

GENERAL SITE INFORMATION, CHARACTERISTICS, AND STATUS

Project Name	<u>PACIFIC SOUND RESOURCES</u>	ProjectID: 10-14
Last Updated:	07/28/03	
City:	Seattle	
County:	King	
State:	WA	
Country:	USA	
Bodies of Water:	Elliott Bay; Puget Sound	
US EPA Region:	X	
Status (Active, Complete, or Monitoring Only):	Active	
Date On NPL:	1994	
ROD/ESD Date:	1999	
Operable Unit:	Marine Sediment (offshore unit)	
Areas of Concern (length or acres):	A 100 acre offshore area of sediment, extending about 1,200 feet from the shoreline	
Other Characteristics of Water Body:	The offshore unit of contaminated marine sediment includes a 100-acre area, with nearshore contamination extending down to 20 feet into sediment and then trailing off to primarily surficial contamination at about 1,200 feet from shore.	
Contaminants of Concern:	PAHs, pentachlorophenol, metals, PCBs	
Source of Contamination:	The most likely source is wood treating operations at the adjacent upland site, including direct discharge or disposal of process wastes to Elliott Bay and indirect transport (runoff).	
Contaminated Area Physical Characteristics:	<p>Wood treating operations were conducted at the site from 1909 to 1994. The wood treating facility occupied approximately 25 upland acres.</p> <p>As described in Reference A-849: "The wood treating plant evolved over time from a pile-supported facility over water to a facility constructed on fill. Various filling episodes took place at the PSR site between 1927 and 1974. The site is currently situated on approximately 20 to 40 feet of fill material that was intermittently placed on what was the Duwamish river estuary. Throughout the site's history, bulkheads and revetments have been built on the property to contain fill, control erosion, and isolate equipment from encroaching tides. These retaining structures have had a confounding effect on groundwater migration at the site by creating barriers and/or preferential flow paths . . . The (upland) site is currently bounded to the north by Elliott Bay and on all other sides by the Port's newly constructed container terminal facility."</p> <p>The offshore marine sediment area of concern encompasses about 100 acres, and extends offshore for about 1,200 feet. For the first 400 feet, which is the most heavily-contaminated sector of sediment, the sediment bottom slopes at about 20% before leveling off. MLLW depth in this first 400 feet ranges down to 70 feet.</p>	
Type of Regulatory Action:	Superfund. Final	
Overall Status Summary:	<p>The Pacific Sound Resources (PSR) site, which borders Elliott Bay on Puget Sound, is a Superfund Site divided into two operable units - - a Groundwater (upland) unit and a Marine Sediment (offshore) unit. Wood treating operations were conducted at the 25-acre upland site from 1909 to 1994.</p> <p>As described in Reference A-849: "EPA conducted two phases of early cleanup actions on the upland portion of the site. The first phase focused on site stabilization and demolition of onsite</p>	

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structures. The second phase focused on controlling on-going sources to Elliott Bay, addressing contaminated soil, and preparing the site for reuse by the Port. During the first phase, in 1995, the entire wood treatment facility was demolished and approximately 4,000 cubic yards of highly contaminated soil and process sludge were removed from the site. During the second phase, which began in 1996, a slurry wall was installed to prevent light non-aqueous phase liquid (LNAPL) migration to Elliott Bay and to reduce the influence of tidal fluctuation at the site. The slurry wall is 1,200 feet in length and it extends from the ground surface to a depth that averages 40 feet below ground surface. An LNAPL recovery trench was installed in conjunction with the barrier wall to intercept LNAPL before it can reach Elliott Bay. Also, a low-permeability asphalt cap was constructed over a layer of clean fill placed at the site. This cap was designed to prevent direct soil exposure to onsite workers, prevent runoff of contaminated soil to Elliott Bay, and minimize infiltration of storm water to groundwater. The cap was completed in 1998.”

“Other early actions taken at the site included clean out of the Longfellow Creek overflow channel and marine outfall (along the western border of the site), and collection and disposal of the dense non-aqueous phase liquid (DNAPL) that accumulates in onsite monitoring wells. Twenty five cubic yards of PCB contaminated sediments were removed from the Longfellow Creek outfall area by the Port as part of their terminal development work, and approximately 1,500 gallons of DNAPL have been recovered from onsite wells and treated through incineration over the last three years.”

Contaminants of concern are PAHs, pentachlorophenol, heavy metals, and PCBs. Marine sediments are contaminated primarily with PAHs and PCBs. The marine sediment area of concern is about 100 acres extending about 1,200 feet from the shoreline, with the first 400 feet sloping at 20%.

A ROD for the Marine Sediment unit was issued in September 1999. The selected remedy is containment of the contaminated sediments that exceed cleanup goals, by capping 50 acres with a minimum three feet of clean material. An estimated volume of 363,000 cy of clean material will be used for the capping (which calculates to an average depth of 4.5 feet -- to ensure a minimum depth of three feet is attained). In one part of the 50-acre area, the Crowley Marine Services area immediately west of the PSR upland site, 3,500 cy of contaminated sediment will have to be dredged before capping, to maintain navigational depth. The dredged material will be disposed in an upland disposal site. (In mid-2003, it was reported that the volume of contaminated sediment dredged would be 10,000 cy, and would be preceded by removal of an interfering pier structure and 700 wood pilings.)

The design of the cap is expected to be challenging and must address issues such as (a) preventing the cap from sliding in the bottom area that slopes about 20%; (b) effectively capping certain non-uniform bottom areas in which the existing sediment has mounded; (c) placing the cap in deep waters (>70 feet deep); and (d) minimizing resuspension of the soft contaminated bottom sediments.

EPA estimates the in-water capping time at 11 months, but expects the project to take four years calendar time since the volume of clean material required for capping will become available only over time. EPA expects that the extended capping period will allow for testing of placement techniques and on-going evaluation of effectiveness.

The estimated cost for the remedy is \$8.1 million. Design commenced in 2000. Construction of the marine cap is expected to start in late 2003 or early 2004.

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Remedial Action Planned: ☒

Risk Assessment: ☒

Remedial Action Implemented: ☐

Status of Dredging ☐

PRPs: ☒

Contacts: ☒

References: ☒

Modeling: ☐

Fishing Advisory: ☐

Key Conditions: capping, dredging, fish spawning limitations, natural recovery, tidal fluctuations

REMEDIAL ACTION PLANNED

Project Name PACIFIC SOUND RESOURCES

ProjectID: 10-14

Last Updated: 08/20/02

**Target Sediment Cleanup
Standards (TSCS):**

How TSCS Established: The minimum cleanup standard under the State Sediment Management Standards has been selected as the trigger for active remediation of marine sediments contaminated with PAHs. The State's Sediment Quality Standard has been selected as the trigger for active remediation of marine sediments contaminated with PCBs in the nearshore environment.

**Target Bank and Floodplain
Cleanup Levels (if applicable):** N/A

Other Target:

**Environmental Sample Data
References:**

- **Sediment:**
- **Water:**
- **Fish:**

Estimated Target Volume: 50 acres of marine sediments to be capped with 363,000 cy of clean material; also, 3,500 cy to be removed by dredging.

Planned Disposal Method: Upland disposal for 3,500 cy of dredged material

**Estimated Calendar Time to
Implement Remedy:** 4 years

**Estimated Time to Implement
Remedy:** 11 months of in-water time, spread over four years due to the gradual availability of clean material for capping.

**Estimated Cost to Implement
Remedy:** \$8.1 million

**Stated Remedial Action
Objectives (and Source):** Reference A-849: "The remedial action objectives for sediments associated with this site are to minimize human exposure through seafood consumption and minimize benthic community exposure to site contaminants."

**Measures of Success to
be Used:** Not defined

**Planned Monitoring and
Restoration:** Not defined

**Agency Position on Sediment
Removal (and Source):** As explained in Reference A-849: "The Preferred Alternative proposes leaving contamination in place and meeting environmental and human health protection goals through controlled containment (i.e., capping). The preference for capping contaminated marine sediment is based in part on the difficulties associated with dredging. Dredging raises significant concerns regarding short-term water quality impacts and the potentially deleterious effects to fisheries due to the contaminated sediment being oily and fine-grained. In addition, dredging requires siting a large volume disposal facility which is extremely difficult from a regulatory perspective. Dredging is required where maintaining navigation channels is necessary, and at the PSR site, the navigational requirements are minimal, and easily accommodated under the capping alternative. While the volume of material necessary to cap the contaminated sediment in the MSU will not be

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available to allow the action to be completed in one season, receiving smaller portions of capping material over time will allow for trials of various placement techniques as well as on-going evaluation of capping efficacy.”

“EPA has concerns about placement of a cap on about 35% of the proposed cleanup area where the slope is between 18 and 21 percent. A cap placed on an area with a steep slope has the potential to slide. Similarly, bathymetric measurements indicate that “mounds” (likely due to direct waste disposal into Elliott Bay) are present and may present difficulty with respect to uniform cap placement. In addition, the sediments are soft and highly contaminated, and placement of capping material onto the soft sediment has the potential to resuspend the contaminated sediment into the water column. Preliminary discussion of these issues with US Army Corps of Engineers indicates that they can be adequately addressed during the design and placement of the cap.”

RISK ASSESSMENT

Project Name ***PACIFIC SOUND RESOURCES***

ProjectID: 10-14

Last Updated: 08/20/02

RA Type: Human Health and Ecological

RA Status: Complete

RA Objectives:

Company

Performing RA:

RA Reference Report:

***RA Summary and
Conclusions:***

As described in Reference A-849: "The risk assessment indicates that the human population with the highest potential for increased carcinogenic risk is the tribal fisher person consuming seafood (both fish and shellfish) harvested from the site. The current tribal fishers' risk scenario as defined by a reasonable maximum exposure (i.e., a lifetime of eating seafood collected from the site) results in an increased risk of contracting cancer of 4E-4 (i.e., approximately 1 person out of 10,000 people who eat seafood collected from this site over their lifetime will increase their potential for contracting cancer). The current tribal fisher's risk scenario as defined by an average exposure indicates an increased lifetime risk of contracting cancer of 2E-5 (approximately 1 in 100,000). There is no increased risk of noncarcinogenic disease based on the exposure scenarios evaluated."

"Ecological risks were assessed at this site through an evaluation of the toxic effects to several receptors potentially exposed to sediment bound contaminants at the site, including fish, fish eggs, and the benthic community. Fish tissue concentrations and a maternal egg transfer study were used to determine that under current conditions no risk exists for fish or fish eggs due to dioxins and furans in marine sediment at the PSR site. Dioxins and furans are typically associated with wood treatment sites. Several different measurements including chemical concentrations in surface sediment, laboratory bioassay data and benthic community structure were used to predict overall potential toxicity to the benthic community. The bioassays suggest that a wide range of effects could be occurring in benthic organisms at the site. The evaluation of the benthic community structure at the site indicates that lower-level effects than those predicted are occurring, however benthic community effects were still noted. Risks to fish from exposure to PAH contamination associated with this site is not possible to determine because fish metabolize PAHs and therefore the result of PAH exposure can not be measured. However, EPA has recently been provided with a scientific analysis conducted by the National Oceanographic and Atmospheric Administration (NOAA) that indicates adverse effects occur in bottom fish at PAH concentrations much lower than current regulatory levels of concern. EPA considered the NOAA analysis in determining the cleanup boundaries for the site."

POTENTIALLY RESPONSIBLE PARTIES

Project Name **PACIFIC SOUND RESOURCES**

ProjectID: 10-14

PRP Name: PRP INFORMATION NOT RELEASED

PRPID:

Street Address:

City:

State:

KEY CONTACTS

Project Name **PACIFIC SOUND RESOURCES**

ProjectID: 10-14

Last Name: KEY CONTACT INFORMATION NOT RELEASED

Contact ID:

First Name:

Title:

Company:

Address:

City:

State:

Postal Code:

Work Phone # :

Other Phone #:

Fax # :

Email Address:

REFERENCES

Project Name PACIFIC SOUND RESOURCES

ProjectID: 10-14

Reference Type: A

ReferenceID: 847

Title: **Remedial Investigation Report: Pacific Sound Resources:
Marine Sediments Unit: Seattle, Washington (Table of Contents
only)**

Location: AEM

Category: RI/FS

Prepared by/Author: Roy F. Weston, Inc.

**Preparer/Author
Address:** 700 Fifth Avenue, Suite 5700
Seattle, WA 98104-5057

Prepared For: US EPA, Region X
1200 Sixth Avenue
Seattle, WA 98101

Date Published: April 1998

**Key Words and
Phrases:**

Reference Type: A

ReferenceID: 848

Title: **Feasibility Study: Pacific Sound Resources: Marine Sediments
Unit: Seattle, Washington (Table of Contents only)**

Location: AEM

Category: RI/FS

Prepared by/Author: Roy F. Weston, Inc.

**Preparer/Author
Address:** 700 Fifth Avenue, Suite 5700
Seattle, WA 98104-5057

Prepared For: US EPA, Region X
1200 Sixth Avenue
Seattle, WA 98101

Date Published: November 1998

**Key Words and
Phrases:**

REFERENCES

Project Name PACIFIC SOUND RESOURCES

ProjectID: 10-14

Reference Type: A

ReferenceID: 849

Title: *Pacific Sound Resources Superfund Site: Proposed Plan*

Location: AEM

Category: ROD/Proposed Plan/Action Memo/Decision Document

Prepared by/Author: US EPA Region X

Preparer/Author Seattle, WA

Address:

Prepared For: General Public

Date Published: April 1999

**Key Words and
Phrases:**

Reference Type: A

ReferenceID: 850

Title: *Fact Sheet: Proposed Plan Fact Sheet (Pacific Sound Resources)*

Location: AEM

Category: ROD/Proposed Plan/Action Memo/Decision Document

Prepared by/Author: US EPA Region X

Preparer/Author Seattle, WA

Address:

Prepared For: General Public

Date Published: April 1999

**Key Words and
Phrases:**

Reference Type: B

ReferenceID: 729

Title: *NPL Site Narrative for Pacific Sound Resources*

Location: AEM

Category: Site Update

Prepared by/Author: US EPA Region X

Preparer/Author Seattle, WA

Address:

Prepared For: General Public

Date Published: May 31, 1994

**Key Words and
Phrases:**

REFERENCES

Project Name PACIFIC SOUND RESOURCES

ProjectID: 10-14

Reference Type: B
Title: *Site Description (Pacific Sound Resources)*
Location: AEM
Category: Site Update
Prepared by/Author: US EPA Region X
Preparer/Author Address: Seattle, WA
Prepared For: General Public
Date Published: April 2000
Key Words and Phrases:

ReferenceID: 730

Reference Type: B
Title: *e-mail re: Question re Pacific Sound Resources Site*
Location: AEM
Category: Site Update
Prepared by/Author: Sally Thomas
Preparer/Author Address: US EPA Region X
Prepared For: AEM, Inc.
Date Published: August 20, 2002
Key Words and Phrases:

ReferenceID: 960

Reference Type: B
Title: *e-mail re: Question Re Pacific Sound Resources Site*
Location: AEM
Category: Site Update
Prepared by/Author: Cindy Colgate Schuster
Preparer/Author Address: US EPA Region X
Prepared For: AEM, Inc.
Date Published: August 27, 2002
Key Words and Phrases:

ReferenceID: 1029

REFERENCES

Project Name PACIFIC SOUND RESOURCES

ProjectID: 10-14

Reference Type: C

ReferenceID: 949

Title: *\$7.6M Proposed Plan for Pacific Sound Prefers Capping, Considers Dredging*

Location: AEM

Category: Site Update

Prepared by/Author:

**Preparer/Author
Address:**

Prepared For: Superfund Week

Date Published: April 23, 1999

**Key Words and
Phrases:**

Reference Type: C

ReferenceID: 950

Title: *EPA, Corps to Spend Year Figuring Out Complicated Cap Work at Pacific Sound*

Location: AEM

Category: Site Update

Prepared by/Author:

**Preparer/Author
Address:**

Prepared For: Superfund Week

Date Published: March 10, 2000

**Key Words and
Phrases:**

Reference Type: C

ReferenceID: 1150

Title: *Wash.: Debris Removal Begins*

Location: AEM

Category: Site Update

Prepared by/Author:

**Preparer/Author
Address:**

Prepared For: Hazardous Waste/Superfund Week

Date Published: July 28, 2003

**Key Words and
Phrases:**

FISH ADVISORIES

Project Name **PACIFIC SOUND RESOURCES**

ProjectID: 10-14

Advisory: Puget Sound

AdvisoryID: 1108

Extent: North end of Indian Island

Pollutant: metals

Species: shellfish

Population: NCGP

Population Definition: No Consumption-General Population: Advise against consumption by the general population.

Advisory Type: Coastal

Advisory Number: 4249

Status (Active or Rescinded): Active

Date Rescinded:

Contact Name: Dave McBride

Contact Number: 360-236-3176

Advisory: Puget Sound

AdvisoryID: 1109

Extent: North end of Indian Island

Pollutant: PCBs (total)

Species: shellfish

Population: NCGP

Population Definition: No Consumption-General Population: Advise against consumption by the general population.

Advisory Type: Coastal

Advisory Number: 4249

Status (Active or Rescinded): Active

Date Rescinded:

Contact Name: Dave McBride

Contact Number: 360-236-3176
