive habitat
Watercourse Description:	Creek, feed into nearby wetlands, mouth may meander, Field Visit Width ~ 30ft, mud



Suggested Equipment	
Quantity	**Description**
200 ft	B3 - River Boom, or other appropriate type
4 each	Stake(s)
Suggested Personnel	
1	Boat Operator (s)
1	Laborer (s)

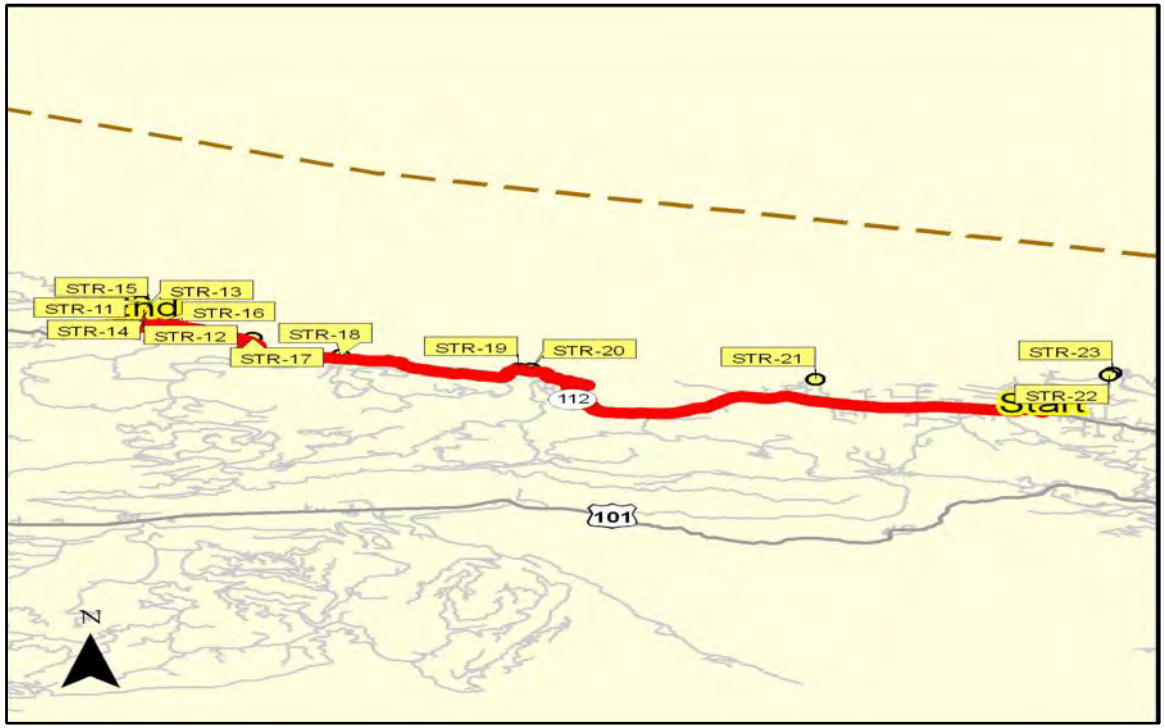
Status: New - visited but not tested 07/24/2007

Image-1003: Pysht overview Indian Creek area

No Image Available

Site Contact Information

High Priority - contact immediate or before entering:
Ring Merril and Ring Physt Tree Farm, (W) 800-827-2367



Closest Address:

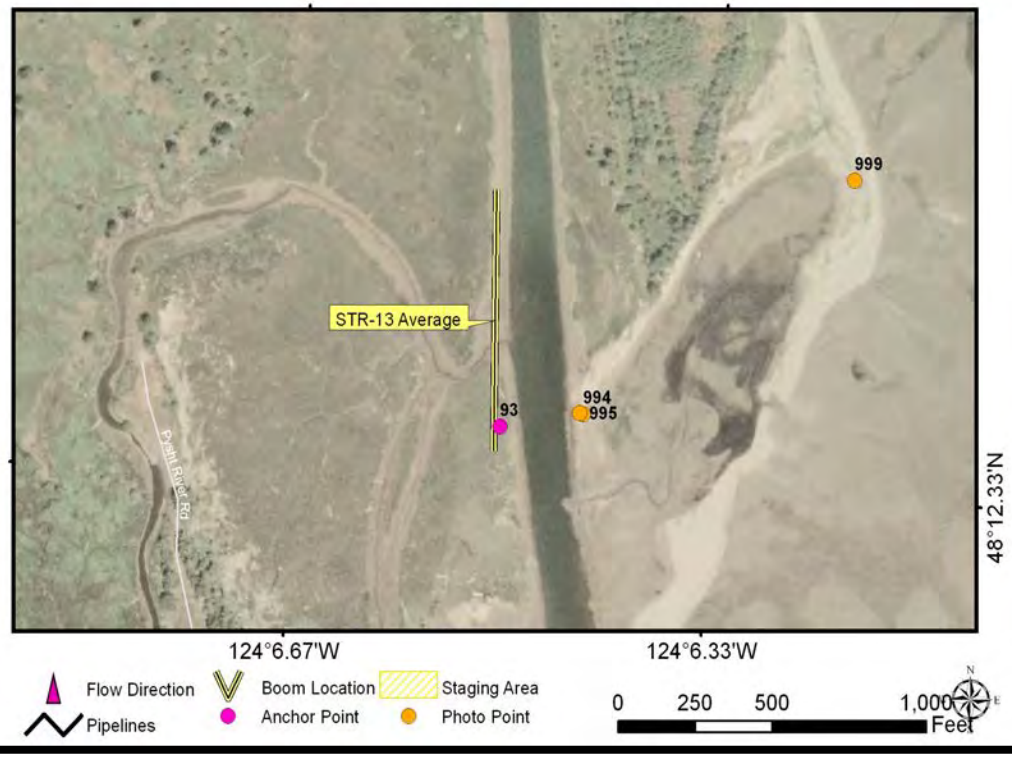
Clallam Bay

Driving Directions:

Depart Joyce
1. Go North West on Agate Beach Rd toward Crescent Beach Rd (0.26 Mile(s))
2. Turn left on Crescent Beach Rd (0.33 Mile(s))
3. Bear right on SR 112 (HWY 112) (21.71 Mile(s))
4. Make sharp right on Pysht River Rd (0.01 Mile(s))
5. Bear right on Olympic National Park (0.51 Mile(s))

Arrive at Point (N 48° 12.062' / W 124° 6.581'), on the left

Site Lat/Long:	N 48° 12.417' / W 124° 6.509', Sector Map STR-3
Strategy Objective:	Exclusion - keep oil out of side channel and in main channel for collection upstream
Implementation:	Deploy boom parallel to the main channel on the west bank. Position boom so that opening to side channel is blocked off. Will need boat to get to west bank.
Site Safety Note:	Beware of submerged logs and shallows. Recommend jet boat. Area can have high mosquito concentrations.
Field Notes:	Dynamic river, with extremely variable flow. The nearby park boat launch is only useful at high tides. Might be better to contact Merril and Ring to get direct road access to river bank.
Resources Targeted:	waterfowl, shorebirds, salmonids (anadromous), baitfish, raptors, sensitive habitat, shellfish
Fixed Anchors:	93: N 48° 12.363' / W 124° 6.500', Water Depth 0ft, downstream from side channel on west bank, adjust as needed
Watercourse Description:	River side channel, channel feeds marsh area, tidal flush, Field Visit Width ~ 50ft, Field Visit Depth ~ 3ft, mud



Suggested Equipment	
Quantity	**Description**
800 ft	B3 - River Boom, or other appropriate type
10 each	Stake(s)
Suggested Personnel	
1	Boat Operator (s)
4	Laborer (s)

Status: New - visited but not tested 07/24/2007

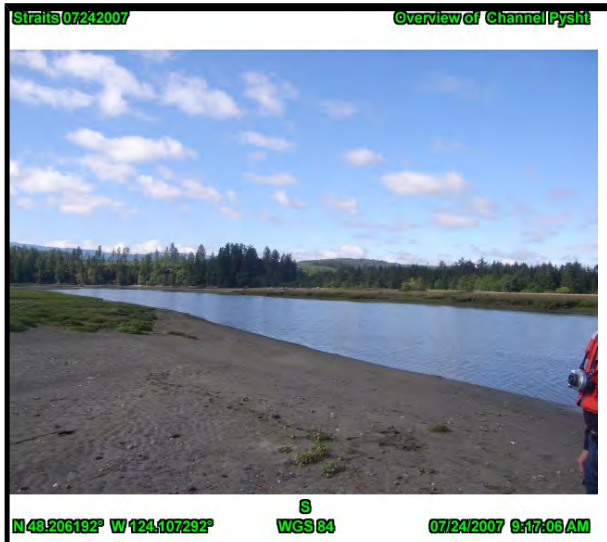
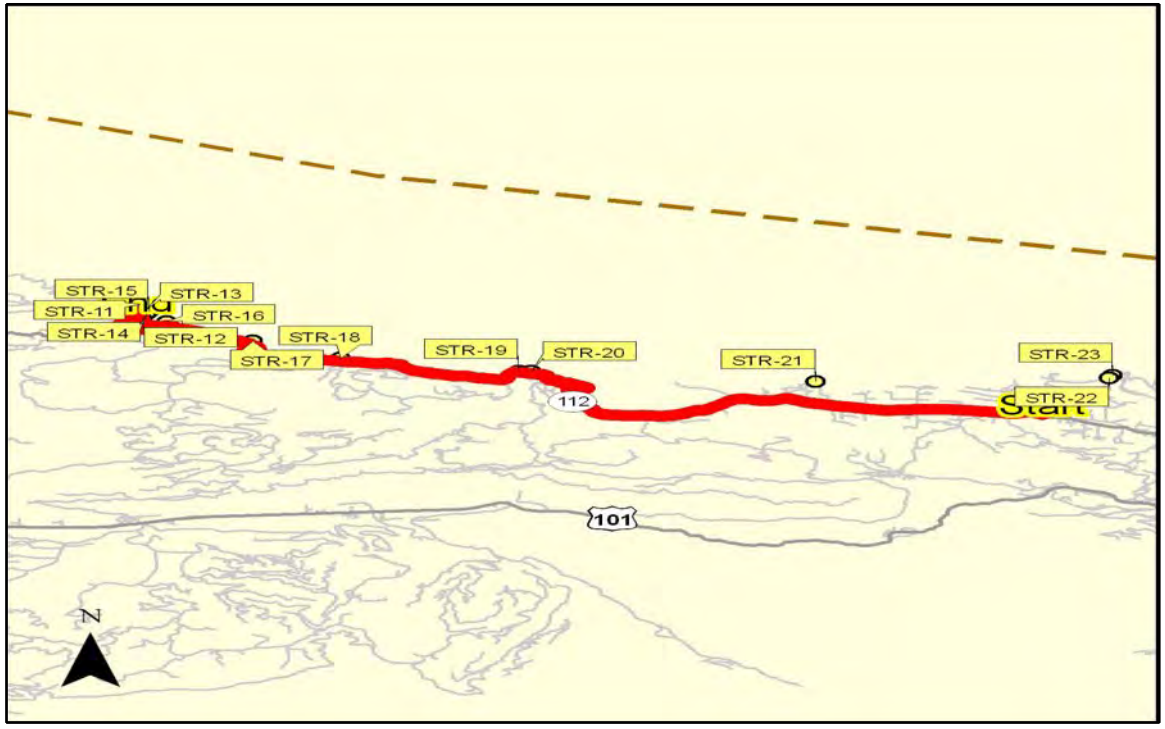


Image-995: Pysht overview shot of channel, w bank on far side

Image-1002: Pysht overview w side channel

Site Contact Information

High Priority - contact immediate or before entering:
Ring Merril and Ring Physt Tree Farm, (W) 800-827-2367



Closest Address:

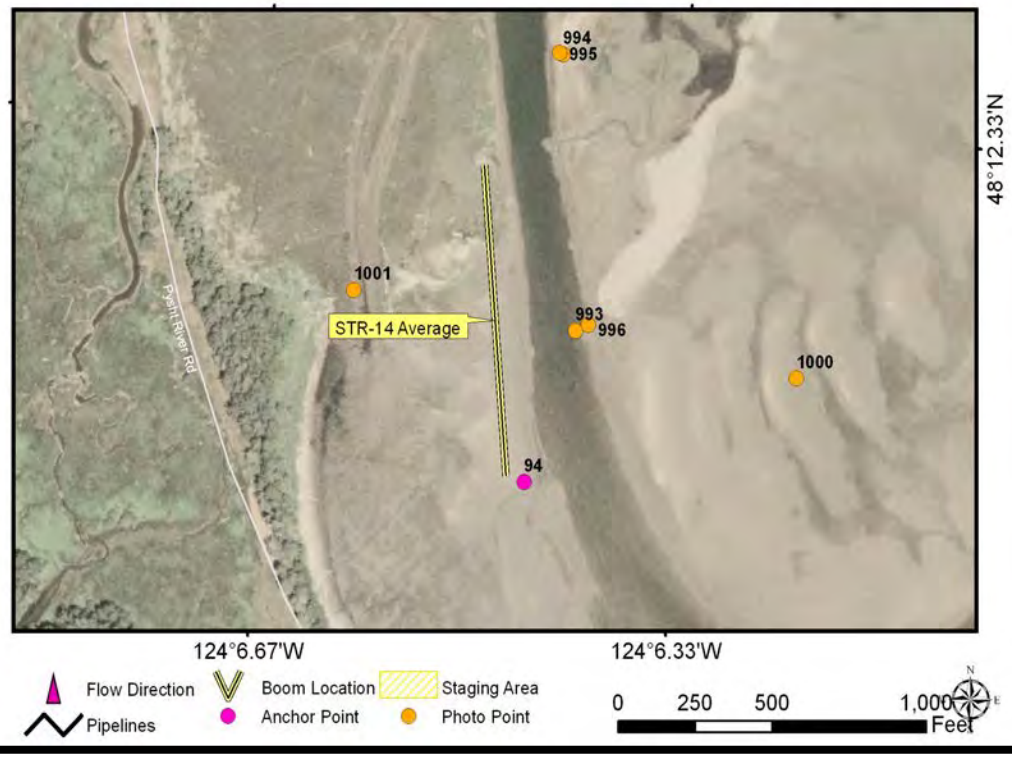
1488 Pysht River Rd, Clallam Bay

Driving Directions:

Depart Joyce
1. Go North West on Agate Beach Rd toward Crescent Beach Rd (0.26 Mile(s))
2. Turn left on Crescent Beach Rd (0.33 Mile(s))
3. Bear right on SR 112 (HWY 112) (21.71 Mile(s))
4. Make sharp right on Pysht River Rd (0.01 Mile(s))
5. Bear right on Olympic National Park (0.84 Mile(s))

Arrive at Point (N 48° 12.417' / W 124° 6.509'), on the right

Site Lat/Long:	N 48° 12.247' / W 124° 6.485', Sector Map STR-3
Strategy Objective:	Collection - keep oil in the main channel for collection upstream
Implementation:	Deploy boom parallel to the main channel on the west bank. Will need boat to get to the west bank. At low tide most of area is mud - bring waders.
Site Safety Note:	Beware of submerged logs and shallows. Recommend jet boat. Area can have high mosquito concentrations.
Field Notes:	The nearby Pillar Point County Park ramp boat launch useful only at high tides. Might be better to contact Merril and Ring to get direct road access.
Resources Targeted:	waterfowl, shorebirds, baitfish, salmonids (anadromous), shellfish, sensitive habitat
Fixed Anchors:	94: N 48° 12.155' / W 124° 6.451', Water Depth 0ft, west bank, near mouth, adjust as needed
Watercourse Description:	River with tidal influence, marsh along banks are perched, but high tides and channel feed them



Suggested Equipment	
Quantity	**Description**
800 ft	B3 - River Boom, or other appropriate type
1 each	Jon Boat(s)
10 each	Stake(s)
Suggested Personnel	
1	Boat Operator (s)
3	Laborer (s)

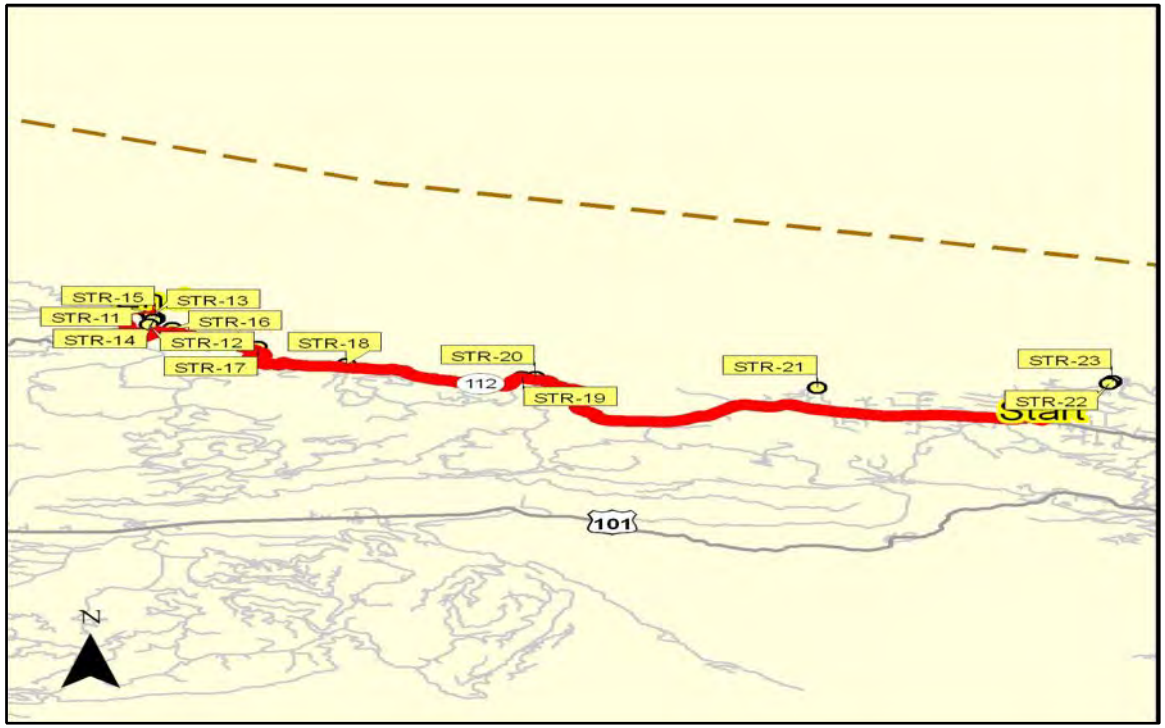
Status: Visited and Not Tested 07/24/2007

Image-996: Pysht - west bank near mouth on far side of shot

Image-1001: Pysht west bank near mouth

Site Contact Information

High Priority - contact immediate or before entering:
Ring Merril and Ring Physt Tree Farm, (W) 800-827-2367



Closest Address:

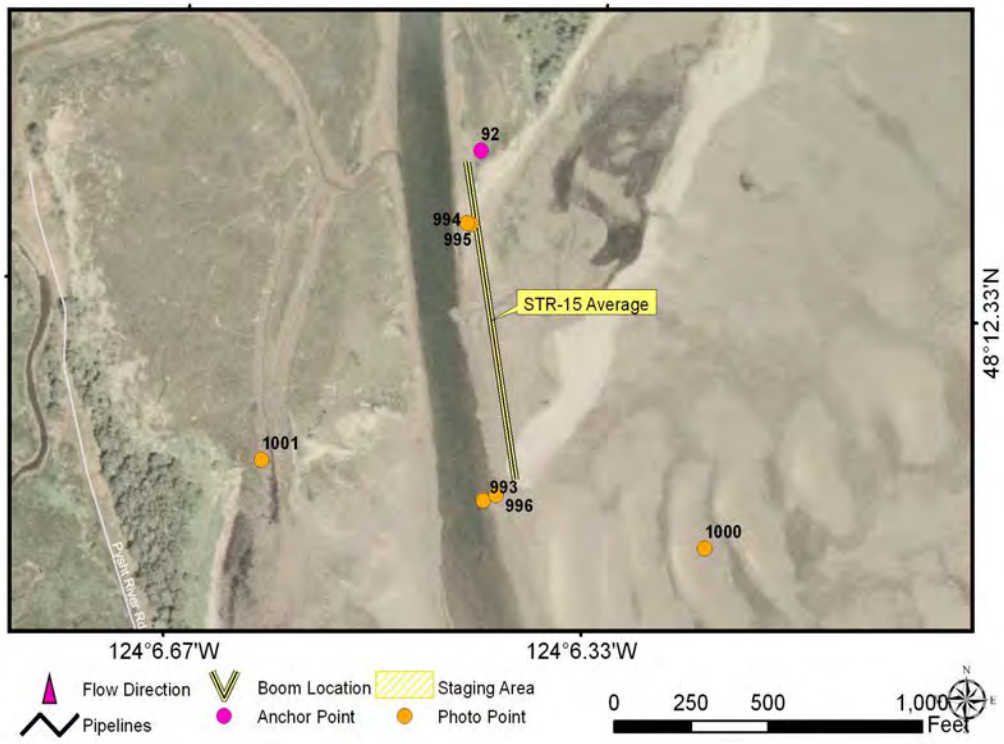
1488 Pysht River Rd, Clallam Bay, 98326

Driving Directions:

Depart Joyce
1. Go North West on Agate Beach Rd toward Crescent Beach Rd (0.26 Mile(s))
2. Turn left on Crescent Beach Rd (0.33 Mile(s))
3. Bear right on SR 112 (HWY 112) (21.71 Mile(s))
4. Make sharp right on Pysht River Rd (1.62 Mile(s))

Arrive at 1488 Pysht River Rd, Clallam Bay, WA, 98326, on the left

Site Lat/Long:	N 48° 12.327' / W 124° 6.418', Sector Map STR-3
Strategy Objective:	Exclusion - keep oil in the main river channel for collection up stream and keep oil out of tidal pond to the east.
Implementation:	Deploy boom parallel to the main channel on the east bank to block off opening of pond and keep oil in main channel. Sticky mud bring waders.
Site Safety Note:	Beware of submerged logs and shallows. Recommend jet boat. Area can have high mosquito concentrations.
Field Notes:	The nearby Pillar Point County Park ramp boat launch is useful only at high tides. Might be better to contact Merril and Ring to get direct road access.
Resources Targeted:	waterfowl, shorebirds, salmonids (anadromous), baitfish, shellfish, raptors, sensitive habitat
Fixed Anchors:	92: N 48° 12.408' / W 124° 6.429', Water Depth 0ft, anchor point farthest from mouth near opening to pond on the east side of river, adjust as needed
Watercourse Description:	River with tidal influence, tidal pond on east side



Suggested Equipment	
Quantity	**Description**
1000 ft	B3 - River Boom, or other appropriate type
6 each	Stake(s)
Suggested Personnel	
5	Laborer (s)

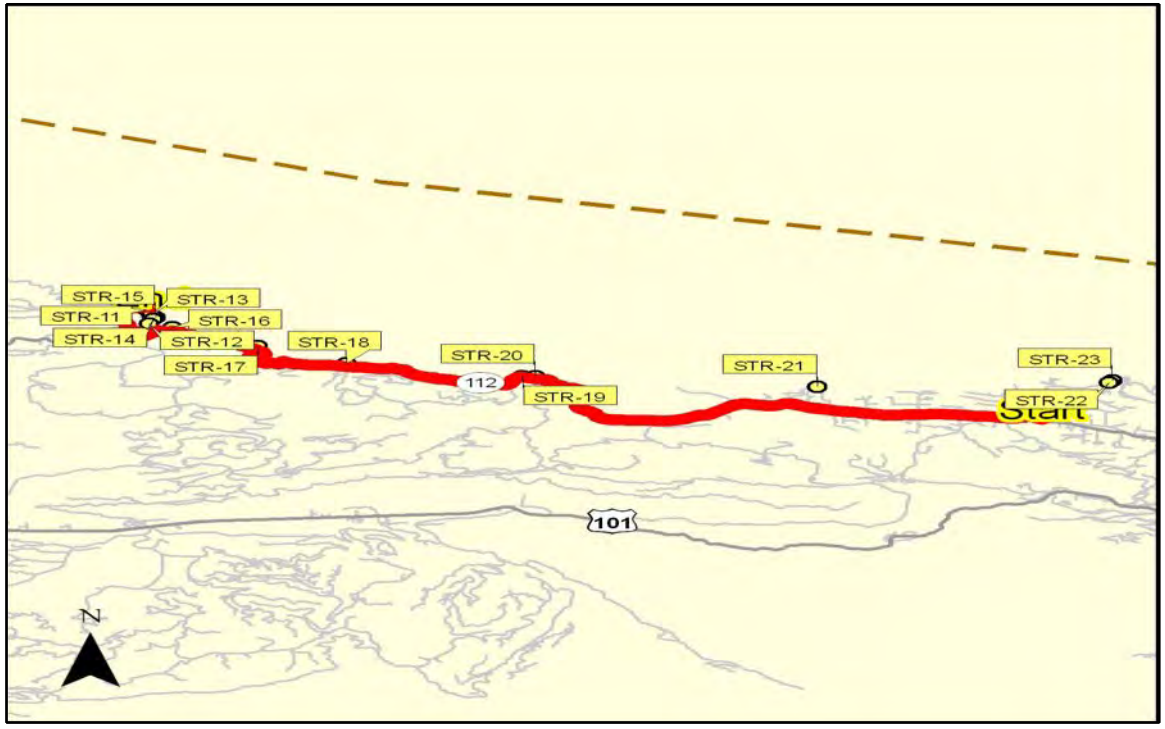
Status: Visited and Not Tested 07/24/2007

Image-994: Pilings along NE side of Pysht River

Image-1000: Pysht overview e bank from air, note tidal pond near tree line on far east bank

Site Contact Information

High Priority - contact immediate or before entering:
Ring Merril and Ring Physt Tree Farm, (W) 800-827-2367



Closest Address:

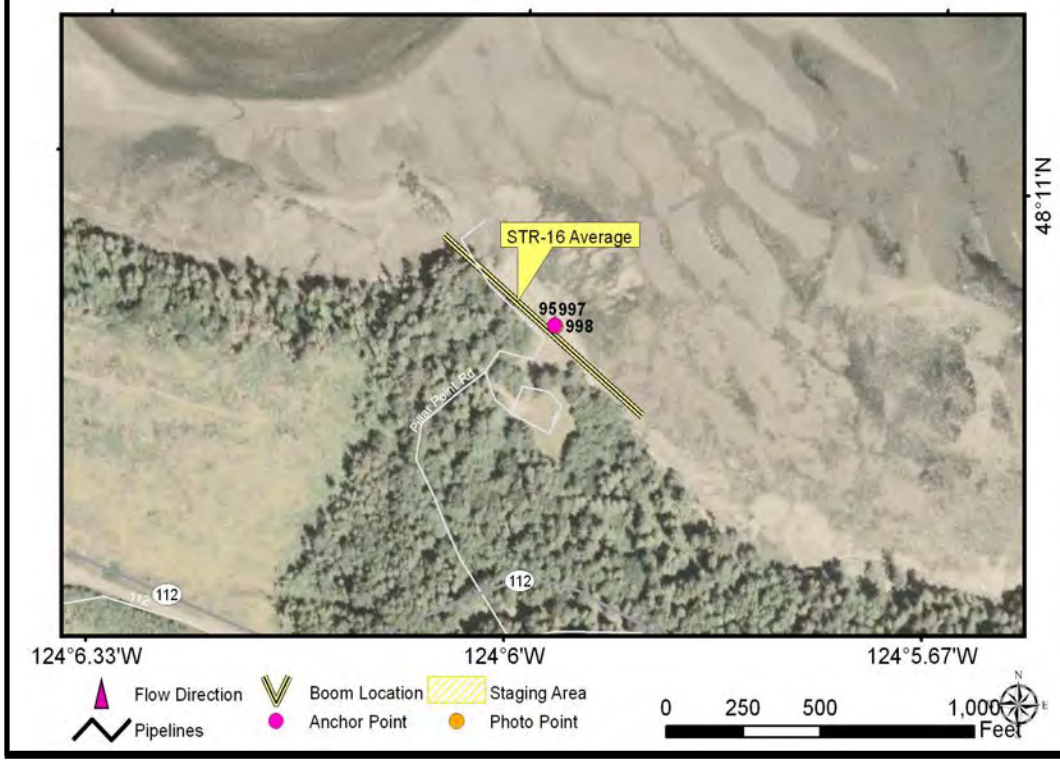
1488 Pysht River Rd, Clallam Bay, 98326

Driving Directions:

Depart Joyce
1. Go North West on Agate Beach Rd toward Crescent Beach Rd (0.26 Mile(s))
2. Turn left on Crescent Beach Rd (0.33 Mile(s))
3. Bear right on SR 112 (HWY 112) (21.71 Mile(s))
4. Make sharp right on Pysht River Rd (1.62 Mile(s))

Arrive at 1488 Pysht River Rd, Clallam Bay, WA, 98326, on the left

Site Lat/Long:	N 48° 11.923' / W 124° 5.979', Sector Map STR-3
Strategy Objective:	Exclusion - keep oil out of the creek mouth.
Implementation:	The creek discharges through a culvert, and the stream flow will prevent oil from entering the culvert most of the year. If the stream flow is low, deploy boom to keep oil from entering the culvert at high tide. If oil is present, deploy snare-boom along beach.
Site Safety Note:	At high flow do not deploy strategies. Poor footing can lead to slips, trips and falls.
Field Notes:	The creek mouth is at the east end of the lower parking lot in the Pillar Point County Park. Vehicle access from Highway 112 at Mile Post 29.8.
Resources Targeted:	salmonids (anadromous), public lands/facilities
Fixed Anchors:	95: N 48° 11.924' / W 124° 5.970', Water Depth 0ft, beach side of culvert, adjust as needed
Watercourse Description:	Creek, discharges through culvert, only at risk low flow and high tide, Field Visit Width ~ 12ft



Suggested Equipment	
Quantity	**Description**
100 ft	Snare Boom
50 ft	Sorbent Boom
2 each	Stake(s)
Suggested Personnel	
1	Laborer (s)

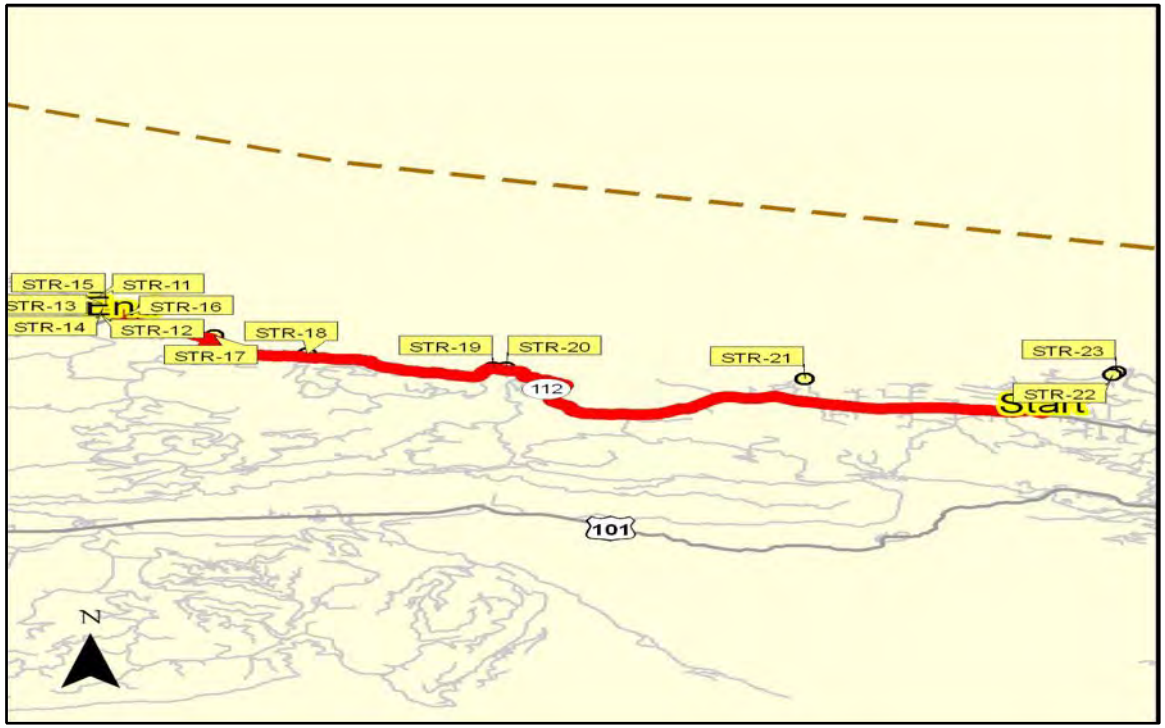
Status: Visited and Not Tested 07/23/2007

Image-998: Butler Creek, snare-boom site

Image-997: Butler Creek, view from beach towards culvert

Site Contact Information

Responsible party or alternate contact:
Clallam County Parks Dept., (W) 360-417-2291, access to the Clallam River, a picnic area and a full-service restroom



Closest Address:

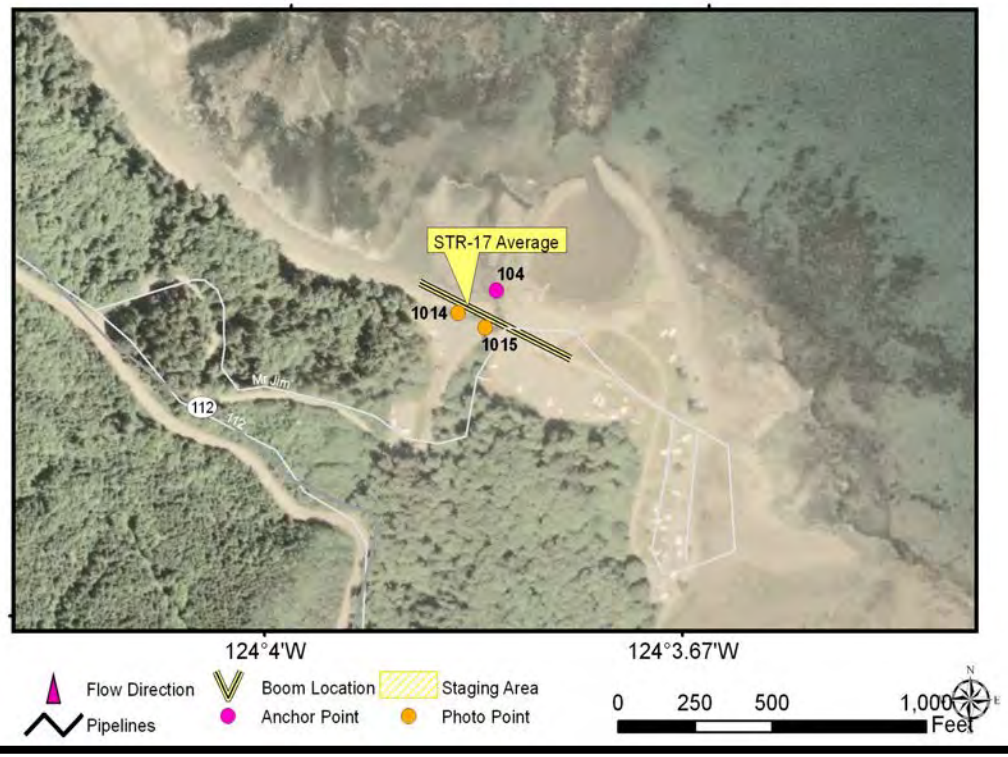
Pillar Point Rd., Clallam Bay, 98326

Driving Directions:

Depart Joyce
1. Go North West on Agate Beach Rd toward Crescent Beach Rd (0.26 Mile(s))
2. Turn left on Crescent Beach Rd (0.33 Mile(s))
3. Bear right on SR 112 (HWY 112) (20.56 Mile(s))
4. Bear right on Pillar Point Rd (0.29 Mile(s))

Arrive at Pillar Point Rd., Clallam Bay, WA, 98326, on the right

Site Lat/Long:	N 48° 11.159' / W 124° 3.827', Sector Map STR-4
Strategy Objective:	Exclusion - keep oil of creek.
Implementation:	Deploy boom across the mouth at an angle to tidal push. If oil is present, deploy snare-boom along beach. The actual location will be dependent on real time conditions, adjust as needed.
Site Safety Note:	At high flow do not deploy strategies.
Field Notes:	Road access by private road with locked gate. If unable to get road access - launch boat at Pillar Point Rec. area boat launch. Need chest waders to launch work boat.
Resources Targeted:	salmonids (anadromous), shorebirds
Fixed Anchors:	104: N 48° 11.175' / W 124° 3.826', Water Depth 0ft, east bank, adjust as needed
Watercourse Description:	Creek, samll creek in private camp ground, discharges through culvert, Field Visit Width ~ 200ft, rock, sand, gravel



Suggested Equipment	
Quantity	**Description**
300 ft	B3 - River Boom, or other appropriate type
300 ft	Snare Boom
8 each	Stake(s)
Suggested Personnel	
2	Laborer (s)

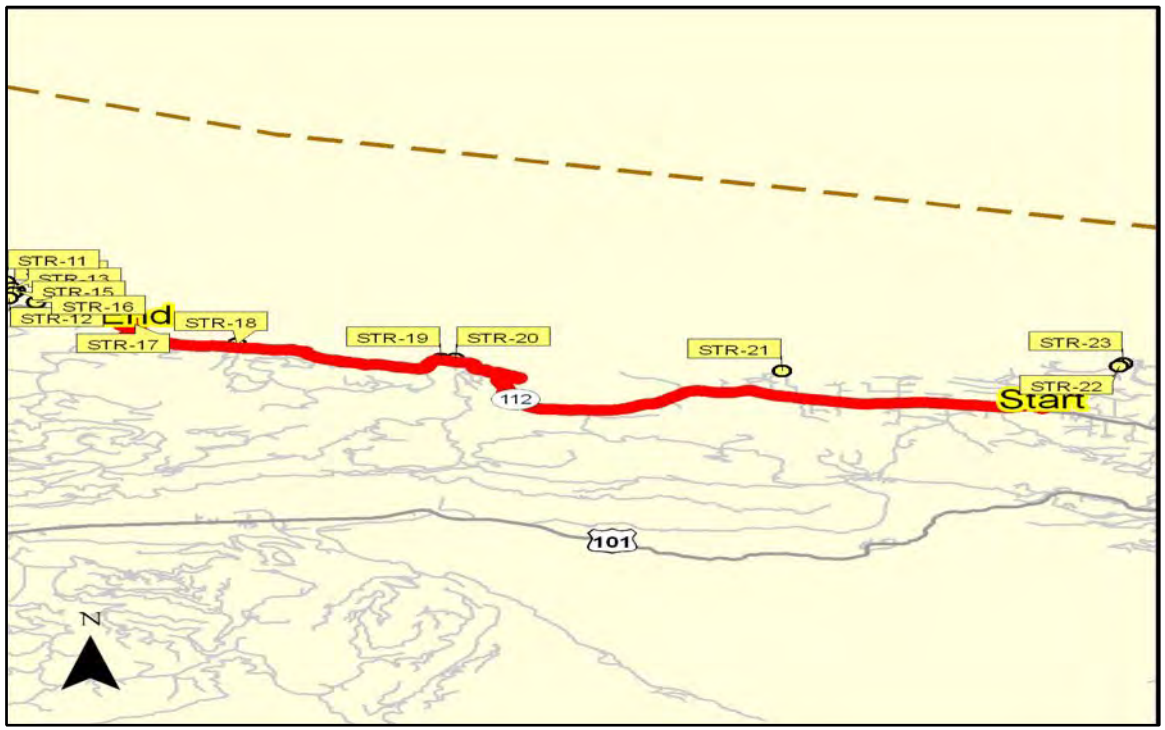
Status: Visited and Not Tested 07/23/2007

Image-1015: Jim Creek, culvert - Hide Tide Boom Site

Image-1014: Jim Creek, snare-boom site

Site Contact Information

Responsible party or alternate contact:
Jim Creek (Silver King) property owners, (W) 360 457 8750, (H) 360 452 8284

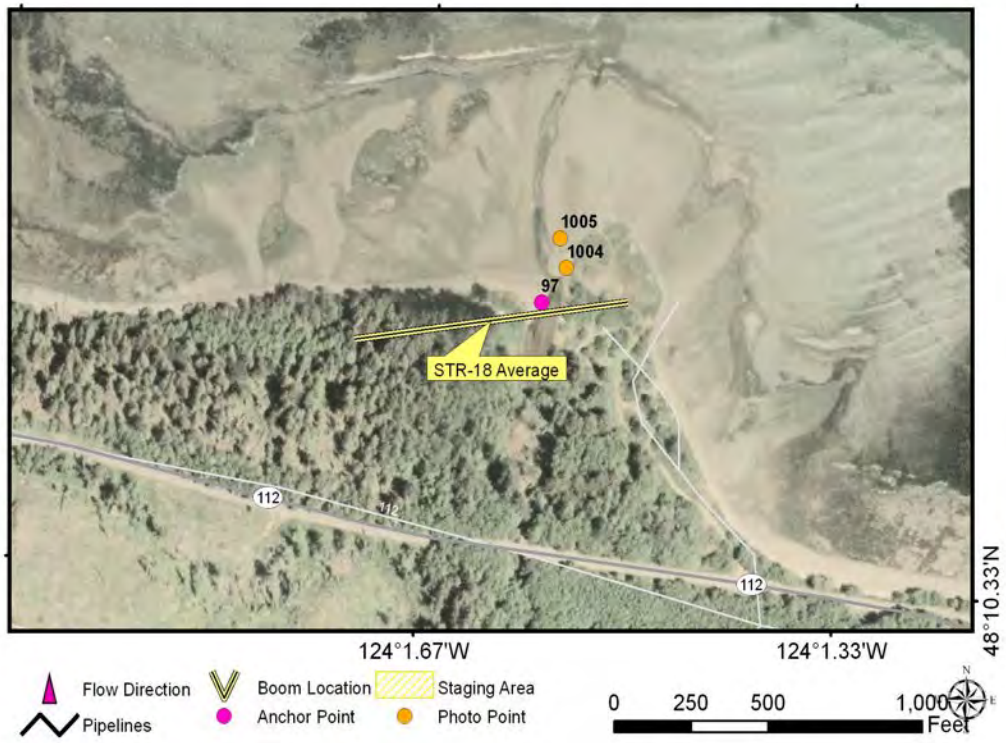


Closest Address:

Driving Directions:

Depart Joyce
1. Go North West on Agate Beach Rd toward Crescent Beach Rd (0.26 Mile(s))
2. Turn left on Crescent Beach Rd (0.33 Mile(s))
3. Bear right on SR 112 (HWY 112) (18.95 Mile(s))
4. Make sharp right on Silver King Resort Rd (Mr Jim) (0.36 Mile(s))
Arrive at Point (N 48° 11.159' / W 124° 3.827'), on the right

Site Lat/Long:	N 48° 10.464' / W 124° 1.606', Sector Map STR-4
Strategy Objective:	Exclusion - keep oil out of the creek mouth.
Implementation:	Deploy boom from land across the mouth of the creek at an angle to the tidal push. If oil is present, deploy snare-boom along beach. Will need small boat to get to other side, or can wade on beach side.
Site Safety Note:	High traffic area, take appropriate precautions. Property is posted and gate has lock.
Field Notes:	Vehicle access off Highway 112 at Mile Post 34.7, turn north off the highway onto a dirt road on the east side of the creek. If can't access by land use water via Pillar Point Rec. Area.
Resources Targeted:	salmonids (anadromous)
Fixed Anchors:	97: N 48° 10.473' / W 124° 1.575', Water Depth 0ft, east bank near beach, adjust as needed
Watercourse Description:	Creek, large creek, with highly varible flow, Field Visit Width ~ 175ft, Field Visit Depth ~ 12ft, gravel, cobble



Suggested Equipment	
Quantity	**Description**
300 ft	B3 - River Boom, or other appropriate type
1 each	Jon Boat(s)
400 ft	Snare Boom
8 each	Stake(s)
Suggested Personnel	
1	Boat Operator (s)
2	Laborer (s)

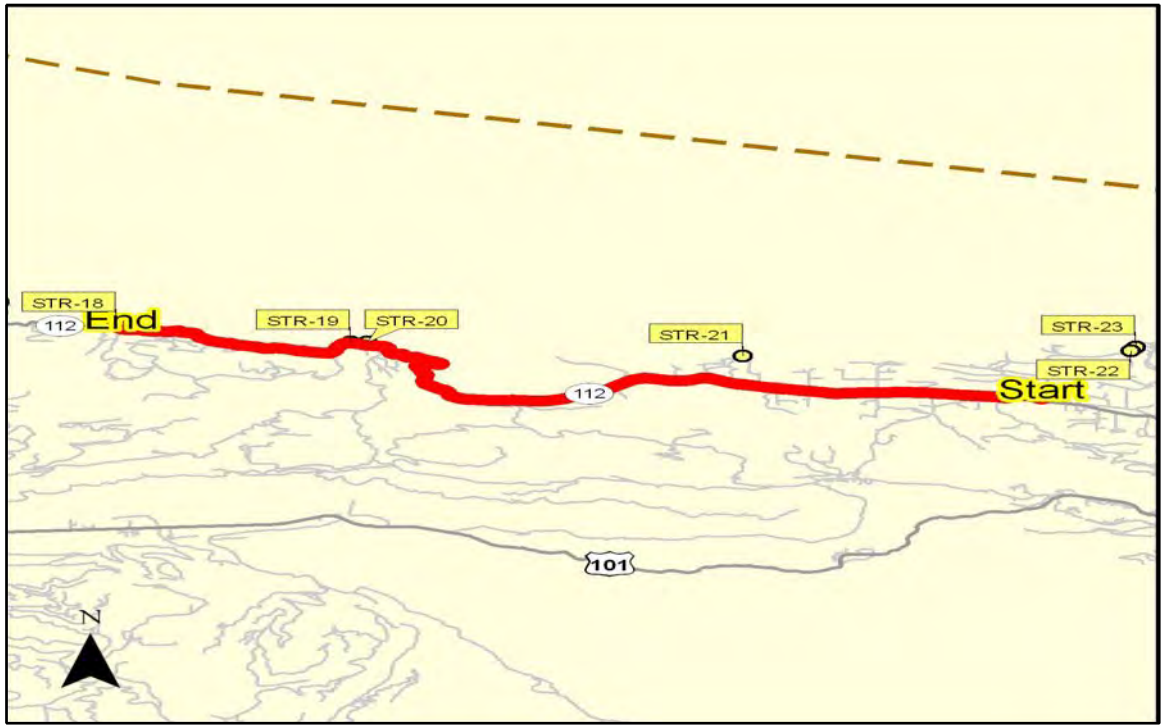
Status: Visited and Not Tested 07/23/2007

Image-1004: Deep creek booming site

Image-1005: Deep Creek, upstream view

Site Contact Information

No contact information available.



Closest Address:

26621 SR 112, Clallum Bay, 98326

Driving Directions:

Depart Joyce
1. Go North West on Agate Beach Rd toward Crescent Beach Rd (0.26 Mile(s))
2. Turn left on Crescent Beach Rd (0.33 Mile(s))
3. Bear right on SR 112 (HWY 112) (15.61 Mile(s))
Arrive at 26621 SR 112, Clallum Bay, WA, 98326, on the right

Site Lat/Long:	N 48° 9.931' / W 123° 57.164', Sector Map STR-4
Strategy Objective:	Exclusion - keep oil out of the river mouth.
Implementation:	Deploy boom from land across the mouth of the river at an angle to the tidal push. If oil is present, deploy snare-boom along beach.
Site Safety Note:	At high flow do not deploy strategies.
Field Notes:	Vehicle access off Highway 112 at Mile Post 38.6, turn north off the highway onto a dirt road on the east side of the West Twin River.
Resources Targeted:	salmonids (anadromous)
Fixed Anchors:	98: N 48° 9.946' / W 123° 57.164', Water Depth 0ft, west bank, adjust as needed
Watercourse Description:	Creek

Suggested Equipment	
Quantity	**Description**
200 ft	B3 - River Boom, or other appropriate type
300 ft	Snare Boom
6 each	Stake(s)
Suggested Personnel	
2	Laborer (s)

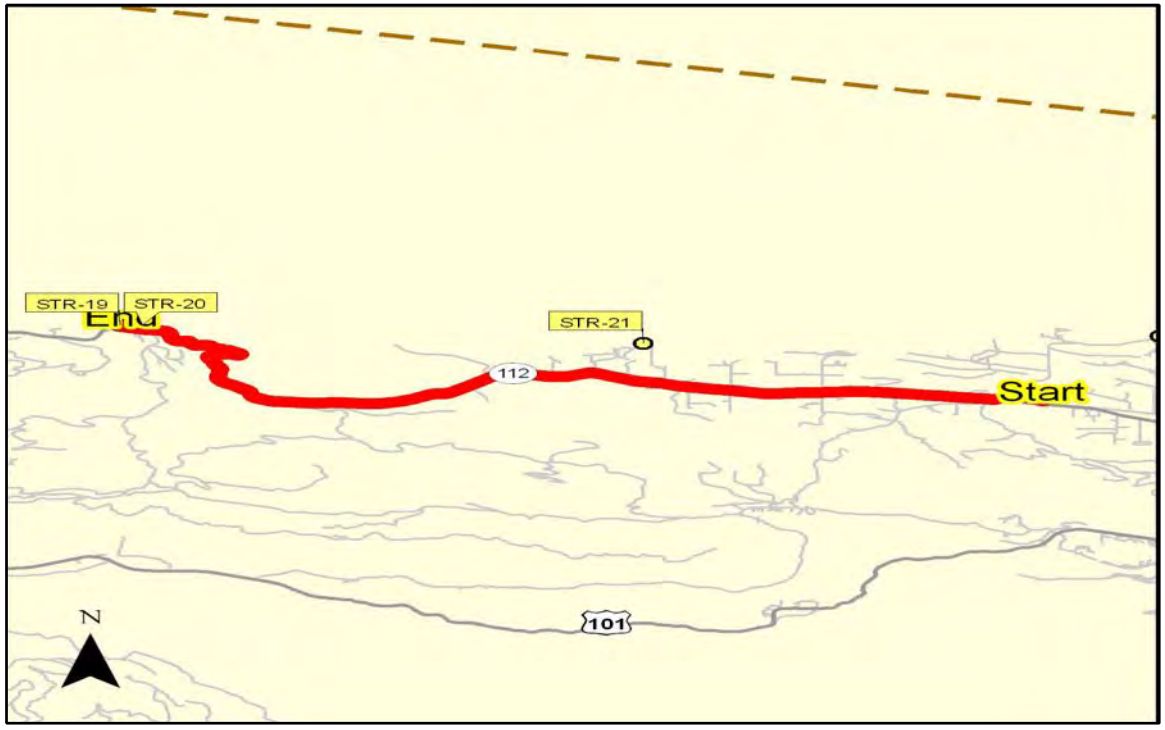
Status: Visited and Not Tested 07/23/2007

Image-1006: Twin w over shot

No Image Available

Site Contact Information

No contact information available.



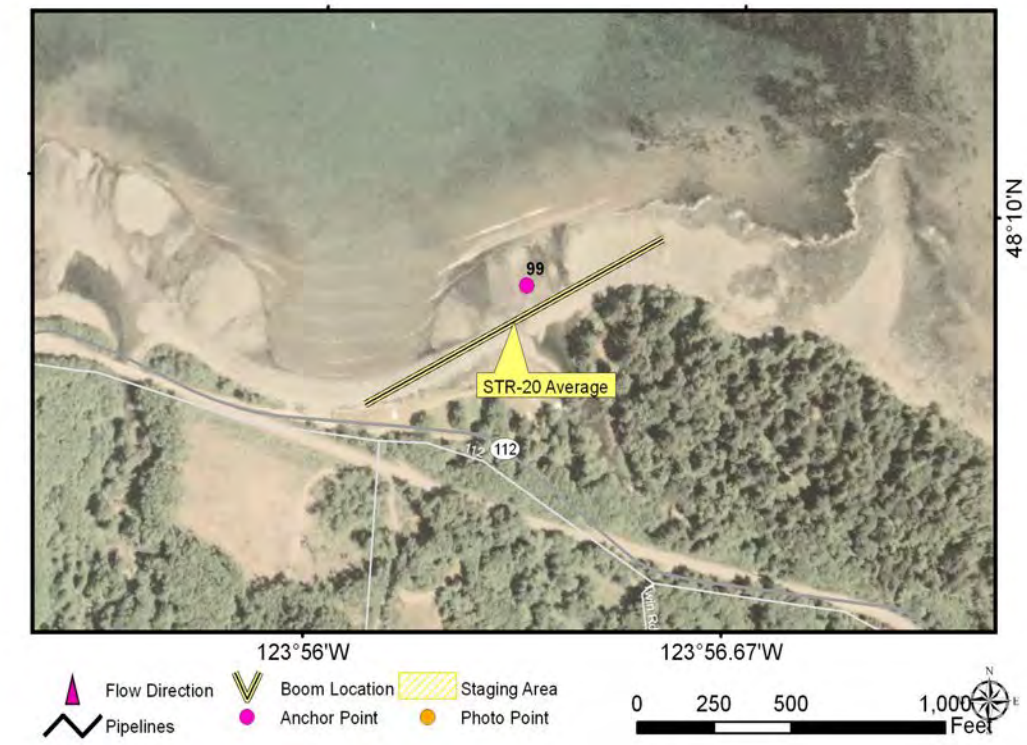
Closest Address:

29656 SR 112, Clallum Bay, 98326

Driving Directions:

Depart Joyce
1. Go North West on Agate Beach Rd toward Crescent Beach Rd (0.26 Mile(s))
2. Turn left on Crescent Beach Rd (0.33 Mile(s))
3. Bear right on SR 112 (HWY 112) (11.78 Mile(s))
Arrive at 29656 SR 112, Clallum Bay, WA, 98326, on the right

Site Lat/Long:	N 48° 9.937' / W 123° 56.842', Sector Map STR-4
Strategy Objective:	Exclusion - keep oil out of the river mouth.
Implementation:	Deploy exclusion boom from land across the mouth of the river at an angle to the tidal push. If oil is present, deploy snare-boom along beach. Access to the river mouth is through private property.
Site Safety Note:	At high flow do not deploy strategies.
Field Notes:	Vehicle access off Highway 112 at Mile Post 38.6, turn north off the highway onto a dirt road on the west side of the East Twin River.
Resources Targeted:	salmonids (anadromous)
Fixed Anchors:	99: N 48° 9.955' / W 123° 56.833', west bank, adjust as needed
Watercourse Description:	Creek



Suggested Equipment	
Quantity	**Description**
100 ft	B3 - River Boom, or other appropriate type
200 ft	Snare Boom
4 each	Stake(s)
Suggested Personnel	
2	Laborer (s)

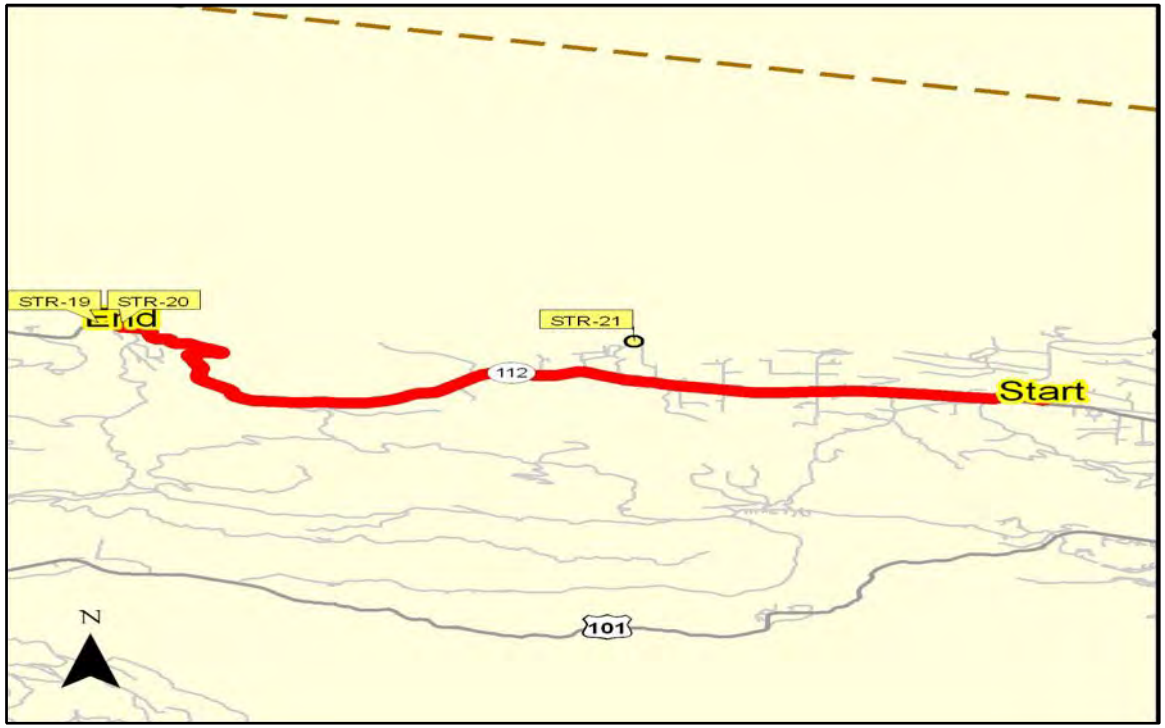
Status: Visited and Not Tested 07/23/2007

Image-1007: Twin east overview

No Image Available

Site Contact Information

No contact information available.



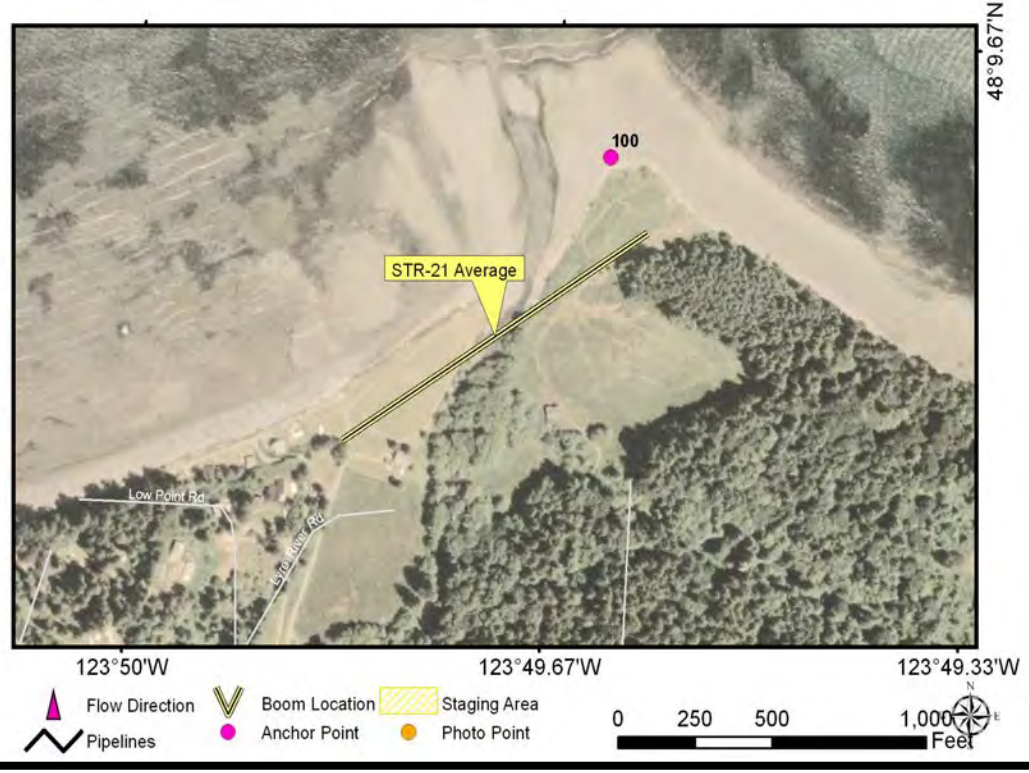
Closest Address:

29880 SR 112, Clallum Bay, 98326

Driving Directions:

Depart Joyce
1. Go North West on Agate Beach Rd toward Crescent Beach Rd (0.26 Mile(s))
2. Turn left on Crescent Beach Rd (0.33 Mile(s))
3. Bear right on SR 112 (HWY 112) (11.54 Mile(s))
Arrive at 29880 SR 112, Clallum Bay, WA, 98326, on the left

Site Lat/Long:	N 48° 9.510' / W 123° 49.718', Sector Map STR-5
Strategy Objective:	Exclusion - keep oil out of the river mouth.
Implementation:	Deploy boom from land across the mouth of the river at an angle to the tidal push. Access to the river mouth is from the campground on the west side of the river. Seasonal strategy, high river flow will keep oil out of the mouth.
Site Safety Note:	At high flow do not deploy strategies.
Field Notes:	Vehicle access off Highway 112 at Mile Post 45.6, turn north off the highway to the Lyre River Campground and check in with the owner. Lyre River Campground closed to public.
Resources Targeted:	salmonids (anadromous), shorebirds
Fixed Anchors:	100: N 48° 9.605' / W 123° 49.625', Water Depth 0ft, west bank, adjust as needed
Watercourse Description:	River with tidal influence, Field Visit Width ~ 135ft, Field Visit Depth ~ 6ft, sand, gravel



Suggested Equipment	
Quantity	**Description**
300 ft	B3 - River Boom, or other appropriate type
400 ft	Snare Boom
6 each	Stake(s)
Suggested Personnel	
2	Laborer (s)

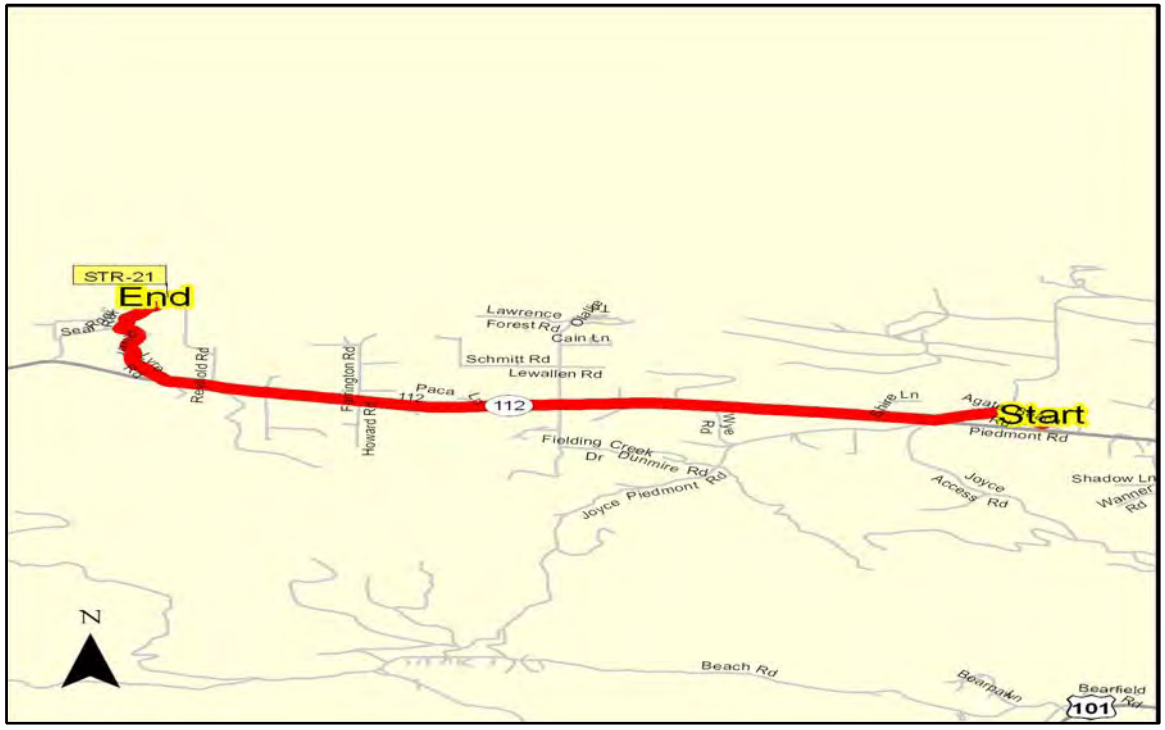
Status: Visited and Not Tested 07/23/2007

Image-1008: Lyre river overview.

No Image Available

Site Contact Information

No contact information available.



Closest Address:

996 W Lyre River Rd., Port Angeles, 98363

Driving Directions:

Depart Joyce
1. Go North West on Agate Beach Rd toward Crescent Beach Rd (0.26 Mile(s))
2. Turn left on Crescent Beach Rd (0.33 Mile(s))
3. Bear right on SR 112 (HWY 112) (3.89 Mile(s))
4. Bear right on E Lyre River Rd (0.75 Mile(s))
5. Turn right at W Lyre River Rd to stay on E Lyre River Rd (0.34 Mile(s))

Arrive at 996 W Lyre River Rd., Port Angeles, WA, 98363, on the left

Site Lat/Long:	N 48° 9.670' / W 123° 42.365', Sector Map STR-5
Strategy Objective:	Exclusion, Collection - keep oil out of Salt Creek and collect from bridge area.
Implementation:	This is a back-up to the Salt Creek beach strategy. Deploy boom in front of bridge at an angle to the tidal push so that oil collects near bridge. May want to use bridge pillars to assist with holding the boom in place. Use vac tuck to suck up collected oil.
Site Safety Note:	High traffic area, take appropriate precautions. At high flow do not deploy strategies.
Field Notes:	Parking area next to bridge has restrooms.
Resources Targeted:	waterfowl, shorebirds, salmonids (anadromous), public lands/facilities, sensitive habitat, special protection area
Fixed Anchors:	102: N 48° 9.660' / W 123° 42.331', Water Depth 0ft, east side of bridge, adjust as needed
Watercourse Description:	River with tidal influence, upper reach of river, Field Visit Width ~ 140ft, Field Visit Depth ~ 12ft, gravel, mud, sand

Suggested Equipment	
Quantity	**Description**
200 ft	B3 - River Boom, or other appropriate type
4 each	Stake(s)
1 each	Vac Truck(s)
Suggested Personnel	
3	Laborer (s)

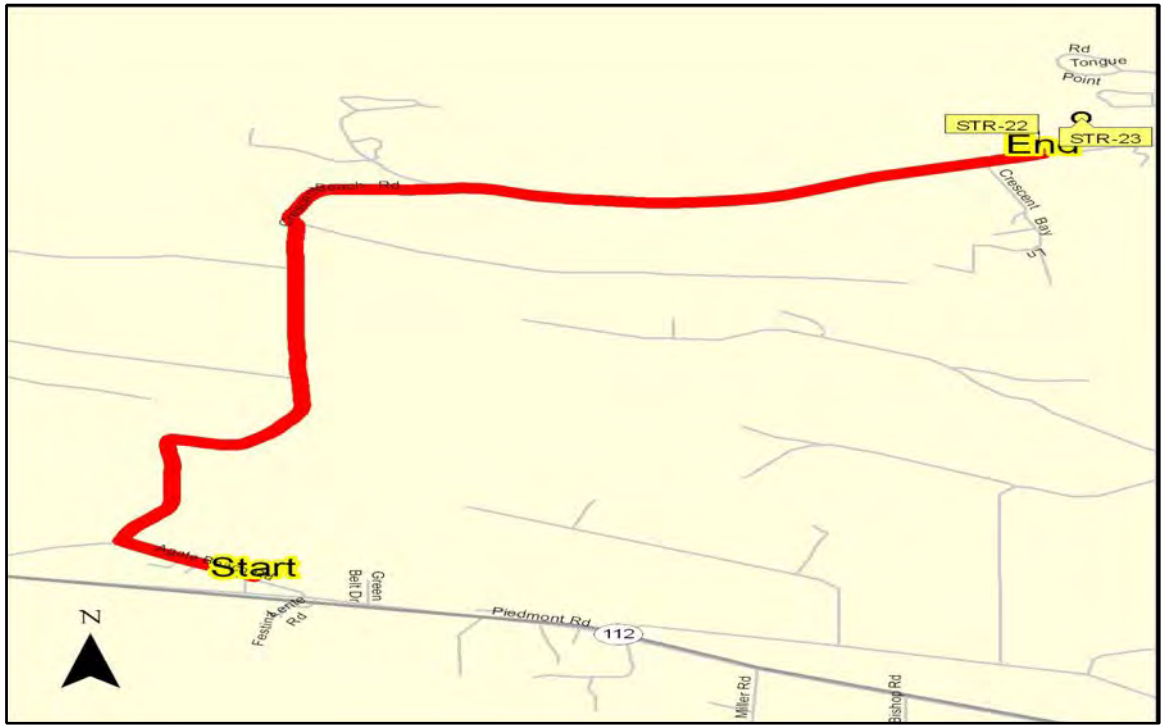
Status: New - visited but not tested 07/23/2007

Image-1010: Salt Creek Hide Tide Boom Site

Image-1009: Salt Creek, parking restroom

Site Contact Information

No contact information available.

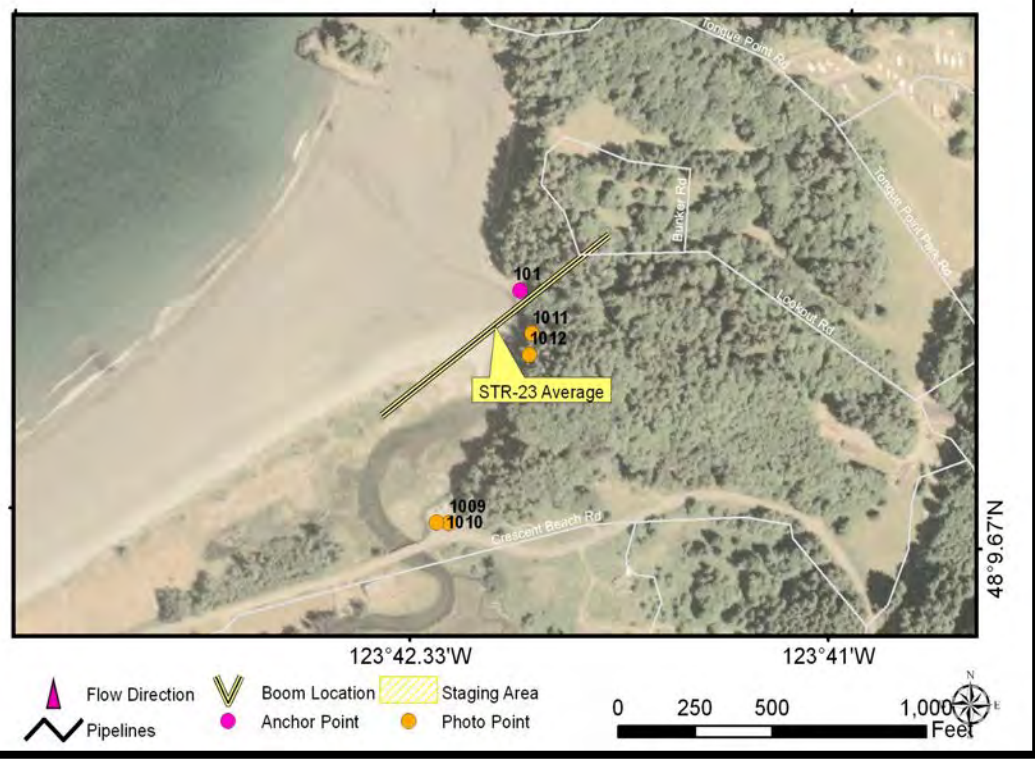


Closest Address:

Driving Directions:

Depart Joyce
1. Go North West on Agate Beach Rd toward Crescent Beach Rd (0.26 Mile(s))
2. Turn right on Crescent Beach Rd (2.82 Mile(s))
Arrive at Point (N 48° 9.67' / W 123° 42.365'), on the left

Site Lat/Long:	N 48° 9.769' / W 123° 42.275', Sector Map STR-5
Strategy Objective:	Exclusion - keep oil out of the creek.
Implementation:	Deploy boom from land across the mouth of the creek. In rough weather, deploy the boom further up the creek if necessary. If oil is present, deploy snare-boom along beach.
Site Safety Note:	At high flow do not deploy strategies. Area can have high mosquito concentrations. At extreme tides this entire area can be underwater. West of Salt Creek Beach is private.
Field Notes:	Vehicle access from Highway 112 at Mile Post 53.9 on Camp Hayden Road, or at Mile Post 51.0 on Crescent Beach Road. Both roads will lead to Salt Creek, on the east end of Crescent Bay.
Resources Targeted:	waterfowl, salmonids (anadromous), shorebirds, sensitive habitat, public lands/facilities, special protection area
Fixed Anchors:	101: N 48° 9.787' / W 123° 42.256', Water Depth 0ft, east bank near mouth and tree line, adjust as needed
Watercourse Description:	River with tidal influence, at extreme tides entire area can be underwater, Field Visit Width ~ 180ft, Field Visit Depth ~ 3ft



Suggested Equipment	
Quantity	**Description**
200 ft	B3 - River Boom, or other appropriate type
300 ft	Snare Boom
8 each	Stake(s)
Suggested Personnel	
2	Laborer (s)

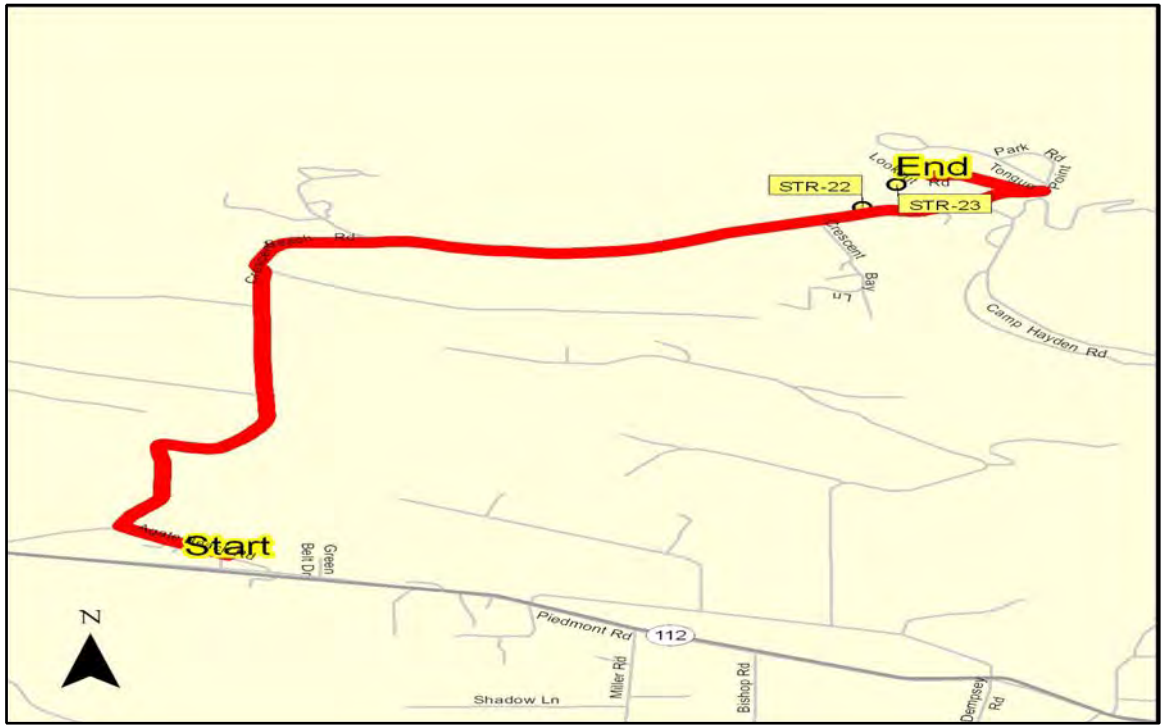
Status: Visited and Not Tested 07/23/2007

Image-1012: Salt Creek view from the mouth upstream.

Image-1011: Salt Creek, beach booming Site

Site Contact Information

Responsible party or alternate contact:
Sea Kota, (H) 360-928-3454, Owner of property west of Salt Creek Beach.



Closest Address:

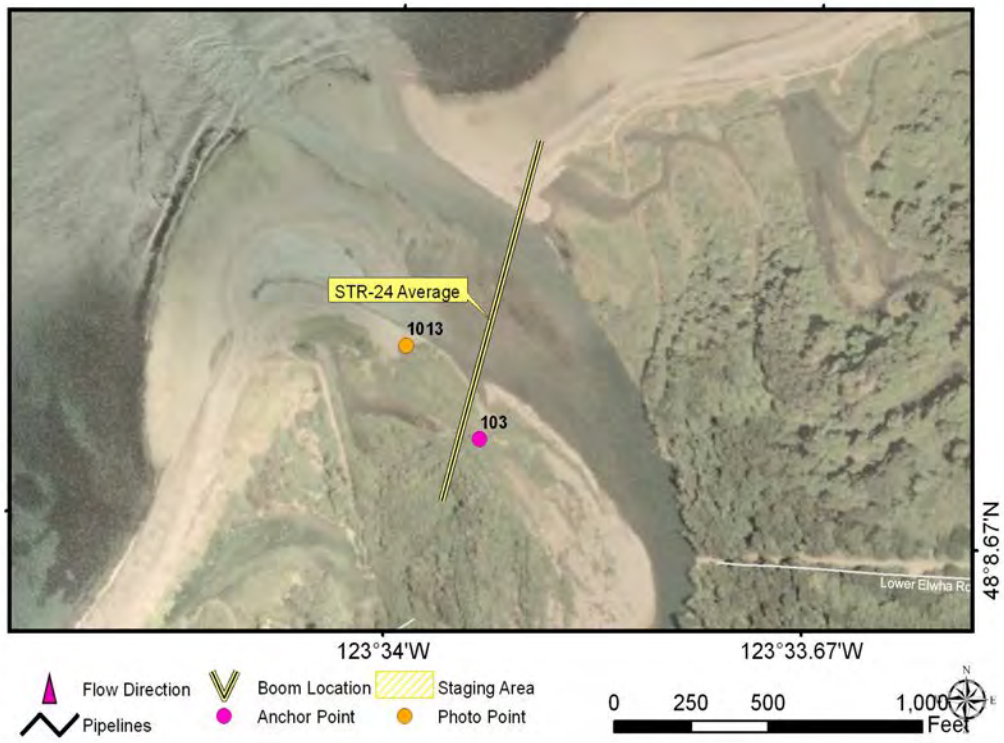
Lookout Rd., Port Angeles, 98363

Driving Directions:

Depart Joyce
1. Go North West on Agate Beach Rd toward Crescent Beach Rd (0.26 Mile(s))
2. Turn right on Crescent Beach Rd (3.06 Mile(s))
3. Turn left on Salt Creek Recreation Area (0.12 Mile(s))
4. Continue on Tongue Point Park Rd (0.03 Mile(s))
5. Make sharp left at Salt Creek Recreation Area to stay on Tongue Point Park Rd (0.03 Mile(s))
6. Bear right on Lookout Rd (0.21 Mile(s))

Arrive at Lookout Rd., Port Angeles, WA, 98363, on the right

Site Lat/Long:	N 48° 8.779' / W 123° 33.915', Sector Map STR-6
Strategy Objective:	Exclusion - keep oil out of the river mouth.
Implementation:	Deploy boom across the mouth of the river at an angle to the tidal push. Use anchors and lines as needed to maintain an effective angle. Necessary only with low river flow and high tide. The actual location will be dependent on real time conditions, adjust as needed.
Site Safety Note:	Very, dynamic system. Sand bars changed greatly in one month. At high river flow do not deploy strategies.
Field Notes:	Boat access from the ramp in Freshwater Bay or Port Angeles. Vehicle access - take Agate Beach Road from West side of Joyce (opposite High School), at 1st intersection turn left on Crescent Beach Rd
Resources Targeted:	waterfowl, salmonids (anadromous), sensitive habitat, tribal lands/resources
Fixed Anchors:	103: N 48° 8.713' / W 123° 33.928', Water Depth 0ft, westbank, adjust as needed
Watercourse Description:	River with tidal influence, Extremely dynamic system., Field Visit Width ~ 400ft, gravel, mud, sand, rock, logs



Suggested Equipment	
Quantity	**Description**
3 each	Anchor(s) for strong currents - ie. SARCA
500 ft	B3 - River Boom, or other appropriate type
1 each	Jon Boat(s)
8 each	Stake(s)
Suggested Personnel	
1	Boat Operator (s)
3	Laborer (s)

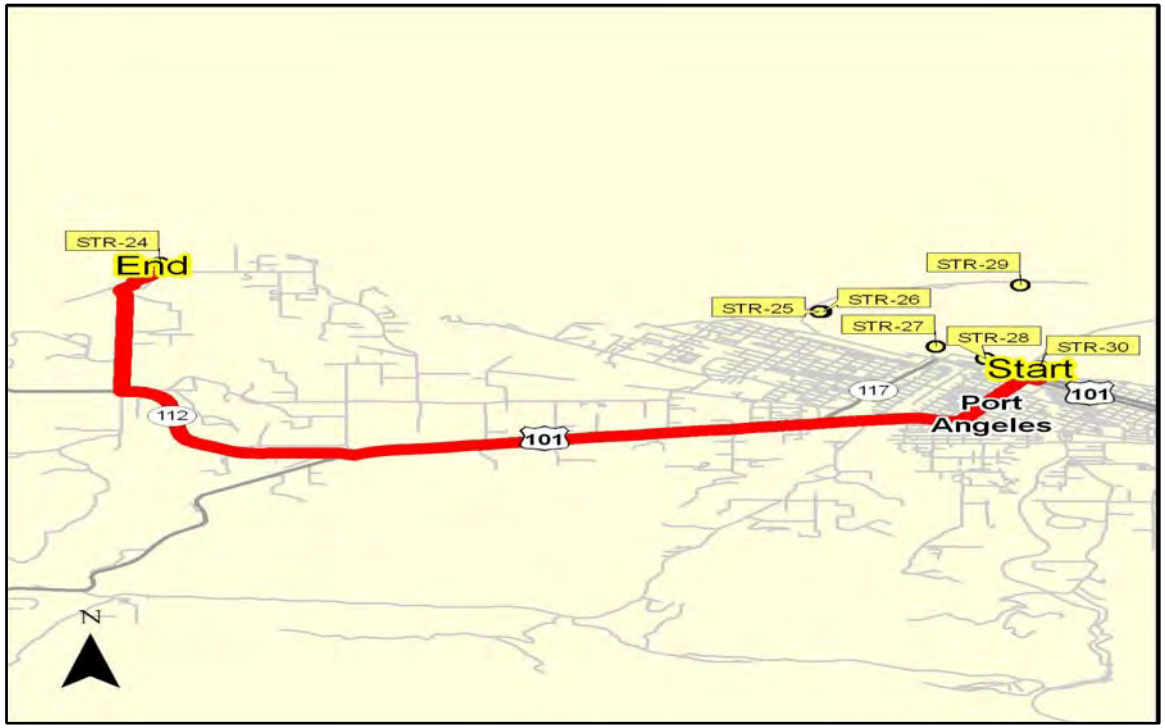
Status: Visited and Not Tested 07/24/2007

Image-1013: Elwa from west bank looking east.

Image-1067: Elwa overview

Site Contact Information

High Priority - contact immediate or before entering:
LOWER ELWHA KLALLAM TRIBE, (W) 360/452-8471, (M) 360/417-2259



Closest Address:

93 Elwha Dike Rd., Port Angeles, 98363

Driving Directions:

Depart Port Angeles
1. Go South East on US 101 (E 1st St) toward S Chase St/N Chase St (0.06 Mile(s))
2. Turn left on N Chase St (0.07 Mile(s))
3. Turn left on US 101 (E Front St) (5.44 Mile(s))
4. Bear right on SR 112 (HWY 112) (2.34 Mile(s))
5. Turn right on Place Rd (1.92 Mile(s))
6. Bear right on Elwha Dike Rd (0.17 Mile(s))

Arrive at 93 Elwha Dike Rd., Port Angeles, WA, 98363, on the left

Site Lat/Long:	N 48° 8.061' / W 123° 27.803', Sector Map STR-6
Strategy Objective:	Exclusion, Collection - keep oil out of the lagoon.
Implementation:	Deploy boom across the lagoon entrance at an angle to the tidal push. As channel is narrow a chevron may be the best boom configuration. If oil does collect this site is vac truck accessible.
Site Safety Note:	High traffic area, take appropriate precautions.
Field Notes:	Boat access from Port Angeles. Vehicle access from Highway 101 to Marine Drive in Port Angeles to Nippon Paper Indus.
Resources Targeted:	waterfowl, shorebirds - minimal
Fixed Anchors:	105: N 48° 8.083' / W 123° 27.868', Water Depth 0ft, north bank near channel mouth, adjust as needed
Watercourse Description:	Ditch, ditch feeds old logging pond at high tide, Field Visit Width ~ 70ft, mud

Suggested Equipment	
Quantity	**Description**
1 each	Anchor(s) for strong currents - ie. SARCA
300 ft	B3 - Contractor Boom
1 each	Jon Boat(s)
6 each	Stake(s)
1 each	Vac Truck(s)
Suggested Personnel	
1	Boat Operator (s)
2	Laborer (s)

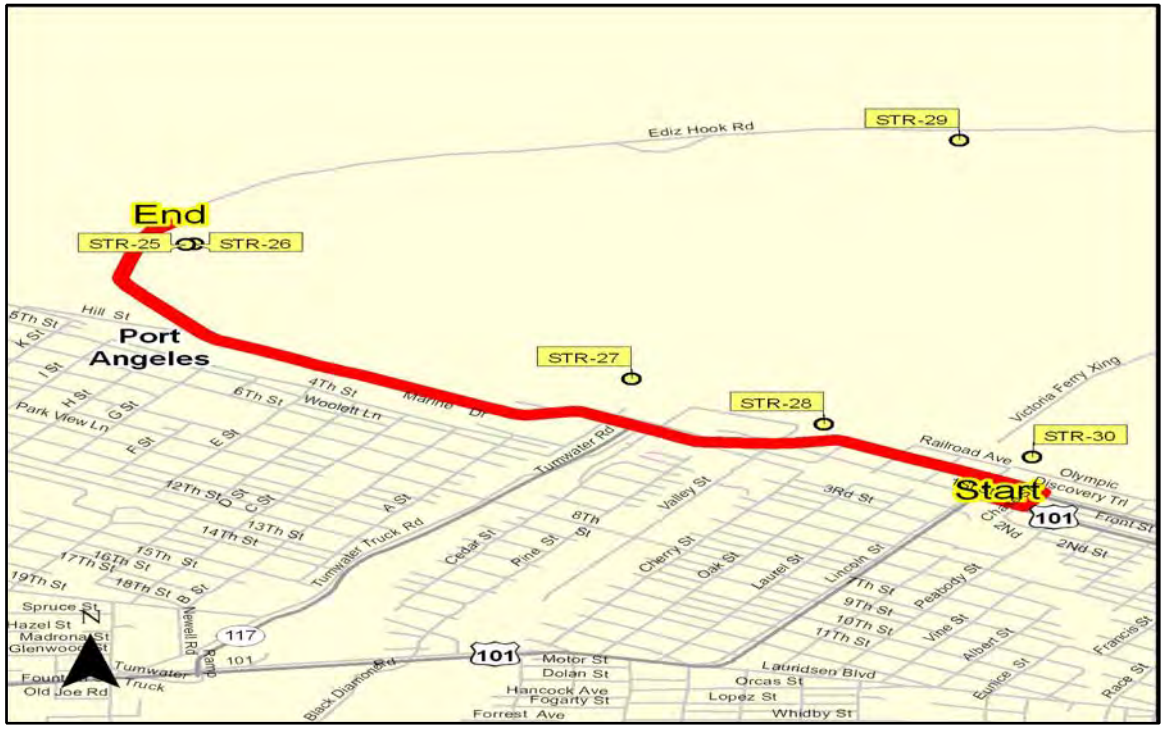
Status: Visited and Tested 04/04/2007

Image-1016: Nippon Paper Indus. inner strategy overview

No Image Available

Site Contact Information

No contact information available.



Closest Address:

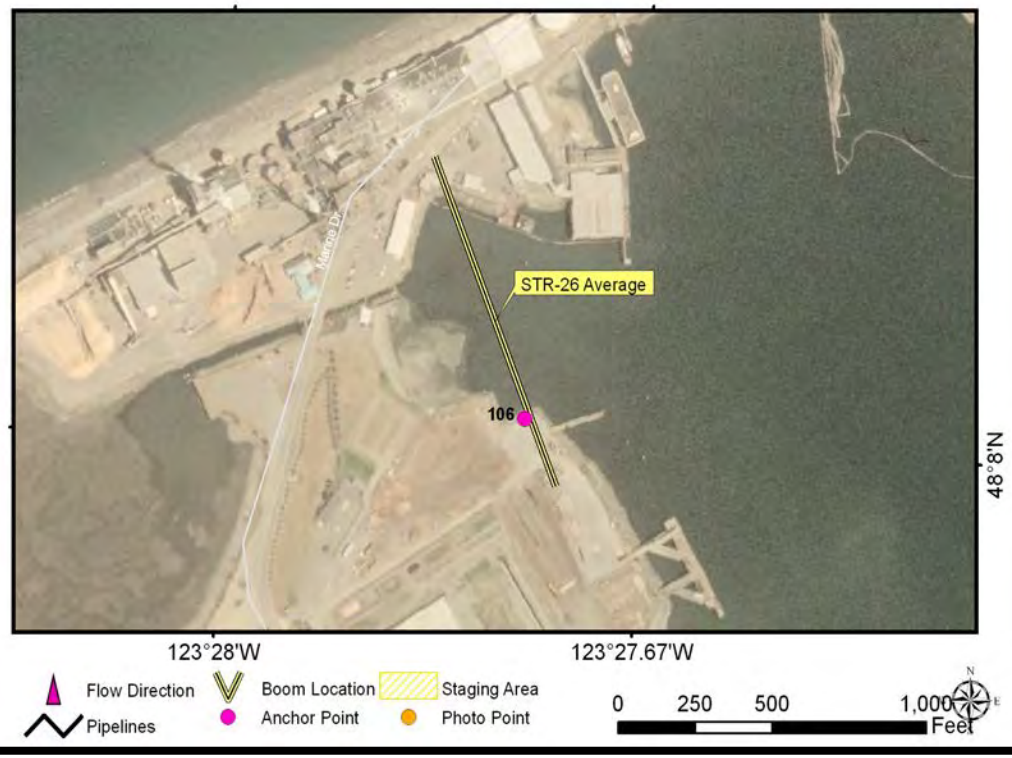
1833 Marine Dr., Port Angeles, 98363

Driving Directions:

Depart Port Angeles
1. Go South East on US 101 (E 1st St) toward S Chase St/N Chase St (0.06 Mile(s))
2. Turn left on N Chase St (0.07 Mile(s))
3. Turn left on US 101 (E Front St) (0.1 Mile(s))
4. Continue on E Front St (0.43 Mile(s))
5. Continue on Marine Dr (1.79 Mile(s))

Arrive at 1833 Marine Dr., Port Angeles, WA, 98363, on the right

Site Lat/Long:	N 48° 8.063' / W 123° 27.784', Sector Map STR-6
Strategy Objective:	Exclusion, Collection - keep oil out of lagoon, and direct oil to south for possible collection.
Implementation:	Deploy boom from the seawall SE of the lagoon entrance to the shoreline to the north. Angle boom to collect oil at parking area on south. This area would be vac truck accessible.
Site Safety Note:	High traffic area, take appropriate precautions.
Field Notes:	Boat access from Port Angeles. Vehicle access from Highway 101 to Marine Drive in Port Angeles to Nippon Paper Indus..
Resources Targeted:	waterfowl, shorebirds - minimal
Fixed Anchors:	106: N 48° 8.014' / W 123° 27.758', Water Depth 0ft, south anchor point, adjust as needed
Watercourse Description:	Bay



Suggested Equipment	
Quantity	**Description**
3 each	Anchor(s) for strong currents - ie. SARCA
800 ft	B3 - Contractor Boom
1 each	Jon Boat(s)
8 each	Stake(s)
1 each	Vac Truck(s)
Suggested Personnel	
1	Boat Operator (s)
2	Laborer (s)

Status: Visited and Tested 04/04/2007

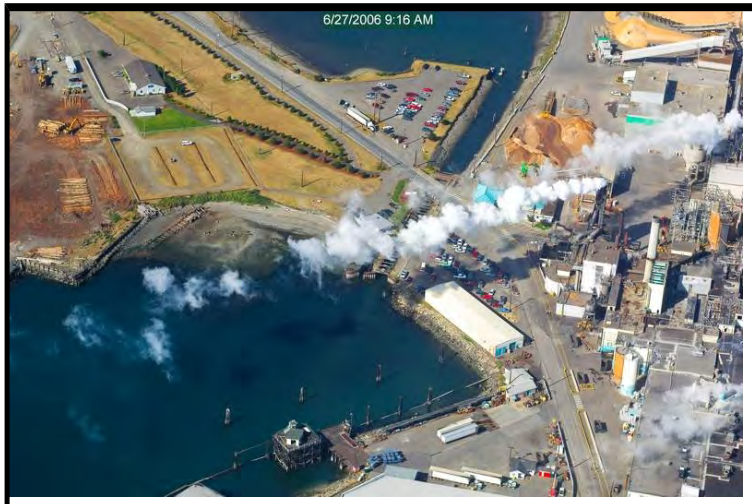
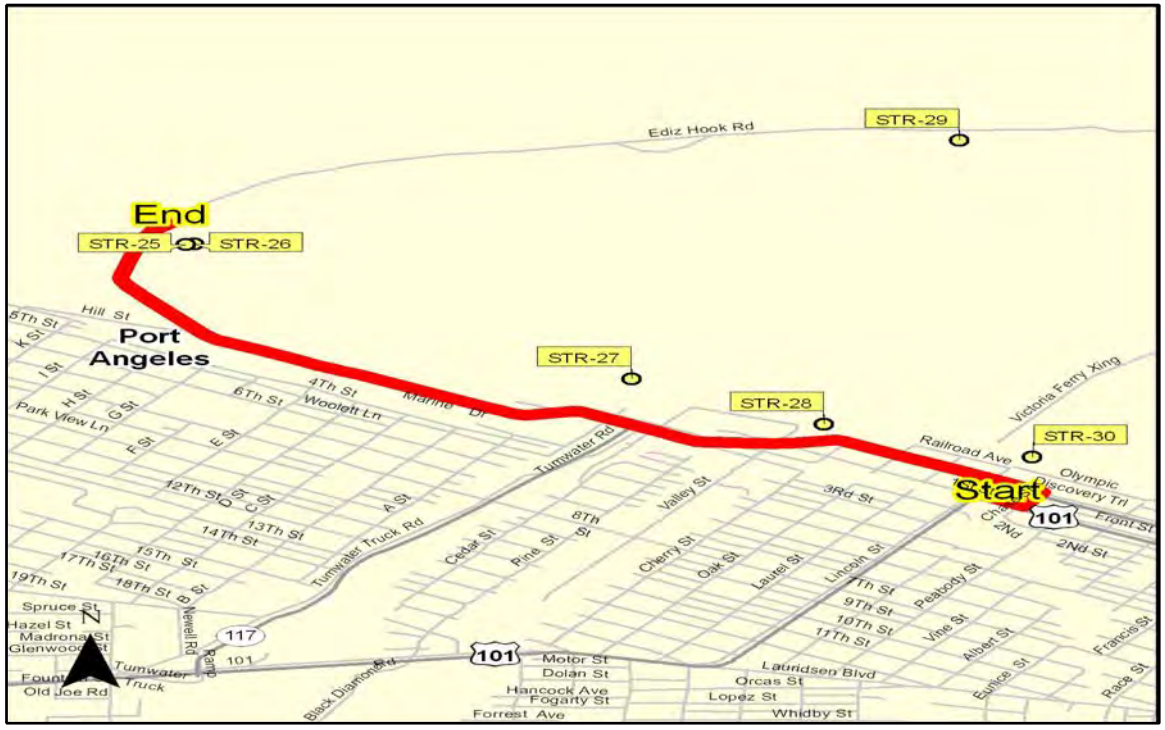


Image-1017: Nippon Paper Indus. Overview

No Image Available

Site Contact Information

No contact information available.



Closest Address:

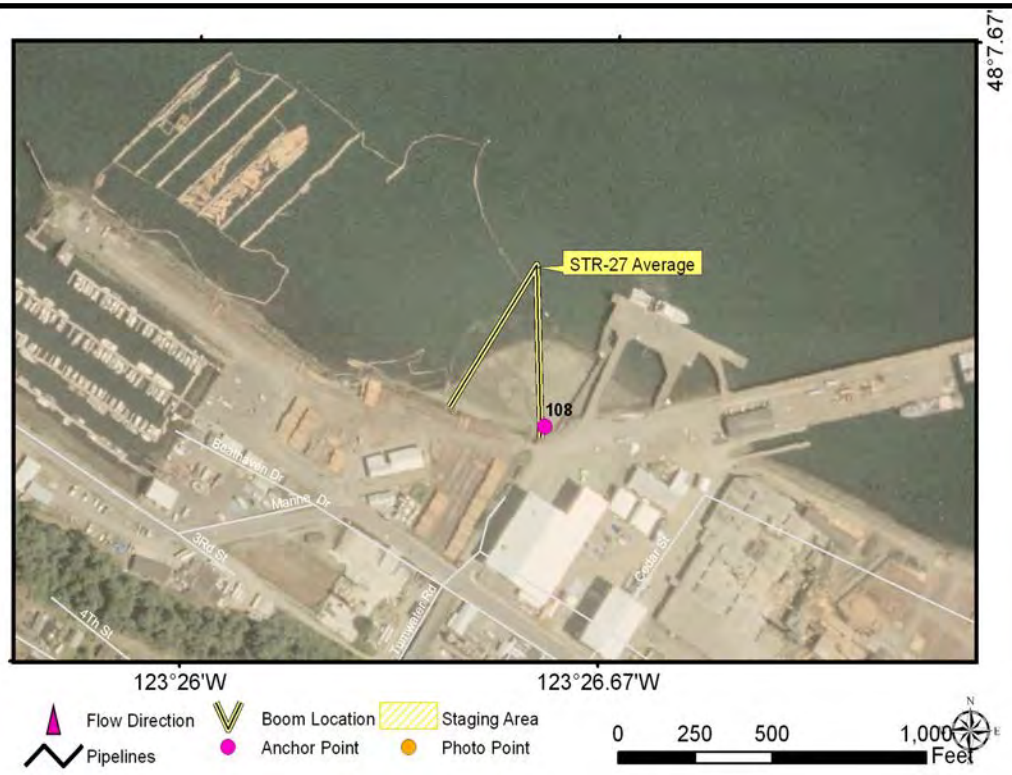
1833 Marine Dr., Port Angeles, 98363

Driving Directions:

Depart Port Angeles
1. Go South East on US 101 (E 1st St) toward S Chase St/N Chase St (0.06 Mile(s))
2. Turn left on N Chase St (0.07 Mile(s))
3. Turn left on US 101 (E Front St) (0.1 Mile(s))
4. Continue on E Front St (0.43 Mile(s))
5. Continue on Marine Dr (1.79 Mile(s))

Arrive at 1833 Marine Dr., Port Angeles, WA, 98363, on the right

Site Lat/Long:	N 48° 7.540' / W 123° 26.730', Sector Map STR-7
Strategy Objective:	Exclusion - keep oil out of the creek mouth.
Implementation:	Deploy boom across the creek mouth at an angle to tidal push. If oil is present, deploy snare-boom along beach.
Site Safety Note:	High traffic area, take appropriate precautions. At high flow do not deploy strategies.
Field Notes:	Boat access from Port Angeles. Vehicle access from Highway 101 to Front Street to Tumwater Street.
Resources Targeted:	salmonids (anadromous)
Fixed Anchors:	108: N 48° 7.463' / W 123° 26.715', Water Depth 0ft, east bank, adjust as needed
Watercourse Description:	Creek, creek along heavy industrail area, Field Visit Width ~ 15ft, mud, gravel



Suggested Equipment	
Quantity	**Description**
200 ft	B3 - River Boom, or other appropriate type
200 ft	Snare Boom
4 each	Stake(s)
Suggested Personnel	
2	Laborer (s)

Status: Visited and Not Tested 08/16/2007

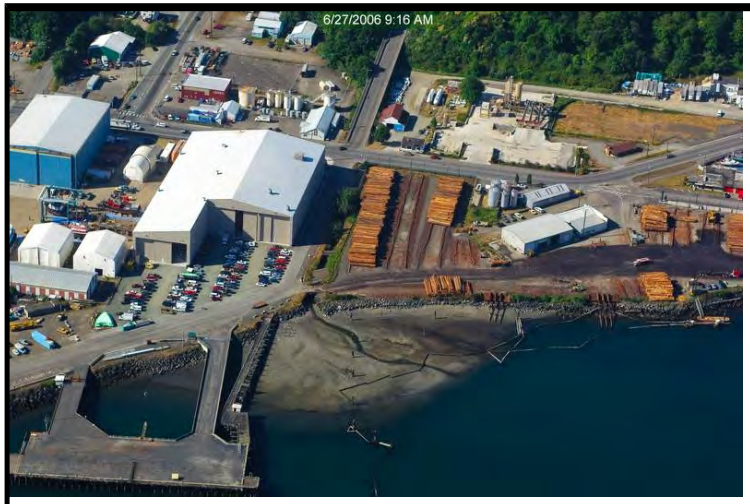
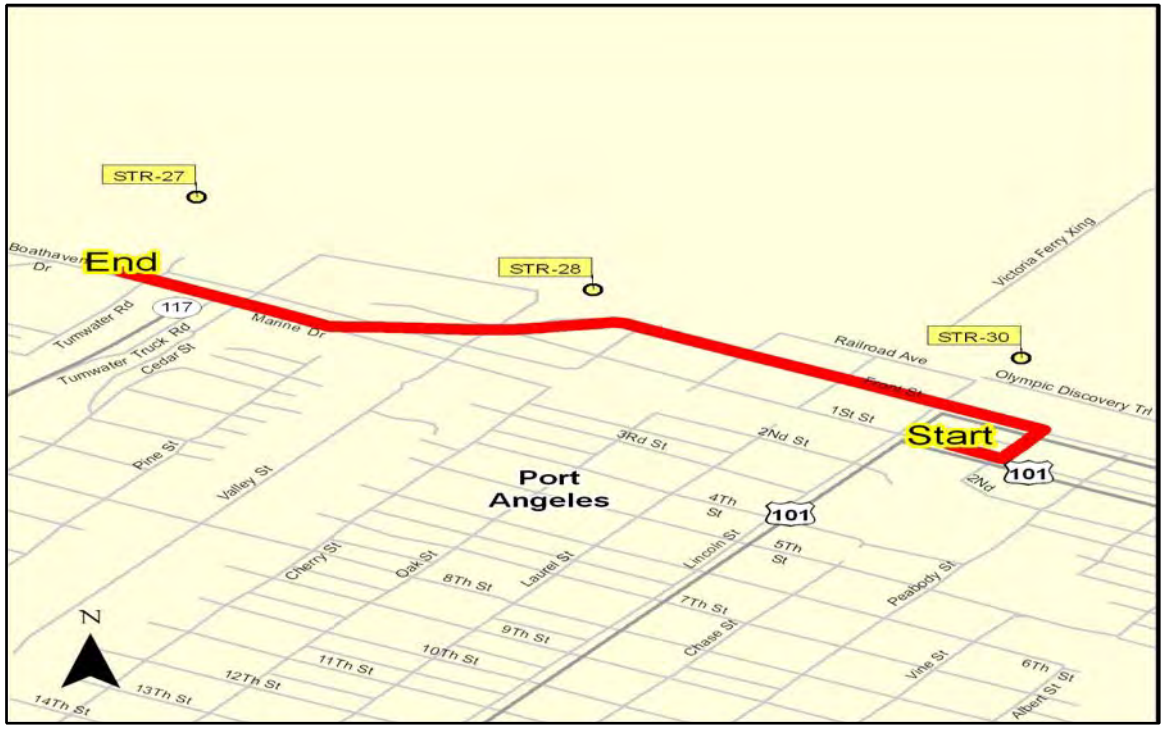


Image-1019: Tumwater creek overview

No Image Available

Site Contact Information

No contact information available.



Closest Address:

711 Marine Dr., Port Angeles, 98363

Driving Directions:

Depart Port Angeles
1. Go South East on US 101 (E 1st St) toward S Chase St/N Chase St (0.06 Mile(s))
2. Turn left on N Chase St (0.07 Mile(s))
3. Turn left on US 101 (E Front St) (0.1 Mile(s))
4. Continue on E Front St (0.43 Mile(s))
5. Continue on Marine Dr (0.4 Mile(s))

Arrive at 711 Marine Dr., Port Angeles, WA, 98363, on the right

Site Lat/Long:	N 48° 7.366' / W 123° 26.267', Sector Map STR-7
Strategy Objective:	Exclusion - keep oil out of the creek mouth and public beach area at the mouth.
Implementation:	Deploy boom across the entrance to the small inlet at the city park and beach at the creek mouth.
Site Safety Note:	At high flow do not deploy strategies. High traffic area, take appropriate precautions.
Field Notes:	Boat access from Port Angeles. Vehicle access from Highway 101 to Front Street.
Resources Targeted:	public lands/facilities, salmonids (anadromous)
Fixed Anchors:	109: N 48° 7.316' / W 123° 26.236', Water Depth 0ft, east bank, adjust as needed
Watercourse Description:	Creek, creek and public beach, Field Visit Width ~ 20ft

Suggested Equipment	
Quantity	**Description**
600 ft	B3 - River Boom, or other appropriate type
6 each	Stake(s)
Suggested Personnel	
3	Laborer (s)

Status: Visited and Not Tested 08/16/2007

Image-1020: Valley Creek and City Park, overview

No Image Available

Site Contact Information

No contact information available.

Closest Address:

98363

Driving Directions:

Depart Port Angeles
1. Go South East on US 101 (E 1st St) toward S Chase St/N Chase St (0.06 Mile(s))
2. Turn left on N Chase St (0.07 Mile(s))
3. Turn left on US 101 (E Front St) (0.1 Mile(s))
4. Continue on E Front St (0.37 Mile(s))

Arrive at Point (N 48° 7.366' / W 123° 26.267'), on the right

Site Lat/Long:	N 48° 8.462' / W 123° 25.941', Sector Map STR-7
Strategy Objective:	Exclusion - keep oil off the sand lance spawning beach.
Implementation:	Deploy boom from the old boat ramp on the inside beach of Ediz Hook at 48°-8.500'N 123°-25.642'W to protect as much beach as possible to the west of the boat ramp.
Site Safety Note:	Poor footing can lead to slips, trips and falls.
Field Notes:	Boat access from Port Angeles. Vehicle access from Highway 101 to Marine Drive in Port Angeles to Ediz Hook Road.
Resources Targeted:	baitfish
Fixed Anchors:	107: N 48° 8.487' / W 123° 25.682', Water Depth 0ft, bank near boat launch, adjust as needed
Watercourse Description:	Bay

Suggested Equipment	
Quantity	**Description**
2500 ft	B3 - Contractor Boom
10 each	Stake(s)
Suggested Personnel	
6	Laborer (s)

Status: Visited and Not Tested 08/16/2007

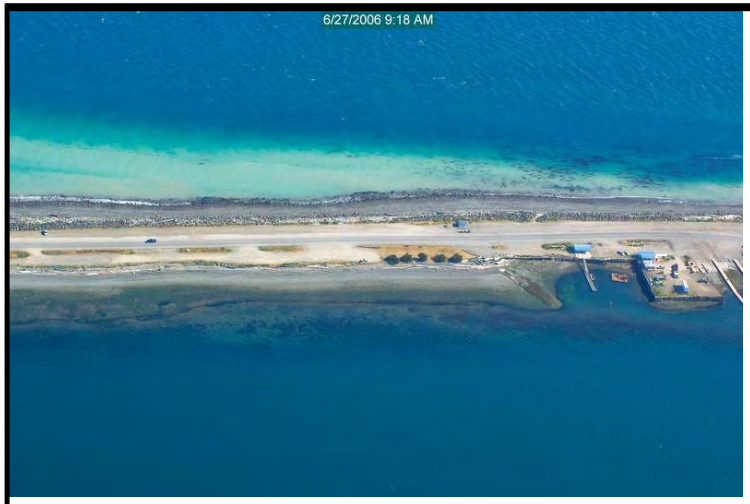


Image-1018: Ediz Hook overview

No Image Available

Site Contact Information

No contact information available.

Closest Address:

Port Angeles, 98363

Driving Directions:

Depart Port Angeles
1. Go South East on US 101 (E 1st St) toward S Chase St/N Chase St (0.06 Mile(s))
2. Turn left on N Chase St (0.07 Mile(s))
3. Turn left on US 101 (E Front St) (0.1 Mile(s))
4. Continue on E Front St (0.43 Mile(s))
5. Continue on Marine Dr (2.02 Mile(s))
6. Continue on Ediz Hook Rd (1.33 Mile(s))

Arrive at Point (N 48° 8.462' / W 123° 25.941'), on the right

Site Lat/Long:	N 48° 7.238' / W 123° 25.766', Sector Map STR-7
Strategy Objective:	Exclusion - keep oil out of the creek mouth.
Implementation:	Deploy boom across the entrance to the creek mouth at an angle to the tidal push, from the northern end of the riprap on the west side to the base of the pier on the east side. The boom can be deployed from land without a boat. If oil is present, deploy snare-boom along beach.
Site Safety Note:	High traffic area, take appropriate precautions. At high flow do not deploy strategies.
Field Notes:	Boat access from Port Angeles. Vehicle access from Highway 101 to North Laurel Street.
Resources Targeted:	salmonids (anadromous)
Fixed Anchors:	110: N 48° 7.239' / W 123° 25.774', Water Depth 0ft, east bank, adjust as needed
Watercourse Description:	Creek, urban creek, Field Visit Width ~ 12ft

Suggested Equipment	
Quantity	**Description**
300 ft	B3 - River Boom, or other appropriate type
300 ft	Snare Boom
6 each	Stake(s)
Suggested Personnel	
2	Laborer (s)

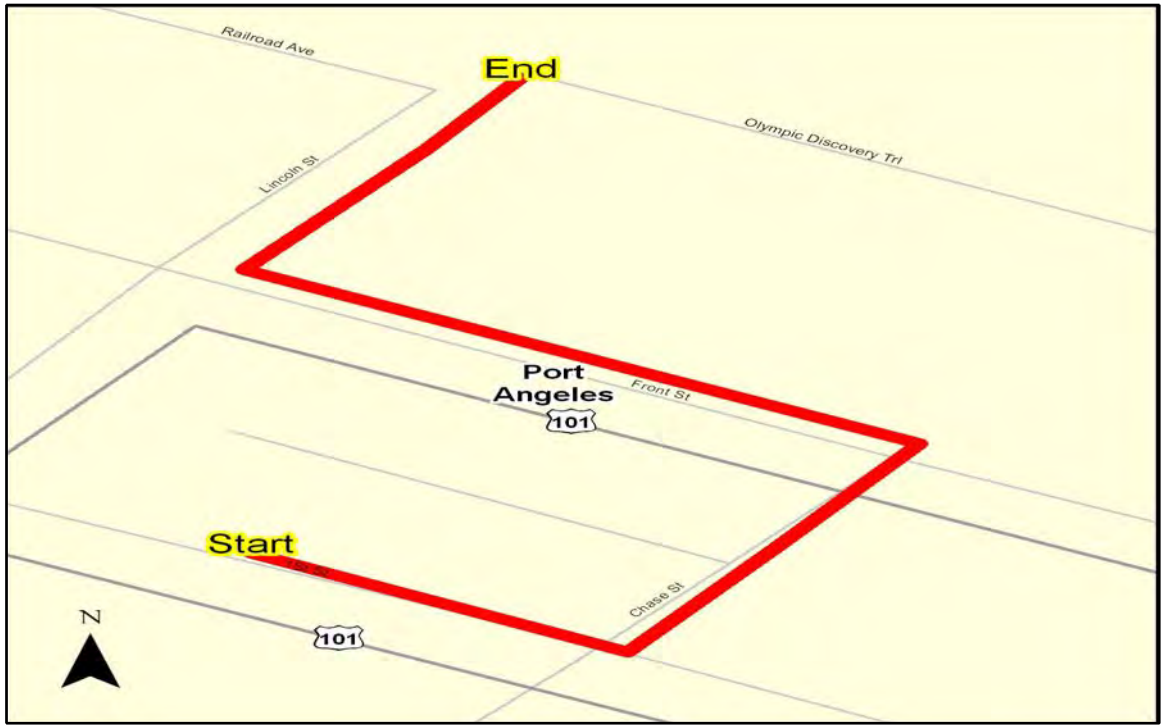
Status: Visited and Not Tested 08/16/2007

Image-1021: Peabody creek, overview

No Image Available

Site Contact Information

No contact information available.



Closest Address:

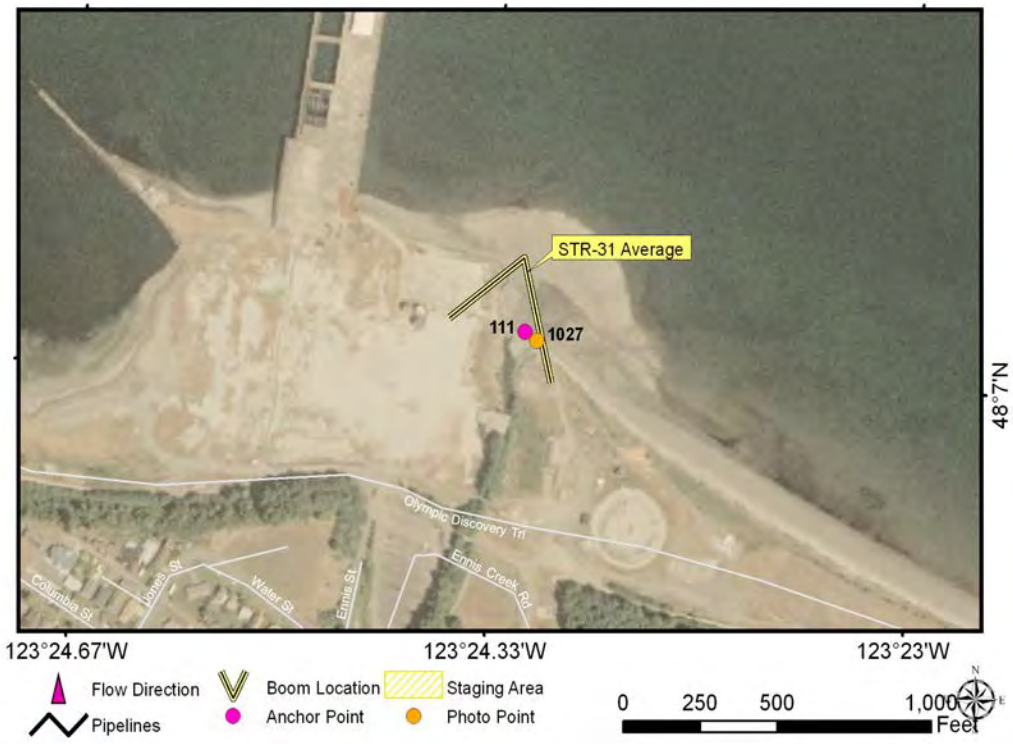
N. Laurel St. and Railroad Ave., Port Angeles, 98363

Driving Directions:

Depart Port Angeles
1. Go South East on US 101 (E 1st St) toward S Chase St/N Chase St (0.06 Mile(s))
2. Turn left on N Chase St (0.07 Mile(s))
3. Turn left on US 101 (E Front St) (0.1 Mile(s))
4. Make sharp right on N Lincoln St (0.07 Mile(s))

Arrive at Point (N 48° 7.238' / W 123° 25.766'), on the left

Site Lat/Long:	N 48° 7.057' / W 123° 24.313', Sector Map STR-7
Strategy Objective:	Exclusion - keep oil out of Ennis Creek
Implementation:	Deploy boom across the creek mouth at an angle to tidal push. If oil is present, deploy snare-boom along beach.
Site Safety Note:	At high flow do not deploy strategies.
Field Notes:	24-hr access from shoreside (through ITT Rayonier PA Site) can be obtained through the Port Angeles fire department during emergency Otherwise access by water from Port Angeles.
Resources Targeted:	salmonids (anadromous)
Fixed Anchors:	111: N 48° 7.023' / W 123° 24.309', Water Depth 0ft, east bank near bridge, adjust as needed
Watercourse Description:	Creek, with tidal influence, bridge crosses creek near mouth, Field Visit Width ~ 40ft, gravel, sand, mud



Suggested Equipment	
Quantity	**Description**
400 ft	B3 - River Boom, or other appropriate type
400 ft	Snare Boom
4 each	Stake(s)
Suggested Personnel	
2	Laborer (s)

Status: New - visited but not tested 07/24/2007

Image-1027: Ennis Creek - bridge near mouth

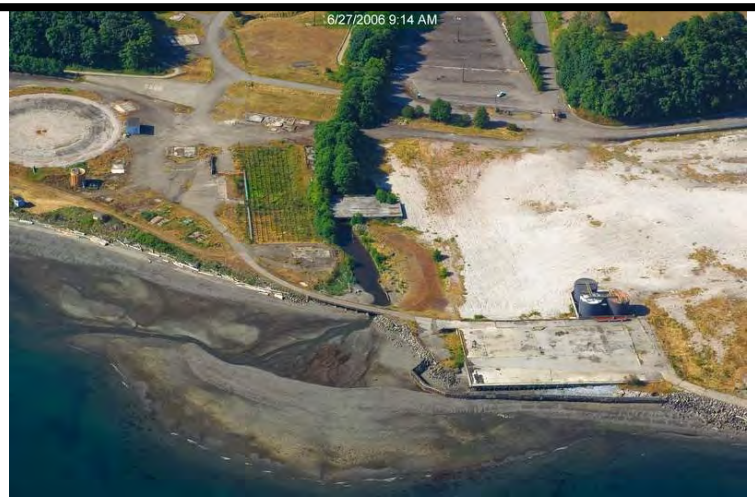
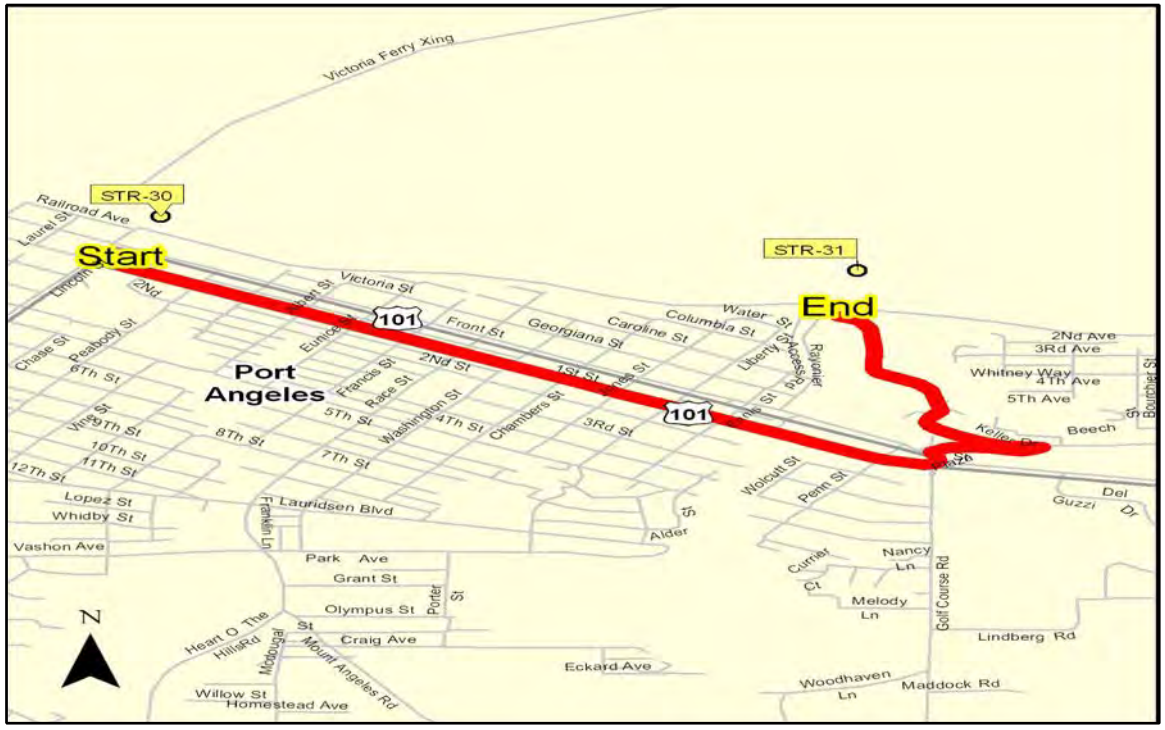


Image-1068: Ennis overview

Site Contact Information

High Priority - contact immediate or before entering:
Anderson Rayonier Ennis Creek, (W) 360 457 2329, (H) 912 427 5354, has key to gate for Ennis creek
Dubuc Ken, Port Angeles fire department, (W) 360 417-4680, has key to gate for Ennis creek.



Closest Address:

Port Angeles

Driving Directions:

Depart Port Angeles
1. Go East on US 101 (E 1st St) toward S Chase St/N Chase St (1.57 Mile(s))
2. Turn right on E Ennis Cutoff Rd (0.19 Mile(s))
3. Make sharp left on E Ennis Creek Rd (0.71 Mile(s))
Arrive at Point (N 48° 7.057' / W 123° 24.313'), on the right

Site Lat/Long:	N 48° 6.953' / W 123° 21.133', Sector Map STR-7
Strategy Objective:	Exclusion, Collection - keep oil out of Morse creek
Implementation:	Deploy boom at an angle to tidal push near golf course bridge. If oil collects this area is vac truck accessible.
Site Safety Note:	At high flow do not deploy strategies.
Field Notes:	Boat access from Port Angeles. Vehicle access from Highway 101 at Mile Post 251.7 to Strait View Drive. Resident parking area at end of road. Vac truck could access this area via golf course.
Resources Targeted:	salmonids (anadromous), waterfowl, shorebirds
Fixed Anchors:	112: N 48° 6.945' / W 123° 21.146', Water Depth 0ft, west corner of golf course bridge, adjust as needed
Watercourse Description:	Creek, with tidal influence, this is the upper location, Field Visit Width ~ 50ft, Field Visit Depth ~ 5ft, gravel, rock

Suggested Equipment	
Quantity	**Description**
100 ft	B3 - River Boom, or other appropriate type
4 each	Stake(s)
1 each	Vac Truck(s)
Suggested Personnel	
2	Laborer (s)

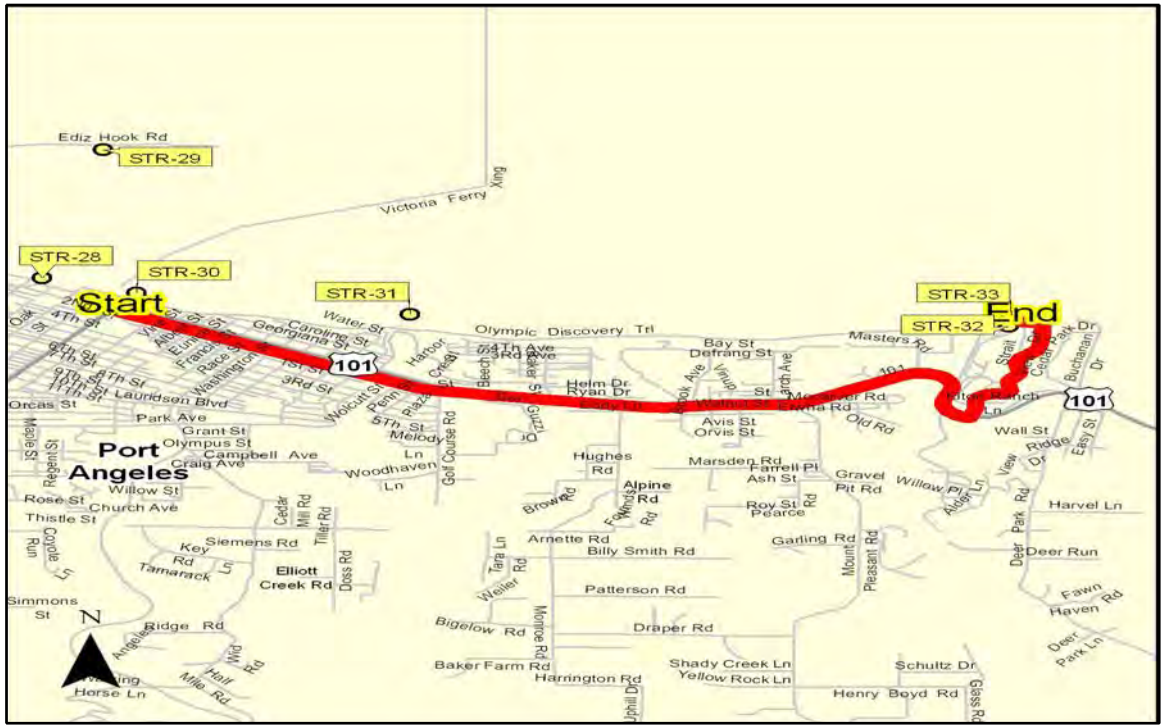
Status: New - visited but not tested 07/24/2007

Image-1029: Morse Creek upper anchor point

Image-1069: Morse Creek overview

Site Contact Information

No contact information available.

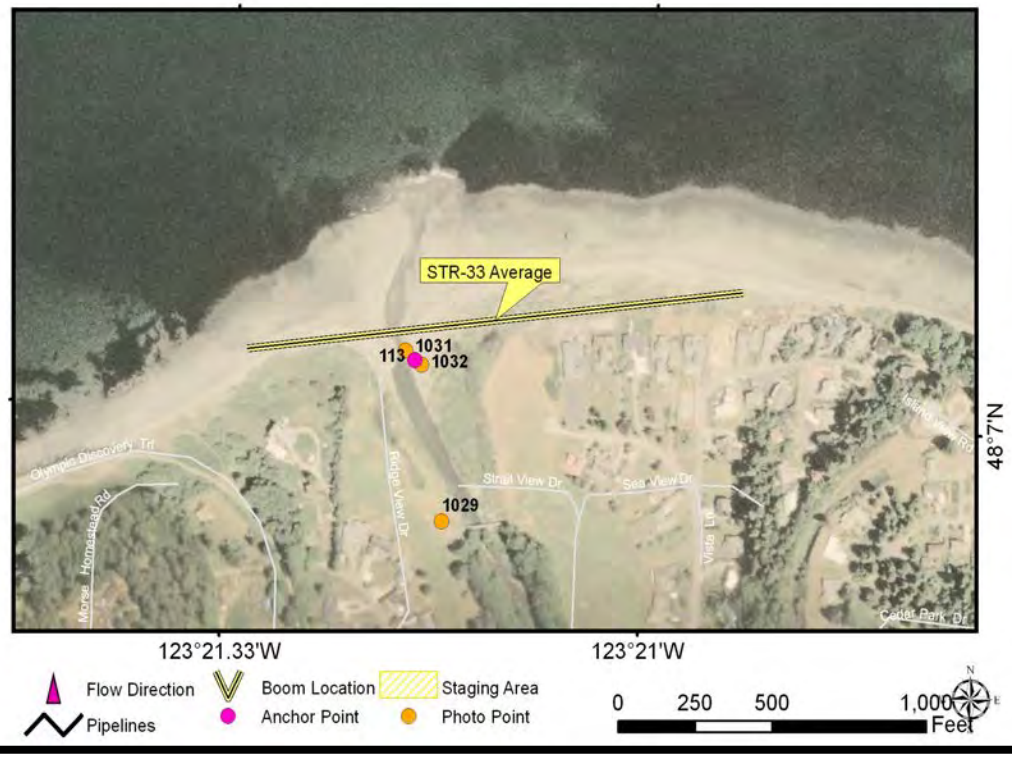


Closest Address:

Driving Directions:

Depart Port Angeles
1. Go East on US 101 (E 1st St) toward S Race St (4.16 Mile (s))
2. Turn left on Strait View Dr (1.14 Mile(s))
Arrive at Point (N 48° 6.953' / W 123° 21.133'), on the left

Site Lat/Long:	N 48° 7.049' / W 123° 21.122', Sector Map STR-7
Strategy Objective:	Exclusion - keep oil out of the creek mouth.
Implementation:	Deploy boom across the creek mouth at an angle to tidal push. If heavy seas prevent deployment as described, back up into the creek mouth as necessary. If oil is present, deploy snare-boom along beach.
Site Safety Note:	At high flow do not deploy strategies.
Field Notes:	Boat access from Port Angeles. Vehicle access from Highway 101 at Mile Post 251.7 to Strait View Drive. Resident parking area at end of road.
Resources Targeted:	shorebirds, salmonids (anadromous), waterfowl
Fixed Anchors:	113: N 48° 7.028' / W 123° 21.184', Water Depth 0ft, east bank, adjust as needed
Watercourse Description:	Creek, with tidal influence, at extreme tide whole area can be underwater, Field Visit Width ~ 50ft, sand, mud, gravel



Suggested Equipment	
Quantity	**Description**
400 ft	B3 - River Boom, or other appropriate type
400 ft	Snare Boom
6 each	Stake(s)
Suggested Personnel	
2	Laborer (s)

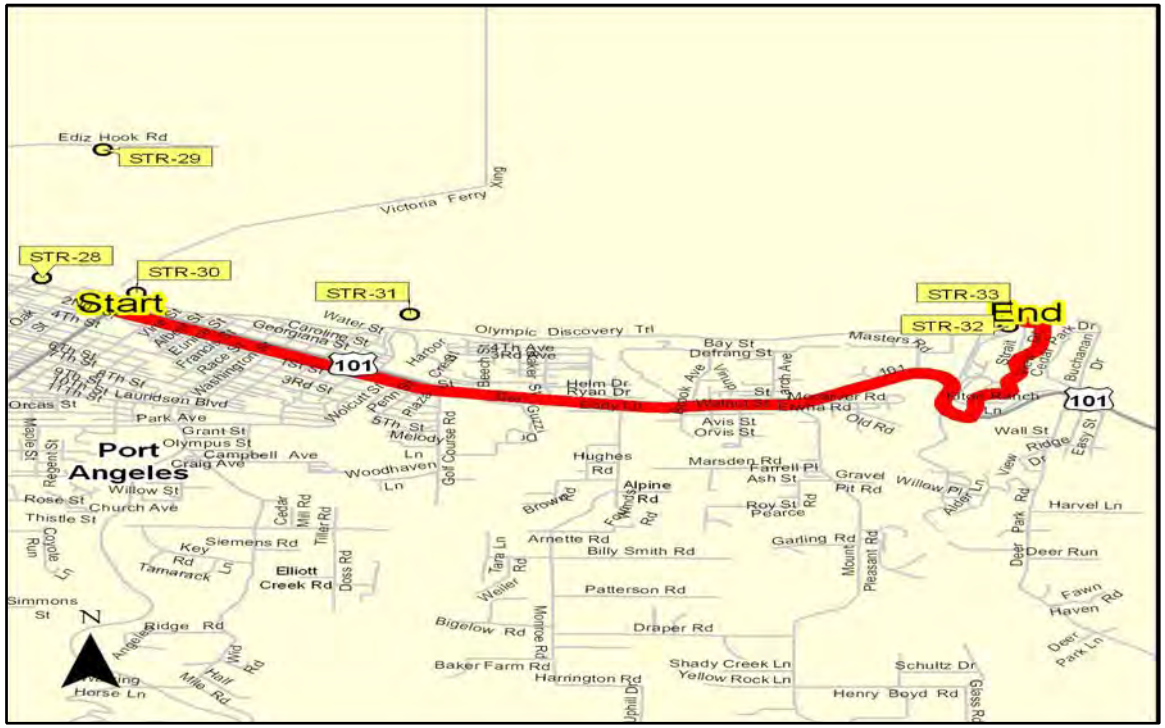
Status: Visited and Not Tested 07/24/2007

Image-1032: Morse Creek east bank anchor point

Image-1031: Morse Creek, mouth

Site Contact Information

No contact information available.



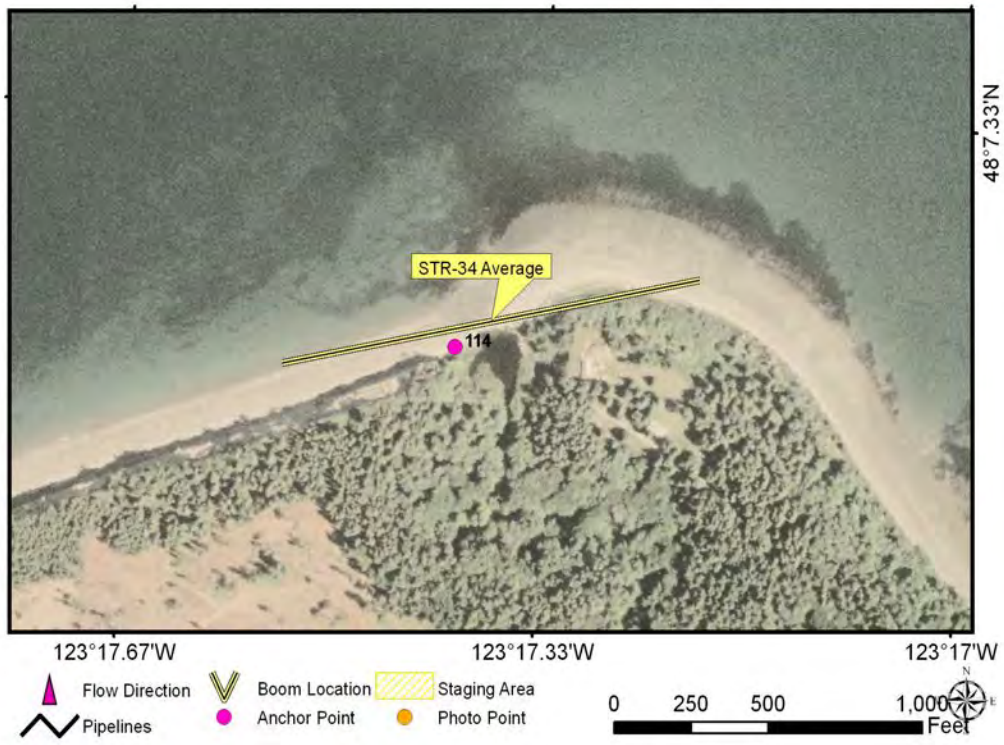
Closest Address:

1189 Strait View Dr., Port Angeles, 98363

Driving Directions:

Depart Port Angeles
1. Go East on US 101 (E 1st St) toward S Race St (4.16 Mile (s))
2. Turn left on Strait View Dr (1.12 Mile(s))
Arrive at 1189 Strait View Dr., Port Angeles, WA, 98363, on the right

Site Lat/Long:	N 48° 7.229' / W 123° 17.374', Sector Map STR-7
Strategy Objective:	Exclusion - keep oil out of the creek mouth.
Implementation:	Deploy boom across the creek mouth at an angle to tidal push. If oil is present, deploy snare-boom along beach.
Site Safety Note:	At high flow do not deploy strategies.
Field Notes:	Boat access from Port Angeles.
Resources Targeted:	salmonids (anadromous)
Fixed Anchors:	114: N 48° 7.216' / W 123° 17.402', Water Depth 0ft, west bank, adjust as needed
Watercourse Description:	Creek, with tidal influence, Field Visit Width ~ 20ft



Suggested Equipment	
Quantity	**Description**
200 ft	B3 - River Boom, or other appropriate type
1 each	Jon Boat(s)
200 ft	Snare Boom
4 each	Stake(s)
Suggested Personnel	
2	Laborer (s)

Status: Visited and Not Tested 07/24/2007

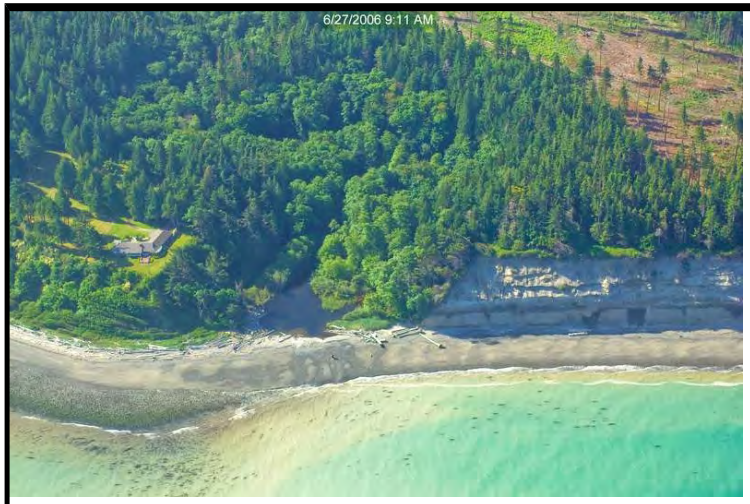
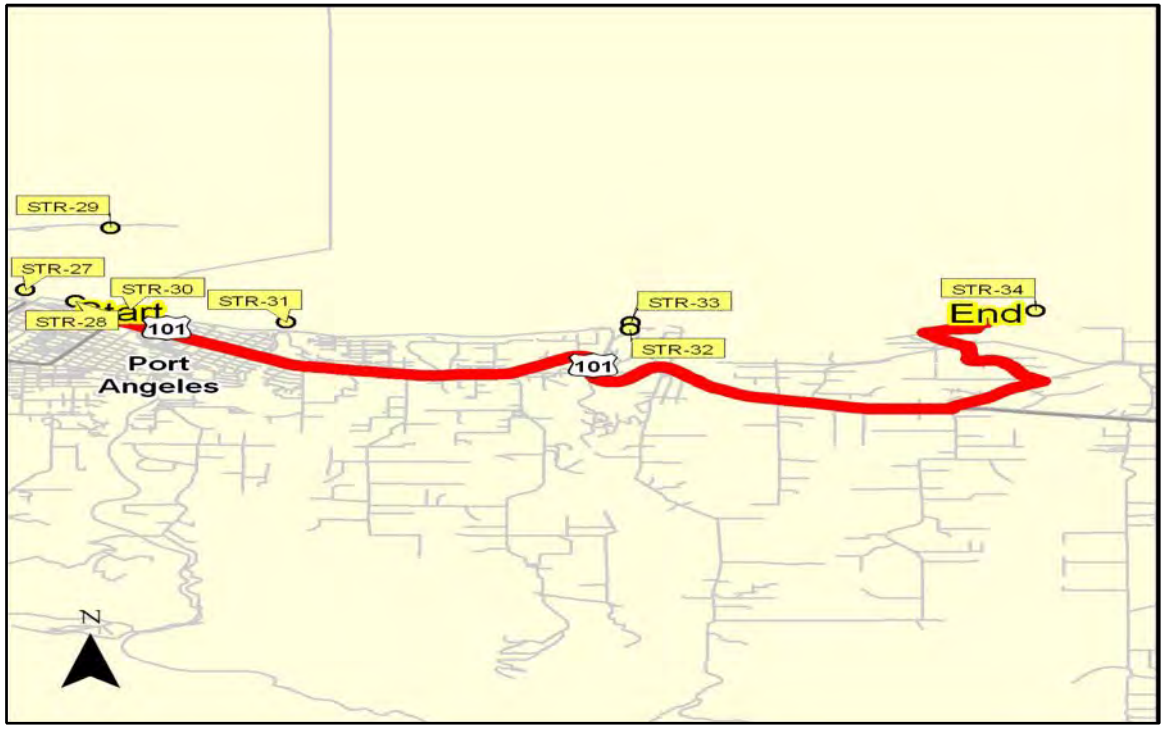


Image-1033: Siebert Creek , overview

No Image Available

Site Contact Information

No contact information available.



Closest Address:

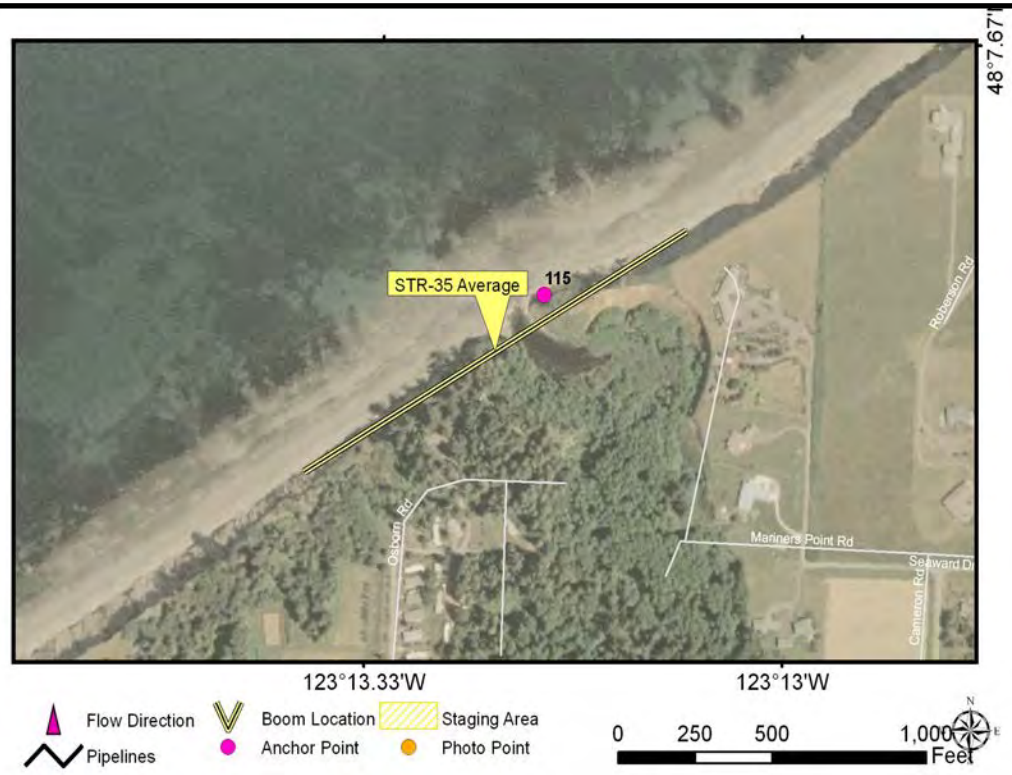
3098 Bluff Dr., Port Angeles, 98362

Driving Directions:

Depart Port Angeles
1. Go East on US 101 (E 1st St) toward S Race St (6.93 Mile (s))
2. Turn left on Old Olympic Hwy (Agnew Cutoff) (0.81 Mile (s))
3. Make sharp left on Lemmon Rd (0.05 Mile(s))
4. Continue on Gasman Rd (1.08 Mile(s))
5. Turn right on Juan De Fuca Way (0.22 Mile(s))
6. Make sharp right on E Bluff Dr (The Bluff) (0.37 Mile(s))
7. Turn left on Montrose Pl (0.07 Mile(s))
8. Turn right on E Bluff Dr (The Bluff) (0.08 Mile(s))

Arrive at 3098 Bluff Dr., Port Angeles, WA, 98362, on the right

Site Lat/Long:	N 48° 7.503' / W 123° 13.227', Sector Map STR-8
Strategy Objective:	Exclusion - keep oil out of the creek mouth.
Implementation:	Deploy boom across the creek mouth at an angle to tidal push. If oil is present, deploy snare-boom along beach.
Site Safety Note:	At high flow do not deploy strategies.
Field Notes:	Boat access from Port Angeles.
Resources Targeted:	salmonids (anadromous)
Fixed Anchors:	115: N 48° 7.533' / W 123° 13.199', Water Depth 0ft, west bank, adjust as needed
Watercourse Description:	Creek, with tidal influence, Field Visit Width ~ 80ft



Suggested Equipment	
Quantity	**Description**
200 ft	B3 - River Boom, or other appropriate type
200 ft	Snare Boom
4 each	Stake(s)
Suggested Personnel	
2	Laborer (s)

Status: Visited and Not Tested 07/24/2007

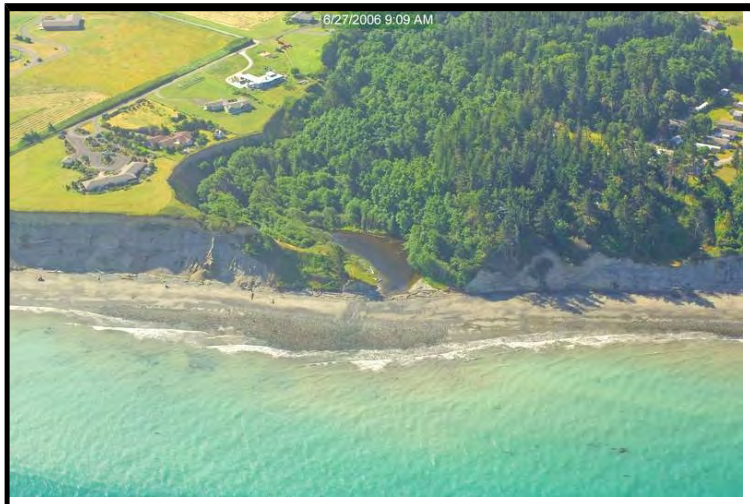
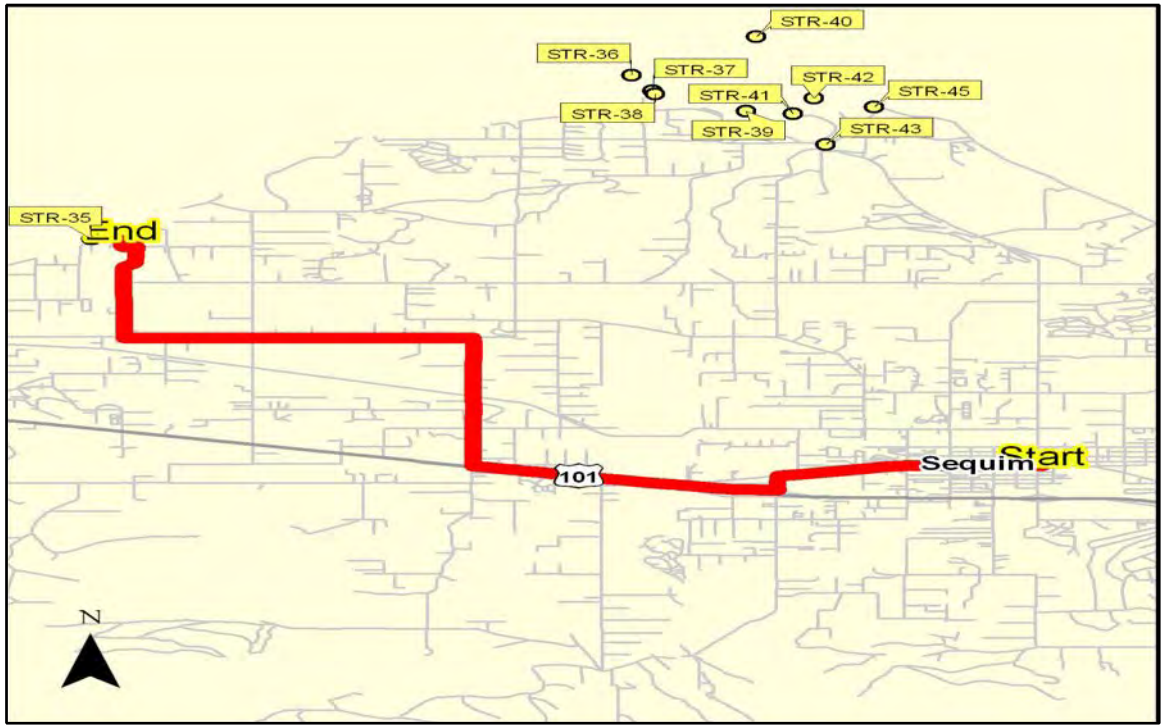


Image-1034: McDonald overview

No Image Available

Site Contact Information

No contact information available.



Closest Address:

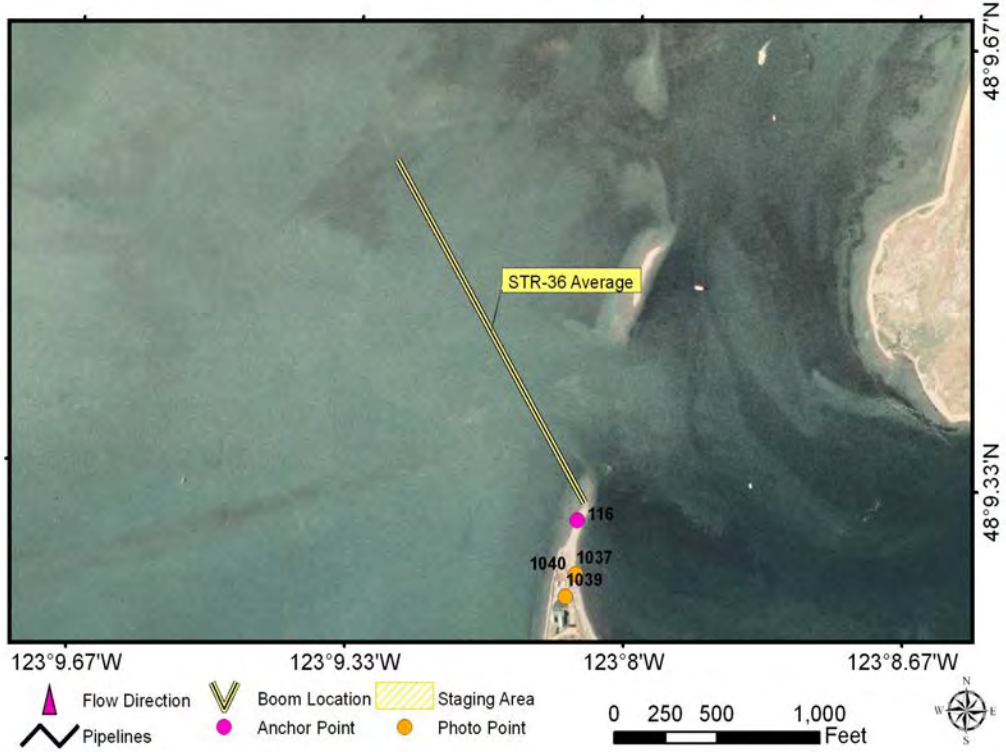
29 Mariners Point Rd., Port Angeles, 98382

Driving Directions:

Depart Sequim
1. Go West on E Washington St toward W Washington St/S Sequim Ave/N Sequim Ave (1.54 Mile(s))
2. Turn left on River Rd (0.19 Mile(s))
3. Turn right onto ramp and go West on US 101 (1.79 Mile(s))
4. Turn right on Carlsborg Rd (1.77 Mile(s))
5. Turn left on Old Olympic Hwy (2.01 Mile(s))
6. Turn right on Cameron Rd (Zwiekorst Rd) (1.3 Mile(s))
7. Turn left on Mariners Point Rd (0.18 Mile(s))

Arrive at 29 Mariners Point Rd., Port Angeles, WA, 98382, on the left

Site Lat/Long:	N 48° 9.463' / W 123° 9.187', Sector Map STR-8
Strategy Objective:	Deflection - keep oil out of Dungeness Bay.
Implementation:	Deploy boom from near the east side of the end of Cline spit. Angle the boom towards the 'sand island' about 600 feet off shore from the spit to the northwest. If oil is spotted in the area this boom could be used for enhanced skimming once a skimmer arrives.
Site Safety Note:	Private duck hunting club near this area.
Field Notes:	Jon Boats can launch from the Cline Spit County Park boat ramp.
Resources Targeted:	public lands/facilities, marine birds, salmonids (anadromous), sensitive habitat, shellfish, shorebirds, special protection area, waterfowl
Fixed Anchors:	116: N 48° 9.302' / W 123° 9.059', Water Depth 0ft, east side of Cline Spit near the tip, adjust as needed
Watercourse Description:	Bay, during ebb and flow strong current in this area



Suggested Equipment	
Quantity	**Description**
200 ft	1/2 poly line
5 each	Anchor(s) for strong currents - ie. SARCA
600 ft	B3 - Contractor Boom
4 each	Stake(s)
Suggested Personnel	
1	Boat Operator (s)
2	Laborer (s)

Status: Visited and Tested 10/04/2007

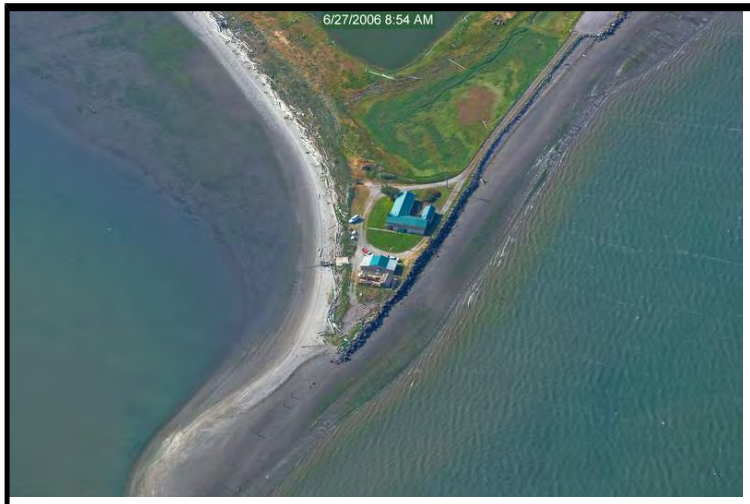
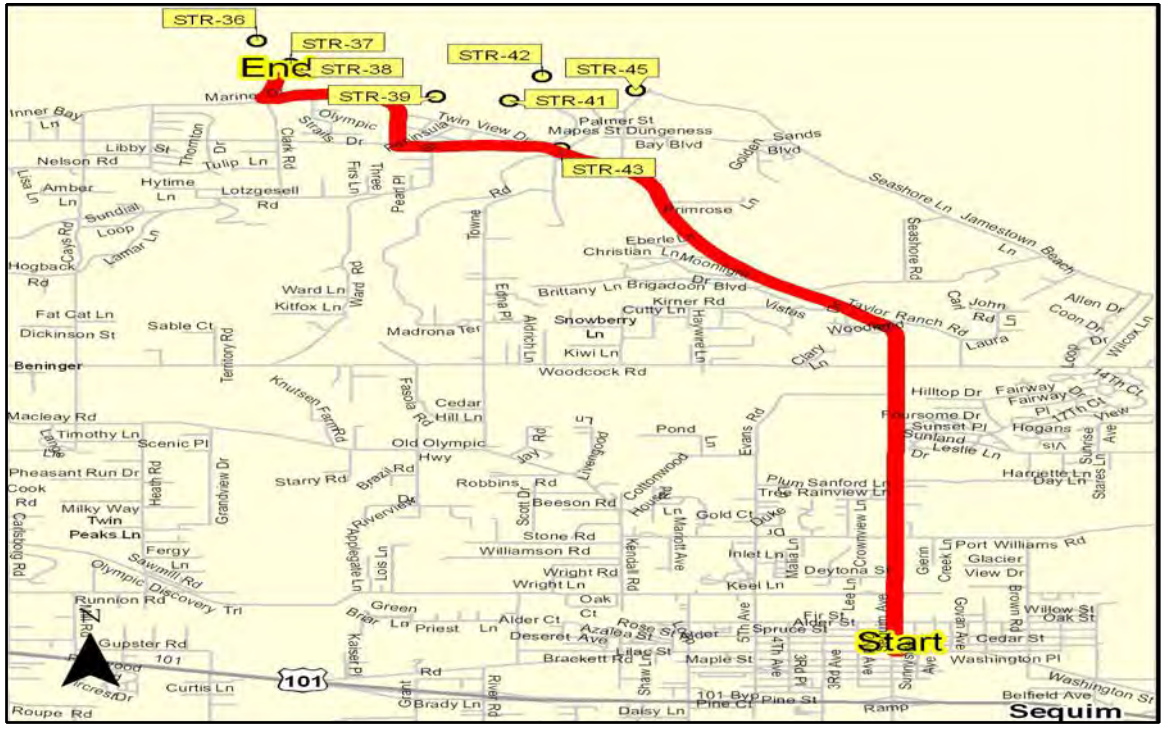


Image-1035: Cline Spit tip, overview, San Juan club with blue roof

No Image Available

Site Contact Information

High Priority - contact immediate or before entering:
San Juan Club, (W) 360 638-4046, duck club on Cline Spit



Closest Address:

199 Cline Spit Rd., Sequim, 98382

Driving Directions:

Depart Sequim
1. Go West on E Washington St toward W Washington St/S Sequim Ave/N Sequim Ave (0.02 Mile(s))
2. Turn right on N Sequim Ave (1.01 Mile(s))
3. Continue on Sequim Dungeness Way (3.61 Mile(s))
4. Continue on E Anderson Rd (0.9 Mile(s))
5. Turn right on Marine Dr (0.85 Mile(s))
6. Bear right on Cline Spit Rd (0.25 Mile(s))

Arrive at 199 Cline Spit Rd., Sequim, WA, 98382, on the left

Site Lat/Long:	N 48° 9.283' / W 123° 9.031', Sector Map STR-8
Strategy Objective:	Collection - keep oil out of Dungeness Bay
Implementation:	Deploy this strategy down current from the primary strategy to collect any oil which is entrapped. Deploy at an angle to the current and use anchor to maintain effective angle.
Site Safety Note:	Private duck club in area.
Field Notes:	Jon Boats can launch from the Cline Spit County Park boat ramp.
Resources Targeted:	waterfowl, special protection area, sensitive habitat, shorebirds, salmonids (anadromous), public lands/facilities
Fixed Anchors:	118: N 48° 9.272' / W 123° 9.061', Water Depth 0ft, east side Cline Spit, adjust as needed
Watercourse Description:	Bay, ebb and flow result in strong currents

Suggested Equipment	
Quantity	**Description**
1 each	Anchor(s) for strong currents - ie. SARCA
100 ft	B3 - Contractor Boom
1 each	Stake(s)
Suggested Personnel	
1	Boat Operator (s)
1	Laborer (s)

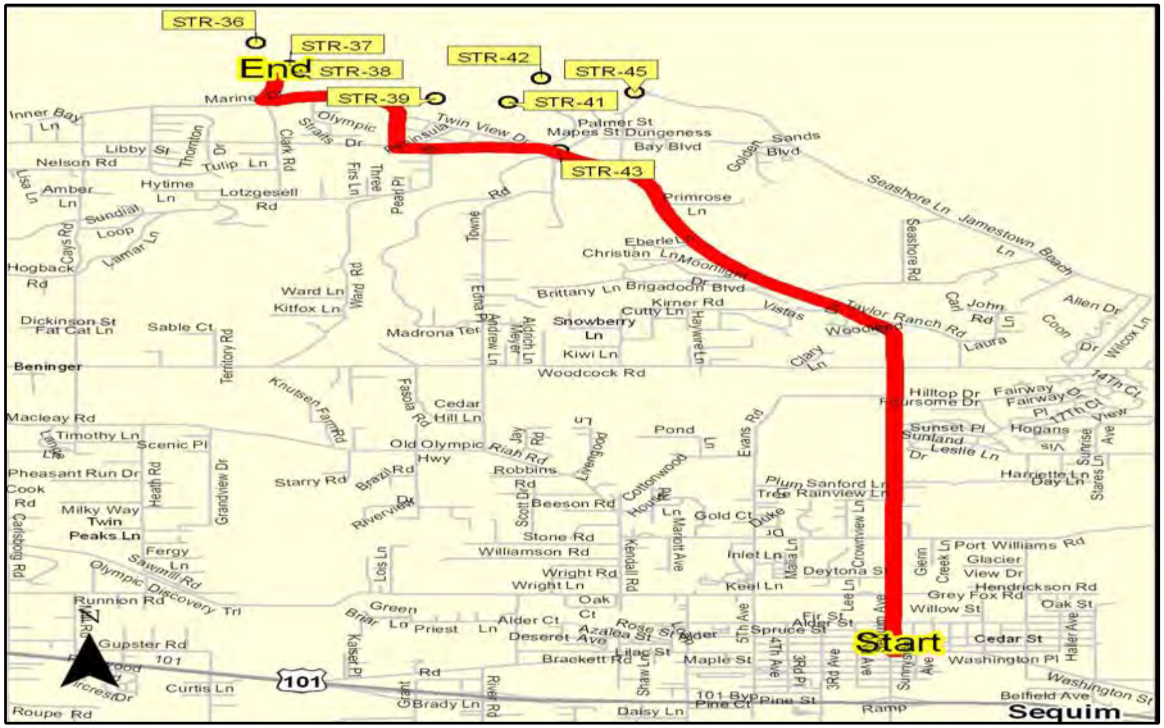
Status: New - visited but not tested 10/04/2007

Image-1037: Cline spit anchor point

Image-1036: Cline Spit, east side overview

Site Contact Information

High Priority - contact immediate or before entering:
San Juan Club, (W) 360 638-4046, duck club on Cline Spit



Closest Address:

Driving Directions:

Depart Sequim
1. Go West on E Washington St toward W Washington St/S Sequim Ave/N Sequim Ave (0.02 Mile(s))
2. Turn right on N Sequim Ave (1.01 Mile(s))
3. Continue on Sequim Dungeness Way (3.61 Mile(s))
4. Continue on E Anderson Rd (0.9 Mile(s))
5. Turn right on Marine Dr (0.85 Mile(s))
6. Bear right on Cline Spit Rd (0.26 Mile(s))

Arrive at Point (N 48° 9.283' / W 123° 9.031'), on the right

Site Lat/Long:	N 48° 9.244' / W 123° 9.007', Sector Map STR-8
Strategy Objective:	Collection - keep oil out of Dungeness Bay and collect oil on Cline Spit.
Implementation:	Deploy boom from the east bank at an angle to the tidal push. Use anchors and lines as needed to maintain an effective angle. May want to use old pilings for shoreline anchor point.
Site Safety Note:	Private duck club in area.
Field Notes:	Jon Boats can launch from the Cline Spit County Park boat ramp.
Resources Targeted:	waterfowl, habitat restoration/mitigation site, shorebirds, sensitive habitat, salmonids (anadromous), public lands/facilities
Fixed Anchors:	117: N 48° 9.250' / W 123° 9.060', Water Depth 0ft, east bank, adjust as needed
Watercourse Description:	Bay, ebb and flow results in strong currents,

Suggested Equipment	
Quantity	**Description**
200 ft	1/2 poly line
3 each	Anchor(s) for strong currents - ie. SARCA
600 ft	B3 - Contractor Boom
4 each	Stake(s)
1 each	Vac Truck(s)
Suggested Personnel	
1	Boat Operator (s)
2	Laborer (s)

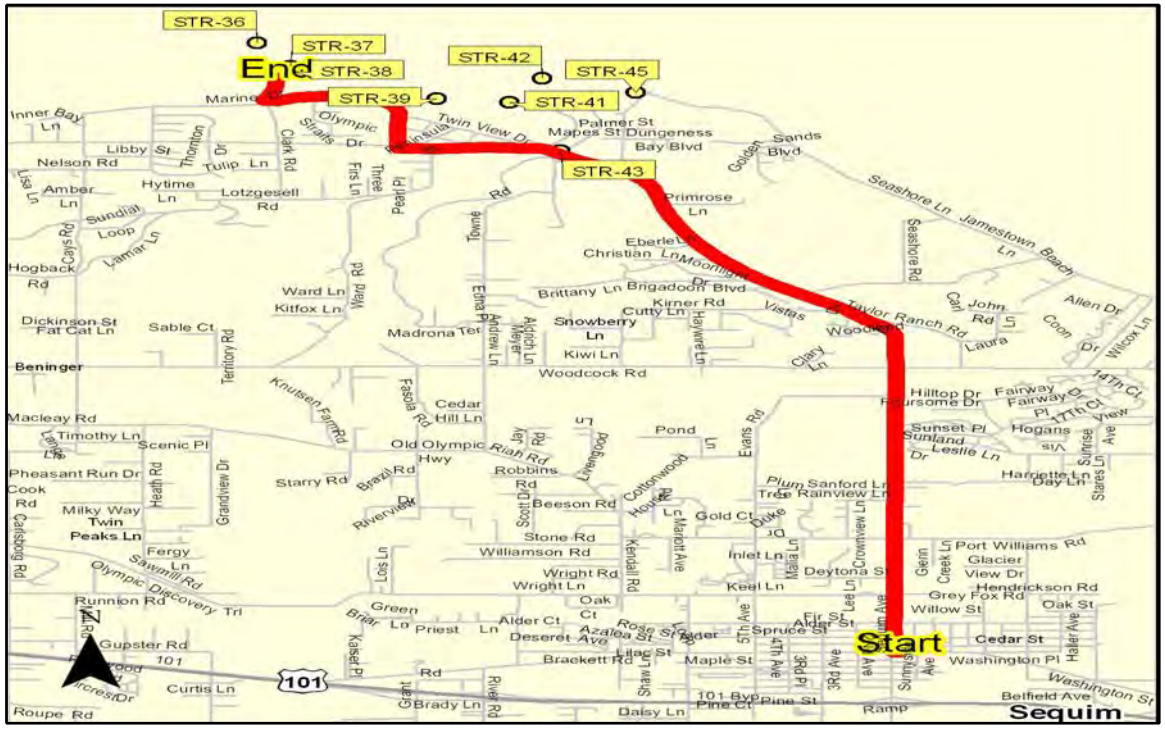
Status: Visited and Tested 10/04/2007

Image-1039: Cline Spit , vac truck site

Image-1040: Cline Spit, anchor point

Site Contact Information

High Priority - contact immediate or before entering:
San Juan Club, (W) 360 638-4046, duck club on Cline Spit



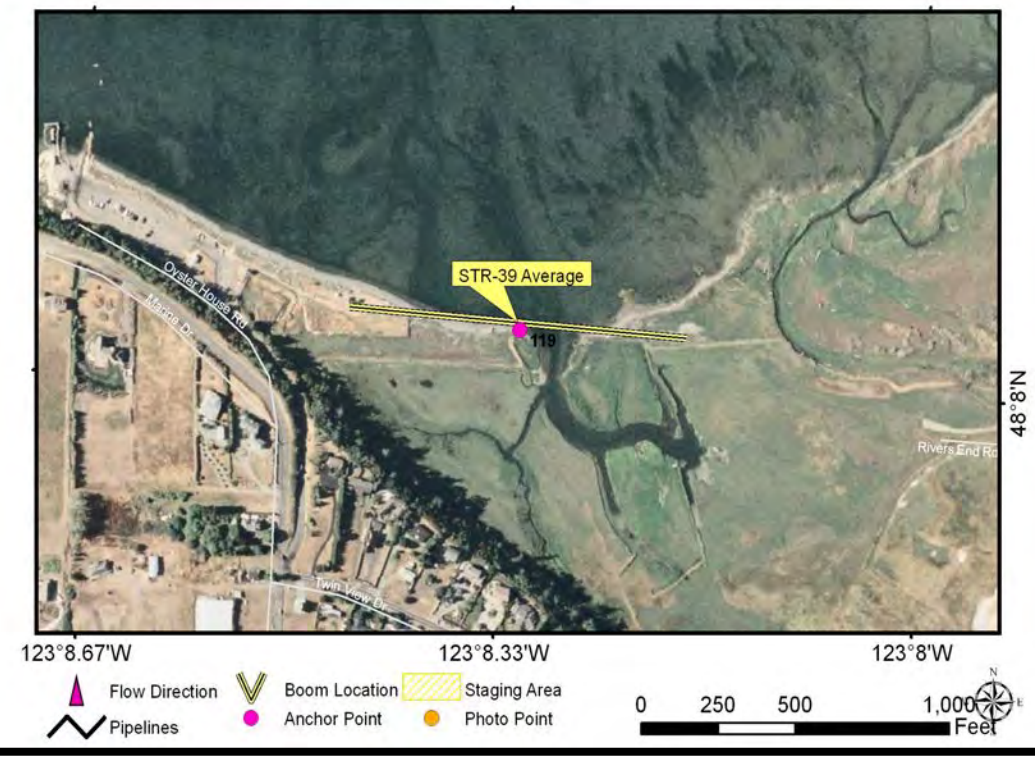
Closest Address:

Driving Directions:

Depart Sequim
1. Go West on E Washington St toward W Washington St/S Sequim Ave/N Sequim Ave (0.02 Mile(s))
2. Turn right on N Sequim Ave (1.01 Mile(s))
3. Continue on Sequim Dungeness Way (3.61 Mile(s))
4. Continue on E Anderson Rd (0.9 Mile(s))
5. Turn right on Marine Dr (0.85 Mile(s))
6. Bear right on Cline Spit Rd (0.26 Mile(s))

Arrive at Point (N 48° 9.244' / W 123° 9.007'), on the right

Site Lat/Long:	N 48° 9.059' / W 123° 8.327', Sector Map STR-8
Strategy Objective:	Exclusion - keep oil out of the slough.
Implementation:	Deploy boom across the slough mouth at an angle to tidal push. Boom can be deployed from land from the Oyster House boat ramp parking area (the slough is a short distance to the east of the lot). If oil is present, deploy snare-boom along beach.
Site Safety Note:	Poor footing can lead to slips, trips and falls. Area can have high mosquito concentrations.
Field Notes:	Boat access from the Oyster House ramp. Vehicle access to the Oyster House boat ramp from Highway 101 in Sequim to Sequim-Dungeness Way to Marine Drive.
Resources Targeted:	waterfowl, shorebirds, sensitive habitat, salmonids (anadromous)
Fixed Anchors:	119: N 48° 9.029' / W 123° 8.319', Water Depth 0ft, east bank of slough, adjust as needed
Watercourse Description:	Slough, many fingered slough, Field Visit Width ~ 180ft,



Suggested Equipment	
Quantity	**Description**
300 ft	B3 - River Boom, or other appropriate type
300 ft	Snare Boom
4 each	Stake(s)
Suggested Personnel	
2	Laborer (s)

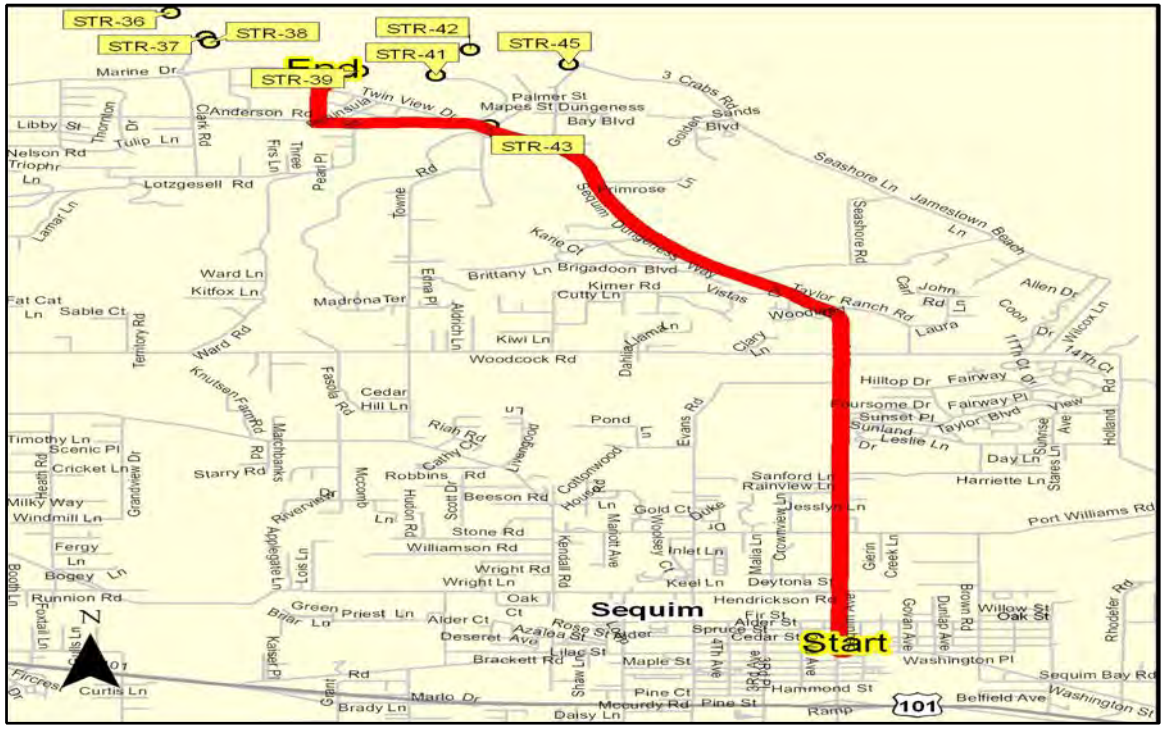
Status: Visited and Not Tested 10/07/2007

Image-1041: Old Town Slough, overview

No Image Available

Site Contact Information

No contact information available.



Closest Address:

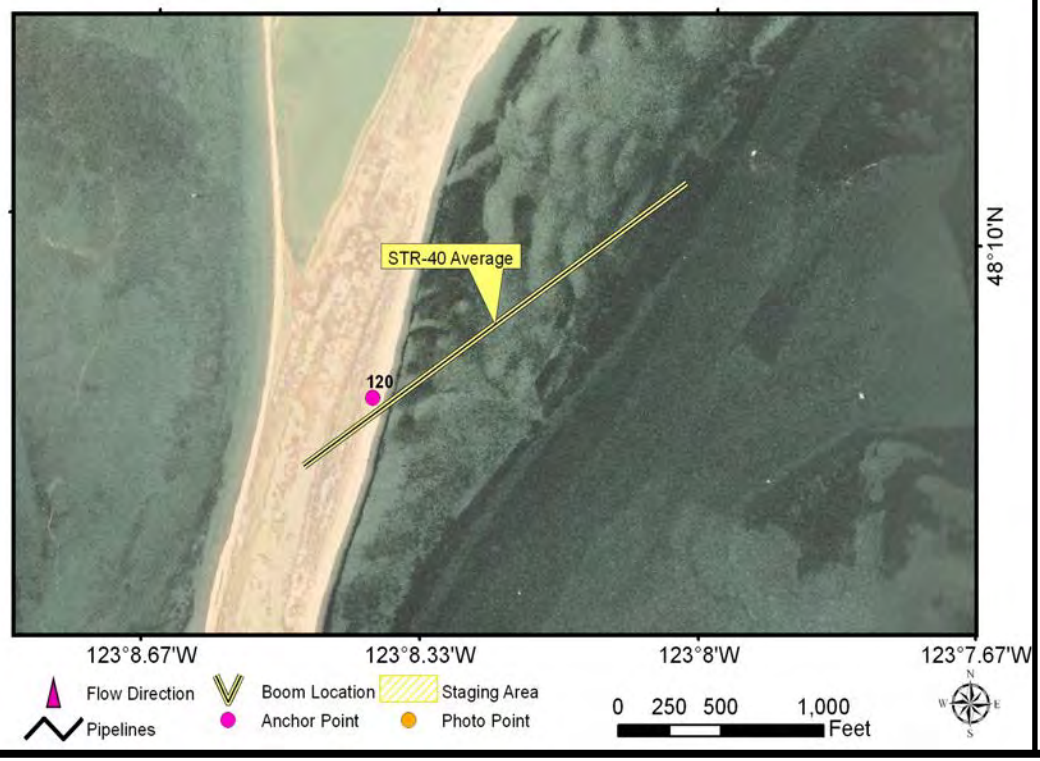
148 Oyster House Rd., Sequim, 98382

Driving Directions:

Depart Sequim
1. Go West on E Washington St toward W Washington St/S Sequim Ave/N Sequim Ave (0.02 Mile(s))
2. Turn right on N Sequim Ave (1.01 Mile(s))
3. Continue on Sequim Dungeness Way (3.61 Mile(s))
4. Continue on E Anderson Rd (0.9 Mile(s))
5. Turn right on Marine Dr (0.29 Mile(s))
6. Turn right on Oyster House Rd (0.1 Mile(s))

Arrive at 148 Oyster House Rd., Sequim, WA, 98382, on the right

Site Lat/Long:	N 48° 9.935' / W 123° 8.260', Sector Map STR-8
Strategy Objective:	Collection - keep oil out of Dungeness Bay
Implementation:	Deploy boom from the east bank at an angle to the tidal push. Use anchors and lines as needed to maintain an effective angle.
Site Safety Note:	High winds can make waters rough even in this protected area.
Field Notes:	Launch work boat from Cline Spit County Park.
Resources Targeted:	waterfowl, shorebirds, sensitive habitat, salmonids (anadromous), public lands/facilities
Fixed Anchors:	120: N 48° 9.869' / W 123° 8.398', Water Depth 0ft, bank on east side of spit, adjust as needed
Watercourse Description:	Bay, ebb and flow result in relatively strong currents along this shoreline,



Suggested Equipment	
Quantity	**Description**
300 ft	1/2 poly line
2 each	Anchor(s) for strong currents - ie. SARCA
500 ft	B3 - Contractor Boom
1 each	Jon Boat(s)
4 each	Stake(s)
Suggested Personnel	
1	Boat Operator (s)
3	Laborer (s)

Status: New - visited and tested 10/04/2007

Image-1042: Dungeness overview

No Image Available

Site Contact Information

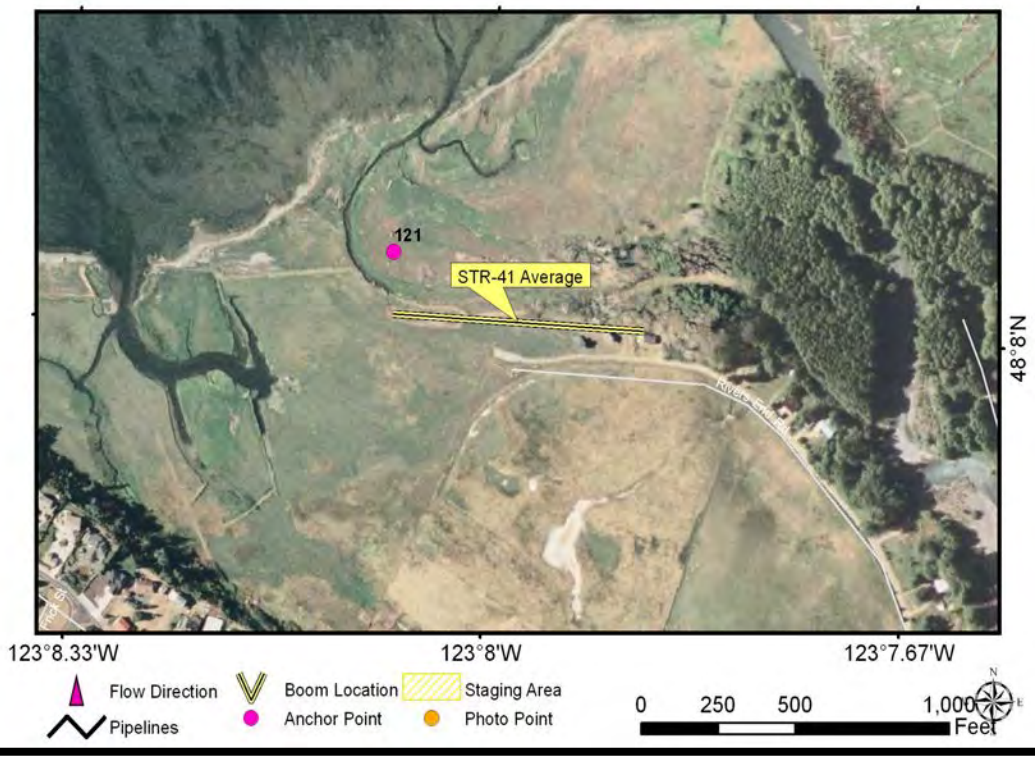
High Priority - contact immediate or before entering:
Dungeness National Wildlife Refuge, (W) 360 971 6000, (H) 360 457-8451

Closest Address:

Driving Directions:

Cannot Drive to Site

Site Lat/Long:	N 48° 9.005' / W 123° 7.978', Sector Map STR-8
Strategy Objective:	Exclusion - keep oil out of the Dungeness River.
Implementation:	Deploy boom across the west channel of the Dungeness River as near to the mouth as possible. The position of the mouth is variable due to shifting delta sediments.
Site Safety Note:	Area can have high mosquito concentrations.
Field Notes:	Boat access from the Oyster House ramp, the John Wayne Marina, or Port Angeles.
Resources Targeted:	salmonids (anadromous), waterfowl, shorebirds, sensitive habitat
Fixed Anchors:	121: N 48° 9.038' / W 123° 8.078', Water Depth 0ft, east bank, the actual location will be dependent on real time conditions, adjust as needed.
Watercourse Description:	River side channel



Suggested Equipment	
Quantity	**Description**
200 ft	B3 - Contractor Boom
4 each	Stake(s)
Suggested Personnel	
2	Laborer (s)

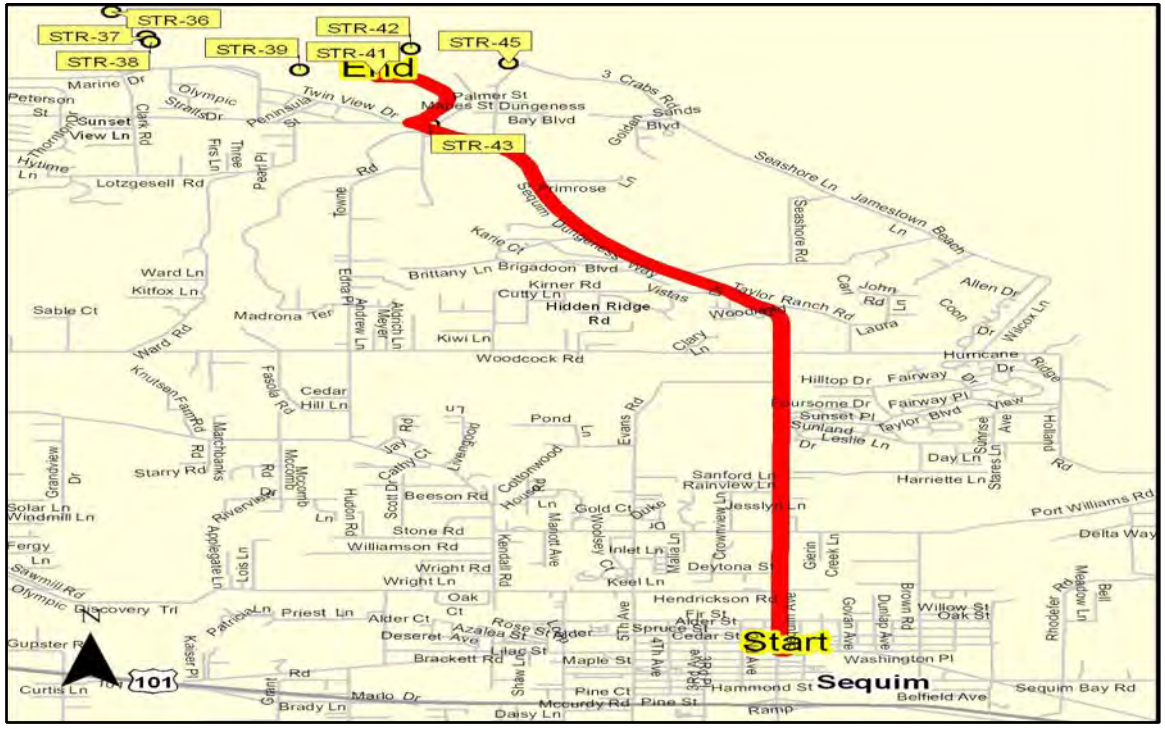
Status: Visited and Not Tested 10/16/2007

Image-1044: Dungeness River west channel, is on the left, overview

No Image Available

Site Contact Information

No contact information available.



Closest Address:

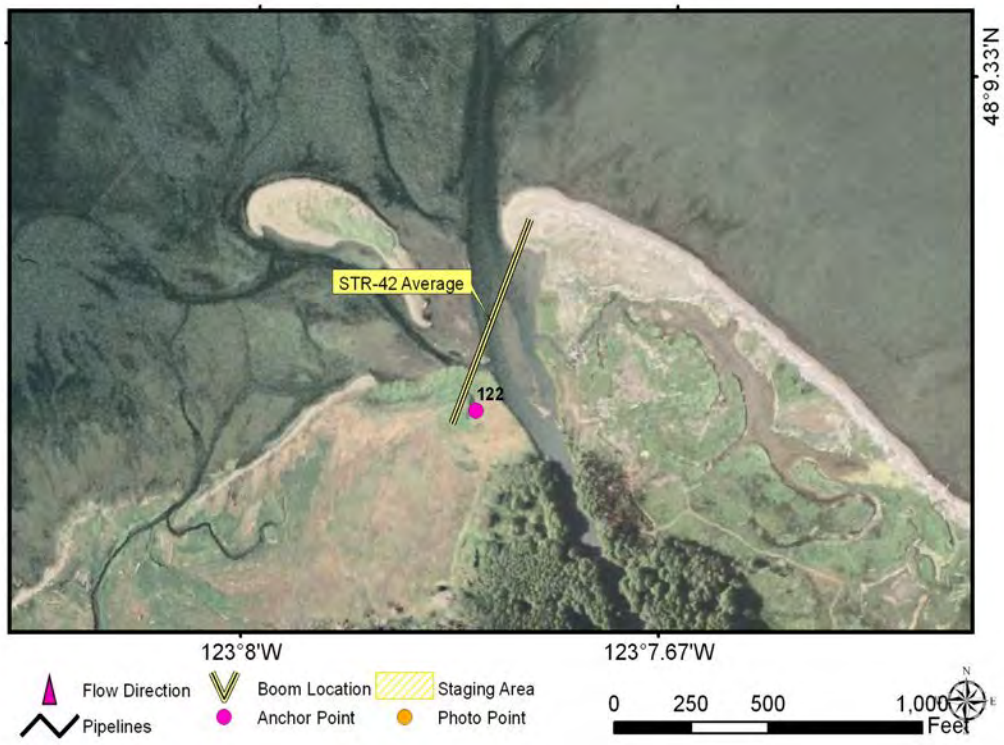
598 Rivers End Rd., Sequim, 98382

Driving Directions:

Depart Sequim
1. Go West on E Washington St toward W Washington St/S Sequim Ave/N Sequim Ave (0.02 Mile(s))
2. Turn right on N Sequim Ave (1.01 Mile(s))
3. Continue on Sequim Dungeness Way (3.61 Mile(s))
4. Continue on E Anderson Rd (0.36 Mile(s))
5. Make sharp right on Rivers End Rd (0.6 Mile(s))

Arrive at 598 Rivers End Rd., Sequim, WA, 98382, on the right

Site Lat/Long:	N 48° 9.191' / W 123° 7.820', Sector Map STR-8
Strategy Objective:	Exclusion - keep oil out of the Dungeness River.
Implementation:	Deploy boom across the east channel of the Dungeness River as near to the mouth as possible. The position of the mouth is variable due to shifting delta sediments. Ensure that the boom also blocks the mouth of Meadowbrook Creek.
Field Notes:	Boat access from the Oyster House ramp, the John Wayne Marina, or Port Angeles. Vehicle access to the Oyster House boat ramp from Highway 101 in Sequim to Sequim-Dungeness Way to Marine Drive. Acces
Resources Targeted:	salmonids (anadromous), sensitive habitat, waterfowl, shorebirds
Fixed Anchors:	122: N 48° 9.157' / W 123° 7.818', Water Depth 0ft, east bank, the actual location will be dependent on real time conditions, adjust as needed.
Watercourse Description:	River side channel, east channel, very dynamic



Suggested Equipment	
Quantity	**Description**
200 ft	B3 - Contractor Boom
4 each	Stake(s)
Suggested Personnel	
2	Laborer (s)

Status: Visited and Not Tested 10/16/2007

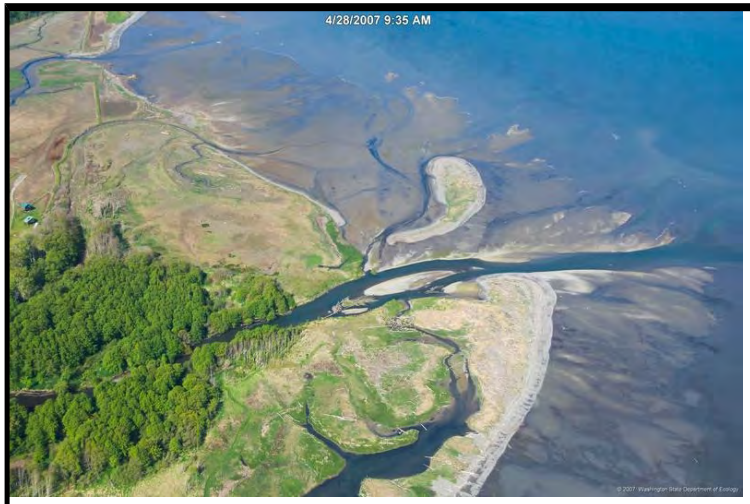
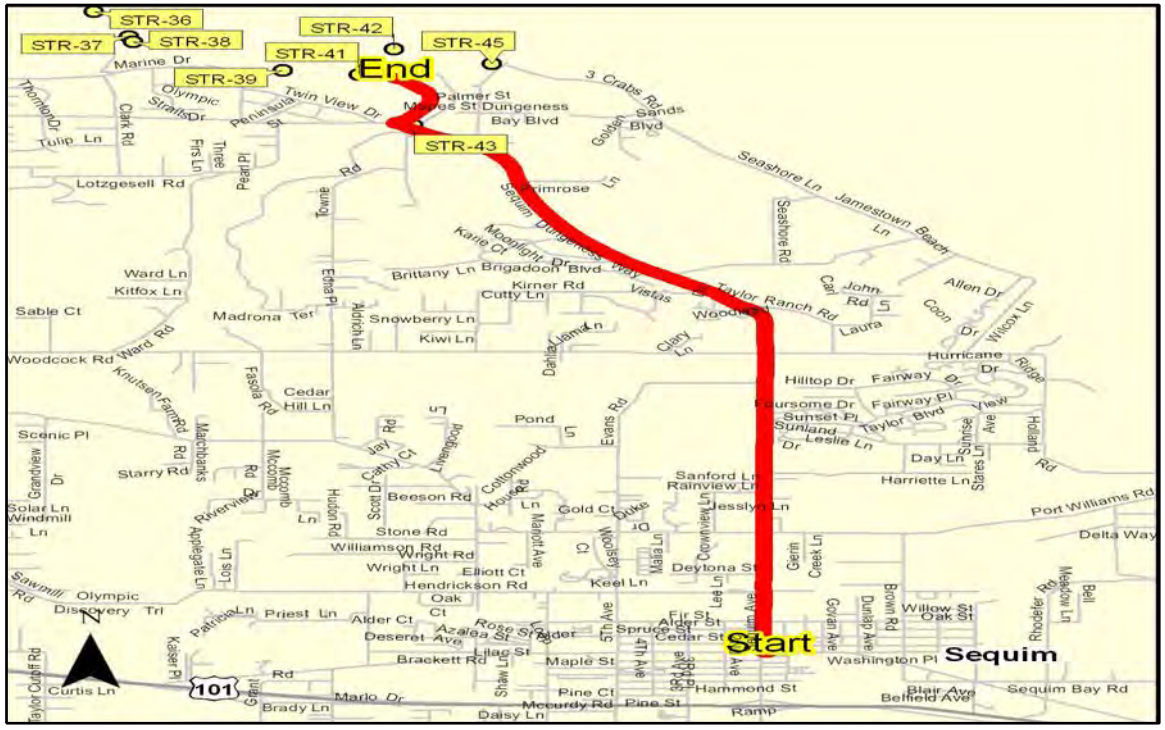


Image-1045: Dungeness River east channel overview

No Image Available

Site Contact Information

No contact information available.



Closest Address:

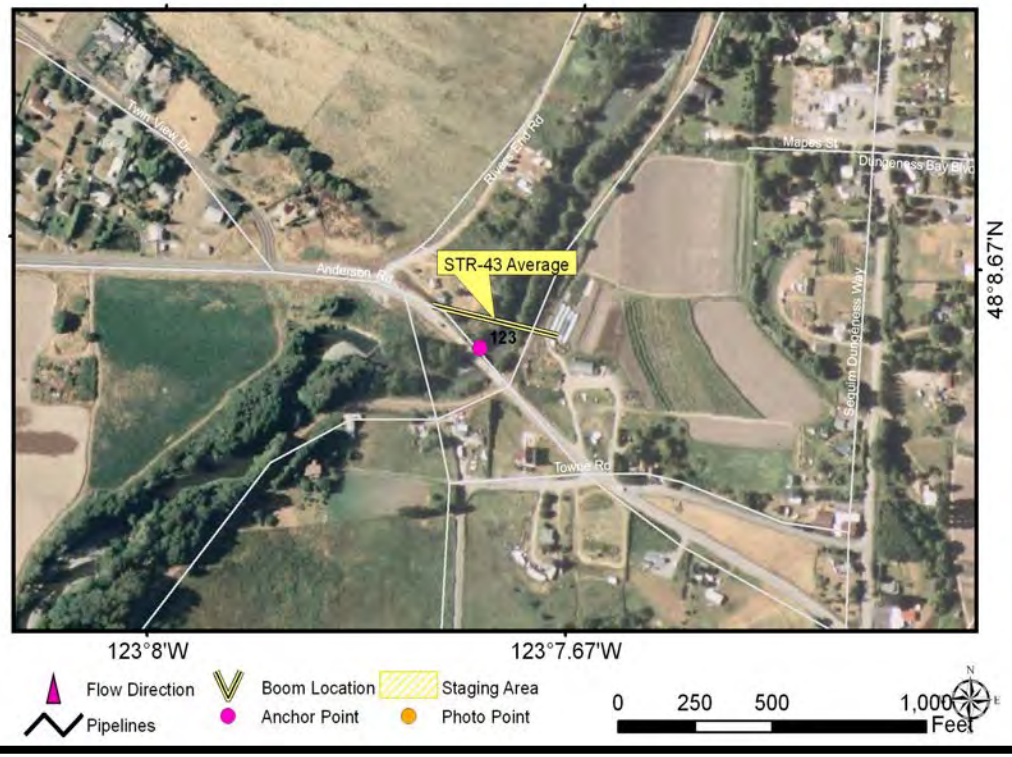
482 Rivers End Rd., Sequim, 98382

Driving Directions:

Depart Sequim
1. Go West on E Washington St toward W Washington St/S Sequim Ave/N Sequim Ave (0.02 Mile(s))
2. Turn right on N Sequim Ave (1.01 Mile(s))
3. Continue on Sequim Dungeness Way (3.61 Mile(s))
4. Continue on E Anderson Rd (0.36 Mile(s))
5. Make sharp right on Rivers End Rd (0.48 Mile(s))

Arrive at 482 Rivers End Rd., Sequim, WA, 98382, on the right

Site Lat/Long:	N 48° 8.612' / W 123° 7.765', Sector Map STR-8
Strategy Objective:	Exclusion - keep oil out of the Dungeness River.
Implementation:	Deploy boom across the river at an angle to tidal push, at the bridge on Marine Drive.
Site Safety Note:	High traffic area, take appropriate precautions. Bring brush clearing equipment.
Field Notes:	Boat access from the Oyster House ramp, the John Wayne Marina, or Port Angeles. Vehicle access to the Oyster House boat ramp from Highway 101 in Sequim to Sequim-Dungeness Way to Marine Drive.
Resources Targeted:	salmonids (anadromous), waterfowl
Fixed Anchors:	123: N 48° 8.619' / W 123° 7.742', east bank downstream from bridge, adjust as needed
Watercourse Description:	River with tidal influence, upper streach, flows under bridge, heavy undergrowth, Field Visit Width ~ 70ft



Suggested Equipment	
Quantity	**Description**
200 ft	B3 - River Boom, or other appropriate type
4 each	Stake(s)
Suggested Personnel	
2	Laborer (s)

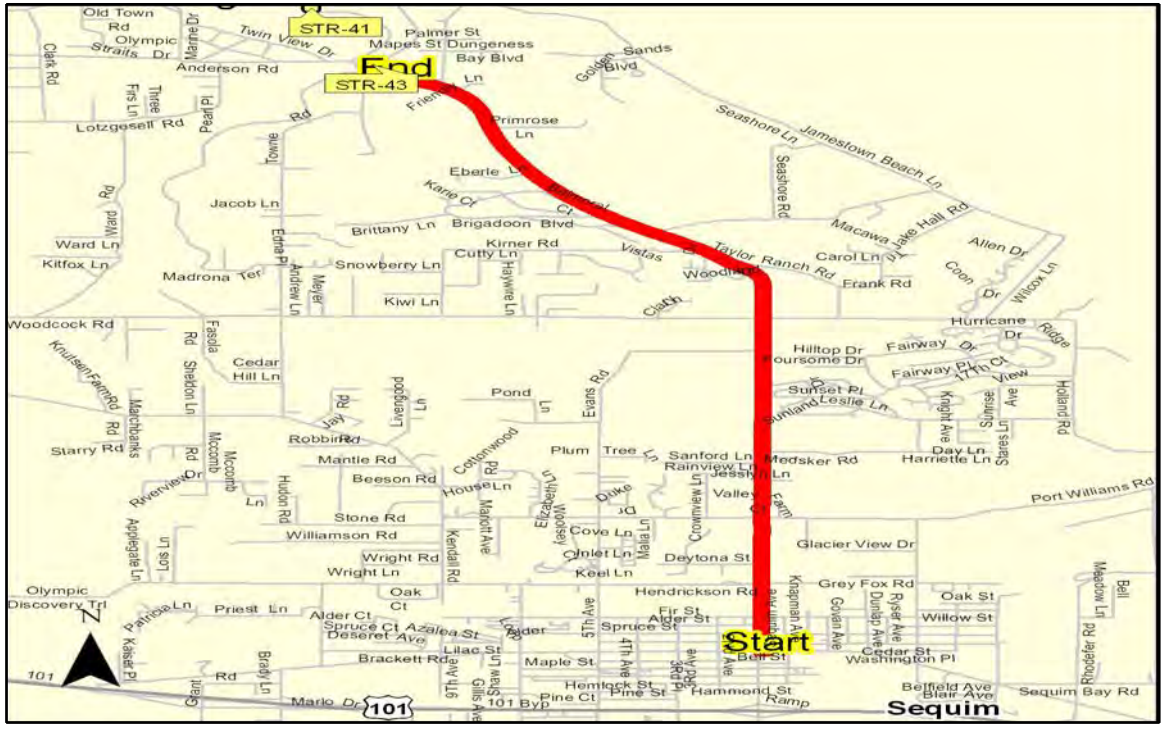
Status: Visited and Not Tested 08/16/2007

Image-1046: Dungeness River bridge site on Marine Drive overview

No Image Available

Site Contact Information

No contact information available.



Closest Address:

East Anderson Rd. and Rivers End Rd., Sequim, 98382

Driving Directions:

Depart Sequim
1. Go West on E Washington St toward W Washington St/S Sequim Ave/N Sequim Ave (0.02 Mile(s))
2. Turn right on N Sequim Ave (1.01 Mile(s))
3. Continue on Sequim Dungeness Way (3.61 Mile(s))
4. Continue on E Anderson Rd (0.18 Mile(s))

Arrive at East Anderson Rd. and Rivers End Rd., Sequim, WA, 98382, on the left

Site Lat/Long:	N 48° 10.558' / W 123° 7.715', Sector Map STR-8
Strategy Objective:	Exclusion - keep oil out of the small cove.
Implementation:	Deploy boom across the entrance to the small cove midway down the east side of Dungeness Spit. The actual location will be dependent on real time conditions, adjust as needed. Deploy boom at an angle to tidal push. If oil is present, deploy snare-boom along beach.
Site Safety Note:	High winds can cause rough water even in this relatively protected area. At extreme tides this entire area can be underwater
Field Notes:	Boat access from Cline Spit county park.
Resources Targeted:	waterfowl, shorebirds, sensitive habitat, special protection area, marine birds
Fixed Anchors:	124: N 48° 10.541' / W 123° 7.889', Water Depth 0ft, Dungeness Spit cove east side, adjust as needed
Watercourse Description:	Cove, cove, with both an inner and outer opening, Field Visit Width ~ 300ft, sand, mud

Suggested Equipment	
Quantity	**Description**
3 each	Anchor(s) for strong currents - ie. SARCA
600 ft	B3 - Contractor Boom
600 ft	Snare Boom
10 each	Stake(s)
Suggested Personnel	
1	Boat Operator (s)
2	Laborer (s)

Status: Visited and Tested 10/04/2007

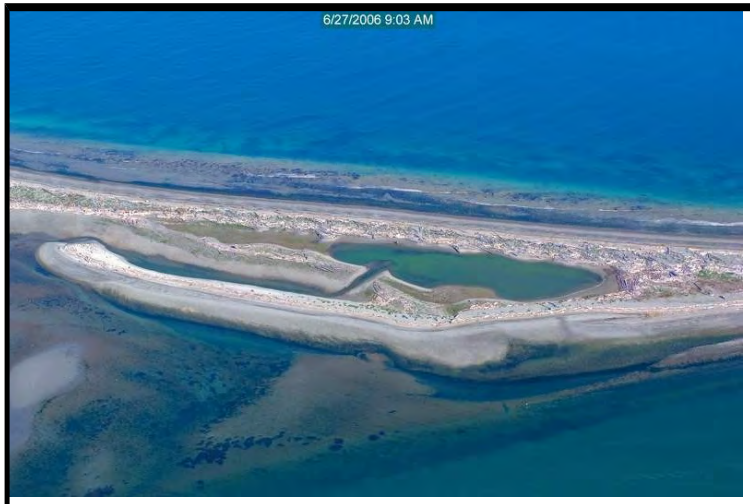


Image-1047: Dungeness Spit cove, about half-way down east side - overview

No Image Available

Site Contact Information

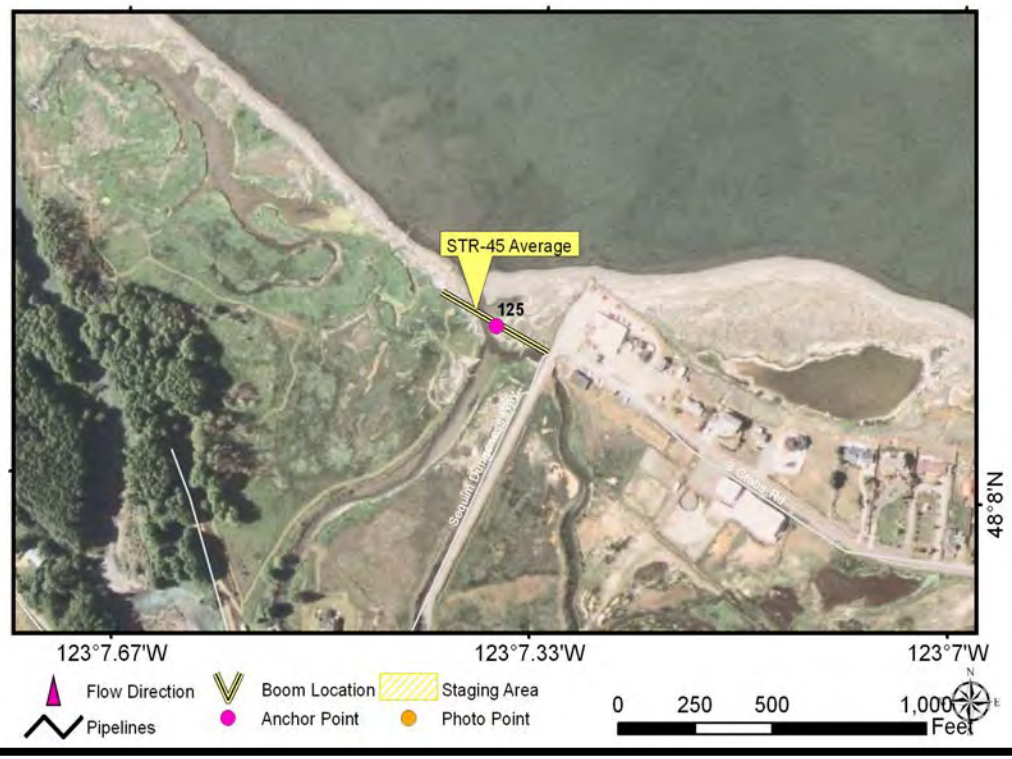
High Priority - contact immediate or before entering: Dungeness National Wildlife Refuge, (W) 360 971 6000, (H) 360 457-8451

Closest Address:

Driving Directions:

Cannot Drive to Site

Site Lat/Long:	N 48° 9.032' / W 123° 7.352', Sector Map STR-8
Strategy Objective:	Exclusion - keep oil out of the creek.
Implementation:	Deploy boom across the creek mouth at an angle to tidal push. If conditions require - move the strategy further upstream. If oil is present, deploy snare-boom along beach.
Site Safety Note:	At high flow do not deploy strategies. High traffic area, take appropriate precautions.
Field Notes:	Vehicle access from Highway 101 in Sequim to Sequim-Dungeness Way. Mouth of creek is west of the Oyster House. Can be deployed without boat.
Resources Targeted:	salmonids (anadromous)
Fixed Anchors:	125: N 48° 9.081' / W 123° 7.367', Water Depth 0ft, east bank near mouth, adjust as needed
Watercourse Description:	Creek, with tidal influence, with two forks, try to keep oil out of both, Field Visit Width ~ 70ft



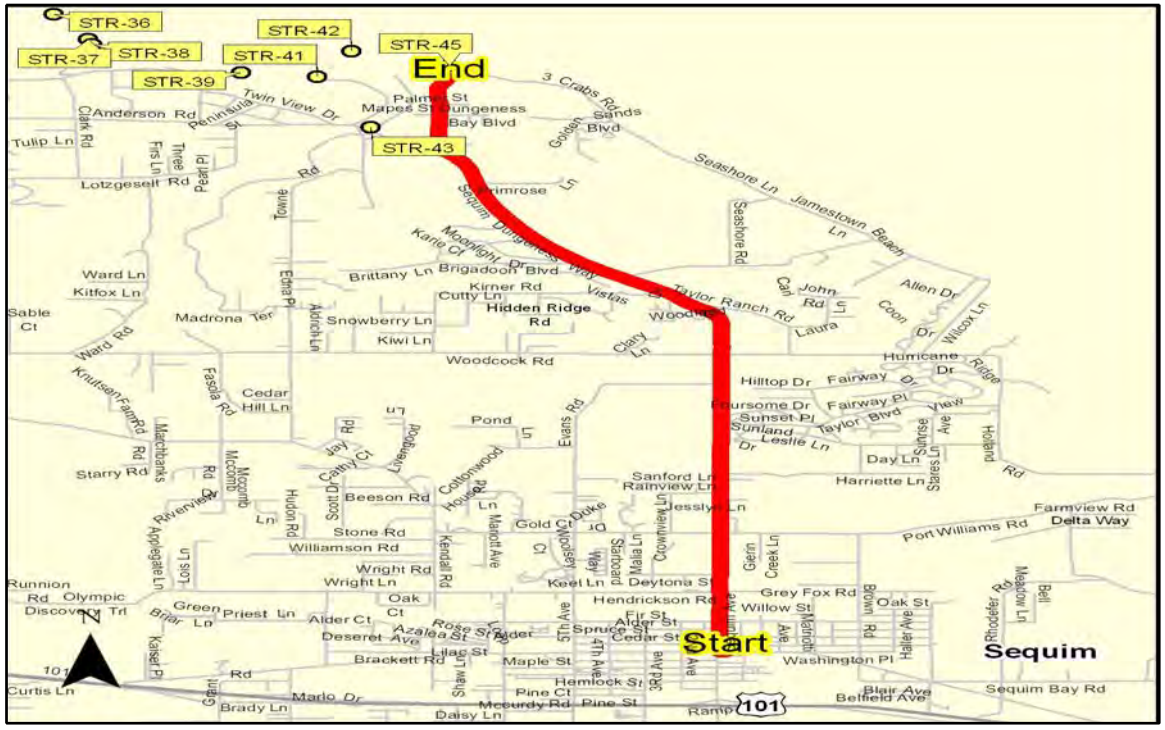
Suggested Equipment	
Quantity	**Description**
100 ft	B3 - River Boom, or other appropriate type
4 each	Stake(s)
Suggested Personnel	
2	Laborer (s)

Status: Visited and Not Tested 10/07/2007

Image-1048: Meadowbrook Creek - is on the right, overview. No Image Available

Site Contact Information

Responsible party or alternate contact:
Dungeness Oyster House, (W) 360 582-0735



Closest Address:

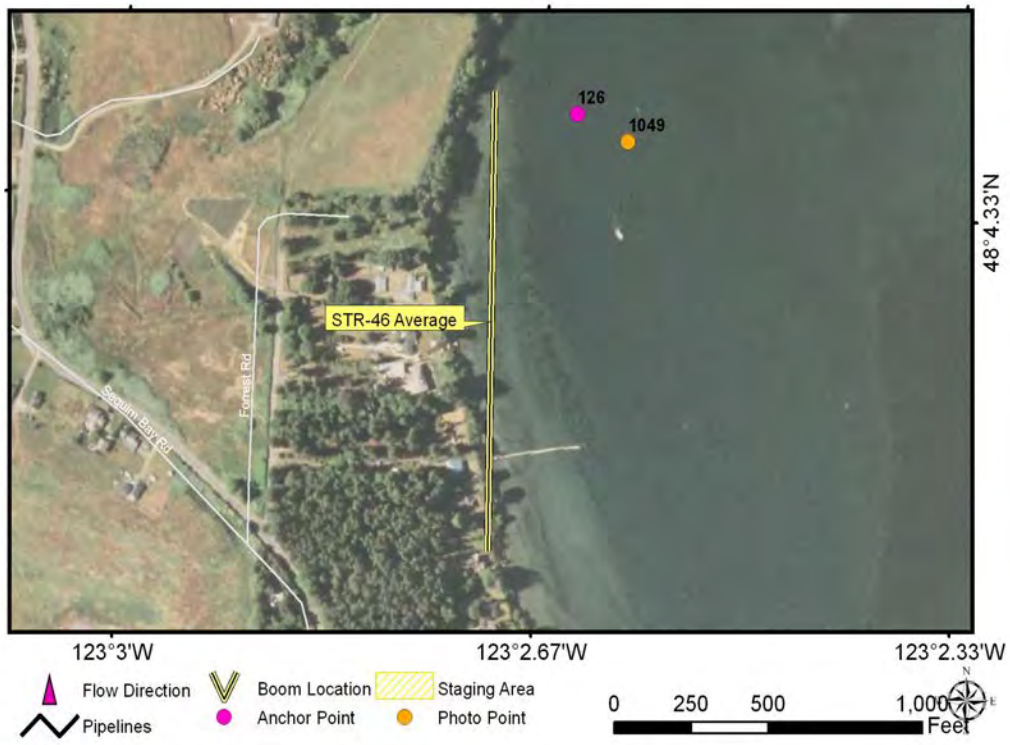
5079 Sequim Dungeness Way, Sequim, 98382

Driving Directions:

Depart Sequim
1. Go West on E Washington St toward W Washington St/S Sequim Ave/N Sequim Ave (0.02 Mile(s))
2. Turn right on N Sequim Ave (1.01 Mile(s))
3. Continue on Sequim Dungeness Way (3.61 Mile(s))
4. Turn right at E Anderson Rd to stay on Sequim Dungeness Way (0.61 Mile(s))

Arrive at 5079 Sequim Dungeness Way, Sequim, WA, 98382, on the right

Site Lat/Long:	N 48° 4.286' / W 123° 2.704', Sector Map STR-9
Strategy Objective:	Exclusion, Diversion - keep oil off of shoreline and divert oil to main channel for collection further south.
Implementation:	Deploy boom parallel to the main channel on the west bank.
Site Safety Note:	Entrance to bay can be very shallow depending on tides. High winds can cause rough water even in this relatively protected area.
Field Notes:	Site is south of lab, along the west bank. Access by water.
Resources Targeted:	tribal lands/resources
Fixed Anchors:	126: N 48° 4.381' / W 123° 2.642', Water Depth 10ft, offshore northern anchor point - adjust as needed
Watercourse Description:	Bay, opening is shallow depending on tides, tidal currents are strong



Suggested Equipment	
Quantity	**Description**
5 each	Anchor(s) for strong currents - ie. SARCA
1000 ft	B3 - Contractor Boom
1 each	Jon Boat(s)
1000 ft	Snare Boom
10 each	Stake(s)
Suggested Personnel	
1	Boat Operator (s)
4	Laborer (s)

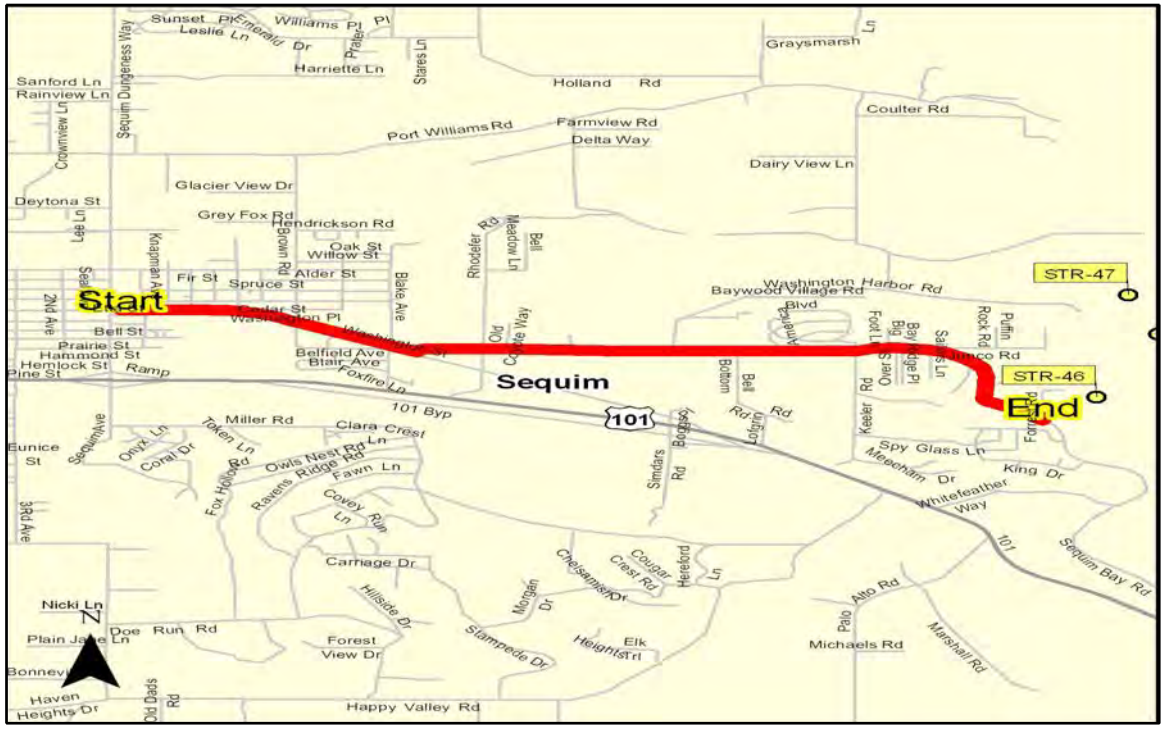
Status: Visited and Not Tested 07/25/2007

Image-1049: Sequim Bay east bank, south of Battelle lab.

Image-1050: Sequim Bay, east bank overview

Site Contact Information

High Priority - contact immediate or before entering:
JAMESTOWN S'KLALLAM TRIBE, (W) 360/683-1109, (M) 360/683-9758, (H) 360/452-5150
Responsible party or alternate contact:
Battelle Marine Science Lab, (W) 360 683-4151



Closest Address:

Forrest Rd., Sequim, 98382

Driving Directions:

Depart Sequim
1. Go East on E Washington St toward N Sunnyside Ave (0.87 Mile(s))
2. Turn left on W Sequim Bay Rd (1.99 Mile(s))
3. Make sharp left on Forrest Rd (0.02 Mile(s))
Arrive at Forrest Rd., Sequim, WA, 98382, on the right

Site Lat/Long:	N 48° 4.859' / W 123° 2.594', Sector Map STR-9
Strategy Objective:	Exclusion - keep oil out of the lagoon behind Gibson Spit.
Implementation:	Deploy boom across the lagoon opening at an angle to tidal push. If tidal push is strong may need to use chevron configuration.
Site Safety Note:	Opening is shallow depending on tides, tidal currents are strong
Field Notes:	Gibson Spit is just to the north of the lagoon opening. No true road access, but maybe able to launch Jon Boat from road on nw side of lagoon.
Resources Targeted:	waterfowl, salmonids (anadromous), sensitive habitat
Fixed Anchors:	127: N 48° 4.983' / W 123° 2.559', Gibson Spit, adjust as needed
Watercourse Description:	Lagoon, tidal currents can strong during ebb and flow, Field Visit Width ~ 800ft

Suggested Equipment	
Quantity	**Description**
3 each	Anchor(s) for strong currents - ie. SARCA
1000 ft	B3 - Contractor Boom
1 each	Jon Boat(s)
8 each	Stake(s)
Suggested Personnel	
1	Boat Operator (s)
3	Laborer (s)

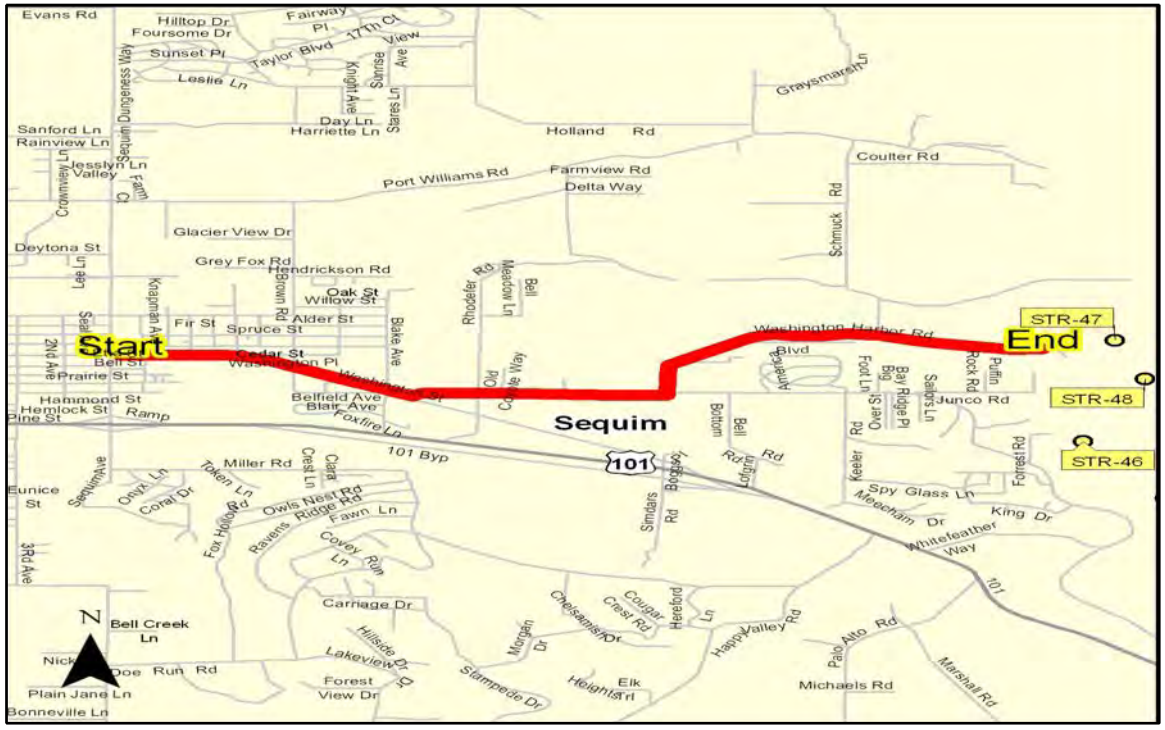
Status: Visited and Not Tested 07/25/2007

Image-1051: Sequim Bay lagoon near Gibson Spit

Image-1052: Sequim Bay lagoon, overview

Site Contact Information

High Priority - contact immediate or before entering:
JAMESTOWN S'KLALLAM TRIBE, (W) 360/683-1109, (M) 360/683-9758, (H) 360/452-5150
Responsible party or alternate contact:
Battelle Marine Science Lab, (W) 360 683-4151



Closest Address:

1033 Washington Harbor Rd., Sequim, 98382

Driving Directions:

Depart Sequim
1. Go East on E Washington St toward N Sunnyside Ave (0.87 Mile(s))
2. Turn left on W Sequim Bay Rd (0.7 Mile(s))
3. Turn left on Washington Harbor Rd (1.3 Mile(s))
Arrive at 1033 Washington Harbor Rd., Sequim, WA, 98382, on the right

Site Lat/Long:	N 48° 4.642' / W 123° 2.487', Sector Map STR-9
Strategy Objective:	Diversion - divert oil entering bay to the west channel for collection at Pitship Point.
Implementation:	Deploy boom from the southwestern tip of Travis Spit to the Middle Ground to direct the oil to the west and south for collection at Pitship Point. The Middle Ground is often covered at high tide.
Site Safety Note:	Opening is shallow depending on tides, tidal currents are strong. High winds can cause rough water even in this relatively protected area.
Field Notes:	Boat ramp on west near Washington Harbor. "Middle ground" can be completely submerged.
Resources Targeted:	waterfowl, shorebirds, shellfish, sensitive habitat
Fixed Anchors:	128: N 48° 4.775' / W 123° 2.442', Water Depth 0ft, tip of Travis Spit, adjust as needed
Watercourse Description:	Bay, this gap between Travis Spit and Middle ground can have strong currents, Field Visit Width ~ 1600ft

Suggested Equipment	
Quantity	**Description**
4 each	Anchor(s) for strong currents - ie. SARCA
1700 ft	B3 - Contractor Boom
4 each	Stake(s)
Suggested Personnel	
1	Boat Operator (s)
3	Laborer (s)

Status: Visited and Not Tested 07/25/2007

Image-1053: Sequim Bay, Travis Spit

Image-1054: Sequim Bay, Travis Spit - Middle Ground is in upper right.

Site Contact Information

Responsible party or alternate contact:
Battelle Marine Science Lab, (W) 360 683-4151

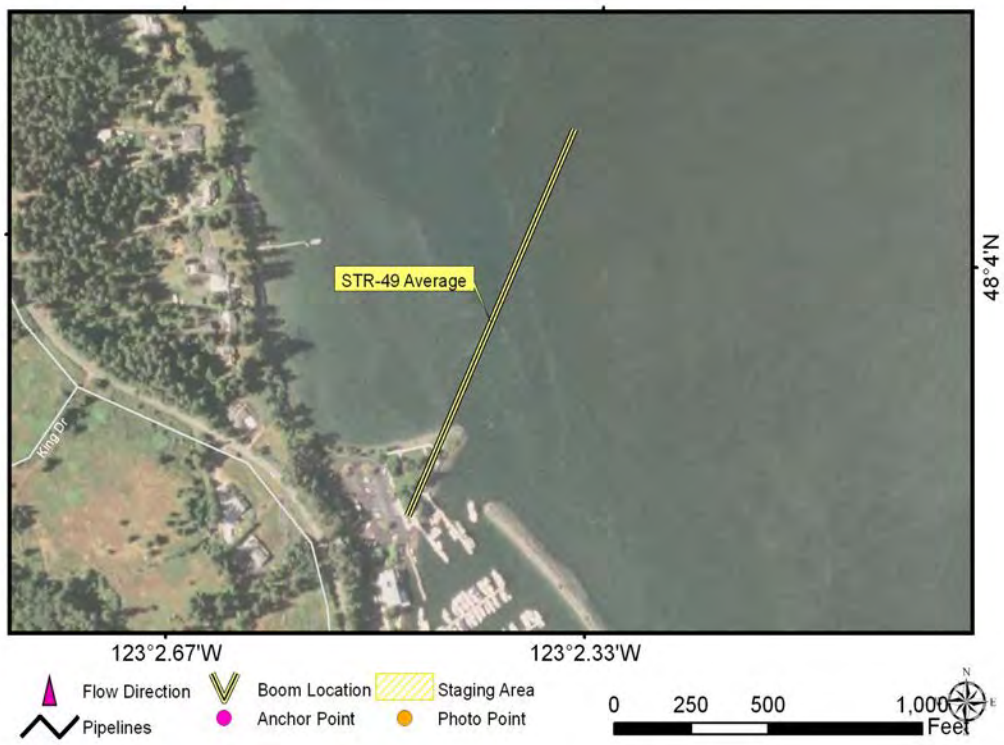
Closest Address:

49 Enchantment Way, Sequim, 98382

Driving Directions:

Cannot Drive to Site

Site Lat/Long:	N 48° 3.964' / W 123° 2.415', Sector Map STR-9
Strategy Objective:	Collection - use currents and boom to collect oil.
Implementation:	Deploy boom from the northeast corner of Pitship Point at a northeasterly direction to collect oil diverted by other strategies. Deploy boom at an angle to the tidal push. Use anchors and lines as needed to maintain an effective angle. Area has paved parking for vac truck access.
Site Safety Note:	High traffic area, take appropriate precautions.
Field Notes:	John Wayne Marina features permanent and guest moorage, excellent marine services, a restaurant, showers, laundry and banquet facilities, and provides boat launch ramps, fuel facilities.
Resources Targeted:	waterfowl, shorebirds, shellfish, sensitive habitat
Fixed Anchors:	129: S 123° 2.469' / W 123° 2.469', Water Depth 0ft, Pitship Point, adjust as needed
Watercourse Description:	Bay, natural collection area created by point,



Suggested Equipment	
Quantity	**Description**
400 ft	1/2 poly line
5 each	Anchor(s) for strong currents - ie. SARCA
1300 ft	B3 - Contractor Boom
5 each	Stake(s)
Suggested Personnel	
1	Boat Operator (s)
3	Laborer (s)

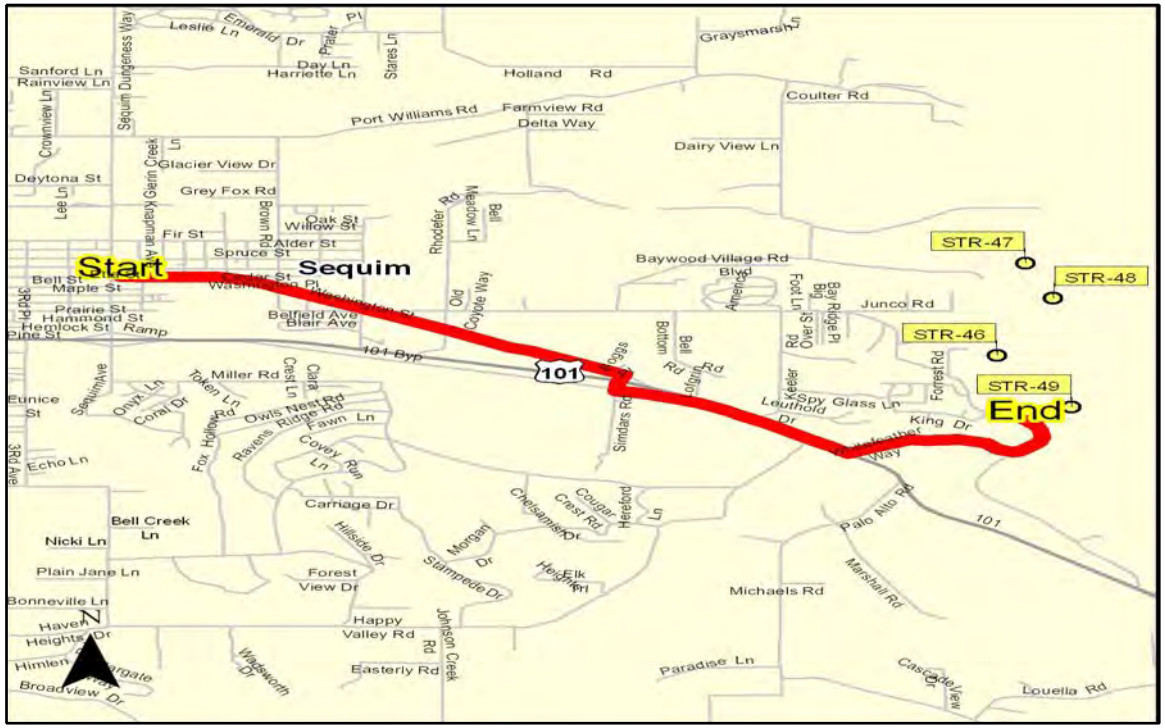
Status: Visited and Not Tested 07/25/2007

Image-1055: Sequim Bay, Pitship point overview

No Image Available

Site Contact Information

High Priority - contact immediate or before entering:
JAMESTOWN S'KLALLAM TRIBE, (W) 360/683-1109, (M) 360/683-9758, (H) 360/452-5150
Responsible party or alternate contact:
Amundson John Wayne Marina, (W) 360 457 3440



Closest Address:

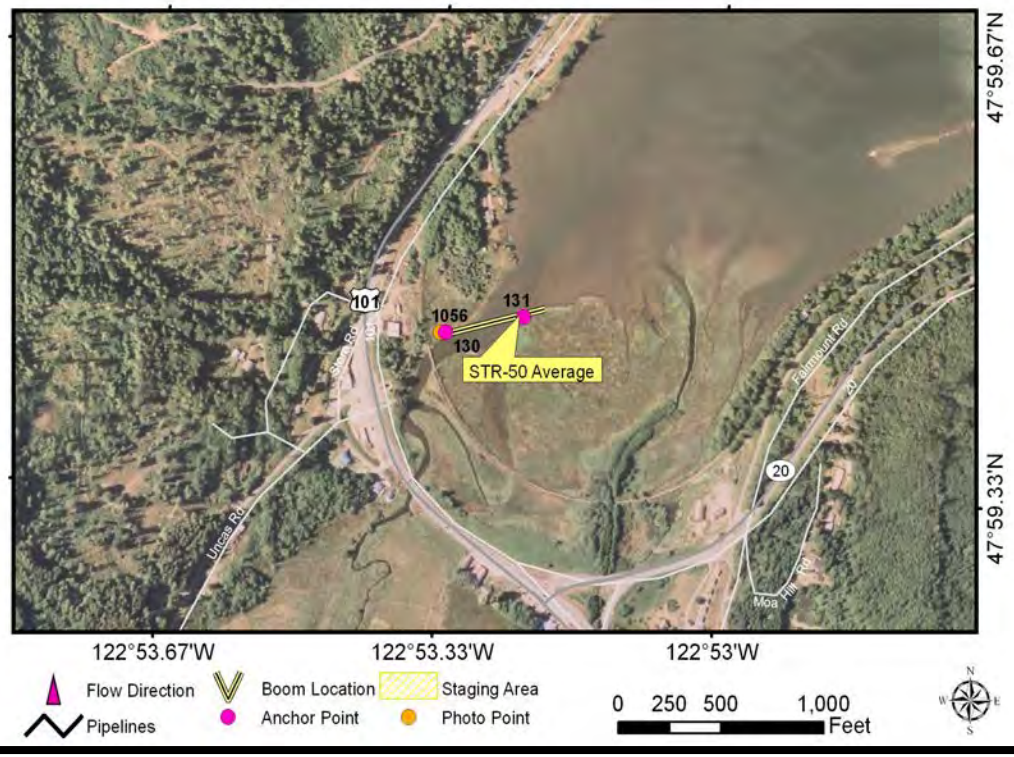
2099 W. Sequim Bay Rd., Sequim, 98382

Driving Directions:

Depart Sequim
1. Go East on E Washington St toward N Sunnyside Ave (1.7 Mile(s))
2. Turn right on Simdars Rd (0.12 Mile(s))
3. Turn left onto ramp and go South East on US 101 (HWY 101) (0.84 Mile(s))
4. Turn left on Whitefeather Way (0.55 Mile(s))
5. Bear left on W Sequim Bay Rd (0.29 Mile(s))

Arrive at 2099 W. Sequim Bay Rd., Sequim, WA, 98382, on the left

Site Lat/Long:	N 47° 59.463' / W 122° 53.268', Sector Map STR-11
Strategy Objective:	Collection, Exclusion - keep oil out of upper marsh area and side channels
Implementation:	Deploy boom across the creek mouth at an angle to tidal push so that oil would collect on the west corner of boom. Use anchors and line to insure effective angle. Be sure to have west anchor point set to keep oil out of side channel on the west side of main channel. Use the point of 'island' on the east side for eastern attachment point.
Site Safety Note:	High traffic area, take appropriate precautions.
Field Notes:	With effort should be able to launch Jon Boat from bank near bridge. Should also be able to get boom trailer near water edge. Note: at low tides entire area can be mud.
Resources Targeted:	waterfowl, shorebirds, sensitive habitat, shellfish
Fixed Anchors:	130: N 47° 59.454' / W 122° 53.327', Water Depth 0ft, on west bank above side channel, adjust as needed - but be sure to keep oil out of side channel; 131: N 47° 59.467' / W 122° 53.235', Water Depth 0ft, 'island' anchor point near tip - adjust as needed but be sure to keep oil out of side channel
Watercourse Description:	Estuaries, near mouth of creek with salt marshes, depth is tide dependent, Field Visit Width ~ 300ft, Field Visit Depth ~ 2ft, mud



Suggested Equipment	
Quantity	**Description**
150 ft	1/2 poly line
1 each	Anchor(s) for strong currents - ie. SARCA
500 ft	B3 - Contractor Boom
6 each	Stake(s)
Suggested Personnel	
1	Boat Operator (s)
2	Laborer (s)

Status: New - visited and tested 11/06/2007

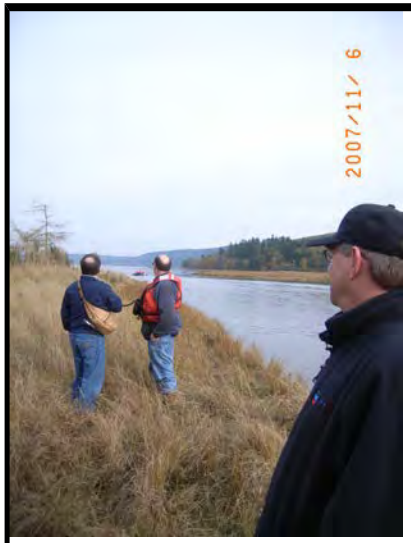


Image-1056: Discovery Bay anchor point near 101 bridge, 'island tip' in background

Image-1057: Discovery Bay, near 101 bridge, boom in red.

Site Contact Information

Responsible party or alternate contact:
Bonney Discovery Bay Railroad Park, (W) 360-379-6812, Deli

Closest Address:

Driving Directions:

Depart Sequim
1. Go East on E Washington St (1.7 Mile(s))
2. Turn right on Simdars Rd (0.12 Mile(s))
3. Turn left onto ramp and go South East on US 101 (HWY 101) (15.8 Mile(s))
Arrive at Point (N 47° 59.463' / W 122° 53.268'), on the right

Site Lat/Long:	N 47° 59.820' / W 122° 52.937', Sector Map STR-11
Strategy Objective:	Collection - keep oil out of Discovery bay.
Implementation:	Deploy boom across the narrowest part of the entrance to Port Discovery. Port Discovery becomes a mudflat at low tide. Deploy boom along the eastern edge of the mudflat so the boom remains in water at low tide. If required block culvert with ply-wood, be sure to get emergency permit from WDFW.
Site Safety Note:	Turn of of HWY 101 can be a high traffic area, take appropriate precautions.
Field Notes:	With effort should be able to launch Jon Boat from bank near 'Railroad Park'. Should also be able to get boom trailer near water edge. Note: at low tides entire area can be mud.
Resources Targeted:	waterfowl, shorebirds, sensitive habitat
Watercourse Description:	

Suggested Equipment	
Quantity	**Description**
2000 ft	B3 - Contractor Boom
Suggested Personnel	

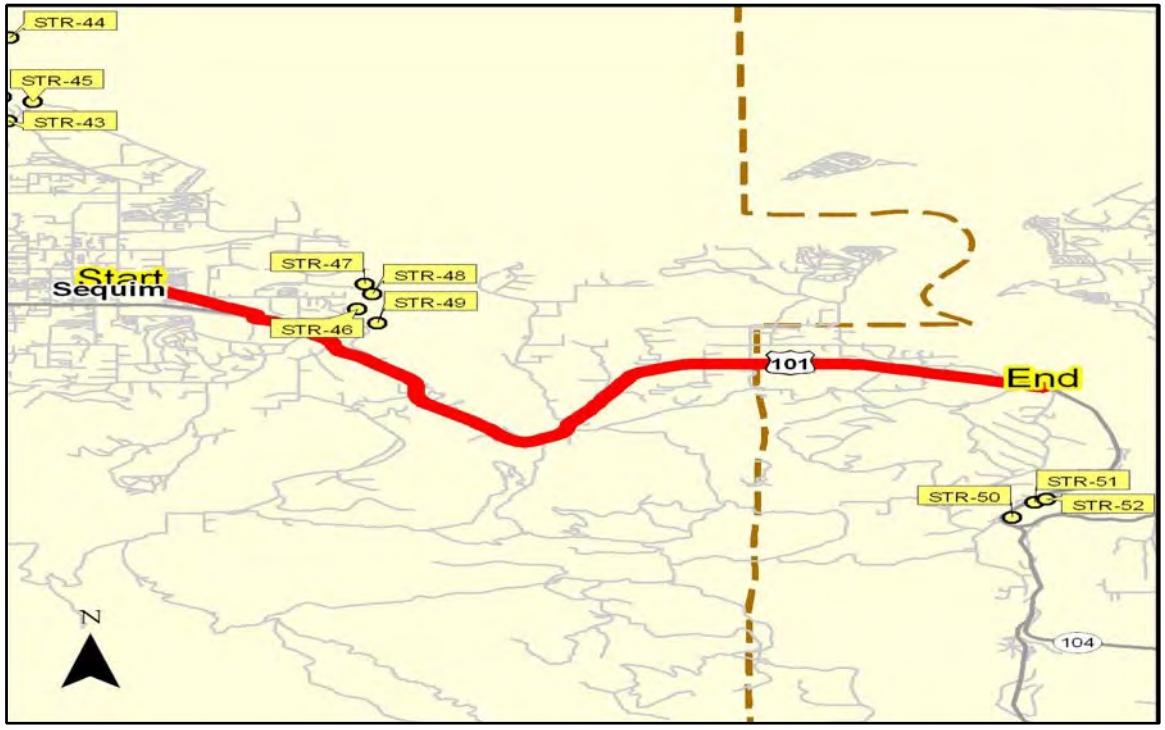
Status: New - visited and tested 11/06/2008

Image-1063: Discovery Bay west bank collection overview

Image-1062: Discovery Bay, w bank collection site

Site Contact Information

High Priority - contact immediate or before entering:
WDFW Emergency Hydraulic Project Approval, (M) 360-534-8233, 24-hour pager number.
Responders must receive Emergency HPA from the WDFW prior to using culvert blocks and underflow dams.
Responsible party or alternate contact:
Bonney Discovery Bay Railroad Park, (W) 360-379-6812, Deli



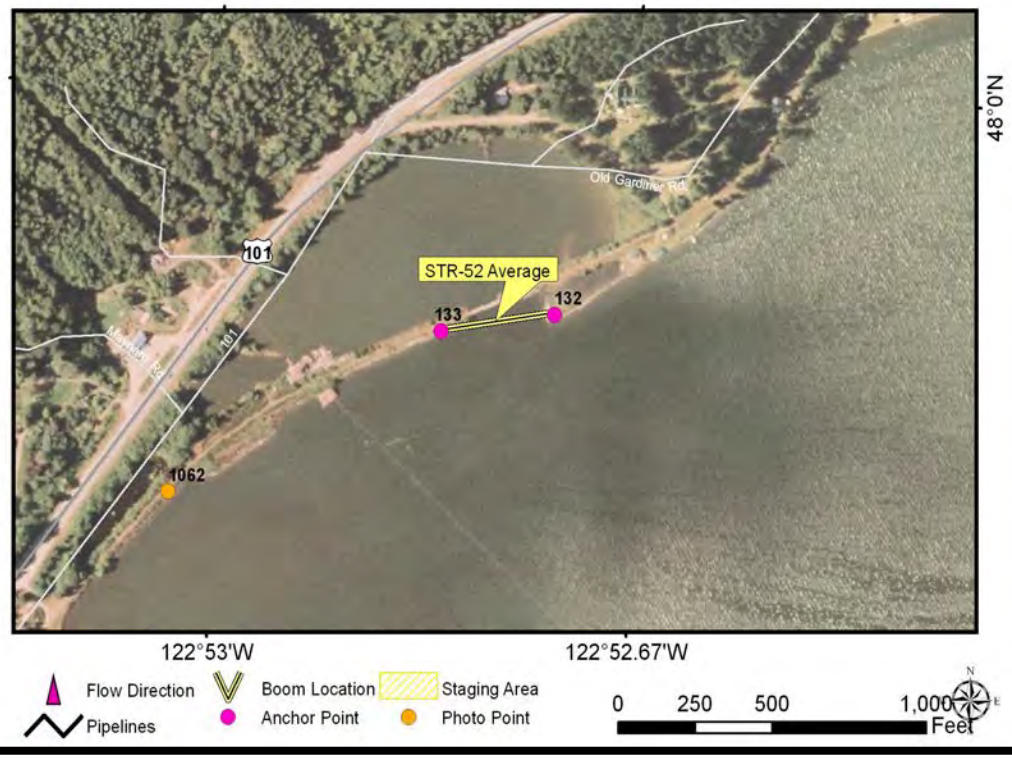
Closest Address:

28202023 HWY 101, Port Townsend, 98368

Driving Directions:

Depart Sequim
1. Go East on E Washington St (1.7 Mile(s))
2. Turn right on Simdars Rd (0.12 Mile(s))
3. Turn left onto ramp and go East on US 101 (HWY 101) (11.59 Mile(s))
Arrive at 28202023 HWY 101, Port Townsend, WA, 98368, on the right

Site Lat/Long:	N 47° 59.885' / W 122° 52.774', Sector Map STR-11
Strategy Objective:	Exclusion - keep oil out of pond.
Implementation:	Deploy boom across the pond mouth at an angle to tidal push. Use anchors and line to insure effect angle. Use tip of point NE of old bridge as upper anchor point.
Site Safety Note:	Turn off from 101 can be high traffic area, take appropriate precautions.
Field Notes:	With effort should be able to launch Jon Boat from bank near 'Railroad Park'. Should also be able to get boom trailer near water edge. Note: at low tides entire area can be mud.
Resources Targeted:	waterfowl, shorebirds, sensitive habitat, shellfish
Fixed Anchors:	132: N 47° 59.889' / W 122° 52.731', Water Depth 0ft, tip of point ne of old bridge, adjust as needed; 133: N 47° 59.879' / W 122° 52.820', Water Depth 0ft, bank se of old bridge - adjust as needed
Watercourse Description:	Pond, with tidal influence, gravel, sand, mud



Suggested Equipment	
Quantity	**Description**
200 ft	1/2 poly line
2 each	Anchor(s) for strong currents - ie. SARCA
500 ft	B3 - Contractor Boom
6 each	Stake(s)
Suggested Personnel	
1	Boat Operator (s)
2	Laborer (s)

Status: Visited and Tested 11/07/2007

Image-1059: Dicovery Bay, pond overview

Image-1058: Discovery Bay, anchor point ne of old bridge

Site Contact Information

Responsible party or alternate contact:
Bonney Discovery Bay Railroad Park, (W) 360-379-6812, Deli

Closest Address:

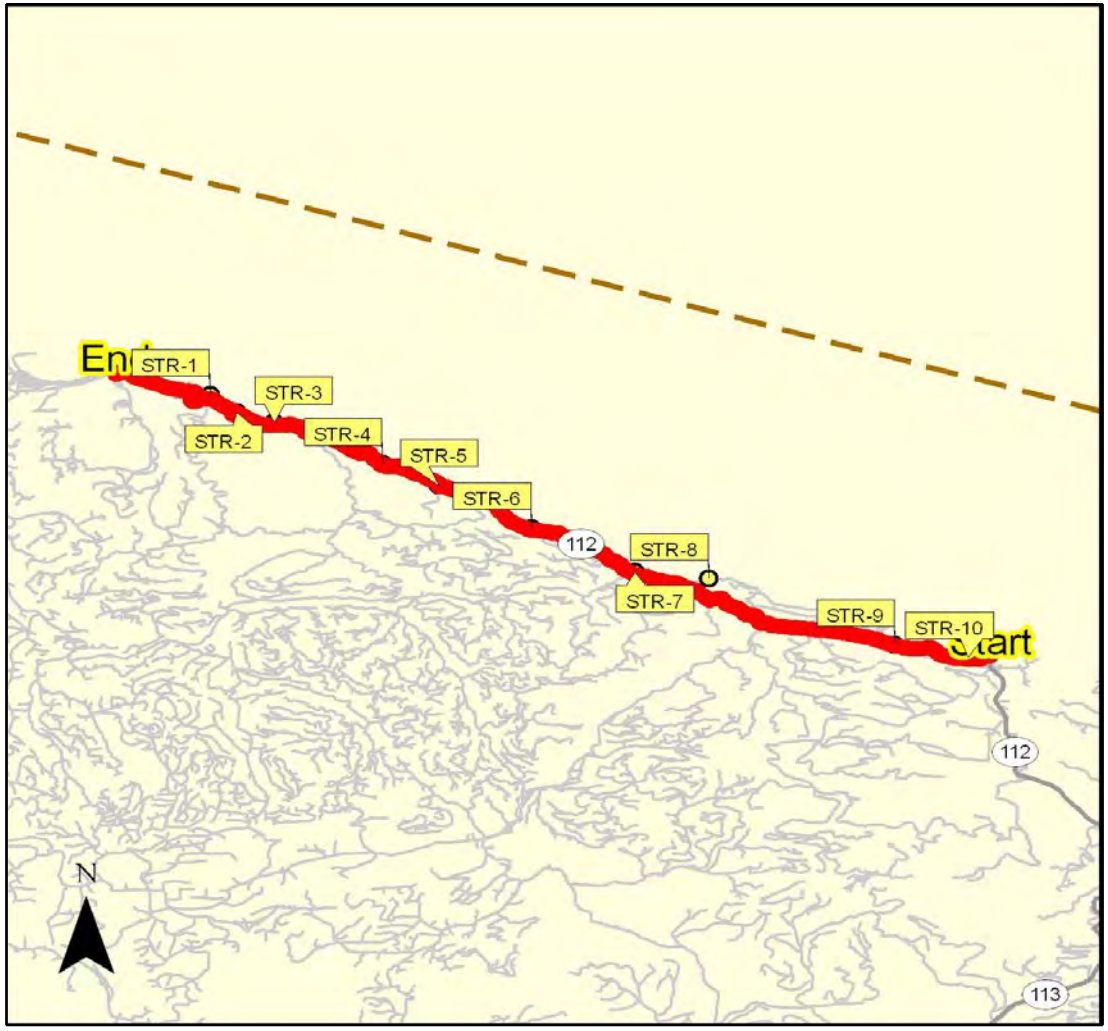
282023 HWY 101, Port Townsend, 98368

Driving Directions:

Depart Sequim
1. Go East on E Washington St (1.7 Mile(s))
2. Turn right on Simdars Rd (0.12 Mile(s))
3. Turn left onto ramp and go East on US 101 (HWY 101) (15.78 Mile(s))
Arrive at 282023 HWY 101, Port Townsend, WA, 98368, on the right

APPENDIX C - DETAILED STAGING LOCATIONS AND DESCRIPTIONS

Lat/Long:	N 48° 22.200' / W 124° 35.574', Sector Map STR-1
Staging Description:	Two 47' MLBs One 41' UTB One 23' S.A.F.E. Boat (UTL) Lighted helo pad with helicopter refueling capability Boat house with marine railway
Site Contacts:	High Priority: Contact before entering or immediate notification required. USCG Neah Bay USCG Neah Bay, W 306-645-2237



Closest Address:

Driving Directions:

Depart Clallam Bay
1. Go South West on Frontier St toward SR 112 (0.04 Mile(s))
2. Turn right on SR 112 (HWY 112) (18.83 Mile(s))
3. Turn right on Agency Creek Loop (0.07 Mile(s))
Arrive at Point (N 48° 22.2' / W 124° 35.574'), on the left

Strategy Sites Served:

STR-1(Marine)
STR-2(Marine)
STR-3(Marine)
STR-4(Marine)
STR-5(Marine)
STR-6(Marine)
STR-7(Marine)
STR-8(Marine)

5. Shoreline Information

5.1. Shoreline Types and Sensitivity

The type of shoreline, degree of exposure to waves and currents, and biological sensitivity are the main criteria for selecting appropriate treatment techniques. Each shoreline type has particular properties (including vegetation types) which facilitate or resist the penetration and persistence of oil. Areas of comparatively uniform sediment type and grain size experience a deeper penetration of oil. Grain size definitions are:

Mud	<0.0625 mm
Fine Sand	0.0625 - 2 mm
Medium to Coarse Sand	2 -4 mm
Pebble/Cobble	4 - 256 mm

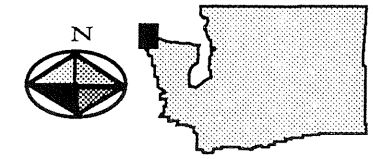
Persistence of oil in a particular area is directly related to the intensity of wave action, tides, and currents. Based on numerous oil spill studies of shoreline characteristics, treatment, and oil impact, the matrices in Section 5.3 were formulated following the basic prototype of the Environmental Sensitivity Index Atlas.

The environmental sensitivity index (ESI) system ranks coastal environments on a scale of 1-10 or 11 (less sensitive to more sensitive) with respect to oil spill sensitivity and potential biological injury is being used for mapping extensive areas of the coastline of the U.S.. Generally speaking, areas exposed to high levels of physical energy, such as wave action and tidal currents, rank low on the scale while sheltered areas have the highest ranking. The shoreline types used in this manual are a combination of the two similar systems used for the Delaware/Pennsylvania/New Jersey ESI Atlas, and the Maryland and Virginia atlases. The numbering system for the Countermeasure Manual Shoreline Types does not correspond exactly to either atlas; however, the corresponding shoreline types can be identified easily from the ESI maps and reassigned the appropriate number (after field verification.) The shoreline ranking system provides a useful first step in the design of contingency plans because it identifies the priority areas that require maximum effort for protection and cleanup. Strike teams and contractors with this document can focus their activities on environmental priorities, particularly during the first few hours and days of the spill.[4]

[4]Regional Response Team III. Draft, *Shoreline Countermeasures Manual.* (Departmentof the Interior, March 22,1991).

CAPE FLATTERY
SHORELINE TYPES

STRAITS OF JUAN DE FUCA GRP



EXPOSED ROCKY SHORE (OR SEAWALL)
WAVE-CUT PLATFORM
FINE GRAINED BEACH
COARSE GRAINED BEACH
SAND/GRAVEL BEACH
GRAVEL/COBBLE/RIPRAP BEACH
EXPOSED TIDAL FLAT
SHELTERED ROCKY FLAT
SHELTERED TIDAL FLAT
MARSH
KELP

Park
Reservation
Boat Launch
Town or City
USFWS Refuge Boundary

2500 meters 5000 meters
8200 feet 16400 feet
1 inch equals 2500 meters

ALL MARINE WATERS DEPICTED BELOW THIS LINE ARE PART OF THE OLYMPIC COAST NATIONAL MARINE SANCTUARY

STRAIT OF JUAN DE FUCA

Tatoosh Island

CAPE FLATTERY

NEAH BAY

WAATCH RIVER

MAKAH BAY

PACIFIC OCEAN

SNOW CREEK

SAIL RIVER

SOOES RIVER

Sooes Beach

MAKAH INDIAN RESERVATION

Portage Head

Approximate Boundary of FLATTERY ROCKS NWR

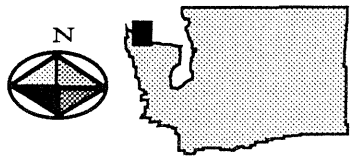
370000 380000 5360000 5350000

SHIPWRECK PT. TO KYDAKA PT.

SHORELINE TYPES

- EXPOSED ROCKY SHORE (OR SEAWALL)
- WAVE-CUT PLATFORM
- FINE GRAINED BEACH
- COARSE GRAINED BEACH
- SAND/GRAVEL BEACH
- GRAVEL/COBBLE/RIPRAP BEACH
- EXPOSED TIDAL FLAT
- SHELTERED ROCKY FLAT
- SHELTERED TIDAL FLAT
- MARSH
- KELP
- Park
- Reservation
- Boat Launch
- Town or City
- USFWS Refuge Boundary

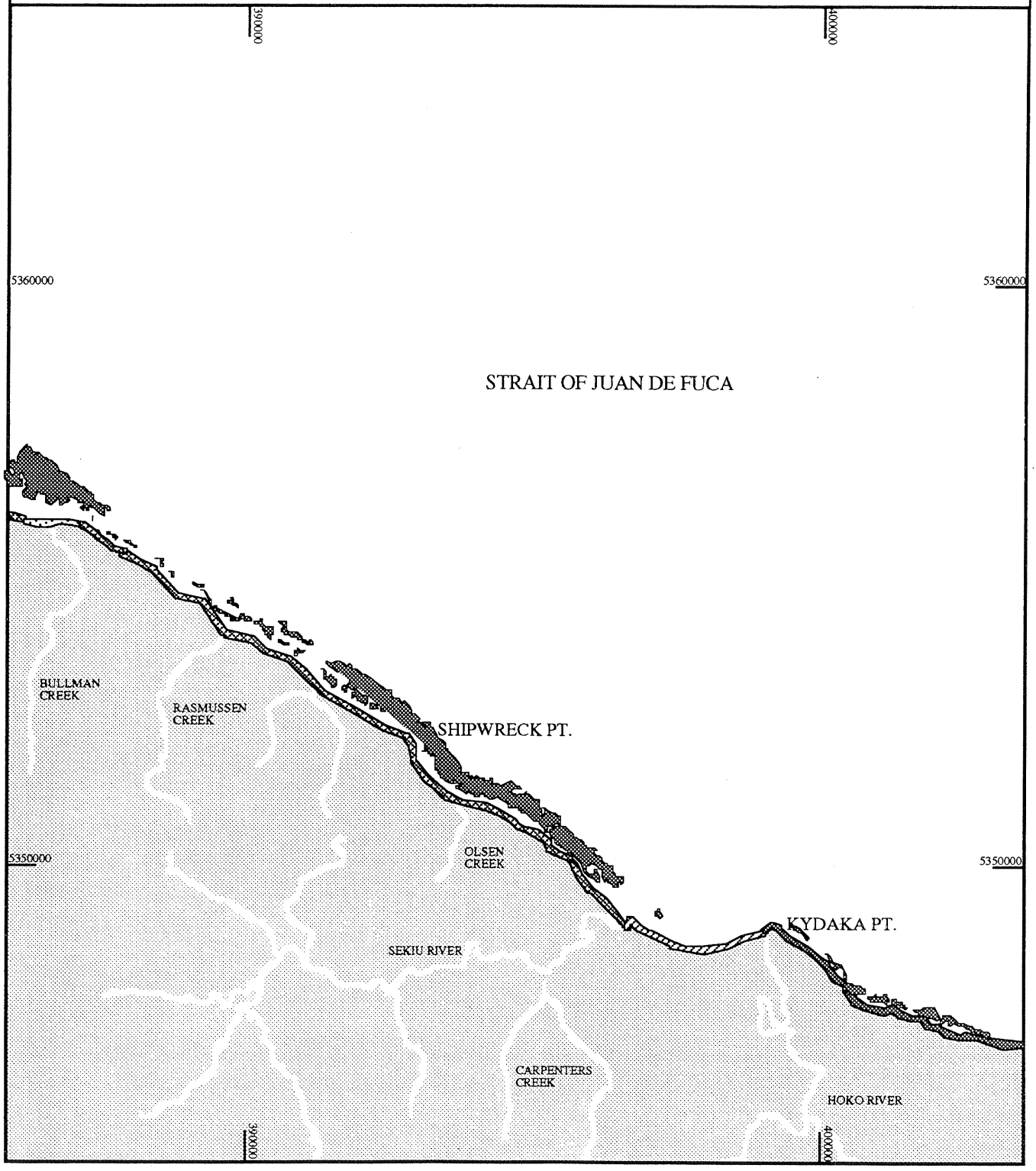
STRAIT OF JUAN DE FUCA GRP



2500 meters 5000 meters

8200 feet 16400 feet

1 inch equals 2500 meters



CLALLAM BAY TO PILLAR PT.

STRAIT OF JUAN DE FUCA GRP

SHORELINE TYPES

- EXPOSED ROCKY SHORE (OR SEAWALL)
- WAVE-CUT PLATFORM
- FINE GRAINED BEACH
- COARSE GRAINED BEACH
- SAND/GRAVEL BEACH
- GRAVEL/COBBLE/RIPRAP BEACH
- EXPOSED TIDAL FLAT
- SHELTERED ROCKY FLAT
- SHELTERED TIDAL FLAT
- MARSH
- KELP

Park
Reservation
Boat Launch
Town or City
USFWS Refuge Boundary

N

2500 meters 5000 meters
8200 feet 16400 feet
1 inch equals 2500 meters

410000 420000

CANADA
UNITED STATES

5350000 5350000

STRAIT OF JUAN DE FUCA

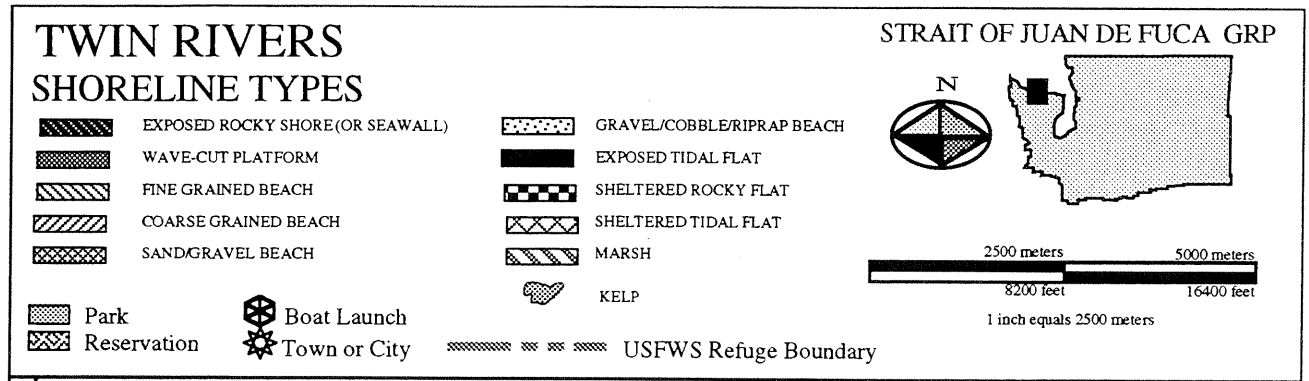
SEKIU POINT
SEKIU
US COAST GUARD BASE
CLALLAM BAY
PEARSON CREEK
CHARLEY CREEK
LAST CREEK
CLALLAM RIVER
PILLAR PT.
REED CREEK
PYSHT RIVER

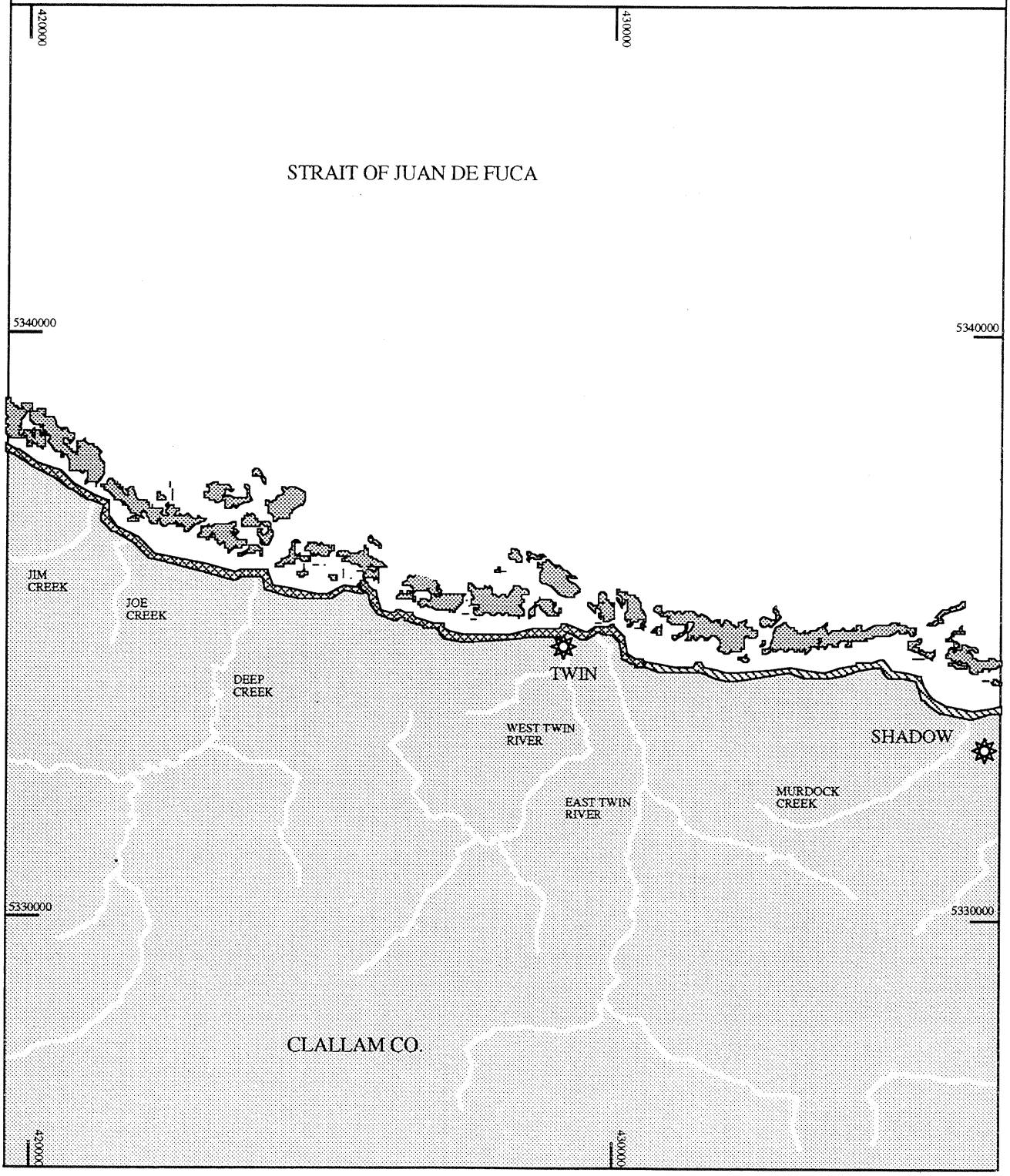
5340000 5340000

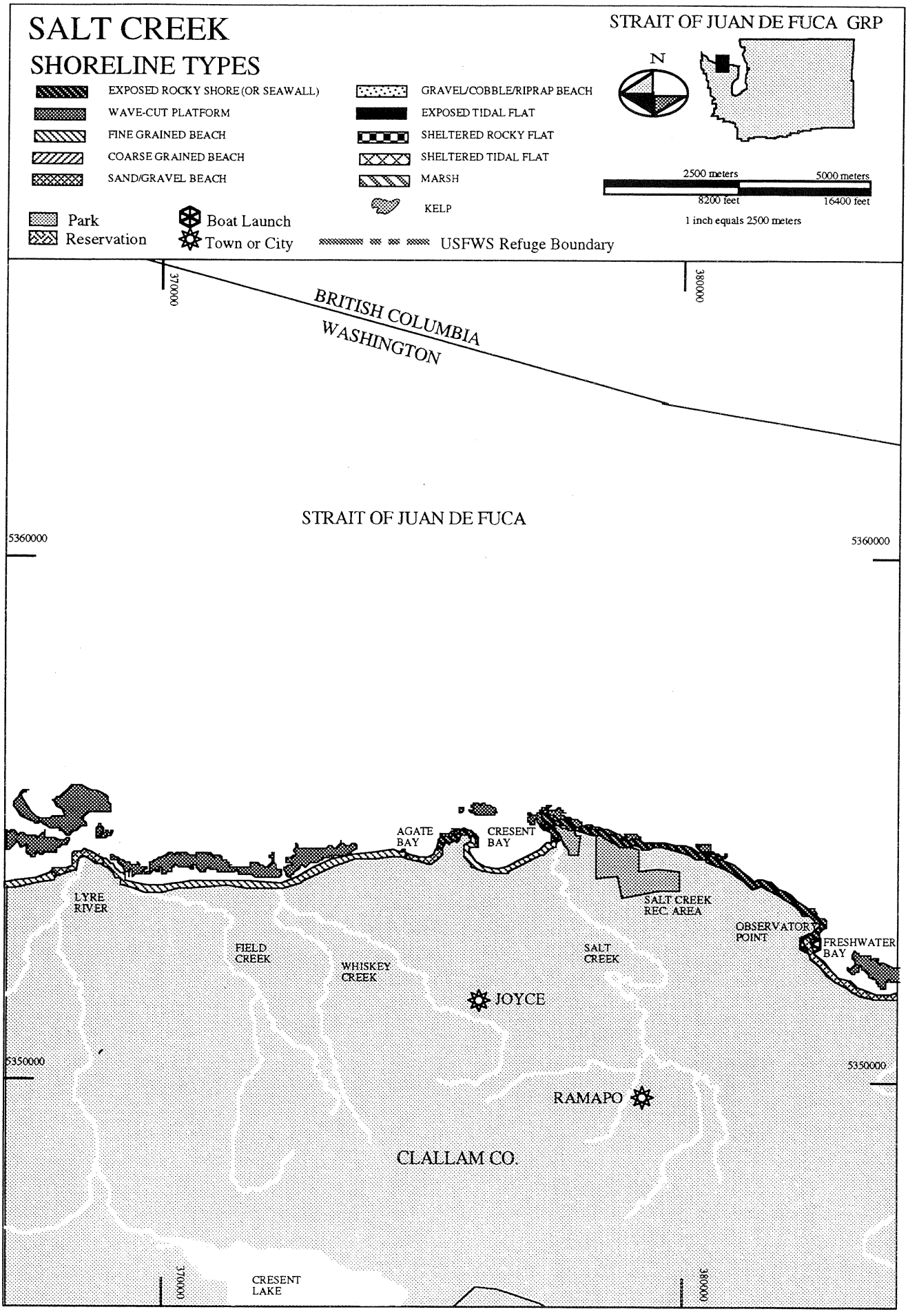
410000 420000

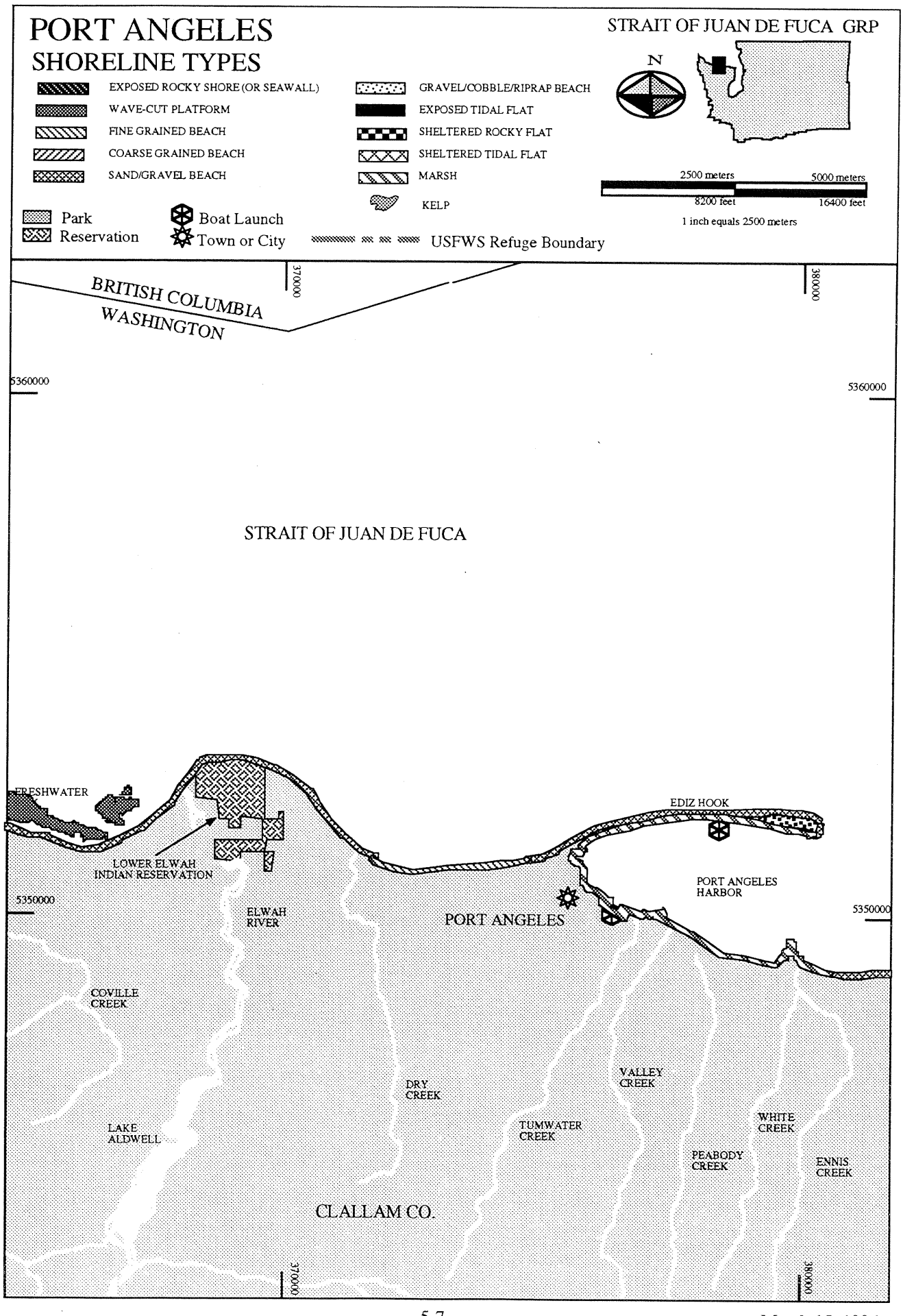
March 15, 1996

TWIN RIVERS
SHORELINE TYPES






SALT CREEK
SHORELINE TYPES
EXPOSED ROCKY SHORE (OR SEAWALL)
WAVE-CUT PLATFORM
FINE GRAINED BEACH
COARSE GRAINED BEACH
SAND/GRAVEL BEACH
GRAVEL/COBBLE/RIPRAP BEACH
EXPOSED TIDAL FLAT
SHELTERED ROCKY FLAT
SHELTERED TIDAL FLAT
MARSH
KELP
Park
Reservation
Boat Launch
Town or City
USFWS Refuge Boundary
STRAIT OF JUAN DE FUCA GRP
N
2500 meters
5000 meters
8200 feet
16400 feet
1 inch equals 2500 meters
370000
380000
BRITISH COLUMBIA
WASHINGTON
STRAIT OF JUAN DE FUCA
5360000
5360000
AGATE BAY
CRESENT BAY
LYRE RIVER
FIELD CREEK
WHISKEY CREEK
SALT CREEK REC. AREA
OBSERVATORY POINT
FRESHWATER BAY
SALT CREEK
JOYCE
5350000
5350000
RAMAPO
CLALLAM CO.
CRESENT LAKE
370000
380000

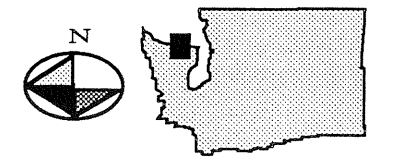

PORT ANGELES
SHORELINE TYPES
EXPOSED ROCKY SHORE (OR SEAWALL)
WAVE-CUT PLATFORM
FINE GRAINED BEACH
COARSE GRAINED BEACH
SAND/GRAVEL BEACH
GRAVEL/COBBLE/RIPRAP BEACH
EXPOSED TIDAL FLAT
SHELTERED ROCKY FLAT
SHELTERED TIDAL FLAT
MARSH
KELP
Park
Reservation
Boat Launch
Town or City
USFWS Refuge Boundary
STRAIT OF JUAN DE FUCA GRP
N
2500 meters
5000 meters
8200 feet
16400 feet
1 inch equals 2500 meters
BRITISH COLUMBIA
WASHINGTON
370000
380000
5360000
5360000
STRAIT OF JUAN DE FUCA
FRESHWATER
LOWER ELWAH
INDIAN RESERVATION
EDIZ HOOK
PORT ANGELES
HARBOR
5350000
5350000
ELWAH
RIVER
PORT ANGELES
COVILLE
CREEK
DRY
CREEK
VALLEY
CREEK
LAKE
ALDWELL
TUMWATER
CREEK
WHITE
CREEK
PEABODY
CREEK
ENNIS
CREEK
CLALLAM CO.
370000
380000

DUNGENESS REC AREA

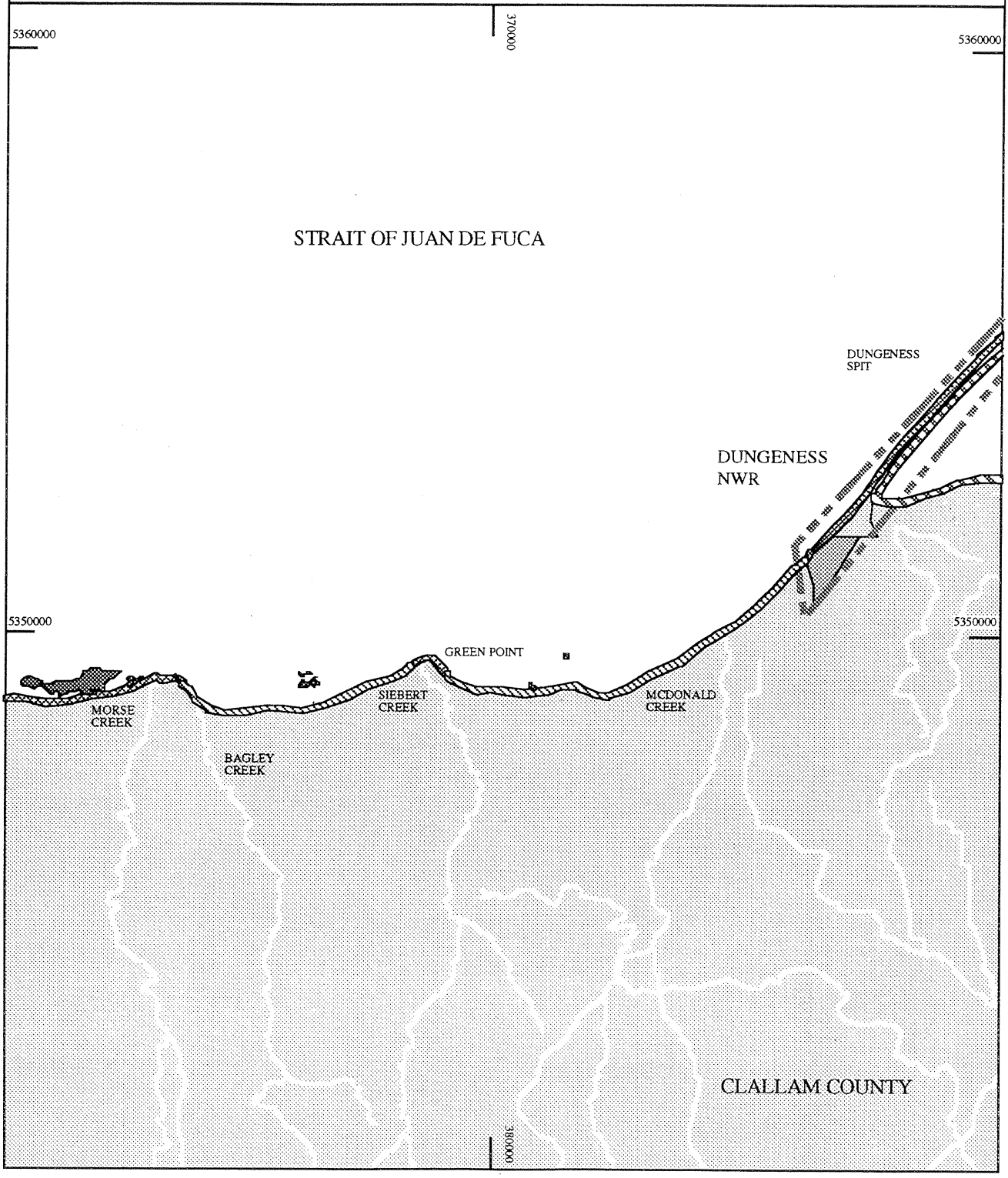
SHORELINE TYPES

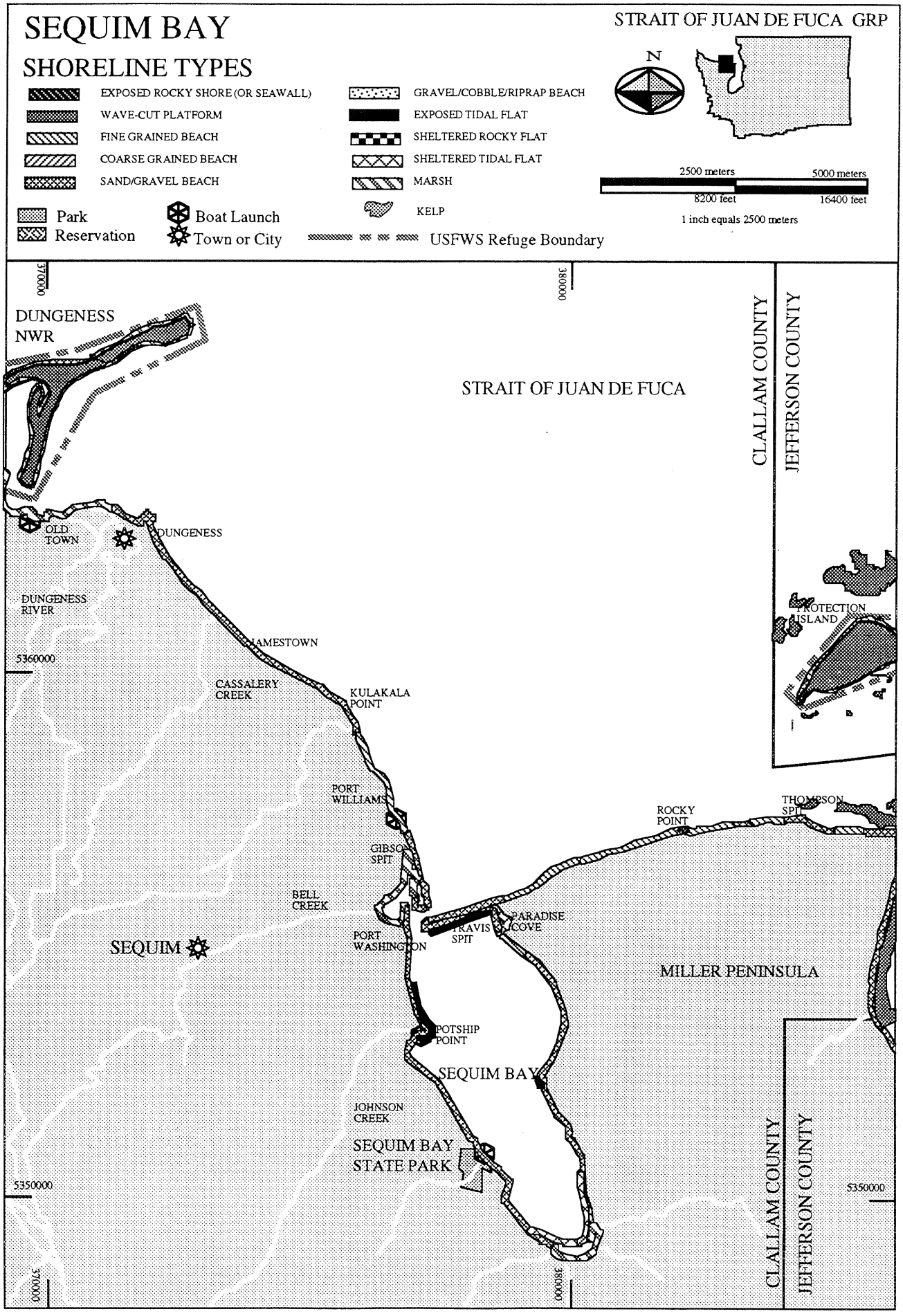
- EXPOSED ROCKY SHORE (OR SEAWALL)
- WAVE-CUT PLATFORM
- FINE GRAINED BEACH
- COARSE GRAINED BEACH
- SAND/GRAVEL BEACH
- GRAVEL/COBBLE/RIPRAP BEACH
- EXPOSED TIDAL FLAT
- SHELTERED ROCKY FLAT
- SHELTERED TIDAL FLAT
- MARSH
- KELP
- Park
- Reservation
- Boat Launch
- Town or City
- USFWS Refuge Boundary

STRAIT OF JUAN DE FUCA GRP



2500 meters 5000 meters
8200 feet 16400 feet
1 inch equals 2500 meters




SEQUIM BAY
SHORELINE TYPES
EXPOSED ROCKY SHORE (OR SEAWALL)
WAVE-CUT PLATFORM
FINE GRAINED BEACH
COARSE GRAINED BEACH
SAND/GRAVEL BEACH
GRAVEL/COBBLE/RIPRAP BEACH
EXPOSED TIDAL FLAT
SHELTERED ROCKY FLAT
SHELTERED TIDAL FLAT
MARSH
KELP
Park
Reservation
Boat Launch
Town or City
USFWS Refuge Boundary
STRAIT OF JUAN DE FUCA GRP
N
2500 meters
5000 meters
8200 feet
16400 feet
1 inch equals 2500 meters
370000
380000
DUNGENESS NWR
STRAIT OF JUAN DE FUCA
CLALLAM COUNTY
JEFFERSON COUNTY
OLD TOWN
DUNGENESS
DUNGENESS RIVER
JAMESTOWN
5360000
CASSALERY CREEK
KULAKALA POINT
PROTECTION ISLAND
PORT WILLIAMS
ROCKY POINT
THOMPSON SPIT
GIBSON SPIT
BELL CREEK
PARADISE COVE
TRAVIS SPIT
PORT WASHINGTON
SEQUIM
MILLER PENINSULA
POTSHIP POINT
SEQUIM BAY
JOHNSON CREEK
SEQUIM BAY STATE PARK
5350000
CLALLAM COUNTY
JEFFERSON COUNTY
5350000
370000
380000

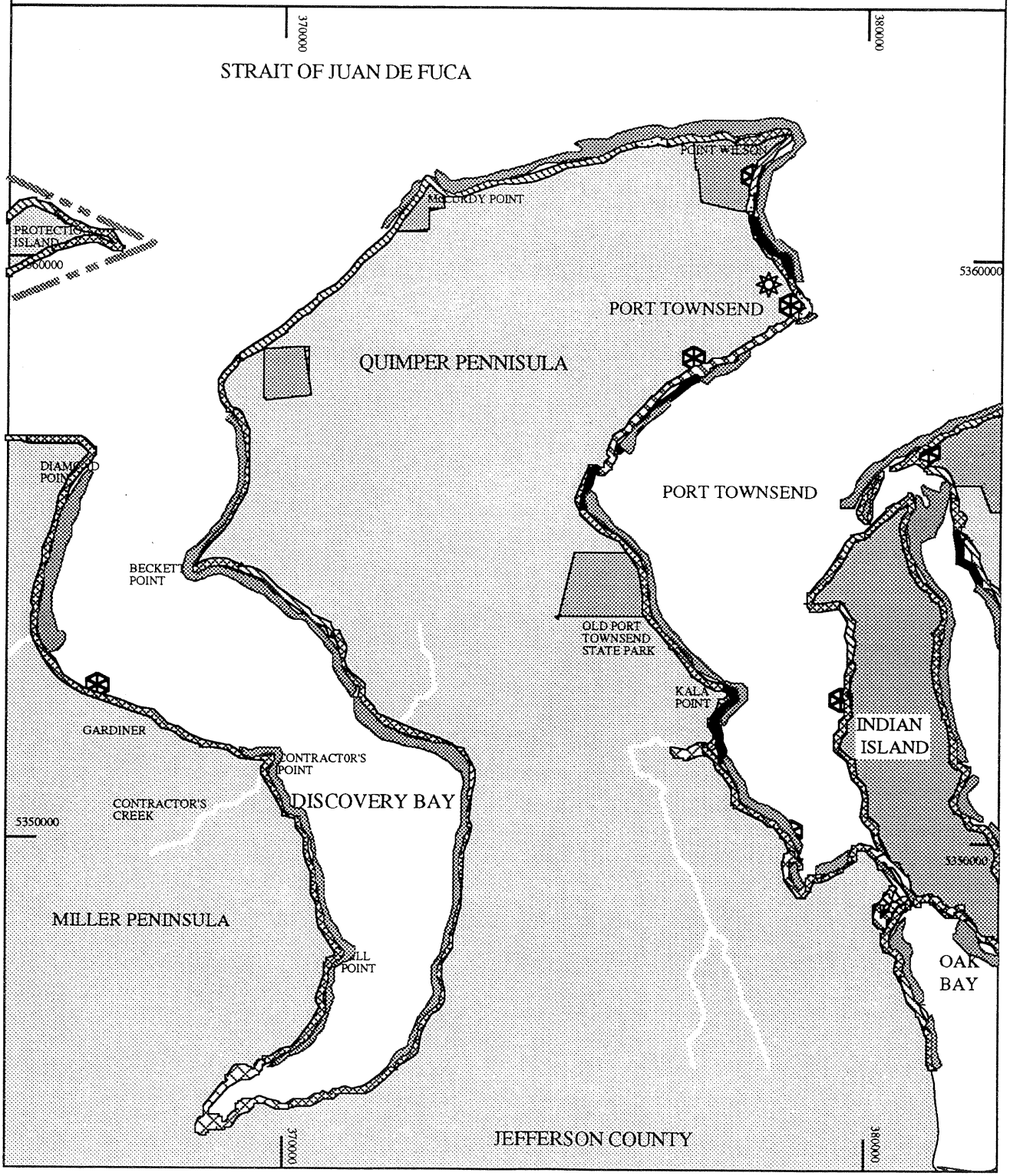
PORT TOWNSEND

SHORELINE TYPES

- EXPOSED ROCKY SHORE (OR SEAWALL)
- WAVE-CUT PLATFORM
- FINE GRAINED BEACH
- COARSE GRAINED BEACH
- SAND/GRAVEL BEACH
- GRAVEL/COBBLE/RIPRAP BEACH
- EXPOSED TIDAL FLAT
- SHELTERED ROCKY FLAT
- SHELTERED TIDAL FLAT
- MARSH
- KELP
- Park
- Reservation
- Boat Launch
- Town or City
- USFWS Refuge Boundary

STRAIT OF JUAN DE FUCA GRP

2500 meters 5000 meters
8200 feet 16400 feet
1 inch equals 2500 meters



FORT EBEY/SMITH ISLAND

SHORELINE TYPES

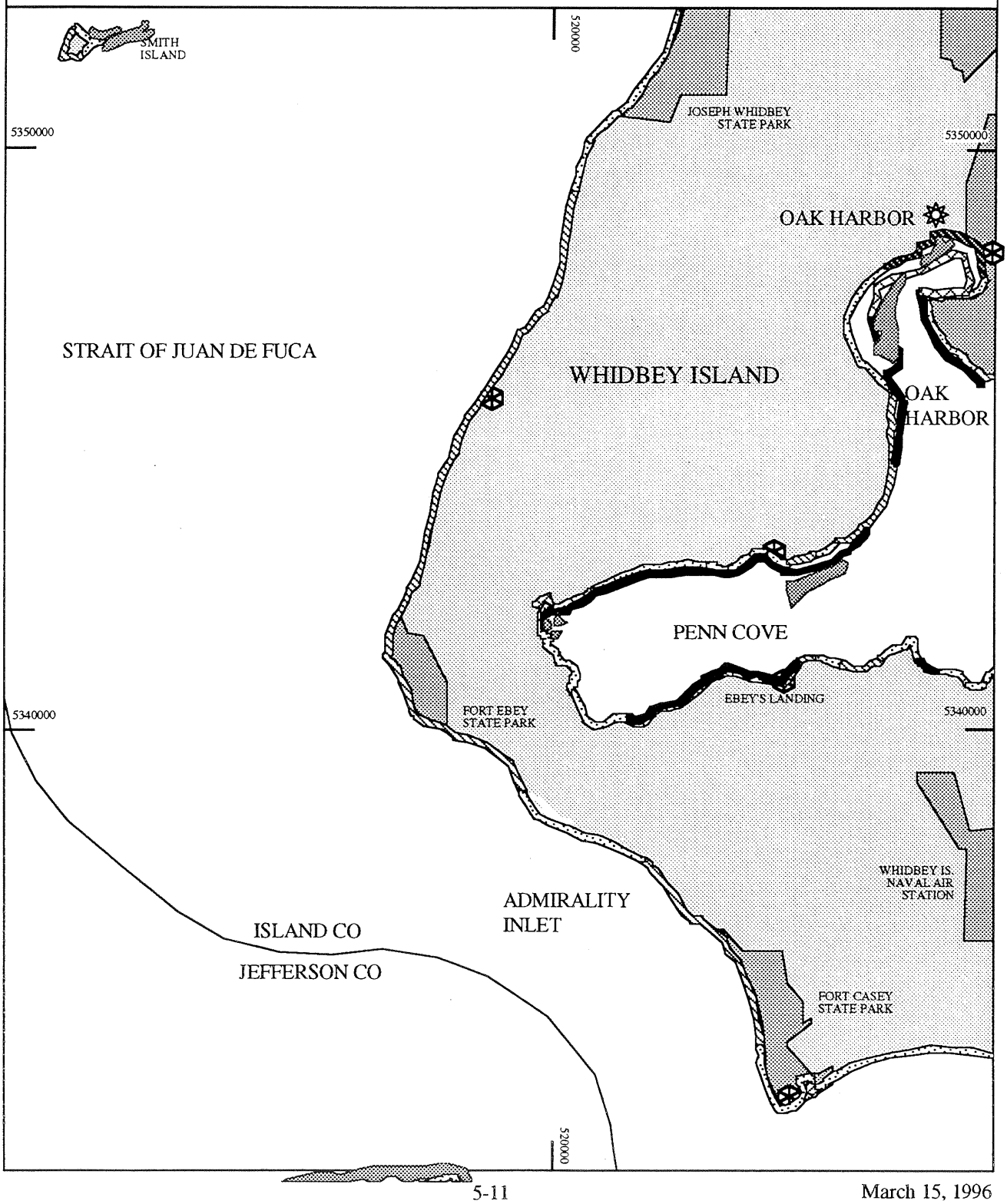
- EXPOSED ROCKY SHORE (OR SEAWALL)
- WAVE-CUT PLATFORM
- FINE GRAINED BEACH
- COARSE GRAINED BEACH
- SAND/GRAVEL BEACH
- GRAVEL/COBBLE/RIPRAP BEACH
- EXPOSED TIDAL FLAT
- SHELTERED ROCKY FLAT
- SHELTERED TIDAL FLAT
- MARSH
- KELP
- Park
- Reservation
- Boat Launch
- Town or City
- USFWS Refuge Boundary

STRAIT OF JUAN DE FUCA GRP

2500 meters 5000 meters

8200 feet 16400 feet

1 inch equals 2500 meters



5.3 Shoreline Countermeasure Matrices

The matrices included here show which shoreline countermeasure techniques have been considered for the fourteen shoreline types described in Chapter 2 of the "Shoreline Countermeasures Manual & Matrices", Northwest Area Plan, Chapter 9650, Page 9-37. Four matrices have been constructed for the major categories of oil (heavy, medium, light, very light).

Countermeasure methods are described in Chapters 3 and 4 of the manual. Countermeasures in Chapter 3 are traditional or conventional techniques that the OSC can use without any additional concurrence. However, the cutting of vegetation countermeasure should be used only during specific seasonal windows under specific conditions and with landowner approval. Countermeasures in Chapter 4 are described under a separate section called "Shoreline Countermeasure Methods Using Alternative Technology" may be useful in certain situations. These methods are considered more experimental and controversial in their application and potential impacts and require more formal review and consultation before implementing. The exact requirements are spelled out in the National Contingency Plan and the Northwest Area Plan. The Shoreline Countermeasures Matrices are a particularly dynamic component of the manual and should continue to be revised as the existing techniques are used and evaluated, and as both old and new techniques are refined.

Each matrix has a written explanation of how it is to be used as a countermeasure advisability matrix. The matrices are only a general guide for removing oil from shoreline substrates. They must be used in conjunction with the entire "Shoreline Countermeasures Manual" plus field observations and scientific advice. The countermeasures listed are not necessarily the best under all circumstances, and any listed technique may need to be used in conjunction with other techniques (including ones not listed herein). The Federal On-Scene Coordinator (FOSC) or the State OSC operating with the FOSC's authorization has the responsibility for and authority to determine which countermeasure(s) are appropriate for the various situations encountered.

Selection of countermeasure techniques to be used in each spill is based upon the degree of oil contamination, shoreline types, and the presence of sensitive resources. Extremely sensitive areas are generally limited to manual cleanup methods. It is important to note that the primary goal of countermeasure implementation is the removal of oil from the shoreline with no further injury or destruction to the environment. The three categories of guidance used in the matrices are defined as follows:

R	Recommended	May be the preferred method that best achieves the goal of minimizing destruction or injury to the environment
C	Conditional	Viable and possibly useful but may result in limited adverse effects to the environment
	Shaded	Not applicable or not generally recommended.

SHORELINE COUNTERMEASURES MATRIX

Heavy Oil (Heavy Crude Oils, Intermediate Fuel Oils, Bunker C & Heavily Weathered Medium Crudes)

- Heavy oils with little or no evaporation or dissolution
- Water-soluble fraction likely to be <10ppm
- Heavy contamination of intertidal areas likely
- Severe impacts to waterfowl and fur-bearing mammals (coating and ingestion)
- Long-term contamination to sediments possible
- Weathers very slowly
- Dispersion seldom effective
- Shoreline cleanup difficult under all conditions

SHORELINE TYPES CODES

1- Exposed rock shores and vertical, hard man-made structure (e.g. seawalls)
2 - Exposed wave-cut platforms
3 - Fine to medium grained sand beaches & steep unvegetated river banks
4 - Course grained sand beaches
5 - Mixed sand and gravel beaches, including artificial fill containing a range of grain size and material
6A - Gravel beaches - pebbles to cobble
6B - Gravel beaches - cobbles to boulders
6C - Exposed rip rap
7 - Exposed tidal flat
8A- Sheltered vertical rock shores and vertical, hard man-made structures (e.g. seawalls, docks, bulkheads)
8B - Sheltered rubble slope
9A - Sheltered sand and mud flats
9B - Sheltered vegetated low bank
10 - Marshes

COUNTERMEASURES	SHORELINE TYPES 1	2	3	4	5	6A	6B	6C	7	8A	8B	9A	9B	10
CONVENTIONAL METHODS														
No action	C	C	C	C	C	C	C	C	R	C	C	R	C	R
Manual removal of oil	C	R	R	R	R	C	C	C		R	R		C	C
Passive collection of oil	R	R	R	R	R	R	R	R	C	R	R	C	R	R
Oiled debris removal	C	R	R	R	R	R	R	R	C	R	R	C	R	C
Trenching/recovery wells			C	C	C									
Oiled sediment removal			C	C	C	C		C					C	
Ambient water flooding (Deluge)			C	C	C	R	R	R		R	R		C	C
Amb water flush <50 psi	C	C			C	R	C	R		C	C		C	C
Amb water flush <100 psi	C	C					C	C		C	C			
Warm water flush <90°F	C						C	C		C				
Hot water flush >90°F	C									C				
Vacuum removal of oil	C	C	C	C	C	C	C	C		C	C		C	C
Sediment reworking			C	C	C	C								
Sediment Removal-cleaning-replacement			C	C	C	C		C						
Cutting oiled vegetation							C	C		C	C		C	C
ALTERNATIVE METHODS*														
In-situ burning on shore														
Chemical stabilization, protection, cleaning														
Nutrient enhancement			C	C	C	C	C	C						C
Microbial addition														

R Recommend - May be Preferred Alternative
C Conditional (Refer to NW Shoreline Countermeasures Manual)
Shaded areas are Not Applicable or Not Generally Recommened
***** Follow approved process defined in NCP and NW Area Plan

This countermeasure advisability matrix is only a general guide for removal of oil from shoreline substrates. It must be used in conjunction with the entire Shoreline Countermeasures Manual plus field observations and scientific advice. The countermeasures listed are not necessarily the best under all circumstances, and any listed technique may need to be used in conjunction with other techniques (including ones not listed herein). The Federal On-Scene Coordinator (FOSC) or the state OSC operating with the FOSC's authorization has the responsibility for and the authority to determine which countermeasure(s) are appropriate for various situations encountered. Selection of countermeasures is based on the degree of oil contamination, the shoreline type, and the presence of sensitive resources.

SHORELINE COUNTERMEASURES MATRIX

Medium Oil (Most Crude Oils & Some Heavily Weathered Light Crudes)

- About 1/3 will evaporate within 24 hours
- Maximum water-soluble fraction is 10-100ppm
- Oil contamination of intertidal areas can be severe and long-term
- Impact to waterfowl and fur-bearing mammals can be severe
- Chemical dispersion is an option within 1-2 days
- Cleanup most effective if conducted quickly

SHORELINE TYPES CODES

1- Exposed rock shores and vertical, hard man-made structure (e.g. seawalls)
2 - Exposed wave-cut platforms
3 - Fine to medium grained sand beaches & steep unvegetated river banks
4 - Course grained sand beaches
5 - Mixed sand and gravel beaches, including artificial fill containing a range of grain size and material
6A - Gravel beaches - pebbles to cobble
6B - Gravel beaches - cobbles to boulders
6C - Exposed rip rap
7 - Exposed tidal flat
8A- Sheltered vertical rock shores and vertical, hard man-made structures (e.g. seawalls, docks, bulkheads)
8B - Sheltered rubble slope
9A - Sheltered sand and mud flats
9B - Sheltered vegetated low bank
10 - Marshes

COUNTERMEASURES	SHORELINE TYPES 1	2	3	4	5	6A	6B	6C	7	8A	8B	9A	9B	10
CONVENTIONAL METHODS														
No action	C	C	C	C	C	C	C	C	R	C	C	R	C	R
Manual removal of oil	C	R	R	R	R	C	C	C		R	R		C	C
Passive collection of oil	R	R	R	R	R	R	R	R	C	R	R	R	R	R
Oiled debris removal	C	R	R	R	R	R	R	R	C	R	R	C	R	C
Trenching/recovery wells			C	C	C									
Oiled sediment removal			C	C	C	C							C	
Ambient water flooding (Deluge)			C	C	C	R	R	R		R	R		C	C
Amb water flush <50 psi	C	C			C	R	C	R		R	R		C	C
Amb water flush <100 psi	C	C					C	C		C				
Warm water flush <90°F	C						C	C		C				
Hot water flush >90°F	C									C				
Vacuum removal of oil	C	C	R	R		C	R	R		C	C		C	C
Sediment reworking			C	C	C	C								
Sediment Removal-cleaning-replacement			C	C	C	C		C			C			
Cutting oiled vegetation							C	C		C	C		C	C
ALTERNATIVE METHODS*														
In-situ burning on shore														
Chemical stabilization, protection, cleaning														
Nutrient enhancement			C	C	C	C	C	C			C			C
Microbial addition														

R Recommend - May be Preferred Alternative
C Conditional (Refer to NW Shoreline Countermeasures Manual)
Shaded areas are Not Applicable or Not Generally Recommened
***** Follow approved process defined in NCP and NW Area Plan

This countermeasure advisability matrix is only a general guide for removal of oil from shoreline substrates. It must be used in conjunction with the entire Shoreline Countermeasures Manual plus field observations and scientific advice. The countermeasures listed are not necessarily the best under all circumstances, and any listed technique may need to be used in conjunction with other techniques (including ones not listed herein). The Federal On-Scene Coordinator (FOSC) or the state OSC operating with the FOSC's authorization has the responsibility for and the authority to determine which countermeasure(s) are appropriate for various situations encountered. Selection of countermeasures is based on the degree of oil contamination, the shoreline type, and the presence of sensitive resources.

SHORELINE COUNTERMEASURES MATRIX

Light Oil (Diesel, No 2 Fuel Oils, Light Crudes)

- Moderately volatile; will leave residue (up to 1/3 of spilled amount)
- Moderate concentrations of toxic (soluble) compounds
- Long-term contamination of intertidal resources possible
- Potential for subtidal impacts (dissolution, mixing, sorption onto suspended sediments)
- No dispersion necessary
- Cleanup can be very effective

SHORELINE TYPES CODES

1- Exposed rock shores and vertical, hard man-made structure (e.g. seawalls)
2 - Exposed wave-cut platforms
3 - Fine to medium grained sand beaches & steep unvegetated river banks
4 - Course grained sand beaches
5 - Mixed sand and gravel beaches, including artificial fill containing a range of grain size and material
6A - Gravel beaches - pebbles to cobble
6B - Gravel beaches - cobbles to boulders
6C - Exposed rip rap
7 - Exposed tidal flat
8A- Sheltered vertical rock shores and vertical, hard man-made structures (e.g. seawalls, docks, bulkheads)
8B - Sheltered rubble slope
9A - Sheltered sand and mud flats
9B - Sheltered vegetated low bank
10 - Marshes

COUNTERMEASURES	SHORELINE TYPES 1	2	3	4	5	6A	6B	6C	7	8A	8B	9A	9B	10
CONVENTIONAL METHODS														
No action	R	R	C	C	C	C	C	C	R	C	C	R	C	R
Manual removal of oil			C	C	C	C	C	C		R	R		C	
Passive collection of oil	C	R	R	R	R	R	R	R	C	R	R	C	R	R
Oiled debris removal	C	C	R	R	R	R	R	R	C	R	R	C	C	C
Trenching/recovery wells			C	C	C									
Oiled sediment removal			C	C	C	C								
Ambient water flooding (Deluge)			C	C	C	R	R	R			C			C
Amb water flush <50 psi		C			C	C	C	C		R	C			C
Amb water flush <100 psi														
Warm water flush <90°F														
Hot water flush >90°F														
Vacuum removal of oil							C	C						C
Sediment reworking			C	C	C	C								
Sediment Removal-cleaning-replacement			C	C	C									
Cutting oiled vegetation							C	C		C	C		C	C
ALTERNATIVE METHODS*														
In-situ burning of shore														
Chemical stabilization, protection, cleaning														
Nutrient enhancement			C	C	C	C	C	C						C
Microbial addition														

R Recommend - May be Preferred Alternative
C Conditional (Refer to NW Shoreline Countermeasures Manual)
Shaded areas are Not Applicable or Not Generally Recommened
***** Follow approved process defined in NCP and NW Area Plan

This countermeasure advisability matrix is only a general guide for removal of oil from shoreline substrates. It must be used in conjunction with the entire Shoreline Countermeasures Manual plus field observations and scientific advice. The countermeasures listed are not necessarily the best under all circumstances, and any listed technique may need to be used in conjunction with other techniques (including ones not listed herein). The Federal On-Scene Coordinator (FOSC) or the state OSC operating with the FOSC's authorization has the responsibility for and the authority to determine which countermeasure(s) are appropriate for various situations encountered. Selection of countermeasures is based on the degree of oil contamination, the shoreline type, and the presence of sensitive resources.

SHORELINE COUNTERMEASURES MATRIX

Very Light Oil (Jet fuels, Gasoline)

- Highly volatile (should all evaporate within 1-2 days)
- High concentration of toxic (soluble) compounds
- Result: Localized, severe impacts to water column and intertidal resources
- Duration of impact is a function of the resource recovery rate
- No dispersion necessary

SHORELINE TYPES CODES

1- Exposed rock shores and vertical, hard man-made structure (e.g. seawalls)
2 - Exposed wave-cut platforms
3 - Fine to medium grained sand beaches & steep unvegetated river banks
4 - Course grained sand beaches
5 - Mixed sand and gravel beaches, including artificial fill containing a range of grain size and material
6A - Gravel beaches - pebbles to cobble
6B - Gravel beaches - cobbles to boulders
6C - Exposed rip rap
7 - Exposed tidal flat
8A- Sheltered vertical rock shores and vertical, hard man-made structures (e.g. seawalls, docks,
8B - Sheltered rubble slope
9A - Sheltered sand and mud flats
9B - Sheltered vegetated low bank
10 - Marshes

COUNTERMEASURES	SHORELINE TYPES 1	2	3	4	5	6A	6B	6C	7	8A	8B	9A	9B	10
CONVENTIONAL METHODS														
No action	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Manual removal of oil														
Passive collection of oil			C	C	C	C	C	C						
Oiled debris removal	C	C	C	C	C	C	C	C	C	C	C	C	C	C
Trenching/recovery wells			C	C	C									
Oiled sediment removal														
Ambient water flooding (Deluge)														C
Amb water flush <50 psi														
Amb water flush <100 psi														
Warm water flush <90°F														
Hot water flush >90°F														
Vacuum removal of oil														
Sediment reworking			C	C	C	C								
Sediment Removal-cleaning-replacement														
Cutting oiled vegetation														
ALTERNATIVE METHODS*														
In-situ burning on shore														
Chemical stabilization, protection, cleaning														
Nutrient enhancement														
Microbial addition														

R Recommend - May be Preferred Alternative
C Conditional (Refer to NW Shoreline Countermeasures Manual)
Shaded areas are Not Applicable or Not Generally Recommened
***** Follow approved process defined in NCP and NW Area Plan

This countermeasure advisability matrix is only a general guide for removal of oil from shoreline substrates. It must be used in conjunction with the entire Shoreline Countermeasures Manual plus field observations and scientific advice. The countermeasures listed are not necessarily the best under all circumstances, and any listed technique may need to be used in conjunction with other techniques (including ones not listed herein). The Federal On-Scene Coordinator (FOSC) or the state OSC operating with the FOSC's authorization has the responsibility for and the authority to determine which countermeasure(s) are appropriate for various situations encountered. Selection of countermeasures is based on the degree of oil contamination, the shoreline type, and the presence of sensitive resources.

Purpose of Chapter 6

The information presented in this chapter highlights some of the more significant environmentally sensitive areas within the GRP region that could be impacted as a result of an oil spill. Consistent with the overall purpose of the GRP's, this information is only intended to provide a level of detail required during the initial phase of spill response. During an actual event, additional resource information will be available from the resource trustee agencies supporting the Environmental Unit in the Planning Section. Specific resource concerns for areas that already have designated protection strategies in Chapter 4 of the GRP may be found in the "Resources Protected" column in the matrix describing the individual strategies.

The information provided in Chapter 6 is intended for use in:

- Preparing an initial ICS 232 form (Resources-at-Risk summary) for Incident Command

- Identifying those sites where it may be necessary to implement Flight Restriction Zones in order to prevent disturbance/injury to sensitive wildlife species.

- Identifying sensitive shoreline habitats to assist SCAT teams in their initial assessments and to help personnel in the Environmental Unit in developing appropriate cleanup strategies.

Chapter 6 consists of two sets of maps and tables - one for wildlife and the other for fish, shellfish and selected sensitive marine habitats. These data are presented separately, both for ease of reading and because each of the two data sets has slightly different applications within the context of spill response.

The wildlife maps and tables present information on the location and seasonal sensitivity of key wildlife resources. Types of data included here are concentration areas for waterfowl, marine birds and shorebirds; seabird colonies; nesting areas for sensitive species such as eagles, herons and falcons; and marine mammal haulout sites. This information is intended for the rapid identification of areas where significant wildlife oiling impacts could be anticipated and to denote areas where flight restriction zones may be required to protect sensitive wildlife. Each site depicted on these maps is identified by a unique number in order to facilitate the process of communicating Flight Restriction Zone recommendations to the Operations Section in ICS. The tables accompanying the wildlife maps present information on the season(s) during which sites may be particularly sensitive to disturbance.

The fish/shellfish/marine habitat maps present general information on the location of baitfish spawning beaches, herring spawning areas, streams used by anadromous salmonids, hardshell clam concentrations, and kelp and eelgrass beds. This information will be most useful to personnel involved in assessing initial risks to fish and shellfish resources and to those conducting initial beach reconnaissance, pending availability of more detailed resource information and the formation of SCAT teams.

Because the operational uses of this information differ from those of the wildlife data, individual site identification numbers have not been assigned. Tables associated with these maps will identify the seasonal sensitivity of each resource. In addition, notes accompanying each table will provide information on the general distribution and seasonal sensitivity of those resources that are not mapped but may occur anywhere in the GRP region (ex. juvenile salmonids in shallow nearshore waters).

6. Sensitive Resource Description

The Strait of Juan de Fuca provides a wide diversity of shoreline and marine habitats, abundant food resources, exceptional water quality, and extensive cultural history. This region includes one of our state's largest seabird nesting colonies and numerous marine mammal breeding and resting sites. The nearshore region supports a large and diverse assemblage of animals because of the varied habitats which occur here. The strong mixing of nutrient-rich waters from nearby estuaries promotes high productivity and makes these waters rich feeding grounds. Kelp beds found nearshore serve as nursery areas for a variety of fish and other marine organisms. They also create protected waters for resting marine birds and waterfowl. Rocks and islands within the nearshore zone also provide critical resting and breeding habitat for seabirds and marine mammals. The dynamic intertidal zones along the Strait of Juan de Fuca shoreline support rich communities of uniquely adapted marine invertebrates, and host numerous recreational and cultural resources. Offshore waters in the Strait of Juan de Fuca seasonally support large numbers of seabirds and are important migration corridors for marine mammals.

6.1. Fish and Wildlife[5]

Birds

Numerous species of marine birds, waterfowl, and shorebirds are either residents or seasonal visitors in the Strait of Juan de Fuca. Most abundant are colonial nesting species such as the rhinoceros auklet, tufted puffin, double-crested and pelagic cormorants, and glaucous-winged gulls. Major seabird nesting colonies occur on Protection and Smith Islands. Protection Island, the largest, hosts an estimated 16% of Washington's entire seabird breeding population, including as many as 17,000 breeding pairs of rhinoceros auklets. Tatoosh Island, one of our state's largest seabird colonies, lies at the western boundary of the Strait of Juan de Fuca. Many birds residing here utilize the marine waters inside the Strait of Juan de Fuca. Bird distribution tends to be clustered in both nearshore and offshore waters of the Strait.

A number of smaller seabird nesting colonies for species such as pigeon guillemot and black oystercatcher are scattered throughout the region on offshore rocks, exposed rocky coasts, or on pilings. In aggregate, these represent an important contribution to the total seabird population of the region. Marbled murrelets are unique among the area's seabirds because they nest inland in old-growth forests and yet spend much of their time feeding and resting on marine waters in the nearshore environment. This species, federally listed as threatened, is of special concern since it has been shown to be highly vulnerable to oil spills. Bald eagles and peregrine falcons nest within the region and are closely associated with the marine ecosystem because of their feeding habits and resting sites. Both of these species are listed under the federal Endangered Species Act.

Marine Mammals

Five common resident species of whales and dolphins are found within the Strait of Juan de Fuca. These include gray whale, minke whale, orca, Dall's porpoise, and harbor porpoise. Another eleven species of whales or dolphins have been recorded as rare or accidental within the region. One of these, the humpback whale, is federally listed as an endangered species. The Strait of Juan de Fuca hosts one permanent resident pinniped - the harbor seal. The islands, nearshore rocks, and beaches of the Strait of Juan de Fuca provide pupping and resting sites for harbor seals, with the largest concentrations found on Protection Island, Smith Island, and Dungeness Spit. Three additional species occur as regular seasonal residents or migrants: the Stellar's sea lion (federally listed as threatened), California sea lion, and Northern elephant sea. Northern fur seals are relatively rare visitors to the area.

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[5] Information provided by the Washington Department of Fish & Wildlife,Spill Response and Resource Protection Team

Cape Flattery, at the western edge of this GRP region, is the northern end of the range of Washington's entire sea otter population, which extends south to Destruction Island. They are most commonly found within a mile or two of shore, especially in areas where beds of giant kelp occur. This region also supports a large population of river otters which, while not classified as marine mammals, are largely marine in their habits.

Fish and Shellfish

The Strait of Juan de Fuca and its bays and harbors support a large and varied fisheries resource. Baitfish present in the region include surf smelt, sand lance, and herring. Shellfish commonly found in the Strait of Juan de Fuca includes intertidal and subtidal hardshell/softshell calms, pink/spiny scallops, octopus, oysters, rock scallops, sea urchins, geoducks, cancer crabs, pintail shrimp, redrock crab, Dungeness crab, and abalone. Sea urchins and geoducks both hold great commercial value.

Five species of salmon traverse the Strait of Juan de Fuca in their migration toward spawning grounds. There are stocks from as far away as the Deschutes River in South Puget Sound and the Fraser River in British Columbia traveling through the area. Other species such as juvenile ling cod and rockfish use eelgrass and kelp beds along the Strait for protection.

The three most important fisheries areas in the Strait are:

1. Discovery Bay. This area hosts significant adult herring spawning. Sand lance larvae are present. The area has not been surveyed for smelt. Softshell and hardshell clams, including geoducks, occur around the bay's perimeter. This is an important area for Dungeness Crab.

2. Sequim Bay. Sand lance and smelt spawn in the entire interior of the bay. Herring spawning occurs on both sides of the bay. Sand lance spawn out on the spit, where larvae also occur. Clams, shrimp, geoducks, and octopus are also found in the bay.

3. Dungeness Bay. This bay hosts smelt and herring spawning, and is also a herring holding area. Dungeness Bay is also an important location for clams and Dungeness crabs.

6.2. Other Resources

Kelp and Eelgrass[6]

Many species of algae have been identified in the rocky intertidal and nearshore areas of the Strait of Juan de Fuca. Two species of brown algae dominate the extensive kelp forests of this area - bull kelp (*Nereocystis leutkeana)* and giant kelp (*Macrocystis intergrifolia).* Bull kelp tends to inhabit more protected inshore waters, while giant kelp occurs in more exposed areas. Both species play a critical role in providing shelter and food resources to fish and wildlife. Large eelgrass beds occur in Sequim Bay, Discovery Bay, and at Sequim Head; eelgrass also can be found on the north side of Protection Island and from Cape George to Fort Warden.

Cultural Resources[7]

The entire Strait of Juan de Fuca offers valuable recreational experiences - from scenic headlands at Cape Flattery to popular beaches and parks in the inner Strait. Archaeological resources occur throughout the shores of the Strait. Some locations are over 3,000 years old and all have valuable historic properties. These sites are often near shore in intertidal or low bank areas, which must be considered during shoreline cleanup and remediation.

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[6] Information provided by the Washington Department of Natural Resources, Aquatic Lands Division

[7] Information provided by the Washington State Department of Archaeology and Historic Preservation

6.3. Flight Restriction Zones

Flight restriction zones have been designated in the GRP to minimize disturbance to certain wildlife species. An identified location could represent a marine mammal haulout site, a seabird or heron colony, or the individual nest of a sensitive species such as bald eagle. While some zones may be restricted year around, others will be in effect only during the months listed in the matrix.

In general, the no-fly bubble is the area within a 1,500 foot radius and below 1,000 feet in altitude around the location. Restrictions on flight are greater at the west end of the Strait of Juan de Fuca due to the presence of the Olympic Coast National Marine Sanctuary and Olympic National Park. In those protected areas, non-emergency response aircraft must stay above 2,000 feet in elevation within one nautical mile of shore or offshore islands unless otherwise authorized. All aircraft, including those from the government, contractors or media, are expected to avoid these zones when restrictions are in effect. During oil spills, pilots are also asked to avoid disturbing any large concentrations of birds and other wildlife. By keeping a safe distance or altitude, pilots can prevent the accidental hazing of unaffected wildlife into oiled areas and minimize the risk of aircraft/ bird collisions. Due to the density of coastal eagle nests in this region, pilots are asked to avoid low altitude flights over treeline adjacent to the beach. In addition to flight restrictions, boat and ground crews must also

remain at least 200 yards away from the boundaries of any offshore National Wildlife Refuge rocks/islands or sensitive areas identified in Section 6.5. Tribal authorities also request notification when overflights may affect culturally-sensitive areas within reservation boundaries.

6.4. Hazing

Hazing or directed harassment, is a method used to drive or herd wildlife out of an area where they are at risk of becoming oiled. Hazing techniques include the use of visual and audio devices, personnel for herding, vessels and aircraft. In the right circumstances it can be effective in protecting some wildlife species. In other cases it can be disastrous as unaffected wildlife can be driven into oiled areas, or forced to abandon nests or young.

National Marine Fisheries Service staff or their designees will perform all hazing of marine mammals other than sea otters. Before hazing can begin for all other species of wildlife, clearance must be obtained from the Washington Department of Fisheries and Wildlife and the United States Fish and Wildlife Service. All hazing efforts during a spill will be directed by these agencies. The deliberate harassment of wildlife without first securing permission from these agencies is a violation of Federal and State laws.

The following information must be provided for a determination on whether hazing might be authorized in a given situation.

1. Description of the situation where hazing authorization is being sought
2. Location to be hazed
3. Species of wildlife to be hazed and number of animals
4. Methods and equipment used
5. Date and time of hazing
6. Name, phone number, radio frequency, pager number and the amount of hazing experience of the individual requesting permission

The responsible agencies will evaluate each request on a case by case basis. All hazing of marine mammals, threatened and endangered species, and all hazing by aircraft will be performed only under authority and general supervision of WDF&W, USFWS, NMFS or persons designated by these agencies. Representatives of these agencies can be contacted through the planning section of the Unified Command System during the spill event.

6.5. Flight Restriction Zones/Sensitive Wildlife

CAPE FLATTERY FLIGHT RESTRICTION ZONES/SENSITIVE WILDLIFE

NOAA Chart 18400									PERIOD OF SENSITIVITY											
Code	Location	Seabird Colony	Seabird Conc	Waterfowl Conc	Marine Mammal Haulout	Sensitive Nesting Species	Shorebird Conc	Flight Exclusion	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
WOC-1	Seal & Sail Rocks	Yes						Yes												
WOC-2	Mushroom Rock					Yes		Yes												
WOC-3	Tatoosh Island	Yes	Yes		Yes	Yes		Yes												
WOC-4	Fuca Pillar					Yes		Yes												
WOC-5	Portage Head					Yes		Yes												

* FLIGHT AND GROUND ENTRY RESTRICTIONS

Flights below 1000 feet require clearance

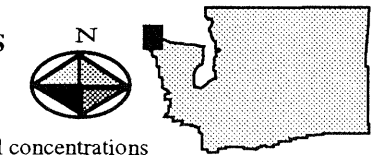
Sensitive season - Minimize seasonal disturbance

CAPE FLATTERY

STRAITS OF JUAN DE FUCA GRP

FLIGHT RESTRICTION ZONES FOR SENSITIVE WILDLIFE SPECIES

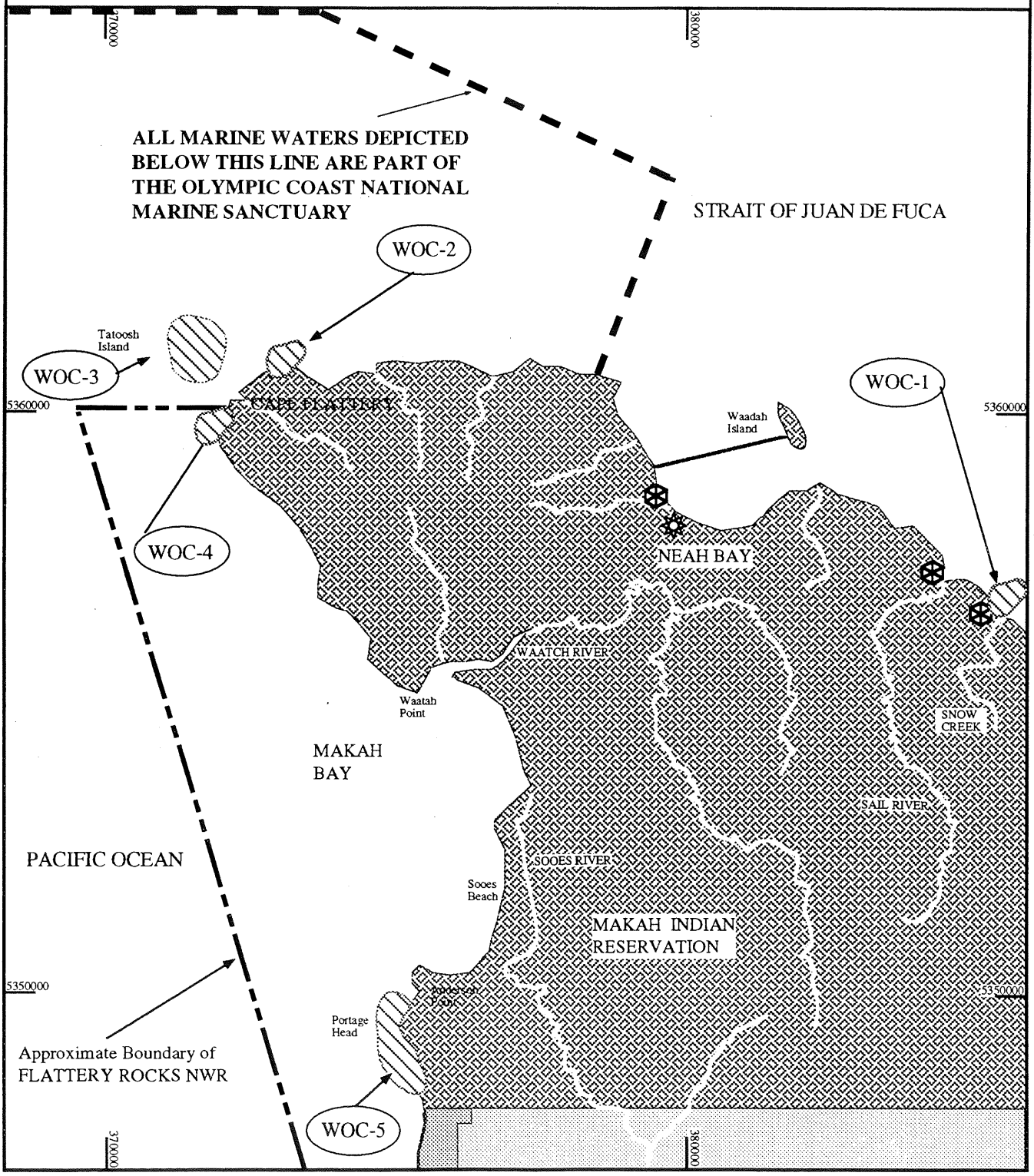
1. Pilots refer to chapter 6.3 Flight Restriction Zones
2. All ground entry within 200 yards of sensitive nesting species is restricted
3. All boaters are requested to approach no closer than 200 yards from seal and waterfowl concentrations



Sensitive Wildlife Area

2500 meters 5000 meters
8200 feet 16400 feet
1 inch equals 2500 meters

Park
Reservation
Boat Launch
Town or City
USFWS Refuge Boundary



March 15 ,1996

SHIPWRECK POINT TO KYDAKA POINT FLIGHT RESTRICTION ZONES/SENSITIVE WILDLIFE

NOAA Chart 18400

Code	Location	Seabird Colony	Seabird Conc	Waterfowl Conc	Marine Mammal Haulout	Sensitive Nesting Species	Shorebird Conc	Flight Exclusion	PERIOD OF SENSITIVITY											
									Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	No Resources Identified																			

* FLIGHT AND GROUND ENTRY RESTRICTIONS

Flights below 1000 feet require clearance

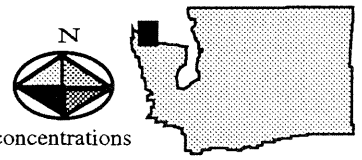
Sensitive season - Minimize seasonal disturbance

SHIPWRECK PT. TO KYDAKA PT.

STRAIT OF JUAN DE FUCA GRP

FLIGHT RESTRICTION ZONES FOR SENSITIVE WILDLIFE SPECIES

1. Pilots refer to chapter 6.3 Flight Restriction Zones
2. All ground entry within 100 yards of sensitive nesting species is restricted
3. All boaters are requested to approach no closer than 100 yards from seal and waterfowl concentrations



Sensitive Wildlife Area

2500 meters 5000 meters
8200 feet 16400 feet
1 inch equals 2500 meters

Park
Reservation

Boat Launch
Town or City

USFWS Refuge Boundary

390000
400000
5360000
5350000
STRAIT OF JUAN DE FUCA
BULLMAN CREEK
RASMUSSEN CREEK
SHIPWRECK PT.
OLSEN CREEK
KYDAKA PT.
SEKIU RIVER
CARPENTERS CREEK
HOKO RIVER

CLALLAM BAY TO PILLAR POINT FLIGHT RESTRICTION ZONES/SENSITIVE WILDLIFE

NOAA Chart 18400

Code	Location	Seabird Colony	Seabird Conc	Waterfowl Conc	Marine Mammal Haulout	Sensitive Nesting Species	Shorebird Conc	Flight Exclusion	PERIOD OF SENSITIVITY											
									Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
W-1	Slip Point				Yes	Yes		Yes	■	■	■	■	■	■	■	■				
W-2	Pillar Point			Yes	Yes	Yes		Yes	■	■	■	■	■	■	■	■	■	■	■	■

* FLIGHT AND GROUND ENTRY RESTRICTIONS

■ Flights below 1000 feet require clearance

▒ Sensitive season - Minimize seasonal disturbance

CLALLAM BAY TO PILLAR PT.

STRAIT OF JUAN DE FUCA GRP

FLIGHT RESTRICTION ZONES FOR SENSITIVE WILDLIFE SPECIES

1. Pilots refer to chapter 6.3 Flight Restriction Zones
2. All ground entry within 100 yards of sensitive nesting species is restricted
3. All boaters are requested to approach no closer than 100 yards from seal and waterfowl concentrations

Sensitive Wildlife Area

Park

Reservation

Boat Launch

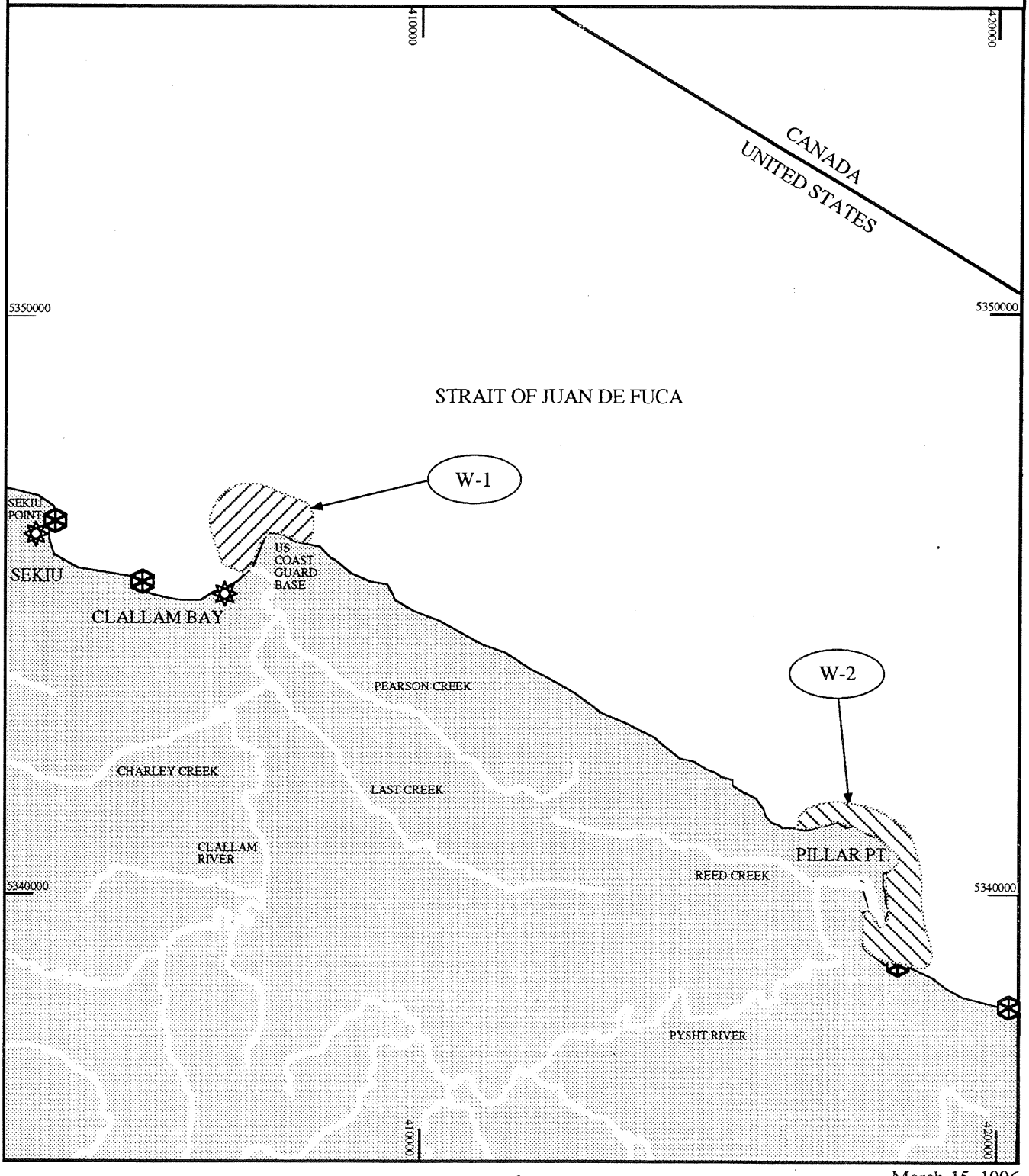
Town or City

USFWS Refuge Boundary

2500 meters 5000 meters

8200 feet 16400 feet

1 inch equals 2500 meters



TWIN RIVERS FLIGHT RESTRICTION ZONES/SENSITIVE WILDLIFE

NOAA Chart 18400

Code	Location	Seabird Colony	Seabird Conc	Waterfowl Conc	Marine Mammal Haulout	Sensitive Nesting Species	Shorebird Conc	Flight Exclusion	PERIOD OF SENSITIVITY											
									Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
W-3	West Twin River		Yes		Yes	Yes		Yes	■	■	■	■	■	■	■	■				

* FLIGHT AND GROUND ENTRY RESTRICTIONS

■ Flights below 1000 feet require clearance

▒ Sensitive season - Minimize seasonal disturbance

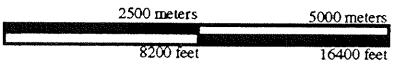
TWIN RIVERS

STRAIT OF JUAN DE FUCA GRP

FLIGHT RESTRICTION ZONES FOR SENSITIVE WILDLIFE SPECIES

1. Pilots refer to chapter 6.3 Flight Restriction Zones
2. All ground entry within 100 yards of sensitive nesting species is restricted
3. All boaters are requested to approach no closer than 100 yards from seal and waterfowl concentrations

Sensitive Wildlife Area



1 inch equals 2500 meters

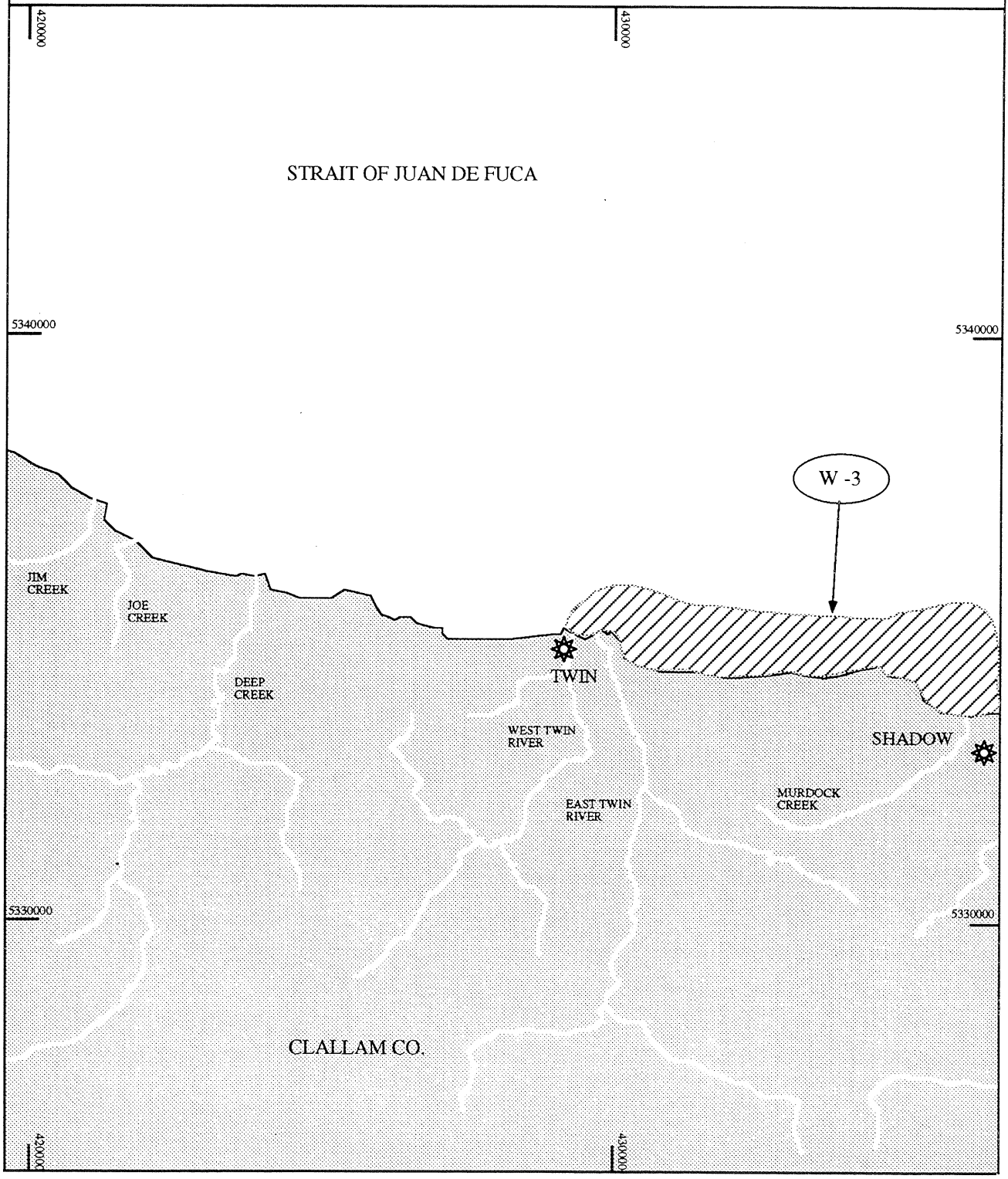
Park

Reservation

Boat Launch

Town or City

USFWS Refuge Boundary



SALT RIVER FLIGHT RESTRICTION ZONES/SENSITIVE WILDLIFE

NOAA Chart 18400

Code	Location	Seabird Colony	Seabird Conc	Waterfowl Conc	Marine Mammal Haulout	Sensitive Nesting Species	Shorebird Conc	Flight Exclusion	PERIOD OF SENSITIVITY Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
W-3	West Twin River		Yes		Yes	Yes		Yes	■	■	■	■	■	■	■	■				
W-4	Tongue Point				Yes		Yes		▒	▒	▒	▒	▒	▒		▒	▒	▒	▒	▒

* FLIGHT AND GROUND ENTRY RESTRICTIONS

■ Flights below 1000 feet require clearance

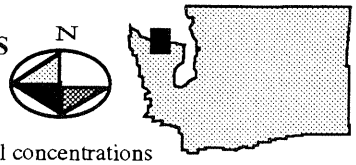
▒ Sensitive season - Minimize seasonal disturbance

SALT CREEK

STRAIT OF JUAN DE FUCA GRP

FLIGHT RESTRICTION ZONES FOR SENSITIVE WILDLIFE SPECIES

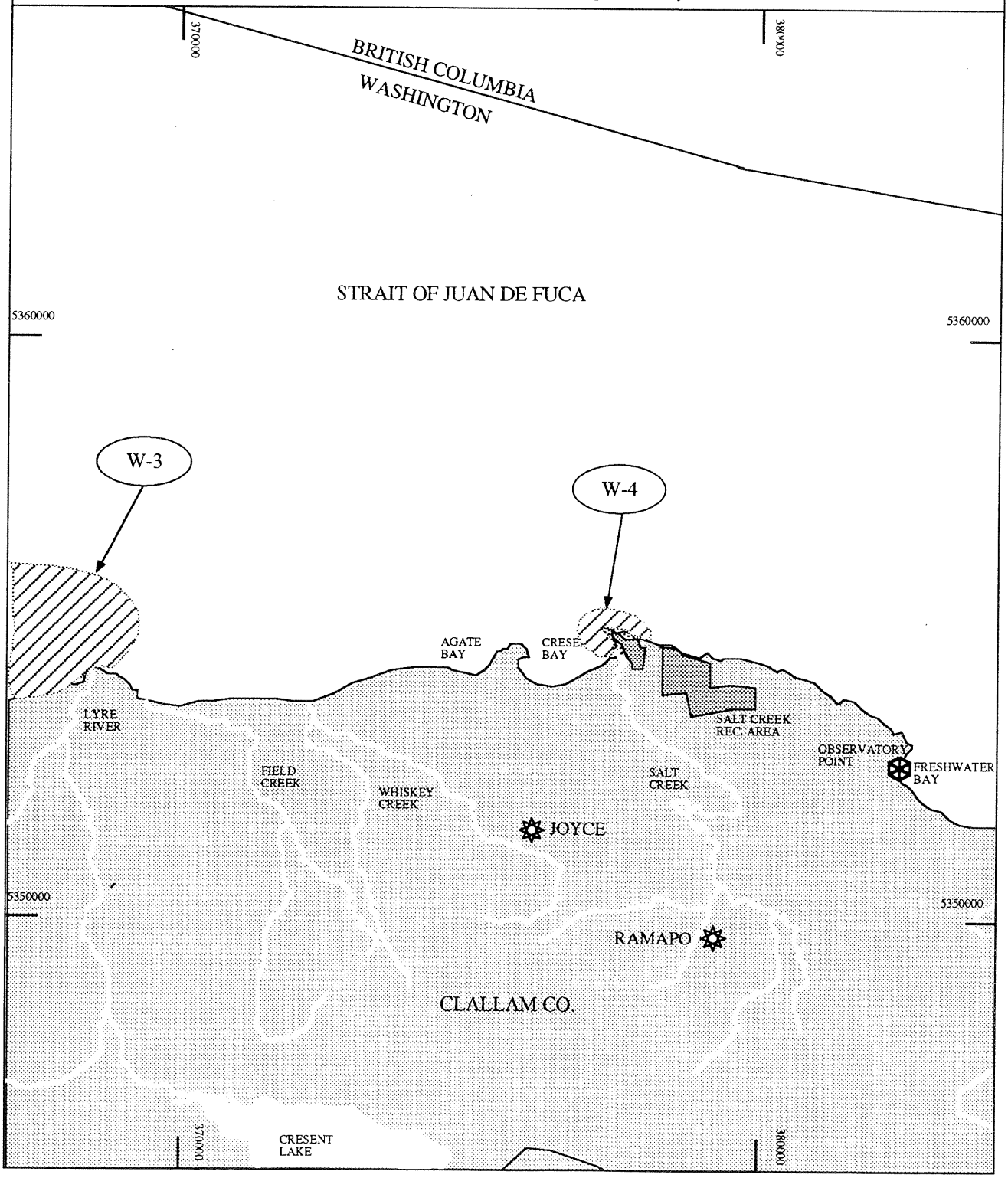
1. Pilots refer to chapter 6.3 Flight Restriction Zones
2. All ground entry within 100 yards of sensitive nesting species is restricted
3. All boaters are requested to approach no closer than 100 yards from seal and waterfowl concentrations



Sensitive Wildlife Area

2500 meters 5000 meters
8200 feet 16400 feet
1 inch equals 2500 meters

Park
Reservation
Boat Launch
Town or City
USFWS Refuge Boundary



PORT ANGELES FLIGHT RESTRICTION ZONES/SENSITIVE WILDLIFE

NOAA Chart 18400												PERIOD OF SENSITIVITY								
Code	Location	Seabird Colony	Seabird Conc	Waterfowl Conc	Marine Mammal Haulout	Sensitive Nesting Species	Shorebird Conc	Flight Exclusion	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
W-5	Angeles Point		Yes	Yes																
W-6	Ediz Hook		Yes	Yes			Yes													

* FLIGHT AND GROUND ENTRY RESTRICTIONS

Flights below 1000 feet require clearance

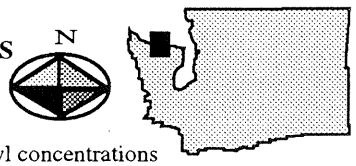
Sensitive season - Minimize seasonal disturbance

PORT ANGELES

STRAIT OF JUAN DE FUCA GRP

FLIGHT RESTRICTION ZONES FOR SENSITIVE WILDLIFE SPECIES

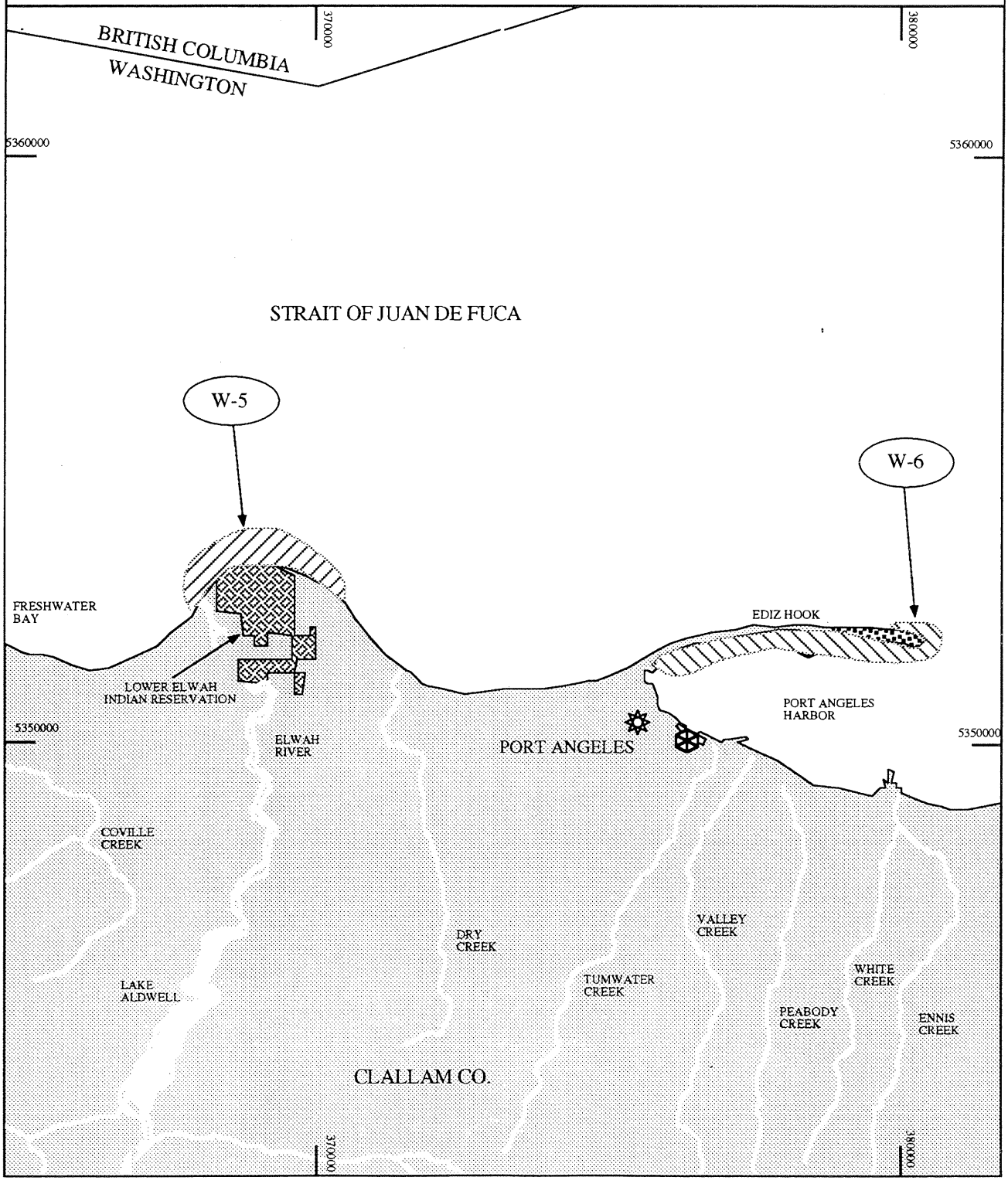
1. Pilots refer to chapter 6.3 Flight Restriction Zones
2. All ground entry within 200 yards of sensitive nesting species is restricted
3. All boaters are requested to approach no closer than 200 yards from seal and waterfowl concentrations



Sensitive Wildlife Area

2500 meters 5000 meters
8200 feet 16400 feet
1 inch equals 2500 meters

Park
Reservation
Boat Launch
Town or City
USFWS Refuge Boundary



DUNGENESS FLIGHT RESTRICTION ZONES/SENSITIVE WILDLIFE

NOAA Chart 18400

Code	Location	Seabird Colony	Seabird Conc	Waterfowl Conc	Marine Mammal Haulout	Sensitive Nesting Species	Shorebird Conc	Flight Exclusion	PERIOD OF SENSITIVITY											
									Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
W-7	Dungeness spit and bay	Yes	Yes	Yes	Yes		Yes	Yes												

* FLIGHT AND GROUND ENTRY RESTRICTIONS

Flights below 1000 feet require clearance

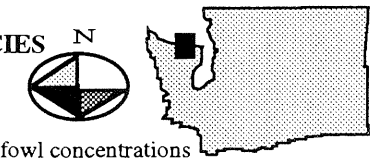
Sensitive season - Minimize seasonal disturbance

DUNGENESS REC AREA

STRAIT OF JUAN DE FUCA GRP

FLIGHT RESTRICTION ZONES FOR SENSITIVE WILDLIFE SPECIES

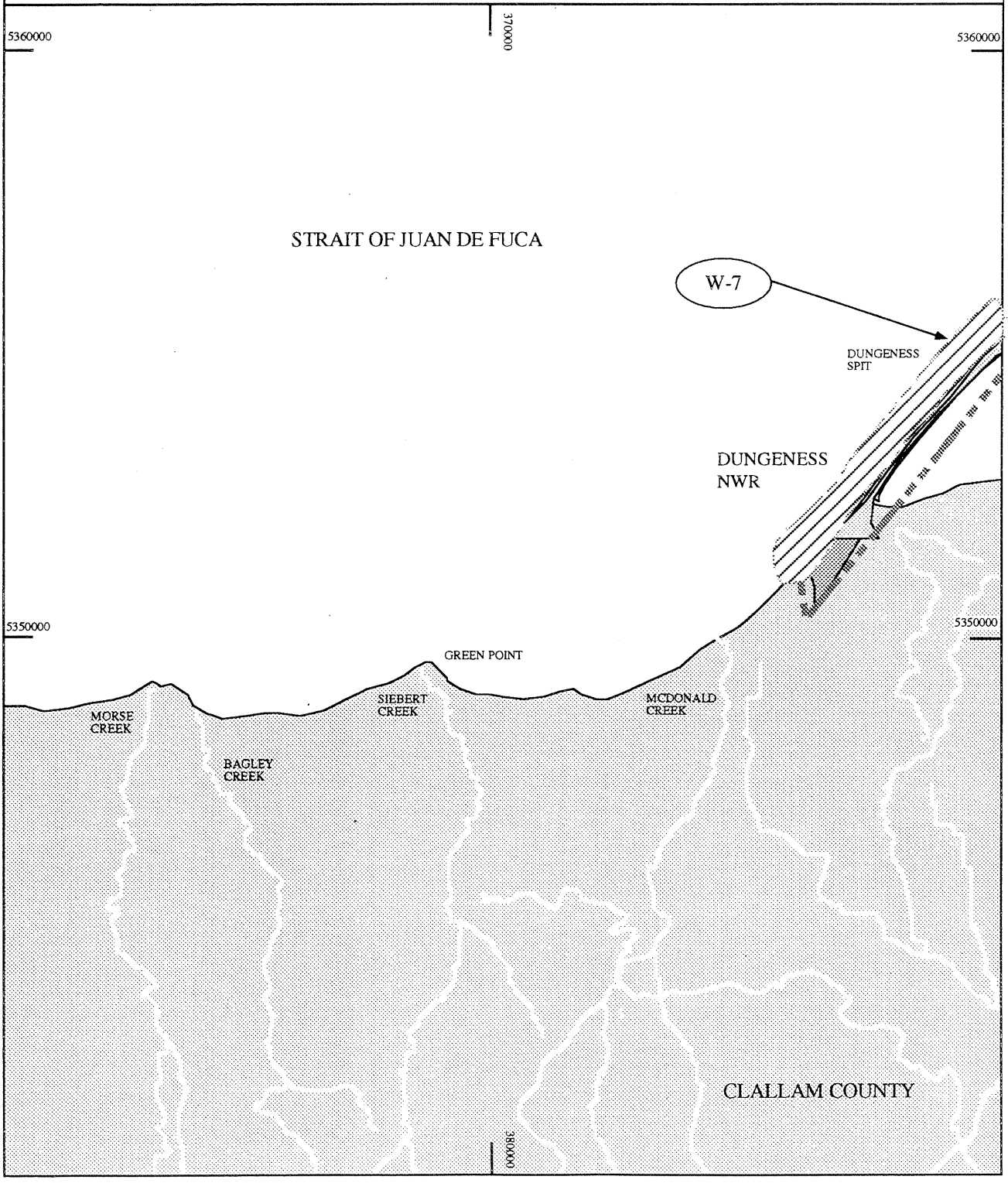
1. Pilots refer to chapter 6.3 Flight Restriction Zones
2. All ground entry within 200 yards of sensitive nesting species is restricted
3. All boaters are requested to approach no closer than 200 yards from seal and waterfowl concentrations



Sensitive Wildlife Area

2500 meters 5000 meters
8200 feet 16400 feet
1 inch equals 2500 meters

Park
Reservation
Boat Launch
Town or City
USFWS Refuge Boundary



SEQUIM BAY FLIGHT RESTRICTION ZONES/SENSITIVE WILDLIFE

NOAA Chart 18400

Code	Location	Seabird Colony	Seabird Conc	Waterfowl Conc	Marine Mammal Haulout	Sensitive Nesting Species	Shorebird Conc	Flight Exclusion	PERIOD OF SENSITIVITY Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
W-7	Dungeness Spit and Bay	Yes	Yes	Yes	Yes			Yes	■	■	■	■	■	■	■	■	■	■	■	■
W-8	Sequim Bay/Kiapot Spit		Yes	Yes	Yes	Yes			▒	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒	▒
W-9	Protection Island	Yes	Yes	Yes	Yes	Yes		Yes	■	■	■	■	■	■	■	■	■	■	■	■

* FLIGHT AND GROUND ENTRY RESTRICTIONS

■ Flights below 1000 feet require clearance

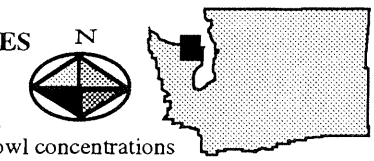
▒ Sensitive season - Minimize seasonal disturbance

SEQUIM BAY

STRAIT OF JUAN DE FUCA GRP

FLIGHT RESTRICTION ZONES FOR SENSITIVE WILDLIFE SPECIES

1. Pilots refer to chapter 6.3 Flight Restriction Zones
2. All ground entry within 200 yards of sensitive nesting species is restricted
3. All boaters are requested to approach no closer than 200 yards from seal and waterfowl concentrations



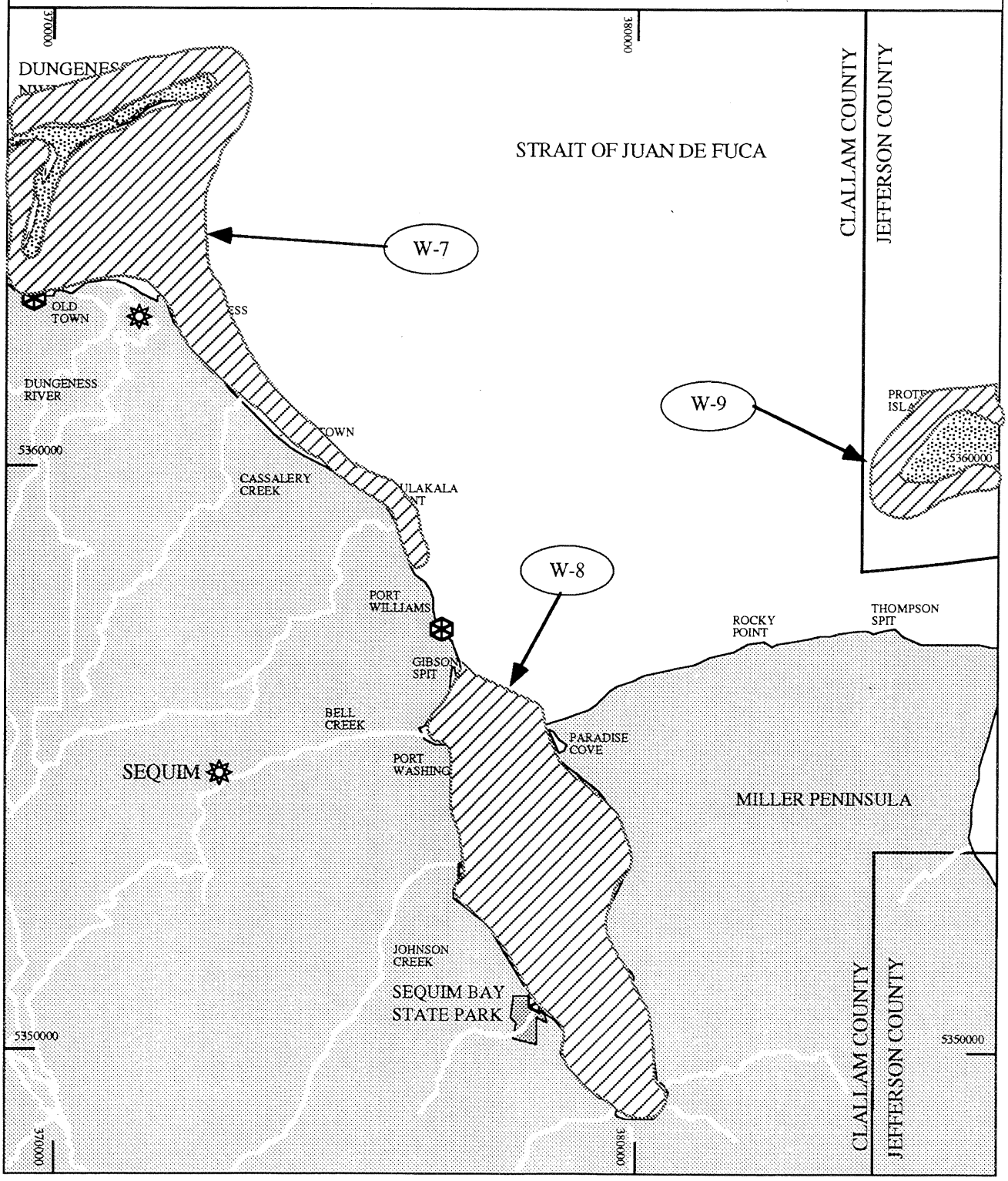
Sensitive Wildlife Area

2500 meters 5000 meters
8200 feet 16400 feet
1 inch equals 2500 meters

Park
Reservation

Boat Launch
Town or City

USFWS Refuge Boundary

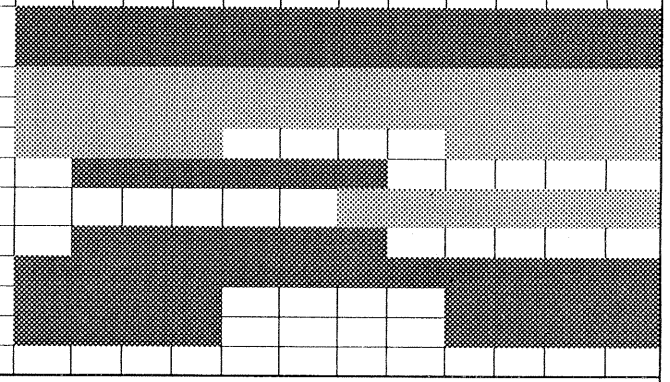


PORT TOWNSEND FLIGHT RESTRICTION ZONES/SENSITIVE WILDLIFE

NOAA Chart 18400

Code	Location	Seabird Colony	Seabird Conc	Waterfowl Conc	Marine Mammal Haulout	Sensitive Nesting Species	Shorebird Conc	Flight Exclusion
W-9	Protection Island	Yes	Yes	Yes	Yes	Yes		Yes
W-10	Gardiner			Yes				
W-11	Point Wilson			Yes				
WAI-9	Port Townsent		Yes	Yes				
WAI-10	Marrowstone Point					Yes		Yes
WAI-10A	Kilsut Hrbr Spit				Yes			
WAI-11	Glen Cove					Yes		Yes
WAI-12	Kilsut Harbor			Yes	Yes	Yes		Yes
WAI-14	Kala Point			Yes				Yes
WAI-15	Hadlock			Yes				Yes

PERIOD OF SENSITIVITY



* FLIGHT AND GROUND ENTRY RESTRICTIONS

Flights below 1000 feet require clearance

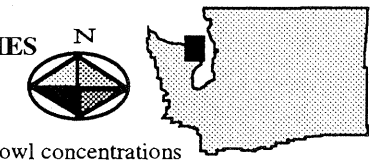
Sensitive season - Minimize seasonal disturbance

PORT TOWNSEND

STRAIT OF JUAN DE FUCA GRP

FLIGHT RESTRICTION ZONES FOR SENSITIVE WILDLIFE SPECIES

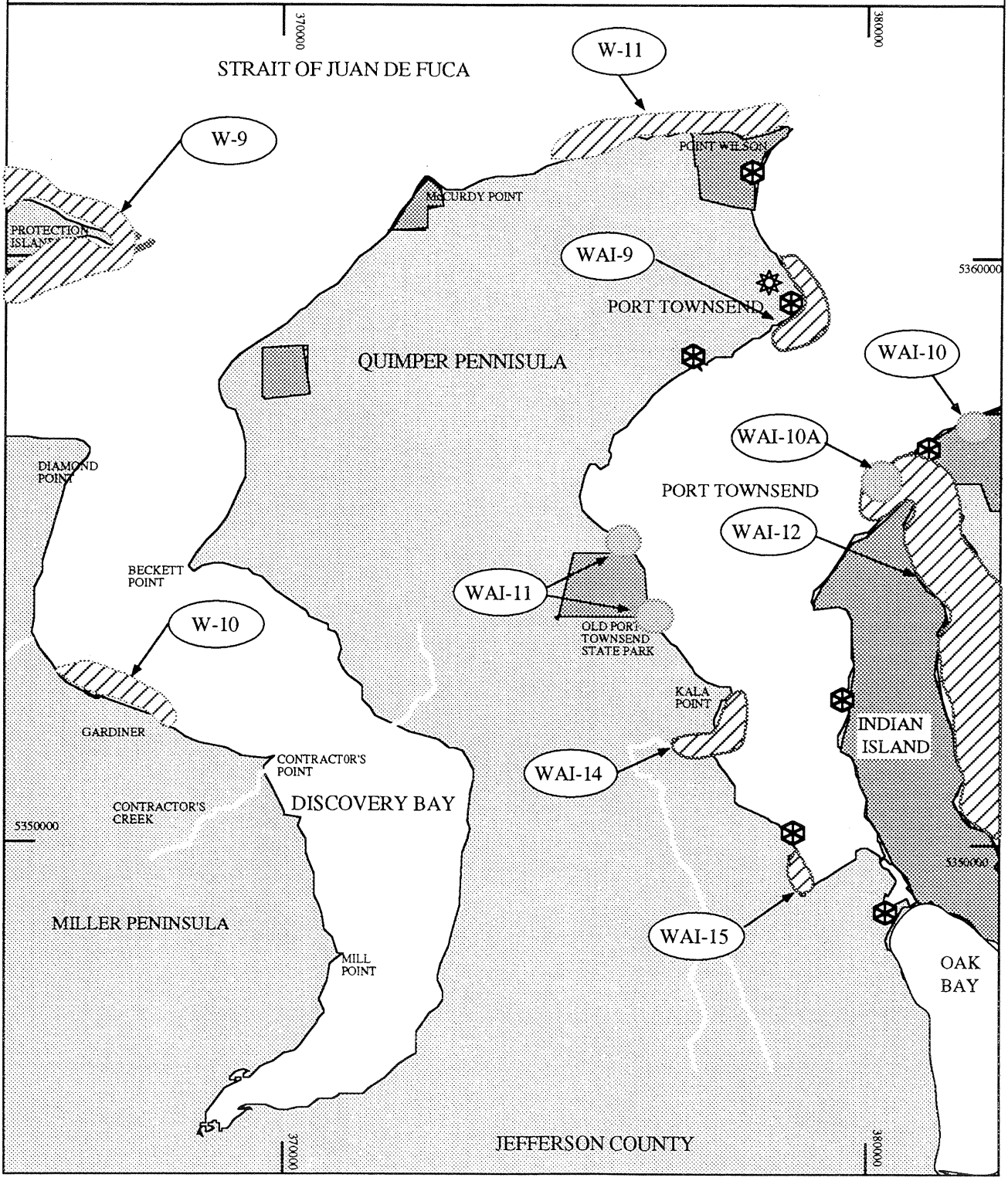
1. Pilots refer to chapter 6.3 Flight Restriction Zones
2. All ground entry within 100 yards of sensitive nesting species is restricted
3. All boaters are requested to approach no closer than 100 yards from seal and waterfowl concentrations



Sensitive Wildlife Area

2500 meters 5000 meters
8200 feet 16400 feet
1 inch equals 2500 meters

Park
Reservation
Boat Launch
Town or City
USFWS Refuge Boundary

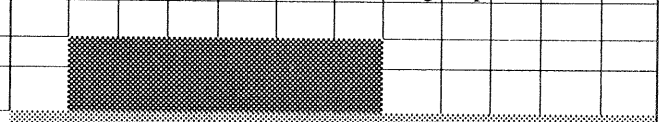


SMITH ISLAND FLIGHT RESTRICTION ZONES/SENSITIVE WILDLIFE

NOAA Chart 18400

Code	Location	Seabird Colony	Seabird Conc	Waterfowl Conc	Marine Mammal Haulout	Sensitive Nesting Species	Shorebird Conc	Flight Exclusion
W-12	Smith Island	Yes	Yes		Yes			Yes
WNC-17	Long Point					Yes		Yes
WNC-33	Penn Cove		Yes	Yes				

PERIOD OF SENSITIVITY



* FLIGHT AND GROUND ENTRY RESTRICTIONS

Flights below 1000 feet require clearance

Sensitive season - Minimize seasonal disturbance

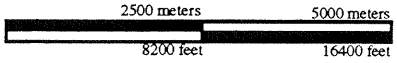
FORT EBEY/SMITH ISLAND

STRAIT OF JUAN DE FUCA GRP

FLIGHT RESTRICTION ZONES FOR SENSITIVE WILDLIFE SPECIES

1. Pilots refer to chapter 6.3 Flight Restriction Zones
2. All ground entry within 200 yards of sensitive nesting species is restricted
3. All boaters are requested to approach no closer than 200 yards from seal and waterfowl concentrations

Sensitive Wildlife Area

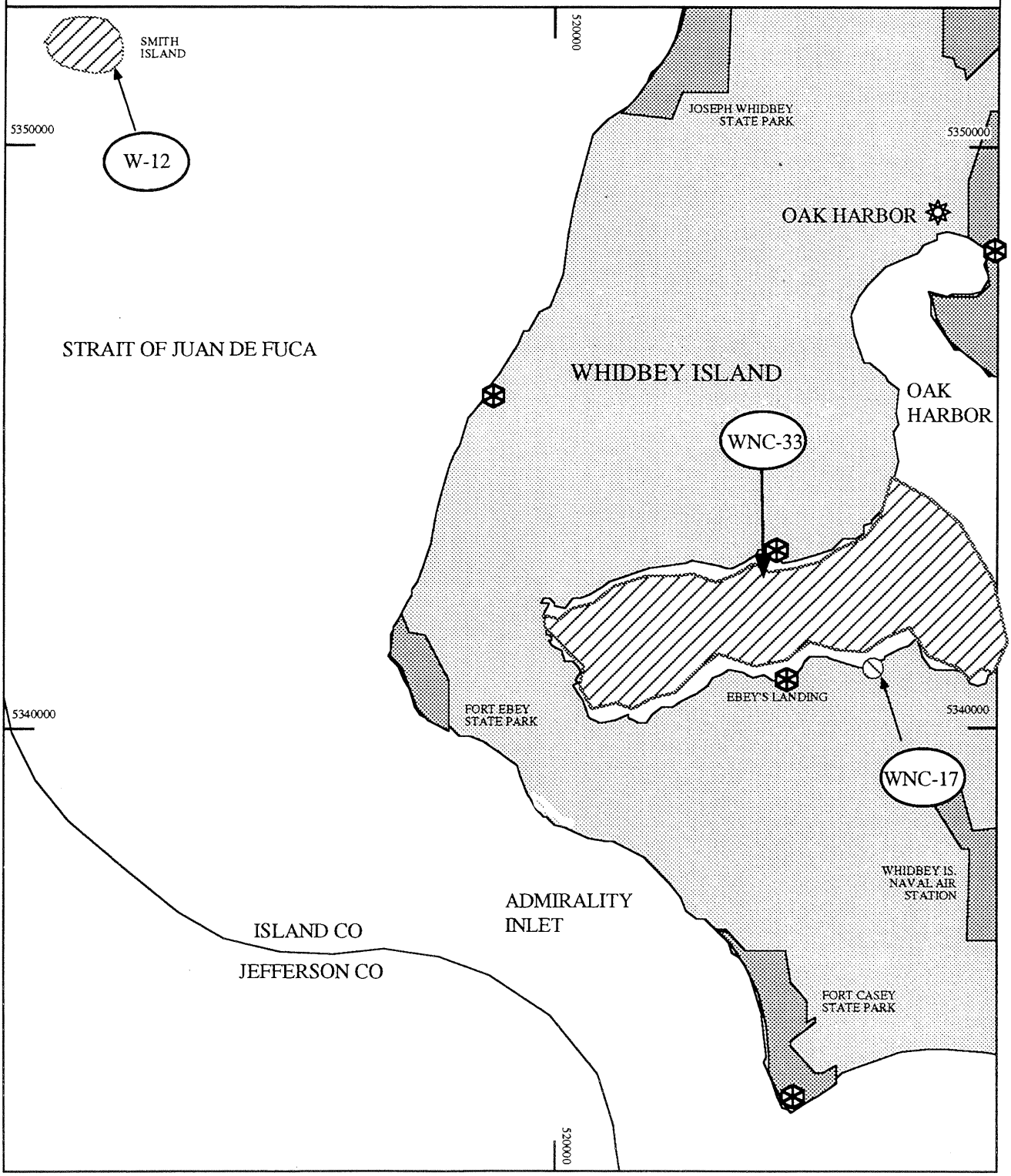


1 inch equals 2500 meters

Park
Reservation

Boat Launch
Town or City

USFWS Refuge Boundary



Strait of Juan de Fuca - Fish and Shellfish Resource Maps

The following draft maps were prepared by the Department of Fisheries (now Department of Fish & Wildlife) to represent nearshore fish and shellfish resources of high commercial, recreational, or ecological value. **Adult and juvenile life stages of a number of ecologically and economically important species including salmon, marine fish, baitfish, and shellfish as well as the plankton community are considered to be ubiquitous in distribution and therefore, are not displayed on maps.** Pertinent information on many of these species can be found in the habitat association and timing tables which include information on temporal and spatial distribution, preferred habitat, and relative abundance of various life history stages. This information must be considered in resource protection and damage assessment efforts.

Additional areas of resource occurrence are continually being documented. The extent of intertidal spawning habitat represented in the baitfish maps for surf smelt and Pacific sand lance is updated annually as new spawning areas are documented.

The shellfish maps do not offer complete information on intertidal and subtidal shellfish resources. Surveys run by the Department of Fish & Wildlife have been oriented to locating beds that could be commercially harvested. Many intertidal areas are privately-owned tidelands upon which the Department of Fish & Wildlife has not undertaken a comprehensive inventory of the naturally produced or cultured shellfish resources. No attempt has been made on these maps to differentiate between areas which have not been surveyed and those in which shellfish were not found in commercial quantities.

Due to a combination of new data and incomplete data, it is not safe to assume that blank areas on the maps are not of concern. If you have any questions regarding this information, please contact the Department of Fish & Wildlife Spill Response Unit at (360) 902-2568.

DRAFT - May 18, 1993

Strait of Juan de Fuca Geographic Response Plan Workshop
Data Recording Sheet

Resource: Pacific Herring (*Clupea harengus pallasi*)

Resource Information Mapped: Adult prespawning holding areas and spawning areas.

Resource Use: Human; roe-on-kelp and Port Gamble spawn-on-kelp fisheries, sport bait fishery targets juvenile fish. Non-human; one of the most important components of the marine food chain; they provide the link between primary production and upper level predators. All life history stages utilized as food by various predators including salmon, rockfish, lingcod, halibut, birds, marine mammals, etc.

General Location or Habitat Association: Adult prespawning holding areas are located in the Protection Island area between Sequim and Discovery Bays and in Discovery Bay. Fish are found in pelagic schools. In this region herring spawning occurs within Discovery, Seqium, and Dungeness Bays. Herring deposit their eggs on marine vegetation, such as eel grass or algae, within the shallow subtidal and intertidal zones.

Seasonal Sensitivity or Occurrence: Adult herring congregate in relatively distinct areas during December and January prior to spawning. Exposure of pre-spawning adults to oil can result in the accumulation of hydrocarbon compounds in the yolk of maturing eggs. Metabolism of these compounds during embryonic and larval stages can result in lethal and sublethal genetic, cellular and morphological injuries. Spawning occurs from mid-January through mid-April. Eggs hatch after approximately 10 days. Larvae and subsequent juvenile fish are found in nearshore areas throughout the summer following hatching. Eggs and larvae are highly susceptible to injury (lethal) from oil exposure.

Recommended Protection Strategy: Keep oil out of Discovery Bay, Sequim Bay, and Dungeness Bay.

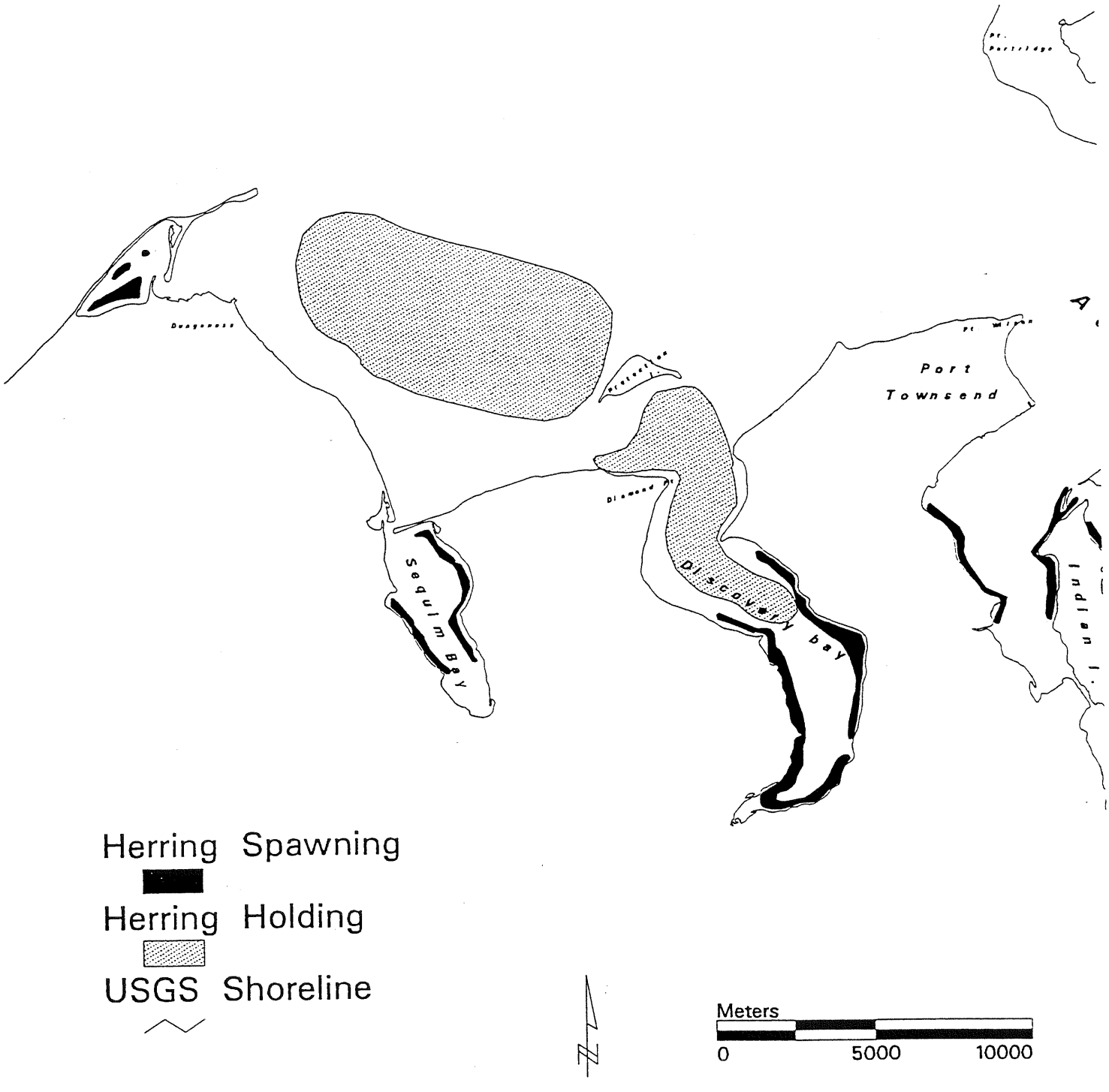
Information Recorder: WDF - Oil Spill Response and Damage Prevention Unit

References:

Emmett, R.L., S.L. Stone, S.A. Hinton, and M.E. Monaco. 1991. Distribution and abundance of fishes and invertebrates in west coast estuaries; Volume II: species life history summaries. ELMR Rep. No. 8. NOAA/NOS Strategic Environmental Assessments Division, Rockville, MD, 329 p.

Washington Department of Fisheries. 1992. Salmon, marine fish and shellfish resources and associated fisheries in Washington's coastal and inland marine waters. Wa. Dept. Fish. Tech. Rpt. 79. 70 p.

Strait of Juan de Fuca Baitfish Resources



Source: Washington Department of Fisheries
This map does not offer complete information on fish and shellfish resources. Comprehensive inventories have not been completed along all shorelines.

DRAFT - May 18, 1993

Strait of Juan de Fuca Geographic Response Plan Workshop
Data Recording Sheet

Resource: Surf Smelt (*Hypomesus pretiosus*)

Resource Information Mapped: Intertidal surf smelt spawning areas.

Resource Use: Human; commercial and recreational harvest. Non-human; smelt are an important component of the marine food chain; they provide the link between primary production and upper level predators. All life history stages are utilized as food by various predators including salmon, rockfish, lingcod, halibut, birds, marine mammals, etc.

General Location of Sensitive Resource: Surf smelt deposit their eggs in the uppermost intertidal zone on gravel generally having a grain size from 1 to 7 mm. Incubation takes 2 - 4 weeks. Larvae are found in adjacent nearshore surface waters for several weeks following hatching. Spawning areas exist in Sequim Bay, Dungeness Bay, and along the Strait between the Lyre River and Twin Rivers. Other undocumented spawning areas are suspected along the Strait.

Seasonal Sensitivity or Occurrence: Surf smelt spawning along the outer Olympic Peninsula and Strait of Juan de Fuca occurs from mid-May through the end of September. Spawning occurs in Dungeness Bay from mid-October through mid January. Eggs and larvae are highly susceptible to injury (lethal) from oil exposure.

Recommended Protection Strategy: Keep oil off of spawning beaches regardless of season. In particular keep oil out of Sequim Bay and Dungeness Bay to protect incubating eggs and planktonic larvae.

Information Recorder: WDF - Oil Spill Response and Damage Prevention Unit

References:

Emmett, R.L., S.L. Stone, S.A. Hinton, and M.E. Monaco. 1991. Distribution and abundance of fishes and invertebrates in west coast estuaries; Volume II: species life history summaries. ELMR Rep. No. 8. NOAA/NOS Strategic Environmental Assessments Division, Rockville, MD, 329 p.

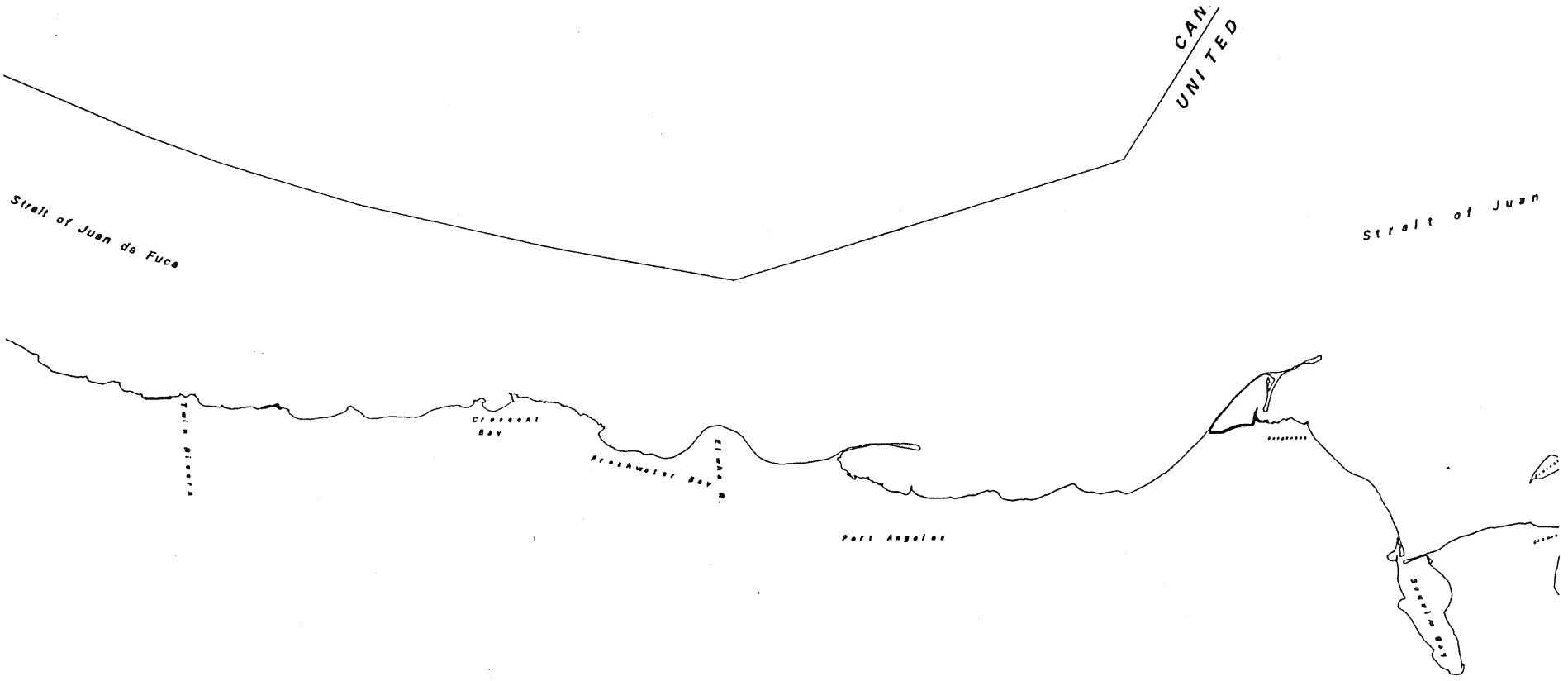
Washington Department of Fisheries. 1992. Salmon, marine fish and shellfish resources and associated fisheries in Washington's coastal and inland marine waters. Wa. Dept. Fish. Tech. Rpt. 79. 70 p.

Strait of Juan de Fuca Baitfish Resources

STRAIT OF JUAN DE FUCA GRP

March 15, 1996

6-29



Smelt Spawning

USGS Shoreline

0 10000 20000

Source: Washington Department of Fisheries
This map does not offer complete information on fish and shellfish resources. Comprehensive inventories have not been completed along all shorelines.

DRAFT - May 18, 1993

Strait of Juan de Fuca Geographic Response Plan Workshop
Data Recording Sheet

Resource: Pacific Sand Lance (*Ammodytes hexapterus*)

Resource Information Mapped: Documented intertidal spawning areas and larval rearing areas.

Resource Use: Human; sand lance are used as bait by recreation fishers. Non-human; sand lance are an important component of the marine food chain; they provide the link between primary production and upper level predators. All life history stages are utilized as food by various predators including salmon, rockfish, lingcod, halibut, birds, marine mammals, etc.

General Location or Habitat Association of Resource: Pacific sand lance spawn from November through February and deposit their eggs on upper intertidal sandy-gravel beaches. Documented spawning areas in the region include Sequim Bay, Dungeness Bay, and several sites within Port Townsend Bay. Sand lance larvae are widespread in the regions near-surface waters from January through March. Documented areas include Discovery Bay, Sequim Bay, Dungeness Bay, and the Straits between Port Angles and Dungeness. It is suspected that additional spawning and larval habitat exists along the western Straits. Adult sand lance are found in nearshore habitats throughout the Strait of Juan de Fuca.

Seasonal Sensitivity: The highest sensitivity is during the spawning and larval stages from mid-October through March. Eggs and larvae are highly susceptible to injury (lethal) from oil exposure.

Recommended Protection Strategy: Keep oil off of spawning beaches regardless of season. In particular keep oil out of Sequim Bay, Discovery Bay, and Dungeness Bay to protect incubating eggs and planktonic larvae.

Information Recorder: WDF - Oil Spill Response and Damage Prevention Unit

References:

Emmett, R.L., S.L. Stone, S.A. Hinton, and M.E. Monaco. 1991. Distribution and abundance of fishes and invertebrates in west coast estuaries; Volume II: species life history summaries. ELMR Rep. No. 8. NOAA/NOS Strategic Environmental Assessments Division, Rockville, MD, 329 p.

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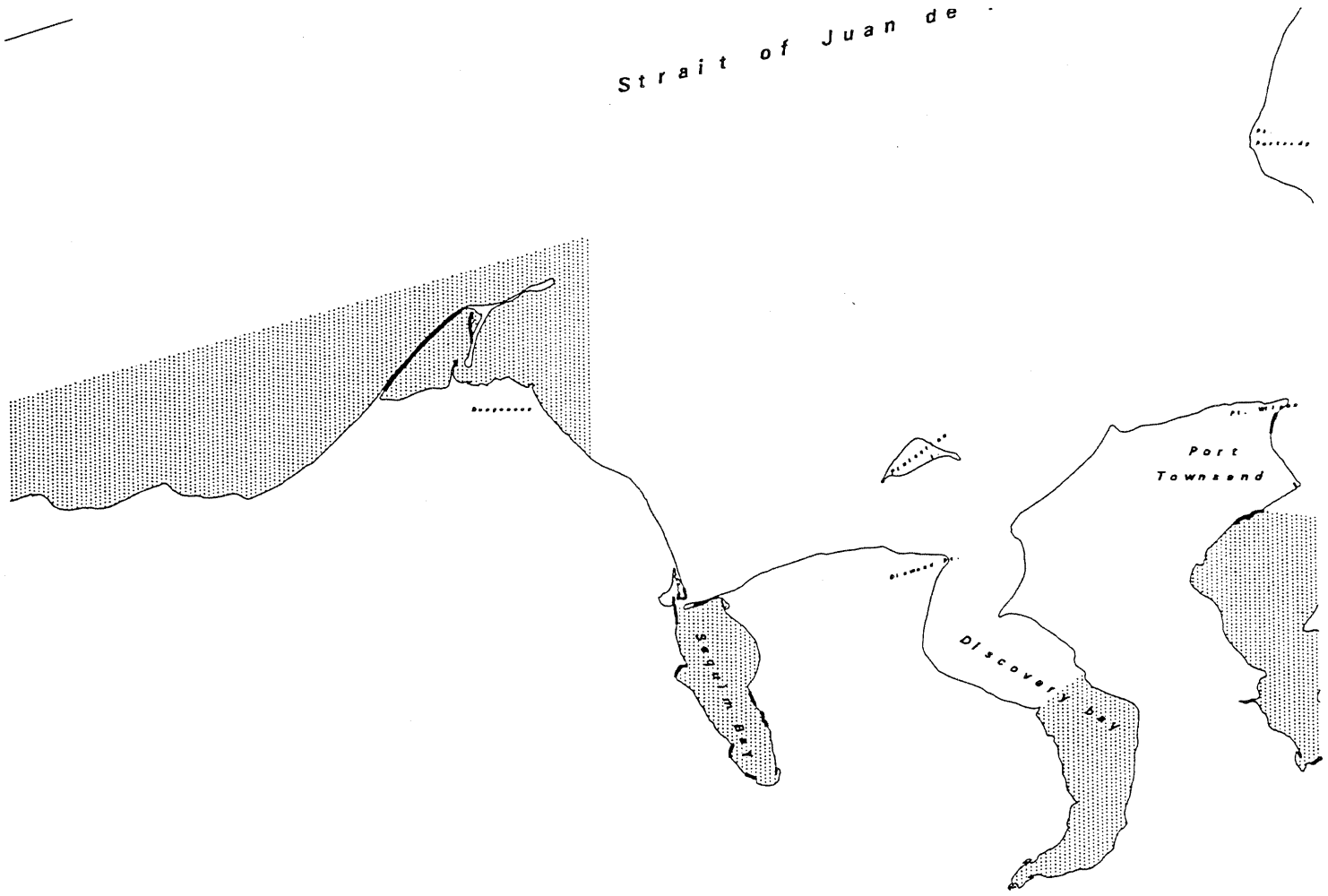
Strait of Juan de Fuca Baitfish Resources



Sand Lance Larvae

Sand Lance Spawning

USGS Shoreline

Meters

0 6000 12000

Source: Washington Department of Fisheries
This map does not offer complete information on fish and shellfish resources. Comprehensive inventories have not been completed along all shorelines.

DRAFT - May 18, 1993

Strait of Juan de Fuca Geographic Response Plan Workshop
Data Recording Sheet

Resource: Pacific Salmon

Resource Information Mapped: Anadromous streams and rivers utilized by one or more of the following species for spawning and rearing: chinook (*Oncorhynchus tshawytscha*), coho (*O. kisutch*), sockeye (*O. nerka*), chum (*O. keta*), and pink (*O. gorbuscha*).

Resource Use: Human; extensive commercial and recreational fisheries. Non-human; the list of predators on the various life history stages of salmon is extensive and includes several species of birds (bald eagle), fish, marine mammals, and terrestrial mammals.

General Location or Habitat Association of Resource: Salmon spawn and rear in all major Washington watersheds and in many of the smaller tributaries. Salmon are anadromous in that they begin life in fresh water, spend the largest portion of their life in salt water, then return to fresh water to spawn. There is a broad range of life history types both between and within the species. Both juvenile and adult salmon are present year round throughout this region.

Seasonal Sensitivity: Varies with species, stock, and river system. See habitat association and timing table.

Recommended Protection Strategy: In the river deltas contain and recover oil in the main channels. Keep oil off of the intertidal flats. Where oil cannot be excluded from the intertidal flats use clean up techniques which do not force oil into beach substratum or transport it into the lower intertidal or subtidal zones. Employ exclusion, deflection or diversion boom at river and stream mouths which are tidally influenced.

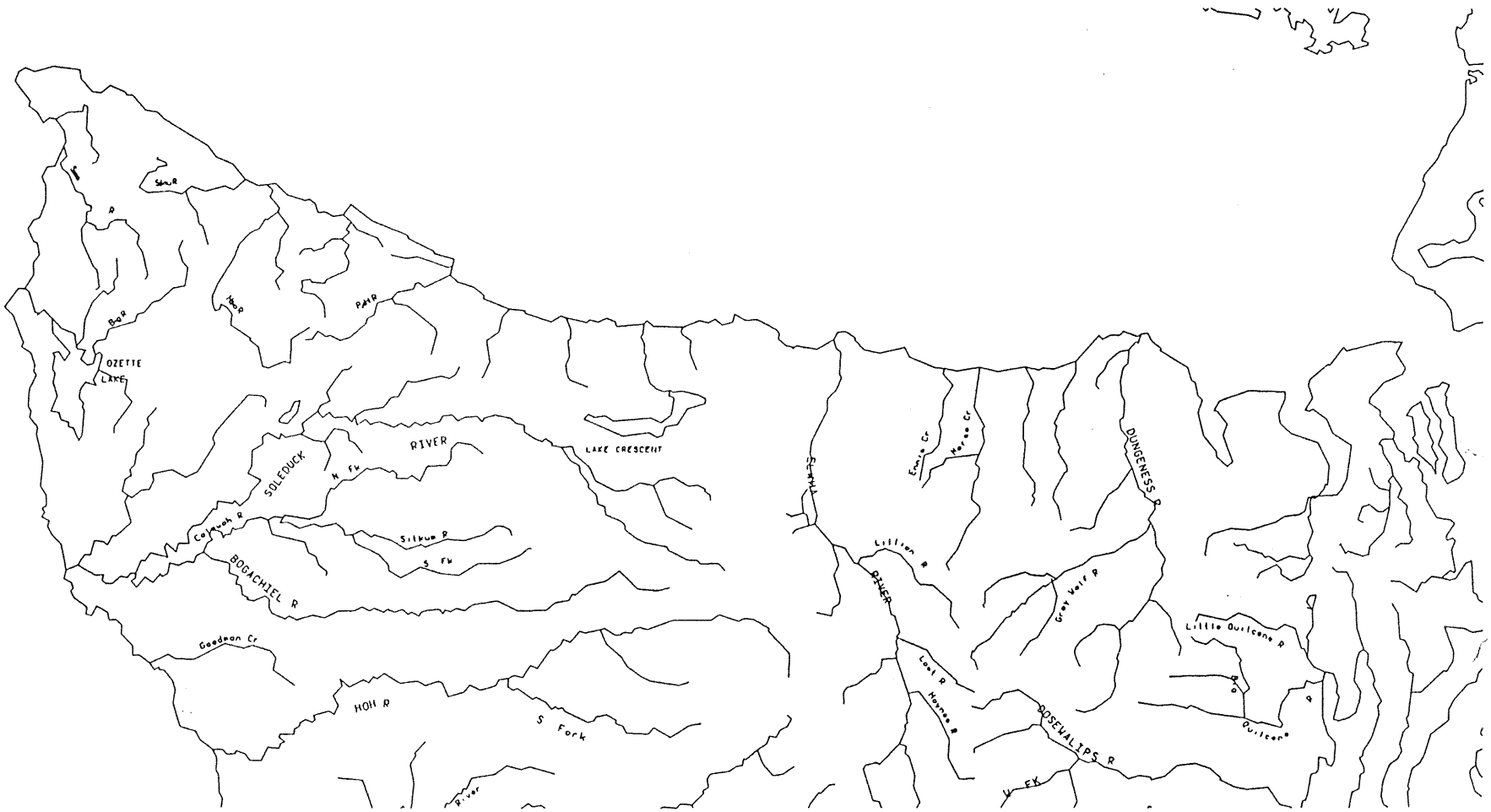
Information Recorder: WDF - Oil Spill Response and Damage Prevention Unit

References:

Emmett, R.L., S.L. Stone, S.A. Hinton, and M.E. Monaco. 1991. Distribution and abundance of fishes and invertebrates in west coast estuaries; Volume II: species life history summaries. ELMR Rep. No. 8. NOAA/NOS Strategic Environmental Assessments Division, Rockville, MD, 329 p.

Washington Department of Fisheries. 1992. Salmon, marine fish and shellfish resources and associated fisheries in Washington's coastal and inland marine waters. Wa. Dept. Fish. Tech. Rpt. 79. 70 p.

Strait of Juan de Fuca Fish Resources



Anadromous Rivers

Meters

0 20000 40000

Source: Washington Department of Fisheries
This map does not offer complete information on fish and shellfish resource distribution. Comprehensive inventories have not been completed along all shorelines.

DRAFT - May 18, 1993

Strait of Juan de Fuca Geographic Response Plan Workshop Data Recording Sheet

Resource: Rockfish (Sebastes spp.)

Resource Information Mapped: Critical juvenile (young-of-the-year) rockfish habitat.

Resource Use: Human; rockfish are an important commercial and recreational species complex. Non-human; rockfish are utilized as food organisms by various marine fish species including lingcod and by marine mammals.

General Location or Habitat Association of Resource: High densities of juvenile rockfish are found in nearshore kelp beds. Fish are often found within 50 cm of the surface. This habitat is critical to their survival, it provides protective cover as well as food. While all the kelp beds along the Straits provide juvenile habitat, beds of particular interest include those from Cape Flattery to Neah Bay (Waadah Island) and Pillar Point east to Jim Creek.

Seasonal Sensitivity: High densities of juvenile rockfish are found in the kelp beds from June through September.

Recommended Protection Strategy: Utilize exclusion, deflection or diversion boom to prevent oil from entering or penetrating into critical kelp beds. The beds mentioned above are a high priority for protection.

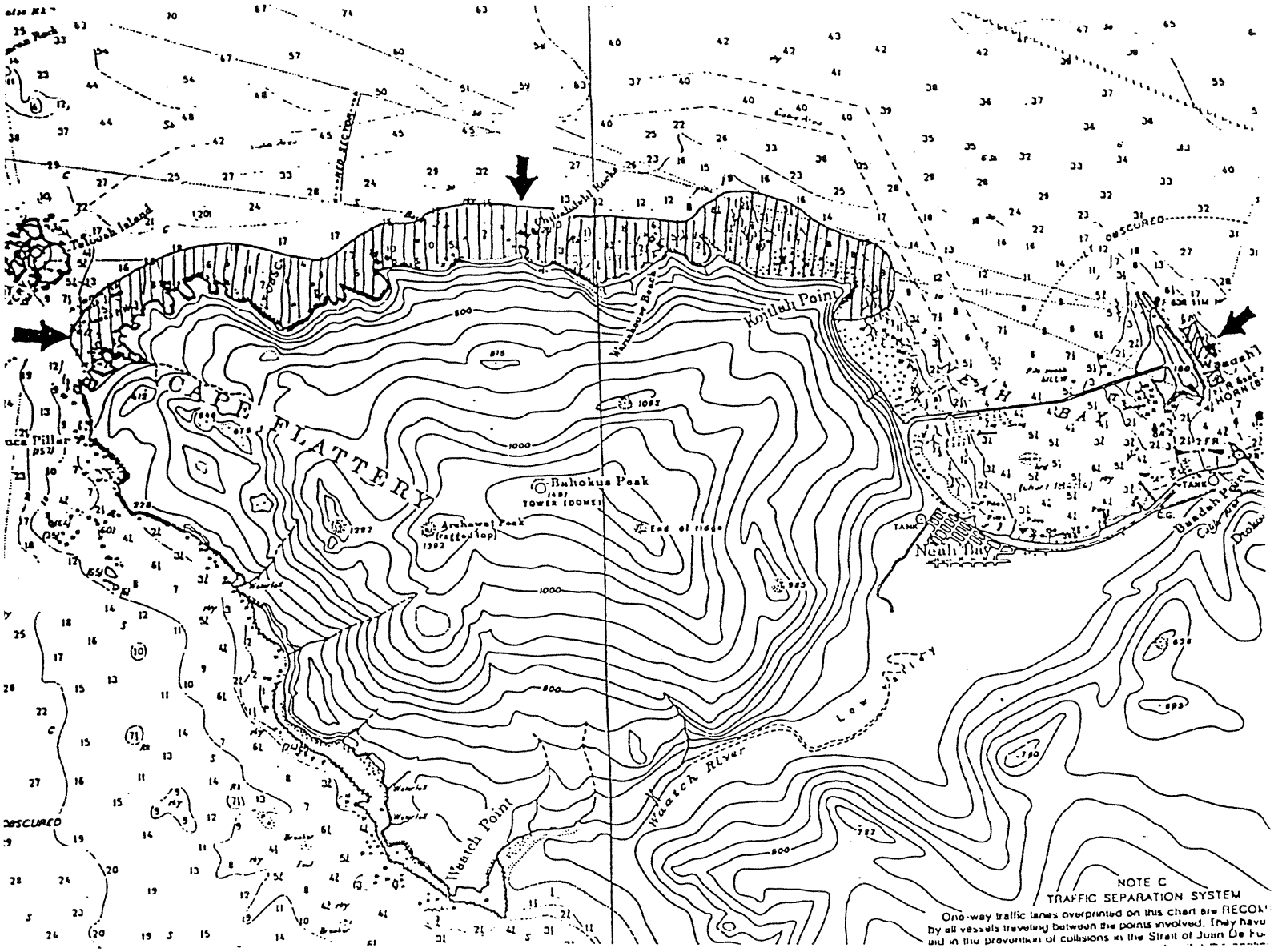
Information Recorder: WDF - Oil Spill Response and Damage Prevention Unit and Marine Habitat Investigations Unit

References:

Emmett, R.L., S.L. Stone, S.A. Hinton, and M.E. Monaco. 1991. Distribution and abundance of fishes and invertebrates in west coast estuaries; Volume II: species life history summaries. ELMR Rep. No. 8. NOAA/NOS Strategic Environmental Assessments Division, Rockville, MD, 329 p.

Washington Department of Fisheries. 1992. Salmon, marine fish and shellfish resources and associated fisheries in Washington's coastal and inland marine waters. Wa. Dept. Fish. Tech. Rpt. 79. 70 p.

Strait of Juan de Fuca Fish Resources



Juvenile Rockfish Rearing

Source: Washington Department of Fisheries
This map does not offer complete information on fish and shellfish resource distribution. Comprehensive inventories have not been completed along all shorelines

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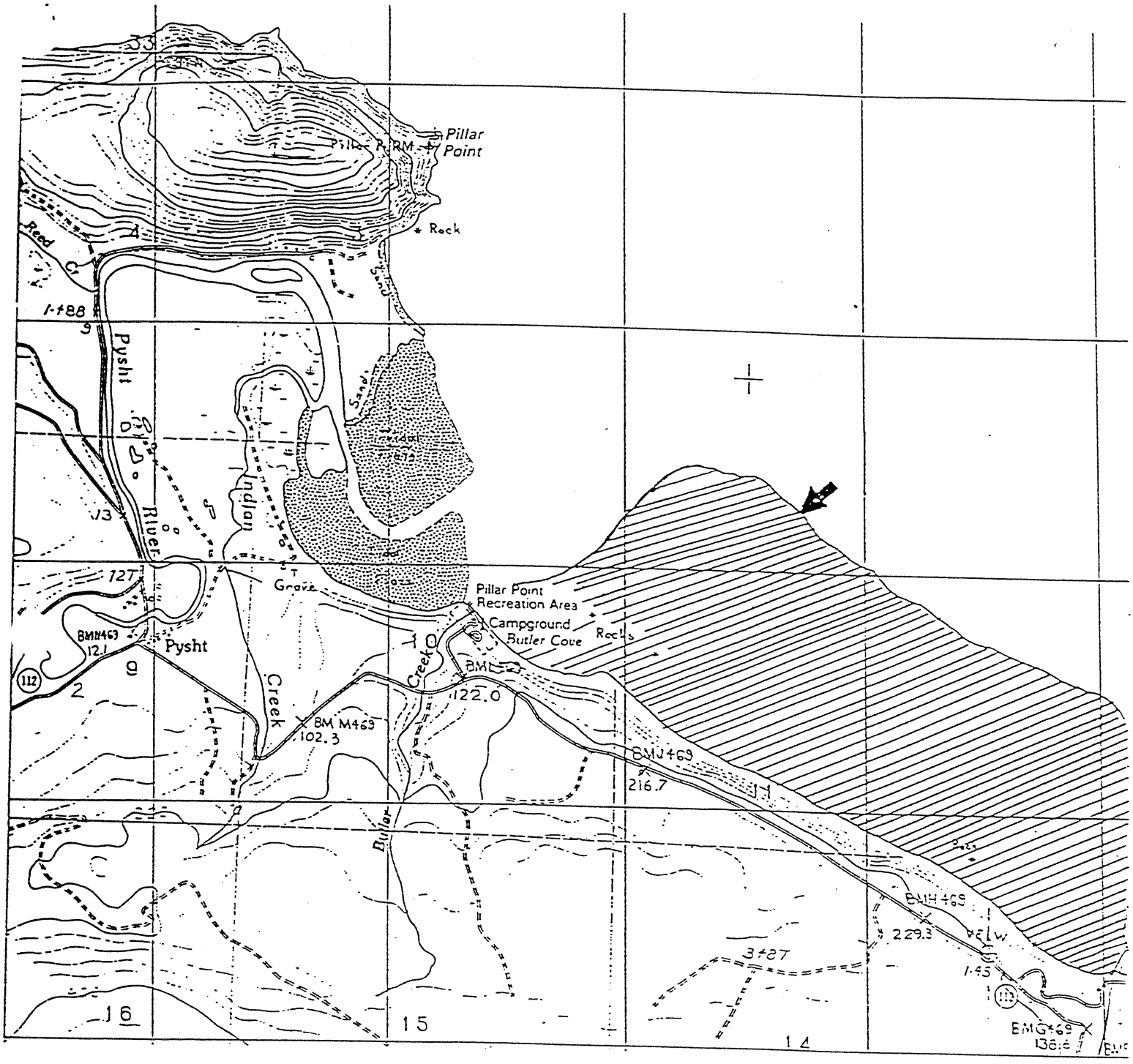
Strait of Juan de Fuca Fish Resources



Juvenile Rockfish Rearing

Source: Washington Department of Fisheries
This map does not offer complete information on fish and shellfish resource distribution. Comprehensive inventories have not been completed along all shorelines

DRAFT - May 18, 1993

Strait of Juan de Fuca Geographic Response Plan Workshop Data Recording Sheet

Resource: Lingcod (*Ophiodon elongatus*)

Resource Information Mapped: Critical juvenile (young-of-the-year) rearing habitat.

Resource Use: Human; lingcod are an important commercial and recreation species. Non-human; larvae and juvenile fish are eaten by other fish species, eggs are eaten by crabs, starfish, sea urchins, and fish.

General Location or Habitat Association of Resource: The area at the mouth of the Pysht River near Pillar Point has been documented as an important nursery area for juvenile lingcod. They prefer the eelgrass/sand bottom habitat. Juvenile Pacific cod also utilize this area as a nursery ground.

Seasonal Sensitivity: June through September.

Recommended Protection Strategy: Employ exclusion, deflection or diversion booming to prevent contamination of the eelgrass beds. Utilization of shoreline clean up techniques which do not transport oil into the subtidal.

Information Source: WDF - Oil Spill Response and Damage Prevention Unit and Marine Habitat Investigations Unit

References:

Emmett, R.L., S.L. Stone, S.A. Hinton, and M.E. Monaco. 1991. Distribution and abundance of fishes and invertebrates in west coast estuaries; Volume II: species life history summaries. ELMR Rep. No. 8. NOAA/NOS Strategic Environmental Assessments Division, Rockville, MD, 329 p.

Washington Department of Fisheries. 1992. Salmon, marine fish and shellfish resources and associated fisheries in Washington's coastal and inland marine waters. Wa. Dept. Fish. Tech. Rpt. 79. 70 p.

Strait of Juan de Fuca Fish Resources

Juvenile Lingcod Rearing

Source: Washington Department of Fisheries
This map does not offer complete information on fish and shellfish resource distribution. Comprehensive inventories have not been completed along all shorelines

DRAFT - May 18, 1993

Strait of Juan de Fuca Geographic Response Plan Workshop
Data Recording Sheet

Resource: Cancer Crab

Resource Information Mapped: Dungeness (*Cancer magister*) and red rock (*C. productus*) crab distribution. Map depicts primarily adults but does cover some juvenile areas. Important juvenile habitat will correlate with the herring spawning (eelgrass) and oyster areas (see appropriate maps).

Resource Use: Human; large commercial and recreational harvest. Non-human; all life history phases are utilized as food by numerous fish species (eg. Pacific herring, lingcod, rockfish, coho and chinook salmon, halibut, English sole and cabezon), octopus, sea otters, harbor seals, sea lions, and gulls.

General Location or Habitat Association of Resource: Adults are found from the intertidal to -90 m MLLW and prefer sandy substrates. Juveniles are found intertidally and typically associated with eelgrass, ulva, bivalve shells, or some form of cover, from +3 to -15 m MLLW. Larvae and megalopae are planktonic. Megalopae are typically found in nearshore waters where they settle to the bottom and metamorphose into juveniles during summer. Females carry incubating eggs beginning in the fall and hatching occurs between February and April.

Seasonal Sensitivity: Larvae/megalopae - planktonic - March through July. Juveniles - epibenthic intertidal - year-round.

Recommended Protection Strategy: Protect nearshore juvenile habitat, particularly eelgrass beds. Important locations include Discovery Bay, Dungeness Bay, western Freshwater Bay, Crescent Bay, Agate Bay and the mouth of the Lyre River.

Information Recorder: WDF - Oil Spill Response and Damage Prevention Unit

References:

Emmett, R.L., S.L. Stone, S.A. Hinton, and M.E. Monaco. 1991. Distribution and abundance of fishes and invertebrates in west coast estuaries; Volume II: species life history summaries. ELMR Rep. No. 8. NOAA/NOS Strategic Environmental Assessments Division, Rockville, MD, 329 p.

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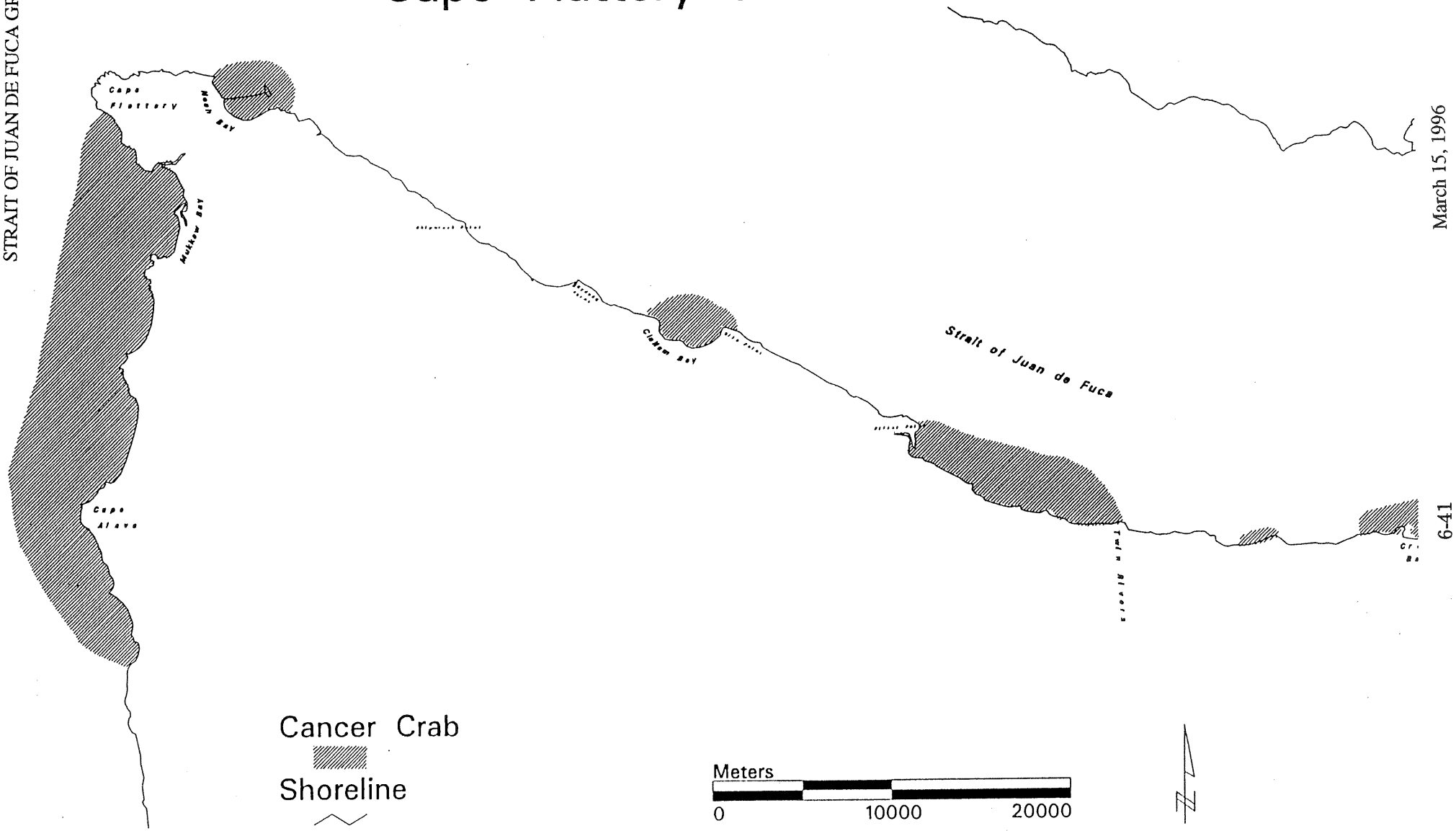
Strait of Juan de Fuca Shellfish Resources
Cape Flattery to Low Point



Source: Washington Department of Fisheries
This map does not offer complete information on fish and shellfish resource distribution. Comprehensive inventories have not been completed along all shorelines.

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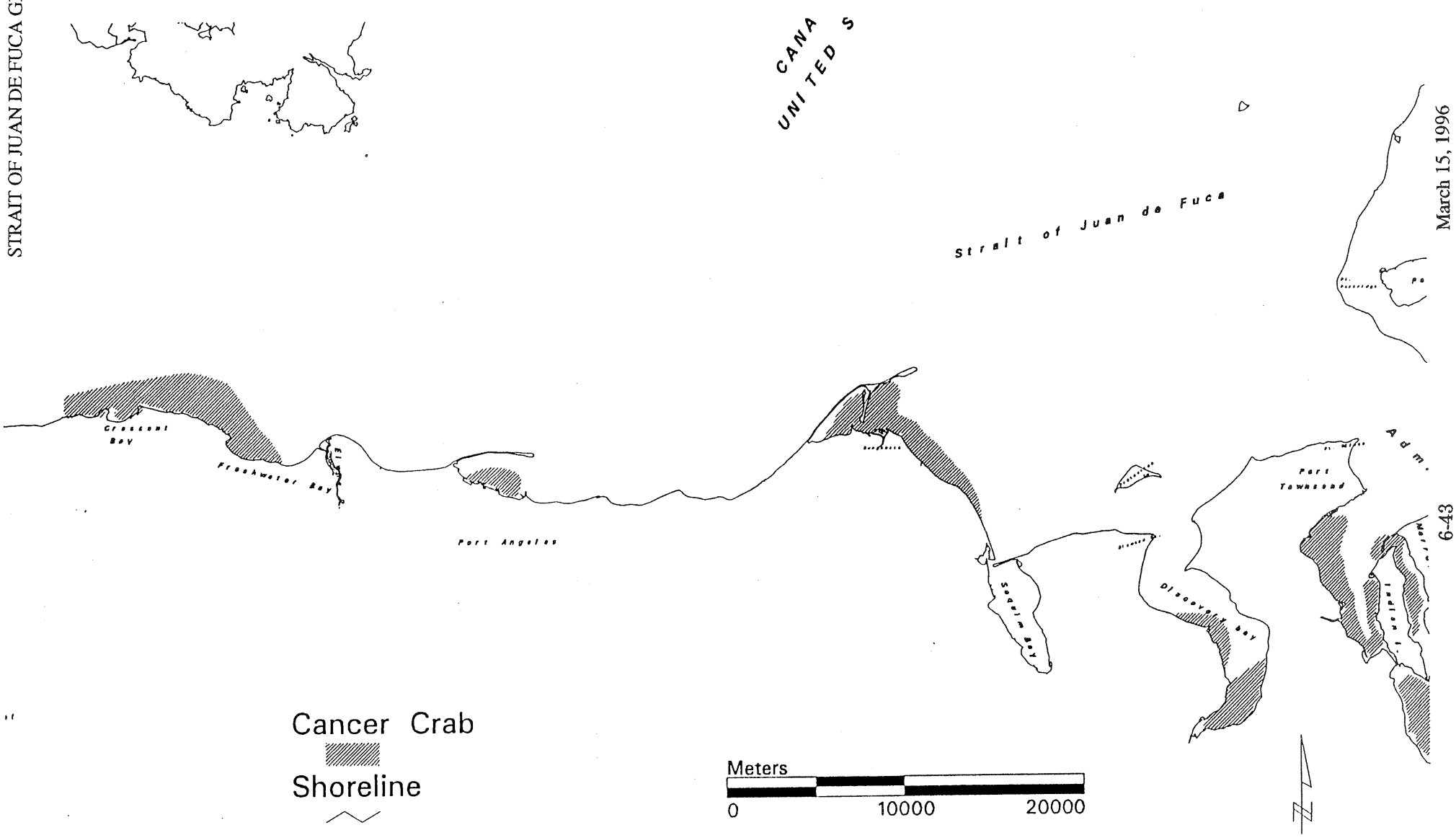
Strait of Juan de Fuca Shellfish Resources
Low Point to Port Townsend

STRAIT OF JUAN DE FUCA GRP

March 15, 1996

6-43



Source: Washington Department of Fisheries
This map does not offer complete information on fish and shellfish resource distribution. Comprehensive inventories have not been completed along all shorelines.

DRAFT - May 18, 1993

Strait of Juan de Fuca Geographic Response Plan Workshop Data Recording Sheet

Resource: Intertidal and subtidal hardshell clams, and intertidal softshell clams.

Resource Information Mapped: Hardshell intertidal include the native littleneck (*Protothaca staminea*), the Manila littleneck (*Tapes philippinarum*), butter clams (*Saxidomus giganteus*), piddock clams (*Zirfaea pilsbryi*), and horse clams (*Tresus capax* and *T. nuttallii*), and cockles (*Clinocardium nuttali*). Subtidal includes butter clams, piddock clams and horse clams. Softshell intertidal includes only the eastern softshell clam (*Mya arenaria*).

Resource Use: Human; commercial and recreational harvest. Non human; as a group clams are feed upon by a wide variety of organisms including snails, sea stars, Dungeness and rock crabs, several species of commercially and recreationally import fish, sea otters, raccoons, scoters and other birds.

General Location or Habitat Association of Resource: Clams are found throughout the region with higher concentrations in Dungeness Bay, Sequim Bay, and Discovery Bay. Clams are found from approximately +2 m MLLW in the intertidal zone to subtidal depths of -21 m MLLW.

Seasonal Sensitivity: Due to their sessile lifestyle in the intertidal zone clams are at high risk of exposure throughout the year. Sensitivity would be elevated during the spawning and larval period which can extend from April through October.

Recommended Protection Strategy: Keep oil out of Dungeness Bay, Sequim Bay, and Discovery Bay. Where oil cannot be excluded from the beach use clean up techniques which do not force oil into beach substratum.

Information Recorder: WDF - Oil Spill Response and Damage Prevention Unit

References:

Emmett, R.L., S.L. Stone, S.A. Hinton, and M.E. Monaco. 1991. Distribution and abundance of fishes and invertebrates in west coast estuaries; Volume II: species life history summaries. ELMR Rep. No. 8. NOAA/NOS Strategic Environmental Assessments Division, Rockville, MD, 329 p.

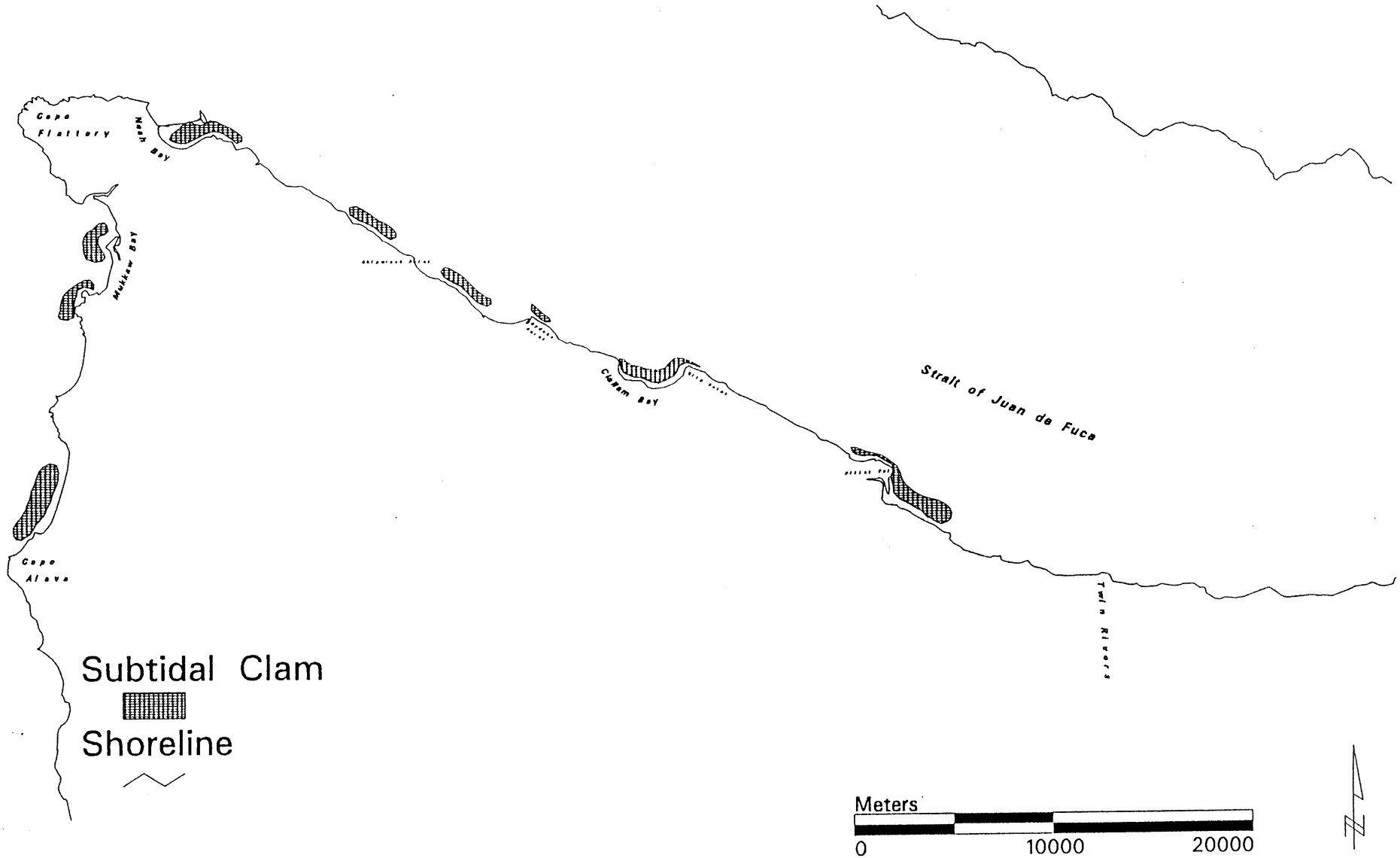
Washington Department of Fisheries. 1992. Salmon, marine fish and shellfish resources and associated fisheries in Washington's coastal and inland marine waters. Wa. Dept. Fish. Tech. Rpt. 79. 70 p.

Strait of Juan de Fuca Shellfish Resources
Cape Flattery to Low Point

STRAIT OF JUAN DE FUCA GRP

March 15, 1996

6-45



Source: Washington Department of Fisheries
This map does not offer complete information on fish and shellfish resource distribution. Comprehensive inventories have not been completed along all shorelines.

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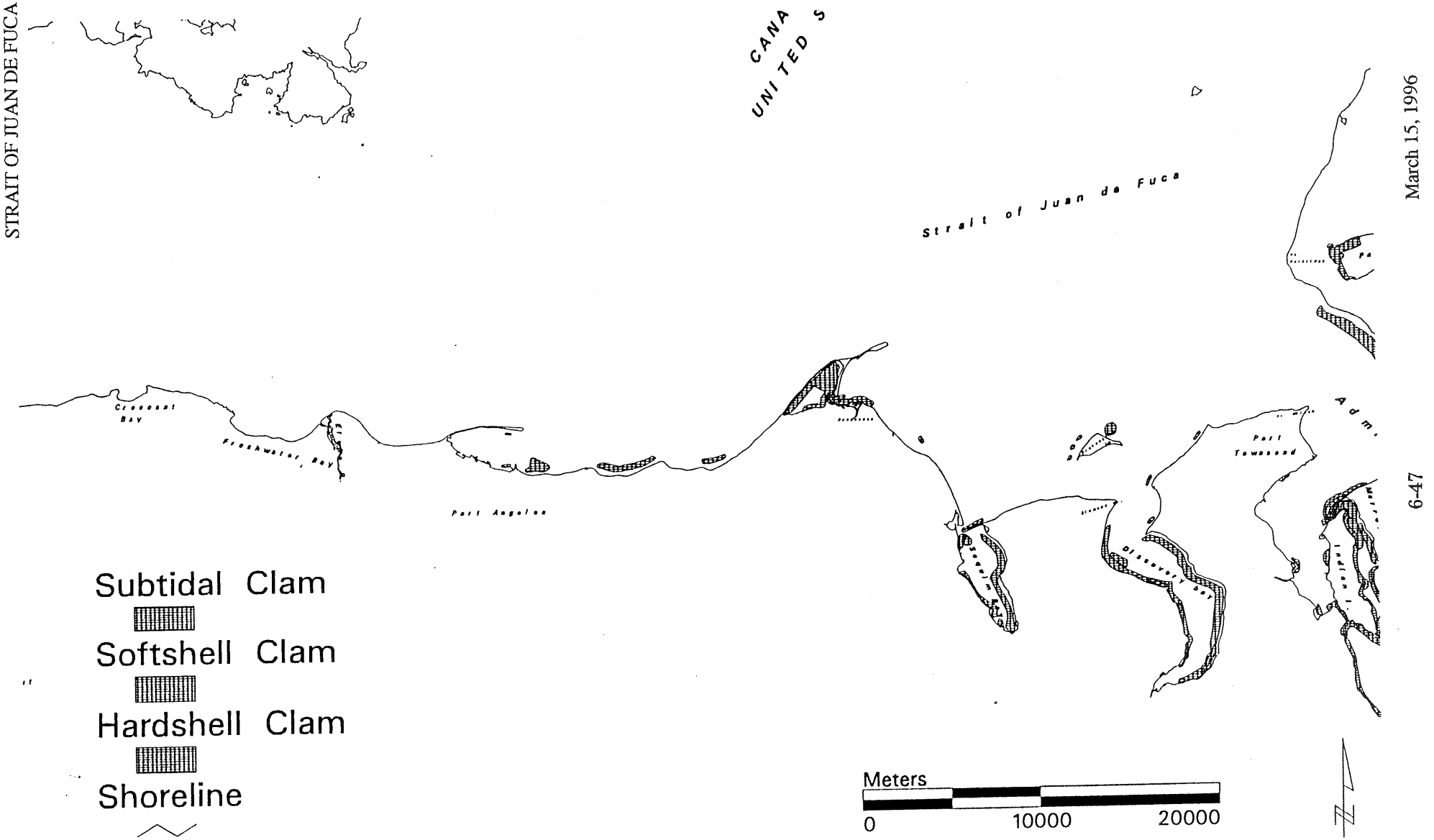
Strait of Juan de Fuca Shellfish Resources
Low Point to Port Townsend



Subtidal Clam

Softshell Clam

Hardshell Clam

Shoreline

Source: Washington Department of Fisheries
This map does not offer complete information on fish and shellfish resource distribution. Comprehensive inventories have not been completed along all shorelines.

DRAFT - May 18, 1993

Strait of Juan de Fuca Geographic Response Plan Workshop
Data Recording Sheet

Resource: Geoduck Clams (*Panope abrupta*)

Resource Information Mapped: Distribution of commercially harvestable quantities of geoduck clams.

Resource Use: Human; Geoducks support a large commercial and recreational fisheries. Non human; Geoducks are fed upon by snails, pandalid shrimp, rock crab, English sole, sand sole, rock sole, starry flounder, starfish, and sea otters.

General Location or Habitat Association of Resource: Geoducks are found throughout the region and inhabit depths from +1 to -110 m MLLW. Preferred substrate is stable mud and sand.

Seasonal Sensitivity: Sensitivity would be highest during the spawning and larval period from April through August (peak May - July).

Recommended Protection Strategy: Utilize beach clean up techniques which do not transport oil into the subtidal zone.

Information Recorder: WDF - Oil Spill Response and Damage Prevention Unit

References:

Emmett, R.L., S.L. Stone, S.A. Hinton, and M.E. Monaco. 1991. Distribution and abundance of fishes and invertebrates in west coast estuaries; Volume II: species life history summaries. ELMR Rep. No. 8. NOAA/NOS Strategic Environmental Assessments Division, Rockville, MD, 329 p.

Washington Department of Fisheries. 1992. Salmon, marine fish and shellfish resources and associated fisheries in Washington's coastal and inland marine waters. Wa. Dept. Fish. Tech. Rpt. 79. 70 p.

Strait of Juan de Fuca Shellfish Resources
Low Point to Port Townsend

STRAIT OF JUAN DE FUCA GRP

March 15, 1996

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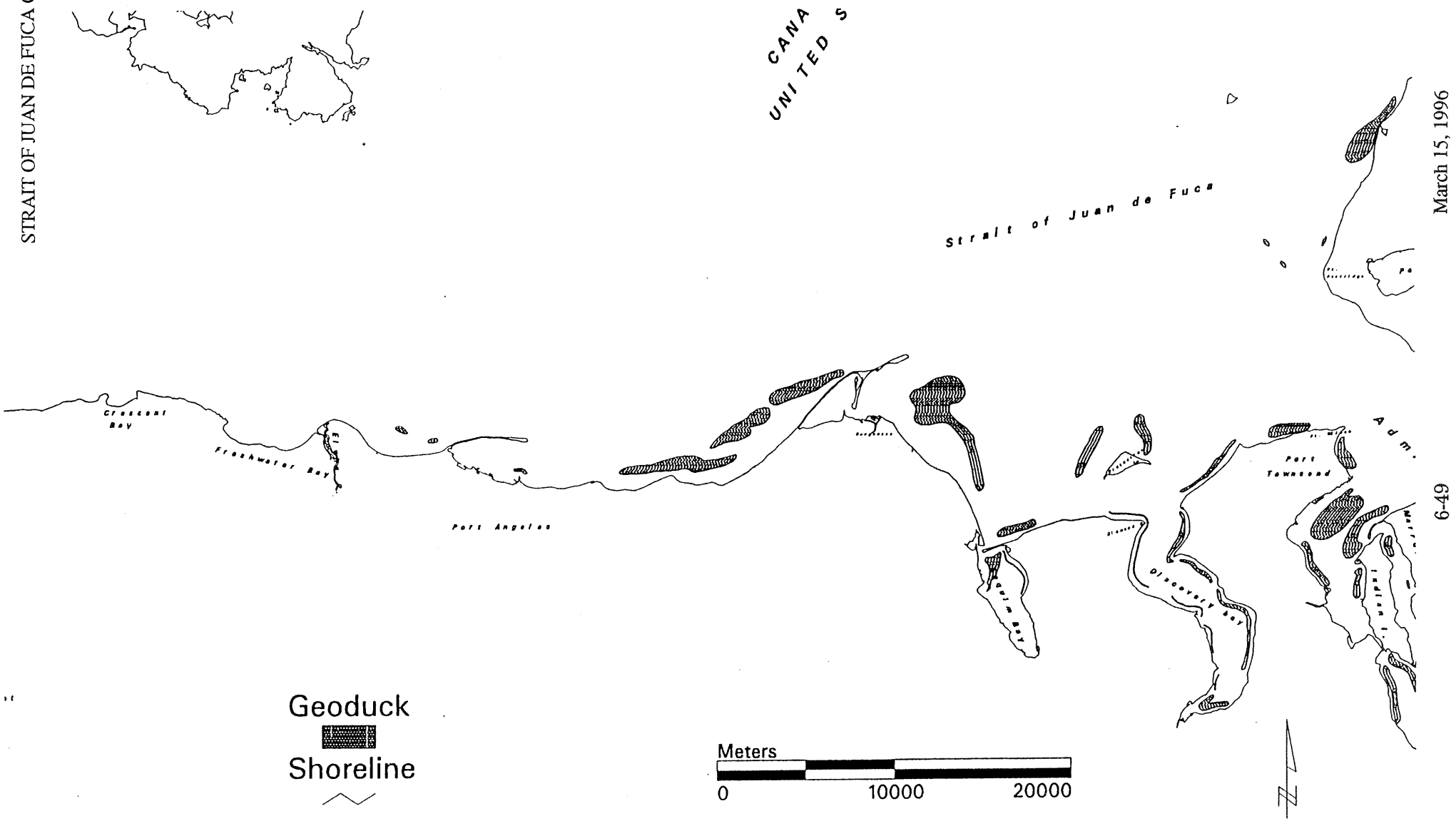

Source: Washington Department of Fisheries
This map does not offer complete information on fish and shellfish resource distribution. Comprehensive inventories have not been completed along all shorelines.

DRAFT - May 18, 1993

Strait of Juan de Fuca Geographic Response Plan Workshop
Data Recording Sheet

Resource: Pacific Oyster (*Crassostrea gigas*)

Resource Information Mapped: Oyster beds, primarily cultured.

Resource Use: Human; recreational and commercial harvest. Non-human; oyster beds provide important habitat for juvenile dungeness crab. Juvenile and adult oysters are preyed upon by dungeness and red rock crab, several starfish species, and surf and white-winged scoters.

General Location or Habitat Association of Resource: Pacific oysters are found in the lower intertidal and shallow subtidal zones in Dungeness Bay and Sequim Bay.

Seasonal Sensitivity: Due to their sessile lifestyle in the intertidal zone oysters are at high risk of exposure throughout the year. Relative to their habitat function for juvenile dungeness crab the most sensitive period would be June through December.

Recommended Protection Strategy: Use exclusion, deflection or diversion boom to keep oil out of Dungeness Bay and Sequim Bay.

Information Recorder: WDF - Oil Spill Response and Damage Prevention Unit

References:

Emmett, R.L., S.L. Stone, S.A. Hinton, and M.E. Monaco. 1991. Distribution and abundance of fishes and invertebrates in west coast estuaries; Volume II: species life history summaries. ELMR Rep. No. 8. NOAA/NOS Strategic Environmental Assessments Division, Rockville, MD, 329 p.

Washington Department of Fisheries. 1992. Salmon, marine fish and shellfish resources and associated fisheries in Washington's coastal and inland marine waters. Wa. Dept. Fish. Tech. Rpt. 79. 70 p.

Strait of Juan de Fuca Shellfish Resources
Low Point to Port Townsend

STRAIT OF JUAN DE FUCA GRP

March 15, 1996

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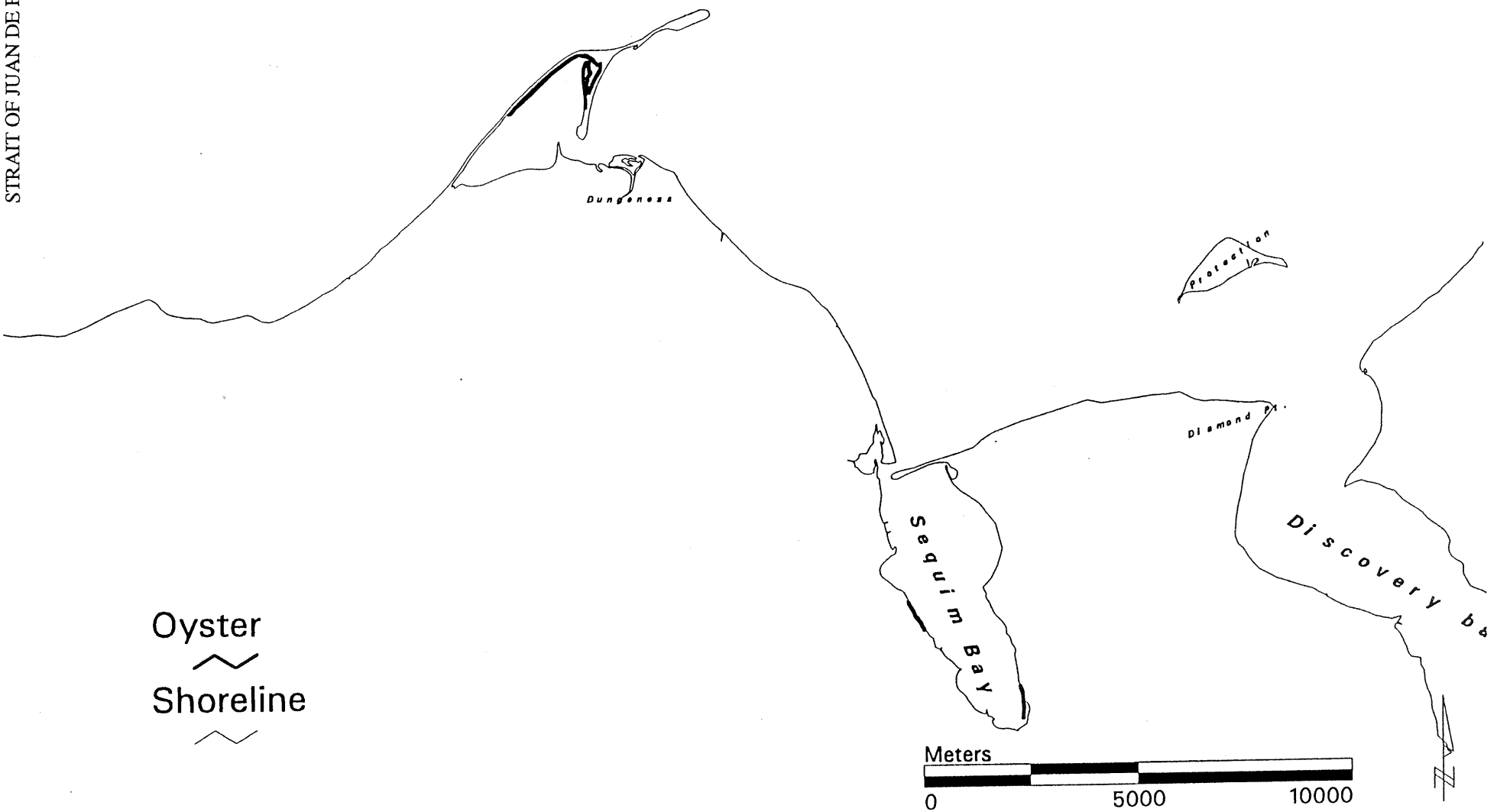


Source: Washington Department of Fisheries
This map does not offer complete information on fish and shellfish resource distribution. Comprehensive inventories have not been completed along all shorelines.

DRAFT - May 18, 1993

Strait of Juan de Fuca Geographic Response Plan Workshop
Data Recording Sheet

Resource: Sea Urchin

Resource Information Mapped: Commercially harvestable quantities of adult sea urchins, primarily the red sea urchin (*Strongylocentrotus franciscanus*).

Resource Use: Human - commercial fishery. Non-human - dominant organism in rocky nearshore communities, responsible for shaping the character of the habitat through their grazing activities. Important prey item for wolf eels and sea otters.

General Location or Habitat Association of Resource: Sea urchins populate the kelp beds along the entire length of the Strait of Juan de Fuca. Urchins are found from the lower intertidal to depths of 125 m but the highest densities are found at depths less than 30 m. Juveniles are found in adult habitat and require the adults presence to survive.

Seasonal Sensitivity: Spawning occurs during the spring followed by a planktonic larval phase that lasts from 60 to 130 days. Adults are susceptible to oil exposure via ingestion of contaminated marine algae, particularly kelp. Highest risk of this type of exposure is from April to November.

Recommended Protection Strategy: Prevent oil from contaminating nearshore kelp beds. Utilize exclusion or diversionary booms in critical areas. Employ beach clean up techniques that do not transport oil into shallow subtidal area.

Information Recorder: WDF - Oil Spill Response and Damage Prevention Unit

References:

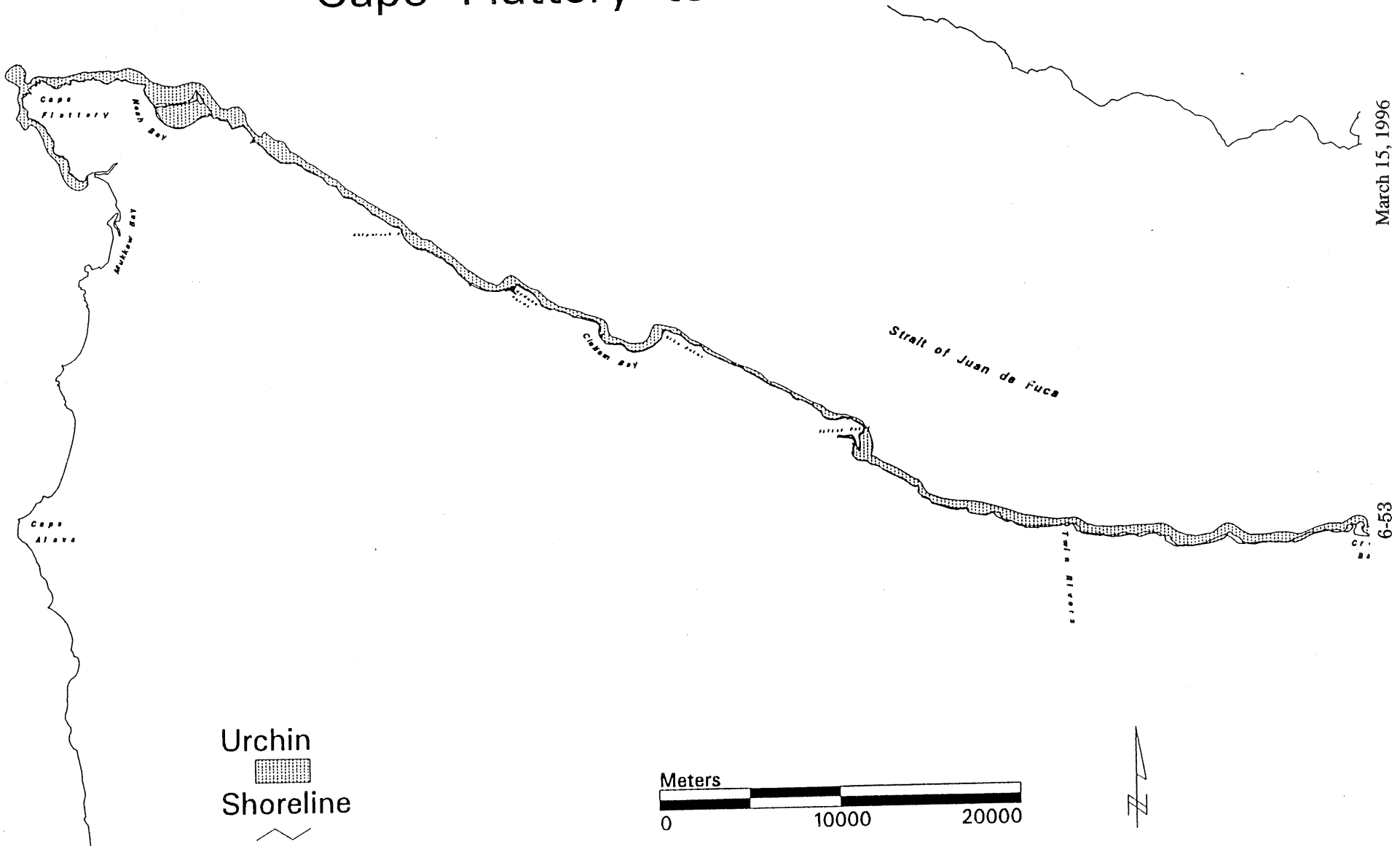
Washington Department of Fisheries. 1992. Salmon, marine fish and shellfish resources and associated fisheries in Washington's coastal and inland marine waters. Wa. Dept. Fish. Tech. Rpt. 79. 70 p.

Strait of Juan de Fuca Shellfish Resources
Cape Flattery to Low Point

STRAIT OF JUAN DE FUCA GRP

March 15, 1996

6-53



Source: Washington Department of Fisheries
This map does not offer complete information on fish and shellfish resource distribution. Comprehensive inventories have not been completed along all shorelines.

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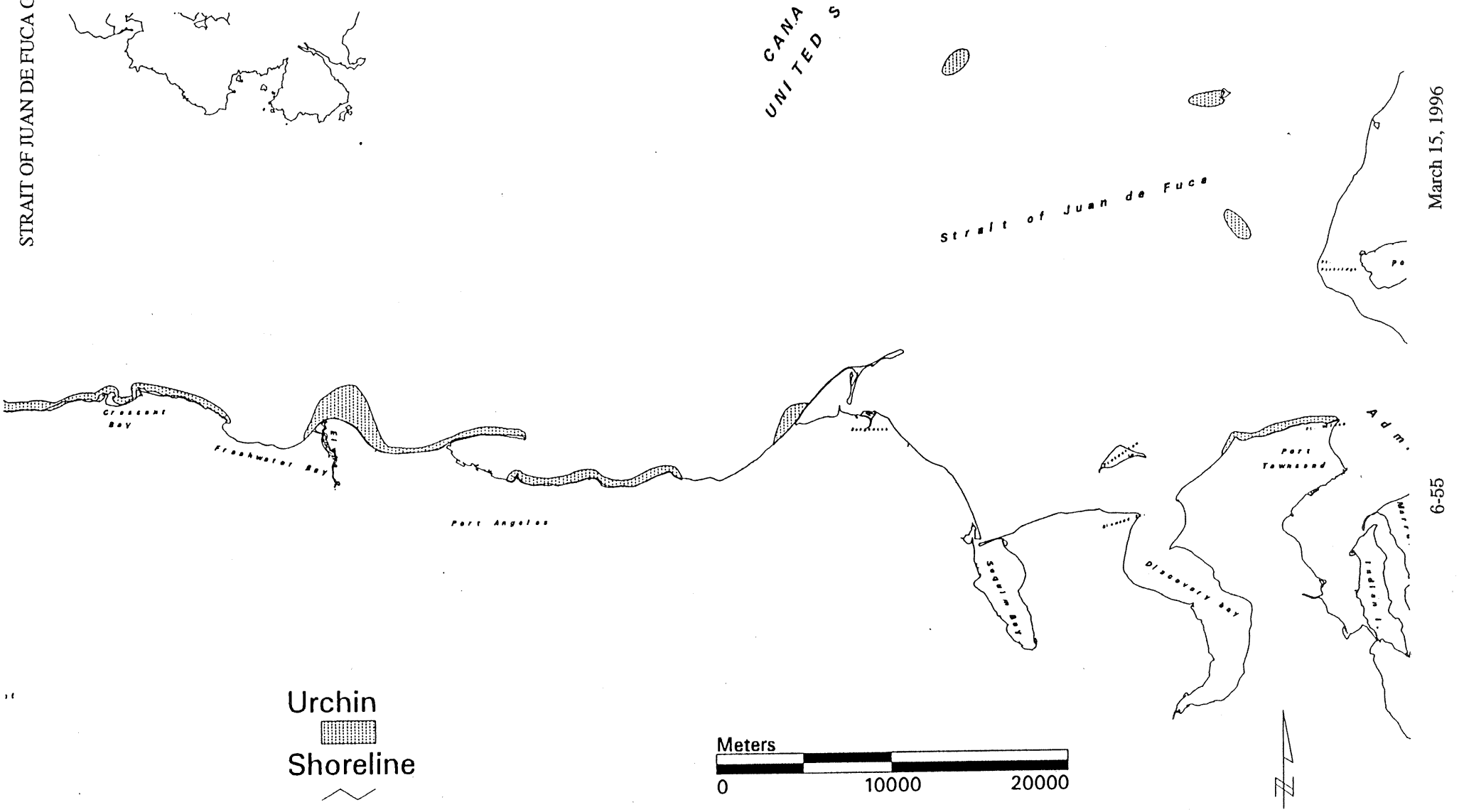
Strait of Juan de Fuca Shellfish Resources
Low Point to Port Townsend

STRAIT OF JUAN DE FUCA GRP

March 15, 1996

6-55



Source: Washington Department of Fisheries
This map does not offer complete information on fish and shellfish resource distribution. Comprehensive inventories have not been completed along all shorelines.

DRAFT - May 18, 1993

Strait of Juan de Fuca Geographic Response Plan Workshop
Data Recording Sheet

Resource: Northern Abalone (*Haliotis kamtschatkana*)

Resource Information Mapped: Documented areas of abalone presence.

Resource Use: Human; recreational fishery only. Non-human; important prey item for sea otters, octopus, and cabezon.

General Location or Habitat Association of Resource: Abalone are found along exposed or semi-exposed bedrock or boulder shorelines from the intertidal zone to depths of 20 m.

Seasonal Sensitivity: Adult abalone congregate in the shallow subtidal zone to spawn from April through June. Abalone broadcast eggs and sperm into the water column and fertilized eggs sink to the bottom and hatch within days. Larvae spend 5 to 6 days as free swimmers in the water column. Adults are susceptible to oil exposure via ingestion of contaminated marine algae, particularly kelp. Highest risk of this type of exposure is from April to November.

Recommended Protection Strategy: Prevent oil from contaminating nearshore kelp beds. Utilize exclusion or diversionary booms in critical areas. Employ beach clean up techniques that do not transport oil into shallow subtidal area.

Information Recorder: WDF - Oil Spill Response and Damage Prevention Unit

References:

Washington Department of Fisheries. 1992. Salmon, marine fish and shellfish resources and associated fisheries in Washington's coastal and inland marine waters. Wa. Dept. Fish. Tech. Rpt. 79. 70 p.

STRAIT OF JUAN DE FUCA GRP

Strait of Juan de Fuca Shellfish Resources
Cape Flattery to Low Point

March 15, 1996

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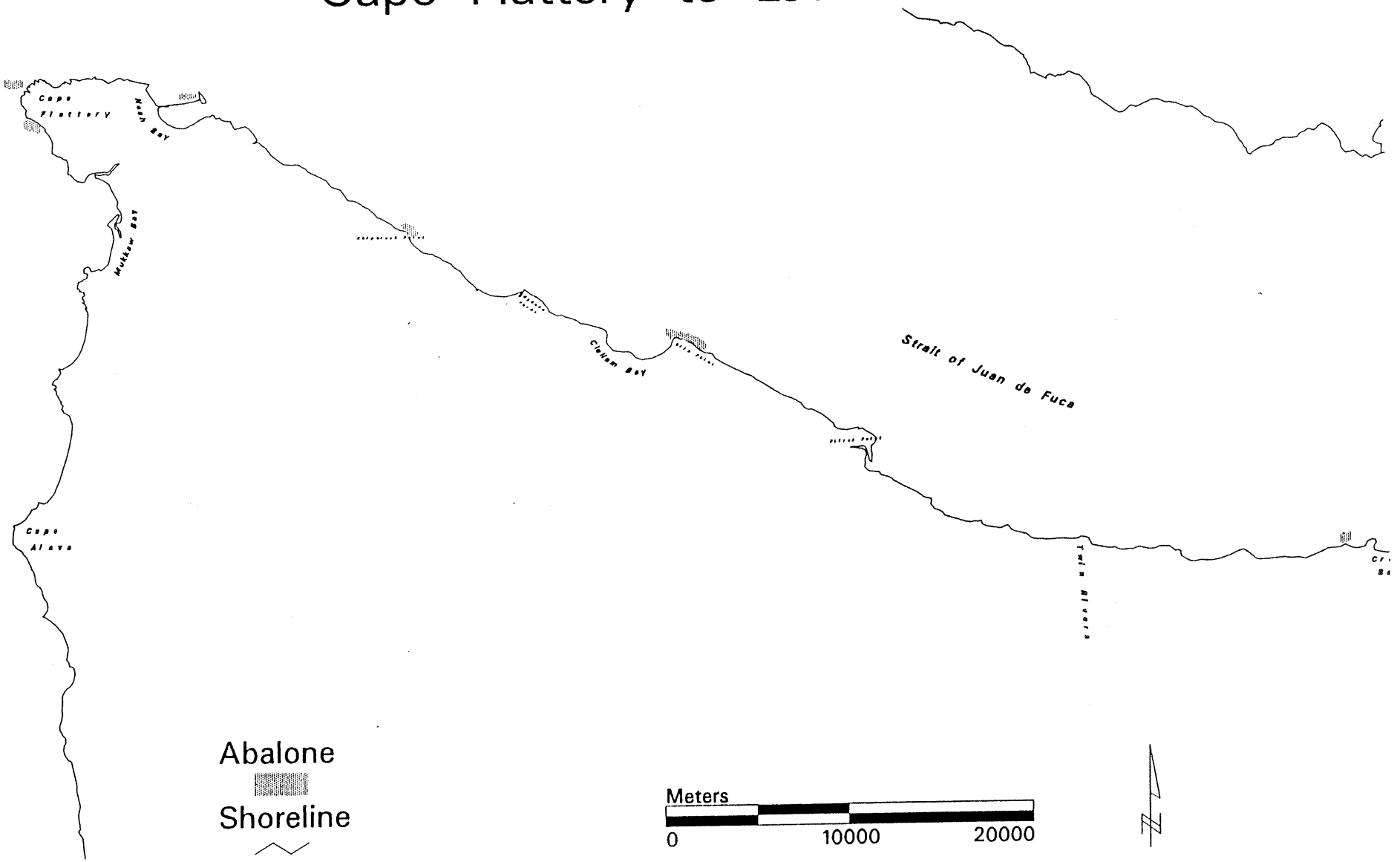

Source: Washington Department of Fisheries
This map does not offer complete information on fish and shellfish resource distribution. Comprehensive inventories have not been completed along all shorelines.

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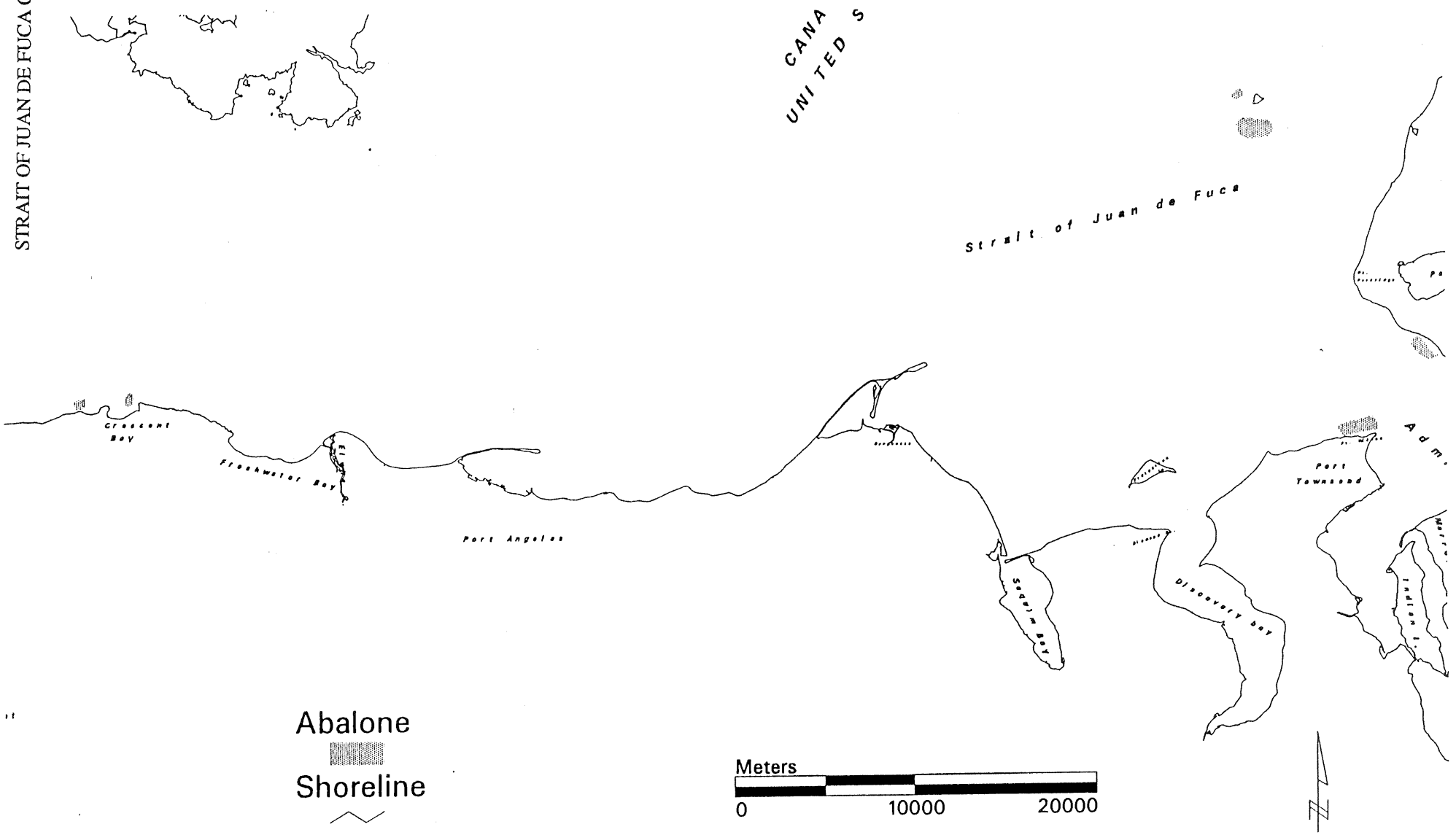
Strait of Juan de Fuca Shellfish Resources
Low Point to Port Townsend

STRAIT OF JUAN DE FUCA GRP

March 15, 1996

6-59



Source: Washington Department of Fisheries
This map does not offer complete information on fish and shellfish resource distribution. Comprehensive inventories have not been completed along all shorelines.

DRAFT - May 18, 1993

Strait of Juan de Fuca Geographic Response Plan Workshop Data Recording Sheet

Resource: Octopus (*Octopus dofleini*)

Resource Information Mapped: Documented octopus habitat.

Resource Use: Harvested in commercial, recreational, and subsistence fisheries.

General Location or Habitat Association of Resource: Octopus live in caves or dens from the lower intertidal to the subtidal zones.

Seasonal Sensitivity: The portion of the population inhabiting the lower intertidal and shallow subtidal zone would be subject to exposure during extreme low tides throughout the year. Octopus are also susceptible to exposure via contaminated prey, particularly clams and crab.

Recommended Protection Strategy: Utilize beach clean up techniques that do not transport oil into shallow subtidal area.

Information Recorder: WDF - Oil Spill Response and Damage Prevention Unit

References:

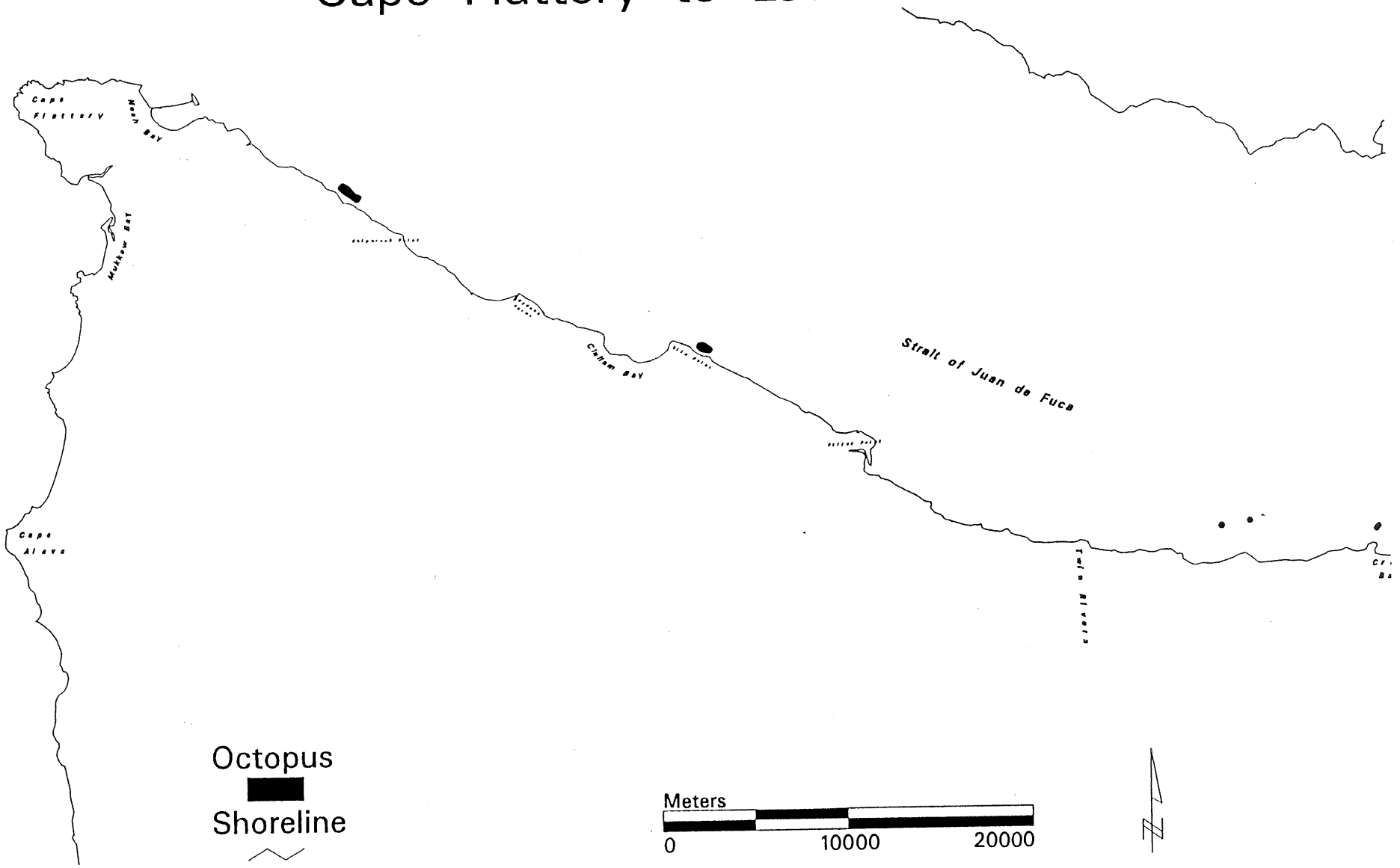
Washington Department of Fisheries. 1992. Salmon, marine fish and shellfish resources and associated fisheries in Washington's coastal and inland marine waters. Wa. Dept. Fish. Tech. Rpt. 79. 70 p.

STRAIT OF JUAN DE FUCA GRP

Strait of Juan de Fuca Shellfish Resources
Cape Flattery to Low Point

March 15, 1996

6-61



Source: Washington Department of Fisheries
This map does not offer complete information on fish and shellfish resource distribution. Comprehensive inventories have not been completed along all shorelines.

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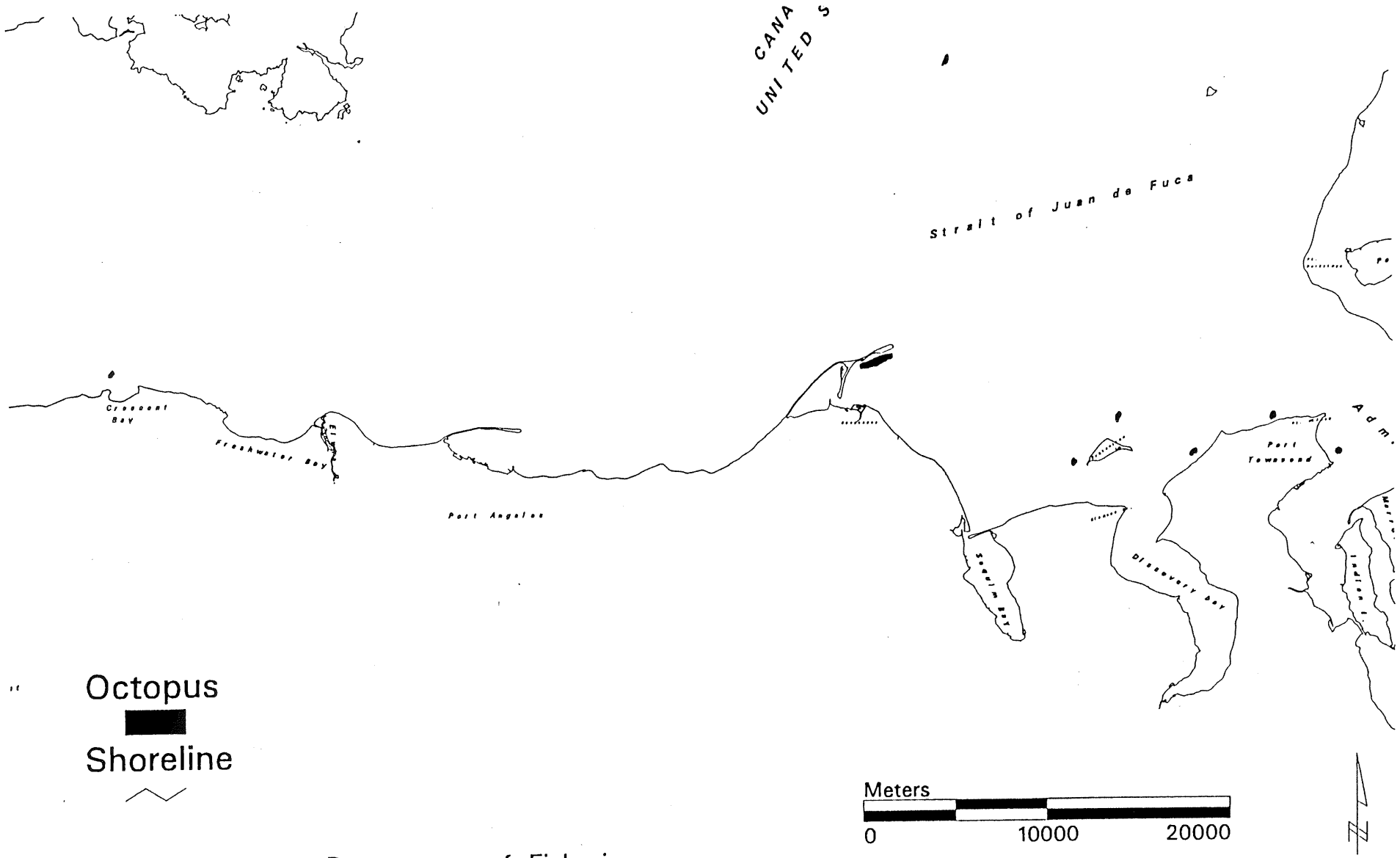
Strait of Juan de Fuca Shellfish Resources
Low Point to Port Townsend



Source: Washington Department of Fisheries
This map does not offer complete information on fish and shellfish resource distribution. Comprehensive inventories have not been completed along all shorelines.

March 15, 1996

DRAFT - May 18, 1993

Strait of Juan de Fuca Geographic Response Plan Workshop
Data Recording Sheet

Resource: Pandalid Shrimp

Resource Information Mapped: Harvest areas for four species of shrimp including; pink (*Pandalus jordani* and *P. borealis*), coonstripe (*P. danae*), and spot prawn (*P. platyceros*).

Resource Use: Human; commercial and recreational fisheries in Port Angles Harbor and the Discovery Bay - Protection Island area. Non-human; food organism for many fish species including rockfish, cabezon, and perch.

General Location or Habitat Association of Resource: Most harvest occurs in waters 100 to 220 m deep, however, the coonstripe and spot prawn are found as shallow as the lower intertidal zone.

Seasonal Sensitivity: Planktonic larval phase from February through July.

Recommended Protection Strategy: Utilize beach clean up techniques that do not transport oil into shallow subtidal area.

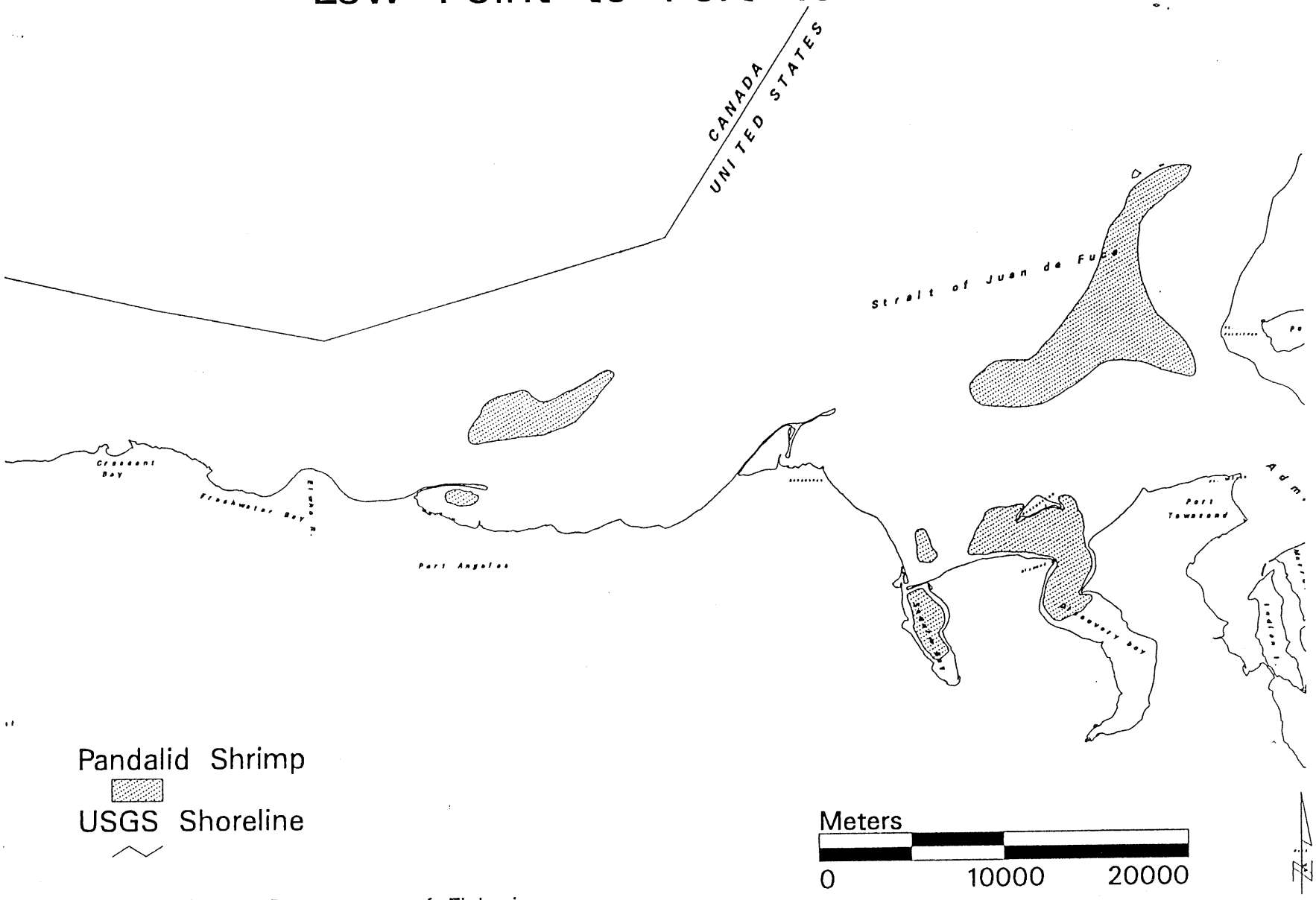
Information Recorder: WDF - Oil Spill Response and Damage Prevention Unit

References:

Washington Department of Fisheries. 1992. Salmon, marine fish and shellfish resources and associated fisheries in Washington's coastal and inland marine waters. Wa. Dept. Fish. Tech. Rpt. 79. 70 p.

Hueckel, G.J. 1980. Foraging on an artificial reef by three Puget Sound fish species. Wa. Dept. Fish. Tech. Rpt. 53. 110 p.

Strait of Juan de Fuca Shellfish Resources
Low Point to Port Townsend



Source: Washington Department of Fisheries
This map does not offer complete information on the distribution of fish and shellfish resources. Comprehensive surveys have not been completed along all shorelines.

Puget Sound Fish and Shellfish Habitat Association Table - Key

Life Stages -
- eggs
- larvae
- juveniles
- spawners/spawning
- parturition (birth)
- adults

Timing -
- --- common
- +++ abundant
- *** highly abundant

Salinity Range -

tidal fresh	0.0 - 0.5	ppt
mixing	0.5 - 25.0	ppt
seawater	>25.0	ppt

Habitats -

intertidal	0-3 m
subtidal	3-10m

Data Source -

Monaco, M.E. et al. 1990. Distribution and abundance of fishes and invertebrates in west coast estuaries. Vol. I: Data summaries. ELMR Rept. 4. Strategic Assessment Branch, NOS/NOAA, Rockville, MD

Emmett, R.L. et al. 1991. Distribution and abundance of fishes and invertebrates in west coast estuaries. Vol. II: Species Life History Summaries. ELMR Rept. 8. Strategic Assessment Branch, NOS/NOAA, Rockville, MD

Fish Habitat Association in Puget Sound

Species	Timing	Salinity Range			Substrate Preference									Habitats						
														Type			Area			
		Tidal Fresh	Mixing	Seawater	Mud/Silt/Clay	Sand/Granule	Pebble	Cobble	Boulder/Riprap	Rocky Outcrop	Estuarine Veg	Marine Veg	None	Benthic Intertidal	Benthic Subtidal	Pelagic	Mainstem Channel	Subsidiary Channel	Channel Edge	Intertidal Flat
Spring Chinook Salmon	J F M A M J J A S O N D																			
juveniles	------++++++++++++++---	X	X	X		X	X	X								X	X	X	X	X
adults	------++++++++++-------	X	X	X		X	X	X								X	X	X	X	X
Fall Chinook Salmon	J F M A M J J A S O N D																			
juveniles	--------++++++++++-----	X	X	X		X	X	X								X	X	X	X	X
adults	-------------++++++---	X	X	X		X	X	X								X	X	X	X	X
Sockeye Salmon	J F M A M J J A S O N D																			
juveniles	----++------	X	X	X									X			X	X	X	X	X
adults	--++++----	X	X	X		X	X									X	X	X	X	X
Coho Salmon	J F M A M J J A S O N D																			
juveniles	----++++--------	X	X	X		X	X									X	X	X	X	X
adults	---- ----++++-	X	X	X		X	X									X	X	X	X	X
Chum Salmon	J F M A M J J A S O N D																			
juveniles	--++++**++----------	X	X	X									X			X	X	X	X	X
adults	++------ --++****+	X	X	X		X	X									X	X	X	X	X

Fish Habitat Association in Puget Sound (cont.)

Species	Timing	Salinity Range			Substrate Preference									Habitats							
														Type			Area				
		Tidal Fresh	Mixing	Seawater	Mud/Silt/Clay	Sand/Granule	Pebble	Cobble	Boulder/Riprap	Rocky Outcrop	Estuarine Veg	Marine Veg	None	Benthic Intertidal	Benthic Subtidal	Pelagic	Mainstem Channel	Subsidiary Channel	Channel Edge	Intertidal Flat
Pink Salmon	J F M A M J J A S O N D																				
juveniles	+++++****++----------	X	X	X									X			X	X	X	X	X
adults	---++**++--	X	X	X		X	X									X	X	X	X	X
Surf Smelt	J F M A M J J A S O N D																				
eggs	****** **********		X	X		X								X							
larvae	++++++++ ++++++++++++		X	X		X								X							
juveniles	++++++++++++++++++++++++		X	X									X			X	X	X	X	X
spawners	****** **********		X	X		X								X							
adults	++++++++++++++++++++++++		X	X									X			X	X	X	X	X
Herring	J F M A M J J A S O N D																				
eggs	**********		X	X							X	X		X	X						X
larvae	**********++++		X	X									X			X	X	X	X	X
juveniles	++++++++**********+++++		X	X									X			X	X	X	X	X
spawners	**********		X	X							X	X		X	X						X
adults	**++++++++++++++++++++*		X	X									X			X	X	X	X	

March 15, 1996

Fish Habitat Association in Puget Sound (cont.)

Species	Timing	Salinity Range			Substrate Preference									Habitats: Type			Habitats: Area			
		Tidal Fresh	Mixing	Seawater	Mud/Silt/Clay	Sand/Granule	Pebble	Cobble	Boulder/Riprap	Rocky Outcrop	Estuarine Veg	Marine Veg	None	Benthic Intertidal	Benthic Subtidal	Pelagic	Mainstem Channel	Subsidiary Channel	Channel Edge	Intertidal Flat
Longfin Smelt	J F M A M J J A S O N D																			
eggs						X											X			
larvae	-------- ---	X	X	X		X										X	X	X	X	
juveniles	----------		X	X									X			X	X	X	X	
adults	-------- ---	X	X	X									X			X	X	X	X	
Anchovy	J F M A M J J A S O N D																			
eggs	--		X	X									X			X				
larvae	----		X	X									X			X	X	X	X	
juveniles	----------		X	X									X			X	X	X	X	
spawners	----		X	X									X			X				
adults	----------		X	X									X			X	X	X	X	
Sand Lance	J F M A M J J A S O N D																			
eggs	*******++ ++*		X	X		X								X	X	X	X			
larvae	++********++		X	X		X										X	X			
juveniles	++++++++++******++++++++		X	X		X								X	X	X	X			
spawners	*******++ ++*		X	X		X								X	X	X	X			
adults	----------		X	X		X								X	X	X	X			

Fish Habitat Association in Puget Sound (cont.)

Species	Timing	Salinity Range			Substrate Preference									Habitats							
														Type			Area				
		Tidal Fresh	Mixing	Seawater	Mud/Silt/Clay	Sand/Granule	Pebble	Cobble	Boulder/Riprap	Rocky Outcrop	Estuarine Veg	Marine Veg	None	Benthic Intertidal	Benthic Subtidal	Pelagic	Mainstem Channel	Subsidiary Channel	Channel Edge	Intertidal Flat
English Sole	J F M A M J J A S O N D																				
eggs	****** +			X									X								
larvae	++++**++		X	X	X								X			X	X	X			
juveniles	**********		X	X	X	X					X	X		X	X		X	X	X	X	
spawning	++++++++++ +		X	X	X	X									X						
adults	++++++++++		X	X	X	X					X	X			X		X				
Starry Flounder	J F M A M J J A S O N D																				
eggs	--------			X									X			X					
larvae	--------		X	X									X			X	X				
juveniles	--------++++++++++---	X	X	X	X	X					X	X		X	X		X	X	X	X	
spawning	--++----			X		X															
adults	++++++++++		X	X	X	X					X	X		X	X		X	X			
Ling Cod	J F M A M J J A S O N D																				
eggs	---------- -			X					X	X				X	X						
larvae	----------		X	X									X			X					
juveniles	----------		X	X	X	X			X	X	X	X		X	X		X	X	X		
spawning	------ -			X					X	X				X	X						
adults	----------			X					X	X		X		X	X						

Fish Habitat Association in Puget Sound (cont.)

Species	Timing	Salinity Range			Substrate Preference									Habitats						
														Type			Area			
		Tidal Fresh	Mixing	Seawater	Mud/Silt/Clay	Sand/Granule	Pebble	Cobble	Boulder/Riprap	Rocky Outcrop	Estuarine Veg	Marine Veg	None	Benthic Intertidal	Benthic Subtidal	Pelagic	Mainstem Channel	Subsidiary Channel	Channel Edge	Intertidal Flat
Shiner Perch	J F M A M J J A S O N D																			
juveniles	++++++******	X	X	X	X	X					X		X		X	X	X	X	X	X
parturition	--+++++--		X		X	X					X		X				X	X	X	X
adults	**********		X	X	X	X					X		X		X	X	X	X	X	X
Perch	J F M A M J J A S O N D																			
juveniles	+++******++	X	X	X	X	X					X					X	X	X	X	X
parturition	--+++++--		X	X	X	X					X						X	X	X	X
adults	--++++++++++--		X	X	X	X					X					X	X	X	X	X
Pacific Tomcod	J F M A M J J A S O N D																			
larvae	--------		X	X									X				X	X	X	
juveniles	----------++++++++++-		X	X	X	X					X	X			X		X	X	X	
adults	++++++++++++++++++++++		X	X	X	X									X		X	X	X	

Shellfish Habitat Association in Puget Sound

Species	Timing	Salinity Range			Substrate Preference									Habitats						
														Type			Area			
		Tidal Fresh	Mixing	Seawater	Mud/Silt/Clay	Sand/Granule	Pebble	Cobble	Boulder/Riprap	Rocky Outcrop	Estuarine Veg	Marine Veg	None	Benthic Intertidal	Benthic Subtidal	Pelagic	Mainstem Channel	Subsidiary Channel	Channel Edge	Intertidal Flat
Dungeness Crab	J F M A M J J A S O N D																			
eggs	----------																			
larvae	----------		X	X									X			X	X	X		
juveniles	----------++****++---		X	X	X	X	X				X			X	X		X	X	X	X
mating	------													X	X					
adults	++++++++++++++++++++++++		X	X	X	X	X							X	X		X	X	X	
Blue Mussel	J F M A M J J A S O N D																			
eggs	++++*******++++		X	X									X			X	X	X	X	X
larvae	++++*******++++		X	X									X			X	X	X	X	X
juveniles	************************		X	X				X	X	X				X	X		X	X	X	X
spawning	++++*******++++		X	X									X	X	X		X	X	X	X
adults	************************		X	X				X	X	X				X	X		X	X	X	X
Softshell Clam	J F M A M J J A S O N D																			
eggs	++++++++++		X	X									X			X	X	X	X	X
larvae	++++++++++++		X	X									X			X	X	X	X	X
juvenile	++++++++++++++++++++++++		X	X	X	X								X	X		X	X	X	X
spawning	++++++++++		X	X									X	X	X		X	X	X	X
adults	++++++++++++++++++++++++		X	X	X	X								X	X		X	X	X	X

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Shellfish Habitat Association in Puget Sound (cont.)

Species	Timing	Salinity Range			Substrate Preference									Habitats							
														Type			Area				
		Tidal Fresh	Mixing	Seawater	Mud/Silt/Clay	Sand/Granule	Pebble	Cobble	Boulder/Riprap	Rocky Outcrop	Estuarine Veg	Marine Veg	None	Benthic Intertidal	Benthic Subtidal	Pelagic	Mainstem Channel	Subsidiary Channel	Channel Edge	Intertidal Flat
Pacific Gaper Clam	J F M A M J J A S O N D																				
eggs	++++++++++		X	X									X			X	X	X	X	X
larvae	+++++++++++		X	X									X			X	X	X	X	X
juvenile	++++++++++++++++++++++		X	X	X	X								X	X		X	X	X	X
spawning	++++++++++		X	X										X	X		X	X	X	X
adults	++++++++++++++++++++++		X	X	X	X								X	X		X	X	X	X
Horse Clam	J F M A M J J A S O N D																				
eggs	--------												X			X	X	X	X	X
larvae	----------		X	X									X			X	X	X	X	X
juvenile	++++++++++++++++++++++		X	X	X	X								X	X		X	X	X	X
spawning	--------													X	X		X	X	X	X
adults	++++++++++++++++++++++		X	X	X	X								X	X		X	X	X	X
Little Neck Clam	J F M A M J J A S O N D																				
eggs	**********												X			X	X	X	X	X
larvae	**********												X			X	X	X	X	X
juveniles	**********		X	X	X	X	X	X						X	X		X	X	X	X
spawning	**********												X	X	X		X	X	X	X
adults	**********		X	X	X	X	X	X						X	X		X	X	X	X

Shellfish Habitat Association in Puget Sound (cont.)

Species	Timing	Salinity Range			Substrate Preference									Habitats							
														Type			Area				
		Tidal Fresh	Mixing	Seawater	Mud/Silt/Clay	Sand/Granule	Pebble	Cobble	Boulder/Riprap	Rocky Outcrop	Estuarine Veg	Marine Veg	None	Benthic Intertidal	Benthic Subtidal	Pelagic	Mainstem Channel	Subsidiary Channel	Channel Edge	Intertidal Flat
Manila Clam	J F M A M J J A S O N D																				
eggs	**********												X			X	X	X	X	X
larvae	**********		X	X									X			X	X	X	X	X
juveniles	**********		X	X	X	X	X	X						X	X				X	X
spawning	**********												X	X	X				X	X
adults	**********		X	X	X	X	X	X						X	X				X	X
Pacific Oyster	J F M A M J J A S O N D																				
eggs													X			X	X	X	X	X
larvae													X			X	X	X	X	X
juveniles	**********		X	X	X	X	X	X	X	X				X	X		X	X	X	X
adults	**********		X	X	X	X	X	X	X	X				X	X		X	X	X	X
Geoduck Clam	J F M A M J J A S O N D																				
eggs	++++++++		X	X									X			X	X	X	X	X
larvae	++++++++++		X	X									X			X	X	X	X	X
juveniles	++++++++++++++++++++		X	X	X	X								X	X		X	X	X	X
spawning	++++++++		X	X									X	X	X		X	X	X	X
adults	++++++++++++++++++++		X	X	X	X								X	X		X	X	X	X

7. Logistical Information

The following is not a complete list of logistical resources - for more information please refer to the Area Contingency Plan, Summary of Area Resources Chapter 6. The subject headings which have an asterisk (*) are being developed; please consult local DEM officials (phone numbers listed on pages 6-53 to 6-55 of the ACP) for specific information.

To submit data for this section, please use Comments/ Corrections/ Suggestions (Appendix C).

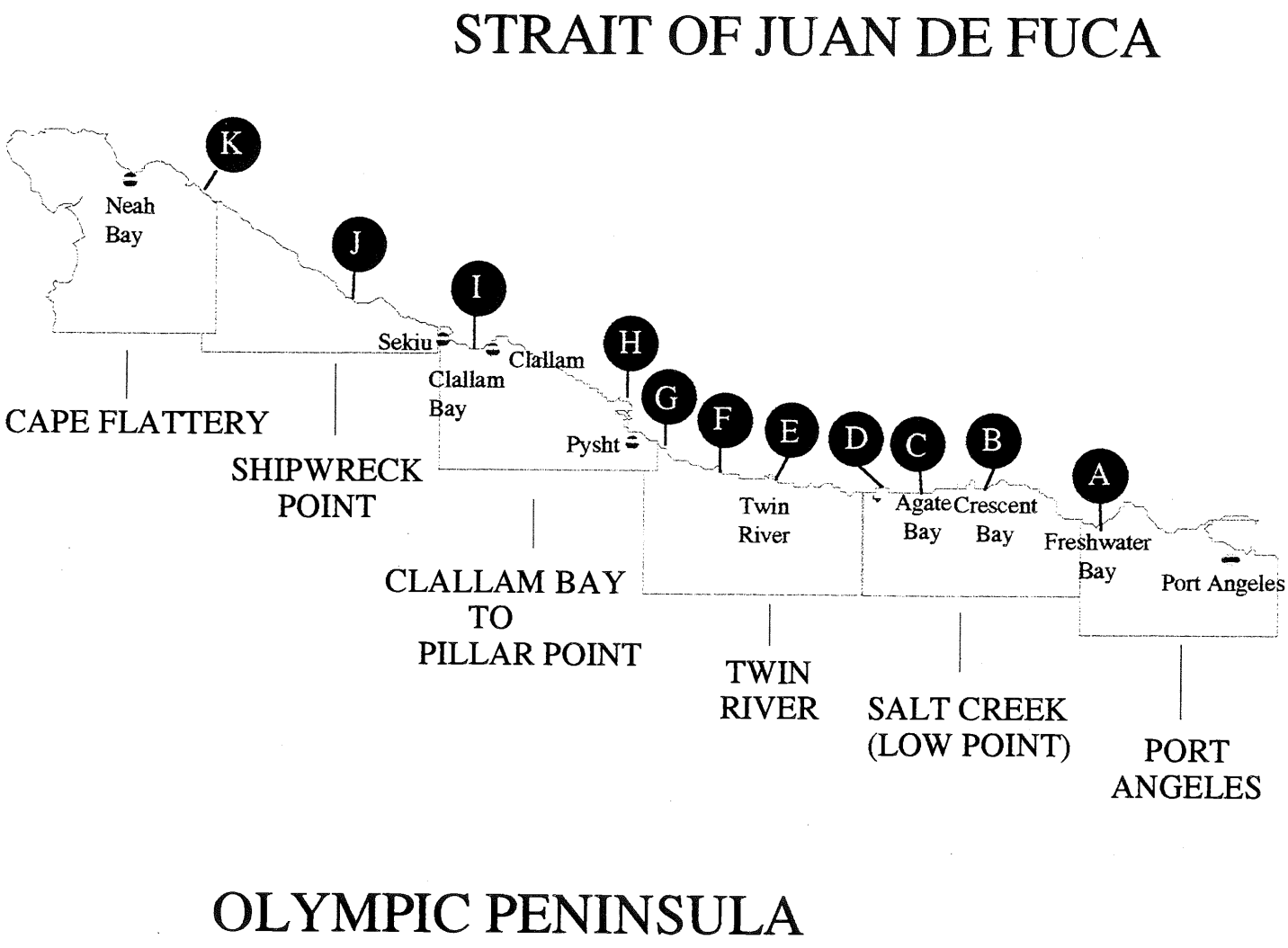
Logistical Support

Subject	Name	Characteristics	Contact	Phone #
Command Posts				
	Olympic National Park HQ/Port Angeles		Curt Sauer	360-452-4501
	Olympic Coast National Marine Sanctuary HQ	138 First St., Port Angeles	Todd Jacobs	360-457-6622
	USCG Station Neah Bay	Neah Bay	Officer-in-charge	360-645-2236
	Cape Flattery Resort		Makah Tribe	360-645-2551
(see pages 7-4 through 7-10 for detailed descriptions of following 11 sites	Freshwater Bay Boat Launch	Clallam County Parks		
	Salt Creek Recreation Area	Clallam County Parks		
	Whisky Creek Launch	Private		360-928-3489
	Lyre River Launch	Private		
	East Twin River	Grassy field; private		
	Deep Creek Spit	Road-side pulloff; private		
	Jim Creek marina	Private (closed at time of printing for renovations)	Joe Murray	800-827-2367
	Pillar Point Launch	Private		
	Sekiu marina	Community center		
	Sekiu River Campground	Private		
	Snow Creek Fish Camp	Private		
Communications				
See ACP, Chapter 6	NPS radio channels/repeater sys.		Mel Kossen	360-452-4501
	NPS Mobile hand radios		Mel Kossen	360-452-4501
Equipment Cache Locations				
See ACP, Chapter 6	NPS Park HQ Emergency Ops Center (Port Angeles)		Larry Nickey	360-452-4501

Subject	Name	Characteristics	Contact	Phone #
Inventory of Local Support Equipment				
	NOAA National Marine Sanctuary Work Boat "Tatoosh"	36'x12' Aluminum (Neah Bay/Port Angeles)	Todd Jacobs	360-457-8496
Helicopter Support/Air Support				
	NPS contract Helicopters		Larry Nickey	360-452-4501
	Fairchild International Airport	Clallam County	Port of Port Angeles	360-457-8527
	Jefferson County International Airport	Jefferson County	Port of Port Townsend	360-385-2323
Access Points				
Property Access Information and Contacts				
	Makah Tribe		Chad Bowechop	360-645-2201
Staging Areas	See Command Posts above			
Recreational Activities				
Key Local Elected Officials				
Tribal Resources				
	Makah Tribe		Chad Bowechop	360-645-220.
	Jamestown Klallam Tribal Council			360-683-1109
	Lower Elwha Tribe			360-452-8471
Fire Department				
See ACP, Chapter 6	Neah Bay Fire			360-645-2701
Local Personnel Support				
	Port Angeles City Hall/DEM	102 E. 5th. Port Angeles, WA 98362		360-452-4545
	Makah Tribe		Chad Bowechop	360-645-2201
	Port Angeles City Police			360-457-7836
	Sequim Police Dept.			360-683-7227
	Clallam County DEM	223 E. 4th St. Port Angeles, WA 98362		360-452-7831
Volunteers				
Wildllife Rehab Facilties				

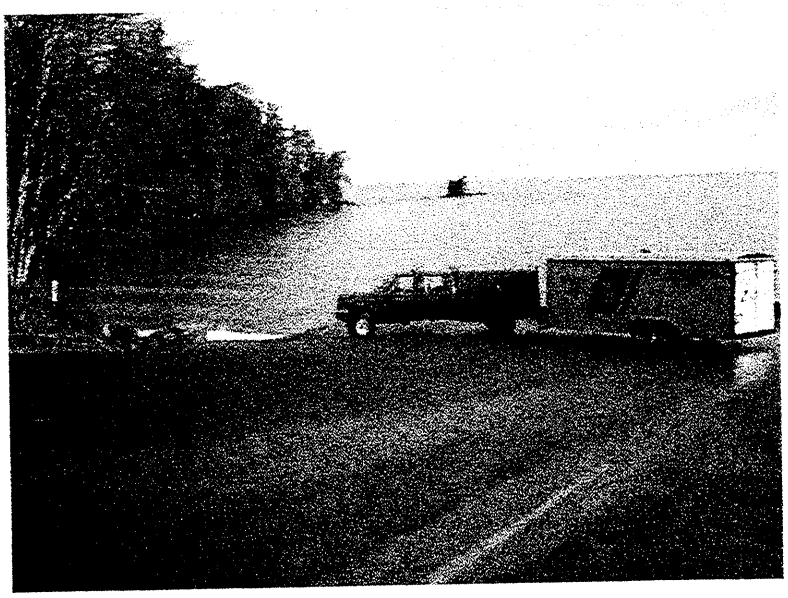
Subject	Name	Characteristics	Contact	Phone #
Marinas/Port Docks				
	Big Salmon Resort	Neah Bay		
	Snow Creek Ramp	Neah Bay		
	Far West Ramp	Neah Bay		
	West Wind Resrot	Neah Bay		
	Coho Resort	Clallam Bay		
	Pillar Point Park	Pillar Point/Hwy 112		
	Van Riper's Resort	Sekiu		
	Olsen's Ramp	Sekiu		
	Silver King Resort	Pysht		
	Lyre River Park	Joyce		
	Jim Creek		Joe Murray	800-827-2367
	Whisky Creek		Whisky Creek Beach	360-928-3489
	Port Angeles Public Ramp	Ediz Hook		
	Freshwater Bay Ramp	Freshwater Bay		
	West Boat Haven Launch	Port Angeles		
	East Boat Haven Launch	Port Angeles		
	John Wayne Marina	Sequim		
	Sequim Bay State Park Ramp	Sequim		
	Boat Haven Ramp	Port Townsend		
	Point Hudson Ramp	Port Townsend		
	Fort Warden Ramp	Fort Warden State Park		
*Housing/ Feeding/ Response Community Support**				
	Cape Flattery Resort	55 units	Cape Flattery area	360-645-2551
	Cape Motel	Bay View Ave. 10 units	Cape Flattery area	360-645-2250
	Hilden's Motel	Bowman Beach, 5 units	Cape Flattery area	360-645-2306
*Interim Storage/Permits**				
	Permit for low overflights of Marine Sancturay	below 2,000 ft/1 mi. from shore	Todd Jacobs	360-457-6622
*Fishing Fleets & Affiliated Organizations**				
*Boat Cleaning Capability**				
*Safe Havens**				

7.1 Key Map to Selected Command Post Sites



7.2 Selected Command Post Site Descriptions

1. **Freshwater Bay** (48'07" N, 123'37.3" W)
   - Approximately 10 miles west of Port Angeles
   - Managed by Clallam County Parks



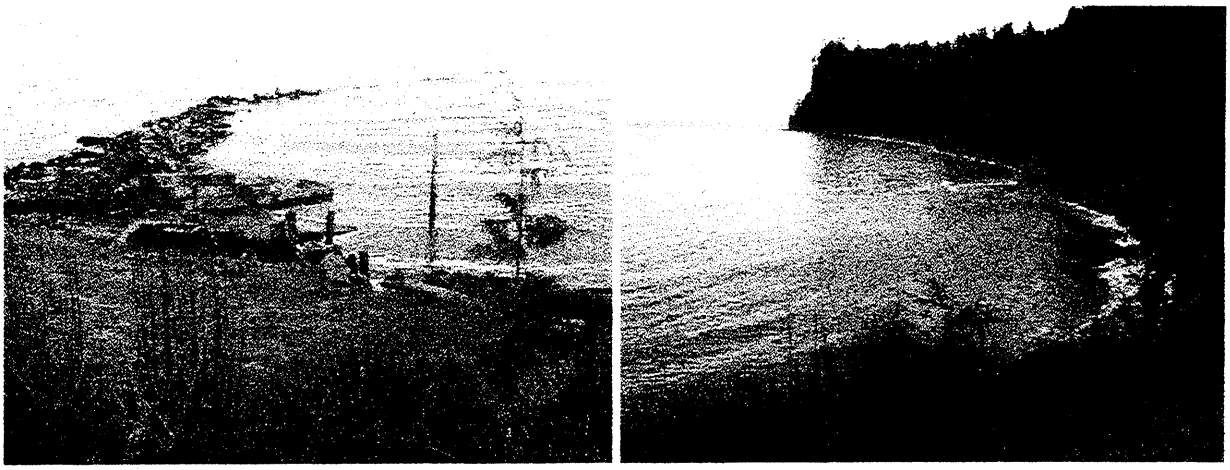
Features:
- Boat launch
- Parking lot/overflow parking
- Outgoing cellular communications
- Excellent access

2. **Salt Creek Recreation Area** (48'09.4" N, 123'42.6" W)
   - Approximately 17 miles west of Port Angeles
   - Managed by Clallam County Parks




Features:
- Campground with electrical hookups
- Large grassy field
- 100 to 200 yards of sandy beachfront
- Outgoing cellular communications
- Excellent access (loop road)

3. **Whisky Creek** (48'09.2" N, 123'47" W)
   - Approximately 20 miles west of Port Angeles
   - Privately owned by Whisky Creek Beach (360) 928-3489



Features:
- Boat launch
- Campground; electrical hookups and cabins
- Outgoing cellular communications
- Large grassy field

4. **Lyre River** (48'08.8" N, 123'50.6" W)
   - Approximately 20 miles west of Port Angeles
   - Privately owned

Features:
- Boat launch
- Large grassy field
- Outgoing cellular communications
- Campground with electrical hookups

5. **West Twin River** (48'09.3" N, 123'57.6" W)
- Approximately 25 miles west of Port Angeles
- Privately owned

Features:
- Large grassy field along shore
- Loop around drive
- Outgoing cellular communications

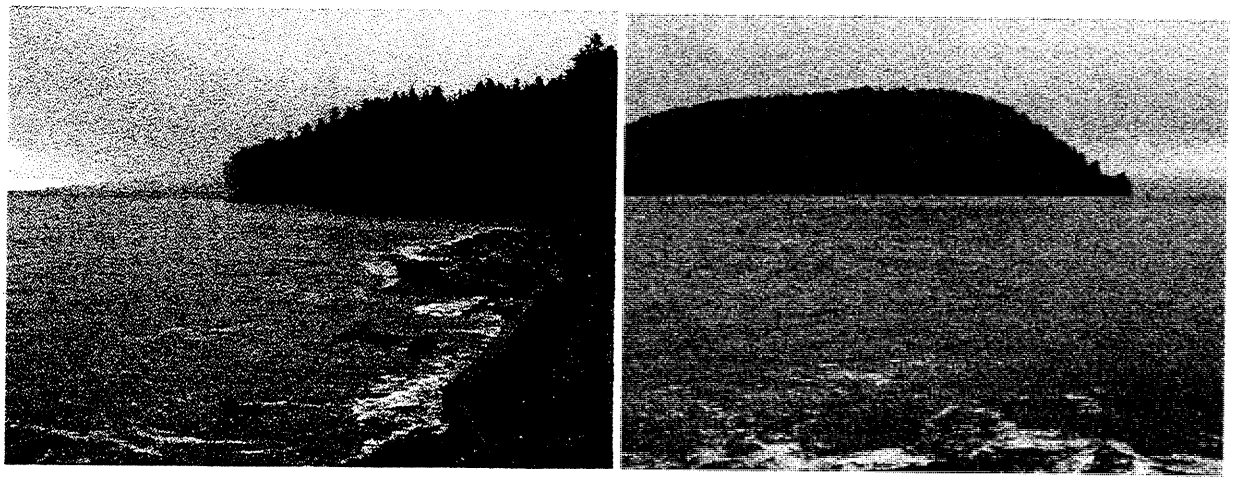
6. **Deep Creek Spit** (48'19.4" N, 124'01.5" W)
- Approximately 4 miles from Twin
- Privately owned

Features:
- 10 to 15 yards from water
- Roadside pulloff
- Large spit
- Outgoing cellular communications

7. **Jim Creek** (48'10.9" N, 123'03.5" W)
   - Approximately 30 miles from Neah Bay
   - Privately owned (contact Joe Murray at 800-827-2367)
   - Currently closed for renovation

Features:
- Campground
- Boat launch, marina, and parking lot
- Outgoing cellular communications

8. **Pillar Point** (48'11.9" N, 124'05.9" W)
   - Approximately 30 miles from Neah Bay
   - Privately owned



Features:
- Boat launch
- Campground (no electrical hookup)
- Parking lot
- Outgoing cellular communications

9. **Sekiu** (48'15.5" N, 124'15.7" W)
   - Approximately 20 miles east of Neah Bay
   - Small community use area

Features:
- Small community center
- Marina and boat launch
- Outgoing cellular communications
- Campground with electrical hookups

10. **Sekiu River Campground** (48'17.5" N, 124'24" W)
   - Approximately 12 miles east of Neah Bay
   - Privately owned

Features:
- Campground (no electrical hookup)
- Beach access and parking lot
- Outgoing cellular communications

11. **Snow Creek Fish Camp** (48'21.3" N, 124'32.9" W)
   - Approximately 5 miles east of Neah Bay
   - Privately owned

Features:
- Boat launch
- Parking lot
- Outgoing cellular communications

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

Appendix B: Original Geographic Response Plan Contributors

Local Representatives
Bob Minty, Jefferson County DEM
Ed Bruette, Kitsap County DEM

Industry and Response Contractors
John Crawford, Foss Environmental
Bert Holmes, Puget Sound Pilots
Ken Florian, Puget Sound Pilots
Sven Eklof, Pacific Western Services
Bob Rome, Pacific Link Environmental
Erik Pratt, Clean Sound
Bob Wiechert, Clean Sound
Mike Rice, PTPC
Tommy Cook, Clean Sound
Alan Rayner, Clean Sound
Chris McCartan, Clean Sound
Roland Miller, Clean Sound
Teresa Hansen, Coe-Truman Technologies
Jim Haugen, MSRC
Lisa Stone, MSRC
Trip Ellison, Riedel Environmental Services

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Roberta Beery

U.S.Fish and Wildlife Service
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Larry Telles

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Lin Bernhardt
Jim Oberlander
Hathor Woods
David Mora
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Washington Department of Fisheries
Brian Benson

Washington Department of Wildlife
Barry Troutman

Washington State Parks
Gus Gustafson
Mike Ramsey

Tribal Representatives
Steve Moddemyer, Port Gamble S'klallam
Ted George, S'Klallam Tribe

Other
Barbara Blowers, Puget Sound Solutions

State Representatives

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

Phone Numbers:

Washington DOE	(360) 407-6972
USCG MSO Puget Sound	(206) 217-6213
USCG MSO Portland	(503) 240-9307
Oregon DEQ	(503) 229-5774
Idaho ERC	(208) 334-3263
EPA	(206) 553-6901

Bulletin Board System (BBS):

USCG MSO Puget Sound	(206) 217-6216
USCG MSO Portland	(503) 240-9308

Internet/E-mail Address:

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OR DEQ	WYLIE.Jack@deq.state.or.us
USCG MSO Puget Sound	jlehto@pacnorwest.uscg.mil
USCG MSO Portland	mwilcox@pacnorwest.uscg.mil
USEPA	sheldrake.beth@epamail.epa.gov

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Planning Department
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Commanding Officer
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Planning Department
MSO Portland
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Washington Department Of Ecology
SPPR Program
Natural Resources Unit
P.O. Box 47600
Olympia, WA 98504-7600

Oregon Department of Environmental Quality
Water Quality Division
811 SW Sixth Avenue
Portland, OR 97204

Office Of The Governor
Idaho Emergency Response Commission
1109 Main
Statehouse
Boise, ID 83720-7000

Environmental Protection Agency
Emergency Response Branch
1200 Sixth Avenue
Seattle, WA 98101

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
Department of Ecology
Spills Program
300 Desmond Drive
P.O. Box 47600
Olympia, WA 98504-7600
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:_____

Northwest Area Committee
c/o Washington Department of Ecology
Spills Program
Natural Resources Unit - GRP Corrections
P.O. Box 47600
Olympia, WA 98504-7600