



DEPARTMENT OF
ECOLOGY
State of Washington

Lower Duwamish Waterway RM 4.2 to 5.8 West (Restoration Areas)

Source Control Action Plan

September 2013

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Lower Duwamish Waterway RM 4.2 to 5.8 West (Restoration Areas)

Source Control Action Plan

Produced by

Toxics Cleanup Program
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Washington State Department of Ecology
Bellevue, Washington

and

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Executive Summary

The purpose of this Source Control Action Plan (SCAP) is to describe potential sources of contaminants to sediments along the Lower Duwamish Waterway (LDW) River Mile (RM) 4.2 to 5.8 West, and to identify actions necessary to minimize recontamination of sediment after cleanup. This SCAP is based on a thorough review of information pertinent to sediment recontamination, as documented in *Lower Duwamish Waterway, RM 4.2 to 5.8 West (Restoration Areas), Summary of Existing Information and Identification of Data Gaps* (SAIC 2013).

The LDW, located in Seattle, Washington, was added to the National Priorities List by the U.S. Environmental Protection Agency (EPA or USEPA) on September 13, 2001. Chemicals of concern (COCs) found in waterway sediments include polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), dioxins/furans, arsenic and other metals, and phthalates. These COCs may pose threats to people, fish, and wildlife.

In December 2000, EPA and the Washington State Department of Ecology (Ecology) entered into an order with King County, the Port of Seattle, the City of Seattle, and The Boeing Company to perform a Remedial Investigation (RI) and Feasibility Study (FS) of sediment contamination in the waterway. EPA is the lead agency for the RI/FS. Ecology is the lead agency for controlling current sources of pollution to the site, in cooperation with the City of Seattle, King County, the Port of Seattle, the City of Tukwila, and EPA.

Phase 1 of the RI/FS (Windward 2003b) used existing data to identify potential human health and ecological risks, information needs, and high priority areas for cleanup. Seven candidate early action areas were identified (Windward 2003a). Ecology's *Lower Duwamish Waterway Source Control Status Report, 2003 to June 2007* (Ecology 2007) and *Lower Duwamish Waterway Source Control Status Report, July 2007 to March 2008* (Ecology 2008a) identified another 16 areas where source control actions may be necessary. The Restoration Areas source control area was identified as one of these areas. One additional source control area was added by Ecology in 2010, for a total of 24 source control areas.

As part of source control efforts in the LDW, Ecology works with other members of the Source Control Work Group (SCWG) to develop SCAPs for areas of sediment contamination that will or may require cleanup. The SCAP for each of these sediment areas describes potential sources of sediment contaminants and the actions needed to control them, and evaluates whether ongoing sources are present that could recontaminate sediments after cleanup. In addition, the SCAPs describe source control actions that are planned or currently underway, and sampling and monitoring activities that will be conducted to identify additional sources.

Sections 1 and 2 of this SCAP provide background information about the LDW site and the sediments near the Restoration Areas source control area. Arsenic, cadmium, silver, PCBs, PAHs, butyl benzyl phthalate, benzyl alcohol, other semivolatile organic compounds (SVOCs), pesticides, and dioxins/furans are considered to be the major COCs in sediments near the source control area. While this SCAP focuses on these COCs, other chemicals that could result in sediment recontamination will be addressed as sources are identified.

Section 3 contains the following: a description of potential sources of contamination that may affect sediments near the Restoration Areas source control area, including outfalls, spills to the waterway, and releases from adjacent properties or upland properties within the Hamm Creek storm drain (SD) basin; an evaluation of the significance of these potential sources; and a listing of the actions that are planned or underway to control potential contaminant sources. Section 4 discusses monitoring activities that will be conducted to identify additional sources and assess progress, and Section 5 describes how source control efforts will be tracked and reported. Section 6 lists documents reviewed during preparation of this SCAP.

Table ES-1 lists the source control actions that have been identified for the Restoration Areas source control area. This table includes a brief description of the potential contaminant sources for each property, source control activities to be conducted, parties involved in source control actions for each property or task, and milestone/target dates for completion of the identified action items. The milestones and targets are best-case scenarios based on consultation with the identified agencies or facilities. They reflect reasonably achievable schedules, and include the time required for planning, contracting, field work, laboratory analysis, and activities dependent on weather.

A removal action for sediment near the Restoration Areas source control area was not scheduled at the time this SCAP was prepared.

Table ES-1. Source Control Actions – Restoration Areas Source Control Area

Potential Sources	Action Items	Priority	Responsible Party(ies)	Status	Target Date
Hamm Creek SD Basin					
Based on GIS data obtained from King County and the Cities of Burien, SeaTac, and Tukwila, it appears that stormwater from some areas currently thought to be part of the Hamm Creek SD basin may be conveyed to the combined sewer system and/or may be discharged to the Duwamish through outfalls upstream of RM 5.8, rather than entering the Hamm Creek SD system.	Request additional information from King County and the Cities of Burien and SeaTac to define the boundaries of the Hamm Creek SD basin in order to determine if the area to the east of Des Moines Memorial Drive between S 116 th Way and S 124 th Street and the area south of S 124 th Street should be included in or excluded from the Restoration Areas source control area.	Medium	Ecology	Planned	TBD
Outfall 3842					
The drainage area associated with Outfall 3842 could not be determined from the information available for review.	Request additional information from the City of Tukwila to determine the drainage area associated with Outfall 3842.	Medium	Ecology	Planned	TBD
Seattle City Light Power Substation (10000 & 100030 West Marginal Place S, Seattle 98108)					
Stormwater from the facility discharges to the LDW via Outfalls 2098 and 2099. Spills at the property may be conveyed to the LDW either through surface runoff or groundwater infiltration.	Request information from SCL and perform a facility inspection to determine if operations at the property represent a potential source of contaminants to LDW sediments.	Medium	Ecology	Planned	TBD
Concentrations of arsenic, mercury, benzo(a)pyrene, and BEHP were detected at concentrations above MTCA cleanup levels and/or draft soil-to-sediment screening levels in fill material at the adjacent property. The same fill material may also be present at the SCL Power Substation property.	Request that SCL perform an environmental assessment to address the potential arsenic, mercury, benzo(a)pyrene, and BEHP contamination in fill material at the property.	Medium	Ecology	Planned	TBD
Boeing Parking Lot Property					
Industrial activity may include outdoor storage of equipment. Contaminants in stormwater runoff, if any, may be conveyed to the LDW.	Perform a source control inspection at the Boeing Parking Lot property to verify compliance with applicable regulations and BMPs to prevent the release of contaminants to the LDW.	Low	Ecology	Planned	TBD

Table ES-1. Source Control Actions – Restoration Areas Source Control Area

Potential Sources	Action Items	Priority	Responsible Party(ies)	Status	Target Date
U.S. Postal Service Seattle Distribution Center					
<p>Information regarding the configuration of the storm drain system at the property was not available for review.</p> <p>During a 2011 inspection, Ecology requested that the facility test sludge in a neutralizing tank and waste ink/alcohol to verify that the substances are non-hazardous.</p> <p>Historical operations at the property may have resulted in soil and groundwater contamination at the property.</p>	Request a facility map from the Sabey Corporation (property manager) showing the storm drain system on the property.	Medium	Ecology	Planned	TBD
	Request information from the U.S. Postal Service regarding the neutralizing tank and the results from testing the sludge in the tank and waste/ink alcohol.	Low	Ecology	Planned	TBD
	Request that the Sabey Corporation collect groundwater data to assess the current concentrations of metals in groundwater beneath the property.	Low	Ecology	Planned	TBD
	Review the cleanup records associated with Atlas Demolition to assess the potential for sediment recontamination via the groundwater discharge pathway.	Low	Ecology	Planned	TBD

Priority:

High priority action item – to be completed prior to sediment cleanup

Medium priority action item – to be completed prior to or concurrent with sediment cleanup

Low priority action item – ongoing actions or actions to be completed as resources become available

Acronyms/Abbreviations

BEHP	bis(2-ethylhexyl)phthalate	MTCA	Model Toxics Control Act
BMP	best management practice	RM	River Mile
GIS	Geographic Information Systems	SCL	Seattle City Light
LDW	Lower Duwamish Waterway	SD	storm drain

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Acronyms/Abbreviations

µg/L	micrograms per liter
2LAET	second lowest apparent effects threshold
AET	apparent effects threshold
AST	aboveground storage tank
BEHP	bis(2-ethylhexyl)phthalate
bgs	below ground surface
BMP	best management practice
BTEX	benzene, toluene, ethylbenzene, and xylenes
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CMP	corrugated metal pipe
CNE	Certificate of No Exposure
COC	chemical of concern
cPAH	carcinogenic polycyclic aromatic hydrocarbon
CSCSL	Confirmed and Suspected Contaminated Sites List
CSL	Cleanup Screening Level
CSO	combined sewer overflow
DDD	dichlorodiphenyldichloroethane
DDE	dichlorodiphenyldichloroethylene
DDT	dichlorodiphenyltrichloroethane
DNR	King County Department of Natural Resources
D&SG	Defense and Space Group
DW	dry weight
EAA	Early Action Area
EB/DRP	Elliott Bay/Duwamish Restoration Program
Ecology	Washington State Department of Ecology
EPA	United States Environmental Protection Agency
FS	Feasibility Study
FSID	Facility Site Identification number
GIS	Geographic Information Systems
HPAH	high molecular weight polycyclic aromatic hydrocarbon
HVAC	heating, ventilation, and air-conditioning
ID	identification
ISGP	Industrial Stormwater General Permit
ISIS	Integrated Site Information System
LAET	lowest apparent effects threshold
LDW	Lower Duwamish Waterway
LDWG	Lower Duwamish Waterway Group
LPAH	low molecular weight polycyclic aromatic hydrocarbon
LUST	leaking underground storage tank
METRO	Municipality of Metropolitan Seattle
mg/kg	milligrams per kilogram
MTCA	Model Toxics Control Act
NFA	No Further Action
ng/kg	nanograms per kilogram
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System

Acronyms/Abbreviations (continued)

OC	organic carbon
PAH	polycyclic aromatic hydrocarbon
PBDE	polybrominated diethyl
PBT	persistent bioaccumulative toxin
PCB	polychlorinated biphenyl
PSCAA	Puget Sound Clean Air Agency
PVC	polyvinyl chloride
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
RM	river mile
ROD	Record of Decision
SAIC	Science Applications International Corporation
SCAP	Source Control Action Plan
SCL	Seattle City Light
SCWG	Source Control Work Group
SD	storm drain
SKCDPH	Seattle/King County Department of Public Health
SMS	Sediment Management Standards
SPU	Seattle Public Utilities
sq ft	square feet
SQS	Sediment Quality Standard
SR	State Route
SVOC	semivolatile organic compound
TBT	tributyltin
TEQ	toxic equivalency
TOC	total organic carbon
TPH	total petroleum hydrocarbons
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USPS	United States Postal Service
UST	underground storage tank
VCP	Voluntary Cleanup Program
VOC	volatile organic compound
WAC	Washington Administrative Code
WQS	Water Quality Standards

1.0 Introduction

This Source Control Action Plan (SCAP) describes potential sources of contamination that may affect sediments in and adjacent to the River Mile (RM) 4.2 to 5.8 West¹ (Restoration Areas) source control area of the Lower Duwamish Waterway (LDW). The purpose of this plan is to evaluate the significance of these sources and to determine if actions are needed to minimize the potential for recontamination of sediment near the Restoration Areas source control area after cleanup. In addition, this SCAP describes:

- Source control actions/programs that are planned or currently underway,
- Sampling and monitoring activities that will be conducted to identify additional sources and assess progress, and
- How these source control efforts will be tracked and reported.

The information in this document was obtained from a variety of sources, including the following documents²:

- *Lower Duwamish Waterway, RM 4.2 to 5.8 West (Restoration Areas) – Summary of Existing Information and Identification of Data Gaps* (Data Gaps Report), Science Applications International Corporation (SAIC), July 2013, located on Ecology's website: http://www.ecy.wa.gov/programs/tcp/sites_brochure/lower_duwamish/sites/RM_42-58_W/restoration-Area.html
- *Lower Duwamish Waterway Source Control Strategy*, Washington State Department of Ecology (Ecology), January 2004, located on Ecology's website: <http://www.ecy.wa.gov/biblio/0409043.html>
- *Lower Duwamish Waterway Remedial Investigation*, Windward Environmental LLC (Windward), July 9, 2010, located on Lower Duwamish Waterway Group's website: http://www.ldwg.org/rifs_docs8.htm#drafri
- *Lower Duwamish Waterway Final Feasibility Study*, AECOM, October 31, 2012, located on Lower Duwamish Waterway Group's website: http://www.ldwg.org/rifs_docs9.htm#final2012

1.1 Organization of Document

Section 1 of this SCAP describes the LDW site, the strategy for source control, and the responsibilities of the public agencies involved in source control for the LDW. Section 2 provides background information on the Restoration Areas source control area, including a description of the chemicals of concern (COCs) for sediments. Section 3 provides an overview of potential sources of contaminants that may affect sediments near the Restoration Areas source control area,

¹ River miles as defined in this report are measured from the southern tip of Harbor Island.

² This SCAP incorporates data published through April 30, 2013. Section 5, Tracking and Reporting of Source Control Activities, describes how newer data will be disseminated.

including outfalls, spills, properties adjacent to the LDW, and upland properties within the Hamm Creek storm drain (SD) basin. Section 3 also describes actions planned or currently underway to control potential sources of contaminants. Sections 4 and 5 describe monitoring and tracking/reporting activities, respectively. References are listed in Section 6, and figures and tables are presented at the end of the document.

As new information about the facilities and potential sources discussed in this document becomes available and as source control progress is made, Ecology will update the information in this SCAP as needed. The status of source control actions is summarized in the LDW Source Control Status Reports (Ecology 2007, 2008a, 2008b, 2009c, 2011a, 2012b, 2013 and as updated).

1.2 Lower Duwamish Waterway Site

The LDW is the downstream portion of the Duwamish River, extending from the southern tip of Harbor Island to just south of the Norfolk combined sewer overflow (CSO) (Figure 1). It is a major shipping route for bulk and containerized cargo. Most of the upland areas adjacent to the LDW have been developed for industrial and commercial operations. These include cargo handling and storage, marine construction, boat manufacturing, marina operations, concrete manufacturing, paper and metals fabrication, food processing, and aerospace manufacturing. In addition to industry, the river is used for fishing, recreation, and wildlife habitat. Residential areas near the waterway include the South Park and Georgetown neighborhoods.

Beginning in 1913, this portion of the Duwamish River was dredged and straightened to promote navigation and industrial development, resulting in the river's current form. Shoreline features within the waterway include constructed bulkheads, piers, wharves, buildings extending over the water, and steeply sloped banks armored with riprap or other fill materials (Weston 1999). This development left intertidal habitats dispersed in relatively small patches, with the exception of Kellogg Island, which is the largest contiguous area of intertidal habitat remaining in the Duwamish River (Tanner 1991). Over the past 20 years, public agencies and volunteer organizations have worked to restore intertidal and subtidal habitat to the river. Some of the largest restoration projects are at Herring's House Park/Terminal 107, Turning Basin 3, Hamm Creek, and Terminal 105.

The presence of chemical contamination in the LDW has been recognized since the 1970s (Windward 2003b). In 1988, the United States Environmental Protection Agency (EPA or USEPA) investigated sediments in the LDW as part of the Elliott Bay Action Program. Problem chemicals identified by the EPA study included metals, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), phthalates, and other organic compounds. In 1999, EPA completed a study of approximately 6 miles of the waterway, from the southern tip of Harbor Island to just south of the turning basin near the Norfolk CSO (Weston 1999). This study confirmed the presence of PCBs, PAHs, phthalates, mercury, and other metals. These contaminants pose threats to people, fish, and wildlife.

In December 2000, EPA and Ecology signed an agreement with King County, the Port of Seattle, the City of Seattle, and The Boeing Company, collectively known as the Lower Duwamish Waterway Group (LDWG). Under the agreement, the LDWG completed a Remedial Investigation (RI) and Feasibility Study (FS) of the LDW to assess risks to human health and the

environment and to evaluate cleanup alternatives. The RI for the site was completed in two phases. Results of Phase 1 were published in July 2003 (Windward 2003b). The Phase 1 RI used existing data to characterize the nature and extent of chemical contamination in LDW sediments, develop preliminary risk estimates, and identify candidate sites for early cleanup action. The Phase 2 RI was published in July 2010, and presents the results of investigations conducted for the LDW study area between 2003 and 2009, including studies to assess sediment dynamics, the nature and extent of contamination in the LDW, preliminary background concentrations, ecological and human health risks, and potential chemical sources (Windward 2010b). No additional early cleanup areas were identified. The final FS, which addresses cleanup options for contaminated sediments in the LDW, was completed in October 2012. A Proposed Plan for cleanup of the LDW was completed in February 2013 and was available for public review through June 13, 2013. Currently, EPA is reviewing comments on the Proposed Plan.

On September 13, 2001, EPA added the LDW to its National Priorities List. This is EPA's list of hazardous waste sites that warrant further investigation and cleanup under Superfund. Ecology added the site to the Washington State Hazardous Sites List on February 26, 2002.

An interagency Memorandum of Understanding, signed by EPA and Ecology in April 2002 and updated in April 2004, divides responsibilities for the site (EPA and Ecology 2002, 2004). EPA is the lead agency for the RI/FS, while Ecology is the lead agency for source control issues.

In June 2003, the *Technical Memorandum: Data Analysis and Candidate Site Identification* was issued. Seven candidate sites for early action were recommended. The sites, as listed in the Technical Memorandum (Windward 2003a), are:

- Area 1: Area near Duwamish/Diagonal CSO/SD, on the east side of the LDW (RM 0.4 to 0.6);
- Area 2: Located at approximately RM 2.2, on the west side of the LDW, just south of the 1st Avenue S Bridge;
- Area 3: Slip 4 (RM 2.8);
- Area 4: Located south of Slip 4, on the east side of the LDW, just offshore of the Boeing Plant 2 and Jorgensen Forge properties (RM 2.9 to 3.7);
- Area 5: Located at approximately RM 3.6, on the west side of the LDW;
- Area 6: Located at approximately RM 3.8, on the east side of the LDW; and
- Area 7: Area near Norfolk CSO (RM 4.9-5.0), on the east side of the LDW.

Ecology and EPA refined the boundaries of the candidate early action areas (EAAs), generally based on storm drain basin boundaries. The seven candidate EAAs are shown on Figure 1.

Of the seven candidate EAAs, five either had sponsors to begin investigations or were already under investigation by a member or group of members of the LDWG. These five sites are: Slip 4, Terminal 117, Boeing Plant 2, Duwamish/Diagonal CSO/SD, and Norfolk CSO/SD.³ EPA is the lead agency for managing cleanup at Terminal 117 and Slip 4. The other three early action

³ These five sites are identified as EAAs in the Final FS for the Lower Duwamish Waterway, published on October 31, 2012 (AECOM 2012). The two candidate EAAs without sponsors are identified in the Final FS as Areas of Potential Concern.

cleanup projects were begun before the current LDW RI/FS was initiated. Cleanup at Boeing Plant 2, under the Resource Conservation and Recovery Act (RCRA), with oversight by EPA, is currently in progress. The Duwamish/Diagonal CSO/SD and Norfolk CSO/SD cleanups are under King County management as part of the Elliott Bay-Duwamish Restoration Program. Cleanup at Duwamish/Diagonal was partially completed in March 2004; a partial sediment cleanup was conducted at Norfolk CSO/SD in 1999. Additional sediment removal actions were completed by Boeing inshore of the Norfolk CSO/SD area in September 2003 and by the City of Seattle in Slip 4 in February 2012. Early action cleanups may involve members of the LDWG or other parties as appropriate. Planning and implementation of early action cleanups is being conducted concurrently with the RI/FS.

In 2007, Ecology, in consultation with EPA, identified eight additional source control areas based on available sediment data, size of the upland basin draining to the source control area, and general knowledge about facilities operating in the basin. In February 2008, Ecology identified the areas of the LDW not covered by a SCAP or planned SCAP. Using the same criteria as in 2007, eight additional potential source control areas were added to the list (Ecology 2008a). The Restoration Areas source control area was identified as one of these areas. One additional source control area was added by Ecology in 2010, for a total of 24 source control areas. Ecology and EPA redefined the boundaries of the source control areas, generally defined by stormwater drainage basins. The seven candidate EAAs and 17 additional source control areas are shown in Figure 1. Stormwater drainage basins located in the vicinity of the Restoration Areas source control area are shown on Figure 2. CSO basins are shown on Figure 3.

Further information about the LDW can be found at:

<http://yosemite.epa.gov/r10/cleanup.nsf/sites/lduwamish> and
http://www.ecy.wa.gov/programs/tcp/sites_brochure/lower_duwamish/lower_duwamish_hp.html

1.3 LDW Source Control Strategy

The LDW Source Control Strategy (Ecology 2004) describes the process for identifying source control issues and implementing effective source controls for the LDW. The plan is to identify and manage sources of potential contamination and recontamination in coordination with sediment cleanups. The goal of the strategy is to minimize the potential for recontamination of sediments to levels exceeding the LDW sediment cleanup goals and the Washington State Sediment Management Standards (SMS).⁴ Existing administrative and legal authorities will be used to perform inspections and require necessary source control actions. Ecology revised the LDW Source Control Strategy in December 2012. The draft final strategy will be published in 2013 (Ecology 2012c).

The strategy is being implemented through the development of a series of detailed, area-specific SCAPs that will be coordinated with sediment cleanups, beginning with the candidate EAAs. Each SCAP will document what is known about the area, the potential sources of recontamination, actions taken to address them, and how to determine when adequate source control is achieved for an area. Because the scope of source control for each area will vary, it is necessary to adapt each

⁴ Washington Administrative Code (WAC) 173-204

plan to the specific situation at that area. The success of this strategy depends on the coordination and cooperation of all public agencies with responsibility for source control in the LDW area, as well as prompt compliance by the businesses that must make necessary changes to control releases from their properties.

The source control strategy focuses on controlling contamination that affects LDW sediments. It is based on the principles of source control for sediment sites described in EPA's *Principles for Managing Contaminated Sediment Risks at Hazardous Waste Sites; February 12, 2002* (USEPA 2002), and Ecology's SMS. The first principle is to control sources early, starting with identifying all ongoing sources of contaminants to the site. EPA's Record of Decision (ROD) for the site will require that sources of sediment contamination to the entire site be evaluated, investigated, and controlled as necessary. Dividing source control work into specific SCAPs and prioritizing those plans to coordinate with sediment cleanups will address the guidance and regulations and will be consistent with the selected remedial actions in the EPA ROD.

Source control priorities are divided into four tiers. Tier 1 consists of source control actions associated with candidate EAA sediment cleanups. Tier 2 consists of source control actions associated with cleanup areas identified in the RI/FS and EPA's ROD. Tier 3 consists of source control necessary to minimize future sediment contamination from basins that may not drain directly to an identified sediment cleanup area. Tier 4 consists of source control necessary to address any recontamination identified by post-cleanup sediment monitoring (Ecology 2008a). This document is a SCAP for a Tier 3 Source Control Area.

Further information about the LDW Source Control Strategy can be found at:

<http://www.ecy.wa.gov/biblio/0409052.html> and

http://www.ecy.wa.gov/programs/tcp/sites_brochure/lower_duwamish/lower_duwamish_hp.html

1.4 Source Control Work Group

The primary public agencies responsible for source control for the LDW are Ecology, the City of Seattle, King County, the Port of Seattle, the City of Tukwila, and EPA. All of these agencies, except the City of Seattle, are involved in the source control activities for the Restoration Areas source control area.

In order to coordinate among these agencies, Ecology formed the Source Control Work Group (SCWG) in January 2002. The purpose of the SCWG is to share information, discuss strategy, actively participate in developing SCAPs, jointly implement source control measures, and share progress reports on source control activities for the LDW area. The monthly SCWG meetings are chaired by Ecology. All final decisions on source control actions and completeness will be made by Ecology, in consultation with EPA, as outlined in the April 2004 Ecology/EPA LDW Memorandum of Understanding (EPA and Ecology 2004).

Other public agencies with relevant source control responsibilities include the Washington State Department of Transportation, Puget Sound Clean Air Agency (PSCAA), and the Seattle/King County Department of Public Health (SKCDPH). These agencies are invited to participate in source control with the SCWG as appropriate (Ecology 2004).

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2.0 River Mile 4.2 to 5.8 West (Restoration Areas)

The Restoration Areas source control area is located along the western side of the LDW Superfund Site between RM 4.2 and 5.8⁵ (Figures 1 and 4). Elevated concentrations of chemicals have been measured in sediments near the source control area, including arsenic, cadmium, silver, PCBs, PAHs, butyl benzyl phthalate, benzyl alcohol, other semivolatile organic compounds (SVOCs), pesticides, and dioxins/furans. These may be a result of historical and/or ongoing sources within the source control area.⁶ Chemicals may have entered the LDW through direct discharges, spills, bank erosion, groundwater discharge, surface water runoff, atmospheric deposition, or other non-point source discharges.

Properties and facilities located directly adjacent to the LDW at RM 4.2 to 5.8 West are shown in Figures 5 and 6. From north to south, these properties/facilities are:

- Hamm Creek Restoration Area
- Seattle City Light (SCL) Power Substation
- Kenco Marine Restoration Area
- Turning Basin 3 Restoration Area
- Fremont Property
- Boeing Parking Lot Property
- Thales Avionics⁷
- United States Postal Service (USPS) Distribution Center
- North Wind's Weir Restoration Area

Publically accessible beach areas are present along these properties, with the exception of the SCL Power Substation. The mud shoreline of the LDW is exposed along the entire bank within the Restoration Areas source control area, except for an approximate 0.1-mile length of riprap offshore of the SCL Power Substation. The mudflats in this area have been identified as clam habitat (Windward 2010b).

The LDW is east of these properties. Located to the west of these properties are West Marginal Way SW and commercial and residential properties (Figures 7 through 11). Upland properties that have been assigned Ecology Facility/Site identification numbers (IDs) are listed below:

⁵ The boundary of the Restoration Areas Source Control Area was extended from RM 4.2-4.8 West to RM 4.2-5.8 West in April 2013. The decision to extend the boundary to RM 5.8 West was made so that all properties on the peninsula between RM 4.7 and 5.8 West are included in the source control area (Cargill 2013). Stormwater from these facilities discharges to the LDW.

⁶ Historical sources of PCBs include electrical equipment spills and leakage, residential trash burning, and building sealant (caulk) volatilization and abrasion. Sources of phthalates include polymer (primarily PVC) off-gassing, industrial and commercial air emissions, and leaching of roofing materials (Ecology and King County 2011).

⁷ All properties on the peninsula between RM 4.7 and 5.8 West are considered to be properties adjacent to the LDW due to the shared history of the properties.

- Moimoi Property
- Rainier Golf & Country Club
- Glen Acres Home Association
- McCall Oil
- 7-Eleven Food Store
- Puget Sound Plumbing & Heating
- Connect Motorsports (former Chevron 306536)
- Chavez Auto Repair
- Jones Property
- The Aussie Repair & Machine Shop Properties, which include:
 - Mike's Aussie Machine Shop
 - Goldco
 - Aussie Machine
 - Joe's Aussie Repair
- Glendale Heating & Air Conditioning
- Pacific Underwriters
- Former Highline School District Warehouse
- Big Picture High School

These properties are listed in Table 1a.⁸ The parcels associated with these adjacent and upland facilities are identified in Table 1b on Figure 12.

2.1 Site Description

The upland areas adjacent to the LDW within the Restoration Areas source control area was developed as agricultural and residential land for many decades. Industrial land uses in the area began in the late 1930s/early 1940s, with the construction of the SCL Power Substation. Current and historical commercial and industrial operations in the vicinity of the Restoration Areas source control area include the SCL Power Substation, historical barge and vessel mooring by Kenco Marine, truck and container parking and storage, and aerospace electronics manufacturing.

Hamm Creek is composed of four tributaries known as the South, Middle, Lost, and North Forks. Only the South Fork of Hamm Creek is located within the Restoration Areas source control area. The remaining forks are located within the Sea King Industrial Park source control area.

The South Fork originates from groundwater seeps and springs in the hills to the west of the LDW. The flow regime of the creek has been altered by human activities including industrial development and urbanization, channelization and piping, dredging, and removal of wetlands riparian vegetation, and large woody debris. King County estimated that approximately 3,590

⁸ Table 1a lists all names and Ecology/Facility Site ID numbers associated with each property/facility.

feet of the 7,475-foot long South Fork have been modified by human activity. Rainier Golf and Country Club diverts water from the South Fork to supply an ornamental concrete-lined pond on the golf course (King County 2000b). In the 1980s, fish and wildlife habitats in and near Hamm Creek South Fork were improved by citizen volunteers through trash removal, introduction of insect larvae and crayfish, and planting of trees and aquatic and riparian vegetation (USACE 1998).

In the 1950s, Hamm Creek South Fork was rerouted from its original discharge location near RM 4.2 West to an open ditch and culvert that ran parallel to West Marginal Place S. The culvert was plumbed to the S 96th Street SD system, which discharges to the LDW at Outfall 2100 (A). In 2000, King County and the United States Corps of Engineers (USACE) completed a 2,000-foot natural channel that redirected Hamm Creek South Fork to its current discharge location (the Hamm Creek outlet, Outfall 2205), which is immediately south of Delta Marine (Figure 4) (King County 2000a).

Water quality in Hamm Creek is typical of urbanized streams during storm events. Metals (zinc, copper, and lead) and total petroleum hydrocarbon concentrations increase in the creek during storms. In 1997, a release of chlorinated water to the South Fork resulted in a fish kill (King County 2000b). Surface runoff from residential areas has contributed to sediment erosion, sedimentation, and contamination in the creek. Pesticides, insecticides, and fungicides may be present in runoff from the golf course operations. Approximately 3 acres of State Route (SR)-99 drains to Hamm Creek South Fork (USACE 1998).

Habitat restoration within the source control area has occurred under three programs: the Elliott Bay/Duwamish Restoration Program (EB/DRP), the federal Coastal America Program, and the Point Rediscovery wetland pond and stream enhancement project. Restored areas include:

- Hamm Creek Restoration Area
- Muckleshoot Tribe/Kenco Marine Restoration Area
- Turning Basin 3 Restoration Area
- North Wind's Weir
- Point Rediscovery Wetland Pond and Stream Enhancement Project

2.1.1 Elliott Bay/Duwamish Restoration Program

In 1990, the National Oceanic and Atmospheric Administration (NOAA) filed a lawsuit against the City of Seattle and the Municipality of Metropolitan Seattle (METRO) to recover damages for the loss of natural resources due to the release of hazardous substances into the environment in and near Elliott Bay and the LDW. The City of Seattle and METRO (now King County Department of Natural Resources [DNR]) established a program to help restore and replace the natural resources of Elliott Bay and the LDW, as part of a settlement agreement with NOAA. The Consent Decree resulted in the EB/DRP. The EB/DRP included sediment remediation, source control, and habitat development. Parties to the settlement include NOAA, the U.S. Fish and Wildlife Service (USFWS), Ecology, and the Muckleshoot Indian Tribe and Suquamish Tribe, as natural resources trustees (USFWS 2000).

The City of Seattle and King County acquired the Hamm Creek and Kenco Marine Restoration Areas for the purpose of habitat restoration (Figure 5). One acre of Cecil Moses Park was made available to establish the North Wind’s Weir Restoration Area (Figure 6) (USFWS 2000).

USFWS was given the responsibility of implementing a monitoring program to evaluate the success of the habitat restoration activities at Hamm Creek, Kenco Marine, and North Wind’s Weir (USFWS 2000).

Prey resource production was selected as the criterion to assess the presence or absence of sediment recontamination. Benthic organisms were sampled from the restored areas in April, May, and June 2010. Sediment cores were collected from vegetated areas and mudflats to quantify the benthic invertebrates. Diverse and abundant invertebrate species were observed, suggesting that invertebrate communities are stabilizing (Cordell and Toft 2012), which suggests that sediment recontamination has not occurred. However, no confirmation samples have been collected from sediment within the restored areas to verify that chemical concentrations are below the Sediment Quality Standard (SQS). Additional information regarding the restoration activities and monitoring program is provided in the Restoration Areas Data Gaps Report (SAIC 2013).

Hamm Creek Restoration Area

Facility Summary: Hamm Creek Restoration Area	
Tax Parcel No.	5624200931
Address	10108 West Marginal Place S, Seattle 98108
Property Owner	Seattle City Light
Parcel Size	16.45 acres (716,740 sq ft), 6.2 acres restored

Hamm Creek historically meandered through parcel 5624200931. In the 1950s, the creek was rerouted to an open ditch and culvert that ran parallel to West Marginal Place S. In 2000, King County and USACE completed a 2,000-foot natural channel that redirected the Hamm Creek South Fork to discharge to the LDW via the Hamm Creek outlet, immediately south of Delta Marine (King County 2000a). The new riparian stream bed and channel for Hamm Creek included meanders and fish pools and large woody debris. The restored area was planted with native trees and shrubs (USFWS 2000). Approximately 60,000 cubic yards of dredged fill material were removed (Cordell and Toft 2012). Restoration activities were completed in 2000 and monitoring began in 2001 (USFWS 2008). Large boulders, cobble, and root wads were placed along the north bank near the mouth of Hamm Creek to slow the rate of erosion following an erosion event in 2002 (USFWS 2012).

Monitoring data have indicated that the restored habitat at Hamm Creek is stable, although winter storm events in 2006/2007 caused major erosion. Beaver dams along Hamm Creek redirected the channel, creating a cut through a berm that separated freshwater and saltwater marshes (USFWS 2008).

Kenco Marine Restoration Area

Facility Summary: Kenco Marine Restoration Area	
Tax Parcel No.	5624200970
Address	None
Property Owner	Muckleshoot Indian Tribe
Parcel Size	0.83 acre (36,025 sq ft), 0.3 acre restored

The Kenco Marine Restoration Area is south of the SCL Power Substation and north of the Turning Basin 3 Restoration Area (Figure 5). Kenco Marine owned the property until 1997 when it was purchased by the Muckleshoot Indian Tribe. Kenco Marine performed commercial marine operations including moorage and vessel repair. Repair operations included battery replacement, oil lubrication, and minor painting of tugs and barges (USACE 1994 as cited in NOAA 2000). Following the purchase in 1997, barges and other vessels were removed from the property, exposing 16,000 to 18,000 square feet (sq ft) of intertidal and subtidal mudflats (USFWS 2000).

Historical fill material and commercial structures, including a 125-foot-long dock constructed of creosote-treated pilings and several concrete and asphalt pads, were removed from the property as part of the habitat restoration. Most of the historical fill was placed after 1950 (USFWS 2000). In 1998, remedial excavations were performed in two areas to remove petroleum hydrocarbon-contaminated soil. The excavation footprints were 40 and 100 sq ft. Following removal of the petroleum-contaminated soil, concentrations of PAHs remained in soil above Model Toxics Control Act (MTCA) Method B cleanup levels (USACE 1997b as cited in NOAA 2000).

Benches were excavated at the property to create mudflat, marsh, and riparian habitats. Habitat monitoring project management is provided by the Muckleshoot Indian Tribe Fisheries Department (USFWS 2000). Buildings, concrete foundations, and docks and pilings were removed from the property in 2005 (Cordell and Toft 2012). Restoration activities were completed in 2006 and monitoring began in 2007 (USFWS 2008). Monitoring data have indicated that the restored habitat at Kenco Marine is stable (USFWS 2012).

North Wind's Weir

Facility Summary: North Wind's Weir	
Tax Parcel No.	2843800005
Address	112 th Street and Pacific Highway S, Tukwila 98168
Property Owner	King County Parks
Parcel Size	2.64 acres (115,135 sq ft)
Facility/Site ID	5584231

North Wind's Weir is located south of the USPS Distribution Center (Figure 6).

The property was developed in the 1930s and 1940s for single family residential housing (USFWS 2000). Historical fill material and residential structures were removed from the property during habitat restoration activities. Restoration of the property included development

of trails, shoreline stabilization, plantings of native trees and shrubs, and development of interpretive features describing the cultural significance of the property to Native Americans (USFWS 2000). Restoration activities were completed in 2002 and monitoring began in 2003. Monitoring data have indicated that the restored habitat at North Wind’s Weir is stable (USFWS 2008).

The Integrated Site Information System (ISIS) database indicates that North Wind’s Weir was listed on Ecology’s Confirmed and Suspected Contaminated Sites List (CSCSL) in January 2004. Petroleum and PAH concentrations above MTCA cleanup levels were confirmed in soil. Metals concentrations above MTCA cleanup levels were confirmed in groundwater. Analytical data were not available for review. The property was enrolled in the Voluntary Cleanup Program (VCP) between November 2004 and May 2006. The ISIS database lists the current property status as “cleanup started.”

2.1.2 Federal Coastal America Program

The Turning Basin 3 Restoration Area was established first through the federal Coastal America Program in 1994 and then expanded by the Port of Seattle in 1999. The Coastal America Program was implemented by the Port of Seattle, USFWS, USACE, and the EPA (Cordell et al. 2001).

Turning Basin 3 Restoration Area

Facility Summary: Turning Basin 3 Restoration Area	
Tax Parcel No.	0003400013, 0423049187
Address	0013: 10100 West Marginal Place S, Seattle 98108 9187: 10108 West Marginal Place S, Seattle 98108
Property Owner	Port of Seattle
Parcel Size	0013: 1.28 acres (55,568 sq ft) 9187: 2.0 acres (86,967 sq ft)
Facility/Site ID No.	96665547
EPA ID No.	WAD988480000 – inactive (Seattle City Light Duwamish TR)

The Turning Basin 3 Restoration Area is southeast of the Kenco Marine Restoration Area and northwest of the Fremont property (Figures 5 and 6). The Turning Basin 3 Restoration Area is composed of two parcels, 0013 and 9187. The majority of parcel 0013 is submerged (Figure 12). Lease documents included in the Desimone Trust’s response to a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 104(e) Request for Information identify this area as “Mr. Pallet” (BNY Mellon 2009).⁹

Restoration activities performed through the Coastal America Program in 1994 included removal of fill material and construction of an upland riparian buffer with a small intertidal basin (Cordell

⁹ Mr. Pallet was incorrectly identified as historically operating at the SCL Power Substation in the Restoration Areas Data Gaps Report (SAIC 2013).

et al. 2001). The Port of Seattle purchased the property from the Desimone Trust in 1996. The Port of Seattle completed approximately 1.3 acres of aquatic restoration at Turning Basin 3 to compensate for pier construction at Terminal 5 (Cordell et al. 2008). In 1998 a derelict ferry was removed, and in 1999 the Port of Seattle restored 2 additional acres (USACE 1998).

Invertebrate monitoring was performed in 1999 and yearly from 2004 to 2007. Results of the monitoring indicate that invertebrate communities were increasing in diversity and density (Cordell et al. 2008). These results suggest that sediment recontamination has not occurred.

2.1.3 Point Rediscovery Wetland Pond and Stream Enhancement Project

The former Rainier Vista Treatment Plant received residential wastewater and some light industrial wastewater. Residential sewage may have been dumped at the northern end of the property from 1984 to 1987. In 1990, a main transmission pipe ruptured and an undetermined amount of wastewater was spilled. Lime was spread on the resulting wastewater ponds (Herrera 1994).

From 1996 to 1998, the Point Rediscovery wetland pond and stream enhancement project was constructed at the former Rainier Vista treatment plant, located between SR-99 and Des Moines Memorial Drive S (Figure 5). This restoration area is adjacent to the main channel of Hamm Creek South Fork (King County 2000b). Additional information regarding this restoration effort was not available for review.

2.2 Chemicals of Concern in Sediment

Sediments near the Restoration Areas source control area generally consist of approximately 20 to greater than 80 percent fines. Total organic carbon (TOC) in this area ranges from 0.3 to 4.0 percent (Windward 2010b).

Several environmental investigations have included the collection of sediment near the Restoration Areas source control area. Sampling locations are listed in Table 2 and are shown in Figures 13a through 13c.

- Five surface sediment samples were collected in August 1994 as part of the Phase I Norfolk CSO sediment cleanup study (Windward 2003b).
- Four surface sediment samples were collected from a single sampling station (WQAHAMM) from May to June 1997 during the King County CSO Water Quality Assurance Assessment (King County 1999).
- Twenty-nine surface sediment samples were collected during September, October, and November 1997 during the Duwamish Waterway Sediment Characterization Study (NOAA 1998).
- Eighteen surface sediment samples were collected in August 1998 during the EPA Site Inspection (Weston 1999).

- Nineteen surface sediment samples were collected during four rounds of sampling from 2004 to 2006 during the LDW Phase 2 RI Benthic and Rounds 1, 2, and 3 Surface Sediment Sampling (Windward 2005a, 2005b, 2005c, 2010b).
- Five subsurface sediment samples were collected from two coring locations during 2006 during the LDW Phase 2 RI Subsurface Sediment Sampling (Windward 2007).
- Fifteen surface sediment samples and seven bank sediment samples were collected in April and May 2008 during the Duwamish River RM 4.9 to 7.4 Sediment Sampling and Analysis (E&E 2009).
- One beach composite sample (LDW-SS544-comp) and one surface sediment sample (LDW-SS547) were collected in January 2010 during the LDW RI Dioxin Sampling (Windward 2010a).
- Eleven surface sediment samples were collected between March and April 2011 during the Surface Sediment Sampling at Outfalls in the LDW study (SAIC 2011).

Chemical data were compared to the SMS, which include both the SQS and Cleanup Screening Levels (CSLs) (WAC 173-204). Sediments that meet the SQS criteria have a low likelihood of adverse effects on sediment-dwelling biological resources. However, an exceedance of the SQS numerical criteria does not necessarily indicate adverse effects or toxicity, and the degree of SQS exceedance does not correspond to the level of sediment toxicity. The CSL is greater than or equal to the SQS and represents a higher level of risk to benthic organisms than SQS levels. The SQS and CSL values provide a basis for identifying sediments that may pose a risk to some ecological receptors. The SMS for most organic chemicals are based on total organic carbon (OC)-normalized concentrations. The results of this comparison are provided in Table 3. COCs were identified based on the results of sediment sampling in the vicinity of the Restoration Areas source control area, as identified above. Chemicals that exceeded the SQS in at least one surface or subsurface sediment sample are considered COCs for the Restoration Areas source control area. In general, chemicals were present in sediment samples at concentrations only slightly above the SQS values; the greatest exceedances were observed for 1,2,4-trichlorobenzene, 1,2-dichlorobenzene and benzyl alcohol, cadmium, silver, and hexachlorobenzene in surface samples collected near Outfalls 2098 and 2099 (Figures 13b and 13c). In subsurface samples, only one chemical exceedance was observed; total PCBs were detected at 19.8 milligrams per kilogram (mg/kg) OC in the 0-2 ft sample from location LDW-SC56, which exceeded the SQS (12 mg/kg OC) by a factor of 1.6. The CSL (65 mg/kg OC) was not exceeded. Additional information on SQS/CSL exceedances is provided in the Restoration Areas Data Gaps Report (SAIC 2013).

Following publication of the Restoration Areas Data Gaps Report, 22 additional surface sediment samples collected between RM 4.8 and RM 5.8 West were identified (Appendix A). These 22 samples were inadvertently omitted from the Restoration Areas Data Gaps Report. Sample locations and analytical results for these samples have been incorporated into the SCAP. The additional samples are presented in the SCAP to provide more complete information regarding sediment quality near the Restoration Areas source control area. Only one exceedance of the SMS criteria was observed in these samples. In sample DR276, the acenaphthene concentration of 17.2 mg/kg OC exceeded the SQS of 16 mg/kg OC by a factor of 1.1 (Table 3). The concentration does not exceed the CSL of 57 mg/kg OC. Acenaphthene was previously

identified as a COC for the sediments near the Restoration Areas source control area. No additional COCs or data gaps were identified based on the analytical results from the samples.

The following chemicals were detected in sediments near the Restoration Areas source control area at concentrations above the SQS/CSL, and are considered sediment COCs.

Chemicals Detected at Concentrations Above the SQS/CSL	Surface Sediment		Subsurface Sediment	
	> SQS	> CSL	> SQS	> CSL
Metals				
Arsenic	●	●		
Cadmium	●	●		
Silver	●	●		
PAHs				
Acenaphthene	●			
Benzo(g,h,i)perylene	●			
Dibenzo(a,h)anthracene	●	●		
Fluorene	●			
Indeno(1,2,3-cd)pyrene	●	●		
Phenanthrene	●			
Pyrene	●	●		
Total HPAH	●	●		
Phthalates				
Butyl benzyl phthalate	●			
Other SVOCs				
2,4-Dimethylphenol	●	●		
2-Methylphenol	●	●		
4-Methylphenol	●	●		
Benzoic acid	●	●		
Benzyl alcohol	●	●		
Dibenzofuran	●		●	
Hexachlorobenzene	●	●		
Hexachlorobutadiene	●	●		
N-Nitrosodiphenylamine	●	●		
Pentachlorophenol	●			
PCBs				
PCBs (total)	●		●	

Exceedance factors, which are a measure of the degree to which maximum detected concentrations exceed the SQS/CSL values, are listed in Table 3.

Results for these chemicals are discussed in more detail below.

Metals

Arsenic, cadmium, and silver concentrations exceeded the SQS and CSL in one surface sediment sample, LDW-SS2098-D, which was located downstream of Outfall 2098 (Figure 13b). The

arsenic concentration also exceeded the LDW Natural Background concentration for arsenic of 7 (mg/kg (AECOM 2012).

Arsenic was detected in 72 of the 80 surface sediment samples that were analyzed for metals and all four subsurface sediment samples (Appendix A, Tables A-1b and A-2b). Arsenic concentrations exceeded the LDW Natural Background concentration for arsenic in 34 surface sediment samples and in two subsurface sediment samples, both collected from coring location LDW-SC54 (Figure 13b).

PAHs

PAH concentrations exceeding the SQS were detected in three surface samples. Acenaphthene, benzo(g,h,i)perylene, dibenzo(a,h)anthracene, and fluorene were detected above the SQS in sample LDW-SS2098-D. The dibenzo(a,h)anthracene concentration in this sample also exceeded the CSL. Dibenzo(a,h)anthracene was also detected above the SQS in sample LDW-SS-2009-U. In addition, acenaphthene was detected above the SQS in sample DR276, which was collected offshore of the Boeing Parking Lot property. PAHs were not detected above the SQS/CSL in the subsurface sediment samples (Figure 13b).

Carcinogenic PAHs (cPAHs) were detected in 47 of the 80 surface samples and 3 of the 4 subsurface samples analyzed for PAHs (Appendix A, Tables A-1b and A-2b). The LDW Natural Background cPAH toxic equivalency (TEQ) of 0.009 mg TEQ/kg (AECOM 2012) was exceeded in 38 surface sediment and three subsurface sediment samples.

Phthalates

Butyl benzyl phthalate concentrations exceeded the SQS in surface samples collected near Outfalls 2098 and 2099 (Figure 13b). Phthalate concentrations in the subsurface samples did not exceed the SQS or CSL.

Phenols

Concentrations of 2,4-dimethylphenol, 2-methylphenol, and 4-methylphenol exceeded the SQS and CSL in surface samples collected downstream from Outfall 2098 and upstream of Outfall 2099 (Figure 13b). Pentachlorophenol concentrations also exceeded the SQS in these samples. Phenols were not detected in the subsurface samples.

Other SVOCs

Concentrations of other SVOCs exceeded the SQS and CSL in eight surface sediment samples. Benzyl alcohol exceeded the SQS and CSL in samples collected near Outfalls 2098, 2099, 2200, and 2201. In the surface samples collected downstream from Outfall 2098 and upstream of Outfall 2099, concentrations of 1,2,4-trichlorobenzene, 1,2-dichlorobenzene, 1,4-dichlorobenzene, benzoic acid, hexachlorobenzene, hexachlorobutadiene, and n-nitrosodiphenylamine exceeded the SQS and CSL; concentrations of dibenzofuran exceeded the SQS only (Figure 13b). Concentrations of benzoic acid exceeded the SQS and CSL in bank sediment samples DRB-113 and DRB-114, which were collected between RM 5.4 and 5.5

(Figure 13c). Concentrations of other SVOCs in the subsurface samples did not exceed the SQS or CSL.

PCBs

Total PCB concentrations exceeded the SQS in two surface sediment samples (LDW-SS148 and WIT258) and in one subsurface sample (LDW-SC56 0-2 ft). The greatest PCB concentration was observed in the subsurface sample, which was collected near the Turning Basin 3 Restoration Area (Figure 13b).

PCBs were detected in 73 of the 109 surface samples and 3 of the 4 subsurface samples analyzed for PCBs (Appendix A, Tables A-1b and A-2b). Concentrations in 70 surface samples and all three subsurface sediment samples exceeded the LDW Natural Background concentration of 0.002 mg/kg (AECOM 2012).

Other COCs

Although no sediment quality standards have been promulgated, dioxins and furans are considered to be potential COCs at the Restoration Areas source control area. These compounds were detected in 20 surface sediment samples. Mammalian dioxin/furan toxic equivalencies (TEQs) ranged from 0.0841 to 15.4 nanograms TEQ per kilogram (ng TEQ/kg) dry weight (DW). The highest concentrations of dioxins/furans were detected at location LDW-SS131, collected downstream of the Hamm Creek outfall to the LDW. In addition, the dioxin/furan TEQ exceeded the LDW Natural Background TEQ for dioxins/furans (2 ng TEQ/kg) in four samples, DRB-114, LDW-SS131, LDW-SS544, and LDW-SS547. Sample DRB-114 was a bank sediment sample collected near RM 5.4 West. Sample LDW-SS544 was a beach composite sample collected near the Hamm Creek outfall to the LDW and sample LDW-SS547 was collected near the Turning Basin 3 Restoration Area, respectively (SAIC 2013).

Pesticides, including hexachlorobenzene, are considered potential COCs at the Restoration Areas source control area. Concentrations of pesticides including dichlorodiphenyldichloroethane (DDD), dichlorodiphenyltrichloroethane (DDT), and dichlorodiphenyldichloroethylene (DDE) were detected in surface sediment sampling locations. Greatest concentrations of pesticides were detected at surface sample locations LDW-SS2098-D and LDW-2099-U (Figure 13b) (SAIC 2013).

Organotin compounds are persistent bioaccumulative toxins (PBTs) and are generally considered COCs for LDW sediments. Tributyltin (TBT) is used as the indicator chemical for organotin compounds. The mean concentration of TBT in the LDW is 90 mg/kg DW (AECOM 2012). Organotin compounds were detected at six sampling locations near the Restoration Areas source control area in between 1998 and 2006, with concentrations of TBT up to 0.053 mg/kg DW at location LDW-SS131. Since the maximum TBT concentration in sediments near the Restoration Areas source control area is three orders of magnitude below the mean TBT concentration in LDW sediment, organotin compounds are not considered COCs for the sediments adjacent to the Restoration Areas source control area (SAIC 2013).

2.3 Potential Pathways to Sediment

Transport pathways that could potentially contribute to sediment contamination near the Restoration Areas source control area include direct discharges via storm drain outfalls, surface runoff (sheet flow), groundwater discharge, bank erosion, atmospheric deposition, and spills directly to the LDW. Relevant pathways are described briefly below, and are discussed in more detail in the Restoration Areas Data Gaps Report (SAIC 2013). Specific contaminant sources and transport pathways are discussed in Section 3.

2.3.1 Direct Discharges from Outfalls

The LDW area is served by a combination of separated storm drain and sanitary sewers, and combined sewer systems. Storm drains convey stormwater runoff collected from streets, parking lots, roof drains, and residential, commercial, and industrial properties to the waterway. In the LDW, there are both public and private storm drain systems. Most of the waterfront properties along the LDW are served by privately owned systems that discharge directly to the waterway. The other upland areas are served by a combination of privately and publicly owned systems.

Storm drains entering the LDW carry runoff generated by rain and snow. A wide range of chemicals may become dissolved or suspended in runoff as rainwater flows over the land. Urban areas may accumulate particulates, dust, oil, asphalt, rust, rubber, metals, pesticides, detergents, or other materials as a result of urban activities. These can be flushed into storm drains during wet weather. Storm drains can also convey materials from businesses with permitted discharges (i.e., National Pollutant Discharge Elimination System [NPDES] industrial or individual stormwater permits), vehicle washing, runoff from landscaped areas, erosion of contaminated soil, groundwater infiltration, and materials illegally dumped into the system.

Some areas of the LDW are served by combined sewer systems, which carry both stormwater and municipal/industrial wastewater in a single pipe. These systems were generally constructed before about 1970 because it was less expensive to install a single pipe rather than separate storm and sanitary systems. Under normal rainfall conditions, wastewater and stormwater are conveyed through this combined sewer pipe to a wastewater treatment facility. During large storm events, however, the total volume of wastewater and stormwater can sometimes exceed the conveyance and treatment capacity of the combined sewer system. When this occurs, the combined sewer system is designed to overflow through relief points, called CSOs. The CSOs prevent the combined sewer system from backing up and creating flooding problems. The 8th Avenue S CSO and the East Marginal CSO basins cover much of the Restoration Areas source control area (Figure 3). The outfall for the 8th Avenue S CSO basin is located within the Riverside Drive source control area. The outfall for the East Marginal CSO basin is located at the head of Slip 4, within EAA-3.

Additional information on public storm drains is presented in the Restoration Areas Data Gaps Report (SAIC 2013). In the Restoration Areas source control area, there are nine outfalls to the LDW, including six public storm drains, two ditches, and Hamm Creek (Figure 14).

2.3.2 Surface Runoff (Sheet Flow)

In areas lacking collection systems, spills or leaks on properties adjacent to the LDW could flow directly over impervious surfaces or through creeks and ditches to the waterway. Current operational practices at adjacent properties may contribute to the movement of contaminants to the LDW via runoff. Surface runoff from properties adjacent to the LDW may be a source of contaminants to sediments associated with the Restoration Areas source control area.

2.3.3 Spills to the LDW

Near-water and over-water activities have the potential to impact adjacent sediment from spills directly to the LDW of material containing COCs. Accidental spills during loading/unloading operations may result in transport of contaminants to sediment. Over-water activities were historically performed by Kenco Marine. No over-water activities are currently performed within the Restoration Areas source control area.

2.3.4 Groundwater Discharges

Contaminants in soil resulting from spills and releases to adjacent properties may be transported to groundwater and subsequently be released to the LDW and the Restoration Areas source control area. Groundwater contamination has been documented at the USPS Distribution Center property.

Concentrations of chemicals in soil and groundwater were compared to draft soil-to-sediment or groundwater-to-sediment screening levels (SAIC 2006). These screening levels were initially developed to assist in the identification of upland properties that may pose a potential risk of recontamination of sediments at Slip 4. The screening levels incorporate a number of conservative assumptions, including the absence of contaminant dilution and ample time for contaminant concentrations in soil, sediment, and groundwater to achieve equilibrium. In addition, the screening levels do not address issues of contaminant mass flux from upland media to sediments, nor do they address the area or volume of sediment that might be affected by upland contaminants. Because of these assumptions and uncertainties, these screening levels are most appropriately used for one-sided comparisons. If contaminant concentrations in upland soil or groundwater are below these screening levels, then it is unlikely that they will lead to exceedances of the SMS. However, upland concentrations that exceed these screening levels *may or may not* pose a threat to marine sediments; additional property-specific information must be considered in order to make such an assessment. While not currently considered COCs in sediment, these chemicals may warrant further investigation, depending on property-specific conditions, to evaluate the likelihood that they will lead to exceedances of the SMS.

Soil contaminated by petroleum hydrocarbons have been identified at several upland properties within the Restoration Areas source control area. Where these contaminants are present in the subsurface, naturally occurring arsenic in soil can be mobilized and migrate into groundwater (Harter and Rollins 2008). Arsenic was identified as a COC for the sediments near the Restoration Areas source control area.

Four seep locations were identified during the Windward seep reconnaissance survey. The Restoration Areas source control area was identified as an area with higher general seepage levels (Windward 2004). Seep 39 was selected for chemical analysis (Figure 13b). Copper concentrations in unfiltered and filtered samples exceeded the Marine Chronic Water Quality Standard (WQS) of 3.1 micrograms per liter ($\mu\text{g/L}$), but did not exceed the draft groundwater-to-sediment screening levels (SAIC 2013).

2.3.5 Bank Erosion

The banks of the LDW shoreline are susceptible to erosion by wind and surface water, particularly in areas where banks are steep. Shoreline armoring and the presence of vegetation reduce the potential for bank erosion. Contaminants in soils along the banks of the LDW could be released directly to sediments via erosion. The mud shoreline of the LDW is exposed along the entire bank within the Restoration Areas source control area, except for an approximate 0.1-mile length of riprap offshore of the SCL Power Substation (Windward 2010b).

In May 2011, three bank soil samples were collected at RM 4.4 West, on SCL-owned property near the Hamm Creek Restoration Area (Figure 13a). Soil samples were analyzed for metals, PCBs, PAHs, other SVOCs, total petroleum hydrocarbons (TPH), TBT, polybrominated diethyl ethers (PBDEs), pesticides, and dioxins/furans. Chemical concentrations did not exceed the SMS criteria or LDW natural background screening levels (Hart Crowser 2012).

2.3.6 Atmospheric Deposition

Air pollution is a potential source of sediment contamination with origins outside of the Restoration Areas source control area. Toxics loading studies conducted in Puget Sound suggest that runoff from the land surface and atmospheric deposition directly to marine waters has resulted in considerable loading of contaminants to Puget Sound.

Atmospheric deposition occurs when toxic air pollutants enter the LDW directly or through stormwater. Air pollutants may be generated from point or non-point sources. Point sources include industrial facilities, and air pollutants may be generated from painting, sandblasting, loading/unloading of raw materials, and other activities, or through industrial smokestacks. Non-point sources include dispersed sources such as vehicle emissions, aircraft exhaust, and off-gassing from common materials such as plastics. Air pollutants may be transported over long distances by wind, and can be deposited to land and water surfaces by precipitation or particle deposition.

Three facilities within the Restoration Areas source control area are currently regulated as a point source of air emissions. These facilities are listed below.

Facility	PSCAA Facility Registration No.
7-Eleven Food Store (7-11 #23931)	13029G
Elliott Paint Company, Inc.	29259
Preet Auto Body (Mike's Aussie Machine)	29308

Contaminants originating from nearby properties and streets may be transported through the air and deposited in the Restoration Areas source control area or in other areas that drain to the LDW. Although chemical deposition from air directly to the LDW probably occurs, this mechanism is not likely to result in sediment concentrations above local background levels. Secondary impacts of air sources on the stormwater pathway to receiving waters and sediment are not well understood; additional information is needed. Recent and ongoing atmospheric deposition studies in the LDW area are summarized in the LDW Source Control Status Report (Ecology 2007 and subsequent updates).

Ecology is developing an inventory of point sources registered with PSCAA, and preparing a report that summarizes existing information and understanding about the contribution of atmospheric deposition of COCs to LDW sediments. This work started in summer 2012 and is scheduled to be completed in September 2013.

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3.0 Potential Sources of Sediment Recontamination

Potential sources of sediment recontamination are described in detail in the Restoration Areas Data Gaps Report (SAIC 2013). This section summarizes the information on outfalls (Section 3.1), adjacent properties (Section 3.2), and upland properties (Section 3.3).

3.1 Outfalls

Storm drains convey stormwater runoff collected from streets, parking lots, roof drains, and residential, commercial, and industrial properties to the LDW. Storm drains entering the LDW carry runoff generated by rain and snow. A wide range of chemicals may become dissolved or suspended in runoff as rainwater flows over the land. Urban areas generally accumulate particulates, dust, oil, asphalt, rust, rubber, metals, pesticides, detergents, or other materials as a result of human activities throughout the drainage basin.

Human activities include landscaping, spills, illegal dumping, vehicle maintenance (fueling, washing), and vehicle use (wear on roads, tires, brakes, fluid leaks, and emissions). These materials can be flushed into storm drains during wet weather and are then conveyed to the waterway, mainly through the storm drain system. In addition, contaminants in soil or groundwater could enter the system through cracks or gaps in the stormwater piping.

3.1.1 Public Storm Drain Outfalls

Within the Restoration Areas source control area there are nine public outfalls, including six public storm drains, two ditches, and Hamm Creek (Figure 14).

Outfall No.	Outfall Name	Diameter/Material	Outfall Type	Outfall Owner
2205	Hamm Creek	Creek	Public	King County
2099	Duwamish Substation #1	6-inch CMP	Public	Seattle City Light
2098	Duwamish Substation #2	6-inch CMP	Public	Seattle City Light
2200	WSDOT	30-inch CMP	Public	WSDOT
2201	WSDOT	36-inch CMP	Public	WSDOT
NA	Ditch #1	NA	Public	
NA	Ditch #2	NA	Public	
3842	NA	48-inch, unknown	Public	City of Tukwila
3921	NA	24-inch concrete	Public	City of Tukwila

CMP = corrugated metal pipe; WSDOT = Washington State Department of Transportation

Lateral storm drain lines connect several of the surrounding facilities to the main lines in the Hamm Creek SD basin. Outfalls 2098 and 2099 are connected to storm drain lines on the SCL Power Substation. Outfalls 2200 and 2201 appear to convey drainage from SR-99. Stormwater from the northwestern portion of the peninsula appears to discharge at the Turning Basin 3 Restoration Area through Ditch #1. Stormwater from the Boeing Parking Lot property appears to discharge to the LDW at Ditch #2. GIS data from the City of Tukwila and King County did not identify any storm drain lines that may be connected to Outfall 3842. Stormwater from Thales Avionics, the USPS Distribution Center, West Marginal Place S and 27th Avenue S appears to discharge to the Duwamish through Outfall 3921 (Figure 14).

Storm Drain Sampling

Seattle Public Utilities (SPU) and EPA have collected storm drain solids samples from storm drain structures within the source control area. The SCWG¹⁰ compares analytical results from these samples to the SQS and apparent effects threshold (AET). Petroleum hydrocarbon results are compared to the MTCA Method A cleanup standards. Although these regulatory standards are not applicable to storm drain solids, the SCWG uses these values as a benchmark to describe storm drain solids quality (SPU 2010). In this document, values described above (SQS/CSL, lowest apparent effects threshold [LAET]/second lowest apparent effects threshold [2LAET], and MTCA Method A) that are used for comparison to storm drain solids data are referred to as “storm drain screening values.” It should be emphasized that none of these values are applied as cleanup levels to storm drain or combined sewer solids. It is important to note that any comparison of this kind is most likely conservative given that sediments discharged from storm drains are highly dispersed in the receiving environment and mixed with the natural sedimentation taking place in storm drain systems.

SPU collected storm drain solids samples from storm drain structures within the Hamm Creek SD basin in April 2009, November 2010, and June 2012 from inline sediment trap HC-ST1 and in May 2011 from right-of-way catch basin RCB270. In August 2011, EPA collected storm drain solids samples from a right-of-way catch basin (TUK-06) near the head of the inlet at the Turning Basin 3 Restoration Area (Figure 14). The samples were analyzed for PCBs; total and dissolved metals and mercury; and PAHs, phthalates, and other SVOCs (SPU 2011; KTA 2012). Bis(2-ethylhexyl)phthalate (BEHP) and dimethyl phthalate were detected in sample RCB270 at concentrations exceeding the LAET-based storm drain screening values. These chemicals are COCs for the LDW Superfund site but have not been detected above the SQS or CSL in sediment near the Restoration Areas source control area. Concentrations of arsenic, carcinogenic polycyclic aromatic hydrocarbon (cPAHs), and the dioxin/furan TEQ slightly exceeded the LDW natural background concentrations in one or more storm drain structures, but were significantly below the Remedial Action Levels identified in the Proposed Plan for the LDW Superfund Site (USEPA 2013). The chemical concentrations and exceedance factors are listed in Table 4. Additional information is provided in the Restoration Areas Data Gaps Report (SAIC 2013).

¹⁰ The SCWG is composed of Ecology, King County, the Cities of Seattle and Tukwila, the Port of Seattle, and EPA.

Water and Sediment Quality Monitoring Program

In 1993, a water and sediment quality monitoring program was conducted for the S 96th Street SD basin (Herrera 1994). Base flow, storm flow, and creek sediment samples were collected from Hamm Creek South Fork during the investigation.

Base Flow and Storm Flow Water Results

One water quality monitoring station was established to collect grab samples from Hamm Creek South Fork. Water samples were analyzed for TPH, metals, and conventionals (Herrera 1994). Concentrations of copper and lead exceeded freshwater acute and chronic water quality standards during base and storm flows. Surface water sample results are summarized in the table below:

Chemicals Detected at Concentrations in Surface Water Samples	Sample Event		Freshwater Acute Water Quality Standards (µg/L) ^a	Freshwater Chronic Water Quality Standards (µg/L)
	Base Flow	Storm Flow		
TPH (µg/L)	ND	ND	-	-
Metals (µg/L)				
Cadmium	ND	ND	0.82	0.37
Chromium	ND	9	-	-
Copper	10	6.4	4.6	3.5
Lead	1.7	7.9	14	0.54
Zinc	16	19	35	32

a – Surface Water ARAR – Aquatic Life – Fresh/Acute – Ch. 173-201A WAC

b – Surface Water ARAR – Aquatic Life – Fresh/Chronic – Ch. 173-201A WAC

ND – Not detected above screening levels

Creek Sediment Results

One sediment sample was collected from Hamm Creek South Fork. The sample was analyzed for TPH, PAHs, metals, and conventionals (Herrera 1994). Analytical results were compared to MTCA cleanup levels for soil and the draft soil-to-sediment screening levels for saturated soil (Table 5). Several LDW sediment COCs were detected in the samples at concentrations exceeding MTCA cleanup levels and the draft soil-to-sediment screening levels; these COCs are listed below. Sediment COCs that exceeded the SMS in sediment samples collected near the Restoration Areas source control area are indicated by a check mark.

Chemical	>MTCA Cleanup Levels	>Draft Soil-to-Sediment Screening Levels	Sediment COC?
Metals			
Arsenic	●		✓
Zinc		●	
PAHs			
Acenaphthene		●	✓
Anthracene		●	

Chemical	>MTCA Cleanup Levels	>Draft Soil-to-Sediment Screening Levels	Sediment COC?
Benzo(a)anthracene		●	
Benzo(a)pyrene	●	●	
Benzo(b)fluoranthene	●	●	
Benzo(g,h,i)perylene		●	✓
Benzo(k)fluoranthene		●	
Chrysene		●	
Dibenzo(a,h)anthracene	●	●	✓
Fluoranthene		●	
Fluorene		●	✓
Indeno(1,2,3-cd)pyrene		●	
Phenanthrene		●	
Pyrene		●	

All chemicals listed in the table, with the exception of TPH, are sediment COCs for the LDW Superfund Site. Individual chemical concentrations are provided in Table 5.

Sources of PAHs were attributed to the area upstream of Hamm Creek South Fork at SR-99 (Herrera 1994).

Hamm Creek SD Basin

The Hamm Creek SD basin covers approximately 735 acres, spanning north-to-south from S 96th Street in Seattle to S 146th Street in SeaTac and from west-to-east from 12th Avenue S to Des Moines Memorial Drive S within unincorporated King County, from 12th Avenue S to 22nd Avenue S within Burien city limits and from 18th Avenue S to 29th Avenue S within SeaTac city limits (Figure 14). Land uses within the storm drain basin include industrial and commercial properties.

There are 27 facilities within the Hamm Creek SD basin (Table 1a):

- 3 of these facilities, the Moimoi Property, the Jones Property, and Mike’s Aussie Machine Shop, are listed on Ecology’s CSCSL (the Jones Property and Mike’s Aussie Machine Shop have received a No Further Action (NFA) determination from Ecology).
- 1 facility, Aussie Machine, has a Certificate of No Exposure (CNE).
- 1 facility, Glendale Heating & Air Conditioning, has an active EPA ID number.
- 6 facilities are listed on Ecology’s leaking underground storage tank (LUST) list.
- 10 facilities are listed on Ecology’s underground storage tank (UST) list.
- 7 facilities have not been assigned Ecology Facility/Site Identification (FSID) numbers, but have been subject to regulatory interactions, such as inspections, with Ecology, King County, or PSCAA.

Based on GIS data obtained from King County and the Cities of Burien, SeaTac, and Tukwila, it appears that stormwater from some areas currently thought to be part of the Hamm Creek SD basin may be conveyed to the combined sewer system and/or may be discharged to the

Duwamish through outfalls upstream of RM 5.8, rather than entering the Hamm Creek SD system (Figure 14). The areas to the east and south of the dashed line on Figure 14 may be outside of the Hamm Creek SD system and, if so, should be excluded from the Restoration Areas source control area.

Potential for Sediment Recontamination

Catch basin storm drain solids sampling indicated concentrations of BEHP and dimethyl phthalate exceeding the LAET-based storm drain screening value in a single sample (RCB270) within the Hamm Creek SD system. These chemicals are COCs for the LDW Superfund site but have not been detected above the SQS or CSL in sediment near the Restoration Areas source control area. Sediment COCs suspended in stormwater, if any, may be conveyed to the LDW; however, any concentrations of sediment COCs are likely to be diluted by mingling with the south fork of Hamm Creek and partitioning to sediments in the creek bed and the Hamm Creek Restoration Area before discharging to the LDW. The potential for sediment recontamination via this pathway is low.

Arsenic concentrations in one storm drain solids sample, TUK-06, exceeded the LDW natural background concentration of 7 mg/kg. Sediment COCs suspended in stormwater, if any, may be conveyed to the LDW. The potential for sediment recontamination via this pathway is low.

Source Control Actions

Ecology will continue to perform facility inspections to determine if undocumented industrial operations are occurring within the Hamm Creek SD basin that may be an ongoing source of sediment recontamination.

Information needed to assess the potential for sediment recontamination associated with the public storm drain outfalls was summarized in the Restoration Areas Data Gaps Report (SAIC 2013). The following source control actions will be conducted to fill the identified data gaps and reduce the potential for recontamination of sediments near the Restoration Areas source control area:

- Ecology will request additional information from King County and the Cities of Burien and SeaTac to define the boundaries of the Hamm Creek SD basin in order to determine if the area to the east of Des Moines Memorial Drive between S 116th Way and S 124th Street and the area south of S 124th Street should be included in or excluded from the Restoration Areas source control area.
- Ecology will request additional information from the City of Tukwila to determine the drainage area associated with Outfall 3842.

3.2 Adjacent Properties

The LDW shoreline spans approximately 1.6 miles of the source control area. Parcels along the shoreline are a mix of restored habitats and industrial properties. Restored areas are described in Section 2.1 and include:

- Hamm Creek Restoration Area
- Kenco Marine Restoration Area
- Turning Basin 3 Restoration Area
- North Wind's Weir
- Point Rediscovery Wetland

Several facilities are located adjacent to the LDW in the Restoration Areas source control area; information about these facilities relevant to recontamination of LDW sediments was presented in the Restoration Areas Data Gaps Report (SAIC 2013). These facilities include:

- SCL Power Substation
- Fremont Property
- Boeing Parking Lot Property
- Thales Avionics
- USPS Distribution Center

Based on the information reviewed for the Restoration Areas Data Gaps Report, the potential for sediment recontamination associated with the Fremont Property and Thales Avionics is very low to low. The current operator at the Fremont Property, J&H Express, has complied with corrective actions identified by Ecology by improving spill response and washing procedures. Thales Avionics performs its operations indoors and has received a Conditional No Exposure certificate under the Industrial Stormwater General Permit (ISGP) from Ecology. No data gaps were identified for these facilities (SAIC 2013).

Facilities and properties that were identified as potential sources of sediment recontamination or for which insufficient information was available to assess the potential for sediment recontamination are listed below.

Facility/Property	Address	Potential Contaminant Pathways
Seattle City Light Power Substation	10000 & 10030 West Marginal Place S, Seattle 98108	Stormwater, surface runoff, spills, groundwater discharge
Boeing Parking Lot Property	2601 S 102 nd Street, Tukwila 98168	Stormwater
U.S. Postal Service Seattle Distribution Center	10600 & 10800 West Marginal Place S, Tukwila 98168	Groundwater discharge

These facilities are discussed in more detail in Sections 3.2.1 through 3.2.3. The following sections summarize historical operations, current operations, regulatory history, environmental investigations, the potential for sediment recontamination, and source control actions to be implemented for the facilities adjacent to the LDW.

3.2.1 Seattle City Light Power Substation

Current Operations	Municipal power substation
Historical Operations	Vacant
Tax Parcel No.	5624200930, 5624200950, 5624200951
Address	10000 & 10030 West Marginal Place S, Seattle 98108
Facility/Site ID	NA
Chemicals of Concern	Arsenic, mercury, benzo(a)pyrene, BEHP
Media Affected	Stormwater, surface runoff, spills, groundwater discharge

The SCL Power Substation is adjacent to the LDW between RM 4.4 and 4.5 West (Figure 5). Vacant land, also owned by SCL, is present immediately south of the substation. Hamm Creek Restoration Area is immediately north of the substation. West Marginal Place S is located to west/southwest of the property.

Historical and Current Operations

The property was platted but undeveloped in the late 1920s. Between 1928 and 1936 a bulkhead was built along the shoreline. Development of the substation began in 1954 when 220,000 cubic yards of dredge material were placed at the property (USACE 1997a). The power substation continues to operate at the property. The shoreline of the property is protected by a bulkhead and riprap.

Stormwater from the property is discharged to the LDW through Outfalls 2098 and 2099 (Figure 14). Stormwater discharges to the LDW from the property are covered by the city of Seattle municipal stormwater discharge permit.

Regulatory History

No records regarding the regulatory history of this property were identified during the preparation of this SCAP.

Environmental Investigations and Cleanups

SCL performed several environmental investigations at the property between 1985 and 2006.

In January 1985, soil samples were collected beneath capacitor banks and transformers to determine the extent of possible PCB contamination. Soil samples were collected between 6 and 8 inches below ground surface (bgs) and analyzed for PCBs. Black oils heavily coated the rocks below transformer access valves. PCBs, as Aroclors 1254 and 1260, were detected beneath the capacitor banks at concentrations below the current MTCA Method B cleanup level. Aroclor 1254 was detected slightly above the draft soil-to-sediment screening level in one sample. Aroclor 1260 was detected in one sample collected beneath the transformers at a concentration below the MTCA Method B cleanup level and the draft soil-to-sediment screening level

(Table 6). Two surface concrete samples were collected from the capacitor banks. PCBs were detected at concentrations of 0.02 and 0.26 mg/kg (Raven 1985).

Forty-seven solids samples were collected from breakers at the substation in 1985 and analyzed for PCBs. The sample matrix is not identified on the laboratory report. PCBs, as Aroclors 1242 and 1260, were detected in 27 samples, with total PCB concentrations ranging from 2.1 to 156 mg/kg. Concentrations of Aroclor 1242 were approximately 3 to 30 times greater than concentrations of Aroclor 1260 in individual samples (SCL 1985). The greatest total PCB concentrations were from breaker 240-82, which is located on the eastern side of the property (Figure 15a). A narrative describing the sampling event and a map identifying sample locations were not available for review at the time this SCAP was prepared.

In June 1988, seven concrete and seven composite soil samples were collected beneath a capacitor bank, which was scheduled to be removed from the property in September 1988. PCBs, as Aroclor 1242, were detected in four of the samples at concentrations exceeding the MTCA Method B cleanup level and the draft soil-to-sediment screening level (Table 6). PCBs were detected in two concrete samples at concentrations of 0.53 and 0.69 mg/kg (Raven 1988).

In February 1990, soil samples were collected around five breaker systems at the substation (Figure 15a) to assess soil quality prior to the installation of oil spill containment systems. PCBs were detected in only one sample, at a concentration of 0.7 mg/kg (Raven 1990). This concentration slightly exceeds the MTCA Method B cleanup level and the draft soil-to-sediment screening level (Table 6).

Boeing performed an investigation at the adjacent property (Hamm Creek Restoration Area) in 1990. Dredge materials appear to have been placed on both properties by USACE in 1954 (Weston 1990). At the Hamm Creek Restoration Area, concentrations of arsenic exceeded the MTCA Method B cleanup level. BEHP and mercury concentrations exceeded the draft soil-to-sediment screening level. Benzo(a)pyrene concentrations exceeded the MTCA Method B cleanup level (0.14 mg/kg), the draft soil-to-sediment screening level (0.21 mg/kg), and the LDW Background concentration (0.009 mg/kg). Chemical concentrations are listed in Table 6. However, these concentrations may be related to later dredge materials stockpiled at the Hamm Creek Restoration Area and may not be representative of the chemical characteristics of the 1954 dredge materials that were placed on the SCL Power Substation property.

A Phase II Environmental Site Assessment was performed at parcel 5624200950 (Figure 12) in April 2006. This parcel is used as a right-of-way for power transmission lines and as a buffer area to the substation. Three groundwater monitoring wells and three soil borings were installed on the property. Two surface sediment samples were collected from the LDW from the shoreline (Figure 15b). Samples were analyzed for PCBs, PAHs, VOCs, metals, petroleum hydrocarbons, and pesticides. The only analyte detected in soil was chromium, which was detected in all samples at concentrations below the draft soil-to-sediment screening levels. Chloromethane was the only analyte detected in groundwater; the concentration was 0.47 µg/L. The detection was attributed to chlorinated drinking water that was used during well installation. Chromium (7 and 18 mg/kg) and lead (9.2 and 57 mg/kg) were detected in the sediment samples, below the SQS and CSL. Heptachlor was also detected in sediment (HWA GeoSciences 2006).

In May 2011, three bank soil samples were collected at RM 4.4 West, on SCL-owned property near the Hamm Creek Restoration Area (Figure 13a). Soil samples were analyzed for metals, PCBs, PAHs, other SVOCs, TPH, TBT, PBDEs, pesticides, and dioxins/furans. Chemical concentrations did not exceed the SMS criteria or LDW natural background screening levels (Hart Crowser 2012).

Potential for Sediment Recontamination

The potential for sediment recontamination via this property is summarized below. Concentrations of several sediment COCs exceeded the CSL in surface sediment samples collected near Outfalls 2098 and 2099, including metals, PAHs, phenols, and other SVOCs (Table 3, Figure 13b).

- Stormwater discharges to the LDW through Outfalls 2098 and 2099. Contaminants in stormwater, if any, may represent a potential source for sediment recontamination.
- If a spill occurs at the property, contaminants may infiltrate the ground surface. If a spill occurs during a storm, contaminants may be entrained in stormwater, rather than infiltrate the ground surface. Contaminants that have infiltrated the ground surface may be conveyed to the LDW via groundwater discharge.
- PCBs have been detected at low levels in soil samples collected from the property but have not been detected above the SMS criteria in LDW sediment samples collected adjacent to the property. Results of an environmental investigation at the Hamm Creek Restoration Area (Weston 1990), which may also be representative of the environmental conditions beneath the SCL Power Substation, indicate the potential presence of arsenic, mercury, benzo(a)pyrene, and BEHP above MTCA cleanup levels and/or draft soil-to-sediment screening levels.
- The shoreline of the property is protected by a bulkhead and riprap. The potential for sediment recontamination via the bank erosion/leaching pathway is very low.

Source Control Actions

Information needed to assess the potential for sediment recontamination associated with current or historical operations at this property was summarized in the Restoration Areas Data Gaps Report (SAIC 2013). The following source control actions will be conducted to fill the identified data gaps and reduce the potential for recontamination of sediments:

- Ecology will request information from SCL and perform a facility inspection to determine if operations at the property represent a potential source of contaminants to LDW sediments.
- Ecology will request that SCL perform an environmental assessment to address the potential arsenic, mercury, benzo(a)pyrene, and BEHP contamination in fill material at the property.

3.2.2 Boeing Parking Lot Property

Current Operations	Parking lot, equipment storage, employee fitness center
Historical Operations	Farmland
Tax Parcel No.	0423049150
Address	2601 S 102 nd Street, Tukwila 98168
Facility/Site ID	None
Chemicals of Concern	Petroleum hydrocarbons, metals, solvents
Media Affected	Stormwater

The Boeing Parking Lot property is located between RM 4.8 and 5.5 West. The property is bordered by the LDW to the northeast and south. The Fremont property and Thales Avionics are west of the property. Turning Basin 3 is located to the northwest (Figure 6).

A 52,500 sq ft fitness center, built in 1987, is present on the southeastern portion of the property.

Historical and Current Operations

Boeing began leasing the property from the Desimone Trust in 1956. Prior to Boeing's lease, the property was farmland (BNY Mellon 2009). The property was paved in the late 1970s and is used for parking by Boeing employees. In recent aerial photographs some storage of equipment is observed. According to the Washington State Corporation website, the building has been used for a variety of Boeing employee clubs such as the Autosports Club, Computing Society, Prospectors Society, Whitewater Touring Club, and Windsurfing Club.

A dirt walking trail is present between the paved area and the LDW shoreline. The shoreline does not appear to be reinforced. Stormwater from the northwestern portion of the property appears to be conveyed to a ditch and discharges to the LDW through Ditch #2 (Figure 14).

The property is located within the East Marginal CSO basin (Figure 3).

Regulatory History

In April 2009, EPA sent a CERCLA Section 104(e) Request for Information to the Desimone Trust. Parcel 9150 was included in the request (USEPA 2009). Relevant information from the response to the CERCLA 104(e) request was included in the Restoration Areas Data Gaps Report (SAIC 2013).

Environmental Investigations and Cleanups

No records of environmental investigation and cleanups were identified for this property.

Potential for Sediment Recontamination

The potential for sediment recontamination via this property is summarized below. Benzoic acid exceeded the SQS and CSL and acenaphthene exceeded the SQS in sediment samples collected

near the property (Figure 13c). The potential for sediment recontamination associated with this facility is summarized below.

- Stormwater from the northwestern area of the property is conveyed to the LDW through Ditch #2. Surface runoff from most of the property likely flows from the paved area to the unpaved portions of the property and then infiltrates the ground surface. Industrial activity appears to be limited to outdoor storage of equipment. Contaminants in stormwater runoff, if any, may be conveyed to the LDW.
- The property was not developed for industrial/commercial use until the late 1970s. Since development, the property has been used for equipment storage and Boeing employee parking. The potential for sediment recontamination via the soil and groundwater pathway is very low.

Source Control Actions

Information needed to assess the potential for sediment recontamination associated with current or historical operations at this property was summarized in the Restoration Areas Data Gaps Report (SAIC 2013). The following source control actions will be conducted to fill the identified data gaps and reduce the potential for recontamination of sediments:

- Ecology will perform a source control inspection at the Boeing Parking Lot property to verify compliance with applicable regulations and best management practices (BMPs) to prevent the release of contaminants to the LDW.

3.2.3 U.S. Postal Service Seattle Distribution Center

Current Operations	Mail distribution
Historical Operations	Truck testing, stockpiling of used building materials
Tax Parcel No.	0423049057, 0423049130, 0423049186, 0423049189
Address	10600 & 10800 West Marginal Place S, Tukwila 98168
Facility/Site ID	2048: Atlas Demolition 58835952: Boeing D&SG Oxbow Site 76328824: U.S. Postal Service Seattle Distribution Center
Chemicals of Concern	Metals
Media Affected	Groundwater discharge

The USPS Seattle Distribution Center is located adjacent to the Duwamish River between RM 5.5 and 5.7 West. North Wind’s Weir is south of the facility. Thales Avionics and the Boeing Parking Lot property are located to the north. The property is bordered on the west by 27th Avenue S (Figure 6). One building is present on the property, a 325,000 sq ft warehouse/light industrial manufacturing building, built in 1987. The building spans parcels 9186 and 9189. The property is also known as the Oxbow Corporate Park, which is managed by The Sabey Corporation.

Historical Operations

The property was leased to PACCAR in 1970. PACCAR sublet parcels 9189, 9057, and the eastern portion of parcel 9186 to Atlas Building Wreckers from 1979 to 1986. The western portion of parcel 9186 and parcel 9190 were used by PACCAR to test Kenworth trucks (BNY Mellon 2009). Future Resources, Inc., a construction debris salvage operation, was also present on areas of parcel 9186 that were not used for the Kenworth test track (ICF Kaiser 1995).

Atlas Building Wreckers stored cement, bricks, and other wrecked building materials at the property. Some materials may have been buried at the property. The company's activities may have encroached on parcel 9130 (the SCL easement) and on property controlled by PACCAR. On August 30, 1985, King County served a Stop Order to Atlas Building Wreckers, disallowing the company's activities at the property (PACCAR 1985). A 1985 site reconnaissance identified limited soil contamination from oil, fuel, lubricants, paint, and unidentifiable fluids spilling from drums, cans, tanks, vats, and machinery (Hart Crowser 1985). The building materials and other debris were removed from the property between 1986 and 1987 (BNY Mellon 2009). No records that documented the removal of potentially contaminated soil were identified during the preparation of this SCAP.

The Sabey Corporation began leasing the property in 1987. The Sabey Corporation built and managed the Oxbow Corporate Park. The building on parcels 9186 and 9189 was originally constructed in 1987 as two separate buildings. These buildings were referred to as Buildings 250 and 252 and were originally leased by Boeing. Boeing vacated the buildings in 1994 (ICF Kaiser 1995).

Boeing performed tool and metal fabrication, composite aircraft parts fabrication, and painting activities in Building 250. High-tech aircraft parts were manufactured in a "clean room" located within the building. Sealants, solvents, Freon, developers, oils, resin, and potting compounds were used in the building. Building 250 is the larger portion of the present day building and spans parcels 9186 and 9189. Boeing performed tool and metal fabrication, parts painting, and welding activities in Building 252. A paint booth, in-floor utility trench, and air and gas lines were present in the building (ICF Kaiser 1995).

Dove Supply Company, a construction equipment and heavy machinery salvage operation, leased parcel 9130 from SCL in 1983 (Geotech Consultants 1995).

Current Operations

The USPS operates a distribution center at the facility on parcels 9186 and 9189, using 10700 27th Avenue S, Tukwila as its operating address. The USPS uses parcels 9057 and 9130 for parking. A neutralizing tank is present at the property. Ink and alcohol are used at the facility (Ecology 2011b). The USPS has leased the property since 1995 or 1996. No additional information regarding historical or current operations was available for review.

Stormwater from the facility appears to discharge to the Duwamish through Outfall 3921 or it may be conveyed to the combined sewer system (Figure 14). A diagram of the private storm drain system on the property was not available for review.

Regulatory History

In 1981, Atlas Building Wreckers was fined by the Puget Sound Air Pollution Control Agency for illegal outdoor burning of materials (PACCAR 1981). Atlas Building Wreckers was listed on the CSCSL as Atlas Demolition in March 1988. Non-halogenated solvent contamination was suspected in groundwater, surface water, and soil. The site status was changed to NFA in October 1991. The ISIS database indicates that the NFA decision was due to cleanup under prior authority.

Boeing obtained an EPA ID number in 1991 as a hazardous waste planner, under the name Boeing Defense and Space Group (D&SG). The EPA ID was cancelled in June 1995.

The USPS obtained an EPA ID number in February 1997 as a hazardous waste generator and has reported as a facility that stores hazardous chemicals since February 2002.

In April 2009, EPA sent a CERCLA Section 104(e) Request for Information to the Desimone Trust (USEPA 2009). Relevant information from the response to the CERCLA 104(e) request is included in this Data Gaps Report.

Ecology performed an Urban Waters inspection at the facility on September 7, 2011. Ecology determined that the facility was in compliance, but made two recommendations (Ecology 2011b):

- Test sludge in a neutralizing tank and waste ink/alcohol to verify that they are non-hazardous.
- Increase sweeping of debris and cleanup of oil spots, with a focus on the loading docks.

Environmental Investigations and Cleanups

A Hazardous Materials investigation was performed at the property in 1995 on behalf of the USPS. During the investigation, a groundwater monitoring well was identified inside Building 250. Oxbow Corporate Park and Boeing personnel did not know why the well had been installed. A groundwater sample was collected and analyzed for TPH, volatile organic compounds (VOCs), and metals (ICF Kaiser 1995).

Chemical	Concentration (µg/L)	MTCA Cleanup Level (µg/L)	Groundwater-to-Sediment Screening Level (µg/L)	MTCA Exceedance Factor	Groundwater-to-Sediment Screening Level Exceedance Factor
Cadmium	33	5	3.4	6.6	9.7
Chromium	120	50	320	2.4	<1
Copper	440	640	120	<1	3.7
Lead	120	15	13	8.0	9.2
Nickel	90	NA	NA	--	--
Zinc	420	4,800	76	<1	5.5

Potential for Sediment Recontamination

The potential for sediment recontamination via this property is summarized below. Benzoic acid exceeded the SQS and CSL in a single sediment sample collected near the property (Figure 13c). The potential for sediment recontamination associated with this property is summarized below.

- Ecology determined that the facility was in compliance during a 2011 Urban Waters inspection. Stormwater and surface runoff are not considered to be significant pathways for transport of potential contaminants to LDW sediments.
- All industrial activities appear to be performed indoors, except for loading activities. Spills are not considered to be significant pathways for transport of potential contaminants to LDW sediments.
- Atlas Building Wreckers stored a variety of building materials and other equipment at the property between 1979 and 1987. In 1985, limited soil contamination from oil, fuel, lubricants, paint, and unidentifiable fluids was identified at the property. No records that documented the removal of potentially contaminated soil were identified during the preparation of this SCAP. It is possible that contaminated soil was removed from the property during the construction of Oxbow Corporate Park. Cleanup records associated with Atlas Demolition were not available for review during the preparation of the SCAP.
- Metals concentrations exceeding MTCA cleanup levels and the draft groundwater-to-sediment screening levels were detected in a single groundwater sample collected in 1995. The detected metals (cadmium, chromium, copper, lead, nickel, and zinc) have not been detected above screening levels in the LDW sediments near the property. The potential for sediment recontamination via this pathway is low.

Source Control Actions

Information needed to assess the potential for sediment recontamination associated with current or historical operations at this property was summarized in the Restoration Areas Data Gaps Report (SAIC 2013). The following source control actions will be conducted to fill the identified data gaps and reduce the potential for recontamination of sediments:

- Ecology will request a facility map from the Sabey Corporation showing the storm drain system on the property.
- Ecology will request information from the U.S. Postal Service regarding the neutralizing tank and the results from testing the sludge in the tank and waste/ink alcohol.
- Ecology will request that the Sabey Corporation collect groundwater data to assess the current concentrations of metals in groundwater beneath the property.
- Ecology will review the cleanup records associated with Atlas Demolition to assess the potential for sediment recontamination via the groundwater discharge pathway.

3.3 Upland Properties in the Hamm Creek SD Basin

Upland facilities within the Hamm Creek SD basin that could potentially affect sediments near the Restoration Areas source control area are listed on Table 1a. Relevant information about these facilities was summarized in the Restoration Areas Data Gaps Report (SAIC 2013). Additionally, an unknown number of undocumented industrial operations may take place within the Hamm Creek SD basin. Undocumented industrial activities may be an ongoing source of contaminants to sediments adjacent to the Restoration Areas source control area.

The upland facilities listed below were identified as potential sediment recontamination sources. Additional information regarding source control actions for these upland properties is provided in Sections 3.3.1 and 3.3.2.

Facility	Address	Potential Contaminant Pathways	Figure No.
Rainier Golf & Country Club	11133 Des Moines Memorial Drive S, Seattle 98168	Stormwater, groundwater discharge	8
Puget Sound Plumbing & Heating	11803 Des Moines Memorial Drive S, Burien 98168	Stormwater	9

3.3.1 Rainier Golf & Country Club

Current Operations	Private golf and country club
Historical Operations	Private golf and country club
Tax Parcel No.	0985000005
Address	1856 S 112 th Street, Seattle 98168 Operating: 11133 Des Moines Memorial Drive S, Seattle 98168
Facility/Site ID	78215825
Chemicals of Concern	Pesticides, insecticides, fungicides
Media Affected	Stormwater, groundwater discharge

Rainier Golf & Country Club is located approximately 1,500 feet southwest of the LDW. The property is bordered by S 107th Street to the north, Des Moines Memorial Drive and 20th Avenue S to the east, Glendale Way S to the south, and 14th Avenue S to the west. Residential properties surround the golf course (Figure 8).

Historical and Current Operations

Rainier Golf & Country Club has operated at this location since 1920. Two gasoline USTs and one diesel UST were historically present at golf course maintenance facility, which is located in the middle of the course. The USTs were installed in 1987 and removed in 1994 (O’Sullivan Omega 1994). Water is diverted from the South Fork of Hamm Creek to supply an ornamental concrete-lined pond on the golf course (King County 2000b).

Stormwater from the facility is conveyed to Hamm Creek and to the storm drain line that runs parallel to Des Moines Memorial Drive S.

Regulatory History

In January 2012, Ecology issued an NFA regarding soil contamination that was discovered when the gasoline and diesel USTs were removed from the property. The contaminated soil had been removed from the property (Ecology 2012a).

Environmental Investigations and Cleanups

In April 1994, the gasoline and diesel USTs were removed from the property. Soil samples collected from the excavated soil were analyzed for petroleum hydrocarbons and contained diesel and gasoline concentrations of 16,000 mg/kg and 1,030 mg/kg, respectively. Additional excavation of the UST pits was performed to remove contaminated soil. Confirmation samples indicated that all soil with diesel and gasoline concentrations above the 1990 MTCA cleanup level of 200 mg/kg had been removed. Groundwater was not encountered (O'Sullivan Omega 1994).

Potential for Sediment Recontamination

The potential for sediment contamination associated with this property is summarized below:

- Stormwater runoff from the property is conveyed to Hamm Creek South Fork and the storm drain line that runs parallel to Des Moines Memorial Drive S. USACE has identified Rainier Golf & Country Club as a potential source of the pesticides, insecticides, and fungicides in Hamm Creek South Fork (USACE 1998). Pesticides DDD, DDE, and DDT have been detected in LDW sediments adjacent to the Restoration Areas source control area.
- Soil contaminated by petroleum hydrocarbons due to leaking USTs was removed from the property and Ecology has issued an NFA. The golf course has been identified as a potential source of pesticides, insecticides, and fungicides to Hamm Creek South Fork by USACE; these contaminants may be present in soil and groundwater beneath the property. Groundwater beneath the property may discharge to Hamm Creek.

Source Control Actions

Information needed to assess the potential for sediment recontamination associated with current or historical operations at this facility was summarized in the Restoration Areas Data Gaps Report (SAIC 2013). The following source control actions will be conducted to fill the identified data gaps and reduce the potential for recontamination of sediments:

- Ecology will request additional information from Rainier Golf & Country Club regarding the use of pesticides, insecticides and fungicides at the property to determine if current or historical golf course operations represent a potential source of contaminants to LDW sediments.

3.3.2 Puget Sound Plumbing & Heating

Current Operations	Heating, ventilation, and air-conditioning and plumbing services
Historical Operations	Fuel service station
Tax Parcel No.	0985000400
Address	11803 Des Moines Memorial Drive S, Burien 98168
Facility/Site ID	53457146: Auto Site Automotive
Chemicals of Concern	Unknown
Media Affected	Stormwater

Puget Sound Plumbing & Heating currently operates at parcel 0400. The property is bordered by Des Moines Memorial Drive to the east, S 118th Street, a 7-Eleven store and Rainier Golf & Country Club to the north, an apartment building to the west, and a residential property to the south (Figure 9).

Historical Operations

A Shell Oil service station operated at the property from 1962 to 1974. In 1974, the Benson family purchased the property. The property was then leased to several automotive repair businesses (Pinnacle GeoSciences 2008). The Benson family sold the property to the current property owner in March 2010.

The historical service station had fueling islands in the eastern portion of the property and two USTs located at the northeast corner of the property. Features of the historical automotive repair businesses included two underground hydraulic hoists and a floor sump that were installed in the facility building. A waste oil aboveground storage tank (AST) was present on the east side of the building. Drums of waste petroleum products were stored on the south side of the building. Two 500-gallon USTs used for waste oil and heating oil were installed at the northwest corner of the building (Pinnacle GeoSciences 2008).

Current Operations

Puget Sound Plumbing & Heating is a heating, ventilation, and air-conditioning (HVAC) and plumbing services company. The company offers services such as drain cleaning, sewer line service, and repair and replacement of water heaters, toilets, and furnaces (Puget Sound Plumbing and Heating 2013). The company does not appear to manufacture any parts or equipment related to the HVAC and plumbing services.

A heating oil AST is present on the north side of the building (Pinnacle GeoSciences 2008).

Regulatory History

In January 2009, Ecology entered the property into the VCP. The VCP ID number was NW2113 (Ecology 2009a).

Following environmental cleanup activities, Ecology issued an NFA determination in March 2009 for soil contamination related to former leaking USTs (Ecology 2009b).

Environmental Investigations and Cleanups

Two environmental investigations have been performed at the Puget Sound Plumbing and Heating property. Approximately 300 tons of soil contaminated by petroleum hydrocarbons and metals were removed from the property. Concentrations of petroleum hydrocarbons and metals remaining in soil were below MTCA Method A cleanup levels (SAIC 2013).

Potential for Sediment Recontamination

The potential for sediment contamination associated with this property is summarized below:

- The current operations performed by Puget Sound Plumbing & Heating have not been evaluated by King County or Ecology for compliance with source control BMPs.
- Previous environmental investigations and cleanups indicate that gasoline-range hydrocarbons and metals remain in soil beneath the property at low concentrations. Groundwater does not appear to be contaminated by petroleum hydrocarbons, but has not been tested for metals. Given the low concentrations of metals in soil, it is unlikely that metals have leached to groundwater. The property is approximately 3,200 feet southwest of the LDW (Pinnacle GeoSciences 2008). The potential for sediment recontamination via this pathway is very low.

Source Control Actions

Information needed to assess the potential for sediment recontamination associated with current or historical operations at this facility was summarized in the Restoration Areas Data Gaps Report (SAIC 2013). The following source control actions will be conducted to fill the identified data gaps and reduce the potential for recontamination of sediments:

- Ecology or King County will perform a source control inspection at the facility to determine if current operations at the property represent a potential source of contaminants to stormwater.

4.0 Monitoring

Monitoring efforts by SPU, Ecology, and King County will continue to assist in identifying and tracing ongoing sources of COCs present in LDW sediments or in upland media. This information will be used to focus source control efforts on specific problem areas within the Restoration Areas source control area and to track the progress of the source control program. The following types of samples will be collected:

- In-line sediment trap samples from storm drain systems,
- Onsite catch basin sediment samples, and
- Soil and groundwater samples as necessary.

If monitoring data indicate the presence of additional sources that could result in recontamination of sediments associated with the Restoration Areas source control area, then Ecology will identify source control activities as appropriate.

Because source control is an iterative process, monitoring is necessary to identify trends in concentrations of COCs. Monitoring is anticipated to continue for some years. Any decisions to discontinue monitoring will be made jointly by Ecology and EPA, based on the best available information. At this time, Ecology plans to review the progress and data associated with source control action items for each SCAP at least annually, and summarize this information in the LDW Source Control Status Reports, which are scheduled for publication periodically. In addition, Ecology may prepare Technical Memoranda to update the Data Gaps Reports and SCAPs, as needed.

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5.0 Tracking and Reporting of Source Control Activities

Ecology is the lead for tracking, documenting, and reporting the status of source control to EPA and the public. Each agency involved in source control will document its source control activities and provide regular updates to Ecology. Ecology will prepare periodic LDW Source Control Status Reports that summarize recent activities for each source control area and the overall status of source control in the LDW.

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6.0 References

- AECOM. 2012. Final Feasibility Study, Lower Duwamish Waterway, Seattle, Washington. Prepared by AECOM for the Lower Duwamish Waterway Group. October 31, 2012.
- BNY Mellon (BNY Mellon Wealth Management). 2009. Letter from Elizabeth Parrott Stultz, BNY Mellon, to Claire Hong, USEPA. Re: Request for Information Pursuant to Section 104(e) of CERCLA for the Lower Duwamish Waterway Superfund Site, Seattle, Washington, respondent: Representative of Mellon Trust of Washington, now known as BNY Mellon N.A. – Trust for Giuseppe and Assunta Desimone, Site: Lower Duwamish Waterway, Seattle, Washington. September 2, 2009.
- Cargill. 2013. E-mail from Dan Cargill, Ecology, to Megan Gay, SAIC. Re: Restoration Areas – Questions. April 8, 2013.
- Cordell et al. 2001. Biological Monitoring at Duwamish River Coastal America Restoration and Reference Sites: A Seven-Year Retrospective. Prepared by J.R. Cordell, L.M. Tear, and K. Jensen, Wetland Ecosystem Team, University of Washington, School of Aquatic and Fishery Sciences. December 2001.
- Cordell et al. 2008. Fish and Invertebrates at a Wetland Restoration Site in the Duwamish River Estuary, Seattle, Washington, Results of Biological Monitoring at Turning Basin Number Three, 1999-2007. Prepared by Jeffery R. Cordell, Jason Toft, Elizabeth Armbrust, Wetland Ecosystem Team, University of Washington, School of Aquatic and Fishery Sciences. Prepared for the Port of Seattle. December 2008.
- Cordell and Toft. 2012. 2010 Invertebrate Monitoring at Duwamish Waterway Restoration Sites: Hamm Creek, Herring's House, Northwind's Weir, and Kenco Marine. Prepared by Jeffrey R. Cordell and Jason Toft, Wetland Ecosystem Team, University of Washington, School of Aquatic and Fishery Sciences. Prepared for the United States Fish and Wildlife Service. March 2012.
- Crowley. 2013. Email from Allison Crowley, Seattle City Light, to Dan Cargill, Ecology. Subject: FW: DRAFT Data Gaps Report for RM 4.2 to 5.8 West (Restoration Areas), sampling activities at the Duwamish Substation. June 12, 2013.
- E&E (Ecology & Environment, Inc.). 2009. Technical Memorandum from Mark Longtine, E&E, to Brad Helland, Ecology. Re: Final Report, Duwamish River Sediment Sampling and Analysis, Lower Duwamish Waterway Risk Assessment Technical Assistance. June 30, 2009.
- Ecology. 2004. Lower Duwamish Waterway Source Control Strategy. Publication No. 04-09-043. Prepared by Washington State Department of Ecology, Northwest Regional Office, Toxics Cleanup Program. January 2004.

- Ecology. 2007. Lower Duwamish Waterway Source Control Status Report, 2003 to June 2007. Publication No. 07-09-064. Prepared by Washington State Department of Ecology, Northwest Regional Office, Toxics Cleanup Program. July 2007.
- Ecology. 2008a. Lower Duwamish Waterway Source Control Status Report, July 2007 to March 2008. Publication No. 08-09-063. Prepared by Washington State Department of Ecology, Northwest Regional Office, Toxics Cleanup Program. May 2008.
- Ecology. 2008b. Lower Duwamish Waterway Source Control Status Report, April 2008 to August 2008. Publication No. 08-09-068. Prepared by Washington State Department of Ecology, Northwest Regional Office, Toxics Cleanup Program. October 2008.
- Ecology. 2009a. Letter from Sara Nied, Ecology, to Greta Benson, Benson Property. Re: Request for Review: Independent Remedial Action, Auto Site Automotive AKA Benson Property, 11803 Des Moines Memorial Drive South, Seattle, WA. January 27, 2009.
- Ecology. 2009b. Letter from Libby S. Goldstein, Ecology, to Greta Benson, Benson Property. Re: No Further Action at the following site: Site name: Auto Site Automotive, Site Address: 11803 Des Moines Memorial Drive South, Seattle, WA 98168, Facility/Site No.: 53457146, VCP Project No.: NW2113. March 23, 2009.
- Ecology. 2009c. Lower Duwamish Waterway, Source Control Status Report, September 2008 through June 2009. Publication No. 09-09-183. Prepared by Washington State Department of Ecology, Northwest Regional Office, Toxics Cleanup Program. August 2009.
- Ecology. 2011a. Lower Duwamish Waterway Source Control Status Report, July 2009 through September 2010. Publication No. 11-09-169. Prepared by Washington State Department of Ecology, Northwest Regional Office, Toxics Cleanup Program. August 2011.
- Ecology. 2011b. Letter from Donovan Gray, Ecology, to Rick Sudduth, Seattle Processing & Distribution Center, United States Postal Service. RE: Notification of Compliance Achieved. September 27, 2011.
- Ecology. 2012a. Letter from Russ Olsen, Ecology, to Property Owner, Rainier Golf & Country Club. Re: No Further Action (NFA) Determination associated with Leaking Underground Storage Tank (LUST) Site: Site Name: Rainier Golf & Country Club, Property Address: 1856 S 112th, Seattle, WA 98168, Facility/Site No: 78215825, LUST ID: 5184. January 11, 2012.
- Ecology. 2012b. Lower Duwamish Waterway, Source Control Status Report, October 2010 through December 2011. Publication No. 12-09-131. Prepared by Washington State Department of Ecology, Northwest Regional Office, Toxics Cleanup Program. July 2012.
- Ecology. 2012c. Lower Duwamish Waterway Source Control Strategy. Draft Final. Prepared by Washington State Department of Ecology Toxics Cleanup Program and Water Quality Program. Revised December 2012.

- Ecology. 2013. Lower Duwamish Waterway Source Control Status Report, January 2012 through December 2012. Prepared by Washington State Department of Ecology, Northwest Regional Office, Toxics Cleanup Program. June 2013.
- Ecology and King County. 2011. Control of Toxic Chemicals in Puget Sound: Assessment of Selected Toxic Chemicals in the Puget Sound Basin, 2007-2011. Washington State Department of Ecology, Olympia, WA and King County Department of Natural Resources, Seattle, WA. Ecology Publication No. 11-03-055. 2011.
- EPA and Ecology. 2002. Lower Duwamish Waterway Site Memorandum of Understanding between the United States Environmental Protection Agency and the Washington State Department of Ecology. April 2002.
- EPA and Ecology. 2004. Lower Duwamish Waterway Site Memorandum of Understanding between the United States Environmental Protection Agency and the Washington State Department of Ecology. April 2004.
- Geotech Consultants (Geotech Consultants, Inc.). 1995. Phase 1 Environmental Assessment, Building 251, South 102nd Street and West Marginal Way South, Tukwila, Washington. Prepared for The Sumitomo Bank. December 1, 1995.
- Hart Crowser (Hart Crowser Associates Inc.). 1985. Letter from John E. Zipper, Philip A. Spadaro and Matthew G. Dalton, Hart Crowser, to Phillip E. Gladfelter, PACCAR. Re: Site Reconnaissance Observations, Leased Property near Boeing Developmental Center. November 14, 1985.
- Hart Crowser. 2012. Lower Duwamish Waterway, Bank Sampling Summary Report, Seattle, Washington. Prepared for Washington State Department of Ecology. March 13, 2012.
- Harter and Rollins (Thomas Harter and Larry Rollins). 2008. Watersheds, Groundwater and Drinking Water: A Practical Guide. University of California (System) Division of Agriculture and Natural Resources. 2008.
- Herrera (Herrera Environmental Consultants). 1994. South 96th Street Water Quality Engineering Report, Nonpoint Source Pollution Controls for the Hamm Creek Watershed. Prepared by Herrera Environmental Consultants for King County Surface Water Management Division. April 1994.
- HWA GeoSciences (HWA Geosciences Inc.). 2006. Phase II Environmental Site Assessment, Duwamish Substation, Tax Parcel #5624200950, 10000 West Marginal Way South. Prepared for Seattle Fleets & Facilities. May 12, 2006.
- ICF Kaiser (ICF Kaiser Engineers, Inc.). 1995. Hazardous Materials Investigation at the Oxbow Corporate Park, Tukwila, Washington. Prepared for the United States Postal Service, Major Facilities Office. October 26, 1995.

- King County. 1999. King County Combined Sewer Overflow Water Quality Assessment for the Duwamish River and Elliott Bay. Volume 1: Overview and Interpretation, plus appendices. King County Department of Natural Resources, Seattle, WA. February 1999.
- King County. 2000a. News Release - Salmon using newly restored Hamm Creek channel. Retrieved from <http://your.kingcounty.gov/exec/news/2000/111400.htm> on January 31, 2013. November 14, 2000.
- King County. 2000b. Habitat Limiting Factors and Reconnaissance Assessment Report. Green/Duwamish and Central Puget Sound Watersheds (Water Resource Inventory Area 9 and Vashon Island). Volume II. December 2000.
- King County. 2007. Combined Sewer Overflow Control Program, 2006-2007 Annual Report. October 2007.
- KTA (KTA Associates, Inc.). 2012. Memorandum from Ken Taylor, KTA, to Joe Roberto, USEPA. Re: Report – First Round of Duwamish Sediment Sampling – City of Tukwila. January 4, 2012.
- NOAA (National Oceanic and Atmospheric Administration). 1998. Duwamish Waterway Sediment Characterization Study Report. As cited in Windward 2003b.
- NOAA. 2000. Environmental Assessment for Turning Basin #3 Aquatic Habitat Restoration Project. 2000.
- O’Sullivan Omega. 1994. UST Closure Report, Rainier Golf and Country Club, 856 South 112th Street, Seattle, Washington 98168. Prepared for Ron Proctor, Rainier Golf and Country Club. May 16, 1994.
- PACCAR. 1981. Letter from Kenneth R. Brownstein, PACCAR, to Walter Lowe, Atlas Building Wreckers. Regarding the Notice of and Order of Civil Penalty No. 5134 from the Puget Sound Air Pollution Control Agency. June 19, 1981.
- PACCAR. 1985. Letter from Phillip E. Gladfelter, PACCAR, to Atlas Building Wreckers. Regarding the sublease between PACCAR and Atlas dated March 1, 1979, and PACCAR’s intention to not renew the sublease. September 4, 1985.
- Pinnacle GeoSciences. 2008. Summary Letter, Site Assessment, former Shell Oil Station, 11803 Des Moines Memorial Drive South, Seattle, Washington. Prepared for the Estate of Mary W. Benson. June 27, 2008.
- Puget Sound Plumbing and Heating. 2013. Company website: <http://pugetsoundplumbing.com>. Accessed on May 10, 2013.
- Raven (Raven Systems & Research, Inc.). 1985. Seattle City Light Work Order #85-3, PCB Soil Testing at Three City Light Substations: Bothell, Duwamish, and South. Prepared for Seattle City Light, Office of Environmental Affairs. March 28, 1985.

- Raven (Raven Services Corporation). 1988. Seattle City Light Work Order #88-11, PCB Testing at Duwamish Substation and a Private Residence. Prepared for Seattle City Light. July 28, 1988.
- Raven. 1990. Seattle City Light Work Order #90-A (Contingency) Duwamish Substation Breaker Pads Soil Testing. Prepared for Seattle City Light. April 20, 1990.
- SAIC (Science Applications International Corporation). 2006. Soil and Groundwater Screening Criteria, Source Control Action Plan, Slip 4, Lower Duwamish Waterway. Prepared for the Washington State Department of Ecology. August 2006 (Revised February 2007).
- SAIC. 2011. Surface Sediment Sampling at Outfalls in the Lower Duwamish Waterway, Seattle, WA, Data Report. Prepared for the Washington State Department of Ecology, Toxics Cleanup Program. October 2011.
- SAIC. 2013. Lower Duwamish Waterway, RM 4.2 to 5.8 West (Restoration Areas), Summary of Existing Information and Identification of Data Gaps. Prepared for Washington State Department of Ecology, Toxics Cleanup Program. July 2013.
- SCL (Seattle City Light). 1985. Laboratory report to Art Cuplin, Bates Numbers SEA036783-SEA036785. Received March 5, 1985.
- SPU (Seattle Public Utilities). 2010. Seattle Public Utilities Source Control Program for the Lower Duwamish Waterway, December 2010 Progress Report. December 2010.
- SPU. 2011. Letter from Beth Schmoyer, SPU, to Katherine Scott, Ecology, Re: Interagency Agreement C1100067, final project report. December 30, 2011.
- Tanner, C. 1991. Potential Intertidal Habitat Restoration Sites in the Duwamish River Estuary. EPA 910/9-91-050. Prepared for Port of Seattle Engineering Department and U.S. Environmental Protection Agency, Seattle, WA. As cited in Windward 2003b.
- USACE (United States Army Corps of Engineers). 1994. Level 1 Environmental Site Assessment and Recommendations for Further Action. Kenco Marine Inc., Property, Duwamish Turning Basin, King County, WA. As cited in NOAA 2000.
- USACE. 1997a. Sampling & Analysis Plan for the Hamm Creek Restoration Project, Duwamish Turning Basin, Seattle, Washington. Prepared by David Fox, Dredged Material Management Office. April 28, 1997.
- USACE. 1997b. Phase II Site Assessment Kenco Marine, Inc. Duwamish Turning Basin No. 3 Tukwila, WA. As cited in NOAA 2000.
- USACE. 1998. Duwamish River, Turning Basin #3 Section 1135 Ecosystem Restoration and Environmental Assessment Report, King County, Washington. July 1998.

- USEPA (U.S. Environmental Protection Agency). 2002. Principles for Managing Contaminated Sediment Risks at Hazardous Waste Sites. OSWER Directive 9285.6-08. U.S. Environmental Protection Agency. February 12, 2002.
- USEPA. 2009. Letter from Sheila Eckman, USEPA, to Nancy Pellegrino, Mellon Trust of Washington. Re: Request for Information Pursuant to Section 104(e) of CERCLA for the Lower Duwamish Waterway Superfund Site, Seattle, Washington. April 23, 2009.
- USEPA. 2013. Proposed Plan, Lower Duwamish Waterway Superfund Site. U.S. Environmental Protection Agency, Region 10. February 28, 2013.
- USFWS (U.S. Fish and Wildlife Service). 2000. Intertidal Habitat Projects Monitoring Program, Elliott Bay/Duwamish Restoration Program. Panel Publication 23. Prepared for the Elliott Bay/Duwamish Restoration Program Panel by the USFWS, Western Washington Office. March 2000.
- USFWS. 2008. Elliott Bay/Duwamish Restoration Program: Intertidal Habitat Projects Monitoring Report, 2007 Report. Prepared by USFWS Western Washington Fish and Wildlife Office. July 2008.
- USFWS. 2012. Elliott Bay/Duwamish Restoration Program: Intertidal Habitat Projects Monitoring Report, 2010 Report. Prepared by USFWS Western Washington Fish and Wildlife Office. March 2012.
- Weston (Roy F. Weston, Inc.). 1990. Baseline Soil and Groundwater Quality Assessment, Seattle City Light Long-Term Lease Option, Seattle Washington. Prepared for Boeing Environmental Affairs, Seattle, Washington. May 23, 1990.
- Weston. 1999. Site inspection report: Lower Duwamish River, RM 2.5-11.5, Volume 1 – Report and appendices. Prepared for U.S. Environmental Protection Agency Region 10, Seattle, WA. April 1999.
- Windward (Windward Environmental LLC). 2003a. Lower Duwamish Waterway Remedial Investigation, Task 5: Identification of Candidate Sites for Early Action, Technical Memorandum: Data Analysis and Candidate Site Identification, Final. Prepared for the Lower Duwamish Waterway Group. June 12, 2003.
- Windward. 2003b. Lower Duwamish Waterway Remedial Investigation, Phase 1 Remedial Investigation Report, Final. Prepared for the Lower Duwamish Waterway Group. July 3, 2003.
- Windward. 2004. Lower Duwamish Waterway Remedial Investigation, Data Report: Survey and Sampling of Lower Duwamish Waterway Seeps, Final. Prepared for the Lower Duwamish Waterway Group. November 18, 2004.
- Windward. 2005a. Lower Duwamish Water Remedial Investigation, Data Report: Chemical Analyses of Benthic Invertebrate and Clam Tissue Samples and Co-located Sediment Samples. Prepared for the Lower Duwamish Waterway Group. May 20, 2005.

Windward. 2005b. Lower Duwamish Waterway Remedial Investigation, Data Report: Round 1 Surface Sediment Sampling for Chemical Analyses and Toxicity Testing Final. Prepared for the Lower Duwamish Waterway Group. October 21, 2005.

Windward. 2005c. Lower Duwamish Waterway Remedial Investigation, Data Report: Round 2 Surface Sediment Sampling for Chemical Analyses and Toxicity Testing Final. Prepared for the Lower Duwamish Waterway Group. December 9, 2005.

Windward. 2007. Phase 2 Remedial Investigation Report, Draft. Prepared by Windward Environmental LLC for the Lower Duwamish Waterway Group. November 5, 2007.

Windward. 2010a. Lower Duwamish Waterway Remedial Investigation. Technical Memorandum: 2009/2010 Surface Sediment Sampling Results for Dioxins and Furans and Other Chemicals. Prepared by Windward Environmental LLC for the U.S. Environmental Protection Agency and the Washington State Department of Ecology. May 21, 2010.

Windward. 2010b. Lower Duwamish Waterway Remedial Investigation Report. Final. Prepared by Windward Environmental LLC for the Lower Duwamish Waterway Group. July 9, 2010.

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Tables

**Table 1a
Facilities within the Restoration Areas Source Control Area**

Property Name	Facility Name	FSID	Alternate Names	Address	City	Zip	CSCSL	CNE	LUST	UST	VCP	NFA	Active EPA ID	Inspected	
Adjacent Properties															
Hamm Creek Restoration Area	Same	None		10108 West Marginal Place S	Seattle	98108									
Seattle City Light Power Substation	Same	None		10000 & 10030 West Marginal Place S	Seattle	98108									
Kenco Marine Restoration Area	Same	None		None											
Turning Basin 3 Restoration Area	Seattle City Light Duwamish TR	96665547		10100 & 10108 West Marginal Place S	Seattle	98168							●		
Fremont Property	Graham Trucking	54756774	AJF Trailer Leasing, Bidaboo Auctions, McKenna Construction, Pamco Construction	10108 West Marginal Place S	Seattle	98108							●		
	J&H Express Inc.	22587		10160 West Marginal Place S	Tukwila	98168									●
	RENU	20607		2876 S 102ND ST	Tukwila	98168									●
	Xtra Lease Seattle Branch	34451867		10180 West Marginal Place S	Seattle	98168								●	
Boeing Parking Lot Property	Same	None		2601 S 102nd Street	Seattle	98168									
Thales Avionics	Same	1453860	Riverfront Technical Park	2811 S 102nd Street	Tukwila	98168		●						●	
U.S. Postal Service Distribution Center	Atlas Demolition	2048	Resources, Inc.	10900 27th Avenue S	Seattle	98168	●					●			
	Boeing D&SG Oxbow Site	58835952	Boeing Military Planes Oxbo, Oxbow	10700 West Marginal Way S	Seattle	98168							●		
	USPS Distribution Center	76328824	Corporate Park	10700 27 th Avenue S	Tukwila	98168								●	
North Wind's Weir	North Wind's Weir Intertidal Restoration	5584231	Cecil Moses Park	112 th Street & Pacific Highway S	Tukwila	98168	●				●				
Hamm Creek Storm Drain Basin															
7-Eleven Food Store	7-Eleven Food Store 230723931L	43565732		11657 Des Moines Way S	Seattle	98168				●			●	●	
Aussie Repair & Machine Shop Properties	Aussie Machine	20863		12446 Des Moines Memorial Drive S	Burien	98168		●						●	
	Goldco	54287319	Boulevard Auto Service, Complete Auto Repair, Joe's Aussie Repair (former location)	12459 Des Moines Way S	Burien	98168			●	●					
	Triple V Auto Repair	None		12459 Des Moines Way S	Burien	98168								●	
	Joies Aussie Repair	7672	Cascade Transmission Service	12454 Des Moines Memorial Drive	Burien	98168								●	
	Mike's Aussie Machine Shop	2334	Armex, Phyllis E Armijo, Armijo Property, Aussie Machine Shop,	12441 Des Moines Memorial Drive	Burien	98168	●			●		●		●	
	Pacific Auto Truck Repair	None	Boulevard Auto Parts, Pacific Truck Repair	12441 Des Moines Memorial Drive	Au	98168								●	
	Preet Auto Body	None		12441 Des Moines Memorial Drive	Burien	98168								●	
Puget Sound Plumbing and Heating	Former Auto Site Automotive	53457146	Benson Property, Former Shell Service Station	11803 Des Moines Memorial Drive S	Seattle	98168			●	●	●		●		
Connect Motorsports	Former Chevron 306536	66498524	Glendale Auto Repair, UNOCAL 6248	11845 Des Moines Way S	Seattle	98168			●	●			●		
Glen Acres Golf Course	Glen Acres Home Association	18369741		1000 S 112th Street	Seattle	98168			●	●					
Glendale Heating & Air Conditioning	Same	42321723	Glendale Oil Co Inc.	12462 Des Moines Way S	Seattle	98168				●			●	●	
HSD Highline Boulevard Park Warehouse	Same	82131388		12833 20th Avenue S	Burien	98168							●		
Jones Property	Same	2491		12441 20th Avenue S	Burien	98168	●					●			
Chavez Auto Repair	Joseph B Meder	13389849		12025 Des Moines Way S	Seattle	98168				●					
McCall Oil	McCall Oil Seattle Home Heating	7747737		11441 Des Moines Way	Burien	98168			●	●		●			
Moimoi Property	Same	95231135		10118 Des Moines Memorial Drive S	Seattle	98168	●								
Pacific Underwriters Corp	Same	9386197		12611 Des Moines Memorial Drive	Seattle	98168				●					
Rainier Golf & Country Club	Same	78215825		1856 S 112th Street	Seattle	98168			●	●					
Big Picture High School	US DOJ DEA Kent Training	73123528		2450 S 142nd Street	Burien	98168							●		
Elliott Paint Company, Inc.	Same	None		11206 & 11210 Des Moines Memorial Drive S	Seattle	98168									
India Pentacostal Assembly	Same	None		1443 S 99th Street	Seattle	98108								●	
Light House Ministries	Same	None		9820 Des Moines Memorial Drive S	Seattle	98108								●	
Park Des Moines Apartments	Same	None		10002 Des Moines Memorial Drive S	Seattle	98168								●	
Renacer Youth Treatment Center	Same	None		10001 Des Moines Memorial Drive S	Seattle	98168								●	
Sunrise Terrace Condominiums	Same	None		10455 Des Moines Memorial Drive S	Seattle	98168								●	
Vinh Apartments	Same	None		10007 17th Place S	Seattle	98168								●	

Bold type indicates the name of the facility operating at the parcel(s) as of May 2013.

FSID - Facility/Site Identification Number. The FSID listed in the table is for the facility listed under "Facility Name".

CSCSL - Contaminated and Suspected Contaminated Sites List

CNE - Conditional No Exposure

LUST - Leaking Underground Storage Tank

UST - Underground Storage Tank

VCP - Voluntary Cleanup Program

NFA - No Further Action

EPA - Environmental Protection Agency

Table 1b
Property Information for Facilities
Within the Restoration Areas Source Control Area

Facility Name	Parcel	Address	City	Zip	Acreage (acres, sq ft)	Buildings (year built, sq ft)	Property Owner
Adjacent Properties							
Hamm Creek Restoration Area	5624200931	10108 West Marginal Place S	Seattle	98108	16.45 acres (716,740 sq ft)	None	Seattle City Light
Seattle City Light Power Substation	5624200930	10000 West Marginal Place S	Seattle	98108	12.09 acres (526,443 sq ft)	Substation (1955, 1,500 sq ft)	Seattle City Light
	5624200950	10030 West Marginal Place S	Seattle	98108	2.69 acres (116,960 sq ft)	None	
	5624200951	None	Seattle	98108	0.21 acre (9,000 sq ft)	None	
Kenco Marine Restoration Area	5624200970	None	Seattle	98108	0.83 acre (36,025 sq ft)	None	Muckleshoot Indian Tribe
Turning Basin 3 Restoration Area	0003400013	None	Seattle	98168	1.28 acres (55,568 sq ft)	None	Port of Seattle
	0423049187	None	Seattle	98168	2.0 acres (86,967 sq ft)	None	
Fremont Property	0423049001	None	Tukwila	98168	4.58 acres (199,396 sq ft)	None	Mellon Desimone Trust
	0423049073	10180 West Marginal Place S	Tukwila	98108	6.28 acres (273,348 sq ft)	Storage Shed (1950, 4,800 sq ft)	
Boeing Parking Lot Property	0423049150	2601 S 102nd Street	Seattle	98168	34.53 acres (1,504,264 sq ft)	Fitness Center (1987, 52,500 sq ft)	Desimone Trust Oxbow 2601
Thales Avionics	0423049190	2811 S 102nd Street	Tukwila	98168	9.07 acres (395,016 sq ft)	Office Building (1987, 175,068 sq ft)	Mellon Trust of WA
U.S. Postal Service Distribution Center	0423049057	10800 West Marginal Place S	Tukwila	98168	9057: 4.79 acres (208,640 sq ft)	None	Desimone Irrevocable Trust
	0423049130	None	Tukwila	98168	18.89 acres (822,899 sq ft)	None	Seattle City Light
	0423049186	10600 West Marginal Way S	Tukwila	98168	14.12 acres (615, 107 sq ft)	Light Industrial Warehouse (1987, 325,000 sq ft)	Mellon Trust of WA
	0423049189	10600 West Marginal Way S	Tukwila	98168	8.93 acres (388,805 sq ft)		Desimone Irrevocable Trust
North Wind's Weir	2843800005	112 th Street and Pacific Highway S	Tukwila	98168	2.64 acres (115,135 sq ft)	None	King County Parks
Upland Properties							
7-Eleven Food Store	0985000384	11657 Des Moines Way S	Seattle	98168	0.56 acre (24,589 sq ft)	Convenience Market (1980, 2,560 sq ft)	The Southland Corporation

**Table 1b
Property Information for Facilities
Within the Restoration Areas Source Control Area**

Facility Name	Parcel	Address	City	Zip	Acreage (acres, sq ft)	Buildings (year built, sq ft)	Property Owner
Aussie Repair & Machine Shop Properties	0985001075	12441 Des Moines Memorial Drive	Burien	98168	0.53 acre (23,035 sq ft)	Auto Parts Retail/Warehouse (1975, 3,850 sq ft)	Singh Tarlochan & Gill Chamka
	0985001094	12459 Des Moines WAY S	Burien	98168	0.43 acre (18,784 sq ft)	Garage Service Repair (1920, 1,016 sq ft) Residence (1942, 874 sq ft)	Randy Van
	0985001205	12446 Des Moines Memorial Drive	Burien	98168	0.26 acre (11,201 sq ft)	Garage (1949, 1,650 sq ft) Storage Bldg (1979, 2,400 sq ft)	Hoefler Des Moines Way Properties LLC
	0985001210	12454 Des Moines Memorial Drive	Burien	98168	0.25 acre (11,050 sq ft)	Light Industrial Bldg (1950, 3,807 sq ft)	AW Elmer
Big Picture High School	3598600006	2450 S 142nd Street	Seattle	98168	19.22 acres (837,308 sqft)	Elementary School (1975, 2,840 sq ft) Elementary School (1966, 6,900 sq ft) Elementary School/Auditorium (1960, 76,922 sq ft)	Highline School District 401
Chavez Auto Repair	0985000790	12025 Des Moines Way S	Seattle	98168	0.43 acre (18,830 sq ft)	Garage (1960, 1,032 sq ft)	Joseph B Medler, Jr.
Connect Motorsports	0985000434	11845 Des Moines Way S	Seattle	98166	17,300 sq.ft., 0.40 acres	Service Garage (1970, 1,624 sq ft)	Balbir Shingh & Jaswinder K Gill
Elliott Paint Company, Inc.	0923049070	11206 Des Moines Memorial Drive S	Seattle	98168	0.39 acre (16,870 sq ft)	Apartments (1967, 7,256 sq ft)	EPM LLC
	0923049205	11210 Des Moines Memorial Drive S	Seattle	98168	0.19 acre (8,327 sq ft)	Garage (1946, 5,128 sq ft)	
Glen Acres Golf Course	0523049022	1000 S 112th Street	Seattle	98168	13.39 acres (583,268 sq ft)	Clubhouse (1926, 19,088 sq ft) Equipment Shop Bldg (1963, 1,798 sq ft) Retail Store (1968, 2,683 sq ft) Restroom Bldg (1963, 693 sq ft)	Glen Acres Homeowners Association
Glendale Heating & Air Conditioning	0985001215	12462 Des Moines Way S	Seattle	98168	0.25 acre (10,866 sq ft)	Office/Garage (1957, 1,670 sq ft)	Glendale Oil Co Inc.
HSD Highline Boulevard Park Warehouse	1623049076	12833 20th Avenue S	Seattle	98168	3.96 acres (172,349 sq ft)	None	Highline School District 401
India Pentacostal Assembly	5624200452	1443 S 99th Street	Seattle	98108	0.33 acre (14,200 sq ft)	Office Building (1990, 3,160 sq.ft.)	India Pentecostal Assembly of Seattle
Jones Property	0985001305	12441 20th Avenue S	Burien	98168	0.37 acre (16,284 sq ft)	Single Family Residence (1930, 960 sq ft)	Federal Home Loan Mortgage
Light House Ministries	5624200431	9820 Des Moines Memorial Drive S	Seattle	98108	0.62 acre (27,000 sq ft)	Vacant	Union Gospel Mission

**Table 1b
Property Information for Facilities
Within the Restoration Areas Source Control Area**

Facility Name	Parcel	Address	City	Zip	Acreage (acres, sq ft)	Buildings (year built, sq ft)	Property Owner
McCall Oil Seattle Home Heating	0923049224	11441 Des Moines Way S	Burien	98168	0.40 acre (17,415 sq ft)	Vacant	James H & Pamela Thomson
Moimoi Property	5624200760	10118 Des Moines Memorial Drive S	Seattle	98168	0.44 acre (18,974 sq ft)	Vacant	10118 LLC
Pacific Underwriters Corp	0985001125	12611 Des Moines Memorial Drive S	Seattle	98168	0.34 acre (14,595 sq ft)	Office Building (1979, 4,730 sq ft)	Pacific Underwriters Corp
Park Des Moines Apartments	5624200436	10002 Des Moines Memorial Drive S	Seattle	98168	0.70 acre (30,580 sq ft)	Apartment Bldg (1967, 23,700 sq ft)	Yaota Teung
Puget Sound Plumbing and Heating	0985000400	11803 Des Moines Memorial Drive S	Seattle	98168	0.48 acre (10,752 sq ft)	Garage, Service Repair (1962, 2,500 sq ft)	WD Buckingham Properties LLC
Rainier Golf & Country Club	0985000005	1856 S 112th Street	Seattle	98168	107.86 acres (4,698,279 sq ft)	Clubhouse/Storage (1923, 25,984 sq ft) Snack Bar (1965, 1,385 sq ft) Maintenance Bldg (2008, 8,480 sq ft) Locker Rooms/Storage (1957, 1,422 sq ft) Cart Barn (1986, 2,000 sq ft) Maintenance/Storage Bldg (2008, 2,240 sq ft)	Rainier Golf & Country Club
Renacer Youth Treatment Center	5624200415	10001 Des Moines Memorial Drive S	Seattle	98168	2.80 acre (121,912 sq ft)	Rehab Center (1980, 17,200 sq ft)	Sea-Mar Community Health Center
Sunrise Terrace Condominiums	8123900000	10455 Des Moines Memorial Drive S	Seattle	98168	3.64 acres (158,730 sq ft)	3 Condominium Bldgs (1969, sq ft not listed)	Sunrise Terrace Condominiums
Vinh Apartments	5624200774	10007 17th Place S	Seattle	98168	0.28 acre (12,308 sq ft)	Apartment Bldg (1967, 5,576 sq ft)	Craig Dang Le & Thi Ngu

**Table 2
Sediment Samples Collected Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Collection Depth (feet)	Analyses						Source	
				PCBs	SVOCs	Metals	Dioxins/ Furans	Organo- metals	Pesticides		VOCs
Norfolk Cleanup 1	NFK14	8/19/1994	Surface	●	●	●			●		Windward 2010b
	NFK15	8/22/1994		●	●	●			●		
	NFK16	8/22/1994		●	●	●			●		
	NFK17	8/22/1994				● ^a					
	NFK18	8/22/1994				● ^a					
KC Water Quality Assessment	WQAHAMM	5/15/1997	Surface	●	●	●					Windward 2003
	WQAHAMM	5/20/1997		●	●	●					
	WQAHAMM	5/28/1997		●	●	●					
	WQAHAMM	6/3/1997		●	●	●					
NOAA Site Characterization	CH0003	10/9/1997	Surface	●							Windward 2003
	EIT046	10/14/1997		●							
	EST103	10/14/1997		●							
	EST108	10/14/1997		●							
	WIT247	10/1/1997		●							
	WIT248	10/2/1997		●							
	WIT249	10/1/1997		●							
	WIT250	10/1/1997		●							
	WIT251	9/29/1997		●							
	WIT252	9/29/1997		●							
	WIT254	10/17/1997		●							
	WIT255	9/29/1997		●							
	WIT256	11/13/1997		●							
	WIT257	10/2/1997		●							
	WIT258	10/1/1997		●							
	WIT259	10/1/1997		●							
	WIT260	10/1/1997		●							
	WIT261	10/1/1997		●							
	WST300	10/8/1997		●							
	WST301	10/20/1997		●							
	WST302	10/1/1997		●							
	WST303	10/23/1997		●							
	WST304	10/21/1997		●							
	WST305	10/21/1997		●							
WST306	10/21/1997	●									
WST308	10/1/1997	●									
WST309	10/1/1997	●									
WST310	11/13/1997	●									
WST312	10/23/1997	●									

**Table 2
Sediment Samples Collected Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Collection Depth (feet)	Analyses						Source	
				PCBs	SVOCs	Metals	Dioxins/ Furans	Organo- metals	Pesticides		VOCs
EPA Site Inspection	DR263	8/25/1998	Surface	●	●	●					Windward 2003
	DR264	8/26/1998		●	●	●	●				
	DR265	8/26/1998		●	●	●					
	DR266	8/26/1998		●	●	●		●		●	
	DR267	8/26/1998		●	●	●					
	DR268	8/26/1998		●	●	●					
	DR269	8/26/1998		●	●	●					
	DR270	8/26/1998		●	●	●		●			
	DR273	8/26/1998		●	●	●		●			
	DR274	9/15/1998		●	●	●					
	DR275	9/15/1998		●	●	●					
	DR276	9/15/1998		●	●	●					
	DR285	8/25/1998		●	●	●					
	DR287	8/26/1998		●	●	●					
	DR293	9/14/1998		●	●	●					
	DR294	9/15/1998		●	●	●					
DR295	9/15/1998	●	●	●							
DR296	9/15/1998	●	●	●							
LDWRI-Benthic	B10b	8/19/2004	Surface	●	●	●		●	●	Windward 2010b	
LDWRI-Surface Sediment Round 1	LDW-SS134	1/24/2005	Surface	●	●	●			●	Windward 2010b	
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	Surface	●	●	●	●	●	●		Windward 2010b
	LDW-SS133	3/9/2005		●	●	●		●	●		
	LDW-SS135	3/15/2005		●	●	●					
	LDW-SS136	3/15/2005		●	●	●					
	LDW-SS139	3/9/2005		●	●	●					
	LDW-SS140	3/8/2005		●	●	●			●		
	LDW-SS141	3/15/2005		●	●	●					
	LDW-SS145	3/14/2005		●	●	●					
	LDW-SS146	3/9/2005		●	●	●					
	LDW-SS147	3/9/2005		●	●	●					
	LDW-SS148	3/9/2005		●	●	●					
	LDW-SS149	3/9/2005		●	●	●					
	LDW-SS150	3/9/2005		●	●	●			●		
LDW-SS151	3/15/2005	●	●	●							
LDW-SS152	3/15/2005	●	●	●				●			
LDW Subsurface Sediment 2006	LDW-SC54	2/23/2006	0-2	●	●	●			●	Windward 2007	
	LDW-SC54	2/23/2006	2-4	●	●	●			●		
	LDW-SC56	2/7/2006	0-2	●	●	●					
	LDW-SC56	2/7/2006	2-4	●	●	●					
LDWRI-Surface Sediment Round 3	LDW-SS339	10/3/2006	Surface	●	●	●				Windward 2010b	
	LDW-SS340	10/3/2006		●	●	●					

**Table 2
Sediment Samples Collected Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Collection Depth (feet)	Analyses						Source	
				PCBs	SVOCs	Metals	Dioxins/ Furans	Organo- metals	Pesticides		VOCs
Duwamish River RM 4.9 to 7.4	DR-01	4/28/2008	Surface	●	●	●	●				E&E 2009
	DR-02	4/28/2008		●	●	●	●				
	DR-03	4/28/2008		●	●	●	●				
	DR-04	4/28/2008		●	●	●	●				
	DR-05	4/28/2008		●	●	●	●				
	DR-06	4/28/2008		●	●	●	●				
	DR-07	4/28/2008		●	●	●	●				
	DR-09	4/28/2008		●	●	●	●				
	DR-10	4/28/2008		●	●	●	●				
	DR-11	4/28/2008		●	●	●	●				
	DR-12	4/28/2008		●	●	●	●				
	DRB-112	5/9/2008		●	● ^b	● ^c	●				
	DRB-113	5/9/2008		●	●	●	●				
	DRB-114	5/9/2008		●	●	●	●				
	DRB-115	5/9/2008		●	● ^b	● ^c	●				
	DRB-116	5/9/2008		●	● ^b	● ^c	●				
	DRB-117	5/9/2008		●	● ^b	● ^c	●				
	DRB-118 ^d	5/9/2008									
OR-11	May-08	●	●	●	●						
OR-12	May-08	●	●	●	●						
OS-11	5/2/2008										
OS-12 ^d	5/2/2008										
LDWRI-Dioxin Sampling	LDW-SS544-comp	1/12/2010	Surface	●	● ^b	● ^c	●			Windward 2010a	
	LDW-SS547	1/11/2010	Surface	●	● ^b	● ^c	●				
LDW Outfall Sampling	LDW-SS2098-A	3/4/2011	Surface	●	●	●	●		●	SAIC 2011	
	LDW-SS2098-D	3/4/2011		●	●	●		●			
	LDW-SS2098-U	3/4/2011		●	●	●		●			
	LDW-SS2099-A	3/3/2011		●	●	●	●	●			
	LDW-SS2099-D	3/3/2011		●	●	●		●			
	LDW-SS2099-U	3/3/2011		●	●	●		●			
	LDW-SS2200-A	3/18/2011		●	●	●	●	●			
	LDW-SS2200-D	3/18/2011		●	●	●		●			
	LDW-SS2201-A	3/18/2011		●	●	●	●	●			
	LDW-SS2201-D	3/18/2011		●	●	●		●			
LDW-SS2201-U	3/18/2011	●	●	●		●					

Table 2
Sediment Samples Collected Near the Restoration Areas Source Control Area

Event Name	Location Name	Date Collected	Collection Depth (feet)	Analyses						Source
				PCBs	SVOCs	Metals	Dioxins/ Furans	Organo- metals	Pesticides	

- a - Mercury was the only metal analyzed in this sample.
- b - PAHs were the only SVOCs analyzed in this sample.
- c - Arsenic was the only metal analyzed in this sample.
- d - This sample was analyzed only for total organic carbon and grain size.

PCBs - Polychlorinated biphenyls
 SVOCs - Semi-volatile organic compounds
 VOCs - Volatile organic compounds

Table 3
Chemicals Detected Above Screening Levels in Surface Sediment Samples
Near the Restoration Areas Source Control Area

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
Metals											
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Arsenic	2.58E+02	1.16		57	93	mg/kg DW	4.5	2.8
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Cadmium	6.57E+01	1.16		5.1	6.7	mg/kg DW	13	9.8
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Silver	6.42E+01	1.16		6.1	6.1	mg/kg DW	11	11
PAHs											
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Acenaphthene	3.34E-01	1.16	2.88E+01	16	57	mg/kg OC	1.8	<1
EPA Site Inspection	DR276	9/15/1998	Acenaphthene	2.60E-01	1.51	1.72E+01	16	57	mg/kg OC	1.1	<1
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Benzo(g,h,i)perylene	4.06E-01	1.16	3.50E+01	31	78	mg/kg OC	1.1	<1
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Dibenzo(a,h)anthracene	4.24E-01	1.16	3.66E+01	12	33	mg/kg OC	3.0	1.1
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Dibenzo(a,h)anthracene	4.21E-01	1.86	2.26E+01	12	33	mg/kg OC	1.9	<1
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Fluorene	3.78E-01	1.16	3.26E+01	23	79	mg/kg OC	1.4	<1
Phthalates											
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Butyl benzyl phthalate	4.46E-01 J	1.16	3.84E+01	4.9	64	mg/kg OC	7.8	<1
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Butyl benzyl phthalate	3.67E-01	1.86	1.97E+01	4.9	64	mg/kg OC	4.0	<1
Phenols											
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	2,4-Dimethylphenol	3.05E-01	1.16	2.63E+01	29	29	ug/kg DW	11	11
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	2,4-Dimethylphenol	2.92E-01	1.86	1.57E+01	29	29	ug/kg DW	10	10
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	2-Methylphenol	3.38E-01	1.16	2.91E+01	63	63	ug/kg DW	5.4	5.4
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	2-Methylphenol	3.14E-01	1.86	1.69E+01	63	63	ug/kg DW	5.0	5.0
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	4-Methylphenol	7.09E-01	1.16	6.11E+01	670	670	ug/kg DW	1.1	1.1
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Pentachlorophenol	4.81E-01	1.16	4.15E+01	360	690	ug/kg DW	1.3	<1
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Pentachlorophenol	3.99E-01	1.86	2.15E+01	360	690	ug/kg DW	1.1	<1
Other SVOCs											
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	1,2,4-Trichlorobenzene	3.17E-01	1.86	1.70E+01	0.81	1.8	mg/kg OC	21	9.5
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	1,2,4-Trichlorobenzene	3.10E-01	1.16	2.67E+01	0.81	1.8	mg/kg OC	33	15
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	1,2-Dichlorobenzene	2.90E-01	1.16	2.50E+01	2.3	2.3	mg/kg OC	11	11
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	1,2-Dichlorobenzene	2.48E-01	1.86	1.33E+01	2.3	2.3	mg/kg OC	5.8	5.8
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	1,4-Dichlorobenzene	2.74E-01	1.16	2.36E+01	3.1	9	mg/kg OC	7.6	2.6
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	1,4-Dichlorobenzene	2.45E-01	1.86	1.32E+01	3.1	9	mg/kg OC	4.2	1.5
Duwamish River RM 4.9 to 7.4	DRB-114	5/9/2008	Benzoic acid	3.80E+00 JB	2.18	1.74E+02	650	650	ug/kg DW	5.8	5.8
Duwamish River RM 4.9 to 7.4	DRB-113	5/9/2008	Benzoic acid	3.50E+00 JB	1.9	1.84E+02	650	650	ug/kg DW	5.4	5.4
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Benzoic acid	1.10E+00	1.16	9.48E+01	650	650	ug/kg DW	1.7	1.7
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Benzoic acid	1.04E+00	1.86	5.59E+01	650	650	ug/kg DW	1.6	1.6
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Benzyl alcohol	7.52E-01	1.86	4.04E+01	57	73	ug/kg DW	13	10
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Benzyl alcohol	7.48E-01	1.16	6.45E+01	57	73	ug/kg DW	13	10
LDW Outfall Sampling	LDW-SS2200-D	3/18/2011	Benzyl alcohol	1.50E-01	2.38	6.30E+00	57	73	ug/kg DW	2.6	2.1
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	Benzyl alcohol	1.40E-01	1.7	8.24E+00	57	73	ug/kg DW	2.5	1.9
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	Benzyl alcohol	1.40E-01	2.33	6.01E+00	57	73	ug/kg DW	2.5	1.9

Table 3
Chemicals Detected Above Screening Levels in Surface Sediment Samples
Near the Restoration Areas Source Control Area

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
LDW Outfall Sampling	LDW-SS2201-D	3/18/2011	Benzyl alcohol	1.30E-01	2.58	5.04E+00	57	73	ug/kg DW	2.3	1.8
LDW Outfall Sampling	LDW-SS2099-D	3/3/2011	Benzyl alcohol	1.20E-01 J	4.01	2.99E+00	57	73	ug/kg DW	2.1	1.6
LDW Outfall Sampling	LDW-SS2201-U	3/18/2011	Benzyl alcohol	6.90E-02	1.69	4.08E+00	57	73	ug/kg DW	1.2	<1
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Dibenzofuran	3.86E-01	1.16	3.33E+01	15	58	mg/kg OC	2.2	<1
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Dibenzofuran	2.97E-01	1.86	1.60E+01	15	58	mg/kg OC	1.1	<1
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Hexachlorobenzene	3.63E-01	1.16	3.13E+01	0.38	2.3	mg/kg OC	82	14
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Hexachlorobenzene	3.27E-01	1.86	1.76E+01	0.38	2.3	mg/kg OC	46	7.6
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Hexachlorobutadiene	3.35E-01	1.86	1.80E+01	3.9	6.2	mg/kg OC	4.6	2.9
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Hexachlorobutadiene	3.15E-01	1.16	2.72E+01	3.9	6.2	mg/kg OC	7.0	4.4
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	N-Nitrosodiphenylamine	3.71E-01	1.16	3.20E+01	11	11	mg/kg OC	2.9	2.9
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	N-Nitrosodiphenylamine	2.73E-01	1.86	1.47E+01	11	11	mg/kg OC	1.3	1.3
PCBs											
LDWRI-Surface Sediment Round 2	LDW-SS148	3/9/2005	PCBs (total calc'd)	5.20E-01	2.55	2.04E+01	12	65	mg/kg OC	1.7	<1
NOAA Site Characterization	WIT258	10/1/1997	PCBs (total-calc'd)	3.40E-01	1.59	2.14E+01	12	65	mg/kg OC	1.8	<1

mg/kg - Milligram per kilogram

ug/kg - Microgram per kilogram

DW - Dry weight

TOC - Total Organic Carbon

OC - Organic carbon normalized

SQS - SMS Sediment Quality Standard

CSL - SMS Cleanup Screening Level

SMS - Sediment Management Standard (Washington Administrative Code 173-204)

PAHs - Polycyclic aromatic hydrocarbons

SVOCs - Semi-volatile organic compounds

PCB - Polychlorinated biphenyl

J - Estimated value between the method detection limit and the laboratory reporting limit

LDW - Lower Duwamish Waterway

TEQ - Toxic Equivalency

Table presents detected chemicals only.

Exceedance factors are the ratio of the detected concentrations to the CSL or SQS; exceedance factors are shown only if they are greater than 1.

Sampling events are listed in Table 2.

Table 4
Chemicals Detected Above Screening Levels in Storm Drain Samples
Restoration Areas Source Control Area

Source	Location ID	Collection Date	Grab Type	Parameter	Result	SQS/ LAET	CSL/ 2LAET	Units	Exceedance Factors	
									SQS	CSL
SPU 2011	RCB270	8/23/2011	ROW Catch Basin	bis(2-Ethylhexyl)phthalate	1.5	1.3	1.9	mg/kg	1.2	<1
SPU 2011	RCB270	8/23/2011	ROW Catch Basin	Dimethyl phthalate	0.097	0.071	0.16	mg/kg	1.4	<1

Source	Location ID	Collection Date	Grab Type	Parameter	Result	LDW Background	LDW RAL	Units	Exceedance Factors	
									Background	RAL
KTA 2012	TUK-06	8/23/2011	ROW Catch Basin	Arsenic ²	10	7	57	mg/kg	1.4	<1
SPU 2011	RCB270	5/13/2011	ROW Catch Basin	Carcinogenic PAHs (calc'd)	0.11	0.009	1	mg/kg	12	<1
Ecology 2013	HC-ST1	6/14/2012	Sediment Trap	Carcinogenic PAHs (calc'd)	0.08	0.009	1	mg/kg	9.3	<1
SPU 2010	HC-ST1	11/4/2010	Sediment Trap	Carcinogenic PAHs (calc'd)	0.02	0.009	1	mg/kg	2.3	<1
SPU 2010	HC-ST1	11/4/2010	Inline	Carcinogenic PAHs (calc'd)	0.02	0.009	1	mg/kg	2.0	<1
SPU 2011	RCB270	5/13/2011	ROW Catch Basin	Total Dioxin/Furan TEQ	2.99 J	2	25	ng/kg	1.5	<1

mg/kg - milligram per kilogram

ng/kg - nanogram per kilogram

SQS - Sediment Quality Standard

CSL - Cleanup Screening Level

LAET - lowest apparent effects threshold

2LAET - second lowest apparent effects threshold

RAL - Remedial Action Level

PAH - polycyclic aromatic hydrocarbon

TEQ - toxic equivalence quotient

J - Estimated value between the method detection limit and the laboratory reporting limit

Table presents chemicals that exceed a screening level in at least one sample.

Exceedance factors are the ratio of the detected concentration to the SQS or CSL; exceedance factors are shown only if they are greater than 1.

All concentrations are as dry weight concentrations. Dry weight concentrations for non-polar organics were compared to the LAET and 2LAET values, which are functionally equivalent to the SQS and CSL.

Table 5
Chemicals Detected in Creek Sediment
Hamm Creek South Fork (1993)

Source	Sample Date	Sample Location	Chemical	Conc'n (mg/kg DW)	MTCA Cleanup Level ^a (mg/kg)	Soil-to-Sediment Screening Level ^b (mg/kg)	MTCA Exceedance Factor	Soil-to-Sediment Screening Level Exceedance Factor
Herrera 1994	4/5/1993	Station 7	Acenaphthene	6.1 J	4,800	0.06	<1	102
Herrera 1994	4/5/1993	Station 7	Anthracene	1.3	24,000	1.2	<1	1.1
Herrera 1994	4/5/1993	Station 7	Arsenic	4.6	0.67	590	6.9	<1
Herrera 1994	4/5/1993	Station 7	Benzo(a)anthracene	1.3	1.4	0.27	<1	4.8
Herrera 1994	4/5/1993	Station 7	Benzo(a)pyrene	1.6	0.14	0.21	11	7.6
Herrera 1994	4/5/1993	Station 7	Benzo(b)fluoranthene	1.5	1.4	0.45	1.1	3.3
Herrera 1994	4/5/1993	Station 7	Benzo(g,h,i)perylene	1.1		0.078		14
Herrera 1994	4/5/1993	Station 7	Benzo(k)fluoranthene	0.94	14	0.45	<1	2.1
Herrera 1994	4/5/1993	Station 7	Beryllium	0.2				
Herrera 1994	4/5/1993	Station 7	Cadmium	0.6	2	1.7	<1	<1
Herrera 1994	4/5/1993	Station 7	Carcinogenic PAHs	9.64				
Herrera 1994	4/5/1993	Station 7	Chromium	27.8	3,200	270	<1	<1
Herrera 1994	4/5/1993	Station 7	Chrysene	1.8	140	0.46	<1	3.9
Herrera 1994	4/5/1993	Station 7	Copper	16	3,200	39	<1	<1
Herrera 1994	4/5/1993	Station 7	Dibenzo(a,h)anthracene	1.2	0.14	0.033	8.6	36
Herrera 1994	4/5/1993	Station 7	Fluoranthene	8.1	3,200	1.2	<1	6.8
Herrera 1994	4/5/1993	Station 7	Fluorene	1.3	3,200	0.081	<1	16
Herrera 1994	4/5/1993	Station 7	HPAHs, total	22.74				
Herrera 1994	4/5/1993	Station 7	Indeno(1,2,3-cd)pyrene	1.3	1.4	0.088	<1	15
Herrera 1994	4/5/1993	Station 7	Lead	24.3	250	67	<1	<1
Herrera 1994	4/5/1993	Station 7	LPAHs, total	14.42 L				
Herrera 1994	4/5/1993	Station 7	Nickel	48				
Herrera 1994	4/5/1993	Station 7	Phenanthrene	4.2		0.49		8.6
Herrera 1994	4/5/1993	Station 7	Pyrene	3.9	2,400	1.4	<1	2.8
Herrera 1994	4/5/1993	Station 7	Total petroleum hydrocarbons	370	2,000		<1	
Herrera 1994	4/5/1993	Station 7	Zinc	92.7	24,000	38	<1	2.4

**Table 5
Chemicals Detected in Creek Sediment
Hamm Creek South Fork (1993)**

Source	Sample Date	Sample Location	Chemical	Conc'n (mg/kg DW)	MTCA Cleanup Level ^a (mg/kg)	Soil-to-Sediment Screening Level ^b (mg/kg)	MTCA Exceedance Factor	Soil-to-Sediment Screening Level Exceedance Factor
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mg/kg - milligrams per kilogram
 DW - dry weight
 MTCA - Model Toxics Control Act

J - Estimated value
 L - Undetected values (added as analytical detection limits) included in sum.
 Concentration exceeds MTCA Cleanup Level and/or Soil-to-Sediment Screening Level

a - The lower of MTCA Method A or B cleanup levels was selected, from CLARC database.
 b - Based on CSL. Where two screening levels are listed for a single chemical, the higher screening levels are for soil samples collected from the vadose zone and the lower screening levels are for soil samples collected from the saturated zone (SAIC 2006).
 Table presents detected chemicals only.
 Exceedance factors are the ratio of the detected concentration to the MTCA Cleanup Level or Soil-to-Sediment Screening Level.

Table 6
Chemicals Detected in Soil
Hamm Creek Restoration Area and Seattle City Light Power Substation

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Soil Conc'n (mg/kg)	MTCA Cleanup Level ^a (mg/kg)	Soil-to-Sediment Screening Level ^b (mg/kg)	MTCA Exceedance Factor	Soil-to-Sediment Screening Level Exceedance Factor
Hamm Creek Restoration Area									
Weston 1990	Apr-90	B-3		Arsenic	8.7	0.67	590	13	<1
Weston 1990	Apr-90	MW-3		Arsenic	7.5	0.67	590	11	<1
Weston 1990	Apr-90	B-1		Arsenic	5.9	0.67	590	8.8	<1
Weston 1990	Apr-90	B-4		Arsenic	5.6	0.67	590	8.4	<1
Weston 1990	Apr-90	MW-1		Arsenic	4.9	0.67	590	7.3	<1
Weston 1990	Apr-90	B-2		Arsenic	4.8	0.67	590	7.2	<1
Weston 1990	Apr-90	MW-2		Arsenic	4.2	0.67	590	6.3	<1
Weston 1990	Apr-90	MW-2		Barium	76.0				
Weston 1990	Apr-90	B-3		Barium	74.0				
Weston 1990	Apr-90	MW-3		Barium	67.0				
Weston 1990	Apr-90	B-1		Barium	56.0				
Weston 1990	Apr-90	MW-1		Barium	50.0				
Weston 1990	Apr-90	B-4		Barium	50.0				
Weston 1990	Apr-90	B-2		Barium	42.0				
Weston 1990	Apr-90	MW-3		Benzo(a)pyrene	0.34	0.14	0.21	2.4	1.6
Weston 1990	Apr-90	B-3		Benzo(a)pyrene	0.25	0.14	0.21	1.8	1.2
Weston 1990	Apr-90	B-1		Benzo(a)pyrene	0.14	0.14	0.21	1.0	<1
Weston 1990	Apr-90	MW-1		Benzo(a)pyrene	0.096	0.14	0.21	<1	<1
Weston 1990	Apr-90	B-2		Bis(2-ethylhexyl)phthalate	0.49	71	0.078	<1	6.3
Weston 1990	Apr-90	B-3		Bis(2-ethylhexyl)phthalate	0.44	71	0.078	<1	5.6
Weston 1990	Apr-90	B-1		Bis(2-ethylhexyl)phthalate	0.39	71	0.078	<1	5.0
Weston 1990	Apr-90	B-4		Bis(2-ethylhexyl)phthalate	0.4	71	0.078	<1	4.9
Weston 1990	Apr-90	MW-3		Bis(2-ethylhexyl)phthalate	0.34	71	0.078	<1	4.4
Weston 1990	Apr-90	MW-2		Bis(2-ethylhexyl)phthalate	0.16	71	0.078	<1	2.1
Weston 1990	Apr-90	MW-1		Bis(2-ethylhexyl)phthalate	0.087	71	0.078	<1	1.1
Weston 1990	Apr-90	MW-2		Cadmium	1.3	2	1.7	<1	<1
Weston 1990	Apr-90	MW-3		Cadmium	1.3	2	1.7	<1	<1
Weston 1990	Apr-90	B-3		Cadmium	1.2	2	1.7	<1	<1
Weston 1990	Apr-90	MW-1		Cadmium	1.0	2	1.7	<1	<1
Weston 1990	Apr-90	B-1		Cadmium	0.9	2	1.7	<1	<1
Weston 1990	Apr-90	B-4		Cadmium	0.6	2	1.7	<1	<1
Weston 1990	Apr-90	MW-3		Chromium	20.0		270		<1
Weston 1990	Apr-90	B-3		Chromium	18.0		270		<1
Weston 1990	Apr-90	MW-2		Chromium	17.0		270		<1

Table 6
Chemicals Detected in Soil
Hamm Creek Restoration Area and Seattle City Light Power Substation

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Soil Conc'n (mg/kg)	MTCA Cleanup Level ^a (mg/kg)	Soil-to-Sediment Screening Level ^b (mg/kg)	MTCA Exceedance Factor	Soil-to-Sediment Screening Level Exceedance Factor
Weston 1990	Apr-90	MW-1		Chromium	15.0		270		<1
Weston 1990	Apr-90	B-1		Chromium	13.0		270		<1
Weston 1990	Apr-90	B-4		Chromium	13.0		270		<1
Weston 1990	Apr-90	B-2		Chromium	12.0		270		<1
Weston 1990	Apr-90	MW-2		Copper	36.0	3,200	39	<1	<1
Weston 1990	Apr-90	MW-3		Copper	36.0	3,200	39	<1	<1
Weston 1990	Apr-90	B-3		Copper	33.0	3,200	39	<1	<1
Weston 1990	Apr-90	MW-1		Copper	20.0	3,200	39	<1	<1
Weston 1990	Apr-90	B-4		Copper	20.0	3,200	39	<1	<1
Weston 1990	Apr-90	B-1		Copper	19.0	3,200	39	<1	<1
Weston 1990	Apr-90	B-2		Copper	17.0	3,200	39	<1	<1
Weston 1990	Apr-90	B-3		Fluoranthene	0.07	3,200	1.2	<1	<1
Weston 1990	Apr-90	B-3		Lead	17.0	250	67	<1	<1
Weston 1990	Apr-90	MW-3		Lead	16.0	250	67	<1	<1
Weston 1990	Apr-90	MW-2		Lead	15.0	250	67	<1	<1
Weston 1990	Apr-90	B-1		Lead	8.7	250	67	<1	<1
Weston 1990	Apr-90	B-2		Lead	8.2	250	67	<1	<1
Weston 1990	Apr-90	B-4		Lead	7.4	250	67	<1	<1
Weston 1990	Apr-90	MW-1		Lead	7.3	250	67	<1	<1
Weston 1990	Apr-90	B-3		Mercury	0.51	2	0.03	<1	17
Weston 1990	Apr-90	MW-3		Mercury	0.24	2	0.03	<1	8.0
Weston 1990	Apr-90	B-3		Pyrene	0.09	2,400	1.4	<1	<1
Weston 1990	Apr-90	MW-3		Selenium	0.8				
Weston 1990	Apr-90	B-1		Selenium	0.5				
Weston 1990	Apr-90	B-3		Tin	50.0				
Seattle City Light Power Substation									
Raven 1988	6/16/1988	DD-10	Surface	Aroclor 1242	1.76	0.5	0.24	3.5	7.3
Raven 1988	6/16/1988	DD-9	Surface	Aroclor 1242	1.49	0.5	0.24	3.0	6.2
Raven 1988	6/16/1988	DD-12	Surface	Aroclor 1242	1.3	0.5	0.24	2.6	5.4
Raven 1988	6/16/1988	DD-13	Surface	Aroclor 1242	0.92	0.5	0.24	1.8	3.8
Raven 1990	2/28/1990	DP-2		Aroclor 1254	0.7	0.5	0.24	1.4	2.9
Raven 1985	Jan-85	D-4	0.5	Aroclor 1254	0.41	0.5	0.24	<1	1.7
Raven 1985	Jan-85	D-3	0.5	Aroclor 1254	0.07	0.5	0.24	<1	<1
Raven 1985	Jan-85	D-1	0.5	Aroclor 1260	0.17	0.5	0.24	<1	<1
Raven 1985	Jan-85	D-9	0.5	Aroclor 1260	0.05	0.5	0.24	<1	<1

Table 6
Chemicals Detected in Soil
Hamm Creek Restoration Area and Seattle City Light Power Substation

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Soil Conc'n (mg/kg)	MTCA Cleanup Level ^a (mg/kg)	Soil-to-Sediment Screening Level ^b (mg/kg)	MTCA Exceedance Factor	Soil-to-Sediment Screening Level Exceedance Factor
HWA GeoSciences 2006	4/11/2006	BH-3	2.5-4	Chromium	10		270		<1
HWA GeoSciences 2006	4/11/2006	BH-1	2.5-4	Chromium	9.7		270		<1
HWA GeoSciences 2006	4/12/2006	BH-2	2.5-3	Chromium	7.6		270		<1
HWA GeoSciences 2006	4/11/2006	MW-1	10-12.5	Chromium	7		270		<1
HWA GeoSciences 2006	4/11/2006	MW-3	7.5-9	Chromium	6.6		270		<1
HWA GeoSciences 2006	4/11/2006	MW-2	7.5-9	Chromium	4.8		270		<1

ft bgs - Feet below ground surface

mg/kg - Milligrams per kilogram

MTCA - Model Toxics Control Act

CSL - Cleanup Screening Level from Washington Sediment Management Standards


a - The lower of MTCA Method A or B cleanup levels was selected, from CLARC database.

b - Based on CSL. Where two screening levels are listed for a single chemical, the higher screening levels are for soil samples collected from the vadose zone and the lower screening levels are for soil samples collected from the saturated zone (SAIC 2006).

Table presents detected chemicals only.

Exceedance factors are the ratio of the detected concentration to the MTCA Cleanup Level or Soil-to-Sediment Screening Level.

Contaminated soil was likely removed from the property as part of the habitat restoration activities.

 Concentration exceeds MTCA Cleanup Level and/or Soil-to-Sediment Screening Level

Figures

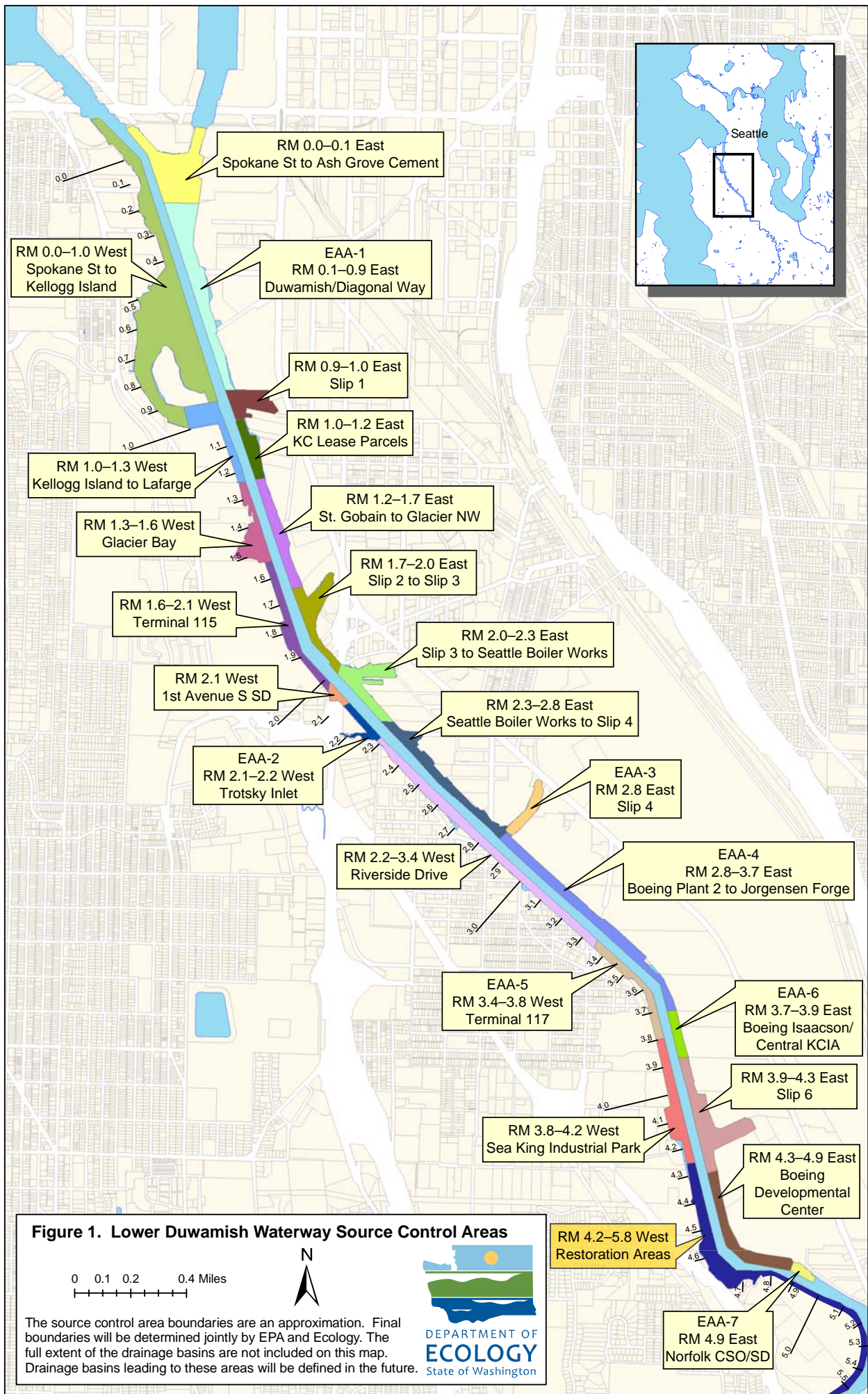


Figure 1. Lower Duwamish Waterway Source Control Areas

The source control area boundaries are an approximation. Final boundaries will be determined jointly by EPA and Ecology. The full extent of the drainage basins are not included on this map. Drainage basins leading to these areas will be defined in the future.

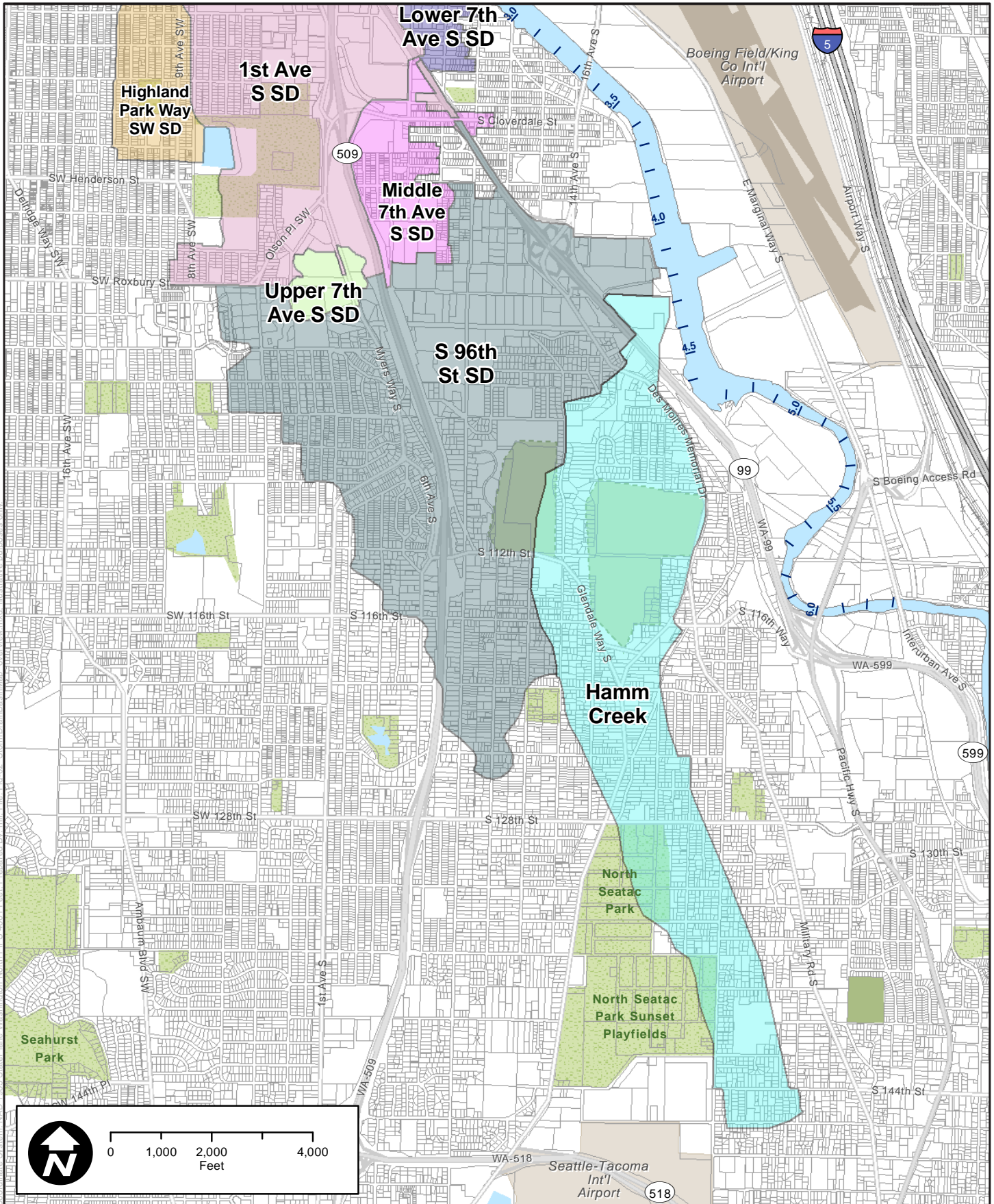
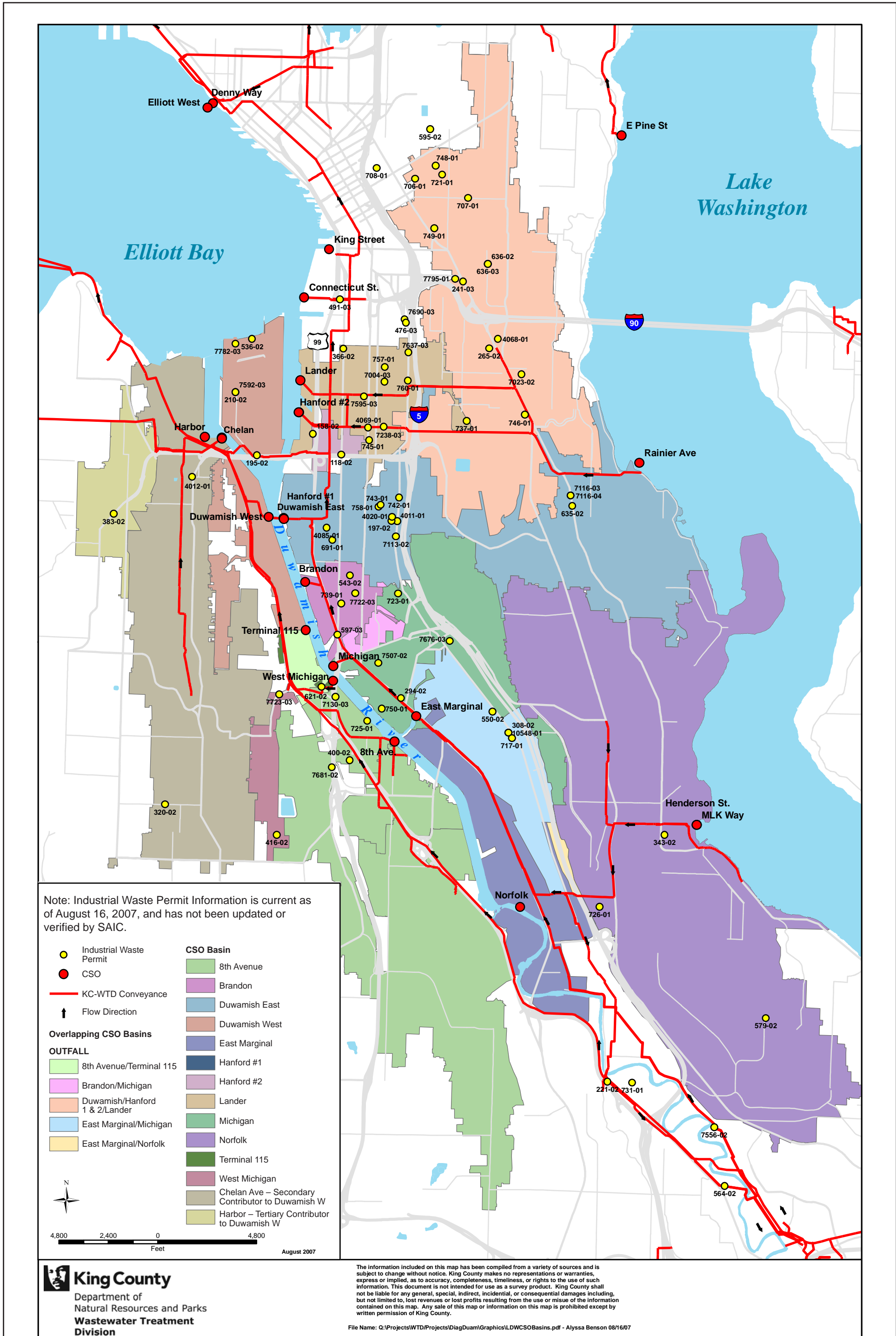


Figure 2. Lower Duwamish Waterway Storm Drain Basins Near the Restoration Areas Source Control Area





Note: Industrial Waste Permit Information is current as of August 16, 2007, and has not been updated or verified by SAIC.

● Industrial Waste Permit
● CSO
— KC-WTD Conveyance
↑ Flow Direction

Overlapping CSO Basins

OUTFALL

- 8th Avenue/Terminal 115
- Brandon/Michigan
- Duwamish/Hanford 1 & 2/Lander
- East Marginal/Michigan
- East Marginal/Norfolk

■ 8th Avenue
■ Brandon
■ Duwamish East
■ Duwamish West
■ East Marginal
■ Hanford #1
■ Hanford #2
■ Lander
■ Michigan
■ Norfolk
■ Terminal 115
■ West Michigan
■ Chelan Ave – Secondary Contributor to Duwamish W
■ Harbor – Tertiary Contributor to Duwamish W

4,800 2,400 0 4,800
 Feet
 August 2007

King County
 Department of
 Natural Resources and Parks
**Wastewater Treatment
 Division**

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File Name: Q:\Projects\WTD\Projects\DiagDuam\Graphics\LDWCOSOBasins.pdf - Alyssa Benson 08/16/07

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File Name: Q:\Projects\WTD\Projects\DiagDuam\Graphics\LDWCOSOBasins.pdf - Alyssa Benson 08/16/07



**Figure 3. Lower Duwamish Waterway
King County Combined Sewer Overflow Basins**

Source: King County 2007



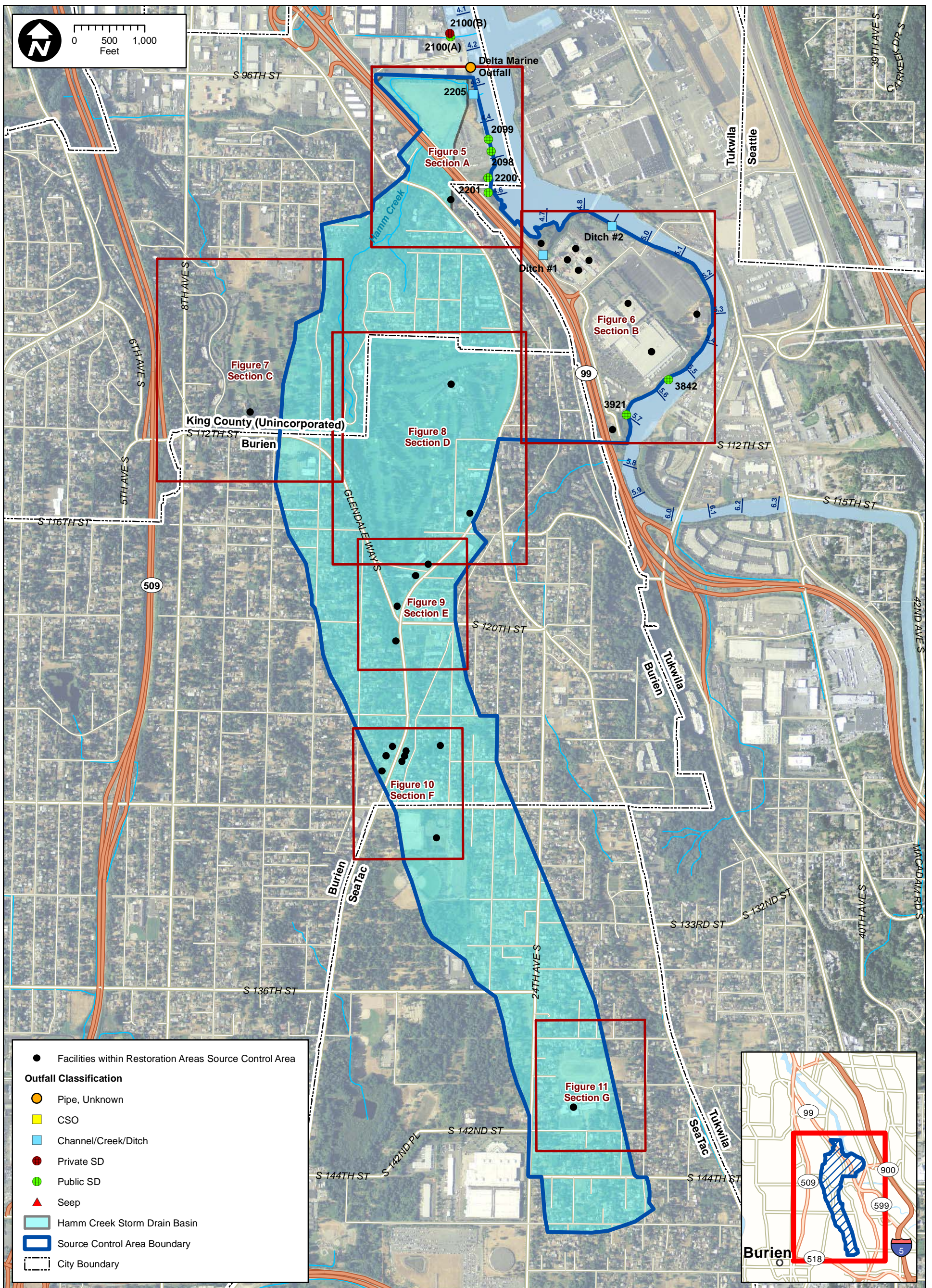


Figure 4. Restoration Areas Source Control Area

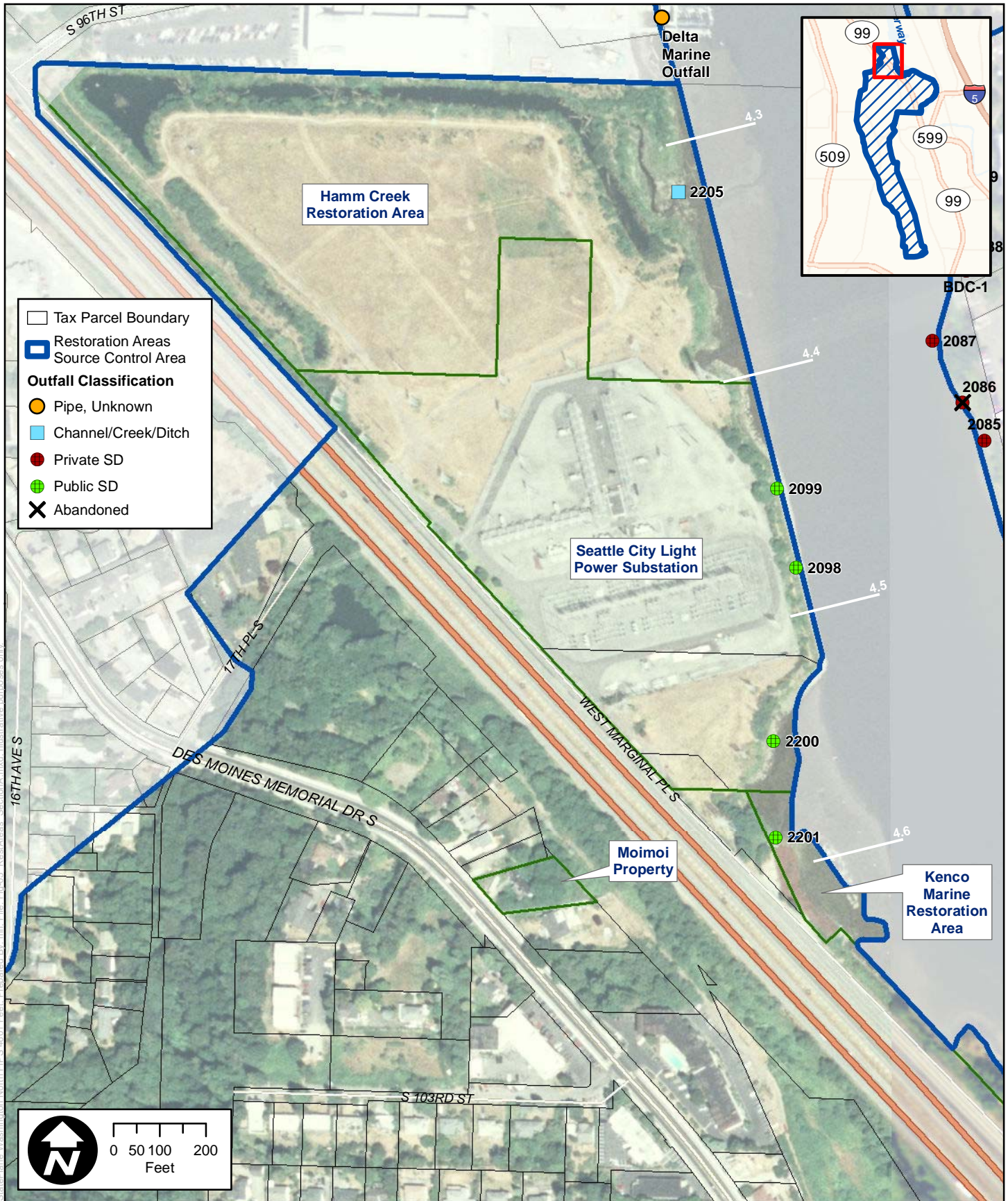


Figure 5. Restoration Areas Source Control Area (Section A)



Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet Prepared By: mlf File: Fiq05_RestAreas_SectionA.mxd Illustrative purposes only

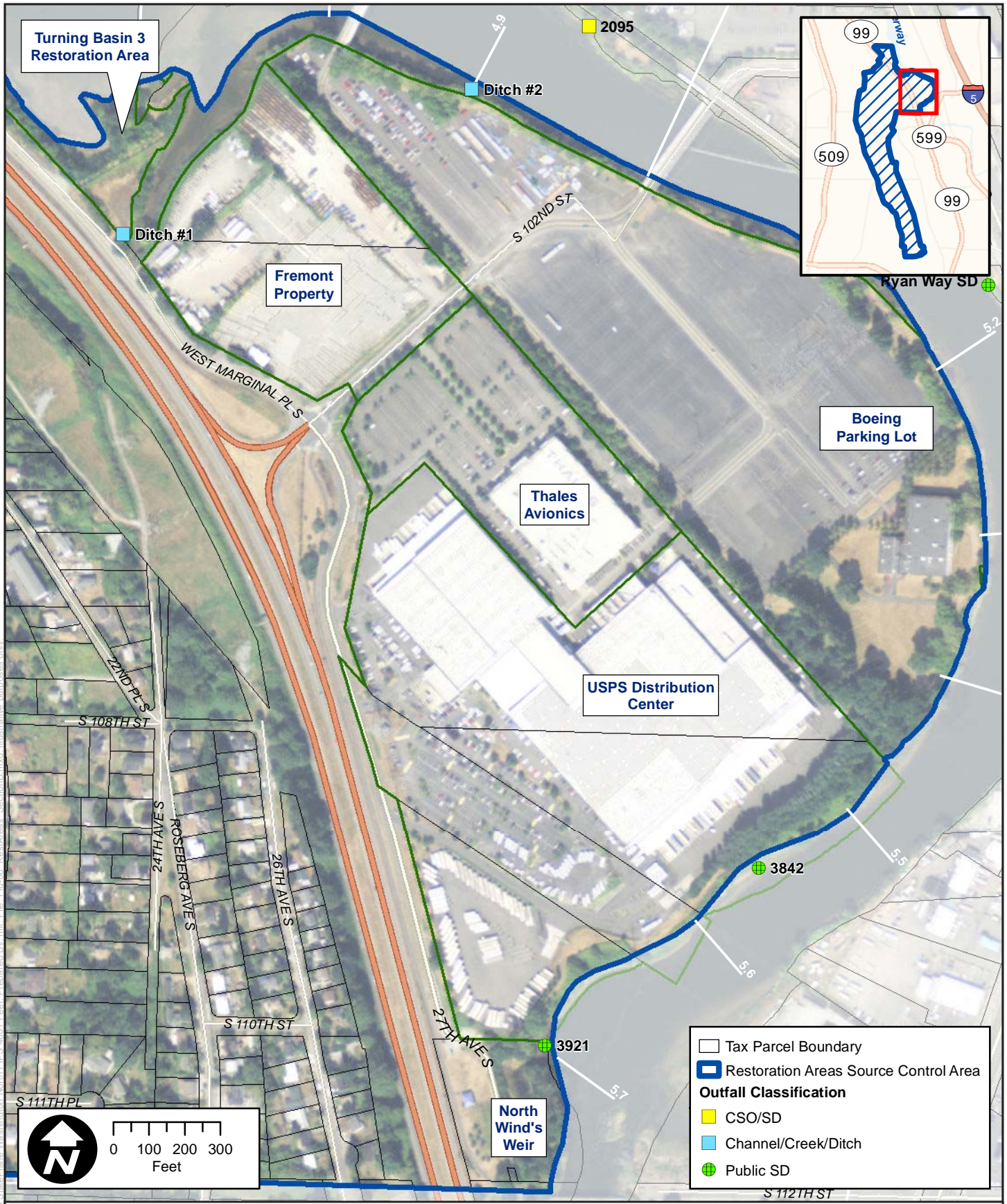


Figure 6. Restoration Areas Source Control Area (Section B)



Coordinate System: NAD_1983_StatePlane_Washington_North_FIPS_4601 Feet; Prepared By: mlf; File: Fig_06_RestAreas_SectionB.mxd; Illustrative purposes only.



Figure 7. Restoration Areas Source Control Area (Section C)



Figure 8. Restoration Areas Source Control Area (Section D)



Coordinate System: NAD_1983_StatePlane_Washington_North_FIPS_4601; Feet; Prepared By: mlf; File: Fic_08_RestAreas_SectionD.mxd; Illustrative purposes only.

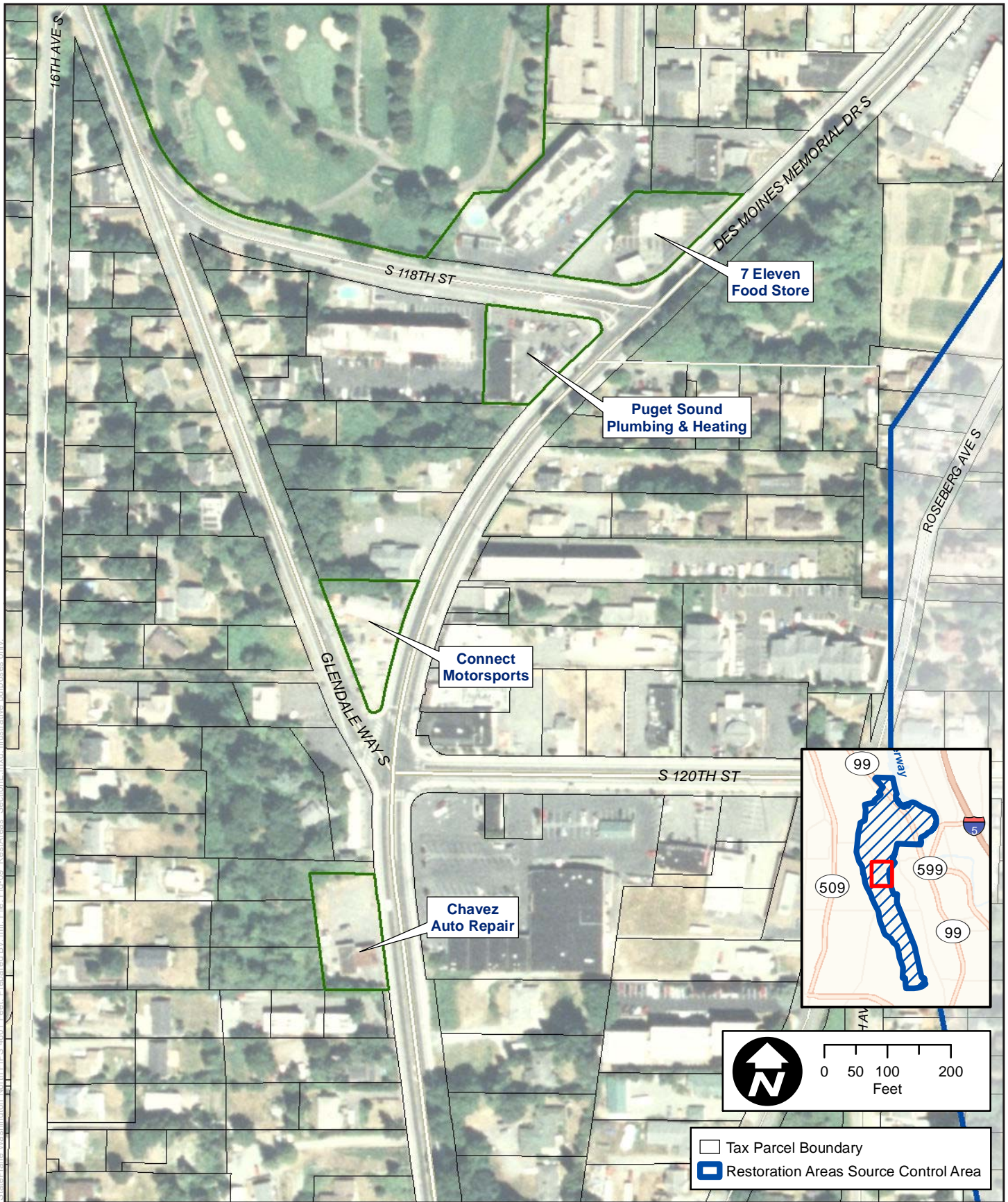


Figure 9. Restoration Areas Source Control Area (Section E)

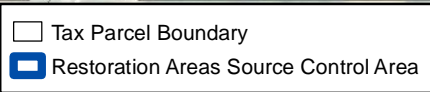
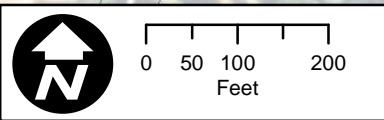
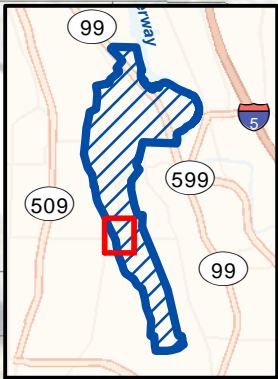
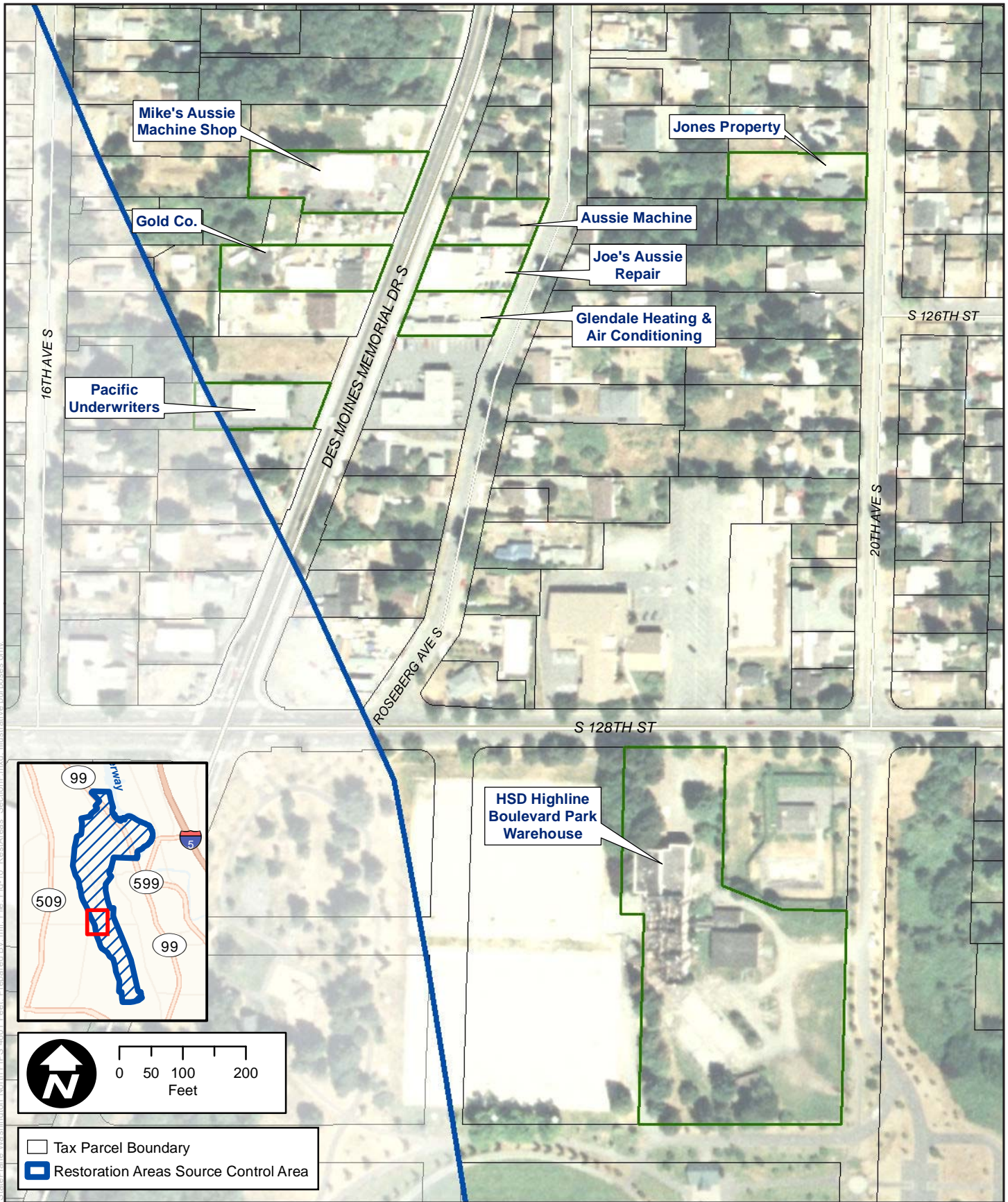


Figure 10. Restoration Areas Source Control Area (Section F)

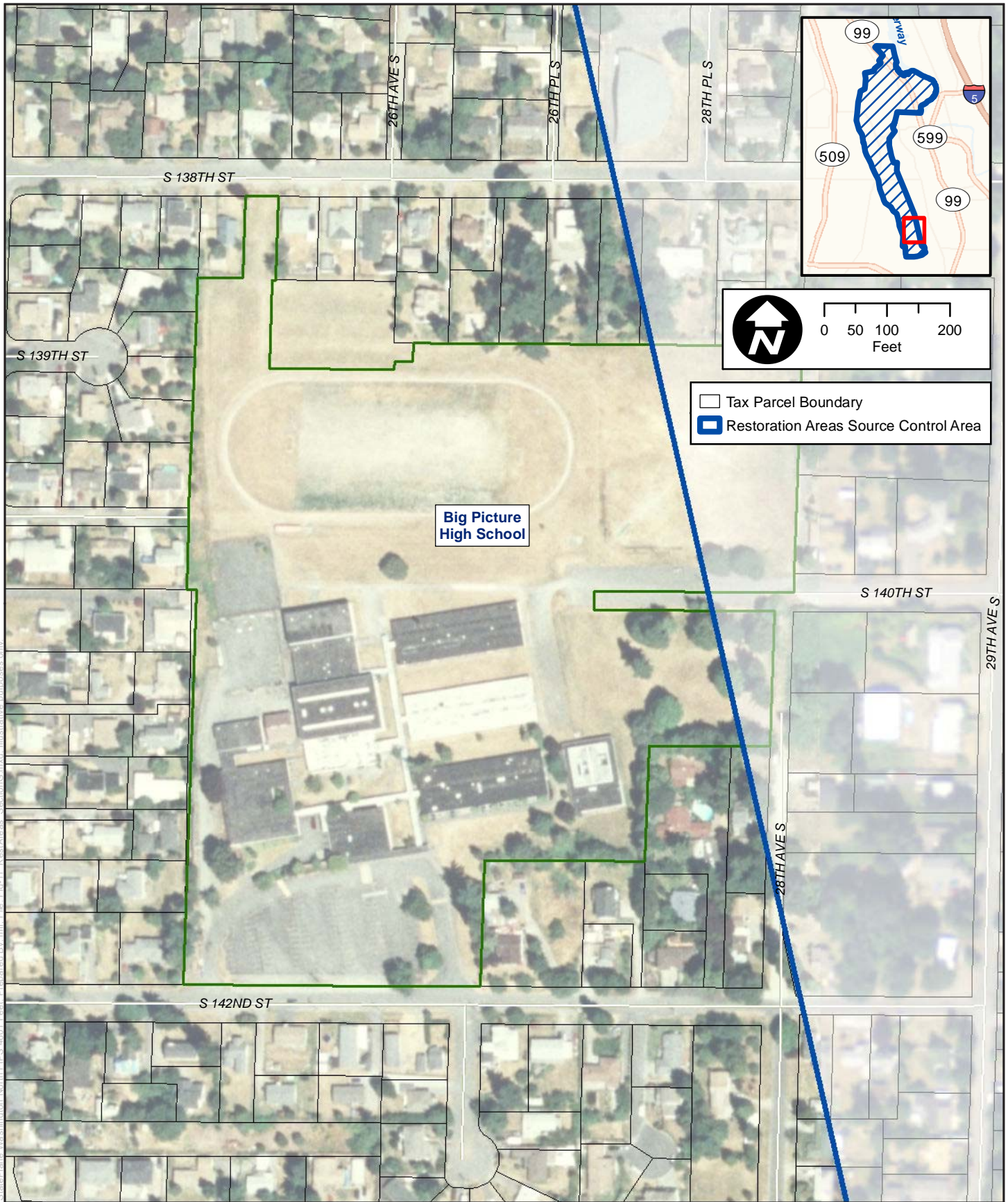


Figure 11. Restoration Areas Source Control Area (Section G)



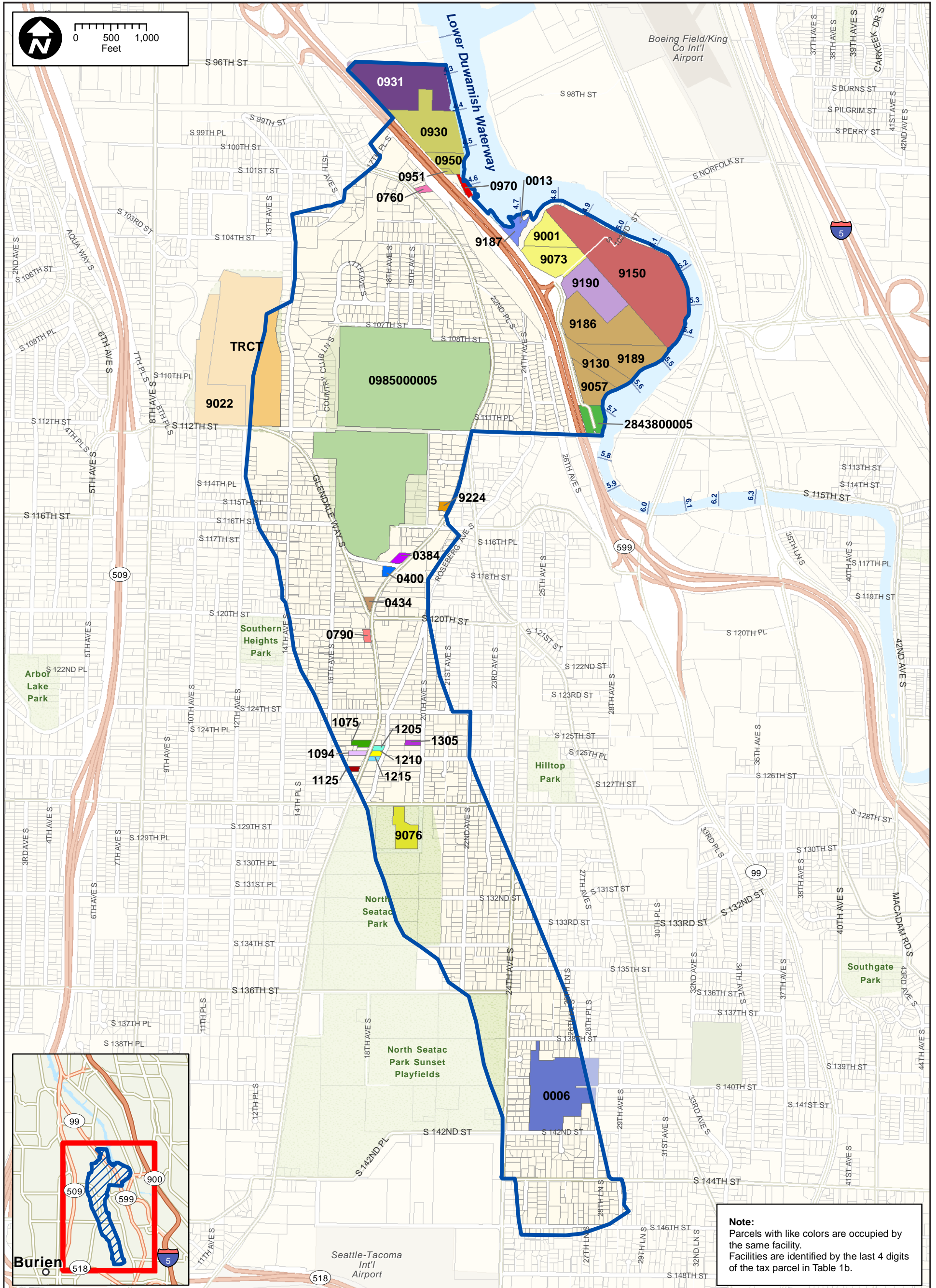


Figure 12. Tax Parcels for Restored Areas and Properties with Ecology Facility/Site Identification Numbers in the Restoration Areas Source Control Area

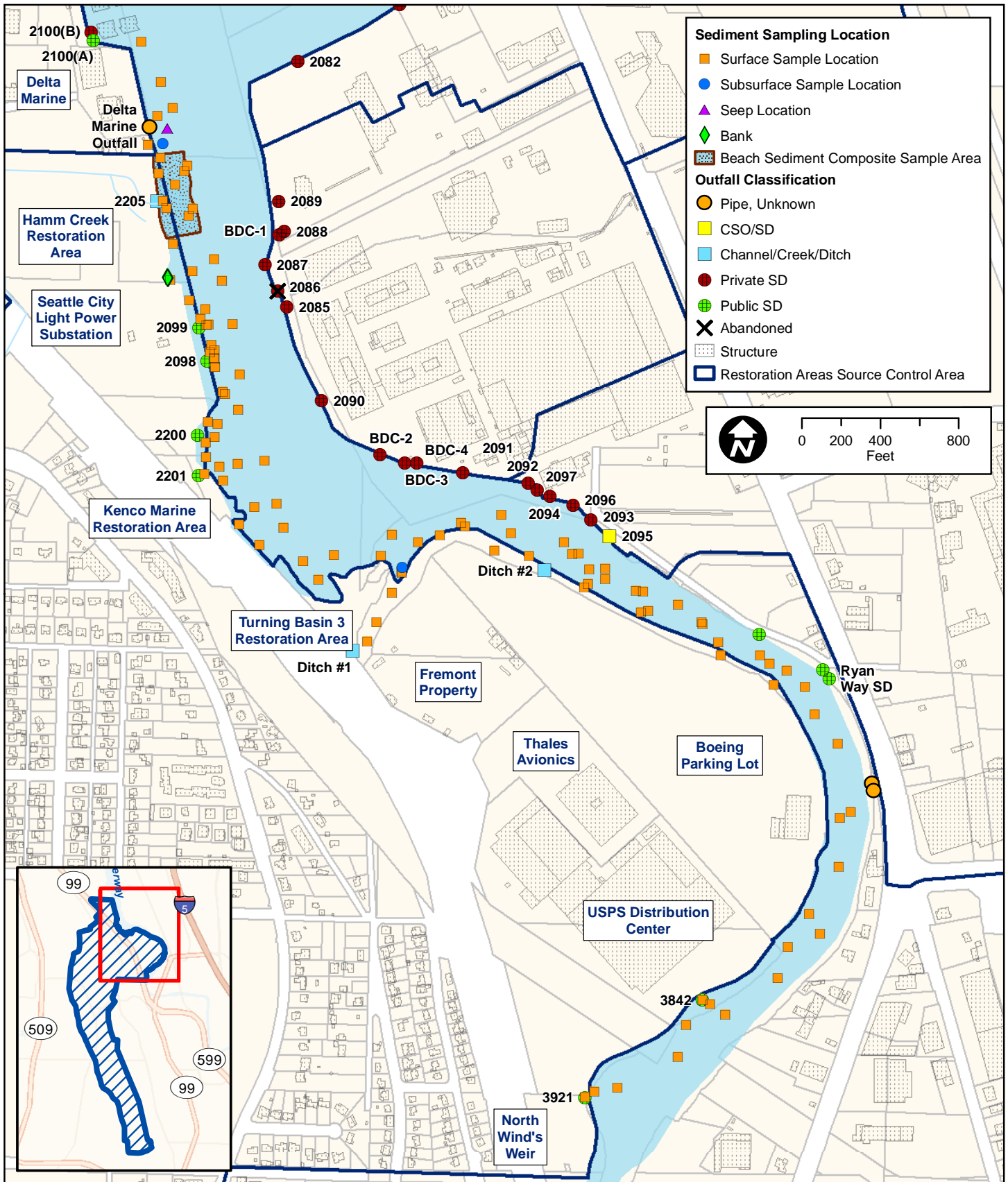


Figure 13a. Sediment, Seep, and Bank Soil Sample Locations Near the Restoration Areas Source Control Area

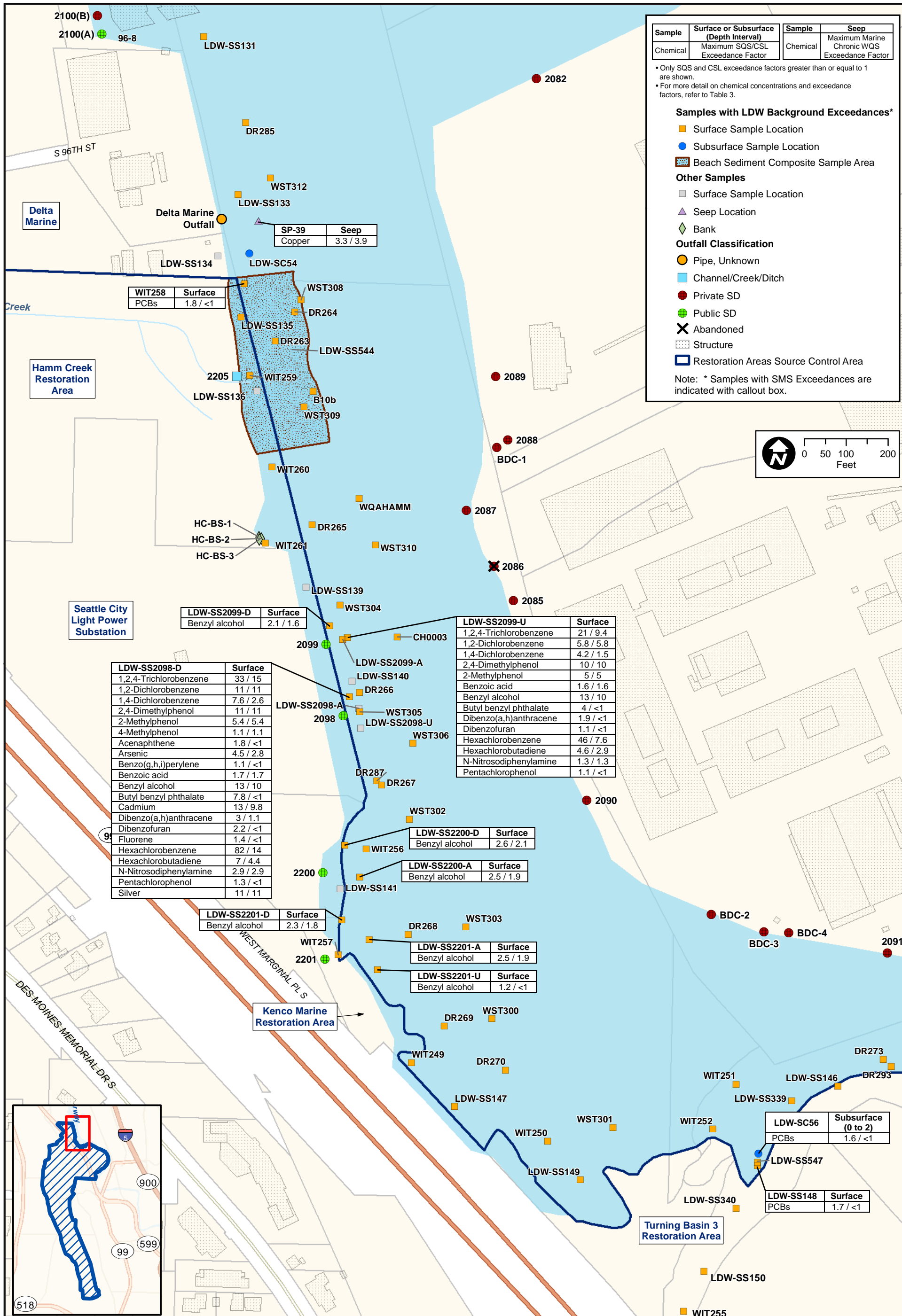
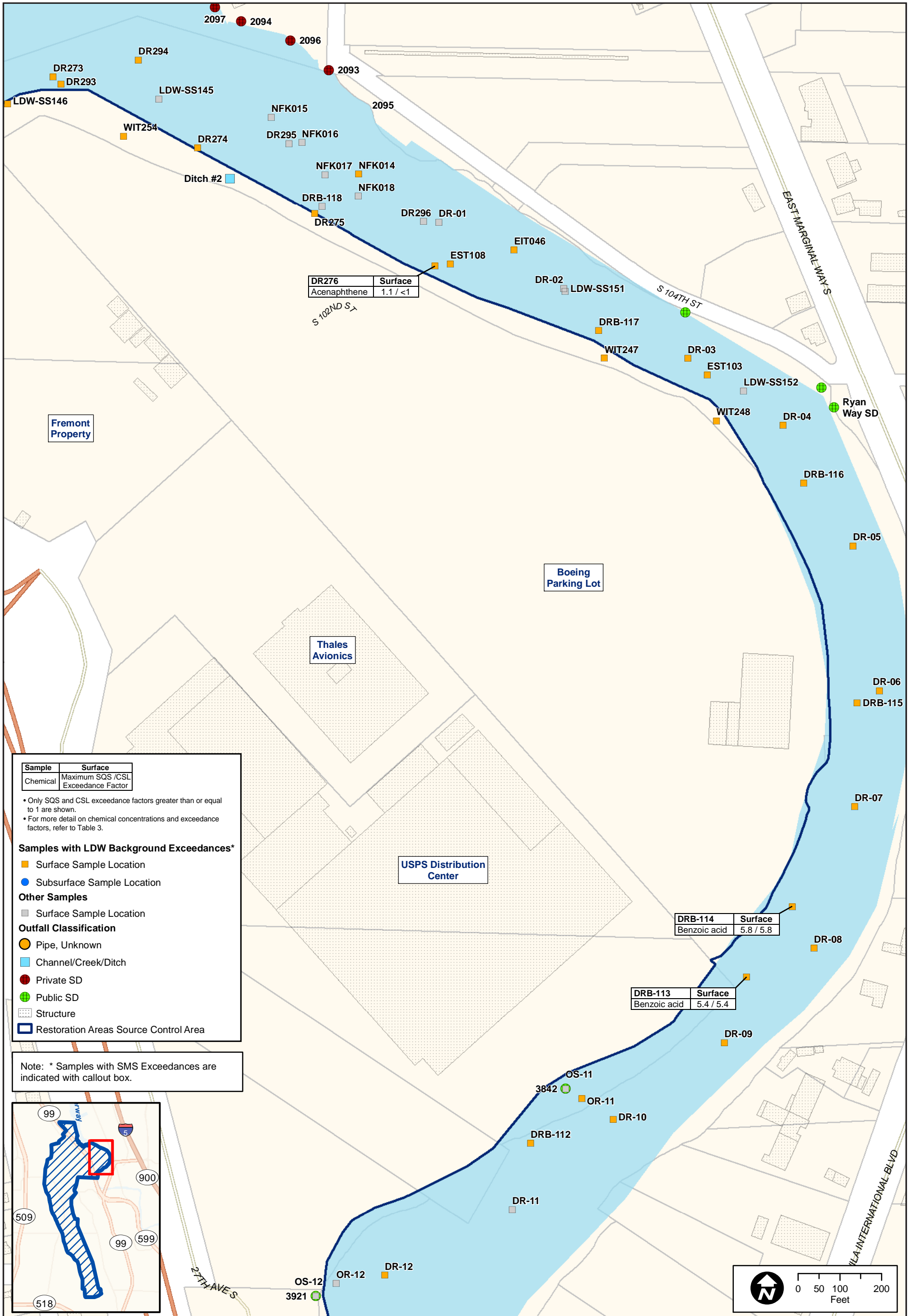


Figure 13b. Sediment, Seep, and Bank Soil Sample Locations Near the Restoration Areas Source Control Area (Northern Portion)



DR276	Surface
Acenaphthene	1.1 / <1

DRB-114	Surface
Benzoic acid	5.8 / 5.8

DRB-113	Surface
Benzoic acid	5.4 / 5.4

Sample	Surface
Chemical	Maximum SQS / CSL Exceedance Factor

- Only SQS and CSL exceedance factors greater than or equal to 1 are shown.
- For more detail on chemical concentrations and exceedance factors, refer to Table 3.

Samples with LDW Background Exceedances*

- Surface Sample Location
- Subsurface Sample Location

Other Samples

- Surface Sample Location

Outfall Classification

- Pipe, Unknown
- Channel/Creek/Ditch
- Private SD
- Public SD
- Structure
- Restoration Areas Source Control Area

Note: * Samples with SMS Exceedances are indicated with callout box.

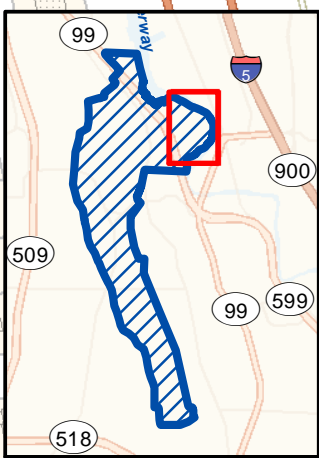


Figure 13c. Sediment, Seep, and Bank Soil Sample Locations Near the Restoration Areas Source Control Area (Southern Portion)

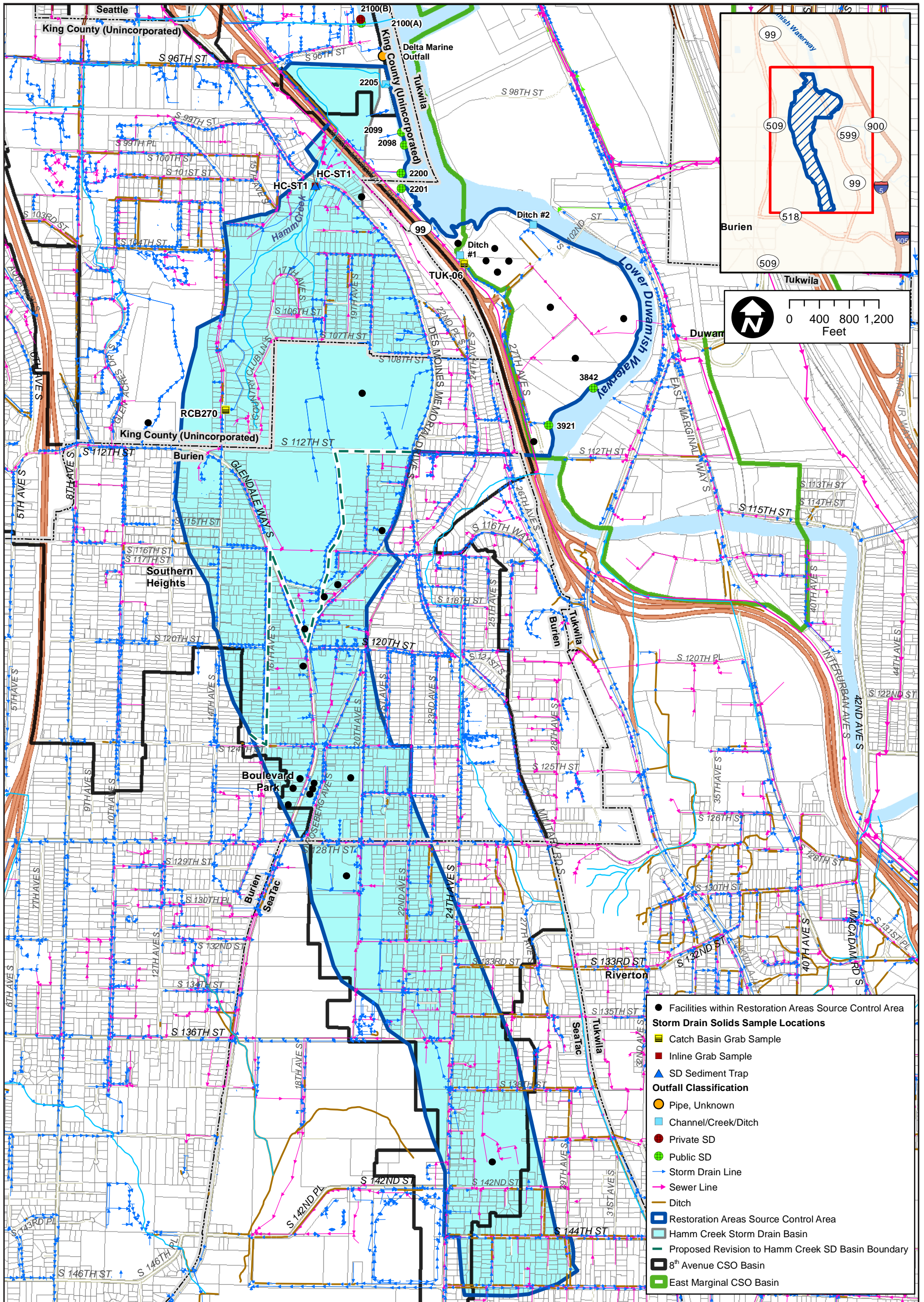
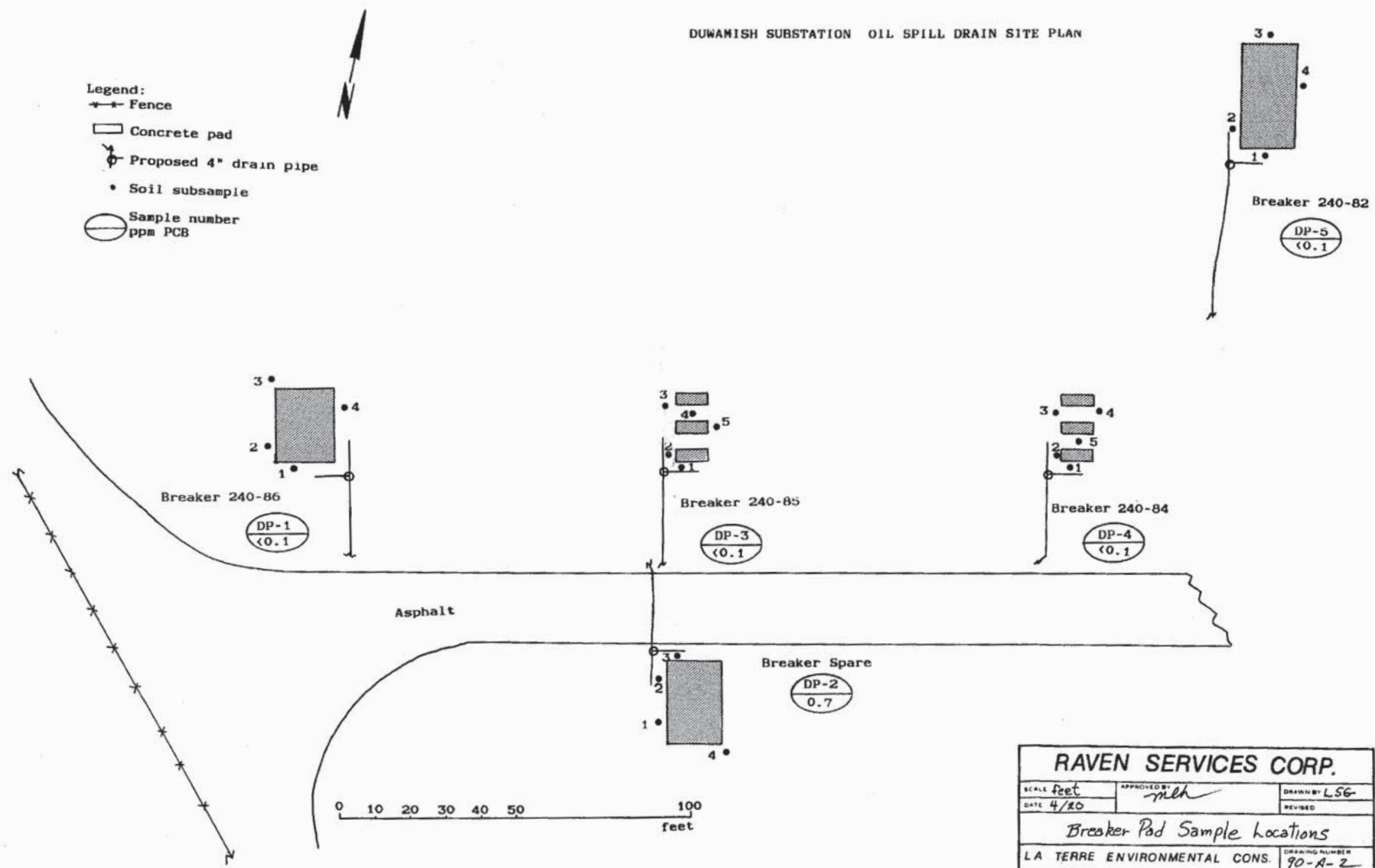


Figure 14. Storm Drain and Sanitary Sewer Lines in the Restoration Areas Source Control Area

DUWAMISH SUBSTATION OIL SPILL DRAIN SITE PLAN

- Legend:
- Fence
 - ▭ Concrete pad
 - ⊕ Proposed 4" drain pipe
 - Soil subsample
 - Sample number
ppm PCB



RAVEN SERVICES CORP.

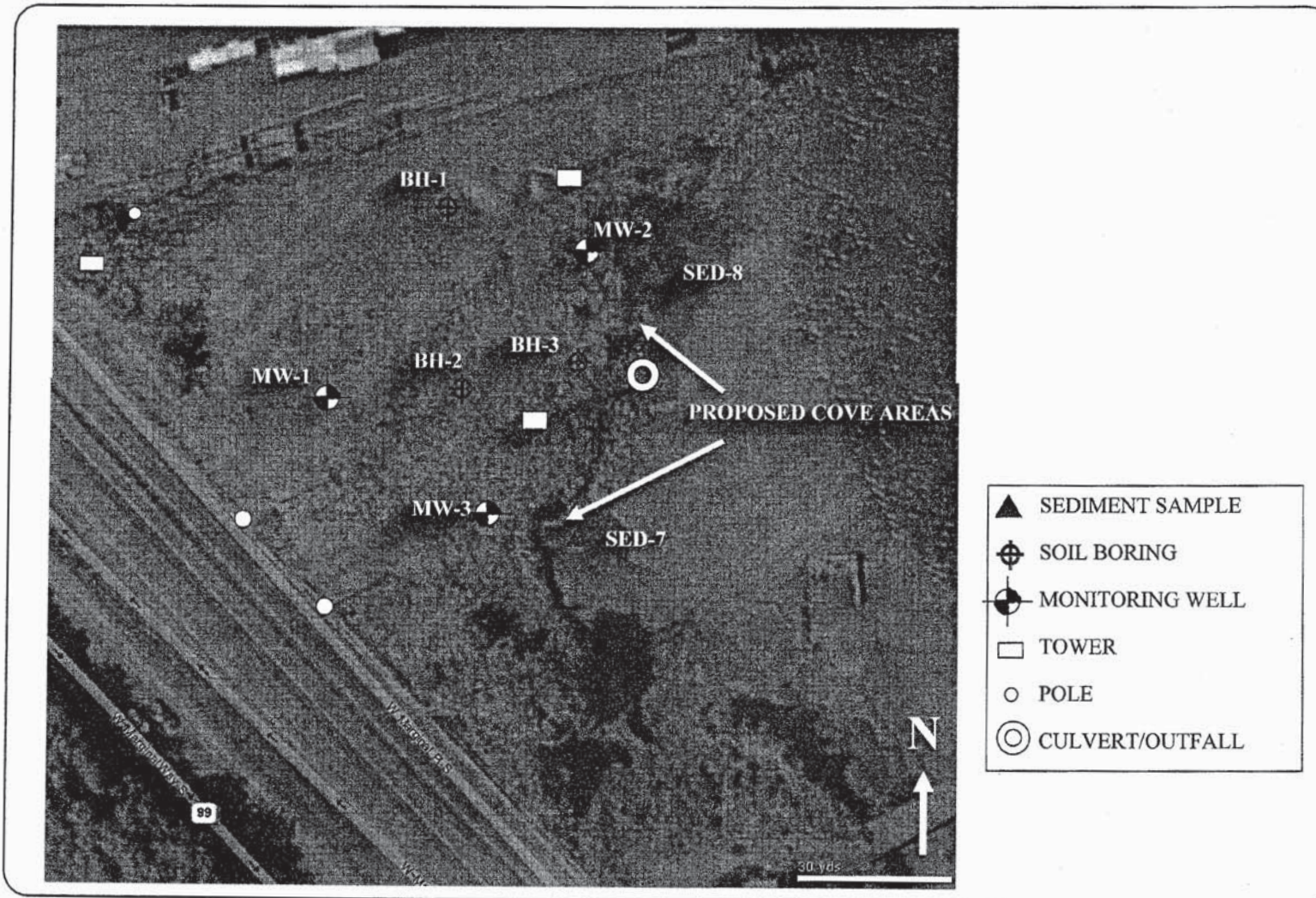
SCALE feet	APPROVED BY <i>mlh</i>	DRAWN BY L56
DATE 4/20		REVISED
Breaker Pad Sample Locations		
LA TERRE ENVIRONMENTAL CONS.	DRAWING NUMBER 90-A-2	



Figure 15a. Seattle City Light Power Substation, Breaker Pad Sample Locations (1990)

Source: Raven 1990





HWA | HWA GEOSCIENCES INC.

EXPLORATION PLAN

SEATTLE CITY LIGHT
DUWAMISH SUBSTATION
SEATTLE, WASHINGTON

FIGURE NO.

2

PROJECT NO.

2006-034



**Figure 15b. Seattle City Light Power Substation,
Environmental Investigation at Parcel 5624200950 (2006)**

Source: HWA GeoSciences 2006



Appendix A

Sediment, Seep, Bank Soil, and Storm Drain Solids Sampling Data – RM 4.2-5.8 West (Restoration Areas)

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	1,2,3,4,6,7,8-HpCDD	2.83E-04	2.98	9.50E-03					
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	1,2,3,4,6,7,8-HpCDD	7.65E-05	2.04	3.75E-03					
Duwamish River RM 4.9 to 7.4	DRB-114	5/9/2008	1,2,3,4,6,7,8-HpCDD	6.90E-05	2.18	3.17E-03					
Duwamish River RM 4.9 to 7.4	DRB-113	5/9/2008	1,2,3,4,6,7,8-HpCDD	5.40E-05	1.9	2.84E-03					
EPA Site Inspection	DR264	8/26/1998	1,2,3,4,6,7,8-HpCDD	5.30E-05	1.48	3.58E-03					
Duwamish River RM 4.9 to 7.4	DRB-112	5/9/2008	1,2,3,4,6,7,8-HpCDD	3.40E-05	1.75	1.94E-03					
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	1,2,3,4,6,7,8-HpCDD	3.10E-05	1.7	1.82E-03					
Duwamish River RM 4.9 to 7.4	DRB-115	5/9/2008	1,2,3,4,6,7,8-HpCDD	2.90E-05	1.28	2.27E-03					
Duwamish River RM 4.9 to 7.4	DRB-116	5/9/2008	1,2,3,4,6,7,8-HpCDD	2.60E-05	2.36	1.10E-03					
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	1,2,3,4,6,7,8-HpCDD	2.30E-05	2.33	9.87E-04					
Duwamish River RM 4.9 to 7.4	DRB-117	5/9/2008	1,2,3,4,6,7,8-HpCDD	1.70E-05	1.32	1.29E-03					
Duwamish River RM 4.9 to 7.4	OR-11	May-08	1,2,3,4,6,7,8-HpCDD	1.70E-05	1.58	1.08E-03					
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	1,2,3,4,6,7,8-HpCDD	1.62E-05	2.2	7.36E-04					
Duwamish River RM 4.9 to 7.4	DR-12	4/28/2008	1,2,3,4,6,7,8-HpCDD	1.00E-05	1.12	8.93E-04					
Duwamish River RM 4.9 to 7.4	DR-01	4/28/2008	1,2,3,4,6,7,8-HpCDD	8.30E-06	1.58	5.25E-04					
LDW Outfall Sampling	LDW-SS2098-A	3/4/2011	1,2,3,4,6,7,8-HpCDD	7.68E-06	1.25	6.14E-04					
Duwamish River RM 4.9 to 7.4	DR-09	4/28/2008	1,2,3,4,6,7,8-HpCDD	3.20E-06 J	0.3	1.07E-03					
LDWRI-Dioxin Sampling	comp	1/12/2010	1,2,3,4,6,7,8-HpCDD	6.01E-05	1.88	3.20E-03					
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	1,2,3,4,6,7,8-HpCDF	3.68E-05	2.98	1.23E-03					
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	1,2,3,4,6,7,8-HpCDF	1.40E-05	2.04	6.86E-04					
Duwamish River RM 4.9 to 7.4	DRB-114	5/9/2008	1,2,3,4,6,7,8-HpCDF	1.30E-05 J	2.18	5.96E-04					
Duwamish River RM 4.9 to 7.4	DRB-113	5/9/2008	1,2,3,4,6,7,8-HpCDF	1.10E-05	1.9	5.79E-04					
Duwamish River RM 4.9 to 7.4	DRB-112	5/9/2008	1,2,3,4,6,7,8-HpCDF	6.20E-06 J	1.75	3.54E-04					
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	1,2,3,4,6,7,8-HpCDF	6.13E-06	1.7	3.61E-04					
Duwamish River RM 4.9 to 7.4	DRB-115	5/9/2008	1,2,3,4,6,7,8-HpCDF	5.00E-06 J	1.28	3.91E-04					
Duwamish River RM 4.9 to 7.4	DRB-116	5/9/2008	1,2,3,4,6,7,8-HpCDF	4.60E-06 J	2.36	1.95E-04					
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	1,2,3,4,6,7,8-HpCDF	4.28E-06 J	2.2	1.95E-04					
Duwamish River RM 4.9 to 7.4	DRB-117	5/9/2008	1,2,3,4,6,7,8-HpCDF	4.10E-06 J	1.32	3.11E-04					
LDW Outfall Sampling	LDW-SS2098-A	3/4/2011	1,2,3,4,6,7,8-HpCDF	1.32E-06 J	1.25	1.06E-04					
LDWRI-Dioxin Sampling	comp	1/12/2010	1,2,3,4,6,7,8-HpCDF	1.40E-05	1.88	7.45E-04					
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	1,2,3,4,7,8,9-HpCDF	2.54E-06 J	2.98	8.52E-05					
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	1,2,3,4,7,8,9-HpCDF	9.31E-07	2.04	4.56E-05					
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	1,2,3,4,7,8,9-HpCDF	4.73E-07 J	1.7	2.78E-05					
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	1,2,3,4,7,8,9-HpCDF	4.40E-07 J	2.2	2.00E-05					
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	1,2,3,4,7,8,9-HpCDF	3.43E-07 J	2.33	1.47E-05					
LDW Outfall Sampling	LDW-SS2098-A	3/4/2011	1,2,3,4,7,8,9-HpCDF	1.26E-07 J	1.25	1.01E-05					
LDWRI-Dioxin Sampling	comp	1/12/2010	1,2,3,4,7,8,9-HpCDF	1.15E-06	1.88	6.12E-05					
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	1,2,3,4,7,8-HxCDD	3.63E-06 J	2.98	1.22E-04					
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	1,2,3,4,7,8-HxCDD	1.21E-06	2.04	5.93E-05					
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	1,2,3,4,7,8-HxCDD	6.50E-07 J	1.7	3.82E-05					
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	1,2,3,4,7,8-HxCDD	4.66E-07 J	2.33	2.00E-05					

Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	1,2,3,4,7,8-HxCDD	1.78E-07 J	2.2	8.09E-06					
LDWRI-Dioxin Sampling	comp	1/12/2010	1,2,3,4,7,8-HxCDD	9.11E-07 J	1.88	4.85E-05					
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	1,2,3,4,7,8-HxCDF	5.15E-06 J	2.98	1.73E-04					
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	1,2,3,4,7,8-HxCDF	1.64E-06	2.04	8.04E-05					
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	1,2,3,4,7,8-HxCDF	8.29E-07 J	2.2	3.77E-05					
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	1,2,3,4,7,8-HxCDF	6.43E-07 J	1.7	3.78E-05					
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	1,2,3,4,7,8-HxCDF	4.52E-07 J	2.33	1.94E-05					
LDW Outfall Sampling	LDW-SS2098-A	3/4/2011	1,2,3,4,7,8-HxCDF	1.36E-07 J	1.25	1.09E-05					
LDWRI-Dioxin Sampling	comp	1/12/2010	1,2,3,4,7,8-HxCDF	2.60E-06	1.88	1.38E-04					
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	1,2,3,6,7,8-HxCDD	1.60E-05	2.98	5.37E-04					
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	1,2,3,6,7,8-HxCDD	3.61E-06	2.04	1.77E-04					
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	1,2,3,6,7,8-HxCDD	1.63E-06 J	1.7	9.59E-05					
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	1,2,3,6,7,8-HxCDD	1.34E-06 J	2.33	5.75E-05					
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	1,2,3,6,7,8-HxCDD	8.70E-07 J	2.2	3.95E-05					
LDW Outfall Sampling	LDW-SS2098-A	3/4/2011	1,2,3,6,7,8-HxCDD	3.96E-07 J	1.25	3.17E-05					
LDWRI-Dioxin Sampling	comp	1/12/2010	1,2,3,6,7,8-HxCDD	2.87E-06	1.88	1.53E-04					
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	1,2,3,6,7,8-HxCDF	2.13E-06 J	2.98	7.15E-05					
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	1,2,3,6,7,8-HxCDF	8.97E-07	2.04	4.40E-05					
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	1,2,3,6,7,8-HxCDF	3.64E-07 J	1.7	2.14E-05					
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	1,2,3,6,7,8-HxCDF	2.75E-07 J	2.33	1.18E-05					
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	1,2,3,6,7,8-HxCDF	2.29E-07 J	2.2	1.04E-05					
LDWRI-Dioxin Sampling	comp	1/12/2010	1,2,3,6,7,8-HxCDF	1.16E-06	1.88	6.17E-05					
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	1,2,3,7,8,9-HxCDD	1.47E-05	2.98	4.93E-04					
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	1,2,3,7,8,9-HxCDD	3.81E-06	2.04	1.87E-04					
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	1,2,3,7,8,9-HxCDD	1.60E-06 J	1.7	9.41E-05					
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	1,2,3,7,8,9-HxCDD	1.39E-06 J	2.33	5.97E-05					
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	1,2,3,7,8,9-HxCDD	6.16E-07 J	2.2	2.80E-05					
LDWRI-Dioxin Sampling	comp	1/12/2010	1,2,3,7,8,9-HxCDD	2.73E-06	1.88	1.45E-04					
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	1,2,3,7,8,9-HxCDF	3.49E-07 J	2.98	1.17E-05					
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	1,2,3,7,8,9-HxCDF	7.10E-08 J	2.04	3.48E-06					
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	1,2,3,7,8-PeCDD	5.18E-06 J	2.98	1.74E-04					
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	1,2,3,7,8-PeCDD	9.42E-07 J	2.04	4.62E-05					
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	1,2,3,7,8-PeCDD	3.83E-07 J	1.7	2.25E-05					
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	1,2,3,7,8-PeCDD	3.17E-07 J	2.33	1.36E-05					
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	1,2,3,7,8-PeCDD	1.38E-07 J	2.2	6.27E-06					
LDWRI-Dioxin Sampling	comp	1/12/2010	1,2,3,7,8-PeCDD	6.90E-07 J	1.88	3.67E-05					
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	1,2,3,7,8-PeCDF	4.69E-07 J	2.98	1.57E-05					
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	1,2,3,7,8-PeCDF	3.50E-07 J	2.04	1.72E-05					
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	1,2,4-Trichlorobenzene	3.17E-01	1.86	1.70E+01	0.81	1.8	mg/kg OC	21	9.5
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	1,2,4-Trichlorobenzene	3.10E-01	1.16	2.67E+01	0.81	1.8	mg/kg OC	33	15
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	1,2-Dichlorobenzene	2.90E-01	1.16	2.50E+01	2.3	2.3	mg/kg OC	11	11

Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	1,2-Dichlorobenzene	2.48E-01	1.86	1.33E+01	2.3	2.3	mg/kg OC	5.8	5.8
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	1,3-Dichlorobenzene	2.79E-01	1.16	2.41E+01					
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	1,3-Dichlorobenzene	2.52E-01	1.86	1.35E+01					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	1,4-Dichlorobenzene	2.74E-01	1.16	2.36E+01	3.1	9	mg/kg OC	7.6	2.6
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	1,4-Dichlorobenzene	2.45E-01	1.86	1.32E+01	3.1	9	mg/kg OC	4.2	1.5
KC Water Quality Assessment	WQAHAMM	6/3/1997	1,4-Dichlorobenzene	1.70E-03 J	1.95	8.72E-02	3.1	9	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	1-Methylnaphthalene	3.24E-01	1.16	2.79E+01					
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	1-Methylnaphthalene	3.00E-01	1.86	1.61E+01					
LDW Outfall Sampling	LDW-SS2201-U	3/18/2011	1-Methylnaphthalene	9.40E-03 J	1.69	5.56E-01					
LDWRI-Benthic	B10b	8/19/2004	1-Methylnaphthalene	1.90E-03 J	1.09	1.74E-01					
Duwamish River RM 4.9 to 7.4	OR-11	May-08	1-Methylnaphthalene	1.60E-03 J	1.58	1.01E-01					
Duwamish River RM 4.9 to 7.4	DRB-112	5/9/2008	1-Methylnaphthalene	1.10E-03 J	1.75	6.29E-02					
Duwamish River RM 4.9 to 7.4	DRB-115	5/9/2008	1-Methylnaphthalene	5.80E-04	1.28	4.53E-02					
Duwamish River RM 4.9 to 7.4	DRB-117	5/9/2008	1-Methylnaphthalene	4.80E-04 J	1.32	3.64E-02					
Duwamish River RM 4.9 to 7.4	DRB-116	5/9/2008	1-Methylnaphthalene	3.70E-04 J	2.36	1.57E-02					
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	2,3,4,6,7,8-HxCDF	1.39E-06 J	2.98	4.66E-05					
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	2,3,4,6,7,8-HxCDF	8.43E-07 J	2.04	4.13E-05					
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	2,3,4,6,7,8-HxCDF	2.94E-07 J	1.7	1.73E-05					
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	2,3,4,6,7,8-HxCDF	2.55E-07 J	2.33	1.09E-05					
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	2,3,4,6,7,8-HxCDF	1.59E-07 J	2.2	7.23E-06					
LDWRI-Dioxin Sampling	comp	1/12/2010	2,3,4,6,7,8-HxCDF	8.43E-07 J	1.88	4.48E-05					
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	2,3,4,7,8-PeCDF	1.41E-06 J	2.98	4.73E-05					
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	2,3,4,7,8-PeCDF	7.95E-07 J	2.04	3.90E-05					
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	2,3,4,7,8-PeCDF	2.66E-07 J	1.7	1.56E-05					
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	2,3,4,7,8-PeCDF	1.93E-07 J	2.2	8.77E-06					
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	2,3,4,7,8-PeCDF	1.69E-07 J	2.33	7.25E-06					
LDWRI-Dioxin Sampling	comp	1/12/2010	2,3,4,7,8-PeCDF	9.48E-07	1.88	5.04E-05					
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	2,3,7,8-TCDD	1.74E-06	2.98	5.84E-05					
LDWRI-Dioxin Sampling	comp	1/12/2010	2,3,7,8-TCDD	6.06E-07	1.88	3.22E-05					
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	2,3,7,8-TCDF	8.59E-07 J	2.04	4.21E-05					
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	2,3,7,8-TCDF	6.71E-07 J	2.98	2.25E-05					
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	2,3,7,8-TCDF	1.70E-07 J	2.33	7.30E-06					
LDWRI-Dioxin Sampling	comp	1/12/2010	2,3,7,8-TCDF	9.27E-07 J	1.88	4.93E-05					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	2,4,5-Trichlorophenol	4.30E-01	1.16	3.71E+01					
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	2,4,5-Trichlorophenol	3.57E-01	1.86	1.92E+01					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	2,4,6-Trichlorophenol	4.06E-01	1.16	3.50E+01					
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	2,4,6-Trichlorophenol	3.57E-01	1.86	1.92E+01					
LDWRI-Benthic	B10b	8/19/2004	2,4'-DDT	6.50E-04 J	1.09	5.96E-02					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	2,4-Dichlorophenol	3.49E-01	1.16	3.01E+01					
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	2,4-Dichlorophenol	3.23E-01	1.86	1.74E+01					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	2,4-Dimethylphenol	3.05E-01	1.16	2.63E+01	29	29	ug/kg DW	11	11

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	2,4-Dimethylphenol	2.92E-01	1.86	1.57E+01	29	29	ug/kg DW	10	10
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	2,4-Dinitrophenol	1.75E+00	1.16	1.51E+02					
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	2,4-Dinitrophenol	7.70E-01 J	1.86	4.14E+01					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	2,4-Dinitrotoluene	4.10E-01	1.16	3.53E+01					
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	2,4-Dinitrotoluene	3.55E-01	1.86	1.91E+01					
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	2,6-Dinitrotoluene	3.34E-01	1.86	1.80E+01					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	2,6-Dinitrotoluene	3.31E-01	1.16	2.85E+01					
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	2-Chloronaphthalene	3.28E-01	1.86	1.76E+01					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	2-Chloronaphthalene	3.14E-01	1.16	2.71E+01					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	2-Chlorophenol	3.29E-01	1.16	2.84E+01					
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	2-Chlorophenol	2.62E-01	1.86	1.41E+01					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	2-Methylnaphthalene	3.18E-01	1.16	2.74E+01	38	64	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	2-Methylnaphthalene	2.94E-01	1.86	1.58E+01	38	64	mg/kg OC	<1	<1
EPA Site Inspection	DR276	9/15/1998	2-Methylnaphthalene	1.00E-01	1.51	6.62E+00	38	64	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS151	3/15/2008	2-Methylnaphthalene	4.20E-02	0.516	8.14E+00	38	64	mg/kg OC	<1	<1
LDWRI-Benthic	B10b	8/19/2004	2-Methylnaphthalene	2.30E-03 J	1.09	2.11E-01	38	64	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	OR-11	May-08	2-Methylnaphthalene	2.00E-03 J	1.58	1.27E-01	38	64	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-01	4/28/2008	2-Methylnaphthalene	1.50E-03 J	0.814	1.84E-01	38	64	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-02	4/28/2008	2-Methylnaphthalene	1.20E-03 J	1.27	9.45E-02	38	64	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-07	4/28/2008	2-Methylnaphthalene	9.50E-04 J	0.892	1.07E-01	38	64	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-112	5/9/2008	2-Methylnaphthalene	8.20E-04 J	1.75	4.69E-02	38	64	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-12	4/28/2008	2-Methylnaphthalene	8.10E-04 J	1.12	7.23E-02	38	64	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-115	5/9/2008	2-Methylnaphthalene	7.50E-04	1.28	5.86E-02	38	64	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-116	5/9/2008	2-Methylnaphthalene	5.10E-04 J	2.36	2.16E-02	38	64	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-117	5/9/2008	2-Methylnaphthalene	5.00E-04 J	1.32	3.79E-02	38	64	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	OR-12	May-08	2-Methylnaphthalene	4.50E-04 J	0.413	1.09E-01	0.67	1.4	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-08	4/28/2008	2-Methylnaphthalene	4.10E-04 J	2.75	1.49E-02	38	64	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-10	4/28/2008	2-Methylnaphthalene	3.80E-04 J	0.643	5.91E-02	38	64	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	2-Methylphenol	3.38E-01	1.16	2.91E+01	63	63	ug/kg DW	5.4	5.4
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	2-Methylphenol	3.14E-01	1.86	1.69E+01	63	63	ug/kg DW	5.0	5.0
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	2-Nitroaniline	4.27E-01	1.86	2.30E+01					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	2-Nitroaniline	3.77E-01	1.16	3.25E+01					
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	2-Nitrophenol	3.73E-01	1.86	2.01E+01					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	2-Nitrophenol	3.12E-01	1.16	2.69E+01					
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	3,3'-Dichlorobenzidine	4.56E-01	1.86	2.45E+01					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	3,3'-Dichlorobenzidine	1.37E-01	1.16	1.18E+01					
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	3-Nitroaniline	6.62E-01	1.86	3.56E+01					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	3-Nitroaniline	5.33E-01	1.16	4.59E+01					
LDWRI-Benthic	B10b	8/19/2004	4,4'-DDD	3.90E-04 J	1.09	3.58E-02					
LDWRI-Benthic	B10b	8/19/2004	4,4'-DDE	2.80E-04 J	1.09	2.57E-02					
LDWRI-Benthic	B10b	8/19/2004	4,4'-DDT	1.40E-03 J	1.09	1.28E-01					

Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	4,6-Dinitro-2-methylphenol	1.39E+00	1.16	1.20E+02					
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	4,6-Dinitro-2-methylphenol	1.39E+00 J	1.86	7.47E+01					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	4-Bromophenyl phenyl ether	3.72E-01	1.16	3.21E+01					
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	4-Bromophenyl phenyl ether	3.27E-01	1.86	1.76E+01					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	4-Chloro-3-methylphenol	3.94E-01	1.16	3.40E+01					
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	4-Chloro-3-methylphenol	3.23E-01	1.86	1.74E+01					
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	4-Chloroaniline	4.20E-01	1.86	2.26E+01					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	4-Chloroaniline	3.02E-01	1.16	2.60E+01					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	4-Chlorophenyl-phenylether	3.52E-01	1.16	3.03E+01					
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	4-Chlorophenyl-phenylether	3.37E-01	1.86	1.81E+01					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	4-Methylphenol	7.09E-01	1.16	6.11E+01	670	670	ug/kg DW	1.1	1.1
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	4-Methylphenol	6.40E-01	1.86	3.44E+01	670	670	ug/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	4-Methylphenol	2.20E-02	2.2	1.00E+00	670	670	ug/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2099-D	3/3/2011	4-Methylphenol	2.10E-02	4.01	5.24E-01	670	670	ug/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS148	3/9/2005	4-Methylphenol	2.00E-02	2.55	7.84E-01	670	670	ug/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	4-Methylphenol	1.60E-02 J	2.33	6.87E-01	670	670	ug/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2201-D	3/18/2011	4-Methylphenol	1.50E-02 J	2.58	5.81E-01	670	670	ug/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	4-Methylphenol	1.40E-02 J	1.7	8.24E-01	670	670	ug/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2200-D	3/18/2011	4-Methylphenol	1.20E-02 J	2.38	5.04E-01	670	670	ug/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	4-Nitroaniline	2.65E-01	1.86	1.42E+01					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	4-Nitroaniline	2.10E-01	1.16	1.81E+01					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	4-Nitrophenol	3.89E-01	1.16	3.35E+01					
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	4-Nitrophenol	3.63E-01	1.86	1.95E+01					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Acenaphthene	3.34E-01	1.16	2.88E+01	16	57	mg/kg OC	1.8	<1
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Acenaphthene	2.95E-01	1.86	1.59E+01	16	57	mg/kg OC	<1	<1
EPA Site Inspection	DR276	9/15/1998	Acenaphthene	2.60E-01	1.51	1.72E+01	16	57	mg/kg OC	1.1	<1
LDWRI-Surface Sediment Round 2	LDW-SS149	3/9/2005	Acenaphthene	8.10E-02	2.08	3.89E+00	16	57	mg/kg OC	<1	<1
EPA Site Inspection	DR265	8/26/1998	Acenaphthene	4.00E-02	1.03	3.88E+00	16	57	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2201-U	3/18/2011	Acenaphthene	3.80E-02	1.69	2.25E+00	16	57	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-07	4/28/2008	Acenaphthene	2.90E-03	0.892	3.25E-01	16	57	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	OR-11	May-08	Acenaphthene	1.30E-03 J	1.58	8.23E-02	16	57	mg/kg OC	<1	<1
LDWRI-Benthic	B10b	8/19/2004	Acenaphthene	1.00E-03 J	1.09	9.17E-02	16	57	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-115	5/9/2008	Acenaphthene	7.00E-04	1.28	5.47E-02	16	57	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-117	5/9/2008	Acenaphthene	5.50E-04 J	1.32	4.17E-02	16	57	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Acenaphthylene	3.68E-01	1.16	3.17E+01	66	66	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Acenaphthylene	3.23E-01	1.86	1.74E+01	66	66	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS147	3/9/2005	Acenaphthylene	2.30E-02	2.12	1.08E+00	66	66	mg/kg OC	<1	<1
LDWRI-Benthic	B10b	8/19/2004	Acenaphthylene	1.50E-03 J	1.09	1.38E-01	66	66	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-01	4/28/2008	Acenaphthylene	4.10E-04 J	0.814	5.04E-02	66	66	mg/kg OC	<1	<1
EPA Site Inspection	DR285	8/25/1998	Aluminum	2.40E+04	3.39	7.08E+05					
EPA Site Inspection	DR263	8/25/1998	Aluminum	2.27E+04	2.9	7.83E+05					

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
EPA Site Inspection	DR268	8/26/1998	Aluminum	1.82E+04	2.1	8.67E+05					
EPA Site Inspection	DR287	8/26/1998	Aluminum	1.78E+04	1.31	1.36E+06					
Duwamish River RM 4.9 to 7.4	DRB-113	5/9/2008	Aluminum	1.70E+04	1.9	8.95E+05					
EPA Site Inspection	DR293	9/14/1998	Aluminum	1.68E+04	1.74	9.66E+05					
Duwamish River RM 4.9 to 7.4	DRB-114	5/9/2008	Aluminum	1.60E+04	2.18	7.34E+05					
EPA Site Inspection	DR266	8/26/1998	Aluminum	1.57E+04	1.38	1.14E+06					
KC Water Quality Assessment	WQAHAMM	6/3/1997	Aluminum	1.50E+04 J	1.95	7.69E+05					
KC Water Quality Assessment	WQAHAMM	5/15/1997	Aluminum	1.50E+04 J	1.75	8.57E+05					
EPA Site Inspection	DR269	8/26/1998	Aluminum	1.46E+04	0.9	1.62E+06					
EPA Site Inspection	DR264	8/26/1998	Aluminum	1.45E+04	1.48	9.80E+05					
EPA Site Inspection	DR273	8/26/1998	Aluminum	1.43E+04	1.66	8.61E+05					
KC Water Quality Assessment	WQAHAMM	5/20/1997	Aluminum	1.40E+04 J	1.77	7.91E+05					
KC Water Quality Assessment	WQAHAMM	5/28/1997	Aluminum	1.40E+04 J	1.56	8.97E+05					
EPA Site Inspection	DR274	9/15/1998	Aluminum	1.40E+04	1.39	1.01E+06					
EPA Site Inspection	DR276	9/15/1998	Aluminum	1.40E+04	1.51	9.27E+05					
EPA Site Inspection	DR267	8/26/1998	Aluminum	1.37E+04	0.85	1.61E+06					
EPA Site Inspection	DR265	8/26/1998	Aluminum	1.31E+04	1.03	1.27E+06					
EPA Site Inspection	DR275	9/15/1998	Aluminum	1.30E+04	1.06	1.23E+06					
EPA Site Inspection	DR270	8/26/1998	Aluminum	1.27E+04	1.32	9.62E+05					
Norfolk-cleanup1	NFK016	8/22/1994	Aluminum	9.60E+03	1.1	8.73E+05					
Duwamish River RM 4.9 to 7.4	OR-11	May-08	Aluminum	9.30E+03	1.58	5.89E+05					
Norfolk-cleanup1	NFK014	8/19/1994	Aluminum	9.30E+03	0.07	1.33E+07					
Norfolk-cleanup1	NFK015	8/22/1994	Aluminum	9.10E+03	3	3.03E+05					
EPA Site Inspection	DR295	9/15/1998	Aluminum	8.40E+03	0.15	5.60E+06					
EPA Site Inspection	DR294	9/15/1998	Aluminum	8.00E+03	0.15	5.33E+06					
EPA Site Inspection	DR296	9/15/1998	Aluminum	7.70E+03	0.65	1.18E+06					
Duwamish River RM 4.9 to 7.4	DR-02	4/28/2008	Aluminum	7.70E+03	1.27	6.06E+05					
Duwamish River RM 4.9 to 7.4	DR-11	4/28/2008	Aluminum	7.20E+03	0.296	2.43E+06					
Duwamish River RM 4.9 to 7.4	DR-01	4/28/2008	Aluminum	7.10E+03	0.814	8.72E+05					
Duwamish River RM 4.9 to 7.4	DR-10	4/28/2008	Aluminum	6.80E+03	0.643	1.06E+06					
Duwamish River RM 4.9 to 7.4	DR-04	4/28/2008	Aluminum	6.70E+03	0.455	1.47E+06					
Duwamish River RM 4.9 to 7.4	OR-12	May-08	Aluminum	6.50E+03	0.413	1.57E+06					
Duwamish River RM 4.9 to 7.4	DR-03	4/28/2008	Aluminum	6.40E+03	0.216	2.96E+06					
Duwamish River RM 4.9 to 7.4	DR-05	4/28/2008	Aluminum	6.40E+03	0.394	1.62E+06					
Duwamish River RM 4.9 to 7.4	DR-09	4/28/2008	Aluminum	6.40E+03	0.3	2.13E+06					
Duwamish River RM 4.9 to 7.4	DR-06	4/28/2008	Aluminum	5.80E+03	0.392	1.48E+06					
Duwamish River RM 4.9 to 7.4	DR-07	4/28/2008	Aluminum	5.80E+03	0.892	6.50E+05					
Duwamish River RM 4.9 to 7.4	DR-12	4/28/2008	Aluminum	4.40E+03	1.12	3.93E+05					
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Aniline	3.23E-01	1.86	1.74E+01					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Aniline	1.36E-01	1.16	1.17E+01					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Anthracene	3.85E-01	1.16	3.32E+01	220	1200	mg/kg OC	<1	<1

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Anthracene	2.84E-01	1.86	1.53E+01	220	1200	mg/kg OC	<1	<1
EPA Site Inspection	DR276	9/15/1998	Anthracene	1.40E-01	1.51	9.27E+00	220	1200	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS149	3/9/2005	Anthracene	1.20E-01	2.08	5.77E+00	220	1200	mg/kg OC	<1	<1
EPA Site Inspection	DR274	9/15/1998	Anthracene	9.00E-02	1.39	6.47E+00	220	1200	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS133	3/9/2005	Anthracene	6.10E-02	2.59	2.36E+00	220	1200	mg/kg OC	<1	<1
EPA Site Inspection	DR268	8/26/1998	Anthracene	5.00E-02	2.1	2.38E+00	220	1200	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS147	3/9/2005	Anthracene	4.90E-02	2.12	2.31E+00	220	1200	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	Anthracene	3.60E-02	2.98	1.21E+00	220	1200	mg/kg OC	<1	<1
EPA Site Inspection	DR265	8/26/1998	Anthracene	3.00E-02	1.03	2.91E+00	220	1200	mg/kg OC	<1	<1
EPA Site Inspection	DR293	9/14/1998	Anthracene	3.00E-02	1.74	1.72E+00	220	1200	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS146	3/9/2005	Anthracene	2.70E-02	2.4	1.13E+00	220	1200	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS148	3/9/2005	Anthracene	2.20E-02	2.55	8.63E-01	220	1200	mg/kg OC	<1	<1
EPA Site Inspection	DR273	8/26/1998	Anthracene	2.00E-02	1.66	1.20E+00	220	1200	mg/kg OC	<1	<1
EPA Site Inspection	DR285	8/25/1998	Anthracene	2.00E-02	3.39	5.90E-01	220	1200	mg/kg OC	<1	<1
EPA Site Inspection	DR275	9/15/1998	Anthracene	2.00E-02	1.06	1.89E+00	220	1200	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-114	5/9/2008	Anthracene	1.60E-02 J	2.18	7.34E-01	220	1200	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-113	5/9/2008	Anthracene	1.20E-02 J	1.9	6.32E-01	220	1200	mg/kg OC	<1	<1
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	Anthracene	1.10E-02	2.04	5.39E-01	220	1200	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-07	4/28/2008	Anthracene	4.60E-03	0.892	5.16E-01	220	1200	mg/kg OC	<1	<1
LDWRI-Benthic	B10b	8/19/2004	Anthracene	4.20E-03 J	1.09	3.85E-01	220	1200	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	OR-11	May-08	Anthracene	3.30E-03	1.58	2.09E-01	220	1200	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-115	5/9/2008	Anthracene	1.80E-03 J	1.28	1.41E-01	220	1200	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-112	5/9/2008	Anthracene	1.30E-03 J	1.75	7.43E-02	220	1200	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-117	5/9/2008	Anthracene	1.20E-03 J	1.32	9.09E-02	220	1200	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-116	5/9/2008	Anthracene	9.20E-04 J	2.36	3.90E-02	220	1200	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-01	4/28/2008	Anthracene	7.80E-04 J	0.814	9.58E-02	220	1200	mg/kg OC	<1	<1
LDWRI-Dioxin Sampling	comp	1/12/2010	Anthracene	4.80E-03	1.88	2.55E-01	220	1200	mg/kg OC	<1	<1
EPA Site Inspection	DR293	9/14/1998	Antimony	7.00E+00 J	1.74	4.02E+02					
Duwamish River RM 4.9 to 7.4	DR-09	4/28/2008	Antimony	9.90E-01 JB	0.3	3.30E+02					
Duwamish River RM 4.9 to 7.4	DRB-114	5/9/2008	Antimony	5.20E-01 B	2.18	2.39E+01					
Duwamish River RM 4.9 to 7.4	DRB-113	5/9/2008	Antimony	4.90E-01 B	1.9	2.58E+01					
Duwamish River RM 4.9 to 7.4	DR-05	4/28/2008	Antimony	4.60E-01 B	0.394	1.17E+02					
Duwamish River RM 4.9 to 7.4	OR-11	May-08	Antimony	2.40E-01 JB	1.58	1.52E+01					
Duwamish River RM 4.9 to 7.4	DR-03	4/28/2008	Antimony	1.30E-01 JB	0.216	6.02E+01					
Duwamish River RM 4.9 to 7.4	DR-11	4/28/2008	Antimony	1.30E-01 JB	0.296	4.39E+01					
Duwamish River RM 4.9 to 7.4	DR-01	4/28/2008	Antimony	1.30E-01 J	0.814	1.60E+01					
Duwamish River RM 4.9 to 7.4	DR-04	4/28/2008	Antimony	1.20E-01 JB	0.455	2.64E+01					
Duwamish River RM 4.9 to 7.4	OR-12	May-08	Antimony	1.20E-01 JB	0.413	2.91E+01					
Duwamish River RM 4.9 to 7.4	DR-06	4/28/2008	Antimony	1.10E-01 JB	0.392	2.81E+01					
Duwamish River RM 4.9 to 7.4	DR-02	4/28/2008	Antimony	1.00E-01 J	1.27	7.87E+00					
LDWRI-Benthic	B10b	8/19/2004	Antimony	9.00E-02 J	1.09	8.26E+00					

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
Duwamish River RM 4.9 to 7.4	DR-07	4/28/2008	Antimony	8.60E-02 JB	0.892	9.64E+00					
Duwamish River RM 4.9 to 7.4	DR-12	4/28/2008	Antimony	8.40E-02 JB	1.12	7.50E+00					
Duwamish River RM 4.9 to 7.4	DR-10	4/28/2008	Antimony	8.30E-02 JB	0.643	1.29E+01					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Aroclor 1016	5.98E-02	1.16	5.16E+00					
LDWRI-Surface Sediment Round 2	LDW-SS149	3/9/2005	Aroclor 1248	5.40E-02	2.08	2.60E+00					
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Aroclor 1248	7.30E-03	1.86	3.92E-01					
LDW Outfall Sampling	LDW-SS2099-D	3/3/2011	Aroclor 1248	7.00E-03	4.01	1.75E-01					
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	Aroclor 1248	6.00E-03	2.2	2.73E-01					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Aroclor 1248	5.10E-03	1.16	4.40E-01					
LDWRI-Dioxin Sampling	comp	1/12/2010	Aroclor 1248	3.10E-02	1.88	1.65E+00					
LDWRI-Surface Sediment Round 2	LDW-SS148	3/9/2005	Aroclor 1254	5.20E-01	2.55	2.04E+01					
LDWRI-Surface Sediment Round 2	LDW-SS135	3/15/2005	Aroclor 1254	1.70E-01	2.28	7.46E+00					
LDWRI-Surface Sediment Round 3	LDW-SS340	10/3/2006	Aroclor 1254	6.40E-02	1.8	3.56E+00					
EPA Site Inspection	DR273	8/26/1998	Aroclor 1254	4.50E-02	1.66	2.71E+00					
LDWRI-Surface Sediment Round 2	LDW-SS149	3/9/2005	Aroclor 1254	4.40E-02	2.08	2.12E+00					
EPA Site Inspection	DR268	8/26/1998	Aroclor 1254	3.40E-02	2.1	1.62E+00					
EPA Site Inspection	DR276	9/15/1998	Aroclor 1254	3.20E-02	1.51	2.12E+00					
EPA Site Inspection	DR285	8/25/1998	Aroclor 1254	2.90E-02	3.39	8.55E-01					
EPA Site Inspection	DR263	8/25/1998	Aroclor 1254	2.80E-02	2.9	9.66E-01					
LDW Outfall Sampling	LDW-SS2201-U	3/18/2011	Aroclor 1254	2.60E-02	1.69	1.54E+00					
EPA Site Inspection	DR264	8/26/1998	Aroclor 1254	2.50E-02	1.48	1.69E+00					
EPA Site Inspection	DR287	8/26/1998	Aroclor 1254	2.50E-02	1.31	1.91E+00					
EPA Site Inspection	DR266	8/26/1998	Aroclor 1254	2.40E-02	1.38	1.74E+00					
LDWRI-Surface Sediment Round 2	LDW-SS150	3/9/2005	Aroclor 1254	2.40E-02	1.79	1.34E+00					
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	Aroclor 1254	2.20E-02 J	2.98	7.38E-01					
EPA Site Inspection	DR267	8/26/1998	Aroclor 1254	2.10E-02	0.85	2.47E+00					
LDWRI-Surface Sediment Round 3	LDW-SS339	10/3/2006	Aroclor 1254	2.00E-02	2.04	9.80E-01					
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	Aroclor 1254	1.80E-02	2.04	8.82E-01					
LDWRI-Surface Sediment Round 2	LDW-SS133	3/9/2005	Aroclor 1254	1.70E-02 J	2.59	6.56E-01					
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	Aroclor 1254	1.30E-02	2.33	5.58E-01					
LDW Outfall Sampling	LDW-SS2200-D	3/18/2011	Aroclor 1254	1.20E-02	2.38	5.04E-01					
LDW Outfall Sampling	LDW-SS2099-D	3/3/2011	Aroclor 1254	7.10E-03	4.01	1.77E-01					
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	Aroclor 1254	6.20E-03	2.2	2.82E-01					
LDW Outfall Sampling	LDW-SS2201-D	3/18/2011	Aroclor 1254	5.00E-03 J	2.58	1.94E-01					
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	Aroclor 1254	4.70E-03	1.7	2.76E-01					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Aroclor 1254	4.00E-03	1.16	3.45E-01					
Duwamish River RM 4.9 to 7.4	DRB-115	5/9/2008	Aroclor 1254	2.10E-03 J	1.28	1.64E-01					
Duwamish River RM 4.9 to 7.4	DRB-112	5/9/2008	Aroclor 1254	1.90E-03	1.75	1.09E-01					
Duwamish River RM 4.9 to 7.4	DRB-116	5/9/2008	Aroclor 1254	1.70E-03 J	2.36	7.20E-02					
Duwamish River RM 4.9 to 7.4	DRB-117	5/9/2008	Aroclor 1254	8.60E-04 J	1.32	6.52E-02					
LDWRI-Dioxin Sampling	comp	1/12/2010	Aroclor 1254	5.50E-02	1.88	2.93E+00					

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
LDWRI-Surface Sediment Round 2	LDW-SS135	3/15/2005	Aroclor 1260	7.00E-02	2.28	3.07E+00					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Aroclor 1260	6.56E-02	1.16	5.66E+00					
LDWRI-Surface Sediment Round 3	LDW-SS339	10/3/2006	Aroclor 1260	4.00E-02	2.04	1.96E+00					
LDWRI-Surface Sediment Round 2	LDW-SS150	3/9/2005	Aroclor 1260	3.00E-02	1.79	1.68E+00					
EPA Site Inspection	DR266	8/26/1998	Aroclor 1260	2.70E-02	1.38	1.96E+00					
EPA Site Inspection	DR264	8/26/1998	Aroclor 1260	2.60E-02	1.48	1.76E+00					
EPA Site Inspection	DR285	8/25/1998	Aroclor 1260	2.40E-02 J	3.39	7.08E-01					
LDWRI-Surface Sediment Round 3	LDW-SS340	10/3/2006	Aroclor 1260	2.40E-02 J	1.8	1.33E+00					
EPA Site Inspection	DR263	8/25/1998	Aroclor 1260	2.20E-02 J	2.9	7.59E-01					
LDWRI-Surface Sediment Round 2	LDW-SS133	3/9/2005	Aroclor 1260	1.90E-02 J	2.59	7.34E-01					
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	Aroclor 1260	1.20E-02	2.04	5.88E-01					
LDWRI-Benthic	B10b	8/19/2004	Aroclor 1260	9.80E-03 J	1.09	8.99E-01					
LDW Outfall Sampling	LDW-SS2201-U	3/18/2011	Aroclor 1260	7.90E-03	1.69	4.67E-01					
LDW Outfall Sampling	LDW-SS2099-D	3/3/2011	Aroclor 1260	5.30E-03	4.01	1.32E-01					
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	Aroclor 1260	3.80E-03 J	1.7	2.24E-01					
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	Aroclor 1260	3.00E-03 J	2.33	1.29E-01					
LDW Outfall Sampling	LDW-SS2201-D	3/18/2011	Aroclor 1260	3.00E-03 J	2.58	1.16E-01					
Duwamish River RM 4.9 to 7.4	DR-01	4/28/2008	Aroclor 1260	3.60E-03 J	0.814	4.42E-01					
Duwamish River RM 4.9 to 7.4	DR-03	4/28/2008	Aroclor 1260	3.40E-03 J	0.216	1.57E+00					
Duwamish River RM 4.9 to 7.4	DR-06	4/28/2008	Aroclor 1260	3.00E-03 J	0.392	7.65E-01					
Duwamish River RM 4.9 to 7.4	DR-04	4/28/2008	Aroclor 1260	2.90E-03 J	0.455	6.37E-01					
Duwamish River RM 4.9 to 7.4	DR-09	4/28/2008	Aroclor 1260	2.70E-03 J	0.3	9.00E-01					
Duwamish River RM 4.9 to 7.4	DR-12	4/28/2008	Aroclor 1260	2.70E-03 J	1.12	2.41E-01					
Duwamish River RM 4.9 to 7.4	DR-05	4/28/2008	Aroclor 1260	2.60E-03 J	0.394	6.60E-01					
Duwamish River RM 4.9 to 7.4	DR-08	4/28/2008	Aroclor 1260	2.60E-03 J	2.75	9.45E-02					
Duwamish River RM 4.9 to 7.4	DR-10	4/28/2008	Aroclor 1260	2.50E-03 J	0.643	3.89E-01					
Duwamish River RM 4.9 to 7.4	DR-07	4/28/2008	Aroclor 1260	2.30E-03 J	0.892	2.58E-01					
LDWRI-Dioxin Sampling	comp	1/12/2010	Aroclor 1260	4.10E-02	1.88	2.18E+00					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Arsenic	2.58E+02	1.16	2.22E+04	57	93	mg/kg DW	4.5	2.8
LDWRI-Surface Sediment Round 2	LDW-SS148	3/9/2005	Arsenic	1.56E+01	2.55	6.12E+02	57	93	mg/kg DW	<1	<1
EPA Site Inspection	DR263	8/25/1998	Arsenic	1.38E+01	2.9	4.76E+02	57	93	mg/kg DW	<1	<1
KC Water Quality Assessment	WQAHAMM	6/3/1997	Arsenic	1.30E+01	1.95	6.67E+02	57	93	mg/kg DW	<1	<1
EPA Site Inspection	DR285	8/25/1998	Arsenic	1.23E+01	3.39	3.63E+02	57	93	mg/kg DW	<1	<1
EPA Site Inspection	DR266	8/26/1998	Arsenic	1.20E+01	1.38	8.70E+02	57	93	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	Arsenic	1.20E+01	2.33	5.15E+02	57	93	mg/kg DW	<1	<1
EPA Site Inspection	DR265	8/26/1998	Arsenic	1.15E+01	1.03	1.12E+03	57	93	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2201-U	3/18/2011	Arsenic	1.10E+01	1.69	6.51E+02	57	93	mg/kg DW	<1	<1
KC Water Quality Assessment	WQAHAMM	5/20/1997	Arsenic	1.10E+01	1.77	6.21E+02	57	93	mg/kg DW	<1	<1
KC Water Quality Assessment	WQAHAMM	5/15/1997	Arsenic	1.10E+01	1.75	6.29E+02	57	93	mg/kg DW	<1	<1
KC Water Quality Assessment	WQAHAMM	5/28/1997	Arsenic	1.10E+01	1.56	7.05E+02	57	93	mg/kg DW	<1	<1
EPA Site Inspection	DR273	8/26/1998	Arsenic	1.07E+01	1.66	6.45E+02	57	93	mg/kg DW	<1	<1

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
EPA Site Inspection	DR270	8/26/1998	Arsenic	1.06E+01	1.32	8.03E+02	57	93	mg/kg DW	<1	<1
EPA Site Inspection	DR264	8/26/1998	Arsenic	1.00E+01	1.48	6.76E+02	57	93	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-112	5/9/2008	Arsenic	1.00E+01 B	1.75	5.71E+02	57	93	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	Arsenic	1.00E+01	2.98	3.36E+02	57	93	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS133	3/9/2005	Arsenic	1.00E+01	2.59	3.86E+02	57	93	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2200-D	3/18/2011	Arsenic	1.00E+01	2.38	4.20E+02	57	93	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	Arsenic	1.00E+01	1.7	5.88E+02	57	93	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2201-D	3/18/2011	Arsenic	1.00E+01	2.58	3.88E+02	57	93	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS135	3/15/2005	Arsenic	9.80E+00	2.28	4.30E+02	57	93	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-114	5/9/2008	Arsenic	9.70E+00	2.18	4.45E+02	57	93	mg/kg DW	<1	<1
Norfolk-cleanup1	NFK014	8/19/1994	Arsenic	9.70E+00	0.07	1.39E+04	57	93	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-113	5/9/2008	Arsenic	9.50E+00	1.9	5.00E+02	57	93	mg/kg DW	<1	<1
EPA Site Inspection	DR276	9/15/1998	Arsenic	9.50E+00	1.51	6.29E+02	57	93	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS147	3/9/2005	Arsenic	8.70E+00	2.12	4.10E+02	57	93	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-05	4/28/2008	Arsenic	8.60E+00	0.394	2.18E+03	57	93	mg/kg DW	<1	<1
EPA Site Inspection	DR287	8/26/1998	Arsenic	8.50E+00	1.31	6.49E+02	57	93	mg/kg DW	<1	<1
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	Arsenic	8.30E+00	2.04	4.07E+02	57	93	mg/kg DW	<1	<1
EPA Site Inspection	DR268	8/26/1998	Arsenic	8.00E+00	2.1	3.81E+02	57	93	mg/kg DW	<1	<1
EPA Site Inspection	DR269	8/26/1998	Arsenic	8.00E+00	0.9	8.89E+02	57	93	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Arsenic	8.00E+00	1.86	4.30E+02	57	93	mg/kg DW	<1	<1
EPA Site Inspection	DR275	9/15/1998	Arsenic	7.40E+00	1.06	6.98E+02	57	93	mg/kg DW	<1	<1
EPA Site Inspection	DR267	8/26/1998	Arsenic	7.20E+00	0.85	8.47E+02	57	93	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS146	3/9/2005	Arsenic	7.10E+00	2.4	2.96E+02	57	93	mg/kg DW	<1	<1
EPA Site Inspection	DR293	9/14/1998	Arsenic	7.00E+00	1.74	4.02E+02	57	93	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2098-A	3/4/2011	Arsenic	7.00E+00	1.25	5.60E+02	57	93	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	Arsenic	7.00E+00	2.2	3.18E+02	57	93	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-116	5/9/2008	Arsenic	6.90E+00 B	2.36	2.92E+02	57	93	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-115	5/9/2008	Arsenic	6.80E+00 B	1.28	5.31E+02	57	93	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS139	3/9/2005	Arsenic	6.80E+00	1.67	4.07E+02	57	93	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS141	3/15/2005	Arsenic	6.70E+00	2.82	2.38E+02	57	93	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 3	LDW-SS340	10/3/2006	Arsenic	6.60E+00	1.8	3.67E+02	57	93	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS149	3/9/2005	Arsenic	6.40E+00	2.08	3.08E+02	57	93	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	OR-11	May-08	Arsenic	6.30E+00	1.58	3.99E+02	57	93	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 3	LDW-SS339	10/3/2006	Arsenic	6.20E+00	2.04	3.04E+02	57	93	mg/kg DW	<1	<1
EPA Site Inspection	DR274	9/15/1998	Arsenic	6.10E+00	1.39	4.39E+02	57	93	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-01	4/28/2008	Arsenic	6.10E+00	0.814	7.49E+02	57	93	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS150	3/9/2005	Arsenic	5.80E+00	1.79	3.24E+02	57	93	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-10	4/28/2008	Arsenic	5.70E+00	0.643	8.86E+02	57	93	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-07	4/28/2008	Arsenic	5.60E+00	0.892	6.28E+02	57	93	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS136	3/15/2005	Arsenic	5.60E+00	1.56	3.59E+02	57	93	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-117	5/9/2008	Arsenic	5.50E+00 B	1.32	4.17E+02	57	93	mg/kg DW	<1	<1

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
EPA Site Inspection	DR296	9/15/1998	Arsenic	5.30E+00	0.65	8.15E+02	57	93	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-02	4/28/2008	Arsenic	5.30E+00	1.27	4.17E+02	57	93	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-03	4/28/2008	Arsenic	5.10E+00	0.216	2.36E+03	57	93	mg/kg DW	<1	<1
LDWRI-Benthic	B10b	8/19/2004	Arsenic	5.05E+00 J	1.09	4.63E+02	57	93	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS140	3/8/2005	Arsenic	5.00E+00	1.52	3.29E+02	57	93	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-04	4/28/2008	Arsenic	4.90E+00	0.455	1.08E+03	57	93	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	OR-12	May-08	Arsenic	4.90E+00	0.413	1.19E+03	57	93	mg/kg DW	<1	<1
EPA Site Inspection	DR295	9/15/1998	Arsenic	4.90E+00	0.15	3.27E+03	57	93	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-09	4/28/2008	Arsenic	4.80E+00	0.3	1.60E+03	57	93	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-06	4/28/2008	Arsenic	4.70E+00	0.392	1.20E+03	57	93	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-11	4/28/2008	Arsenic	4.70E+00	0.296	1.59E+03	57	93	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS152	3/15/2008	Arsenic	4.70E+00	0.236	1.99E+03	57	93	mg/kg DW	<1	<1
EPA Site Inspection	DR294	9/15/1998	Arsenic	4.60E+00	0.15	3.07E+03	57	93	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS145	3/14/2005	Arsenic	4.50E+00	0.189	2.38E+03	57	93	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS151	3/15/2008	Arsenic	4.10E+00	0.516	7.95E+02	57	93	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-12	4/28/2008	Arsenic	3.70E+00	1.12	3.30E+02	57	93	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 1	LDW-SS134	1/24/2005	Arsenic	3.50E+00	0.39	8.97E+02	57	93	mg/kg DW	<1	<1
LDWRI-Dioxin Sampling	comp	1/12/2010	Arsenic	6.40E+00			57	93	mg/kg DW	<1	<1
EPA Site Inspection	DR285	8/25/1998	Barium	7.60E+01	3.39	2.24E+03					
EPA Site Inspection	DR263	8/25/1998	Barium	7.20E+01	2.9	2.48E+03					
EPA Site Inspection	DR268	8/26/1998	Barium	7.00E+01	2.1	3.33E+03					
EPA Site Inspection	DR293	9/14/1998	Barium	5.80E+01	1.74	3.33E+03					
Norfolk-cleanup1	NFK016	8/22/1994	Barium	5.60E+01	1.1	5.09E+03					
EPA Site Inspection	DR287	8/26/1998	Barium	5.50E+01	1.31	4.20E+03					
EPA Site Inspection	DR266	8/26/1998	Barium	5.00E+01	1.38	3.62E+03					
EPA Site Inspection	DR273	8/26/1998	Barium	5.00E+01	1.66	3.01E+03					
EPA Site Inspection	DR269	8/26/1998	Barium	4.80E+01	0.9	5.33E+03					
EPA Site Inspection	DR296	9/15/1998	Barium	4.70E+01	0.65	7.23E+03					
EPA Site Inspection	DR276	9/15/1998	Barium	4.70E+01	1.51	3.11E+03					
Norfolk-cleanup1	NFK015	8/22/1994	Barium	4.70E+01	3	1.57E+03					
EPA Site Inspection	DR267	8/26/1998	Barium	4.60E+01	0.85	5.41E+03					
EPA Site Inspection	DR270	8/26/1998	Barium	4.60E+01	1.32	3.48E+03					
EPA Site Inspection	DR264	8/26/1998	Barium	4.40E+01	1.48	2.97E+03					
EPA Site Inspection	DR265	8/26/1998	Barium	4.20E+01	1.03	4.08E+03					
EPA Site Inspection	DR275	9/15/1998	Barium	4.20E+01	1.06	3.96E+03					
EPA Site Inspection	DR274	9/15/1998	Barium	4.20E+01	1.39	3.02E+03					
Norfolk-cleanup1	NFK014	8/19/1994	Barium	3.80E+01	0.07	5.43E+04					
EPA Site Inspection	DR295	9/15/1998	Barium	3.40E+01	0.15	2.27E+04					
EPA Site Inspection	DR294	9/15/1998	Barium	2.90E+01	0.15	1.93E+04					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Benzo(a)anthracene	4.44E-01	1.16	3.83E+01	110	270	mg/kg OC	<1	<1
EPA Site Inspection	DR276	9/15/1998	Benzo(a)anthracene	4.10E-01	1.51	2.72E+01	110	270	mg/kg OC	<1	<1

Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
EPA Site Inspection	DR274	9/15/1998	Benzo(a)anthracene	3.70E-01	1.39	2.66E+01	110	270	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS149	3/9/2005	Benzo(a)anthracene	3.60E-01	2.08	1.73E+01	110	270	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Benzo(a)anthracene	3.41E-01	1.86	1.83E+01	110	270	mg/kg OC	<1	<1
EPA Site Inspection	DR268	8/26/1998	Benzo(a)anthracene	2.00E-01	2.1	9.52E+00	110	270	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS147	3/9/2005	Benzo(a)anthracene	1.60E-01	2.12	7.55E+00	110	270	mg/kg OC	<1	<1
EPA Site Inspection	DR293	9/14/1998	Benzo(a)anthracene	1.40E-01	1.74	8.05E+00	110	270	mg/kg OC	<1	<1
EPA Site Inspection	DR273	8/26/1998	Benzo(a)anthracene	1.30E-01	1.66	7.83E+00	110	270	mg/kg OC	<1	<1
EPA Site Inspection	DR285	8/25/1998	Benzo(a)anthracene	1.30E-01	3.39	3.83E+00	110	270	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS146	3/9/2005	Benzo(a)anthracene	1.30E-01	2.4	5.42E+00	110	270	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	Benzo(a)anthracene	1.20E-01	2.98	4.03E+00	110	270	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS133	3/9/2005	Benzo(a)anthracene	1.10E-01	2.59	4.25E+00	110	270	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS148	3/9/2005	Benzo(a)anthracene	1.10E-01	2.55	4.31E+00	110	270	mg/kg OC	<1	<1
EPA Site Inspection	DR275	9/15/1998	Benzo(a)anthracene	1.00E-01	1.06	9.43E+00	110	270	mg/kg OC	<1	<1
EPA Site Inspection	DR263	8/25/1998	Benzo(a)anthracene	8.00E-02	2.9	2.76E+00	110	270	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS139	3/9/2005	Benzo(a)anthracene	7.20E-02	1.67	4.31E+00	110	270	mg/kg OC	<1	<1
EPA Site Inspection	DR264	8/26/1998	Benzo(a)anthracene	7.00E-02	1.48	4.73E+00	110	270	mg/kg OC	<1	<1
EPA Site Inspection	DR265	8/26/1998	Benzo(a)anthracene	7.00E-02	1.03	6.80E+00	110	270	mg/kg OC	<1	<1
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	Benzo(a)anthracene	6.20E-02	2.04	3.64E+00	110	270	mg/kg OC	<1	<1
EPA Site Inspection	DR269	8/26/1998	Benzo(a)anthracene	6.00E-02	0.9	6.67E+00	110	270	mg/kg OC	<1	<1
EPA Site Inspection	DR287	8/26/1998	Benzo(a)anthracene	6.00E-02	1.31	4.58E+00	110	270	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-114	5/9/2008	Benzo(a)anthracene	5.80E-02	2.18	2.66E+00	110	270	mg/kg OC	<1	<1
KC Water Quality Assessment	WQAHAMM	6/3/1997	Benzo(a)anthracene	5.80E-02 J	1.95	2.97E+00	110	270	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 3	LDW-SS340	10/3/2006	Benzo(a)anthracene	5.60E-02 J	1.8	3.11E+00	110	270	mg/kg OC	<1	<1
EPA Site Inspection	DR266	8/26/1998	Benzo(a)anthracene	5.00E-02	1.38	3.62E+00	110	270	mg/kg OC	<1	<1
EPA Site Inspection	DR267	8/26/1998	Benzo(a)anthracene	5.00E-02	0.85	5.88E+00	110	270	mg/kg OC	<1	<1
EPA Site Inspection	DR270	8/26/1998	Benzo(a)anthracene	5.00E-02	1.32	3.79E+00	110	270	mg/kg OC	<1	<1
KC Water Quality Assessment	WQAHAMM	5/15/1997	Benzo(a)anthracene	4.40E-02 J	1.75	2.51E+00	110	270	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-113	5/9/2008	Benzo(a)anthracene	3.90E-02 J	1.9	2.05E+00	110	270	mg/kg OC	<1	<1
KC Water Quality Assessment	WQAHAMM	5/28/1997	Benzo(a)anthracene	3.70E-02 J	1.56	2.37E+00	110	270	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS141	3/15/2005	Benzo(a)anthracene	3.50E-02 J	2.82	1.24E+00	110	270	mg/kg OC	<1	<1
KC Water Quality Assessment	WQAHAMM	5/20/1997	Benzo(a)anthracene	3.20E-02 J	1.77	1.81E+00	110	270	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS150	3/9/2005	Benzo(a)anthracene	2.80E-02	1.79	1.56E+00	110	270	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2200-D	3/18/2011	Benzo(a)anthracene	2.70E-02	2.38	1.13E+00	110	270	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-D ^a	3/3/2011	Benzo(a)anthracene	2.40E-02	4.01	5.99E-01	1.3	1.6	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2201-U	3/18/2011	Benzo(a)anthracene	1.70E-02 J	1.69	1.01E+00	110	270	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	OR-11	May-08	Benzo(a)anthracene	1.70E-02	1.58	1.08E+00	110	270	mg/kg OC	<1	<1
LDWRI-Benthic	B10b	8/19/2004	Benzo(a)anthracene	1.30E-02	1.09	1.19E+00	110	270	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	Benzo(a)anthracene	1.30E-02 J	2.2	5.91E-01	110	270	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	Benzo(a)anthracene	1.30E-02 J	2.33	5.58E-01	110	270	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	Benzo(a)anthracene	1.30E-02 J	1.7	7.65E-01	110	270	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS136	3/15/2005	Benzo(a)anthracene	1.20E-02	1.56	7.69E-01	110	270	mg/kg OC	<1	<1

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
Duwamish River RM 4.9 to 7.4	DRB-115	5/9/2008	Benzo(a)anthracene	9.20E-03	1.28	7.19E-01	110	270	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS140	3/8/2005	Benzo(a)anthracene	9.20E-03	1.52	6.05E-01	110	270	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-117	5/9/2008	Benzo(a)anthracene	7.50E-03	1.32	5.68E-01	110	270	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-01	4/28/2008	Benzo(a)anthracene	7.50E-03 J	0.814	9.21E-01	110	270	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-07	4/28/2008	Benzo(a)anthracene	7.40E-03	0.892	8.30E-01	110	270	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-112	5/9/2008	Benzo(a)anthracene	6.80E-03	1.75	3.89E-01	110	270	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-116	5/9/2008	Benzo(a)anthracene	4.30E-03 J	2.36	1.82E-01	110	270	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-02	4/28/2008	Benzo(a)anthracene	1.00E-03 J	1.27	7.87E-02	110	270	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	OR-12 ^a	May-08	Benzo(a)anthracene	8.70E-04 J	0.413	2.11E-01	1.3	1.6	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-04 ^a	4/28/2008	Benzo(a)anthracene	0.000860 J	0.455	0.189011	1.3	1.6	mg/kg DW	<1	<1
LDWRI-Dioxin Sampling	comp	1/12/2010	Benzo(a)anthracene	1.60E-02	1.88	8.51E-01	110	270	mg/kg OC	<1	<1
EPA Site Inspection	DR274	9/15/1998	Benzo(a)pyrene	4.40E-01	1.39	3.17E+01	99	210	mg/kg OC	<1	<1
EPA Site Inspection	DR276	9/15/1998	Benzo(a)pyrene	3.40E-01	1.51	2.25E+01	99	210	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Benzo(a)pyrene	3.37E-01	1.16	2.91E+01	99	210	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Benzo(a)pyrene	2.89E-01	1.86	1.55E+01	99	210	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS149	3/9/2005	Benzo(a)pyrene	2.60E-01	2.08	1.25E+01	99	210	mg/kg OC	<1	<1
EPA Site Inspection	DR293	9/14/1998	Benzo(a)pyrene	1.80E-01	1.74	1.03E+01	99	210	mg/kg OC	<1	<1
EPA Site Inspection	DR273	8/26/1998	Benzo(a)pyrene	1.60E-01	1.66	9.64E+00	99	210	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS148	3/9/2005	Benzo(a)pyrene	1.60E-01	2.55	6.27E+00	99	210	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS146	3/9/2005	Benzo(a)pyrene	1.50E-01	2.4	6.25E+00	99	210	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS147	3/9/2005	Benzo(a)pyrene	1.50E-01	2.12	7.08E+00	99	210	mg/kg OC	<1	<1
EPA Site Inspection	DR275	9/15/1998	Benzo(a)pyrene	1.30E-01	1.06	1.23E+01	99	210	mg/kg OC	<1	<1
EPA Site Inspection	DR268	8/26/1998	Benzo(a)pyrene	1.20E-01	2.1	5.71E+00	99	210	mg/kg OC	<1	<1
EPA Site Inspection	DR285	8/25/1998	Benzo(a)pyrene	1.20E-01	3.39	3.54E+00	99	210	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS133	3/9/2005	Benzo(a)pyrene	1.00E-01	2.59	3.86E+00	99	210	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	Benzo(a)pyrene	9.50E-02	2.98	3.19E+00	99	210	mg/kg OC	<1	<1
EPA Site Inspection	DR263	8/25/1998	Benzo(a)pyrene	9.00E-02	2.9	3.10E+00	99	210	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS139	3/9/2005	Benzo(a)pyrene	8.30E-02	1.67	4.97E+00	99	210	mg/kg OC	<1	<1
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	Benzo(a)pyrene	7.70E-02	2.04	3.77E+00	99	210	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 3	LDW-SS340	10/3/2006	Benzo(a)pyrene	7.10E-02	1.8	3.94E+00	99	210	mg/kg OC	<1	<1
EPA Site Inspection	DR264	8/26/1998	Benzo(a)pyrene	7.00E-02	1.48	4.73E+00	99	210	mg/kg OC	<1	<1
EPA Site Inspection	DR266	8/26/1998	Benzo(a)pyrene	7.00E-02	1.38	5.07E+00	99	210	mg/kg OC	<1	<1
EPA Site Inspection	DR269	8/26/1998	Benzo(a)pyrene	7.00E-02	0.9	7.78E+00	99	210	mg/kg OC	<1	<1
EPA Site Inspection	DR287	8/26/1998	Benzo(a)pyrene	7.00E-02	1.31	5.34E+00	99	210	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-114	5/9/2008	Benzo(a)pyrene	6.30E-02	2.18	2.89E+00	99	210	mg/kg OC	<1	<1
EPA Site Inspection	DR265	8/26/1998	Benzo(a)pyrene	6.00E-02	1.03	5.83E+00	99	210	mg/kg OC	<1	<1
EPA Site Inspection	DR267	8/26/1998	Benzo(a)pyrene	6.00E-02	0.85	7.06E+00	99	210	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-113	5/9/2008	Benzo(a)pyrene	5.20E-02 J	1.9	2.74E+00	99	210	mg/kg OC	<1	<1
EPA Site Inspection	DR270	8/26/1998	Benzo(a)pyrene	5.00E-02	1.32	3.79E+00	99	210	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS150	3/9/2005	Benzo(a)pyrene	3.30E-02	1.79	1.84E+00	99	210	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-D ^a	3/3/2011	Benzo(a)pyrene	2.50E-02	4.01	6.23E-01	1.6	3.0	mg/kg DW	<1	<1

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
LDWRI-Surface Sediment Round 2	LDW-SS136	3/15/2005	Benzo(a)pyrene	2.30E-02	1.56	1.47E+00	99	210	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2200-D	3/18/2011	Benzo(a)pyrene	2.30E-02	2.38	9.66E-01	99	210	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	OR-11	May-08	Benzo(a)pyrene	2.10E-02	1.58	1.33E+00	99	210	mg/kg OC	<1	<1
EPA Site Inspection	DR294 ^a	9/15/1998	Benzo(a)pyrene	2.00E-02	0.15	1.33E+01	1.6	3.0	mg/kg DW	<1	<1
LDWRI-Benthic	B10b	8/19/2004	Benzo(a)pyrene	1.60E-02	1.09	1.47E+00	99	210	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2201-U	3/18/2011	Benzo(a)pyrene	1.60E-02 J	1.69	9.47E-01	99	210	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	Benzo(a)pyrene	1.30E-02 J	2.33	5.58E-01	99	210	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	Benzo(a)pyrene	1.20E-02 J	1.7	7.06E-01	99	210	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2201-D	3/18/2011	Benzo(a)pyrene	1.20E-02 J	2.58	4.65E-01	99	210	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-115	5/9/2008	Benzo(a)pyrene	1.10E-02	1.28	8.59E-01	99	210	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	Benzo(a)pyrene	1.10E-02 J	2.2	5.00E-01	99	210	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-117	5/9/2008	Benzo(a)pyrene	1.00E-02	1.32	7.58E-01	99	210	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS140	3/8/2005	Benzo(a)pyrene	1.00E-02	1.52	6.58E-01	99	210	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-112	5/9/2008	Benzo(a)pyrene	8.80E-03	1.75	5.03E-01	99	210	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-07	4/28/2008	Benzo(a)pyrene	7.30E-03	0.892	8.18E-01	99	210	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-116	5/9/2008	Benzo(a)pyrene	7.20E-03	2.36	3.05E-01	99	210	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS141	3/15/2005	Benzo(a)pyrene	7.10E-03	2.82	2.52E-01	99	210	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-01	4/28/2008	Benzo(a)pyrene	5.30E-03 J	0.814	6.51E-01	99	210	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-12	4/28/2008	Benzo(a)pyrene	1.80E-03 J	1.12	1.61E-01	99	210	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-03 ^a	4/28/2008	Benzo(a)pyrene	0.001700 J	0.216	0.787037	1.6	3.0	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-05 ^a	4/28/2008	Benzo(a)pyrene	0.001700 J	0.394	0.431472	1.6	3.0	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-11 ^a	4/28/2008	Benzo(a)pyrene	0.001700 J	0.296	0.574324	1.6	3.0	mg/kg DW	<1	<1
LDWRI-Dioxin Sampling	comp	1/12/2010	Benzo(a)pyrene	1.90E-02	1.88	1.01E+00	99	210	mg/kg OC	<1	<1
EPA Site Inspection	DR274	9/15/1998	Benzo(b)fluoranthene	4.00E-01	1.39	2.88E+01	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR276	9/15/1998	Benzo(b)fluoranthene	3.60E-01	1.51	2.38E+01	230	450	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS149	3/9/2005	Benzo(b)fluoranthene	2.50E-01	2.08	1.20E+01	230	450	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS148	3/9/2005	Benzo(b)fluoranthene	2.10E-01	2.55	8.24E+00	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR293	9/14/1998	Benzo(b)fluoranthene	1.90E-01	1.74	1.09E+01	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR268	8/26/1998	Benzo(b)fluoranthene	1.80E-01	2.1	8.57E+00	230	450	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	Benzo(b)fluoranthene	1.80E-01	2.98	6.04E+00	230	450	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS146	3/9/2005	Benzo(b)fluoranthene	1.80E-01	2.4	7.50E+00	230	450	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS147	3/9/2005	Benzo(b)fluoranthene	1.80E-01	2.12	8.49E+00	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR273	8/26/1998	Benzo(b)fluoranthene	1.70E-01	1.66	1.02E+01	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR285	8/25/1998	Benzo(b)fluoranthene	1.60E-01	3.39	4.72E+00	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR263	8/25/1998	Benzo(b)fluoranthene	1.30E-01	2.9	4.48E+00	230	450	mg/kg OC	<1	<1
KC Water Quality Assessment	WQAHAMM	6/3/1997	Benzo(b)fluoranthene	1.30E-01	1.95	6.67E+00	230	450	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS133	3/9/2005	Benzo(b)fluoranthene	1.20E-01	2.59	4.63E+00	230	450	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS139	3/9/2005	Benzo(b)fluoranthene	1.20E-01	1.67	7.19E+00	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR275	9/15/1998	Benzo(b)fluoranthene	1.10E-01	1.06	1.04E+01	230	450	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-114	5/9/2008	Benzo(b)fluoranthene	1.00E-01	2.18	4.59E+00	230	450	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 3	LDW-SS340	10/3/2006	Benzo(b)fluoranthene	1.00E-01	1.8	5.56E+00	230	450	mg/kg OC	<1	<1

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
KC Water Quality Assessment	WQAHAMM	5/15/1997	Benzo(b)fluoranthene	9.20E-02	1.75	5.26E+00	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR269	8/26/1998	Benzo(b)fluoranthene	9.00E-02	0.9	1.00E+01	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR287	8/26/1998	Benzo(b)fluoranthene	9.00E-02	1.31	6.87E+00	230	450	mg/kg OC	<1	<1
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	Benzo(b)fluoranthene	7.10E-02 J	2.04	3.48E+00	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR264	8/26/1998	Benzo(b)fluoranthene	7.00E-02	1.48	4.73E+00	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR266	8/26/1998	Benzo(b)fluoranthene	7.00E-02	1.38	5.07E+00	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR267	8/26/1998	Benzo(b)fluoranthene	7.00E-02	0.85	8.24E+00	230	450	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-113	5/9/2008	Benzo(b)fluoranthene	6.70E-02	1.9	3.53E+00	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR265	8/26/1998	Benzo(b)fluoranthene	6.00E-02	1.03	5.83E+00	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR270	8/26/1998	Benzo(b)fluoranthene	6.00E-02	1.32	4.55E+00	230	450	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS150	3/9/2005	Benzo(b)fluoranthene	3.60E-02	1.79	2.01E+00	230	450	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	OR-11	May-08	Benzo(b)fluoranthene	3.50E-02	1.58	2.22E+00	230	450	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS136	3/15/2005	Benzo(b)fluoranthene	2.90E-02	1.56	1.86E+00	230	450	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS140	3/8/2005	Benzo(b)fluoranthene	2.90E-02	1.52	1.91E+00	230	450	mg/kg OC	<1	<1
LDWRI-Benthic	B10b	8/19/2004	Benzo(b)fluoranthene	2.10E-02	1.09	1.93E+00	230	450	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-115	5/9/2008	Benzo(b)fluoranthene	1.40E-02	1.28	1.09E+00	230	450	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-117	5/9/2008	Benzo(b)fluoranthene	1.40E-02	1.32	1.06E+00	230	450	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-112	5/9/2008	Benzo(b)fluoranthene	1.10E-02	1.75	6.29E-01	230	450	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-01	4/28/2008	Benzo(b)fluoranthene	1.10E-02 J	0.814	1.35E+00	230	450	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-116	5/9/2008	Benzo(b)fluoranthene	8.80E-03	2.36	3.73E-01	230	450	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-07	4/28/2008	Benzo(b)fluoranthene	7.70E-03	0.892	8.63E-01	230	450	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS141	3/15/2005	Benzo(b)fluoranthene	7.10E-03	2.82	2.52E-01	230	450	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-02	4/28/2008	Benzo(b)fluoranthene	1.20E-03 J	1.27	9.45E-02	230	450	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-08	4/28/2008	Benzo(b)fluoranthene	8.70E-04 J	2.75	3.16E-02	230	450	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-10	4/28/2008	Benzo(b)fluoranthene	7.60E-04 J	0.643	1.18E-01	230	450	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-12	4/28/2008	Benzo(b)fluoranthene	6.80E-04 J	1.12	6.07E-02	230	450	mg/kg OC	<1	<1
LDWRI-Dioxin Sampling	comp	1/12/2010	Benzo(b)fluoranthene	2.00E-02 J	1.88	1.06E+00	230	450	mg/kg OC	<1	<1
LDWRI-Benthic	B10b	8/19/2004	Benzo(e)pyrene	1.70E-02	1.09	1.56E+00					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Benzo(g,h,i)perylene	4.06E-01	1.16	3.50E+01	31	78	mg/kg OC	1.1	<1
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Benzo(g,h,i)perylene	4.02E-01	1.86	2.16E+01	31	78	mg/kg OC	<1	<1
EPA Site Inspection	DR274	9/15/1998	Benzo(g,h,i)perylene	2.80E-01	1.39	2.01E+01	31	78	mg/kg OC	<1	<1
EPA Site Inspection	DR276	9/15/1998	Benzo(g,h,i)perylene	2.10E-01	1.51	1.39E+01	31	78	mg/kg OC	<1	<1
EPA Site Inspection	DR293	9/14/1998	Benzo(g,h,i)perylene	1.20E-01	1.74	6.90E+00	31	78	mg/kg OC	<1	<1
EPA Site Inspection	DR273	8/26/1998	Benzo(g,h,i)perylene	1.10E-01	1.66	6.63E+00	31	78	mg/kg OC	<1	<1
EPA Site Inspection	DR275	9/15/1998	Benzo(g,h,i)perylene	1.00E-01	1.06	9.43E+00	31	78	mg/kg OC	<1	<1
EPA Site Inspection	DR263	8/25/1998	Benzo(g,h,i)perylene	8.00E-02	2.9	2.76E+00	31	78	mg/kg OC	<1	<1
EPA Site Inspection	DR285	8/25/1998	Benzo(g,h,i)perylene	8.00E-02	3.39	2.36E+00	31	78	mg/kg OC	<1	<1
EPA Site Inspection	DR268	8/26/1998	Benzo(g,h,i)perylene	7.00E-02	2.1	3.33E+00	31	78	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-114	5/9/2008	Benzo(g,h,i)perylene	6.30E-02	2.18	2.89E+00	31	78	mg/kg OC	<1	<1
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	Benzo(g,h,i)perylene	6.30E-02	2.04	3.09E+00	31	78	mg/kg OC	<1	<1
KC Water Quality Assessment	WQAHAMM	6/3/1997	Benzo(g,h,i)perylene	6.10E-02 J	1.95	3.13E+00	31	78	mg/kg OC	<1	<1

Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
EPA Site Inspection	DR287	8/26/1998	Benzo(g,h,i)perylene	6.00E-02	1.31	4.58E+00	31	78	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 3	LDW-SS340	10/3/2006	Benzo(g,h,i)perylene	6.00E-02 J	1.8	3.33E+00	31	78	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS148	3/9/2005	Benzo(g,h,i)perylene	5.90E-02	2.55	2.31E+00	31	78	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS146	3/9/2005	Benzo(g,h,i)perylene	5.70E-02	2.4	2.38E+00	31	78	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS147	3/9/2005	Benzo(g,h,i)perylene	5.20E-02	2.12	2.45E+00	31	78	mg/kg OC	<1	<1
EPA Site Inspection	DR264	8/26/1998	Benzo(g,h,i)perylene	5.00E-02	1.48	3.38E+00	31	78	mg/kg OC	<1	<1
EPA Site Inspection	DR265	8/26/1998	Benzo(g,h,i)perylene	5.00E-02	1.03	4.85E+00	31	78	mg/kg OC	<1	<1
EPA Site Inspection	DR266	8/26/1998	Benzo(g,h,i)perylene	5.00E-02	1.38	3.62E+00	31	78	mg/kg OC	<1	<1
EPA Site Inspection	DR269	8/26/1998	Benzo(g,h,i)perylene	5.00E-02	0.9	5.56E+00	31	78	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS149	3/9/2005	Benzo(g,h,i)perylene	4.80E-02 J	2.08	2.31E+00	31	78	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-113	5/9/2008	Benzo(g,h,i)perylene	4.40E-02 J	1.9	2.32E+00	31	78	mg/kg OC	<1	<1
EPA Site Inspection	DR267	8/26/1998	Benzo(g,h,i)perylene	4.00E-02	0.85	4.71E+00	31	78	mg/kg OC	<1	<1
EPA Site Inspection	DR270	8/26/1998	Benzo(g,h,i)perylene	4.00E-02	1.32	3.03E+00	31	78	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS133	3/9/2005	Benzo(g,h,i)perylene	3.70E-02	2.59	1.43E+00	31	78	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	Benzo(g,h,i)perylene	3.40E-02	2.98	1.14E+00	31	78	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS139	3/9/2005	Benzo(g,h,i)perylene	3.30E-02	1.67	1.98E+00	31	78	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-D ^a	3/3/2011	Benzo(g,h,i)perylene	2.50E-02	4.01	6.23E-01	0.67	0.72	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2200-D	3/18/2011	Benzo(g,h,i)perylene	1.90E-02	2.38	7.98E-01	31	78	mg/kg OC	<1	<1
LDWRI-Benthic	B10b	8/19/2004	Benzo(g,h,i)perylene	1.70E-02	1.09	1.56E+00	31	78	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	OR-11	May-08	Benzo(g,h,i)perylene	1.70E-02	1.58	1.08E+00	31	78	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	Benzo(g,h,i)perylene	1.50E-02 J	1.7	8.82E-01	31	78	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2201-U	3/18/2011	Benzo(g,h,i)perylene	1.50E-02 J	1.69	8.88E-01	31	78	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	Benzo(g,h,i)perylene	1.30E-02 J	2.33	5.58E-01	31	78	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2201-D	3/18/2011	Benzo(g,h,i)perylene	1.20E-02 J	2.58	4.65E-01	31	78	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	Benzo(g,h,i)perylene	1.10E-02 J	2.2	5.00E-01	31	78	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-112	5/9/2008	Benzo(g,h,i)perylene	8.50E-03	1.75	4.86E-01	31	78	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-115	5/9/2008	Benzo(g,h,i)perylene	7.80E-03	1.28	6.09E-01	31	78	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-117	5/9/2008	Benzo(g,h,i)perylene	5.70E-03	1.32	4.32E-01	31	78	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-01	4/28/2008	Benzo(g,h,i)perylene	4.60E-03	0.814	5.65E-01	31	78	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-07	4/28/2008	Benzo(g,h,i)perylene	3.10E-03	0.892	3.48E-01	31	78	mg/kg OC	<1	<1
LDWRI-Dioxin Sampling	comp	1/12/2010	Benzo(g,h,i)perylene	2.00E-02	1.88	1.06E+00	31	78	mg/kg OC	<1	<1
EPA Site Inspection	DR274	9/15/1998	Benzo(k)fluoranthene	4.20E-01	1.39	3.02E+01	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR276	9/15/1998	Benzo(k)fluoranthene	3.40E-01	1.51	2.25E+01	230	450	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS149	3/9/2005	Benzo(k)fluoranthene	3.20E-01	2.08	1.54E+01	230	450	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS146	3/9/2005	Benzo(k)fluoranthene	2.80E-01	2.4	1.17E+01	230	450	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS148	3/9/2005	Benzo(k)fluoranthene	2.30E-01	2.55	9.02E+00	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR268	8/26/1998	Benzo(k)fluoranthene	2.10E-01	2.1	1.00E+01	230	450	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS147	3/9/2005	Benzo(k)fluoranthene	2.10E-01	2.12	9.91E+00	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR273	8/26/1998	Benzo(k)fluoranthene	1.80E-01	1.66	1.08E+01	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR293	9/14/1998	Benzo(k)fluoranthene	1.80E-01	1.74	1.03E+01	230	450	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS133	3/9/2005	Benzo(k)fluoranthene	1.70E-01	2.59	6.56E+00	230	450	mg/kg OC	<1	<1

Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
EPA Site Inspection	DR285	8/25/1998	Benzo(k)fluoranthene	1.60E-01	3.39	4.72E+00	230	450	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS139	3/9/2005	Benzo(k)fluoranthene	1.30E-01	1.67	7.78E+00	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR275	9/15/1998	Benzo(k)fluoranthene	1.30E-01	1.06	1.23E+01	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR263	8/25/1998	Benzo(k)fluoranthene	1.20E-01	2.9	4.14E+00	230	450	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	Benzo(k)fluoranthene	1.20E-01	2.98	4.03E+00	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR287	8/26/1998	Benzo(k)fluoranthene	1.00E-01	1.31	7.63E+00	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR265	8/26/1998	Benzo(k)fluoranthene	9.00E-02	1.03	8.74E+00	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR266	8/26/1998	Benzo(k)fluoranthene	9.00E-02	1.38	6.52E+00	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR269	8/26/1998	Benzo(k)fluoranthene	8.00E-02	0.9	8.89E+00	230	450	mg/kg OC	<1	<1
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	Benzo(k)fluoranthene	7.10E-02 J	2.04	3.48E+00	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR264	8/26/1998	Benzo(k)fluoranthene	7.00E-02	1.48	4.73E+00	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR267	8/26/1998	Benzo(k)fluoranthene	7.00E-02	0.85	8.24E+00	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR270	8/26/1998	Benzo(k)fluoranthene	7.00E-02	1.32	5.30E+00	230	450	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS141	3/15/2005	Benzo(k)fluoranthene	6.20E-02	2.82	2.20E+00	230	450	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 3	LDW-SS340	10/3/2006	Benzo(k)fluoranthene	5.20E-02 J	1.8	2.89E+00	230	450	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS150	3/9/2005	Benzo(k)fluoranthene	4.10E-02	1.79	2.29E+00	230	450	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-114	5/9/2008	Benzo(k)fluoranthene	3.30E-02 J	2.18	1.51E+00	230	450	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS136	3/15/2005	Benzo(k)fluoranthene	3.10E-02	1.56	1.99E+00	230	450	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-113	5/9/2008	Benzo(k)fluoranthene	2.20E-02 J	1.9	1.16E+00	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR294 ^a	9/15/1998	Benzo(k)fluoranthene	2.00E-02	0.15	1.33E+01	3.2	3.6	mg/kg DW	<1	<1
LDWRI-Benthic	B10b	8/19/2004	Benzo(k)fluoranthene	1.80E-02	1.09	1.65E+00	230	450	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS140	3/8/2005	Benzo(k)fluoranthene	1.60E-02 J	1.52	1.05E+00	230	450	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	OR-11	May-08	Benzo(k)fluoranthene	1.10E-02	1.58	6.96E-01	230	450	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-115	5/9/2008	Benzo(k)fluoranthene	5.40E-03	1.28	4.22E-01	230	450	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-117	5/9/2008	Benzo(k)fluoranthene	5.00E-03	1.32	3.79E-01	230	450	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-112	5/9/2008	Benzo(k)fluoranthene	4.40E-03 J	1.75	2.51E-01	230	450	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-116	5/9/2008	Benzo(k)fluoranthene	3.30E-03 J	2.36	1.40E-01	230	450	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-01	4/28/2008	Benzo(k)fluoranthene	3.30E-03 J	0.814	4.05E-01	230	450	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-07	4/28/2008	Benzo(k)fluoranthene	2.50E-03 J	0.892	2.80E-01	230	450	mg/kg OC	<1	<1
LDWRI-Dioxin Sampling	comp	1/12/2010	Benzo(k)fluoranthene	2.00E-02 J	1.88	1.06E+00	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR274	9/15/1998	Benzofluoranthenes (total-calc'd)	8.20E-01	1.39	5.90E+01	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR276	9/15/1998	Benzofluoranthenes (total-calc'd)	7.00E-01	1.51	4.64E+01	230	450	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Benzofluoranthenes (total-calc'd)	6.87E-01	1.16	5.92E+01	230	450	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Benzofluoranthenes (total-calc'd)	6.41E-01	1.86	3.45E+01	230	450	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS149	3/9/2005	Benzofluoranthenes (total-calc'd)	5.70E-01	2.08	2.74E+01	230	450	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS146	3/9/2005	Benzofluoranthenes (total-calc'd)	4.60E-01	2.4	1.92E+01	230	450	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS148	3/9/2005	Benzofluoranthenes (total-calc'd)	4.40E-01	2.55	1.73E+01	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR268	8/26/1998	Benzofluoranthenes (total-calc'd)	3.90E-01	2.1	1.86E+01	230	450	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS147	3/9/2005	Benzofluoranthenes (total-calc'd)	3.90E-01	2.12	1.84E+01	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR293	9/14/1998	Benzofluoranthenes (total-calc'd)	3.70E-01	1.74	2.13E+01	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR273	8/26/1998	Benzofluoranthenes (total-calc'd)	3.50E-01	1.66	2.11E+01	230	450	mg/kg OC	<1	<1

Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
EPA Site Inspection	DR285	8/25/1998	Benzofluoranthenes (total-calc'd)	3.20E-01	3.39	9.44E+00	230	450	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	Benzofluoranthenes (total-calc'd)	3.00E-01	2.98	1.01E+01	230	450	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS133	3/9/2005	Benzofluoranthenes (total-calc'd)	2.90E-01	2.59	1.12E+01	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR263	8/25/1998	Benzofluoranthenes (total-calc'd)	2.50E-01	2.9	8.62E+00	230	450	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS139	3/9/2005	Benzofluoranthenes (total-calc'd)	2.50E-01	1.67	1.50E+01	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR275	9/15/1998	Benzofluoranthenes (total-calc'd)	2.40E-01	1.06	2.26E+01	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR287	8/26/1998	Benzofluoranthenes (total-calc'd)	1.90E-01	1.31	1.45E+01	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR269	8/26/1998	Benzofluoranthenes (total-calc'd)	1.70E-01	0.9	1.89E+01	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR266	8/26/1998	Benzofluoranthenes (total-calc'd)	1.60E-01	1.38	1.16E+01	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR265	8/26/1998	Benzofluoranthenes (total-calc'd)	1.50E-01	1.03	1.46E+01	230	450	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 3	LDW-SS340	10/3/2006	Benzofluoranthenes (total-calc'd)	1.50E-01 J	1.8	8.33E+00	230	450	mg/kg OC	<1	<1
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	Benzofluoranthenes (total-calc'd)	1.42E-01 J	2.04	6.96E+00	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR264	8/26/1998	Benzofluoranthenes (total-calc'd)	1.40E-01	1.48	9.46E+00	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR267	8/26/1998	Benzofluoranthenes (total-calc'd)	1.40E-01	0.85	1.65E+01	230	450	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-114	5/9/2008	Benzofluoranthenes (total-calc'd)	1.33E-01 J	2.18	6.10E+00	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR270	8/26/1998	Benzofluoranthenes (total-calc'd)	1.30E-01	1.32	9.85E+00	230	450	mg/kg OC	<1	<1
KC Water Quality Assessment	WQAHAMM	6/3/1997	Benzofluoranthenes (total-calc'd)	1.30E-01	1.95	6.67E+00	230	450	mg/kg OC	<1	<1
KC Water Quality Assessment	WQAHAMM	5/15/1997	Benzofluoranthenes (total-calc'd)	9.20E-02	1.75	5.26E+00	230	450	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-113	5/9/2008	Benzofluoranthenes (total-calc'd)	8.90E-02 J	1.9	4.68E+00	230	450	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS150	3/9/2005	Benzofluoranthenes (total-calc'd)	7.70E-02	1.79	4.30E+00	230	450	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS141	3/15/2005	Benzofluoranthenes (total-calc'd)	6.90E-02	2.82	2.45E+00	230	450	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-D ^a	3/3/2011	Benzofluoranthenes (total-calc'd)	6.10E-02	4.01	1.52E+00	3.2	3.6	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS136	3/15/2005	Benzofluoranthenes (total-calc'd)	6.00E-02	1.56	3.85E+00	230	450	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2200-D	3/18/2011	Benzofluoranthenes (total-calc'd)	5.00E-02	2.38	2.10E+00	230	450	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2201-U	3/18/2011	Benzofluoranthenes (total-calc'd)	4.60E-02	1.69	2.72E+00	230	450	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	OR-11	May-08	Benzofluoranthenes (total-calc'd)	4.60E-02	1.58	2.91E+00	230	450	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS140	3/8/2005	Benzofluoranthenes (total-calc'd)	4.50E-02 J	1.52	2.96E+00	230	450	mg/kg OC	<1	<1
LDWRI-Benthic	B10b	8/19/2004	Benzofluoranthenes (total-calc'd)	3.90E-02	1.09	3.58E+00	230	450	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	Benzofluoranthenes (total-calc'd)	3.10E-02	1.7	1.82E+00	230	450	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	Benzofluoranthenes (total-calc'd)	3.00E-02	2.33	1.29E+00	230	450	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2201-D	3/18/2011	Benzofluoranthenes (total-calc'd)	2.90E-02	2.58	1.12E+00	230	450	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	Benzofluoranthenes (total-calc'd)	2.60E-02	2.2	1.18E+00	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR294 ^a	9/15/1998	Benzofluoranthenes (total-calc'd)	2.00E-02	0.15	1.33E+01	3.2	3.6	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-115	5/9/2008	Benzofluoranthenes (total-calc'd)	1.94E-02	1.28	1.52E+00	230	450	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-117	5/9/2008	Benzofluoranthenes (total-calc'd)	1.90E-02	1.32	1.44E+00	230	450	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-112	5/9/2008	Benzofluoranthenes (total-calc'd)	1.54E-02 J	1.75	8.80E-01	230	450	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-116	5/9/2008	Benzofluoranthenes (total-calc'd)	1.21E-02 J	2.36	5.13E-01	230	450	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-07	4/28/2008	Benzofluoranthenes (total-calc'd)	1.02E-02 J	0.892	1.14E+00	230	450	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-02	4/28/2008	Benzofluoranthenes (total-calc'd)	1.40E-03 J	1.27	1.10E-01	230	450	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-08	4/28/2008	Benzofluoranthenes (total-calc'd)	8.70E-04 J	2.75	3.16E-02	230	450	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-10	4/28/2008	Benzofluoranthenes (total-calc'd)	7.60E-04 J	0.643	1.18E-01	230	450	mg/kg OC	<1	<1

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
Duwamish River RM 4.9 to 7.4	DR-12	4/28/2008	Benzo(a)fluoranthenes (total-calc'd)	6.80E-04 J	1.12	6.07E-02	230	450	mg/kg OC	<1	<1
LDWRI-Dioxin Sampling	comp	1/12/2010	Benzo(a)fluoranthenes (total-calc'd)	4.00E-02 J	1.88	2.13E+00	230	450	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-114	5/9/2008	Benzoic acid	3.80E+00 JB	2.18	1.74E+02	650	650	ug/kg DW	5.8	5.8
Duwamish River RM 4.9 to 7.4	DRB-113	5/9/2008	Benzoic acid	3.50E+00 JB	1.9	1.84E+02	650	650	ug/kg DW	5.4	5.4
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Benzoic acid	1.10E+00	1.16	9.48E+01	650	650	ug/kg DW	1.7	1.7
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Benzoic acid	1.04E+00	1.86	5.59E+01	650	650	ug/kg DW	1.6	1.6
LDWRI-Benthic	B10b	8/19/2004	Benzoic acid	3.00E-01	1.09	2.75E+01	650	650	ug/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	OR-11	May-08	Benzoic acid	2.90E-01 J	1.58	1.84E+01	650	650	ug/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS146	3/9/2005	Benzoic acid	2.10E-01	2.4	8.75E+00	650	650	ug/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2099-D	3/3/2011	Benzoic acid	1.90E-01	4.01	4.74E+00	650	650	ug/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2201-D	3/18/2011	Benzoic acid	1.90E-01 J	2.58	7.36E+00	650	650	ug/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2200-D	3/18/2011	Benzoic acid	1.80E-01 J	2.38	7.56E+00	650	650	ug/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	Benzoic acid	1.70E-01 J	1.7	1.00E+01	650	650	ug/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	Benzoic acid	1.40E-01 J	2.33	6.01E+00	650	650	ug/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	Benzoic acid	1.10E-01	2.98	3.69E+00	650	650	ug/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2201-U	3/18/2011	Benzoic acid	1.10E-01 J	1.69	6.51E+00	650	650	ug/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS139	3/9/2005	Benzoic acid	7.10E-02	1.67	4.25E+00	650	650	ug/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2098-A	3/4/2011	Benzoic acid	3.50E-02 J	1.25	2.80E+00	650	650	ug/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Benzyl alcohol	7.52E-01	1.86	4.04E+01	57	73	ug/kg DW	13	10
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Benzyl alcohol	7.48E-01	1.16	6.45E+01	57	73	ug/kg DW	13	10
LDW Outfall Sampling	LDW-SS2200-D	3/18/2011	Benzyl alcohol	1.50E-01	2.38	6.30E+00	57	73	ug/kg DW	2.6	2.1
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	Benzyl alcohol	1.40E-01	2.33	6.01E+00	57	73	ug/kg DW	2.5	1.9
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	Benzyl alcohol	1.40E-01	1.7	8.24E+00	57	73	ug/kg DW	2.5	1.9
LDW Outfall Sampling	LDW-SS2201-D	3/18/2011	Benzyl alcohol	1.30E-01	2.58	5.04E+00	57	73	ug/kg DW	2.3	1.8
LDW Outfall Sampling	LDW-SS2099-D	3/3/2011	Benzyl alcohol	1.20E-01 J	4.01	2.99E+00	57	73	ug/kg DW	2.1	1.6
LDW Outfall Sampling	LDW-SS2201-U	3/18/2011	Benzyl alcohol	6.90E-02	1.69	4.08E+00	57	73	ug/kg DW	1.2	<1
LDWRI-Surface Sediment Round 2	LDW-SS133	3/9/2005	Benzyl alcohol	2.00E-02	2.59	7.72E-01	57	73	ug/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	Benzyl alcohol	1.50E-02 J	2.2	6.82E-01	57	73	ug/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2098-A	3/4/2011	Benzyl alcohol	1.00E-02	1.25	8.00E-01	57	73	ug/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2098-U	3/4/2011	Benzyl alcohol	5.40E-03	0.844	6.40E-01	57	73	ug/kg DW	<1	<1
EPA Site Inspection	DR285	8/25/1998	Beryllium	4.30E-01	3.39	1.27E+01					
EPA Site Inspection	DR263	8/25/1998	Beryllium	4.10E-01	2.9	1.41E+01					
Norfolk-cleanup1	NFK016	8/22/1994	Beryllium	4.10E-01	1.1	3.73E+01					
EPA Site Inspection	DR268	8/26/1998	Beryllium	3.80E-01	2.1	1.81E+01					
KC Water Quality Assessment	WQAHAMM	6/3/1997	Beryllium	3.80E-01	1.95	1.95E+01					
KC Water Quality Assessment	WQAHAMM	5/15/1997	Beryllium	3.50E-01	1.75	2.00E+01					
KC Water Quality Assessment	WQAHAMM	5/20/1997	Beryllium	3.40E-01	1.77	1.92E+01					
KC Water Quality Assessment	WQAHAMM	5/28/1997	Beryllium	3.40E-01	1.56	2.18E+01					
EPA Site Inspection	DR287	8/26/1998	Beryllium	3.30E-01	1.31	2.52E+01					
EPA Site Inspection	DR293	9/14/1998	Beryllium	3.20E-01 J	1.74	1.84E+01					
EPA Site Inspection	DR264	8/26/1998	Beryllium	3.10E-01	1.48	2.09E+01					

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
EPA Site Inspection	DR266	8/26/1998	Beryllium	3.10E-01	1.38	2.25E+01					
EPA Site Inspection	DR269	8/26/1998	Beryllium	3.00E-01	0.9	3.33E+01					
EPA Site Inspection	DR276	9/15/1998	Beryllium	3.00E-01	1.51	1.99E+01					
EPA Site Inspection	DR267	8/26/1998	Beryllium	2.80E-01	0.85	3.29E+01					
EPA Site Inspection	DR274	9/15/1998	Beryllium	2.80E-01	1.39	2.01E+01					
EPA Site Inspection	DR265	8/26/1998	Beryllium	2.70E-01	1.03	2.62E+01					
EPA Site Inspection	DR275	9/15/1998	Beryllium	2.60E-01	1.06	2.45E+01					
EPA Site Inspection	DR270	8/26/1998	Beryllium	2.50E-01	1.32	1.89E+01					
EPA Site Inspection	DR273	8/26/1998	Beryllium	2.50E-01	1.66	1.51E+01					
Norfolk-cleanup1	NFK014	8/19/1994	Beryllium	2.50E-01	0.07	3.57E+02					
Norfolk-cleanup1	NFK015	8/22/1994	Beryllium	2.50E-01	3	8.33E+00					
EPA Site Inspection	DR295	9/15/1998	Beryllium	2.10E-01	0.15	1.40E+02					
EPA Site Inspection	DR296	9/15/1998	Beryllium	2.10E-01	0.65	3.23E+01					
EPA Site Inspection	DR294	9/15/1998	Beryllium	1.90E-01	0.15	1.27E+02					
LDWRI-Benthic	B10b	8/19/2004	Biphenyl	8.60E-04 J	1.09	7.89E-02					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Bis(2-chloro-1-methylethyl)ether	3.06E-01	1.16	2.64E+01					
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Bis(2-chloro-1-methylethyl)ether	2.93E-01	1.86	1.58E+01					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Bis(2-Chloroethoxy)methane	3.08E-01	1.16	2.66E+01					
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Bis(2-Chloroethoxy)methane	3.01E-01	1.86	1.62E+01					
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Bis(2-Chloroethyl)ether	3.22E-01	1.86	1.73E+01					
EPA Site Inspection	DR285	8/25/1998	Bis(2-ethylhexyl)phthalate	4.50E-01	3.39	1.33E+01	47	78	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Bis(2-ethylhexyl)phthalate	4.08E-01	1.16	3.52E+01	47	78	mg/kg OC	<1	<1
EPA Site Inspection	DR276	9/15/1998	Bis(2-ethylhexyl)phthalate	3.40E-01	1.51	2.25E+01	47	78	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Bis(2-ethylhexyl)phthalate	3.12E-01	1.86	1.68E+01	47	78	mg/kg OC	<1	<1
KC Water Quality Assessment	WQAHAMM	6/3/1997	Bis(2-ethylhexyl)phthalate	2.87E-01	1.95	1.47E+01	47	78	mg/kg OC	<1	<1
EPA Site Inspection	DR263	8/25/1998	Bis(2-ethylhexyl)phthalate	2.80E-01	2.9	9.66E+00	47	78	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	Bis(2-ethylhexyl)phthalate	2.70E-01	2.98	9.06E+00	47	78	mg/kg OC	<1	<1
KC Water Quality Assessment	WQAHAMM	5/15/1997	Bis(2-ethylhexyl)phthalate	2.02E-01	1.75	1.15E+01	47	78	mg/kg OC	<1	<1
EPA Site Inspection	DR274	9/15/1998	Bis(2-ethylhexyl)phthalate	1.50E-01	1.39	1.08E+01	47	78	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	OR-11	May-08	Bis(2-ethylhexyl)phthalate	1.30E-01 J	1.58	8.23E+00	47	78	mg/kg OC	<1	<1
EPA Site Inspection	DR270	8/26/1998	Bis(2-ethylhexyl)phthalate	1.20E-01	1.32	9.09E+00	47	78	mg/kg OC	<1	<1
EPA Site Inspection	DR273	8/26/1998	Bis(2-ethylhexyl)phthalate	1.20E-01	1.66	7.23E+00	47	78	mg/kg OC	<1	<1
KC Water Quality Assessment	WQAHAMM	5/20/1997	Bis(2-ethylhexyl)phthalate	1.16E-01	1.77	6.55E+00	47	78	mg/kg OC	<1	<1
EPA Site Inspection	DR275	9/15/1998	Bis(2-ethylhexyl)phthalate	1.10E-01	1.06	1.04E+01	47	78	mg/kg OC	<1	<1
KC Water Quality Assessment	WQAHAMM	5/28/1997	Bis(2-ethylhexyl)phthalate	1.06E-01	1.56	6.79E+00	47	78	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS141	3/15/2005	Bis(2-ethylhexyl)phthalate	1.00E-01	2.82	3.55E+00	47	78	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 3	LDW-SS340	10/3/2006	Bis(2-ethylhexyl)phthalate	1.00E-01	1.8	5.56E+00	47	78	mg/kg OC	<1	<1
Norfolk-cleanup1	NFK014 ^a	8/19/1994	Bis(2-ethylhexyl)phthalate	8.10E-02	0.07	1.16E+02	1.3	1.9	mg/kg DW	<1	<1
EPA Site Inspection	DR294 ^a	9/15/1998	Bis(2-ethylhexyl)phthalate	5.00E-02	0.15	3.33E+01	1.3	1.9	mg/kg DW	<1	<1
Norfolk-cleanup1	NFK016	8/22/1994	Bis(2-ethylhexyl)phthalate	4.90E-02	1.1	4.45E+00	47	78	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 3	LDW-SS339	10/3/2006	Bis(2-ethylhexyl)phthalate	4.10E-02 J	2.04	2.01E+00	47	78	mg/kg OC	<1	<1

Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
LDWRI-Benthic	B10b	8/19/2004	Bis(2-ethylhexyl)phthalate	3.50E-02 J	1.09	3.21E+00	47	78	mg/kg OC	<1	<1
Duamish River RM 4.9 to 7.4	DR-01	4/28/2008	Bis(2-ethylhexyl)phthalate	3.50E-02 J	0.814	4.30E+00	47	78	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS135	3/15/2005	Bis(2-ethylhexyl)phthalate	3.40E-02	2.28	1.49E+00	47	78	mg/kg OC	<1	<1
Norfolk-cleanup1	NFK015	8/22/1994	Bis(2-ethylhexyl)phthalate	2.70E-02	3	9.00E-01	47	78	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS136	3/15/2005	Bis(2-ethylhexyl)phthalate	2.50E-02	1.56	1.60E+00	47	78	mg/kg OC	<1	<1
EPA Site Inspection	DR295 ^a	9/15/1998	Bis(2-ethylhexyl)phthalate	2.00E-02	0.15	1.33E+01	1.3	1.9	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Butyl benzyl phthalate	4.46E-01 J	1.16	3.84E+01	4.9	64	mg/kg OC	7.8	<1
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Butyl benzyl phthalate	3.67E-01	1.86	1.97E+01	4.9	64	mg/kg OC	4.0	<1
Duamish River RM 4.9 to 7.4	OR-11	May-08	Butyl benzyl phthalate	4.60E-02 B	1.58	2.91E+00	4.9	64	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	Butyl benzyl phthalate	3.50E-02	2.98	1.17E+00	4.9	64	mg/kg OC	<1	<1
EPA Site Inspection	DR263	8/25/1998	Butyl benzyl phthalate	3.00E-02	2.9	1.03E+00	4.9	64	mg/kg OC	<1	<1
EPA Site Inspection	DR285	8/25/1998	Butyl benzyl phthalate	3.00E-02	3.39	8.85E-01	4.9	64	mg/kg OC	<1	<1
Duamish River RM 4.9 to 7.4	OR-12 ^a	May-08	Butyl benzyl phthalate	2.80E-02 B	0.413	6.78E+00	0.063	0.9	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS133	3/9/2005	Butyl benzyl phthalate	2.70E-02	2.59	1.04E+00	4.9	64	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS148	3/9/2005	Butyl benzyl phthalate	2.40E-02	2.55	9.41E-01	4.9	64	mg/kg OC	<1	<1
EPA Site Inspection	DR293	9/14/1998	Butyl benzyl phthalate	2.00E-02	1.74	1.15E+00	4.9	64	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS139	3/9/2005	Butyl benzyl phthalate	2.00E-02	1.67	1.20E+00	4.9	64	mg/kg OC	<1	<1
EPA Site Inspection	DR276	9/15/1998	Butyl benzyl phthalate	2.00E-02	1.51	1.32E+00	4.9	64	mg/kg OC	<1	<1
Duamish River RM 4.9 to 7.4	DR-11 ^a	4/28/2008	Butyl benzyl phthalate	0.015000	0.296	5.067568	0.063	0.9	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 3	LDW-SS340	10/3/2006	Butyl benzyl phthalate	1.30E-02	1.8	7.22E-01	4.9	64	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-D ^a	3/3/2011	Butyl benzyl phthalate	9.90E-03	4.01	2.47E-01	0.063	0.9	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-12	4/28/2008	Butyl benzyl phthalate	8.30E-03 J	1.12	7.41E-01	4.9	64	mg/kg OC	<1	<1
Duamish River RM 4.9 to 7.4	DR-09 ^a	4/28/2008	Butyl benzyl phthalate	0.005400 J	0.3	1.800000	0.063	0.9	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-05 ^a	4/28/2008	Butyl benzyl phthalate	0.004800 J	0.394	1.218274	0.063	0.9	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-04 ^a	4/28/2008	Butyl benzyl phthalate	0.004600 J	0.455	1.010989	0.063	0.9	mg/kg DW	<1	<1
LDWRI-Benthic	B10b	8/19/2004	Butyl benzyl phthalate	4.40E-03 J	1.09	4.04E-01	4.9	64	mg/kg OC	<1	<1
Duamish River RM 4.9 to 7.4	DR-03 ^a	4/28/2008	Butyl benzyl phthalate	0.004400 J	0.216	2.037037	0.063	0.9	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-08	4/28/2008	Butyl benzyl phthalate	4.40E-03 J	2.75	1.60E-01	4.9	64	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	Butyl benzyl phthalate	4.40E-03 J	2.33	1.89E-01	4.9	64	mg/kg OC	<1	<1
Duamish River RM 4.9 to 7.4	DR-06 ^a	4/28/2008	Butyl benzyl phthalate	0.004300 J	0.392	1.096939	0.063	0.9	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2200-D	3/18/2011	Butyl benzyl phthalate	3.90E-03 J	2.38	1.64E-01	4.9	64	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	Butyl benzyl phthalate	3.80E-03 J	1.7	2.24E-01	4.9	64	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2201-D	3/18/2011	Butyl benzyl phthalate	3.80E-03 J	2.58	1.47E-01	4.9	64	mg/kg OC	<1	<1
Duamish River RM 4.9 to 7.4	DR-07	4/28/2008	Butyl benzyl phthalate	3.50E-03 J	0.892	3.92E-01	4.9	64	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2201-U	3/18/2011	Butyl benzyl phthalate	3.40E-03 J	1.69	2.01E-01	4.9	64	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Cadmium	6.57E+01	1.16	5.66E+03	5.1	6.7	mg/kg DW	13	9.8
LDWRI-Surface Sediment Round 2	LDW-SS135	3/15/2005	Cadmium	8.00E-01	2.28	3.51E+01	5.1	6.7	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2099-D	3/3/2011	Cadmium	6.00E-01	4.01	1.50E+01	5.1	6.7	mg/kg DW	<1	<1
EPA Site Inspection	DR285	8/25/1998	Cadmium	4.00E-01	3.39	1.18E+01	5.1	6.7	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DRB-113	5/9/2008	Cadmium	3.50E-01	1.9	1.84E+01	5.1	6.7	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DRB-114	5/9/2008	Cadmium	3.40E-01 J	2.18	1.56E+01	5.1	6.7	mg/kg DW	<1	<1

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
EPA Site Inspection	DR263	8/25/1998	Cadmium	3.20E-01	2.9	1.10E+01	5.1	6.7	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2098-A	3/4/2011	Cadmium	3.00E-01	1.25	2.40E+01	5.1	6.7	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	Cadmium	3.00E-01	2.2	1.36E+01	5.1	6.7	mg/kg DW	<1	<1
EPA Site Inspection	DR268	8/26/1998	Cadmium	1.90E-01	2.1	9.05E+00	5.1	6.7	mg/kg DW	<1	<1
EPA Site Inspection	DR273	8/26/1998	Cadmium	1.80E-01	1.66	1.08E+01	5.1	6.7	mg/kg DW	<1	<1
EPA Site Inspection	DR264	8/26/1998	Cadmium	1.70E-01	1.48	1.15E+01	5.1	6.7	mg/kg DW	<1	<1
EPA Site Inspection	DR266	8/26/1998	Cadmium	1.60E-01	1.38	1.16E+01	5.1	6.7	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-12	4/28/2008	Cadmium	1.50E-01 J	1.12	1.34E+01	5.1	6.7	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	OR-11	May-08	Cadmium	1.50E-01 JB	1.58	9.49E+00	5.1	6.7	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-11	4/28/2008	Cadmium	1.40E-01 J	0.296	4.73E+01	5.1	6.7	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-05	4/28/2008	Cadmium	1.30E-01 J	0.394	3.30E+01	5.1	6.7	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-10	4/28/2008	Cadmium	1.30E-01 J	0.643	2.02E+01	5.1	6.7	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-07	4/28/2008	Cadmium	1.20E-01 J	0.892	1.35E+01	5.1	6.7	mg/kg DW	<1	<1
EPA Site Inspection	DR265	8/26/1998	Cadmium	1.20E-01	1.03	1.17E+01	5.1	6.7	mg/kg DW	<1	<1
EPA Site Inspection	DR267	8/26/1998	Cadmium	1.20E-01	0.85	1.41E+01	5.1	6.7	mg/kg DW	<1	<1
EPA Site Inspection	DR269	8/26/1998	Cadmium	1.20E-01	0.9	1.33E+01	5.1	6.7	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	OR-12	May-08	Cadmium	1.20E-01 JB	0.413	2.91E+01	5.1	6.7	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-03	4/28/2008	Cadmium	1.10E-01 J	0.216	5.09E+01	5.1	6.7	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-04	4/28/2008	Cadmium	1.10E-01 J	0.455	2.42E+01	5.1	6.7	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-09	4/28/2008	Cadmium	1.10E-01 J	0.3	3.67E+01	5.1	6.7	mg/kg DW	<1	<1
EPA Site Inspection	DR270	8/26/1998	Cadmium	1.10E-01	1.32	8.33E+00	5.1	6.7	mg/kg DW	<1	<1
EPA Site Inspection	DR287	8/26/1998	Cadmium	1.10E-01	1.31	8.40E+00	5.1	6.7	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-02	4/28/2008	Cadmium	1.10E-01 J	1.27	8.66E+00	5.1	6.7	mg/kg DW	<1	<1
EPA Site Inspection	DR293	9/14/1998	Cadmium	1.00E-01 J	1.74	5.75E+00	5.1	6.7	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-06	4/28/2008	Cadmium	9.60E-02 J	0.392	2.45E+01	5.1	6.7	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-01	4/28/2008	Cadmium	9.00E-02 J	0.814	1.11E+01	5.1	6.7	mg/kg DW	<1	<1
LDWRI-Benthic	B10b	8/19/2004	Cadmium	6.80E-02	1.09	6.24E+00	5.1	6.7	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Carbazole	4.17E-01	1.16	3.59E+01					
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Carbazole	2.89E-01	1.86	1.55E+01					
EPA Site Inspection	DR274	9/15/1998	Carbazole	1.20E-01	1.39	8.63E+00					
EPA Site Inspection	DR276	9/15/1998	Carbazole	7.00E-02	1.51	4.64E+00					
EPA Site Inspection	DR273	8/26/1998	Carbazole	4.00E-02	1.66	2.41E+00					
EPA Site Inspection	DR293	9/14/1998	Carbazole	4.00E-02	1.74	2.30E+00					
EPA Site Inspection	DR268	8/26/1998	Carbazole	3.00E-02	2.1	1.43E+00					
LDWRI-Surface Sediment Round 2	LDW-SS146	3/9/2005	Carbazole	3.00E-02	2.4	1.25E+00					
EPA Site Inspection	DR275	9/15/1998	Carbazole	3.00E-02	1.06	2.83E+00					
LDWRI-Surface Sediment Round 2	LDW-SS133	3/9/2005	Carbazole	2.90E-02	2.59	1.12E+00					
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	Carbazole	2.40E-02	2.98	8.05E-01					
LDWRI-Surface Sediment Round 2	LDW-SS139	3/9/2005	Carbazole	2.00E-02	1.67	1.20E+00					
LDWRI-Surface Sediment Round 2	LDW-SS147	3/9/2005	Carbazole	2.00E-02	2.12	9.43E-01					
Duwamish River RM 4.9 to 7.4	OR-11	May-08	Carbazole	6.40E-03 J	1.58	4.05E-01					

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
LDWRI-Benthic	B10b	8/19/2004	Carbazole	3.20E-03 J	1.09	2.94E-01					
EPA Site Inspection	DR268	8/26/1998	Carcinogenic PAHs (calc'd)	1.21E+00	2.1	5.76E+01					
EPA Site Inspection	DR293	9/14/1998	Carcinogenic PAHs (calc'd)	1.07E+00	1.74	6.15E+01					
EPA Site Inspection	DR273	8/26/1998	Carcinogenic PAHs (calc'd)	9.80E-01	1.66	5.90E+01					
EPA Site Inspection	DR285	8/25/1998	Carcinogenic PAHs (calc'd)	8.50E-01	3.39	2.51E+01					
EPA Site Inspection	DR263	8/25/1998	Carcinogenic PAHs (calc'd)	6.60E-01	2.9	2.28E+01					
EPA Site Inspection	DR274	9/15/1998	Carcinogenic PAHs (calc'd)	6.20E-01	1.39	4.46E+01					
EPA Site Inspection	DR276	9/15/1998	Carcinogenic PAHs (calc'd)	5.00E-01	1.51	3.31E+01					
EPA Site Inspection	DR287	8/26/1998	Carcinogenic PAHs (calc'd)	4.80E-01	1.31	3.66E+01					
EPA Site Inspection	DR269	8/26/1998	Carcinogenic PAHs (calc'd)	4.60E-01	0.9	5.11E+01					
EPA Site Inspection	DR264	8/26/1998	Carcinogenic PAHs (calc'd)	4.30E-01	1.48	2.91E+01					
EPA Site Inspection	DR265	8/26/1998	Carcinogenic PAHs (calc'd)	4.20E-01	1.03	4.08E+01					
EPA Site Inspection	DR266	8/26/1998	Carcinogenic PAHs (calc'd)	4.20E-01	1.38	3.04E+01					
EPA Site Inspection	DR267	8/26/1998	Carcinogenic PAHs (calc'd)	3.80E-01	0.85	4.47E+01					
EPA Site Inspection	DR270	8/26/1998	Carcinogenic PAHs (calc'd)	3.50E-01	1.32	2.65E+01					
KC Water Quality Assessment	WQAHAMM	6/3/1997	Carcinogenic PAHs (calc'd)	3.45E-01	1.95	1.77E+01					
KC Water Quality Assessment	WQAHAMM	5/15/1997	Carcinogenic PAHs (calc'd)	1.93E-01	1.75	1.11E+01					
EPA Site Inspection	DR275	9/15/1998	Carcinogenic PAHs (calc'd)	1.80E-01	1.06	1.70E+01					
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	Carcinogenic PAHs (calc'd)	1.10E-01 J	2.04	5.39E+00					
Duwamish River RM 4.9 to 7.4	DRB-114	5/9/2008	Carcinogenic PAHs (calc'd)	8.99E-02 J	2.18	4.12E+00					
KC Water Quality Assessment	WQAHAMM	5/28/1997	Carcinogenic PAHs (calc'd)	8.97E-02	1.56	5.75E+00					
KC Water Quality Assessment	WQAHAMM	5/20/1997	Carcinogenic PAHs (calc'd)	7.70E-02	1.77	4.35E+00					
Duwamish River RM 4.9 to 7.4	DRB-113	5/9/2008	Carcinogenic PAHs (calc'd)	7.05E-02 J	1.9	3.71E+00					
LDW Outfall Sampling	LDW-SS2099-D	3/3/2011	Carcinogenic PAHs (calc'd)	3.90E-02	4.01	9.73E-01					
LDW Outfall Sampling	LDW-SS2200-D	3/18/2011	Carcinogenic PAHs (calc'd)	3.50E-02 J	2.38	1.47E+00					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Carcinogenic PAHs (calc'd)	3.10E-02 J	1.16	2.67E+00					
Duwamish River RM 4.9 to 7.4	OR-11	May-08	Carcinogenic PAHs (calc'd)	2.94E-02 J	1.58	1.86E+00					
EPA Site Inspection	DR294	9/15/1998	Carcinogenic PAHs (calc'd)	2.90E-02	0.15	1.93E+01					
LDW Outfall Sampling	LDW-SS2201-U	3/18/2011	Carcinogenic PAHs (calc'd)	2.60E-02 J	1.69	1.54E+00					
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	Carcinogenic PAHs (calc'd)	2.00E-02 J	2.33	8.58E-01					
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	Carcinogenic PAHs (calc'd)	1.90E-02 J	1.7	1.12E+00					
LDW Outfall Sampling	LDW-SS2201-D	3/18/2011	Carcinogenic PAHs (calc'd)	1.90E-02 J	2.58	7.36E-01					
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	Carcinogenic PAHs (calc'd)	1.70E-02 J	2.2	7.73E-01					
Duwamish River RM 4.9 to 7.4	DRB-115	5/9/2008	Carcinogenic PAHs (calc'd)	1.48E-02	1.28	1.16E+00					
Duwamish River RM 4.9 to 7.4	DRB-117	5/9/2008	Carcinogenic PAHs (calc'd)	1.35E-02	1.32	1.02E+00					
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Carcinogenic PAHs (calc'd)	1.30E-02 J	1.86	6.99E-01					
Duwamish River RM 4.9 to 7.4	DRB-112	5/9/2008	Carcinogenic PAHs (calc'd)	1.24E-02 J	1.75	7.11E-01					
Duwamish River RM 4.9 to 7.4	DR-07	4/28/2008	Carcinogenic PAHs (calc'd)	9.73E-03 J	0.892	1.09E+00					
Duwamish River RM 4.9 to 7.4	DRB-116	5/9/2008	Carcinogenic PAHs (calc'd)	9.45E-03 J	2.36	4.00E-01					
Duwamish River RM 4.9 to 7.4	DR-11	4/28/2008	Carcinogenic PAHs (calc'd)	2.08E-03 J	0.296	7.03E-01					
Duwamish River RM 4.9 to 7.4	DR-05	4/28/2008	Carcinogenic PAHs (calc'd)	2.08E-03 J	0.394	5.27E-01					

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
Duwamish River RM 4.9 to 7.4	DR-12	4/28/2008	Carcinogenic PAHs (calc'd)	2.08E-03 J	1.12	1.85E-01					
Duwamish River RM 4.9 to 7.4	DR-03	4/28/2008	Carcinogenic PAHs (calc'd)	1.99E-03 J	0.216	9.20E-01					
Duwamish River RM 4.9 to 7.4	DR-04	4/28/2008	Carcinogenic PAHs (calc'd)	8.80E-04 J	0.455	1.93E-01					
Duwamish River RM 4.9 to 7.4	OR-12	May-08	Carcinogenic PAHs (calc'd)	8.71E-04 J	0.413	2.11E-01					
Duwamish River RM 4.9 to 7.4	DR-08	4/28/2008	Carcinogenic PAHs (calc'd)	8.24E-04 J	2.75	3.00E-02					
Duwamish River RM 4.9 to 7.4	DR-10	4/28/2008	Carcinogenic PAHs (calc'd)	8.00E-04 J	0.643	1.24E-01					
LDWRI-Dioxin Sampling	comp	1/12/2010	Carcinogenic PAHs (calc'd)	2.90E-02 J	1.88	1.54E+00					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Chromium	8.05E+01	1.16	6.94E+03	260	270	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	Chromium	3.10E+01	2.98	1.04E+03	260	270	mg/kg DW	<1	<1
EPA Site Inspection	DR263	8/25/1998	Chromium	2.80E+01	2.9	9.66E+02	260	270	mg/kg DW	<1	<1
EPA Site Inspection	DR285	8/25/1998	Chromium	2.80E+01	3.39	8.26E+02	260	270	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2201-D	3/18/2011	Chromium	2.80E+01	2.58	1.09E+03	260	270	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS133	3/9/2005	Chromium	2.70E+01	2.59	1.04E+03	260	270	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2099-D	3/3/2011	Chromium	2.70E+01	4.01	6.73E+02	260	270	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2200-D	3/18/2011	Chromium	2.70E+01	2.38	1.13E+03	260	270	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	Chromium	2.70E+01	1.7	1.59E+03	260	270	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2201-U	3/18/2011	Chromium	2.65E+01	1.69	1.57E+03	260	270	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	Chromium	2.64E+01	2.33	1.13E+03	260	270	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS135	3/15/2005	Chromium	2.63E+01	2.28	1.15E+03	260	270	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-114	5/9/2008	Chromium	2.60E+01	2.18	1.19E+03	260	270	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS148	3/9/2005	Chromium	2.60E+01	2.55	1.02E+03	260	270	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS150	3/9/2005	Chromium	2.50E+01	1.79	1.40E+03	260	270	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS139	3/9/2005	Chromium	2.44E+01	1.67	1.46E+03	260	270	mg/kg DW	<1	<1
EPA Site Inspection	DR268	8/26/1998	Chromium	2.40E+01	2.1	1.14E+03	260	270	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-113	5/9/2008	Chromium	2.40E+01	1.9	1.26E+03	260	270	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS147	3/9/2005	Chromium	2.40E+01	2.12	1.13E+03	260	270	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS149	3/9/2005	Chromium	2.34E+01	2.08	1.13E+03	260	270	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS141	3/15/2005	Chromium	2.30E+01	2.82	8.16E+02	260	270	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS146	3/9/2005	Chromium	2.30E+01	2.4	9.58E+02	260	270	mg/kg DW	<1	<1
EPA Site Inspection	DR287	8/26/1998	Chromium	2.20E+01	1.31	1.68E+03	260	270	mg/kg DW	<1	<1
EPA Site Inspection	DR293	9/14/1998	Chromium	2.20E+01	1.74	1.26E+03	260	270	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS136	3/15/2005	Chromium	2.11E+01	1.56	1.35E+03	260	270	mg/kg DW	<1	<1
EPA Site Inspection	DR266	8/26/1998	Chromium	2.10E+01	1.38	1.52E+03	260	270	mg/kg DW	<1	<1
EPA Site Inspection	DR276	9/15/1998	Chromium	2.10E+01	1.51	1.39E+03	260	270	mg/kg DW	<1	<1
KC Water Quality Assessment	WQAHAMM	6/3/1997	Chromium	2.08E+01	1.95	1.07E+03	260	270	mg/kg DW	<1	<1
KC Water Quality Assessment	WQAHAMM	5/15/1997	Chromium	2.04E+01	1.75	1.17E+03	260	270	mg/kg DW	<1	<1
EPA Site Inspection	DR273	8/26/1998	Chromium	2.00E+01	1.66	1.20E+03	260	270	mg/kg DW	<1	<1
EPA Site Inspection	DR274	9/15/1998	Chromium	2.00E+01	1.39	1.44E+03	260	270	mg/kg DW	<1	<1
KC Water Quality Assessment	WQAHAMM	5/20/1997	Chromium	1.95E+01	1.77	1.10E+03	260	270	mg/kg DW	<1	<1
KC Water Quality Assessment	WQAHAMM	5/28/1997	Chromium	1.94E+01	1.56	1.24E+03	260	270	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS152	3/15/2008	Chromium	1.92E+01	0.236	8.14E+03	260	270	mg/kg DW	<1	<1

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
EPA Site Inspection	DR264	8/26/1998	Chromium	1.90E+01	1.48	1.28E+03	260	270	mg/kg DW	<1	<1
EPA Site Inspection	DR265	8/26/1998	Chromium	1.90E+01	1.03	1.84E+03	260	270	mg/kg DW	<1	<1
EPA Site Inspection	DR269	8/26/1998	Chromium	1.90E+01	0.9	2.11E+03	260	270	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 3	LDW-SS340	10/3/2006	Chromium	1.85E+01	1.8	1.03E+03	260	270	mg/kg DW	<1	<1
EPA Site Inspection	DR267	8/26/1998	Chromium	1.80E+01	0.85	2.12E+03	260	270	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	OR-11	May-08	Chromium	1.80E+01 B	1.58	1.14E+03	260	270	mg/kg DW	<1	<1
EPA Site Inspection	DR275	9/15/1998	Chromium	1.80E+01	1.06	1.70E+03	260	270	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2098-A	3/4/2011	Chromium	1.78E+01	1.25	1.42E+03	260	270	mg/kg DW	<1	<1
LDWRI-Benthic	B10b	8/19/2004	Chromium	1.61E+01	1.09	1.48E+03	260	270	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS140	3/8/2005	Chromium	1.61E+01	1.52	1.06E+03	260	270	mg/kg DW	<1	<1
Norfolk-cleanup1	NFK016	8/22/1994	Chromium	1.60E+01	1.1	1.45E+03	260	270	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 3	LDW-SS339	10/3/2006	Chromium	1.59E+01	2.04	7.79E+02	260	270	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 1	LDW-SS134	1/24/2005	Chromium	1.57E+01	0.39	4.03E+03	260	270	mg/kg DW	<1	<1
EPA Site Inspection	DR270	8/26/1998	Chromium	1.50E+01	1.32	1.14E+03	260	270	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS145	3/14/2005	Chromium	1.45E+01	0.189	7.67E+03	260	270	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2098-U	3/4/2011	Chromium	1.42E+01	0.844	1.68E+03	260	270	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Chromium	1.41E+01	1.86	7.58E+02	260	270	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-11	4/28/2008	Chromium	1.40E+01	0.296	4.73E+03	260	270	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	Chromium	1.31E+01	2.2	5.95E+02	260	270	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	OR-12	May-08	Chromium	1.30E+01 B	0.413	3.15E+03	260	270	mg/kg DW	<1	<1
Norfolk-cleanup1	NFK014	8/19/1994	Chromium	1.30E+01	0.07	1.86E+04	260	270	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS151	3/15/2008	Chromium	1.26E+01	0.516	2.44E+03	260	270	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-05	4/28/2008	Chromium	1.20E+01	0.394	3.05E+03	260	270	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-03	4/28/2008	Chromium	1.10E+01	0.216	5.09E+03	260	270	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-10	4/28/2008	Chromium	1.10E+01	0.643	1.71E+03	260	270	mg/kg DW	<1	<1
EPA Site Inspection	DR295	9/15/1998	Chromium	1.10E+01	0.15	7.33E+03	260	270	mg/kg DW	<1	<1
EPA Site Inspection	DR296	9/15/1998	Chromium	1.10E+01	0.65	1.69E+03	260	270	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-02	4/28/2008	Chromium	1.10E+01	1.27	8.66E+02	260	270	mg/kg DW	<1	<1
Norfolk-cleanup1	NFK015	8/22/1994	Chromium	1.10E+01	3	3.67E+02	260	270	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-04	4/28/2008	Chromium	9.60E+00	0.455	2.11E+03	260	270	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-09	4/28/2008	Chromium	9.30E+00	0.3	3.10E+03	260	270	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-01	4/28/2008	Chromium	9.20E+00	0.814	1.13E+03	260	270	mg/kg DW	<1	<1
EPA Site Inspection	DR294	9/15/1998	Chromium	9.00E+00	0.15	6.00E+03	260	270	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-06	4/28/2008	Chromium	8.90E+00	0.392	2.27E+03	260	270	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-07	4/28/2008	Chromium	6.90E+00	0.892	7.74E+02	260	270	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-12	4/28/2008	Chromium	6.20E+00	1.12	5.54E+02	260	270	mg/kg DW	<1	<1
EPA Site Inspection	DR276	9/15/1998	Chrysene	5.20E-01	1.51	3.44E+01	110	460	mg/kg OC	<1	<1
EPA Site Inspection	DR274	9/15/1998	Chrysene	4.90E-01	1.39	3.53E+01	110	460	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS149	3/9/2005	Chrysene	4.30E-01	2.08	2.07E+01	110	460	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Chrysene	4.13E-01	1.16	3.56E+01	110	460	mg/kg OC	<1	<1
EPA Site Inspection	DR268	8/26/1998	Chrysene	4.00E-01	2.1	1.90E+01	110	460	mg/kg OC	<1	<1

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Chrysene	3.42E-01	1.86	1.84E+01	110	460	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS147	3/9/2005	Chrysene	2.40E-01	2.12	1.13E+01	110	460	mg/kg OC	<1	<1
EPA Site Inspection	DR293	9/14/1998	Chrysene	2.10E-01	1.74	1.21E+01	110	460	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS146	3/9/2005	Chrysene	2.10E-01	2.4	8.75E+00	110	460	mg/kg OC	<1	<1
EPA Site Inspection	DR273	8/26/1998	Chrysene	1.90E-01	1.66	1.14E+01	110	460	mg/kg OC	<1	<1
EPA Site Inspection	DR285	8/25/1998	Chrysene	1.90E-01	3.39	5.60E+00	110	460	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	Chrysene	1.90E-01	2.98	6.38E+00	110	460	mg/kg OC	<1	<1
EPA Site Inspection	DR263	8/25/1998	Chrysene	1.60E-01	2.9	5.52E+00	110	460	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS148	3/9/2005	Chrysene	1.60E-01	2.55	6.27E+00	110	460	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS133	3/9/2005	Chrysene	1.50E-01	2.59	5.79E+00	110	460	mg/kg OC	<1	<1
EPA Site Inspection	DR275	9/15/1998	Chrysene	1.40E-01	1.06	1.32E+01	110	460	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS139	3/9/2005	Chrysene	1.30E-01	1.67	7.78E+00	110	460	mg/kg OC	<1	<1
EPA Site Inspection	DR269	8/26/1998	Chrysene	1.10E-01	0.9	1.22E+01	110	460	mg/kg OC	<1	<1
EPA Site Inspection	DR264	8/26/1998	Chrysene	1.00E-01	1.48	6.76E+00	110	460	mg/kg OC	<1	<1
EPA Site Inspection	DR265	8/26/1998	Chrysene	1.00E-01	1.03	9.71E+00	110	460	mg/kg OC	<1	<1
EPA Site Inspection	DR287	8/26/1998	Chrysene	1.00E-01	1.31	7.63E+00	110	460	mg/kg OC	<1	<1
KC Water Quality Assessment	WQAHAMM	6/3/1997	Chrysene	9.62E-02	1.95	4.93E+00	110	460	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 3	LDW-SS340	10/3/2006	Chrysene	9.40E-02	1.8	5.22E+00	110	460	mg/kg OC	<1	<1
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	Chrysene	9.20E-02	2.04	4.51E+00	110	460	mg/kg OC	<1	<1
EPA Site Inspection	DR266	8/26/1998	Chrysene	9.00E-02	1.38	6.52E+00	110	460	mg/kg OC	<1	<1
EPA Site Inspection	DR267	8/26/1998	Chrysene	9.00E-02	0.85	1.06E+01	110	460	mg/kg OC	<1	<1
EPA Site Inspection	DR270	8/26/1998	Chrysene	8.00E-02	1.32	6.06E+00	110	460	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-114	5/9/2008	Chrysene	7.70E-02	2.18	3.53E+00	110	460	mg/kg OC	<1	<1
KC Water Quality Assessment	WQAHAMM	5/15/1997	Chrysene	5.74E-02	1.75	3.28E+00	110	460	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-113	5/9/2008	Chrysene	5.50E-02	1.9	2.89E+00	110	460	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS141	3/15/2005	Chrysene	5.40E-02 J	2.82	1.91E+00	110	460	mg/kg OC	<1	<1
KC Water Quality Assessment	WQAHAMM	5/28/1997	Chrysene	5.27E-02	1.56	3.38E+00	110	460	mg/kg OC	<1	<1
KC Water Quality Assessment	WQAHAMM	5/20/1997	Chrysene	4.50E-02	1.77	2.54E+00	110	460	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2201-U	3/18/2011	Chrysene	4.40E-02	1.69	2.60E+00	110	460	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS150	3/9/2005	Chrysene	4.10E-02	1.79	2.29E+00	110	460	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-D ^a	3/3/2011	Chrysene	4.00E-02	4.01	9.98E-01	1.4	1.8	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2200-D	3/18/2011	Chrysene	3.90E-02	2.38	1.64E+00	110	460	mg/kg OC	<1	<1
EPA Site Inspection	DR294 ^a	9/15/1998	Chrysene	3.00E-02	0.15	2.00E+01	1.4	2.8	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS136	3/15/2005	Chrysene	2.70E-02	1.56	1.73E+00	110	460	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	OR-11	May-08	Chrysene	2.60E-02	1.58	1.65E+00	110	460	mg/kg OC	<1	<1
LDWRI-Benthic	B10b	8/19/2004	Chrysene	2.30E-02	1.09	2.11E+00	110	460	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS140	3/8/2005	Chrysene	2.10E-02	1.52	1.38E+00	110	460	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	Chrysene	2.00E-02	2.33	8.58E-01	110	460	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	Chrysene	1.90E-02 J	1.7	1.12E+00	110	460	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2201-D	3/18/2011	Chrysene	1.90E-02	2.58	7.36E-01	110	460	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	Chrysene	1.60E-02 J	2.2	7.27E-01	110	460	mg/kg OC	<1	<1

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
Duwamish River RM 4.9 to 7.4	DRB-115	5/9/2008	Chrysene	1.20E-02	1.28	9.38E-01	110	460	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-01	4/28/2008	Chrysene	9.70E-03 J	0.814	1.19E+00	110	460	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-117	5/9/2008	Chrysene	9.60E-03	1.32	7.27E-01	110	460	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-112	5/9/2008	Chrysene	8.50E-03	1.75	4.86E-01	110	460	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-07	4/28/2008	Chrysene	7.60E-03	0.892	8.52E-01	110	460	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-116	5/9/2008	Chrysene	6.40E-03	2.36	2.71E-01	110	460	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-02	4/28/2008	Chrysene	1.00E-03 J	1.27	7.87E-02	110	460	mg/kg OC	<1	<1
LDWRI-Dioxin Sampling	comp	1/12/2010	Chrysene	2.30E-02	1.88	1.22E+00	110	460	mg/kg OC	<1	<1
EPA Site Inspection	DR285	8/25/1998	Cobalt	1.10E+01	3.39	3.24E+02					
EPA Site Inspection	DR263	8/25/1998	Cobalt	1.00E+01	2.9	3.45E+02					
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	Cobalt	9.90E+00	2.98	3.32E+02					
LDWRI-Surface Sediment Round 2	LDW-SS133	3/9/2005	Cobalt	9.60E+00	2.59	3.71E+02					
LDWRI-Surface Sediment Round 2	LDW-SS147	3/9/2005	Cobalt	9.30E+00	2.12	4.39E+02					
EPA Site Inspection	DR266	8/26/1998	Cobalt	9.00E+00	1.38	6.52E+02					
EPA Site Inspection	DR268	8/26/1998	Cobalt	9.00E+00	2.1	4.29E+02					
EPA Site Inspection	DR269	8/26/1998	Cobalt	9.00E+00	0.9	1.00E+03					
EPA Site Inspection	DR273	8/26/1998	Cobalt	9.00E+00	1.66	5.42E+02					
EPA Site Inspection	DR287	8/26/1998	Cobalt	9.00E+00	1.31	6.87E+02					
LDWRI-Surface Sediment Round 2	LDW-SS146	3/9/2005	Cobalt	9.00E+00	2.4	3.75E+02					
LDWRI-Surface Sediment Round 2	LDW-SS135	3/15/2005	Cobalt	8.80E+00	2.28	3.86E+02					
LDWRI-Surface Sediment Round 2	LDW-SS141	3/15/2005	Cobalt	8.30E+00	2.82	2.94E+02					
LDWRI-Surface Sediment Round 2	LDW-SS139	3/9/2005	Cobalt	8.20E+00	1.67	4.91E+02					
EPA Site Inspection	DR264	8/26/1998	Cobalt	8.00E+00	1.48	5.41E+02					
EPA Site Inspection	DR267	8/26/1998	Cobalt	8.00E+00	0.85	9.41E+02					
EPA Site Inspection	DR293	9/14/1998	Cobalt	8.00E+00	1.74	4.60E+02					
LDWRI-Surface Sediment Round 2	LDW-SS136	3/15/2005	Cobalt	8.00E+00	1.56	5.13E+02					
EPA Site Inspection	DR276	9/15/1998	Cobalt	8.00E+00	1.51	5.30E+02					
LDWRI-Surface Sediment Round 2	LDW-SS145	3/14/2005	Cobalt	7.30E+00	0.189	3.86E+03					
EPA Site Inspection	DR265	8/26/1998	Cobalt	7.00E+00	1.03	6.80E+02					
EPA Site Inspection	DR270	8/26/1998	Cobalt	7.00E+00	1.32	5.30E+02					
LDWRI-Surface Sediment Round 2	LDW-SS149	3/9/2005	Cobalt	7.00E+00	2.08	3.37E+02					
EPA Site Inspection	DR274	9/15/1998	Cobalt	7.00E+00	1.39	5.04E+02					
LDWRI-Benthic	B10b	8/19/2004	Cobalt	6.90E+00	1.09	6.33E+02					
LDWRI-Surface Sediment Round 2	LDW-SS152	3/15/2008	Cobalt	6.70E+00	0.236	2.84E+03					
LDWRI-Surface Sediment Round 2	LDW-SS140	3/8/2005	Cobalt	6.60E+00	1.52	4.34E+02					
LDWRI-Surface Sediment Round 2	LDW-SS148	3/9/2005	Cobalt	6.60E+00	2.55	2.59E+02					
LDWRI-Surface Sediment Round 2	LDW-SS150	3/9/2005	Cobalt	6.40E+00	1.79	3.58E+02					
LDWRI-Surface Sediment Round 3	LDW-SS340	10/3/2006	Cobalt	6.40E+00	1.8	3.56E+02					
LDWRI-Surface Sediment Round 2	LDW-SS151	3/15/2008	Cobalt	6.30E+00	0.516	1.22E+03					
EPA Site Inspection	DR294	9/15/1998	Cobalt	6.00E+00	0.15	4.00E+03					
EPA Site Inspection	DR295	9/15/1998	Cobalt	6.00E+00	0.15	4.00E+03					

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
EPA Site Inspection	DR296	9/15/1998	Cobalt	6.00E+00	0.65	9.23E+02					
EPA Site Inspection	DR275	9/15/1998	Cobalt	6.00E+00	1.06	5.66E+02					
LDWRI-Surface Sediment Round 3	LDW-SS339	10/3/2006	Cobalt	5.90E+00	2.04	2.89E+02					
LDWRI-Surface Sediment Round 1	LDW-SS134	1/24/2005	Cobalt	4.70E+00	0.39	1.21E+03					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Copper	7.99E+01	1.16	6.89E+03	390	390	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS133	3/9/2005	Copper	4.94E+01	2.59	1.91E+03	390	390	mg/kg DW	<1	<1
EPA Site Inspection	DR285	8/25/1998	Copper	4.70E+01	3.39	1.39E+03	390	390	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	Copper	4.67E+01	2.98	1.57E+03	390	390	mg/kg DW	<1	<1
EPA Site Inspection	DR263	8/25/1998	Copper	4.40E+01	2.9	1.52E+03	390	390	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2099-D	3/3/2011	Copper	3.98E+01 J	4.01	9.93E+02	390	390	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS135	3/15/2005	Copper	3.88E+01	2.28	1.70E+03	390	390	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2201-D	3/18/2011	Copper	3.67E+01	2.58	1.42E+03	390	390	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS148	3/9/2005	Copper	3.60E+01	2.55	1.41E+03	390	390	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS147	3/9/2005	Copper	3.58E+01	2.12	1.69E+03	390	390	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS146	3/9/2005	Copper	3.49E+01	2.4	1.45E+03	390	390	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2200-D	3/18/2011	Copper	3.33E+01	2.38	1.40E+03	390	390	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	Copper	3.32E+01	1.7	1.95E+03	390	390	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-113	5/9/2008	Copper	3.30E+01 B	1.9	1.74E+03	390	390	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-114	5/9/2008	Copper	3.30E+01 B	2.18	1.51E+03	390	390	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2201-U	3/18/2011	Copper	3.24E+01	1.69	1.92E+03	390	390	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	Copper	3.15E+01	2.33	1.35E+03	390	390	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS141	3/15/2005	Copper	3.09E+01	2.82	1.10E+03	390	390	mg/kg DW	<1	<1
EPA Site Inspection	DR268	8/26/1998	Copper	3.00E+01	2.1	1.43E+03	390	390	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS139	3/9/2005	Copper	2.97E+01	1.67	1.78E+03	390	390	mg/kg DW	<1	<1
EPA Site Inspection	DR276	9/15/1998	Copper	2.90E+01	1.51	1.92E+03	390	390	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS149	3/9/2005	Copper	2.82E+01	2.08	1.36E+03	390	390	mg/kg DW	<1	<1
KC Water Quality Assessment	WQAHAMM	6/3/1997	Copper	2.81E+01	1.95	1.44E+03	390	390	mg/kg DW	<1	<1
EPA Site Inspection	DR266	8/26/1998	Copper	2.70E+01	1.38	1.96E+03	390	390	mg/kg DW	<1	<1
EPA Site Inspection	DR287	8/26/1998	Copper	2.70E+01	1.31	2.06E+03	390	390	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 3	LDW-SS340	10/3/2006	Copper	2.69E+01	1.8	1.49E+03	390	390	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS136	3/15/2005	Copper	2.63E+01	1.56	1.69E+03	390	390	mg/kg DW	<1	<1
EPA Site Inspection	DR264	8/26/1998	Copper	2.60E+01	1.48	1.76E+03	390	390	mg/kg DW	<1	<1
EPA Site Inspection	DR293	9/14/1998	Copper	2.60E+01	1.74	1.49E+03	390	390	mg/kg DW	<1	<1
KC Water Quality Assessment	WQAHAMM	5/15/1997	Copper	2.53E+01	1.75	1.45E+03	390	390	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 1	LDW-SS134	1/24/2005	Copper	2.50E+01	0.39	6.41E+03	390	390	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS150	3/9/2005	Copper	2.49E+01	1.79	1.39E+03	390	390	mg/kg DW	<1	<1
KC Water Quality Assessment	WQAHAMM	5/20/1997	Copper	2.43E+01	1.77	1.37E+03	390	390	mg/kg DW	<1	<1
EPA Site Inspection	DR273	8/26/1998	Copper	2.40E+01	1.66	1.45E+03	390	390	mg/kg DW	<1	<1
KC Water Quality Assessment	WQAHAMM	5/28/1997	Copper	2.38E+01	1.56	1.53E+03	390	390	mg/kg DW	<1	<1
EPA Site Inspection	DR265	8/26/1998	Copper	2.20E+01	1.03	2.14E+03	390	390	mg/kg DW	<1	<1
EPA Site Inspection	DR267	8/26/1998	Copper	2.20E+01	0.85	2.59E+03	390	390	mg/kg DW	<1	<1

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
EPA Site Inspection	DR269	8/26/1998	Copper	2.20E+01	0.9	2.44E+03	390	390	mg/kg DW	<1	<1
EPA Site Inspection	DR270	8/26/1998	Copper	2.20E+01	1.32	1.67E+03	390	390	mg/kg DW	<1	<1
EPA Site Inspection	DR274	9/15/1998	Copper	2.20E+01	1.39	1.58E+03	390	390	mg/kg DW	<1	<1
Norfolk-cleanup1	NFK016	8/22/1994	Copper	2.20E+01	1.1	2.00E+03	390	390	mg/kg DW	<1	<1
EPA Site Inspection	DR275	9/15/1998	Copper	2.10E+01	1.06	1.98E+03	390	390	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	Copper	1.93E+01 J	2.2	8.77E+02	390	390	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	OR-11	May-08	Copper	1.90E+01	1.58	1.20E+03	390	390	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 3	LDW-SS339	10/3/2006	Copper	1.79E+01	2.04	8.77E+02	390	390	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS140	3/8/2005	Copper	1.74E+01	1.52	1.14E+03	390	390	mg/kg DW	<1	<1
LDWRI-Benthic	B10b	8/19/2004	Copper	1.72E+01	1.09	1.58E+03	390	390	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Copper	1.59E+01 J	1.86	8.55E+02	390	390	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-05	4/28/2008	Copper	1.50E+01 B	0.394	3.81E+03	390	390	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2098-A	3/4/2011	Copper	1.50E+01	1.25	1.20E+03	390	390	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS151	3/15/2008	Copper	1.50E+01	0.516	2.91E+03	390	390	mg/kg DW	<1	<1
EPA Site Inspection	DR296	9/15/1998	Copper	1.50E+01	0.65	2.31E+03	390	390	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS152	3/15/2008	Copper	1.43E+01	0.236	6.06E+03	390	390	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-07	4/28/2008	Copper	1.40E+01	0.892	1.57E+03	390	390	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-01	4/28/2008	Copper	1.40E+01	0.814	1.72E+03	390	390	mg/kg DW	<1	<1
Norfolk-cleanup1	NFK015	8/22/1994	Copper	1.40E+01	3	4.67E+02	390	390	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS145	3/14/2005	Copper	1.37E+01 J	0.189	7.25E+03	390	390	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-10	4/28/2008	Copper	1.30E+01 B	0.643	2.02E+03	390	390	mg/kg DW	<1	<1
EPA Site Inspection	DR294	9/15/1998	Copper	1.30E+01	0.15	8.67E+03	390	390	mg/kg DW	<1	<1
EPA Site Inspection	DR295	9/15/1998	Copper	1.30E+01	0.15	8.67E+03	390	390	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2098-U	3/4/2011	Copper	1.22E+01	0.844	1.45E+03	390	390	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-04	4/28/2008	Copper	1.20E+01 B	0.455	2.64E+03	390	390	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-09	4/28/2008	Copper	1.20E+01 B	0.3	4.00E+03	390	390	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-11	4/28/2008	Copper	1.20E+01 B	0.296	4.05E+03	390	390	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-02	4/28/2008	Copper	1.20E+01	1.27	9.45E+02	390	390	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-03	4/28/2008	Copper	1.10E+01 B	0.216	5.09E+03	390	390	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-06	4/28/2008	Copper	1.10E+01 B	0.392	2.81E+03	390	390	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	OR-12	May-08	Copper	1.10E+01	0.413	2.66E+03	390	390	mg/kg DW	<1	<1
Norfolk-cleanup1	NFK014	8/19/1994	Copper	1.10E+01	0.07	1.57E+04	390	390	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-12	4/28/2008	Copper	1.00E+01 B	1.12	8.93E+02	390	390	mg/kg DW	<1	<1
LDWRI-Benthic	B10b	8/19/2004	DDTs (total-calc'd)	2.70E-03 J	1.09	2.48E-01					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Dibenzo(a,h)anthracene	4.24E-01	1.16	3.66E+01	12	33	mg/kg OC	3.0	1.1
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Dibenzo(a,h)anthracene	4.21E-01	1.86	2.26E+01	12	33	mg/kg OC	1.9	<1
EPA Site Inspection	DR274	9/15/1998	Dibenzo(a,h)anthracene	7.00E-02	1.39	5.04E+00	12	33	mg/kg OC	<1	<1
EPA Site Inspection	DR276	9/15/1998	Dibenzo(a,h)anthracene	6.00E-02	1.51	3.97E+00	12	33	mg/kg OC	<1	<1
EPA Site Inspection	DR273	8/26/1998	Dibenzo(a,h)anthracene	3.00E-02	1.66	1.81E+00	12	33	mg/kg OC	<1	<1
EPA Site Inspection	DR293	9/14/1998	Dibenzo(a,h)anthracene	3.00E-02	1.74	1.72E+00	12	33	mg/kg OC	<1	<1
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	Dibenzo(a,h)anthracene	2.50E-02	2.04	1.23E+00	12	33	mg/kg OC	<1	<1

Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
EPA Site Inspection	DR268	8/26/1998	Dibenzo(a,h)anthracene	2.00E-02	2.1	9.52E-01	12	33	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 3	LDW-SS340	10/3/2006	Dibenzo(a,h)anthracene	7.30E-03	1.8	4.06E-01	12	33	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-D ^a	3/3/2011	Dibenzo(a,h)anthracene	6.80E-03	4.01	1.70E-01	0.23	0.54	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2200-D	3/18/2011	Dibenzo(a,h)anthracene	4.80E-03	2.38	2.02E-01	12	33	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	OR-11	May-08	Dibenzo(a,h)anthracene	4.70E-03 J	1.58	2.97E-01	12	33	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-112	5/9/2008	Dibenzo(a,h)anthracene	4.60E-03 J	1.75	2.63E-01	12	33	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	Dibenzo(a,h)anthracene	3.70E-03 J	2.33	1.59E-01	12	33	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2201-U	3/18/2011	Dibenzo(a,h)anthracene	3.70E-03 J	1.69	2.19E-01	12	33	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2201-D	3/18/2011	Dibenzo(a,h)anthracene	3.50E-03 J	2.58	1.36E-01	12	33	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	Dibenzo(a,h)anthracene	3.30E-03 J	1.7	1.94E-01	12	33	mg/kg OC	<1	<1
LDWRI-Benthic	B10b	8/19/2004	Dibenzo(a,h)anthracene	2.40E-03 J	1.09	2.20E-01	12	33	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-07	4/28/2008	Dibenzo(a,h)anthracene	1.90E-03 J	0.892	2.13E-01	12	33	mg/kg OC	<1	<1
LDWRI-Dioxin Sampling	comp	1/12/2010	Dibenzo(a,h)anthracene	5.70E-03	1.88	3.03E-01	12	33	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Dibenzofuran	3.86E-01	1.16	3.33E+01	15	58	mg/kg OC	2.2	<1
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Dibenzofuran	2.97E-01	1.86	1.60E+01	15	58	mg/kg OC	1.1	<1
EPA Site Inspection	DR276	9/15/1998	Dibenzofuran	1.70E-01	1.51	1.13E+01	15	58	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS149	3/9/2005	Dibenzofuran	4.30E-02 J	2.08	2.07E+00	15	58	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS146	3/9/2005	Dibenzofuran	1.00E-02 J	2.4	4.17E-01	15	58	mg/kg OC	<1	<1
LDWRI-Benthic	B10b	8/19/2004	Dibenzofuran	1.50E-03 J	1.09	1.38E-01	15	58	mg/kg OC	<1	<1
LDWRI-Benthic	B10b	8/19/2004	Dibenzothiophene	8.10E-04 J	1.09	7.43E-02					
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	Dibutyltin as ion	4.80E-03 J	2.98	1.61E-01					
EPA Site Inspection	DR273	8/26/1998	Dibutyltin as ion	2.00E-03 J	1.66	1.20E-01					
LDWRI-Benthic	B10b	8/19/2004	Dibutyltin as ion	1.70E-03 J	1.09	1.56E-01					
EPA Site Inspection	DR264	8/26/1998	Dibutyltin as ion	1.00E-03 J	1.48	6.76E-02					
EPA Site Inspection	DR270	8/26/1998	Dibutyltin as ion	1.00E-03 J	1.32	7.58E-02					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Diethyl phthalate	4.18E-01	1.16	3.60E+01	61	110	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Diethyl phthalate	3.49E-01	1.86	1.88E+01	61	110	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2098-A	3/4/2011	Diethyl phthalate	8.10E-02	1.25	6.48E+00	61	110	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-D ^a	3/3/2011	Diethyl phthalate	9.40E-03 J	4.01	2.34E-01	0.20	1.2	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	OR-11	May-08	Diethyl phthalate	3.40E-03 JB	1.58	2.15E-01	61	110	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	OR-12 ^a	May-08	Diethyl phthalate	3.00E-03 JB	0.413	7.26E-01	0.20	1.2	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-11 ^a	4/28/2008	Diethyl phthalate	0.002600 JB	0.296	0.878378	0.20	1.2	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-03 ^a	4/28/2008	Diethyl phthalate	0.002200 JB	0.216	1.018519	0.20	1.2	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-08	4/28/2008	Diethyl phthalate	2.10E-03 JB	2.75	7.64E-02	61	110	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-10	4/28/2008	Diethyl phthalate	2.00E-03 JB	0.643	3.11E-01	61	110	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-05 ^a	4/28/2008	Diethyl phthalate	0.001900 JB	0.394	0.482234	0.20	1.2	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-04 ^a	4/28/2008	Diethyl phthalate	0.001800 JB	0.455	0.395604	0.20	1.2	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-06 ^a	4/28/2008	Diethyl phthalate	0.001800 JB	0.392	0.459184	0.20	1.2	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-09 ^a	4/28/2008	Diethyl phthalate	0.001700 JB	0.3	0.566667	0.20	1.2	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-07	4/28/2008	Diethyl phthalate	1.60E-03 JB	0.892	1.79E-01	61	110	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Dimethyl phthalate	3.81E-01	1.16	3.28E+01	53	53	mg/kg OC	<1	<1

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Dimethyl phthalate	3.56E-01	1.86	1.91E+01	53	53	mg/kg OC	<1	<1
EPA Site Inspection	DR285	8/25/1998	Dimethyl phthalate	8.00E-02	3.39	2.36E+00	53	53	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	Dimethyl phthalate	5.00E-02	2.98	1.68E+00	53	53	mg/kg OC	<1	<1
EPA Site Inspection	DR264	8/26/1998	Dimethyl phthalate	4.00E-02	1.48	2.70E+00	53	53	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS133	3/9/2005	Dimethyl phthalate	3.30E-02	2.59	1.27E+00	53	53	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 3	LDW-SS339	10/3/2006	Dimethyl phthalate	8.60E-03	2.04	4.22E-01	53	53	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	Dimethyl phthalate	6.70E-03	2.2	3.05E-01	53	53	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-D ^a	3/3/2011	Dimethyl phthalate	5.60E-03	4.01	1.40E-01	0.071	0.16	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Di-n-butyl phthalate	3.87E-01	1.16	3.34E+01	220	1700	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Di-n-butyl phthalate	2.40E-01	1.86	1.29E+01	220	1700	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-12	4/28/2008	Di-n-butyl phthalate	2.00E-02 JB	1.12	1.79E+00	220	1700	mg/kg OC	<1	<1
EPA Site Inspection	DR285	8/25/1998	Di-n-butyl phthalate	2.00E-02	3.39	5.90E-01	220	1700	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	OR-11	May-08	Di-n-butyl phthalate	1.60E-02 JB	1.58	1.01E+00	220	1700	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-07	4/28/2008	Di-n-butyl phthalate	1.50E-02 JB	0.892	1.68E+00	220	1700	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-11 ^a	4/28/2008	Di-n-butyl phthalate	0.013000 JB	0.296	4.391892	1.4	5.1	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	OR-12 ^a	May-08	Di-n-butyl phthalate	1.10E-02 JB	0.413	2.66E+00	1.4	5.1	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-03 ^a	4/28/2008	Di-n-butyl phthalate	0.007500 JB	0.216	3.472222	1.4	5.1	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-05 ^a	4/28/2008	Di-n-butyl phthalate	0.007400 JB	0.394	1.878173	1.4	5.1	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-09 ^a	4/28/2008	Di-n-butyl phthalate	0.007400 JB	0.3	2.466667	1.4	5.1	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-04 ^a	4/28/2008	Di-n-butyl phthalate	0.007300 JB	0.455	1.604396	1.4	5.1	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-08	4/28/2008	Di-n-butyl phthalate	7.30E-03 JB	2.75	2.65E-01	220	1700	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-06 ^a	4/28/2008	Di-n-butyl phthalate	0.007000 JB	0.392	1.785714	1.4	5.1	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-10	4/28/2008	Di-n-butyl phthalate	6.80E-03 JB	0.643	1.06E+00	220	1700	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-114	5/9/2008	Di-n-octyl phthalate	5.20E-01	2.18	2.39E+01	58	4500	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-113	5/9/2008	Di-n-octyl phthalate	4.70E-01	1.9	2.47E+01	58	4500	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Di-n-octyl phthalate	3.46E-01	1.16	2.98E+01	58	4500	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Di-n-octyl phthalate	1.99E-01	1.86	1.07E+01	58	4500	mg/kg OC	<1	<1
EPA Site Inspection	DR276	9/15/1998	Di-n-octyl phthalate	2.00E-02	1.51	1.32E+00	58	4500	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	Dioxin/Furan TEQ	1.54E-05 J	2.98	5.17E-04					
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	Dioxin/Furan TEQ	3.79E-06 J	2.04	1.86E-04					
Duwamish River RM 4.9 to 7.4	DRB-114	5/9/2008	Dioxin/Furan TEQ	2.25E-06 J	2.18	1.03E-04					
Duwamish River RM 4.9 to 7.4	DRB-113	5/9/2008	Dioxin/Furan TEQ	1.78E-06	1.9	9.39E-05					
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	Dioxin/Furan TEQ	1.57E-06 J	1.7	9.24E-05					
Duwamish River RM 4.9 to 7.4	DRB-117	5/9/2008	Dioxin/Furan TEQ	1.32E-06 J	1.32	1.00E-04					
Duwamish River RM 4.9 to 7.4	DRB-112	5/9/2008	Dioxin/Furan TEQ	1.24E-06 J	1.75	7.09E-05					
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	Dioxin/Furan TEQ	1.22E-06 J	2.33	5.24E-05					
Duwamish River RM 4.9 to 7.4	DRB-115	5/9/2008	Dioxin/Furan TEQ	1.12E-06 J	1.28	8.74E-05					
Duwamish River RM 4.9 to 7.4	DRB-116	5/9/2008	Dioxin/Furan TEQ	1.00E-06 J	2.36	4.25E-05					
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	Dioxin/Furan TEQ	8.00E-07 J	2.2	3.64E-05					
Duwamish River RM 4.9 to 7.4	OR-11	May-08	Dioxin/Furan TEQ	6.11E-07 J	1.58	3.87E-05					
LDW Outfall Sampling	LDW-SS2098-A	3/4/2011	Dioxin/Furan TEQ	2.94E-07 J	1.25	2.35E-05					

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
Duwamish River RM 4.9 to 7.4	DR-01	4/28/2008	Dioxin/Furan TEQ	2.87E-07	1.58	1.82E-05					
Duwamish River RM 4.9 to 7.4	DR-12	4/28/2008	Dioxin/Furan TEQ	2.62E-07	1.12	2.34E-05					
Duwamish River RM 4.9 to 7.4	OR-12	May-08	Dioxin/Furan TEQ	1.80E-07 J	0.413	4.36E-05					
Duwamish River RM 4.9 to 7.4	DR-10	4/28/2008	Dioxin/Furan TEQ	1.57E-07 J	0.643	2.44E-05					
Duwamish River RM 4.9 to 7.4	DR-09	4/28/2008	Dioxin/Furan TEQ	1.35E-07 J	0.3	4.50E-05					
Duwamish River RM 4.9 to 7.4	DR-11	4/28/2008	Dioxin/Furan TEQ	1.14E-07 J	0.296	3.84E-05					
Duwamish River RM 4.9 to 7.4	DR-08	4/28/2008	Dioxin/Furan TEQ	8.41E-08 J	2.75	3.06E-06					
LDWRI-Dioxin Sampling	comp	1/12/2010	Dioxin/Furan TEQ	3.73E-06 J	1.88	1.98E-04					
EPA Site Inspection	DR268	8/26/1998	Fluoranthene	1.70E+00	2.1	8.10E+01	160	1200	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS149	3/9/2005	Fluoranthene	1.60E+00	2.08	7.69E+01	160	1200	mg/kg OC	<1	<1
EPA Site Inspection	DR276	9/15/1998	Fluoranthene	1.50E+00	1.51	9.93E+01	160	1200	mg/kg OC	<1	<1
EPA Site Inspection	DR274	9/15/1998	Fluoranthene	1.10E+00	1.39	7.91E+01	160	1200	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Fluoranthene	4.91E-01	1.16	4.23E+01	160	1200	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS146	3/9/2005	Fluoranthene	4.80E-01	2.4	2.00E+01	160	1200	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS147	3/9/2005	Fluoranthene	4.70E-01	2.12	2.22E+01	160	1200	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	Fluoranthene	4.50E-01	2.98	1.51E+01	160	1200	mg/kg OC	<1	<1
EPA Site Inspection	DR293	9/14/1998	Fluoranthene	4.30E-01	1.74	2.47E+01	160	1200	mg/kg OC	<1	<1
EPA Site Inspection	DR285	8/25/1998	Fluoranthene	4.10E-01	3.39	1.21E+01	160	1200	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS133	3/9/2005	Fluoranthene	4.00E-01	2.59	1.54E+01	160	1200	mg/kg OC	<1	<1
EPA Site Inspection	DR263	8/25/1998	Fluoranthene	3.90E-01	2.9	1.34E+01	160	1200	mg/kg OC	<1	<1
EPA Site Inspection	DR273	8/26/1998	Fluoranthene	3.90E-01	1.66	2.35E+01	160	1200	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS148	3/9/2005	Fluoranthene	3.30E-01	2.55	1.29E+01	160	1200	mg/kg OC	<1	<1
EPA Site Inspection	DR275	9/15/1998	Fluoranthene	3.30E-01	1.06	3.11E+01	160	1200	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Fluoranthene	2.98E-01	1.86	1.60E+01	160	1200	mg/kg OC	<1	<1
EPA Site Inspection	DR265	8/26/1998	Fluoranthene	2.90E-01	1.03	2.82E+01	160	1200	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS139	3/9/2005	Fluoranthene	2.60E-01	1.67	1.56E+01	160	1200	mg/kg OC	<1	<1
EPA Site Inspection	DR264	8/26/1998	Fluoranthene	2.10E-01	1.48	1.42E+01	160	1200	mg/kg OC	<1	<1
EPA Site Inspection	DR287	8/26/1998	Fluoranthene	1.80E-01	1.31	1.37E+01	160	1200	mg/kg OC	<1	<1
EPA Site Inspection	DR266	8/26/1998	Fluoranthene	1.70E-01	1.38	1.23E+01	160	1200	mg/kg OC	<1	<1
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	Fluoranthene	1.70E-01	2.04	8.33E+00	160	1200	mg/kg OC	<1	<1
EPA Site Inspection	DR267	8/26/1998	Fluoranthene	1.50E-01	0.85	1.76E+01	160	1200	mg/kg OC	<1	<1
EPA Site Inspection	DR269	8/26/1998	Fluoranthene	1.50E-01	0.9	1.67E+01	160	1200	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-114	5/9/2008	Fluoranthene	1.50E-01	2.18	6.88E+00	160	1200	mg/kg OC	<1	<1
KC Water Quality Assessment	WQAHAMM	6/3/1997	Fluoranthene	1.50E-01 J	1.95	7.69E+00	160	1200	mg/kg OC	<1	<1
EPA Site Inspection	DR270	8/26/1998	Fluoranthene	1.40E-01	1.32	1.06E+01	160	1200	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 3	LDW-SS340	10/3/2006	Fluoranthene	1.40E-01	1.8	7.78E+00	160	1200	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS141	3/15/2005	Fluoranthene	1.10E-01	2.82	3.90E+00	160	1200	mg/kg OC	<1	<1
KC Water Quality Assessment	WQAHAMM	5/15/1997	Fluoranthene	1.10E-01 J	1.75	6.29E+00	160	1200	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-113	5/9/2008	Fluoranthene	1.00E-01	1.9	5.26E+00	160	1200	mg/kg OC	<1	<1
KC Water Quality Assessment	WQAHAMM	5/28/1997	Fluoranthene	9.20E-02 J	1.56	5.90E+00	160	1200	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS150	3/9/2005	Fluoranthene	8.30E-02	1.79	4.64E+00	160	1200	mg/kg OC	<1	<1

Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
KC Water Quality Assessment	WQAHAMM	5/20/1997	Fluoranthene	8.00E-02 J	1.77	4.52E+00	160	1200	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2200-D	3/18/2011	Fluoranthene	7.10E-02	2.38	2.98E+00	160	1200	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-D ^a	3/3/2011	Fluoranthene	6.30E-02	4.01	1.57E+00	1.7	2.5	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2201-U	3/18/2011	Fluoranthene	6.00E-02	1.69	3.55E+00	160	1200	mg/kg OC	<1	<1
EPA Site Inspection	DR294 ^a	9/15/1998	Fluoranthene	6.00E-02	0.15	4.00E+01	1.7	2.5	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS136	3/15/2005	Fluoranthene	4.80E-02	1.56	3.08E+00	160	1200	mg/kg OC	<1	<1
Duamish River RM 4.9 to 7.4	OR-11	May-08	Fluoranthene	4.60E-02	1.58	2.91E+00	160	1200	mg/kg OC	<1	<1
Norfolk-cleanup1	NFK016	8/22/1994	Fluoranthene	4.60E-02 J	1.1	4.18E+00	160	1200	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS140	3/8/2005	Fluoranthene	4.20E-02	1.52	2.76E+00	160	1200	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	Fluoranthene	3.60E-02	2.33	1.55E+00	160	1200	mg/kg OC	<1	<1
LDWRI-Benthic	B10b	8/19/2004	Fluoranthene	3.50E-02	1.09	3.21E+00	160	1200	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 3	LDW-SS339	10/3/2006	Fluoranthene	3.20E-02 J	2.04	1.57E+00	160	1200	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	Fluoranthene	3.00E-02	1.7	1.76E+00	160	1200	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2201-D	3/18/2011	Fluoranthene	3.00E-02	2.58	1.16E+00	160	1200	mg/kg OC	<1	<1
EPA Site Inspection	DR295 ^a	9/15/1998	Fluoranthene	3.00E-02	0.15	2.00E+01	1.7	2.5	mg/kg DW	<1	<1
EPA Site Inspection	DR296	9/15/1998	Fluoranthene	3.00E-02	0.65	4.62E+00	160	1200	mg/kg OC	<1	<1
Duamish River RM 4.9 to 7.4	DRB-117	5/9/2008	Fluoranthene	2.60E-02	1.32	1.97E+00	160	1200	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	Fluoranthene	2.60E-02	2.2	1.18E+00	160	1200	mg/kg OC	<1	<1
Duamish River RM 4.9 to 7.4	DRB-115	5/9/2008	Fluoranthene	2.40E-02	1.28	1.88E+00	160	1200	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS135	3/15/2005	Fluoranthene	2.10E-02	2.28	9.21E-01	160	1200	mg/kg OC	<1	<1
Norfolk-cleanup1	NFK014 ^a	8/19/1994	Fluoranthene	2.00E-02 J	0.07	2.86E+01	1.7	2.5	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-07	4/28/2008	Fluoranthene	1.90E-02	0.892	2.13E+00	160	1200	mg/kg OC	<1	<1
Duamish River RM 4.9 to 7.4	DR-01	4/28/2008	Fluoranthene	1.80E-02 J	0.814	2.21E+00	160	1200	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2098-A	3/4/2011	Fluoranthene	1.70E-02 J	1.25	1.36E+00	160	1200	mg/kg OC	<1	<1
Duamish River RM 4.9 to 7.4	DRB-112	5/9/2008	Fluoranthene	1.50E-02	1.75	8.57E-01	160	1200	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2098-U	3/4/2011	Fluoranthene	1.40E-02 J	0.844	1.66E+00	160	1200	mg/kg OC	<1	<1
Duamish River RM 4.9 to 7.4	DRB-116	5/9/2008	Fluoranthene	1.10E-02	2.36	4.66E-01	160	1200	mg/kg OC	<1	<1
Duamish River RM 4.9 to 7.4	DR-10	4/28/2008	Fluoranthene	1.50E-03 J	0.643	2.33E-01	160	1200	mg/kg OC	<1	<1
Duamish River RM 4.9 to 7.4	DR-02	4/28/2008	Fluoranthene	1.40E-03 J	1.27	1.10E-01	160	1200	mg/kg OC	<1	<1
Duamish River RM 4.9 to 7.4	DR-09 ^a	4/28/2008	Fluoranthene	0.001100 J	0.3	0.366667	1.7	2.5	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-08	4/28/2008	Fluoranthene	1.00E-03 J	2.75	3.64E-02	160	1200	mg/kg OC	<1	<1
Duamish River RM 4.9 to 7.4	DR-04 ^a	4/28/2008	Fluoranthene	0.000930 J	0.455	0.204396	1.7	2.5	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-12	4/28/2008	Fluoranthene	9.00E-04 J	1.12	8.04E-02	160	1200	mg/kg OC	<1	<1
Duamish River RM 4.9 to 7.4	OR-12 ^a	May-08	Fluoranthene	8.20E-04 J	0.413	1.99E-01	1.7	2.5	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-11 ^a	4/28/2008	Fluoranthene	0.000550 J	0.296	0.185811	1.7	2.5	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-03 ^a	4/28/2008	Fluoranthene	0.000500 J	0.216	0.231481	1.7	2.5	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-05 ^a	4/28/2008	Fluoranthene	0.000460 J	0.394	0.116751	1.7	2.5	mg/kg DW	<1	<1
LDWRI-Dioxin Sampling	comp	1/12/2010	Fluoranthene	4.40E-02	1.88	2.34E+00	160	1200	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Fluorene	3.78E-01	1.16	3.26E+01	23	79	mg/kg OC	1.4	<1
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Fluorene	3.50E-01	1.86	1.88E+01	23	79	mg/kg OC	<1	<1
EPA Site Inspection	DR276	9/15/1998	Fluorene	2.80E-01	1.51	1.85E+01	23	79	mg/kg OC	<1	<1

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
LDWRI-Surface Sediment Round 2	LDW-SS149	3/9/2005	Fluorene	5.80E-02 J	2.08	2.79E+00	23	79	mg/kg OC	<1	<1
EPA Site Inspection	DR274	9/15/1998	Fluorene	3.00E-02	1.39	2.16E+00	23	79	mg/kg OC	<1	<1
EPA Site Inspection	DR265	8/26/1998	Fluorene	2.00E-02	1.03	1.94E+00	23	79	mg/kg OC	<1	<1
EPA Site Inspection	DR268	8/26/1998	Fluorene	2.00E-02	2.1	9.52E-01	23	79	mg/kg OC	<1	<1
EPA Site Inspection	DR285	8/25/1998	Fluorene	2.00E-02	3.39	5.90E-01	23	79	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-07	4/28/2008	Fluorene	3.00E-03	0.892	3.36E-01	23	79	mg/kg OC	<1	<1
LDWRI-Benthic	B10b	8/19/2004	Fluorene	1.40E-03 J	1.09	1.28E-01	23	79	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-117	5/9/2008	Fluorene	1.00E-03 J	1.32	7.58E-02	23	79	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-01	4/28/2008	Fluorene	5.90E-04 J	0.814	7.25E-02	23	79	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Hexachlorobenzene	3.63E-01	1.16	3.13E+01	0.38	2.3	mg/kg OC	82	14
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Hexachlorobenzene	3.27E-01	1.86	1.76E+01	0.38	2.3	mg/kg OC	46	7.6
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	Hexachlorobenzene	1.60E-03	2.98	5.37E-02	0.38	2.3	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Hexachlorobutadiene	3.35E-01	1.86	1.80E+01	3.9	6.2	mg/kg OC	4.6	2.9
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Hexachlorobutadiene	3.15E-01	1.16	2.72E+01	3.9	6.2	mg/kg OC	7.0	4.4
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Hexachlorocyclopentadiene	4.07E-01 J	1.86	2.19E+01					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Hexachlorocyclopentadiene	2.70E-01	1.16	2.33E+01					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Hexachloroethane	2.98E-01	1.16	2.57E+01					
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Hexachloroethane	2.73E-01	1.86	1.47E+01					
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Indeno(1,2,3-cd)pyrene	4.21E-01	1.86	2.26E+01	34	88	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Indeno(1,2,3-cd)pyrene	3.86E-01	1.16	3.33E+01	34	88	mg/kg OC	<1	<1
EPA Site Inspection	DR274	9/15/1998	Indeno(1,2,3-cd)pyrene	3.20E-01	1.39	2.30E+01	34	88	mg/kg OC	<1	<1
EPA Site Inspection	DR276	9/15/1998	Indeno(1,2,3-cd)pyrene	2.30E-01	1.51	1.52E+01	34	88	mg/kg OC	<1	<1
EPA Site Inspection	DR293	9/14/1998	Indeno(1,2,3-cd)pyrene	1.40E-01	1.74	8.05E+00	34	88	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS149	3/9/2005	Indeno(1,2,3-cd)pyrene	1.40E-01	2.08	6.73E+00	34	88	mg/kg OC	<1	<1
EPA Site Inspection	DR273	8/26/1998	Indeno(1,2,3-cd)pyrene	1.20E-01	1.66	7.23E+00	34	88	mg/kg OC	<1	<1
EPA Site Inspection	DR275	9/15/1998	Indeno(1,2,3-cd)pyrene	1.10E-01	1.06	1.04E+01	34	88	mg/kg OC	<1	<1
EPA Site Inspection	DR285	8/25/1998	Indeno(1,2,3-cd)pyrene	9.00E-02	3.39	2.65E+00	34	88	mg/kg OC	<1	<1
EPA Site Inspection	DR263	8/25/1998	Indeno(1,2,3-cd)pyrene	8.00E-02	2.9	2.76E+00	34	88	mg/kg OC	<1	<1
EPA Site Inspection	DR268	8/26/1998	Indeno(1,2,3-cd)pyrene	8.00E-02	2.1	3.81E+00	34	88	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS146	3/9/2005	Indeno(1,2,3-cd)pyrene	6.70E-02	2.4	2.79E+00	34	88	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS148	3/9/2005	Indeno(1,2,3-cd)pyrene	6.70E-02	2.55	2.63E+00	34	88	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS147	3/9/2005	Indeno(1,2,3-cd)pyrene	6.50E-02	2.12	3.07E+00	34	88	mg/kg OC	<1	<1
KC Water Quality Assessment	WQAHAMM	6/3/1997	Indeno(1,2,3-cd)pyrene	6.10E-02 J	1.95	3.13E+00	34	88	mg/kg OC	<1	<1
EPA Site Inspection	DR287	8/26/1998	Indeno(1,2,3-cd)pyrene	6.00E-02	1.31	4.58E+00	34	88	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-114	5/9/2008	Indeno(1,2,3-cd)pyrene	5.80E-02 J	2.18	2.66E+00	34	88	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 3	LDW-SS340	10/3/2006	Indeno(1,2,3-cd)pyrene	5.20E-02 J	1.8	2.89E+00	34	88	mg/kg OC	<1	<1
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	Indeno(1,2,3-cd)pyrene	5.10E-02	2.04	2.50E+00	34	88	mg/kg OC	<1	<1
EPA Site Inspection	DR264	8/26/1998	Indeno(1,2,3-cd)pyrene	5.00E-02	1.48	3.38E+00	34	88	mg/kg OC	<1	<1
EPA Site Inspection	DR266	8/26/1998	Indeno(1,2,3-cd)pyrene	5.00E-02	1.38	3.62E+00	34	88	mg/kg OC	<1	<1
EPA Site Inspection	DR269	8/26/1998	Indeno(1,2,3-cd)pyrene	5.00E-02	0.9	5.56E+00	34	88	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	Indeno(1,2,3-cd)pyrene	4.60E-02	2.98	1.54E+00	34	88	mg/kg OC	<1	<1

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
LDWRI-Surface Sediment Round 2	LDW-SS133	3/9/2005	Indeno(1,2,3-cd)pyrene	4.60E-02	2.59	1.78E+00	34	88	mg/kg OC	<1	<1
EPA Site Inspection	DR265	8/26/1998	Indeno(1,2,3-cd)pyrene	4.00E-02	1.03	3.88E+00	34	88	mg/kg OC	<1	<1
EPA Site Inspection	DR267	8/26/1998	Indeno(1,2,3-cd)pyrene	4.00E-02	0.85	4.71E+00	34	88	mg/kg OC	<1	<1
EPA Site Inspection	DR270	8/26/1998	Indeno(1,2,3-cd)pyrene	4.00E-02	1.32	3.03E+00	34	88	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-113	5/9/2008	Indeno(1,2,3-cd)pyrene	4.00E-02 J	1.9	2.11E+00	34	88	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS139	3/9/2005	Indeno(1,2,3-cd)pyrene	3.90E-02	1.67	2.34E+00	34	88	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-D ^a	3/3/2011	Indeno(1,2,3-cd)pyrene	2.10E-02	4.01	5.24E-01	0.6	0.69	mg/kg DW	<1	<1
LDWRI-Benthic	B10b	8/19/2004	Indeno(1,2,3-cd)pyrene	1.50E-02	1.09	1.38E+00	34	88	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2200-D	3/18/2011	Indeno(1,2,3-cd)pyrene	1.50E-02 J	2.38	6.30E-01	34	88	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2201-U	3/18/2011	Indeno(1,2,3-cd)pyrene	1.40E-02 J	1.69	8.28E-01	34	88	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	OR-11	May-08	Indeno(1,2,3-cd)pyrene	1.40E-02	1.58	8.86E-01	34	88	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS136	3/15/2005	Indeno(1,2,3-cd)pyrene	1.20E-02	1.56	7.69E-01	34	88	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS150	3/9/2005	Indeno(1,2,3-cd)pyrene	1.20E-02	1.79	6.70E-01	34	88	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	Indeno(1,2,3-cd)pyrene	1.10E-02 J	1.7	6.47E-01	34	88	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2201-D	3/18/2011	Indeno(1,2,3-cd)pyrene	1.10E-02 J	2.58	4.26E-01	34	88	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	Indeno(1,2,3-cd)pyrene	1.00E-02 J	2.33	4.29E-01	34	88	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS140	3/8/2005	Indeno(1,2,3-cd)pyrene	9.90E-03	1.52	6.51E-01	34	88	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-112	5/9/2008	Indeno(1,2,3-cd)pyrene	8.80E-03	1.75	5.03E-01	34	88	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-115	5/9/2008	Indeno(1,2,3-cd)pyrene	8.20E-03	1.28	6.41E-01	34	88	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-117	5/9/2008	Indeno(1,2,3-cd)pyrene	7.00E-03	1.32	5.30E-01	34	88	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS141	3/15/2005	Indeno(1,2,3-cd)pyrene	6.50E-03	2.82	2.30E-01	34	88	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-116	5/9/2008	Indeno(1,2,3-cd)pyrene	5.20E-03 J	2.36	2.20E-01	34	88	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-07	4/28/2008	Indeno(1,2,3-cd)pyrene	4.00E-03 J	0.892	4.48E-01	34	88	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-01	4/28/2008	Indeno(1,2,3-cd)pyrene	3.40E-03 J	0.814	4.18E-01	34	88	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-11 ^a	4/28/2008	Indeno(1,2,3-cd)pyrene	0.001700 J	0.296	0.574324	0.6	0.69	mg/kg DW	<1	<1
LDWRI-Dioxin Sampling	comp	1/12/2010	Indeno(1,2,3-cd)pyrene	1.40E-02	1.88	7.45E-01	34	88	mg/kg OC	<1	<1
EPA Site Inspection	DR285	8/25/1998	Iron	3.13E+04	3.39	9.23E+05					
EPA Site Inspection	DR263	8/25/1998	Iron	3.10E+04	2.9	1.07E+06					
EPA Site Inspection	DR276	9/15/1998	Iron	2.70E+04	1.51	1.79E+06					
Norfolk-cleanup1	NFK016	8/22/1994	Iron	2.60E+04	1.1	2.36E+06					
EPA Site Inspection	DR266	8/26/1998	Iron	2.59E+04	1.38	1.88E+06					
EPA Site Inspection	DR287	8/26/1998	Iron	2.58E+04	1.31	1.97E+06					
EPA Site Inspection	DR269	8/26/1998	Iron	2.57E+04	0.9	2.86E+06					
EPA Site Inspection	DR268	8/26/1998	Iron	2.48E+04	2.1	1.18E+06					
EPA Site Inspection	DR293	9/14/1998	Iron	2.47E+04	1.74	1.42E+06					
EPA Site Inspection	DR265	8/26/1998	Iron	2.43E+04	1.03	2.36E+06					
EPA Site Inspection	DR273	8/26/1998	Iron	2.34E+04	1.66	1.41E+06					
KC Water Quality Assessment	WQAHAMM	6/3/1997	Iron	2.30E+04 J	1.95	1.18E+06					
EPA Site Inspection	DR275	9/15/1998	Iron	2.30E+04	1.06	2.17E+06					
EPA Site Inspection	DR264	8/26/1998	Iron	2.23E+04	1.48	1.51E+06					
EPA Site Inspection	DR270	8/26/1998	Iron	2.18E+04	1.32	1.65E+06					

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
EPA Site Inspection	DR267	8/26/1998	Iron	2.16E+04	0.85	2.54E+06					
KC Water Quality Assessment	WQAHAMM	5/15/1997	Iron	2.10E+04 J	1.75	1.20E+06					
KC Water Quality Assessment	WQAHAMM	5/28/1997	Iron	2.10E+04 J	1.56	1.35E+06					
EPA Site Inspection	DR274	9/15/1998	Iron	2.10E+04	1.39	1.51E+06					
KC Water Quality Assessment	WQAHAMM	5/20/1997	Iron	2.00E+04 J	1.77	1.13E+06					
EPA Site Inspection	DR295	9/15/1998	Iron	2.00E+04	0.15	1.33E+07					
Norfolk-cleanup1	NFK015	8/22/1994	Iron	2.00E+04	3	6.67E+05					
EPA Site Inspection	DR294	9/15/1998	Iron	1.90E+04	0.15	1.27E+07					
Norfolk-cleanup1	NFK014	8/19/1994	Iron	1.90E+04	0.07	2.71E+07					
EPA Site Inspection	DR296	9/15/1998	Iron	1.80E+04	0.65	2.77E+06					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Isophorone	3.64E-01	1.16	3.14E+01					
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Isophorone	3.52E-01	1.86	1.89E+01					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Lead	2.52E+02	1.16	2.17E+04	450	530	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS148	3/9/2005	Lead	9.50E+01	2.55	3.73E+03	450	530	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS147	3/9/2005	Lead	2.80E+01	2.12	1.32E+03	450	530	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS150	3/9/2005	Lead	2.80E+01	1.79	1.56E+03	450	530	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 3	LDW-SS340	10/3/2006	Lead	2.60E+01	1.8	1.44E+03	450	530	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	Lead	2.10E+01	2.98	7.05E+02	450	530	mg/kg DW	<1	<1
EPA Site Inspection	DR285	8/25/1998	Lead	2.03E+01	3.39	5.99E+02	450	530	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS149	3/9/2005	Lead	2.00E+01	2.08	9.62E+02	450	530	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS133	3/9/2005	Lead	1.90E+01	2.59	7.34E+02	450	530	mg/kg DW	<1	<1
EPA Site Inspection	DR263	8/25/1998	Lead	1.86E+01	2.9	6.41E+02	450	530	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS135	3/15/2005	Lead	1.80E+01	2.28	7.89E+02	450	530	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 3	LDW-SS339	10/3/2006	Lead	1.50E+01	2.04	7.35E+02	450	530	mg/kg DW	<1	<1
EPA Site Inspection	DR276	9/15/1998	Lead	1.50E+01	1.51	9.93E+02	450	530	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS146	3/9/2005	Lead	1.40E+01	2.4	5.83E+02	450	530	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-114	5/9/2008	Lead	1.30E+01 B	2.18	5.96E+02	450	530	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS139	3/9/2005	Lead	1.30E+01	1.67	7.78E+02	450	530	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS141	3/15/2005	Lead	1.30E+01	2.82	4.61E+02	450	530	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2099-D	3/3/2011	Lead	1.30E+01 J	4.01	3.24E+02	450	530	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2201-U	3/18/2011	Lead	1.30E+01	1.69	7.69E+02	450	530	mg/kg DW	<1	<1
EPA Site Inspection	DR273	8/26/1998	Lead	1.29E+01	1.66	7.77E+02	450	530	mg/kg DW	<1	<1
EPA Site Inspection	DR265	8/26/1998	Lead	1.27E+01 J	1.03	1.23E+03	450	530	mg/kg DW	<1	<1
EPA Site Inspection	DR293	9/14/1998	Lead	1.25E+01 J	1.74	7.18E+02	450	530	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-113	5/9/2008	Lead	1.20E+01 B	1.9	6.32E+02	450	530	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2201-D	3/18/2011	Lead	1.20E+01	2.58	4.65E+02	450	530	mg/kg DW	<1	<1
KC Water Quality Assessment	WQAHAMM	6/3/1997	Lead	1.20E+01	1.95	6.15E+02	450	530	mg/kg DW	<1	<1
EPA Site Inspection	DR266	8/26/1998	Lead	1.18E+01 J	1.38	8.55E+02	450	530	mg/kg DW	<1	<1
EPA Site Inspection	DR264	8/26/1998	Lead	1.15E+01 J	1.48	7.77E+02	450	530	mg/kg DW	<1	<1
EPA Site Inspection	DR269	8/26/1998	Lead	1.15E+01 J	0.9	1.28E+03	450	530	mg/kg DW	<1	<1
EPA Site Inspection	DR287	8/26/1998	Lead	1.13E+01 J	1.31	8.63E+02	450	530	mg/kg DW	<1	<1

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
LDWRI-Surface Sediment Round 2	LDW-SS136	3/15/2005	Lead	1.10E+01	1.56	7.05E+02	450	530	mg/kg DW	<1	<1
KC Water Quality Assessment	WQAHAMM	5/20/1997	Lead	1.10E+01	1.77	6.21E+02	450	530	mg/kg DW	<1	<1
KC Water Quality Assessment	WQAHAMM	5/15/1997	Lead	1.10E+01	1.75	6.29E+02	450	530	mg/kg DW	<1	<1
EPA Site Inspection	DR268	8/26/1998	Lead	1.05E+01 J	2.1	5.00E+02	450	530	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	Lead	1.00E+01	1.7	5.88E+02	450	530	mg/kg DW	<1	<1
EPA Site Inspection	DR274	9/15/1998	Lead	1.00E+01	1.39	7.19E+02	450	530	mg/kg DW	<1	<1
EPA Site Inspection	DR275	9/15/1998	Lead	9.70E+00	1.06	9.15E+02	450	530	mg/kg DW	<1	<1
EPA Site Inspection	DR270	8/26/1998	Lead	9.29E+00	1.32	7.04E+02	450	530	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	Lead	9.00E+00	2.33	3.86E+02	450	530	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2200-D	3/18/2011	Lead	9.00E+00	2.38	3.78E+02	450	530	mg/kg DW	<1	<1
EPA Site Inspection	DR267	8/26/1998	Lead	8.93E+00 J	0.85	1.05E+03	450	530	mg/kg DW	<1	<1
KC Water Quality Assessment	WQAHAMM	5/28/1997	Lead	8.50E+00	1.56	5.45E+02	450	530	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	OR-11	May-08	Lead	7.80E+00 B	1.58	4.94E+02	450	530	mg/kg DW	<1	<1
Norfolk-cleanup1	NFK016	8/22/1994	Lead	7.40E+00	1.1	6.73E+02	450	530	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS140	3/8/2005	Lead	7.00E+00	1.52	4.61E+02	450	530	mg/kg DW	<1	<1
LDWRI-Benthic	B10b	8/19/2004	Lead	6.40E+00 J	1.09	5.87E+02	450	530	mg/kg DW	<1	<1
Norfolk-cleanup1	NFK015	8/22/1994	Lead	6.40E+00	3	2.13E+02	450	530	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-12	4/28/2008	Lead	6.10E+00 B	1.12	5.45E+02	450	530	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2098-A	3/4/2011	Lead	6.00E+00	1.25	4.80E+02	450	530	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	Lead	6.00E+00 J	2.2	2.73E+02	450	530	mg/kg DW	<1	<1
EPA Site Inspection	DR294	9/15/1998	Lead	5.20E+00	0.15	3.47E+03	450	530	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS145	3/14/2005	Lead	5.00E+00	0.189	2.65E+03	450	530	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS151	3/15/2008	Lead	5.00E+00	0.516	9.69E+02	450	530	mg/kg DW	<1	<1
EPA Site Inspection	DR295	9/15/1998	Lead	4.90E+00	0.15	3.27E+03	450	530	mg/kg DW	<1	<1
EPA Site Inspection	DR296	9/15/1998	Lead	4.80E+00	0.65	7.38E+02	450	530	mg/kg DW	<1	<1
Norfolk-cleanup1	NFK014	8/19/1994	Lead	4.60E+00	0.07	6.57E+03	450	530	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-01	4/28/2008	Lead	4.60E+00	0.814	5.65E+02	450	530	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-05	4/28/2008	Lead	4.50E+00 B	0.394	1.14E+03	450	530	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 1	LDW-SS134	1/24/2005	Lead	4.00E+00	0.39	1.03E+03	450	530	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Lead	4.00E+00 J	1.86	2.15E+02	450	530	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS152	3/15/2008	Lead	4.00E+00	0.236	1.69E+03	450	530	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-07	4/28/2008	Lead	3.80E+00 B	0.892	4.26E+02	450	530	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-09	4/28/2008	Lead	3.80E+00 B	0.3	1.27E+03	450	530	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-03	4/28/2008	Lead	3.70E+00 B	0.216	1.71E+03	450	530	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-11	4/28/2008	Lead	3.60E+00 B	0.296	1.22E+03	450	530	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-04	4/28/2008	Lead	3.50E+00 B	0.455	7.69E+02	450	530	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-10	4/28/2008	Lead	3.40E+00 B	0.643	5.29E+02	450	530	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-02	4/28/2008	Lead	3.30E+00 J	1.27	2.60E+02	450	530	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	OR-12	May-08	Lead	3.20E+00 B	0.413	7.75E+02	450	530	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DR-06	4/28/2008	Lead	3.10E+00 B	0.392	7.91E+02	450	530	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2098-U	3/4/2011	Lead	3.00E+00	0.844	3.55E+02	450	530	mg/kg DW	<1	<1

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
EPA Site Inspection	DR273	8/26/1998	Manganese	7.79E+02	1.66	4.69E+04					
EPA Site Inspection	DR296	9/15/1998	Manganese	5.20E+02	0.65	8.00E+04					
EPA Site Inspection	DR287	8/26/1998	Manganese	4.89E+02	1.31	3.73E+04					
Norfolk-cleanup1	NFK016	8/22/1994	Manganese	4.70E+02	1.1	4.27E+04					
EPA Site Inspection	DR269	8/26/1998	Manganese	4.53E+02	0.9	5.03E+04					
EPA Site Inspection	DR266	8/26/1998	Manganese	4.41E+02	1.38	3.20E+04					
EPA Site Inspection	DR265	8/26/1998	Manganese	4.32E+02	1.03	4.19E+04					
EPA Site Inspection	DR295	9/15/1998	Manganese	4.10E+02	0.15	2.73E+05					
EPA Site Inspection	DR267	8/26/1998	Manganese	4.05E+02	0.85	4.76E+04					
EPA Site Inspection	DR294	9/15/1998	Manganese	3.80E+02	0.15	2.53E+05					
EPA Site Inspection	DR276	9/15/1998	Manganese	3.70E+02	1.51	2.45E+04					
EPA Site Inspection	DR264	8/26/1998	Manganese	3.66E+02	1.48	2.47E+04					
EPA Site Inspection	DR293	9/14/1998	Manganese	3.58E+02	1.74	2.06E+04					
EPA Site Inspection	DR270	8/26/1998	Manganese	3.34E+02	1.32	2.53E+04					
EPA Site Inspection	DR285	8/25/1998	Manganese	3.34E+02	3.39	9.85E+03					
Norfolk-cleanup1	NFK015	8/22/1994	Manganese	3.30E+02	3	1.10E+04					
EPA Site Inspection	DR263	8/25/1998	Manganese	3.29E+02	2.9	1.13E+04					
EPA Site Inspection	DR275	9/15/1998	Manganese	3.20E+02	1.06	3.02E+04					
Norfolk-cleanup1	NFK014	8/19/1994	Manganese	3.20E+02	0.07	4.57E+05					
EPA Site Inspection	DR268	8/26/1998	Manganese	2.77E+02	2.1	1.32E+04					
EPA Site Inspection	DR274	9/15/1998	Manganese	2.50E+02	1.39	1.80E+04					
EPA Site Inspection	DR267	8/26/1998	Mercury	3.90E-01	0.85	4.59E+01	0.41	0.59	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Mercury	3.20E-01	1.16	2.76E+01	0.41	0.59	mg/kg DW	<1	<1
EPA Site Inspection	DR293	9/14/1998	Mercury	2.10E-01	1.74	1.21E+01	0.41	0.59	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS135	3/15/2005	Mercury	1.60E-01	2.28	7.02E+00	0.41	0.59	mg/kg DW	<1	<1
EPA Site Inspection	DR266	8/26/1998	Mercury	1.40E-01	1.38	1.01E+01	0.41	0.59	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DRB-113	5/9/2008	Mercury	1.30E-01 H	1.9	6.84E+00	0.41	0.59	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS147	3/9/2005	Mercury	1.30E-01	2.12	6.13E+00	0.41	0.59	mg/kg DW	<1	<1
EPA Site Inspection	DR263	8/25/1998	Mercury	1.20E-01	2.9	4.14E+00	0.41	0.59	mg/kg DW	<1	<1
EPA Site Inspection	DR264	8/26/1998	Mercury	1.20E-01	1.48	8.11E+00	0.41	0.59	mg/kg DW	<1	<1
EPA Site Inspection	DR273	8/26/1998	Mercury	1.20E-01	1.66	7.23E+00	0.41	0.59	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2200-D	3/18/2011	Mercury	1.20E-01	2.38	5.04E+00	0.41	0.59	mg/kg DW	<1	<1
EPA Site Inspection	DR285	8/25/1998	Mercury	1.10E-01	3.39	3.24E+00	0.41	0.59	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS150	3/9/2005	Mercury	1.10E-01	1.79	6.15E+00	0.41	0.59	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	Mercury	1.00E-01	2.98	3.36E+00	0.41	0.59	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS133	3/9/2005	Mercury	1.00E-01	2.59	3.86E+00	0.41	0.59	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2099-D	3/3/2011	Mercury	1.00E-01	4.01	2.49E+00	0.41	0.59	mg/kg DW	<1	<1
Duamish River RM 4.9 to 7.4	DRB-114	5/9/2008	Mercury	9.80E-02 H	2.18	4.50E+00	0.41	0.59	mg/kg DW	<1	<1
EPA Site Inspection	DR270	8/26/1998	Mercury	9.00E-02	1.32	6.82E+00	0.41	0.59	mg/kg DW	<1	<1
EPA Site Inspection	DR287	8/26/1998	Mercury	9.00E-02	1.31	6.87E+00	0.41	0.59	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	Mercury	9.00E-02	1.7	5.29E+00	0.41	0.59	mg/kg DW	<1	<1

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
KC Water Quality Assessment	WQAHAMM	6/3/1997	Mercury	9.00E-02	1.95	4.62E+00	0.41	0.59	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2201-D	3/18/2011	Mercury	8.00E-02	2.58	3.10E+00	0.41	0.59	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 3	LDW-SS339	10/3/2006	Mercury	8.00E-02	2.04	3.92E+00	0.41	0.59	mg/kg DW	<1	<1
KC Water Quality Assessment	WQAHAMM	5/28/1997	Mercury	8.00E-02	1.56	5.13E+00	0.41	0.59	mg/kg DW	<1	<1
EPA Site Inspection	DR268	8/26/1998	Mercury	7.00E-02	2.1	3.33E+00	0.41	0.59	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS136	3/15/2005	Mercury	7.00E-02	1.56	4.49E+00	0.41	0.59	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	Mercury	7.00E-02	2.33	3.00E+00	0.41	0.59	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2201-U	3/18/2011	Mercury	7.00E-02	1.69	4.14E+00	0.41	0.59	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 3	LDW-SS340	10/3/2006	Mercury	7.00E-02	1.8	3.89E+00	0.41	0.59	mg/kg DW	<1	<1
KC Water Quality Assessment	WQAHAMM	5/15/1997	Mercury	7.00E-02	1.75	4.00E+00	0.41	0.59	mg/kg DW	<1	<1
KC Water Quality Assessment	WQAHAMM	5/20/1997	Mercury	6.00E-02	1.77	3.39E+00	0.41	0.59	mg/kg DW	<1	<1
EPA Site Inspection	DR274	9/15/1998	Mercury	6.00E-02	1.39	4.32E+00	0.41	0.59	mg/kg DW	<1	<1
EPA Site Inspection	DR276	9/15/1998	Mercury	6.00E-02	1.51	3.97E+00	0.41	0.59	mg/kg DW	<1	<1
EPA Site Inspection	DR265	8/26/1998	Mercury	5.00E-02	1.03	4.85E+00	0.41	0.59	mg/kg DW	<1	<1
EPA Site Inspection	DR269	8/26/1998	Mercury	5.00E-02	0.9	5.56E+00	0.41	0.59	mg/kg DW	<1	<1
EPA Site Inspection	DR275	9/15/1998	Mercury	4.00E-02 J	1.06	3.77E+00	0.41	0.59	mg/kg DW	<1	<1
Norfolk-cleanup1	NFK016	8/22/1994	Mercury	4.00E-02 J	1.1	3.64E+00	0.41	0.59	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-10	4/28/2008	Mercury	3.10E-02	0.643	4.82E+00	0.41	0.59	mg/kg DW	<1	<1
LDWRI-Benthic	B10b	8/19/2004	Mercury	3.00E-02	1.09	2.75E+00	0.41	0.59	mg/kg DW	<1	<1
Norfolk-cleanup1	NFK014	8/19/1994	Mercury	3.00E-02 J	0.07	4.29E+01	0.41	0.59	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	OR-11	May-08	Mercury	2.90E-02	1.58	1.84E+00	0.41	0.59	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-03	4/28/2008	Mercury	1.90E-02 J	0.216	8.80E+00	0.41	0.59	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-11	4/28/2008	Mercury	1.70E-02 J	0.296	5.74E+00	0.41	0.59	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-04	4/28/2008	Mercury	1.50E-02 J	0.455	3.30E+00	0.41	0.59	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-01	4/28/2008	Mercury	1.50E-02 J	0.814	1.84E+00	0.41	0.59	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-02	4/28/2008	Mercury	1.30E-02 J	1.27	1.02E+00	0.41	0.59	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-05	4/28/2008	Mercury	1.20E-02 J	0.394	3.05E+00	0.41	0.59	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-12	4/28/2008	Mercury	8.90E-03 J	1.12	7.95E-01	0.41	0.59	mg/kg DW	<1	<1
KC Water Quality Assessment	WQAHAMM	6/3/1997	Methylmercury	2.35E-03	1.95	1.21E-01					
KC Water Quality Assessment	WQAHAMM	5/28/1997	Methylmercury	2.29E-03	1.56	1.47E-01					
KC Water Quality Assessment	WQAHAMM	5/15/1997	Methylmercury	2.18E-03	1.75	1.25E-01					
KC Water Quality Assessment	WQAHAMM	5/20/1997	Methylmercury	2.11E-03	1.77	1.19E-01					
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	Molybdenum	2.00E+00	2.98	6.71E+01					
LDWRI-Surface Sediment Round 2	LDW-SS146	3/9/2005	Molybdenum	2.00E+00	2.4	8.33E+01					
LDWRI-Surface Sediment Round 2	LDW-SS147	3/9/2005	Molybdenum	2.00E+00	2.12	9.43E+01					
LDWRI-Surface Sediment Round 2	LDW-SS148	3/9/2005	Molybdenum	2.00E+00	2.55	7.84E+01					
LDWRI-Surface Sediment Round 2	LDW-SS135	3/15/2005	Molybdenum	1.40E+00	2.28	6.14E+01					
LDWRI-Surface Sediment Round 2	LDW-SS136	3/15/2005	Molybdenum	1.20E+00	1.56	7.69E+01					
LDWRI-Surface Sediment Round 2	LDW-SS139	3/9/2005	Molybdenum	1.20E+00	1.67	7.19E+01					
LDWRI-Surface Sediment Round 2	LDW-SS133	3/9/2005	Molybdenum	1.00E+00	2.59	3.86E+01					
LDWRI-Surface Sediment Round 2	LDW-SS140	3/8/2005	Molybdenum	1.00E+00	1.52	6.58E+01					

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
LDWRI-Surface Sediment Round 2	LDW-SS141	3/15/2005	Molybdenum	1.00E+00	2.82	3.55E+01					
LDWRI-Surface Sediment Round 2	LDW-SS149	3/9/2005	Molybdenum	1.00E+00	2.08	4.81E+01					
LDWRI-Surface Sediment Round 2	LDW-SS150	3/9/2005	Molybdenum	9.00E-01	1.79	5.03E+01					
LDWRI-Surface Sediment Round 1	LDW-SS134	1/24/2005	Molybdenum	8.00E-01	0.39	2.05E+02					
LDWRI-Surface Sediment Round 2	LDW-SS145	3/14/2005	Molybdenum	8.00E-01	0.189	4.23E+02					
LDWRI-Surface Sediment Round 2	LDW-SS152	3/15/2008	Molybdenum	8.00E-01 J	0.236	3.39E+02					
LDWRI-Surface Sediment Round 2	LDW-SS151	3/15/2008	Molybdenum	7.00E-01 J	0.516	1.36E+02					
LDWRI-Surface Sediment Round 3	LDW-SS340	10/3/2006	Molybdenum	5.00E-01	1.8	2.78E+01					
LDWRI-Surface Sediment Round 3	LDW-SS339	10/3/2006	Molybdenum	4.00E-01	2.04	1.96E+01					
LDWRI-Benthic	B10b	8/19/2004	Molybdenum	3.99E-01	1.09	3.66E+01					
LDWRI-Benthic	B10b	8/19/2004	Monobutyltin as ion	4.60E-04 J	1.09	4.22E-02					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Naphthalene	2.95E-01	1.16	2.54E+01	99	170	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Naphthalene	2.86E-01	1.86	1.54E+01	99	170	mg/kg OC	<1	<1
EPA Site Inspection	DR276	9/15/1998	Naphthalene	7.00E-02	1.51	4.64E+00	99	170	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS151	3/15/2008	Naphthalene	5.00E-02	0.516	9.69E+00	99	170	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2201-U	3/18/2011	Naphthalene	2.20E-02	1.69	1.30E+00	99	170	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	OR-11	May-08	Naphthalene	1.40E-03 J	1.58	8.86E-02	99	170	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-01	4/28/2008	Naphthalene	7.00E-04 J	0.814	8.60E-02	99	170	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-07	4/28/2008	Naphthalene	6.80E-04 J	0.892	7.62E-02	99	170	mg/kg OC	<1	<1
EPA Site Inspection	DR266	8/26/1998	n-Butyltin	3.00E-03 J	1.38	2.17E-01					
EPA Site Inspection	DR273	8/26/1998	n-Butyltin	2.00E-03 J	1.66	1.20E-01					
EPA Site Inspection	DR270	8/26/1998	n-Butyltin	1.00E-03 J	1.32	7.58E-02					
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	Nickel	2.30E+01	2.98	7.72E+02					
LDWRI-Surface Sediment Round 2	LDW-SS149	3/9/2005	Nickel	2.30E+01	2.08	1.11E+03					
Duwamish River RM 4.9 to 7.4	DRB-114	5/9/2008	Nickel	2.10E+01 B	2.18	9.63E+02					
KC Water Quality Assessment	WQAHAMM	6/3/1997	Nickel	2.02E+01	1.95	1.04E+03					
EPA Site Inspection	DR285	8/25/1998	Nickel	2.01E+01	3.39	5.93E+02					
EPA Site Inspection	DR263	8/25/1998	Nickel	2.00E+01	2.9	6.90E+02					
Duwamish River RM 4.9 to 7.4	DRB-113	5/9/2008	Nickel	2.00E+01 B	1.9	1.05E+03					
LDWRI-Surface Sediment Round 2	LDW-SS133	3/9/2005	Nickel	2.00E+01	2.59	7.72E+02					
KC Water Quality Assessment	WQAHAMM	5/15/1997	Nickel	1.91E+01	1.75	1.09E+03					
LDWRI-Surface Sediment Round 2	LDW-SS135	3/15/2005	Nickel	1.90E+01	2.28	8.33E+02					
LDWRI-Surface Sediment Round 2	LDW-SS147	3/9/2005	Nickel	1.90E+01	2.12	8.96E+02					
KC Water Quality Assessment	WQAHAMM	5/28/1997	Nickel	1.87E+01	1.56	1.20E+03					
EPA Site Inspection	DR268	8/26/1998	Nickel	1.84E+01 J	2.1	8.76E+02					
KC Water Quality Assessment	WQAHAMM	5/20/1997	Nickel	1.81E+01	1.77	1.02E+03					
LDWRI-Surface Sediment Round 2	LDW-SS136	3/15/2005	Nickel	1.80E+01	1.56	1.15E+03					
LDWRI-Surface Sediment Round 2	LDW-SS139	3/9/2005	Nickel	1.80E+01	1.67	1.08E+03					
LDWRI-Surface Sediment Round 2	LDW-SS141	3/15/2005	Nickel	1.80E+01	2.82	6.38E+02					
LDWRI-Surface Sediment Round 2	LDW-SS146	3/9/2005	Nickel	1.80E+01	2.4	7.50E+02					
EPA Site Inspection	DR293	9/14/1998	Nickel	1.76E+01	1.74	1.01E+03					

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
EPA Site Inspection	DR287	8/26/1998	Nickel	1.67E+01 J	1.31	1.27E+03					
EPA Site Inspection	DR269	8/26/1998	Nickel	1.63E+01 J	0.9	1.81E+03					
EPA Site Inspection	DR266	8/26/1998	Nickel	1.60E+01 J	1.38	1.16E+03					
LDWRI-Surface Sediment Round 2	LDW-SS150	3/9/2005	Nickel	1.60E+01	1.79	8.94E+02					
EPA Site Inspection	DR276	9/15/1998	Nickel	1.60E+01	1.51	1.06E+03					
Norfolk-cleanup1	NFK016	8/22/1994	Nickel	1.60E+01	1.1	1.45E+03					
EPA Site Inspection	DR264	8/26/1998	Nickel	1.59E+01 J	1.48	1.07E+03					
EPA Site Inspection	DR273	8/26/1998	Nickel	1.50E+01	1.66	9.04E+02					
LDWRI-Surface Sediment Round 2	LDW-SS148	3/9/2005	Nickel	1.50E+01	2.55	5.88E+02					
LDWRI-Surface Sediment Round 2	LDW-SS152	3/15/2008	Nickel	1.50E+01	0.236	6.36E+03					
EPA Site Inspection	DR274	9/15/1998	Nickel	1.50E+01	1.39	1.08E+03					
EPA Site Inspection	DR267	8/26/1998	Nickel	1.47E+01 J	0.85	1.73E+03					
LDWRI-Surface Sediment Round 3	LDW-SS340	10/3/2006	Nickel	1.45E+01	1.8	8.06E+02					
EPA Site Inspection	DR265	8/26/1998	Nickel	1.43E+01 J	1.03	1.39E+03					
Duwamish River RM 4.9 to 7.4	DR-11	4/28/2008	Nickel	1.40E+01 B	0.296	4.73E+03					
LDWRI-Surface Sediment Round 2	LDW-SS140	3/8/2005	Nickel	1.40E+01	1.52	9.21E+02					
Duwamish River RM 4.9 to 7.4	OR-11	May-08	Nickel	1.40E+01	1.58	8.86E+02					
LDWRI-Surface Sediment Round 2	LDW-SS145	3/14/2005	Nickel	1.40E+01	0.189	7.41E+03					
EPA Site Inspection	DR275	9/15/1998	Nickel	1.40E+01	1.06	1.32E+03					
EPA Site Inspection	DR270	8/26/1998	Nickel	1.34E+01	1.32	1.02E+03					
LDWRI-Surface Sediment Round 2	LDW-SS151	3/15/2008	Nickel	1.30E+01	0.516	2.52E+03					
Norfolk-cleanup1	NFK015	8/22/1994	Nickel	1.30E+01	3	4.33E+02					
Duwamish River RM 4.9 to 7.4	DR-04	4/28/2008	Nickel	1.20E+01 B	0.455	2.64E+03					
Duwamish River RM 4.9 to 7.4	DR-05	4/28/2008	Nickel	1.20E+01 B	0.394	3.05E+03					
Duwamish River RM 4.9 to 7.4	DR-10	4/28/2008	Nickel	1.20E+01 B	0.643	1.87E+03					
Duwamish River RM 4.9 to 7.4	OR-12	May-08	Nickel	1.20E+01	0.413	2.91E+03					
EPA Site Inspection	DR295	9/15/1998	Nickel	1.20E+01	0.15	8.00E+03					
Norfolk-cleanup1	NFK014	8/19/1994	Nickel	1.20E+01	0.07	1.71E+04					
LDWRI-Benthic	B10b	8/19/2004	Nickel	1.14E+01	1.09	1.05E+03					
LDWRI-Surface Sediment Round 3	LDW-SS339	10/3/2006	Nickel	1.14E+01	2.04	5.59E+02					
Duwamish River RM 4.9 to 7.4	DR-03	4/28/2008	Nickel	1.10E+01 B	0.216	5.09E+03					
Duwamish River RM 4.9 to 7.4	DR-06	4/28/2008	Nickel	1.10E+01 B	0.392	2.81E+03					
Duwamish River RM 4.9 to 7.4	DR-09	4/28/2008	Nickel	1.10E+01 B	0.3	3.67E+03					
EPA Site Inspection	DR296	9/15/1998	Nickel	1.10E+01	0.65	1.69E+03					
Duwamish River RM 4.9 to 7.4	DR-01	4/28/2008	Nickel	1.10E+01	0.814	1.35E+03					
Duwamish River RM 4.9 to 7.4	DR-02	4/28/2008	Nickel	1.10E+01	1.27	8.66E+02					
EPA Site Inspection	DR294	9/15/1998	Nickel	1.00E+01	0.15	6.67E+03					
Duwamish River RM 4.9 to 7.4	DR-07	4/28/2008	Nickel	9.70E+00 B	0.892	1.09E+03					
Duwamish River RM 4.9 to 7.4	DR-12	4/28/2008	Nickel	8.10E+00 B	1.12	7.23E+02					
LDWRI-Surface Sediment Round 1	LDW-SS134	1/24/2005	Nickel	8.00E+00	0.39	2.05E+03					
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Nitrobenzene	3.47E-01	1.86	1.87E+01					

Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Nitrobenzene	3.24E-01	1.16	2.79E+01					
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	N-Nitrosodimethylamine	2.98E-01	1.86	1.60E+01					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	N-Nitrosodimethylamine	2.85E-01	1.16	2.46E+01					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	N-Nitrosodimethylamine	2.68E-01	1.16	2.31E+01					
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	N-Nitrosodi-n-propylamine	3.25E-01	1.86	1.75E+01					
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	N-Nitrosodi-n-propylamine	3.18E-01	1.86	1.71E+01					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	N-Nitrosodi-n-propylamine	3.14E-01	1.16	2.71E+01					
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	N-Nitrosodi-n-propylamine	3.04E-01	1.86	1.63E+01					
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	N-Nitrosodi-n-propylamine	2.97E-01	1.86	1.60E+01					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	N-Nitrosodiphenylamine	3.71E-01	1.16	3.20E+01	11	11	mg/kg OC	2.9	2.9
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	N-Nitrosodiphenylamine	2.73E-01	1.86	1.47E+01	11	11	mg/kg OC	1.3	1.3
Norfolk-cleanup1	NFK016	8/22/1994	N-Nitrosodiphenylamine	4.10E-02	1.1	3.73E+00	11	11	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS135	3/15/2005	N-Nitrosodiphenylamine	8.00E-03	2.28	3.51E-01	11	11	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	OCDD	1.61E-03	2.98	5.40E-02					
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	OCDD	7.54E-04	2.04	3.70E-02					
Duwamish River RM 4.9 to 7.4	DRB-114	5/9/2008	OCDD	5.60E-04	2.18	2.57E-02					
EPA Site Inspection	DR264	8/26/1998	OCDD	5.30E-04	1.48	3.58E-02					
Duwamish River RM 4.9 to 7.4	DRB-113	5/9/2008	OCDD	4.30E-04	1.9	2.26E-02					
Duwamish River RM 4.9 to 7.4	DRB-112	5/9/2008	OCDD	2.60E-04	1.75	1.49E-02					
Duwamish River RM 4.9 to 7.4	DRB-115	5/9/2008	OCDD	2.50E-04	1.28	1.95E-02					
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	OCDD	2.41E-04	1.7	1.42E-02					
Duwamish River RM 4.9 to 7.4	DRB-116	5/9/2008	OCDD	2.00E-04	2.36	8.47E-03					
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	OCDD	1.90E-04	2.33	8.15E-03					
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	OCDD	1.32E-04	2.2	6.00E-03					
Duwamish River RM 4.9 to 7.4	OR-11	May-08	OCDD	1.30E-04	1.58	8.23E-03					
Duwamish River RM 4.9 to 7.4	DRB-117	5/9/2008	OCDD	1.20E-04	1.32	9.09E-03					
Duwamish River RM 4.9 to 7.4	DR-12	4/28/2008	OCDD	8.00E-05	1.12	7.14E-03					
Duwamish River RM 4.9 to 7.4	DR-01	4/28/2008	OCDD	7.40E-05	1.58	4.68E-03					
LDW Outfall Sampling	LDW-SS2098-A	3/4/2011	OCDD	5.96E-05	1.25	4.77E-03					
Duwamish River RM 4.9 to 7.4	DR-09	4/28/2008	OCDD	3.50E-05	0.3	1.17E-02					
Duwamish River RM 4.9 to 7.4	OR-12	May-08	OCDD	9.90E-06 J	0.413	2.40E-03					
Duwamish River RM 4.9 to 7.4	DR-08	4/28/2008	OCDD	7.50E-06 J	2.75	2.73E-04					
Duwamish River RM 4.9 to 7.4	DR-11	4/28/2008	OCDD	6.90E-06 J	0.296	2.33E-03					
Duwamish River RM 4.9 to 7.4	DR-10	4/28/2008	OCDD	6.40E-06 J	0.643	9.95E-04					
LDWRI-Dioxin Sampling	comp	1/12/2010	OCDD	5.48E-04	1.88	2.91E-02					
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	OCDF	6.36E-05	2.98	2.13E-03					
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	OCDF	5.37E-05	2.04	2.63E-03					
Duwamish River RM 4.9 to 7.4	DRB-114	5/9/2008	OCDF	3.40E-05	2.18	1.56E-03					
Duwamish River RM 4.9 to 7.4	DRB-113	5/9/2008	OCDF	2.70E-05	1.9	1.42E-03					
EPA Site Inspection	DR264	8/26/1998	OCDF	2.20E-05	1.48	1.49E-03					
Duwamish River RM 4.9 to 7.4	DRB-112	5/9/2008	OCDF	1.70E-05	1.75	9.71E-04					

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	OCDF	1.51E-05	1.7	8.88E-04					
Duwamish River RM 4.9 to 7.4	DRB-115	5/9/2008	OCDF	1.30E-05 J	1.28	1.02E-03					
Duwamish River RM 4.9 to 7.4	DRB-116	5/9/2008	OCDF	1.20E-05 J	2.36	5.08E-04					
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	OCDF	1.16E-05	2.2	5.27E-04					
Duwamish River RM 4.9 to 7.4	DRB-117	5/9/2008	OCDF	9.20E-06 J	1.32	6.97E-04					
Duwamish River RM 4.9 to 7.4	OR-11	May-08	OCDF	8.30E-06 J	1.58	5.25E-04					
LDW Outfall Sampling	LDW-SS2098-A	3/4/2011	OCDF	2.69E-06 J	1.25	2.15E-04					
LDWRI-Dioxin Sampling	comp	1/12/2010	OCDF	4.60E-05	1.88	2.45E-03					
LDWRI-Surface Sediment Round 2	LDW-SS148	3/9/2005	PCBs (total calc'd)	5.20E-01	2.55	2.04E+01	12	65	mg/kg OC	1.7	<1
NOAA Site Characterization	WIT258	10/1/1997	PCBs (total calc'd)	3.40E-01	1.59	2.14E+01	12	65	mg/kg OC	1.8	<1
LDWRI-Surface Sediment Round 2	LDW-SS135	3/15/2005	PCBs (total calc'd)	2.40E-01	2.28	1.05E+01	12	65	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS149	3/9/2005	PCBs (total calc'd)	9.80E-02	2.08	4.71E+00	12	65	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 3	LDW-SS340	10/3/2006	PCBs (total calc'd)	8.80E-02 J	1.8	4.89E+00	12	65	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 3	LDW-SS339	10/3/2006	PCBs (total calc'd)	6.00E-02	2.04	2.94E+00	12	65	mg/kg OC	<1	<1
NOAA Site Characterization	WST303	10/23/1997	PCBs (total calc'd)	6.00E-02	2.54	2.36E+00	12	65	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS150	3/9/2005	PCBs (total calc'd)	5.40E-02	1.79	3.02E+00	12	65	mg/kg OC	<1	<1
EPA Site Inspection	DR285	8/25/1998	PCBs (total calc'd)	5.30E-02	3.39	1.56E+00	12	65	mg/kg OC	<1	<1
EPA Site Inspection	DR264	8/26/1998	PCBs (total calc'd)	5.10E-02	1.48	3.45E+00	12	65	mg/kg OC	<1	<1
EPA Site Inspection	DR266	8/26/1998	PCBs (total calc'd)	5.10E-02	1.38	3.70E+00	12	65	mg/kg OC	<1	<1
NOAA Site Characterization	WIT259	10/1/1997	PCBs (total calc'd)	5.10E-02	0.67	7.61E+00	12	65	mg/kg OC	<1	<1
EPA Site Inspection	DR263	8/25/1998	PCBs (total calc'd)	5.00E-02	2.9	1.72E+00	12	65	mg/kg OC	<1	<1
NOAA Site Characterization	EIT046	10/14/1997	PCBs (total calc'd)	4.70E-02 J	1.87	2.51E+00	12	65	mg/kg OC	<1	<1
NOAA Site Characterization	WIT257	10/2/1997	PCBs (total calc'd)	4.60E-02	1.33	3.46E+00	12	65	mg/kg OC	<1	<1
EPA Site Inspection	DR273	8/26/1998	PCBs (total calc'd)	4.50E-02	1.66	2.71E+00	12	65	mg/kg OC	<1	<1
NOAA Site Characterization	WIT252	9/29/1997	PCBs (total calc'd)	4.30E-02	0.8	5.38E+00	12	65	mg/kg OC	<1	<1
NOAA Site Characterization	WIT252	9/29/1997	PCBs (total calc'd)	4.30E-02	0.8	5.38E+00	12	65	mg/kg OC	<1	<1
NOAA Site Characterization	WST306	10/21/1997	PCBs (total calc'd)	3.90E-02	1.52	2.57E+00	12	65	mg/kg OC	<1	<1
NOAA Site Characterization	CH0003	10/9/1997	PCBs (total calc'd)	3.70E-02	2.33	1.59E+00	12	65	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS133	3/9/2005	PCBs (total calc'd)	3.60E-02 J	2.59	1.39E+00	12	65	mg/kg OC	<1	<1
NOAA Site Characterization	WST306	10/21/1997	PCBs (total calc'd)	3.50E-02	1.52	2.30E+00	12	65	mg/kg OC	<1	<1
EPA Site Inspection	DR268	8/26/1998	PCBs (total calc'd)	3.40E-02	2.1	1.62E+00	12	65	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2201-U	3/18/2011	PCBs (total calc'd)	3.40E-02	1.69	2.01E+00	12	65	mg/kg OC	<1	<1
NOAA Site Characterization	WIT249	10/1/1997	PCBs (total calc'd)	3.40E-02	1.72	1.98E+00	12	65	mg/kg OC	<1	<1
NOAA Site Characterization	WST301	10/20/2007	PCBs (total calc'd)	3.20E-02	1.63	1.96E+00	12	65	mg/kg OC	<1	<1
EPA Site Inspection	DR276	9/15/1998	PCBs (total calc'd)	3.20E-02	1.51	2.12E+00	12	65	mg/kg OC	<1	<1
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	PCBs (total calc'd)	3.00E-02	2.04	1.47E+00	12	65	mg/kg OC	<1	<1
NOAA Site Characterization	WST310	11/13/1997	PCBs (total calc'd)	2.90E-02	1.39	2.09E+00	12	65	mg/kg OC	<1	<1
NOAA Site Characterization	WST304	10/21/1997	PCBs (total calc'd)	2.60E-02	0.89	2.92E+00	12	65	mg/kg OC	<1	<1
EPA Site Inspection	DR287	8/26/1998	PCBs (total calc'd)	2.50E-02	1.31	1.91E+00	12	65	mg/kg OC	<1	<1
NOAA Site Characterization	WIT255	9/29/1997	PCBs (total calc'd)	2.50E-02	2.11	1.18E+00	12	65	mg/kg OC	<1	<1
NOAA Site Characterization	WST308	10/1/1997	PCBs (total calc'd)	2.30E-02	0.9	2.56E+00	12	65	mg/kg OC	<1	<1

Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	PCBs (total calc'd)	2.20E-02 J	2.98	7.38E-01	12	65	mg/kg OC	<1	<1
EPA Site Inspection	DR267	8/26/1998	PCBs (total calc'd)	2.10E-02	0.85	2.47E+00	12	65	mg/kg OC	<1	<1
NOAA Site Characterization	WST305	10/21/1997	PCBs (total calc'd)	2.10E-02	0.93	2.26E+00	12	65	mg/kg OC	<1	<1
NOAA Site Characterization	WST312	10/23/1997	PCBs (total calc'd)	2.10E-02	1.74	1.21E+00	12	65	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-D ^a	3/3/2011	PCBs (total calc'd)	1.90E-02	4.01	4.74E-01	0.13	1.0	mg/kg DW	<1	<1
NOAA Site Characterization	WIT248	10/2/1997	PCBs (total calc'd)	1.90E-02 J	2.31	8.23E-01	12	65	mg/kg OC	<1	<1
NOAA Site Characterization	WST300	10/8/1997	PCBs (total calc'd)	1.70E-02	1.31	1.30E+00	12	65	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	PCBs (total calc'd)	1.60E-02 J	2.33	6.87E-01	12	65	mg/kg OC	<1	<1
NOAA Site Characterization	WIT250	10/1/1997	PCBs (total calc'd)	1.60E-02	1.3	1.23E+00	12	65	mg/kg OC	<1	<1
NOAA Site Characterization	WIT260	10/1/1997	PCBs (total calc'd)	1.60E-02	0.93	1.72E+00	12	65	mg/kg OC	<1	<1
NOAA Site Characterization	WST309	10/1/1997	PCBs (total calc'd)	1.60E-02	0.93	1.72E+00	12	65	mg/kg OC	<1	<1
NOAA Site Characterization	WIT256	11/13/1997	PCBs (total calc'd)	1.30E-02	1.96	6.63E-01	12	65	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	PCBs (total calc'd)	1.20E-02	2.2	5.45E-01	12	65	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2200-D	3/18/2011	PCBs (total calc'd)	1.20E-02	2.38	5.04E-01	12	65	mg/kg OC	<1	<1
NOAA Site Characterization	WIT261	10/1/1997	PCBs (total calc'd)	1.10E-02	0.67	1.64E+00	12	65	mg/kg OC	<1	<1
NOAA Site Characterization	WST302 ^a	10/1/1997	PCBs (total calc'd)	1.10E-02	0.36	3.06E+00	0.13	1.0	mg/kg DW	<1	<1
LDWRI-Benthic	B10b	8/19/2004	PCBs (total calc'd)	9.80E-03 J	1.09	8.99E-01	12	65	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	PCBs (total calc'd)	9.10E-03	1.16	7.84E-01	12	65	mg/kg OC	<1	<1
NOAA Site Characterization	WIT251	9/29/1997	PCBs (total calc'd)	8.70E-03	0.95	9.16E-01	12	65	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	PCBs (total calc'd)	8.50E-03 J	1.7	5.00E-01	12	65	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2201-D	3/18/2011	PCBs (total calc'd)	8.00E-03 J	2.58	3.10E-01	12	65	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	PCBs (total calc'd)	7.30E-03	1.86	3.92E-01	12	65	mg/kg OC	<1	<1
NOAA Site Characterization	WIT247	10/1/1997	PCBs (total calc'd)	7.00E-03 J	1.53	4.58E-01	12	65	mg/kg OC	<1	<1
NOAA Site Characterization	WIT254	10/17/1997	PCBs (total calc'd)	6.10E-03 J	1.92	3.18E-01	12	65	mg/kg OC	<1	<1
NOAA Site Characterization	EST108 ^a	10/14/1997	PCBs (total calc'd)	5.90E-03 J	0.25	2.36E+00	0.13	1.0	mg/kg DW	<1	<1
NOAA Site Characterization	EST103 ^a	10/14/1997	PCBs (total calc'd)	3.10E-03 J	0.08	3.88E+00	0.13	1.0	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-03 ^a	4/28/2008	PCBs (total calc'd)	0.003400 J	0.216	1.574074	0.13	1.0	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-06 ^a	4/28/2008	PCBs (total calc'd)	0.003000 J	0.392	0.765306	0.13	1.0	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-04 ^a	4/28/2008	PCBs (total calc'd)	0.002900 J	0.455	0.637363	0.13	1.0	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-09 ^a	4/28/2008	PCBs (total calc'd)	0.002700 J	0.3	0.900000	0.13	1.0	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-12	4/28/2008	PCBs (total calc'd)	2.70E-03 J	1.12	2.41E-01	12	65	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-05 ^a	4/28/2008	PCBs (total calc'd)	0.002600 J	0.394	0.659898	0.13	1.0	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-08	4/28/2008	PCBs (total calc'd)	2.60E-03 J	2.75	9.45E-02	12	65	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-10	4/28/2008	PCBs (total calc'd)	2.50E-03 J	0.643	3.89E-01	12	65	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-07	4/28/2008	PCBs (total calc'd)	2.30E-03 J	0.892	2.58E-01	12	65	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-115	5/9/2008	PCBs (total calc'd)	2.10E-03 J	1.28	1.64E-01	12	65	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-112	5/9/2008	PCBs (total calc'd)	1.90E-03	1.75	1.09E-01	12	65	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-116	5/9/2008	PCBs (total calc'd)	1.70E-03 J	2.36	7.20E-02	12	65	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-117	5/9/2008	PCBs (total calc'd)	8.60E-04 J	1.32	6.52E-02	12	65	mg/kg OC	<1	<1
LDWRI-Dioxin Sampling	comp	1/12/2010	PCBs (total calc'd)	1.27E-01	1.88	6.76E+00	12	65	mg/kg OC	<1	<1
NOAA Site Characterization	WIT252	9/29/1997	PCTs (total)	3.20E-02	0.8	4.00E+00					

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
NOAA Site Characterization	WIT247	10/1/1997	PCTs (total)	2.80E-02	1.53	1.83E+00					
NOAA Site Characterization	WIT258	10/1/1997	PCTs (total)	1.80E-02	1.59	1.13E+00					
NOAA Site Characterization	EIT046	10/14/1997	PCTs (total)	1.40E-02	1.87	7.49E-01					
NOAA Site Characterization	WIT248	10/2/1997	PCTs (total)	1.10E-02	2.31	4.76E-01					
NOAA Site Characterization	CH0003	10/9/1997	PCTs (total)	8.40E-03	2.33	3.61E-01					
NOAA Site Characterization	WIT249	10/1/1997	PCTs (total)	8.10E-03 J	1.72	4.71E-01					
NOAA Site Characterization	WST301	10/20/2007	PCTs (total)	7.90E-03 J	1.63	4.85E-01					
NOAA Site Characterization	WST308	10/1/1997	PCTs (total)	7.90E-03 J	0.9	8.78E-01					
NOAA Site Characterization	WST303	10/23/1997	PCTs (total)	7.50E-03 J	2.54	2.95E-01					
NOAA Site Characterization	WST306	10/21/1997	PCTs (total)	6.50E-03 J	1.52	4.28E-01					
NOAA Site Characterization	WIT255	9/29/1997	PCTs (total)	6.30E-03 J	2.11	2.99E-01					
NOAA Site Characterization	WST312	10/23/1997	PCTs (total)	5.80E-03 J	1.74	3.33E-01					
NOAA Site Characterization	WIT256	11/13/1997	PCTs (total)	5.70E-03 J	1.96	2.91E-01					
NOAA Site Characterization	WST310	11/13/1997	PCTs (total)	5.50E-03 J	1.39	3.96E-01					
NOAA Site Characterization	WIT251	9/29/1997	PCTs (total)	4.30E-03 J	0.95	4.53E-01					
NOAA Site Characterization	WST300	10/8/1997	PCTs (total)	4.20E-03 J	1.31	3.21E-01					
NOAA Site Characterization	WIT250	10/1/1997	PCTs (total)	3.90E-03 J	1.3	3.00E-01					
NOAA Site Characterization	WST304	10/21/1997	PCTs (total)	3.90E-03 J	0.89	4.38E-01					
NOAA Site Characterization	WST305	10/21/1997	PCTs (total)	3.10E-03 J	0.93	3.33E-01					
NOAA Site Characterization	WIT254	10/17/1997	PCTs (total)	3.00E-03 J	1.92	1.56E-01					
NOAA Site Characterization	WIT260	10/1/1997	PCTs (total)	2.60E-03 J	0.93	2.80E-01					
NOAA Site Characterization	WIT259	10/1/1997	PCTs (total)	2.20E-03 J	0.67	3.28E-01					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Pentachlorophenol	4.81E-01	1.16	4.15E+01	360	690	ug/kg DW	1.3	<1
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Pentachlorophenol	3.99E-01	1.86	2.15E+01	360	690	ug/kg DW	1.1	<1
LDWRI-Benthic	B10b	8/19/2004	Perylene	1.50E-02	1.09	1.38E+00					
EPA Site Inspection	DR276	9/15/1998	Phenanthrene	1.30E+00	1.51	8.61E+01	100	480	mg/kg OC	<1	<1
EPA Site Inspection	DR274	9/15/1998	Phenanthrene	5.50E-01	1.39	3.96E+01	100	480	mg/kg OC	<1	<1
EPA Site Inspection	DR268	8/26/1998	Phenanthrene	4.60E-01	2.1	2.19E+01	100	480	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Phenanthrene	4.03E-01	1.16	3.47E+01	100	480	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Phenanthrene	3.26E-01	1.86	1.75E+01	100	480	mg/kg OC	<1	<1
EPA Site Inspection	DR293	9/14/1998	Phenanthrene	2.10E-01	1.74	1.21E+01	100	480	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS147	3/9/2005	Phenanthrene	1.90E-01	2.12	8.96E+00	100	480	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS149	3/9/2005	Phenanthrene	1.90E-01	2.08	9.13E+00	100	480	mg/kg OC	<1	<1
EPA Site Inspection	DR273	8/26/1998	Phenanthrene	1.80E-01	1.66	1.08E+01	100	480	mg/kg OC	<1	<1
EPA Site Inspection	DR275	9/15/1998	Phenanthrene	1.70E-01	1.06	1.60E+01	100	480	mg/kg OC	<1	<1
EPA Site Inspection	DR263	8/25/1998	Phenanthrene	1.60E-01	2.9	5.52E+00	100	480	mg/kg OC	<1	<1
EPA Site Inspection	DR285	8/25/1998	Phenanthrene	1.50E-01	3.39	4.42E+00	100	480	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS146	3/9/2005	Phenanthrene	1.50E-01	2.4	6.25E+00	100	480	mg/kg OC	<1	<1
EPA Site Inspection	DR265	8/26/1998	Phenanthrene	1.10E-01	1.03	1.07E+01	100	480	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS139	3/9/2005	Phenanthrene	9.40E-02	1.67	5.63E+00	100	480	mg/kg OC	<1	<1
KC Water Quality Assessment	WQAHAMM	6/3/1997	Phenanthrene	9.40E-02 J	1.95	4.82E+00	100	480	mg/kg OC	<1	<1

Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
LDWRI-Surface Sediment Round 2	LDW-SS133	3/9/2005	Phenanthrene	9.10E-02	2.59	3.51E+00	100	480	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	Phenanthrene	9.00E-02	2.98	3.02E+00	100	480	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS148	3/9/2005	Phenanthrene	9.00E-02	2.55	3.53E+00	100	480	mg/kg OC	<1	<1
EPA Site Inspection	DR287	8/26/1998	Phenanthrene	8.00E-02	1.31	6.11E+00	100	480	mg/kg OC	<1	<1
EPA Site Inspection	DR264	8/26/1998	Phenanthrene	7.00E-02	1.48	4.73E+00	100	480	mg/kg OC	<1	<1
EPA Site Inspection	DR266	8/26/1998	Phenanthrene	7.00E-02	1.38	5.07E+00	100	480	mg/kg OC	<1	<1
EPA Site Inspection	DR267	8/26/1998	Phenanthrene	7.00E-02	0.85	8.24E+00	100	480	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS150	3/9/2005	Phenanthrene	6.80E-02	1.79	3.80E+00	100	480	mg/kg OC	<1	<1
KC Water Quality Assessment	WQAHAMM	5/15/1997	Phenanthrene	6.30E-02 J	1.75	3.60E+00	100	480	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-114	5/9/2008	Phenanthrene	6.10E-02	2.18	2.80E+00	100	480	mg/kg OC	<1	<1
EPA Site Inspection	DR269	8/26/1998	Phenanthrene	6.00E-02	0.9	6.67E+00	100	480	mg/kg OC	<1	<1
EPA Site Inspection	DR270	8/26/1998	Phenanthrene	6.00E-02	1.32	4.55E+00	100	480	mg/kg OC	<1	<1
KC Water Quality Assessment	WQAHAMM	5/28/1997	Phenanthrene	6.00E-02 J	1.56	3.85E+00	100	480	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2200-D	3/18/2011	Phenanthrene	5.80E-02	2.38	2.44E+00	100	480	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-113	5/9/2008	Phenanthrene	5.20E-02	1.9	2.74E+00	100	480	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 3	LDW-SS340	10/3/2006	Phenanthrene	5.20E-02 J	1.8	2.89E+00	100	480	mg/kg OC	<1	<1
KC Water Quality Assessment	WQAHAMM	5/20/1997	Phenanthrene	5.20E-02 J	1.77	2.94E+00	100	480	mg/kg OC	<1	<1
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	Phenanthrene	5.00E-02	2.04	2.45E+00	100	480	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS141	3/15/2005	Phenanthrene	4.00E-02 J	2.82	1.42E+00	100	480	mg/kg OC	<1	<1
Norfolk-cleanup1	NFK016	8/22/1994	Phenanthrene	3.80E-02 J	1.1	3.45E+00	100	480	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2201-U	3/18/2011	Phenanthrene	3.10E-02	1.69	1.83E+00	100	480	mg/kg OC	<1	<1
EPA Site Inspection	DR294 ^a	9/15/1998	Phenanthrene	3.00E-02	0.15	2.00E+01	1.5	5.4	mg/kg DW	<1	<1
EPA Site Inspection	DR295 ^a	9/15/1998	Phenanthrene	3.00E-02	0.15	2.00E+01	1.5	5.4	mg/kg DW	<1	<1
EPA Site Inspection	DR296	9/15/1998	Phenanthrene	3.00E-02	0.65	4.62E+00	100	480	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-D ^a	3/3/2011	Phenanthrene	2.80E-02	4.01	6.98E-01	1.5	5.4	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	Phenanthrene	2.50E-02	2.33	1.07E+00	100	480	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	Phenanthrene	2.20E-02	1.7	1.29E+00	100	480	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	Phenanthrene	2.10E-02	2.2	9.55E-01	100	480	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS136	3/15/2005	Phenanthrene	2.00E-02	1.56	1.28E+00	100	480	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	OR-11	May-08	Phenanthrene	1.90E-02	1.58	1.20E+00	100	480	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-07	4/28/2008	Phenanthrene	1.70E-02	0.892	1.91E+00	100	480	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2201-D	3/18/2011	Phenanthrene	1.70E-02 J	2.58	6.59E-01	100	480	mg/kg OC	<1	<1
LDWRI-Benthic	B10b	8/19/2004	Phenanthrene	1.50E-02	1.09	1.38E+00	100	480	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-117	5/9/2008	Phenanthrene	1.20E-02	1.32	9.09E-01	100	480	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-115	5/9/2008	Phenanthrene	1.10E-02	1.28	8.59E-01	100	480	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2098-A	3/4/2011	Phenanthrene	1.00E-02 J	1.25	8.00E-01	100	480	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-112	5/9/2008	Phenanthrene	6.00E-03	1.75	3.43E-01	100	480	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-116	5/9/2008	Phenanthrene	5.50E-03	2.36	2.33E-01	100	480	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-01	4/28/2008	Phenanthrene	4.80E-03 J	0.814	5.90E-01	100	480	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-02	4/28/2008	Phenanthrene	1.90E-03 J	1.27	1.50E-01	100	480	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-10	4/28/2008	Phenanthrene	1.80E-03 J	0.643	2.80E-01	100	480	mg/kg OC	<1	<1

Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
Duwamish River RM 4.9 to 7.4	DR-08	4/28/2008	Phenanthrene	1.50E-03 J	2.75	5.45E-02	100	480	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-12	4/28/2008	Phenanthrene	1.00E-03 J	1.12	8.93E-02	100	480	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	OR-12 ^a	May-08	Phenanthrene	9.80E-04 J	0.413	2.37E-01	1.5	5.4	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-09 ^a	4/28/2008	Phenanthrene	0.000530 J	0.3	0.176667	1.5	5.4	mg/kg DW	<1	<1
LDWRI-Dioxin Sampling	comp	1/12/2010	Phenanthrene	1.70E-02	1.88	9.04E-01	100	480	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Phenol	3.45E-01	1.16	2.97E+01	420	1200	ug/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Phenol	3.45E-01	1.86	1.85E+01	420	1200	ug/kg DW	<1	<1
EPA Site Inspection	DR270	8/26/1998	Phenol	1.20E-01 J	1.32	9.09E+00	420	1200	ug/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-113	5/9/2008	Phenol	9.90E-02 J	1.9	5.21E+00	420	1200	ug/kg DW	<1	<1
EPA Site Inspection	DR265	8/26/1998	Phenol	9.00E-02	1.03	8.74E+00	420	1200	ug/kg DW	<1	<1
EPA Site Inspection	DR273	8/26/1998	Phenol	6.00E-02 J	1.66	3.61E+00	420	1200	ug/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-114	5/9/2008	Phenol	5.90E-02 J	2.18	2.71E+00	420	1200	ug/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	Phenol	3.20E-02	1.7	1.88E+00	420	1200	ug/kg DW	<1	<1
EPA Site Inspection	DR269	8/26/1998	Phenol	3.00E-02	0.9	3.33E+00	420	1200	ug/kg DW	<1	<1
EPA Site Inspection	DR287	8/26/1998	Phenol	3.00E-02	1.31	2.29E+00	420	1200	ug/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2201-U	3/18/2011	Phenol	2.50E-02	1.69	1.48E+00	420	1200	ug/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2099-D	3/3/2011	Phenol	1.60E-02 J	4.01	3.99E-01	420	1200	ug/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2200-D	3/18/2011	Phenol	1.40E-02 J	2.38	5.88E-01	420	1200	ug/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	Phenol	1.20E-02 J	2.33	5.15E-01	420	1200	ug/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2201-D	3/18/2011	Phenol	1.20E-02 J	2.58	4.65E-01	420	1200	ug/kg DW	<1	<1
EPA Site Inspection	DR268	8/26/1998	Pyrene	1.60E+00	2.1	7.62E+01	1000	1400	mg/kg OC	<1	<1
EPA Site Inspection	DR276	9/15/1998	Pyrene	9.80E-01	1.51	6.49E+01	1000	1400	mg/kg OC	<1	<1
EPA Site Inspection	DR274	9/15/1998	Pyrene	8.50E-01	1.39	6.12E+01	1000	1400	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS149	3/9/2005	Pyrene	7.60E-01	2.08	3.65E+01	1000	1400	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Pyrene	5.00E-01	1.16	4.31E+01	1000	1400	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Pyrene	3.64E-01	1.86	1.96E+01	1000	1400	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS147	3/9/2005	Pyrene	3.60E-01	2.12	1.70E+01	1000	1400	mg/kg OC	<1	<1
EPA Site Inspection	DR293	9/14/1998	Pyrene	3.50E-01	1.74	2.01E+01	1000	1400	mg/kg OC	<1	<1
EPA Site Inspection	DR285	8/25/1998	Pyrene	3.30E-01	3.39	9.73E+00	1000	1400	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS146	3/9/2005	Pyrene	3.20E-01	2.4	1.33E+01	1000	1400	mg/kg OC	<1	<1
EPA Site Inspection	DR263	8/25/1998	Pyrene	3.00E-01	2.9	1.03E+01	1000	1400	mg/kg OC	<1	<1
EPA Site Inspection	DR273	8/26/1998	Pyrene	3.00E-01	1.66	1.81E+01	1000	1400	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	Pyrene	2.70E-01	2.98	9.06E+00	1000	1400	mg/kg OC	<1	<1
EPA Site Inspection	DR265	8/26/1998	Pyrene	2.60E-01	1.03	2.52E+01	1000	1400	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS148	3/9/2005	Pyrene	2.30E-01	2.55	9.02E+00	1000	1400	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS133	3/9/2005	Pyrene	2.20E-01	2.59	8.49E+00	1000	1400	mg/kg OC	<1	<1
EPA Site Inspection	DR275	9/15/1998	Pyrene	2.20E-01	1.06	2.08E+01	1000	1400	mg/kg OC	<1	<1
EPA Site Inspection	DR264	8/26/1998	Pyrene	1.80E-01	1.48	1.22E+01	1000	1400	mg/kg OC	<1	<1
EPA Site Inspection	DR287	8/26/1998	Pyrene	1.70E-01	1.31	1.30E+01	1000	1400	mg/kg OC	<1	<1
KC Water Quality Assessment	WQAHAMM	6/3/1997	Pyrene	1.70E-01 J	1.95	8.72E+00	1000	1400	mg/kg OC	<1	<1
EPA Site Inspection	DR269	8/26/1998	Pyrene	1.60E-01	0.9	1.78E+01	1000	1400	mg/kg OC	<1	<1

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
LDWRI-Surface Sediment Round 2	LDW-SS139	3/9/2005	Pyrene	1.60E-01	1.67	9.58E+00	1000	1400	mg/kg OC	<1	<1
EPA Site Inspection	DR266	8/26/1998	Pyrene	1.50E-01	1.38	1.09E+01	1000	1400	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-114	5/9/2008	Pyrene	1.30E-01	2.18	5.96E+00	1000	1400	mg/kg OC	<1	<1
EPA Site Inspection	DR267	8/26/1998	Pyrene	1.20E-01	0.85	1.41E+01	1000	1400	mg/kg OC	<1	<1
EPA Site Inspection	DR270	8/26/1998	Pyrene	1.20E-01	1.32	9.09E+00	1000	1400	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 3	LDW-SS340	10/3/2006	Pyrene	1.20E-01	1.8	6.67E+00	1000	1400	mg/kg OC	<1	<1
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	Pyrene	1.20E-01	2.04	5.88E+00	1000	1400	mg/kg OC	<1	<1
KC Water Quality Assessment	WQAHAMM	5/15/1997	Pyrene	1.10E-01 J	1.75	6.29E+00	1000	1400	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-113	5/9/2008	Pyrene	9.40E-02	1.9	4.95E+00	1000	1400	mg/kg OC	<1	<1
KC Water Quality Assessment	WQAHAMM	5/28/1997	Pyrene	8.90E-02 J	1.56	5.71E+00	1000	1400	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS141	3/15/2005	Pyrene	8.70E-02	2.82	3.09E+00	1000	1400	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2200-D	3/18/2011	Pyrene	7.30E-02	2.38	3.07E+00	1000	1400	mg/kg OC	<1	<1
KC Water Quality Assessment	WQAHAMM	5/20/1997	Pyrene	7.30E-02 J	1.77	4.12E+00	1000	1400	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS150	3/9/2005	Pyrene	6.40E-02	1.79	3.58E+00	1000	1400	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-D ^a	3/3/2011	Pyrene	6.40E-02	4.01	1.60E+00	2.6	3.3	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2201-U	3/18/2011	Pyrene	5.10E-02	1.69	3.02E+00	1000	1400	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS136	3/15/2005	Pyrene	4.30E-02	1.56	2.76E+00	1000	1400	mg/kg OC	<1	<1
Norfolk-cleanup1	NFK016	8/22/1994	Pyrene	4.20E-02 J	1.1	3.82E+00	1000	1400	mg/kg OC	<1	<1
EPA Site Inspection	DR294 ^a	9/15/1998	Pyrene	4.00E-02	0.15	2.67E+01	2.6	3.3	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	OR-11	May-08	Pyrene	3.70E-02	1.58	2.34E+00	1000	1400	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	Pyrene	3.40E-02	2.33	1.46E+00	1000	1400	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	Pyrene	3.30E-02	2.2	1.50E+00	1000	1400	mg/kg OC	<1	<1
LDWRI-Benthic	B10b	8/19/2004	Pyrene	3.20E-02	1.09	2.94E+00	1000	1400	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS140	3/8/2005	Pyrene	3.10E-02	1.52	2.04E+00	1000	1400	mg/kg OC	<1	<1
EPA Site Inspection	DR295 ^a	9/15/1998	Pyrene	3.00E-02	0.15	2.00E+01	2.6	3.3	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	Pyrene	2.80E-02	1.7	1.65E+00	1000	1400	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2201-D	3/18/2011	Pyrene	2.80E-02	2.58	1.09E+00	1000	1400	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS135	3/15/2005	Pyrene	2.50E-02	2.28	1.10E+00	1000	1400	mg/kg OC	<1	<1
Norfolk-cleanup1	NFK014 ^a	8/19/1994	Pyrene	2.40E-02 J	0.07	3.43E+01	1000	1400	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-115	5/9/2008	Pyrene	1.90E-02	1.28	1.48E+00	1000	1400	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-117	5/9/2008	Pyrene	1.90E-02	1.32	1.44E+00	1000	1400	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2098-A	3/4/2011	Pyrene	1.80E-02 J	1.25	1.44E+00	1000	1400	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-07	4/28/2008	Pyrene	1.60E-02	0.892	1.79E+00	1000	1400	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2098-U	3/4/2011	Pyrene	1.40E-02 J	0.844	1.66E+00	1000	1400	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-01	4/28/2008	Pyrene	1.40E-02 J	0.814	1.72E+00	1000	1400	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-112	5/9/2008	Pyrene	1.30E-02	1.75	7.43E-01	1000	1400	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-116	5/9/2008	Pyrene	8.80E-03	2.36	3.73E-01	1000	1400	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-02	4/28/2008	Pyrene	1.60E-03 J	1.27	1.26E-01	1000	1400	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-10	4/28/2008	Pyrene	1.30E-03 J	0.643	2.02E-01	1000	1400	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-12	4/28/2008	Pyrene	1.00E-03 J	1.12	8.93E-02	1000	1400	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-08	4/28/2008	Pyrene	8.40E-04 J	2.75	3.05E-02	1000	1400	mg/kg OC	<1	<1

Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
Duwamish River RM 4.9 to 7.4	DR-04 ^a	4/28/2008	Pyrene	0.000820 J	0.455	0.180220	2.6	3.3	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-09 ^a	4/28/2008	Pyrene	0.000820 J	0.3	0.273333	2.6	3.3	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	OR-12 ^a	May-08	Pyrene	7.90E-04 J	0.413	1.91E-01	2.6	3.3	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-05 ^a	4/28/2008	Pyrene	0.000610 J	0.394	0.154822	2.6	3.3	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-11 ^a	4/28/2008	Pyrene	0.000560 J	0.296	0.189189	2.6	3.3	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-03 ^a	4/28/2008	Pyrene	0.000490 J	0.216	0.226852	2.6	3.3	mg/kg DW	<1	<1
LDWRI-Dioxin Sampling	comp	1/12/2010	Pyrene	3.20E-02	1.88	1.70E+00	1000	1400	mg/kg OC	<1	<1
EPA Site Inspection	DR268	8/26/1998	Selenium	1.10E+01	2.1	5.24E+02					
EPA Site Inspection	DR285	8/25/1998	Selenium	1.10E+01	3.39	3.24E+02					
EPA Site Inspection	DR263	8/25/1998	Selenium	1.00E+01	2.9	3.45E+02					
EPA Site Inspection	DR264	8/26/1998	Selenium	1.00E+01	1.48	6.76E+02					
EPA Site Inspection	DR266	8/26/1998	Selenium	1.00E+01	1.38	7.25E+02					
EPA Site Inspection	DR265	8/26/1998	Selenium	9.00E+00	1.03	8.74E+02					
EPA Site Inspection	DR267	8/26/1998	Selenium	9.00E+00	0.85	1.06E+03					
EPA Site Inspection	DR269	8/26/1998	Selenium	9.00E+00	0.9	1.00E+03					
EPA Site Inspection	DR287	8/26/1998	Selenium	9.00E+00	1.31	6.87E+02					
EPA Site Inspection	DR270	8/26/1998	Selenium	8.00E+00 J	1.32	6.06E+02					
EPA Site Inspection	DR273	8/26/1998	Selenium	8.00E+00 J	1.66	4.82E+02					
LDWRI-Benthic	B10b	8/19/2004	Selenium	7.00E-01 J	1.09	6.42E+01					
Duwamish River RM 4.9 to 7.4	DRB-114	5/9/2008	Selenium	3.40E-01 J	2.18	1.56E+01					
Duwamish River RM 4.9 to 7.4	DRB-113	5/9/2008	Selenium	3.20E-01 J	1.9	1.68E+01					
Duwamish River RM 4.9 to 7.4	DR-03	4/28/2008	Selenium	1.60E-01 J	0.216	7.41E+01					
Duwamish River RM 4.9 to 7.4	OR-11	May-08	Selenium	1.50E-01 J	1.58	9.49E+00					
Duwamish River RM 4.9 to 7.4	DR-01	4/28/2008	Selenium	7.80E-02 J	0.814	9.58E+00					
Duwamish River RM 4.9 to 7.4	DR-07	4/28/2008	Selenium	7.30E-02 J	0.892	8.18E+00					
Duwamish River RM 4.9 to 7.4	DR-10	4/28/2008	Selenium	6.50E-02 J	0.643	1.01E+01					
Duwamish River RM 4.9 to 7.4	DR-11	4/28/2008	Selenium	6.50E-02 J	0.296	2.20E+01					
Duwamish River RM 4.9 to 7.4	DR-04	4/28/2008	Selenium	6.20E-02 J	0.455	1.36E+01					
Duwamish River RM 4.9 to 7.4	DR-06	4/28/2008	Selenium	5.90E-02 J	0.392	1.51E+01					
Duwamish River RM 4.9 to 7.4	DR-02	4/28/2008	Selenium	5.90E-02 J	1.27	4.65E+00					
Duwamish River RM 4.9 to 7.4	DR-05	4/28/2008	Selenium	5.70E-02 J	0.394	1.45E+01					
Duwamish River RM 4.9 to 7.4	DR-09	4/28/2008	Selenium	5.10E-02 J	0.3	1.70E+01					
Duwamish River RM 4.9 to 7.4	OR-12	May-08	Selenium	4.30E-02 J	0.413	1.04E+01					
Duwamish River RM 4.9 to 7.4	DR-12	4/28/2008	Selenium	3.70E-02 J	1.12	3.30E+00					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Silver	6.42E+01	1.16	5.53E+03	6.1	6.1	mg/kg DW	11	11
EPA Site Inspection	DR285	8/25/1998	Silver	2.20E-01	3.39	6.49E+00	6.1	6.1	mg/kg DW	<1	<1
EPA Site Inspection	DR263	8/25/1998	Silver	2.10E-01	2.9	7.24E+00	6.1	6.1	mg/kg DW	<1	<1
EPA Site Inspection	DR295	9/15/1998	Silver	1.50E-01 J	0.15	1.00E+02	6.1	6.1	mg/kg DW	<1	<1
EPA Site Inspection	DR276	9/15/1998	Silver	1.40E-01 J	1.51	9.27E+00	6.1	6.1	mg/kg DW	<1	<1
EPA Site Inspection	DR274	9/15/1998	Silver	1.30E-01 J	1.39	9.35E+00	6.1	6.1	mg/kg DW	<1	<1
EPA Site Inspection	DR273	8/26/1998	Silver	1.20E-01	1.66	7.23E+00	6.1	6.1	mg/kg DW	<1	<1

Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
EPA Site Inspection	DR268	8/26/1998	Silver	1.10E-01	2.1	5.24E+00	6.1	6.1	mg/kg DW	<1	<1
EPA Site Inspection	DR270	8/26/1998	Silver	1.10E-01	1.32	8.33E+00	6.1	6.1	mg/kg DW	<1	<1
EPA Site Inspection	DR266	8/26/1998	Silver	1.00E-01	1.38	7.25E+00	6.1	6.1	mg/kg DW	<1	<1
EPA Site Inspection	DR293	9/14/1998	Silver	1.00E-01	1.74	5.75E+00	6.1	6.1	mg/kg DW	<1	<1
EPA Site Inspection	DR294	9/15/1998	Silver	1.00E-01 J	0.15	6.67E+01	6.1	6.1	mg/kg DW	<1	<1
EPA Site Inspection	DR275	9/15/1998	Silver	1.00E-01 J	1.06	9.43E+00	6.1	6.1	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-114	5/9/2008	Silver	9.60E-02 JB	2.18	4.40E+00	6.1	6.1	mg/kg DW	<1	<1
EPA Site Inspection	DR265	8/26/1998	Silver	9.00E-02	1.03	8.74E+00	6.1	6.1	mg/kg DW	<1	<1
EPA Site Inspection	DR287	8/26/1998	Silver	9.00E-02	1.31	6.87E+00	6.1	6.1	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-113	5/9/2008	Silver	8.20E-02 JB	1.9	4.32E+00	6.1	6.1	mg/kg DW	<1	<1
EPA Site Inspection	DR267	8/26/1998	Silver	8.00E-02	0.85	9.41E+00	6.1	6.1	mg/kg DW	<1	<1
EPA Site Inspection	DR296	9/15/1998	Silver	8.00E-02 J	0.65	1.23E+01	6.1	6.1	mg/kg DW	<1	<1
EPA Site Inspection	DR264	8/26/1998	Silver	7.00E-02	1.48	4.73E+00	6.1	6.1	mg/kg DW	<1	<1
EPA Site Inspection	DR269	8/26/1998	Silver	6.00E-02	0.9	6.67E+00	6.1	6.1	mg/kg DW	<1	<1
LDWRI-Benthic	B10b	8/19/2004	Silver	5.50E-02	1.09	5.05E+00	6.1	6.1	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	OR-11	May-08	Silver	3.90E-02 JB	1.58	2.47E+00	6.1	6.1	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-02	4/28/2008	Silver	2.30E-02 J	1.27	1.81E+00	6.1	6.1	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	OR-12	May-08	Silver	1.90E-02 JB	0.413	4.60E+00	6.1	6.1	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-05	4/28/2008	Silver	1.80E-02 JB	0.394	4.57E+00	6.1	6.1	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-01	4/28/2008	Silver	1.80E-02 J	0.814	2.21E+00	6.1	6.1	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-11	4/28/2008	Silver	1.70E-02 JB	0.296	5.74E+00	6.1	6.1	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-10	4/28/2008	Silver	1.50E-02 JB	0.643	2.33E+00	6.1	6.1	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-03	4/28/2008	Silver	1.40E-02 JB	0.216	6.48E+00	6.1	6.1	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-04	4/28/2008	Silver	1.30E-02 JB	0.455	2.86E+00	6.1	6.1	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-06	4/28/2008	Silver	1.30E-02 JB	0.392	3.32E+00	6.1	6.1	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-07	4/28/2008	Silver	1.30E-02 JB	0.892	1.46E+00	6.1	6.1	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-09	4/28/2008	Silver	1.20E-02 JB	0.3	4.00E+00	6.1	6.1	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-12	4/28/2008	Silver	1.20E-02 JB	1.12	1.07E+00	6.1	6.1	mg/kg DW	<1	<1
EPA Site Inspection	DR270	8/26/1998	Tetrabutyltin as ion	2.00E-03 J	1.32	1.52E-01					
EPA Site Inspection	DR268	8/26/1998	Thallium	1.00E-01	2.1	4.76E+00					
EPA Site Inspection	DR285	8/25/1998	Thallium	1.00E-01	3.39	2.95E+00					
EPA Site Inspection	DR263	8/25/1998	Thallium	8.00E-02	2.9	2.76E+00					
EPA Site Inspection	DR269	8/26/1998	Thallium	7.00E-02	0.9	7.78E+00					
EPA Site Inspection	DR266	8/26/1998	Thallium	6.00E-02	1.38	4.35E+00					
EPA Site Inspection	DR267	8/26/1998	Thallium	6.00E-02	0.85	7.06E+00					
EPA Site Inspection	DR287	8/26/1998	Thallium	6.00E-02	1.31	4.58E+00					
EPA Site Inspection	DR274	9/15/1998	Thallium	6.00E-02	1.39	4.32E+00					
EPA Site Inspection	DR276	9/15/1998	Thallium	6.00E-02	1.51	3.97E+00					
EPA Site Inspection	DR264	8/26/1998	Thallium	5.00E-02	1.48	3.38E+00					
EPA Site Inspection	DR293	9/14/1998	Thallium	5.00E-02 J	1.74	2.87E+00					
LDWRI-Benthic	B10b	8/19/2004	Thallium	4.00E-02	1.09	3.67E+00					

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
EPA Site Inspection	DR265	8/26/1998	Thallium	4.00E-02	1.03	3.88E+00					
EPA Site Inspection	DR270	8/26/1998	Thallium	4.00E-02	1.32	3.03E+00					
EPA Site Inspection	DR273	8/26/1998	Thallium	4.00E-02	1.66	2.41E+00					
EPA Site Inspection	DR275	9/15/1998	Thallium	4.00E-02	1.06	3.77E+00					
EPA Site Inspection	DR294	9/15/1998	Thallium	3.00E-02	0.15	2.00E+01					
EPA Site Inspection	DR295	9/15/1998	Thallium	3.00E-02	0.15	2.00E+01					
EPA Site Inspection	DR296	9/15/1998	Thallium	2.00E-02	0.65	3.08E+00					
EPA Site Inspection	DR276	9/15/1998	Total HPAH (calc'd)	5.00E+00	1.51	3.31E+02	960	5300	mg/kg OC	<1	<1
EPA Site Inspection	DR274	9/15/1998	Total HPAH (calc'd)	4.70E+00	1.39	3.38E+02	960	5300	mg/kg OC	<1	<1
EPA Site Inspection	DR268	8/26/1998	Total HPAH (calc'd)	4.58E+00	2.1	2.18E+02	960	5300	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS149	3/9/2005	Total HPAH (calc'd)	4.20E+00 J	2.08	2.02E+02	960	5300	mg/kg OC	<1	<1
EPA Site Inspection	DR293	9/14/1998	Total HPAH (calc'd)	1.97E+00	1.74	1.13E+02	960	5300	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS147	3/9/2005	Total HPAH (calc'd)	1.89E+00	2.12	8.92E+01	960	5300	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS146	3/9/2005	Total HPAH (calc'd)	1.87E+00	2.4	7.79E+01	960	5300	mg/kg OC	<1	<1
EPA Site Inspection	DR273	8/26/1998	Total HPAH (calc'd)	1.78E+00	1.66	1.07E+02	960	5300	mg/kg OC	<1	<1
EPA Site Inspection	DR285	8/25/1998	Total HPAH (calc'd)	1.67E+00	3.39	4.93E+01	960	5300	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS148	3/9/2005	Total HPAH (calc'd)	1.56E+00	2.55	6.12E+01	960	5300	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	Total HPAH (calc'd)	1.51E+00	2.98	5.07E+01	960	5300	mg/kg OC	<1	<1
EPA Site Inspection	DR263	8/25/1998	Total HPAH (calc'd)	1.43E+00	2.9	4.93E+01	960	5300	mg/kg OC	<1	<1
EPA Site Inspection	DR275	9/15/1998	Total HPAH (calc'd)	1.37E+00	1.06	1.29E+02	960	5300	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS133	3/9/2005	Total HPAH (calc'd)	1.35E+00	2.59	5.21E+01	960	5300	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS139	3/9/2005	Total HPAH (calc'd)	1.03E+00	1.67	6.17E+01	960	5300	mg/kg OC	<1	<1
EPA Site Inspection	DR265	8/26/1998	Total HPAH (calc'd)	1.02E+00	1.03	9.90E+01	960	5300	mg/kg OC	<1	<1
EPA Site Inspection	DR287	8/26/1998	Total HPAH (calc'd)	8.90E-01	1.31	6.79E+01	960	5300	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-114	5/9/2008	Total HPAH (calc'd)	8.72E-01 J	2.18	4.00E+01	960	5300	mg/kg OC	<1	<1
EPA Site Inspection	DR264	8/26/1998	Total HPAH (calc'd)	8.70E-01	1.48	5.88E+01	960	5300	mg/kg OC	<1	<1
EPA Site Inspection	DR269	8/26/1998	Total HPAH (calc'd)	8.20E-01	0.9	9.11E+01	960	5300	mg/kg OC	<1	<1
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	Total HPAH (calc'd)	8.00E-01 J	2.04	3.92E+01	960	5300	mg/kg OC	<1	<1
EPA Site Inspection	DR266	8/26/1998	Total HPAH (calc'd)	7.90E-01	1.38	5.72E+01	960	5300	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 3	LDW-SS340	10/3/2006	Total HPAH (calc'd)	7.50E-01 J	1.8	4.17E+01	960	5300	mg/kg OC	<1	<1
KC Water Quality Assessment	WQAHAMM	6/3/1997	Total HPAH (calc'd)	7.26E-01	1.95	3.72E+01	960	5300	mg/kg OC	<1	<1
EPA Site Inspection	DR267	8/26/1998	Total HPAH (calc'd)	6.90E-01	0.85	8.12E+01	960	5300	mg/kg OC	<1	<1
EPA Site Inspection	DR270	8/26/1998	Total HPAH (calc'd)	6.50E-01	1.32	4.92E+01	960	5300	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-113	5/9/2008	Total HPAH (calc'd)	6.07E-01 J	1.9	3.19E+01	960	5300	mg/kg OC	<1	<1
KC Water Quality Assessment	WQAHAMM	5/15/1997	Total HPAH (calc'd)	4.13E-01	1.75	2.36E+01	960	5300	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS141	3/15/2005	Total HPAH (calc'd)	3.70E-01 J	2.82	1.31E+01	960	5300	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS150	3/9/2005	Total HPAH (calc'd)	3.38E-01	1.79	1.89E+01	960	5300	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-D ^a	3/3/2011	Total HPAH (calc'd)	3.30E-01	4.01	8.23E+00	12	17	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2200-D	3/18/2011	Total HPAH (calc'd)	3.20E-01 J	2.38	1.34E+01	960	5300	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Total HPAH (calc'd)	3.00E-01 J	1.16	2.59E+01	960	5300	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	OR-11	May-08	Total HPAH (calc'd)	2.78E-01 J	1.58	1.76E+01	960	5300	mg/kg OC	<1	<1

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
KC Water Quality Assessment	WQAHAMM	5/28/1997	Total HPAH (calc'd)	2.71E-01	1.56	1.74E+01	960	5300	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2201-U	3/18/2011	Total HPAH (calc'd)	2.70E-01 J	1.69	1.60E+01	960	5300	mg/kg OC	<1	<1
KC Water Quality Assessment	WQAHAMM	5/20/1997	Total HPAH (calc'd)	2.30E-01	1.77	1.30E+01	960	5300	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS136	3/15/2005	Total HPAH (calc'd)	2.25E-01	1.56	1.44E+01	960	5300	mg/kg OC	<1	<1
LDWRI-Benthic	B10b	8/19/2004	Total HPAH (calc'd)	1.92E-01 J	1.09	1.76E+01	960	5300	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	Total HPAH (calc'd)	1.70E-01 J	2.33	7.30E+00	960	5300	mg/kg OC	<1	<1
EPA Site Inspection	DR294 ^a	9/15/1998	Total HPAH (calc'd)	1.70E-01	0.15	1.13E+02	12	17	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS140	3/8/2005	Total HPAH (calc'd)	1.68E-01 J	1.52	1.11E+01	960	5300	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	Total HPAH (calc'd)	1.60E-01 J	1.7	9.41E+00	960	5300	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	Total HPAH (calc'd)	1.40E-01 J	2.2	6.36E+00	960	5300	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2201-D	3/18/2011	Total HPAH (calc'd)	1.40E-01 J	2.58	5.43E+00	960	5300	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-115	5/9/2008	Total HPAH (calc'd)	1.11E-01	1.28	8.64E+00	960	5300	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-117	5/9/2008	Total HPAH (calc'd)	1.04E-01	1.32	7.86E+00	960	5300	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-112	5/9/2008	Total HPAH (calc'd)	8.94E-02 J	1.75	5.11E+00	960	5300	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-07	4/28/2008	Total HPAH (calc'd)	8.85E-02 J	0.892	9.92E+00	960	5300	mg/kg OC	<1	<1
Norfolk-cleanup1	NFK016	8/22/1994	Total HPAH (calc'd)	8.80E-02 J	1.1	8.00E+00	960	5300	mg/kg OC	<1	<1
EPA Site Inspection	DR295 ^a	9/15/1998	Total HPAH (calc'd)	6.00E-02	0.15	4.00E+01	12	17	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-116	5/9/2008	Total HPAH (calc'd)	5.50E-02 J	2.36	2.33E+00	960	5300	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS135	3/15/2005	Total HPAH (calc'd)	4.60E-02	2.28	2.02E+00	960	5300	mg/kg OC	<1	<1
Norfolk-cleanup1	NFK014 ^a	8/19/1994	Total HPAH (calc'd)	4.40E-02 J	0.07	6.29E+01	12	17	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2098-A	3/4/2011	Total HPAH (calc'd)	3.50E-02 J	1.25	2.80E+00	960	5300	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Total HPAH (calc'd)	3.30E-02 J	1.86	1.77E+00	960	5300	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 3	LDW-SS339	10/3/2006	Total HPAH (calc'd)	3.20E-02 J	2.04	1.57E+00	960	5300	mg/kg OC	<1	<1
EPA Site Inspection	DR296	9/15/1998	Total HPAH (calc'd)	3.00E-02	0.65	4.62E+00	960	5300	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2098-U	3/4/2011	Total HPAH (calc'd)	2.80E-02 J	0.844	3.32E+00	960	5300	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-11 ^a	4/28/2008	Total HPAH (calc'd)	0.004510 J	0.296	1.523649	12	17	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-05 ^a	4/28/2008	Total HPAH (calc'd)	0.004470 J	0.394	1.134518	12	17	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-12	4/28/2008	Total HPAH (calc'd)	4.38E-03 J	1.12	3.91E-01	960	5300	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-10	4/28/2008	Total HPAH (calc'd)	3.56E-03 J	0.643	5.54E-01	960	5300	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-08	4/28/2008	Total HPAH (calc'd)	2.71E-03 J	2.75	9.85E-02	960	5300	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-03 ^a	4/28/2008	Total HPAH (calc'd)	0.002690 J	0.216	1.245370	12	17	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-04 ^a	4/28/2008	Total HPAH (calc'd)	0.002610 J	0.455	0.573626	12	17	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	OR-12 ^a	May-08	Total HPAH (calc'd)	2.48E-03 J	0.413	6.00E-01	12	17	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-09 ^a	4/28/2008	Total HPAH (calc'd)	0.001920 J	0.3	0.640000	12	17	mg/kg DW	<1	<1
LDWRI-Dioxin Sampling	comp	1/12/2010	Total HPAH (calc'd)	2.14E-01 J	1.88	1.14E+01	960	5300	mg/kg OC	<1	<1
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	Total HpCDD	1.75E-04	2.04	8.58E-03					
Duwamish River RM 4.9 to 7.4	DRB-114	5/9/2008	Total HpCDD	1.40E-04	2.18	6.42E-03					
EPA Site Inspection	DR264	8/26/1998	Total HpCDD	1.20E-04	1.48	8.11E-03					
Duwamish River RM 4.9 to 7.4	DRB-113	5/9/2008	Total HpCDD	1.10E-04	1.9	5.79E-03					
Duwamish River RM 4.9 to 7.4	DRB-112	5/9/2008	Total HpCDD	6.80E-05	1.75	3.89E-03					
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	Total HpCDD	6.54E-05	1.7	3.85E-03					

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
Duwamish River RM 4.9 to 7.4	DRB-115	5/9/2008	Total HpCDD	6.20E-05	1.28	4.84E-03					
Duwamish River RM 4.9 to 7.4	DRB-116	5/9/2008	Total HpCDD	5.30E-05	2.36	2.25E-03					
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	Total HpCDD	5.10E-05	2.33	2.19E-03					
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	Total HpCDD	3.62E-05	2.2	1.65E-03					
Duwamish River RM 4.9 to 7.4	OR-11	May-08	Total HpCDD	3.60E-05	1.58	2.28E-03					
Duwamish River RM 4.9 to 7.4	DR-01	4/28/2008	Total HpCDD	3.40E-05	1.58	2.15E-03					
Duwamish River RM 4.9 to 7.4	DRB-117	5/9/2008	Total HpCDD	3.10E-05	1.32	2.35E-03					
Duwamish River RM 4.9 to 7.4	DR-12	4/28/2008	Total HpCDD	1.80E-05	1.12	1.61E-03					
LDW Outfall Sampling	LDW-SS2098-A	3/4/2011	Total HpCDD	1.67E-05	1.25	1.34E-03					
Duwamish River RM 4.9 to 7.4	DR-09	4/28/2008	Total HpCDD	3.20E-06	0.3	1.07E-03					
LDWRI-Dioxin Sampling	comp	1/12/2010	Total HpCDD	1.34E-04	1.88	7.13E-03					
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	Total HpCDF	5.01E-05	2.04	2.46E-03					
Duwamish River RM 4.9 to 7.4	DRB-114	5/9/2008	Total HpCDF	4.10E-05	2.18	1.88E-03					
Duwamish River RM 4.9 to 7.4	DRB-113	5/9/2008	Total HpCDF	3.30E-05	1.9	1.74E-03					
EPA Site Inspection	DR264	8/26/1998	Total HpCDF	1.80E-05	1.48	1.22E-03					
Duwamish River RM 4.9 to 7.4	DRB-112	5/9/2008	Total HpCDF	1.80E-05	1.75	1.03E-03					
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	Total HpCDF	1.70E-05	1.7	1.00E-03					
Duwamish River RM 4.9 to 7.4	DRB-115	5/9/2008	Total HpCDF	1.50E-05	1.28	1.17E-03					
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	Total HpCDF	1.48E-05	2.2	6.73E-04					
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	Total HpCDF	1.31E-05	2.33	5.62E-04					
Duwamish River RM 4.9 to 7.4	DRB-117	5/9/2008	Total HpCDF	8.90E-06	1.32	6.74E-04					
Duwamish River RM 4.9 to 7.4	OR-11	May-08	Total HpCDF	7.80E-06	1.58	4.94E-04					
Duwamish River RM 4.9 to 7.4	DRB-116	5/9/2008	Total HpCDF	4.60E-06	2.36	1.95E-04					
LDW Outfall Sampling	LDW-SS2098-A	3/4/2011	Total HpCDF	3.45E-06	1.25	2.76E-04					
LDWRI-Dioxin Sampling	comp	1/12/2010	Total HpCDF	4.60E-05	1.88	2.45E-03					
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	Total HxCDD	3.42E-05	2.04	1.68E-03					
Duwamish River RM 4.9 to 7.4	DRB-114	5/9/2008	Total HxCDD	1.40E-05	2.18	6.42E-04					
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	Total HxCDD	1.33E-05	1.7	7.82E-04					
Duwamish River RM 4.9 to 7.4	DRB-113	5/9/2008	Total HxCDD	1.30E-05	1.9	6.84E-04					
EPA Site Inspection	DR264	8/26/1998	Total HxCDD	1.20E-05	1.48	8.11E-04					
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	Total HxCDD	1.18E-05	2.33	5.06E-04					
Duwamish River RM 4.9 to 7.4	DRB-115	5/9/2008	Total HxCDD	1.10E-05	1.28	8.59E-04					
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	Total HxCDD	7.06E-06	2.2	3.21E-04					
Duwamish River RM 4.9 to 7.4	DRB-112	5/9/2008	Total HxCDD	4.40E-06	1.75	2.51E-04					
LDW Outfall Sampling	LDW-SS2098-A	3/4/2011	Total HxCDD	2.51E-06	1.25	2.01E-04					
LDWRI-Dioxin Sampling	comp	1/12/2010	Total HxCDD	2.67E-05	1.88	1.42E-03					
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	Total HxCDF	2.82E-05	2.04	1.38E-03					
Duwamish River RM 4.9 to 7.4	DRB-114	5/9/2008	Total HxCDF	1.30E-05	2.18	5.96E-04					
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	Total HxCDF	1.01E-05	1.7	5.94E-04					
EPA Site Inspection	DR264	8/26/1998	Total HxCDF	9.70E-06	1.48	6.55E-04					
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	Total HxCDF	8.16E-06	2.2	3.71E-04					

Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	Total HxCDF	6.95E-06	2.33	2.98E-04					
Duamish River RM 4.9 to 7.4	DRB-115	5/9/2008	Total HxCDF	4.00E-06	1.28	3.13E-04					
LDW Outfall Sampling	LDW-SS2098-A	3/4/2011	Total HxCDF	1.87E-06	1.25	1.50E-04					
LDWRI-Dioxin Sampling	comp	1/12/2010	Total HxCDF	2.71E-05	1.88	1.44E-03					
EPA Site Inspection	DR276	9/15/1998	Total LPAH (calc'd)	2.10E+00	1.51	1.39E+02	370	780	mg/kg OC	<1	<1
EPA Site Inspection	DR274	9/15/1998	Total LPAH (calc'd)	6.70E-01	1.39	4.82E+01	370	780	mg/kg OC	<1	<1
EPA Site Inspection	DR268	8/26/1998	Total LPAH (calc'd)	5.30E-01	2.1	2.52E+01	370	780	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS149	3/9/2005	Total LPAH (calc'd)	4.50E-01 J	2.08	2.16E+01	370	780	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS147	3/9/2005	Total LPAH (calc'd)	2.60E-01	2.12	1.23E+01	370	780	mg/kg OC	<1	<1
EPA Site Inspection	DR293	9/14/1998	Total LPAH (calc'd)	2.40E-01	1.74	1.38E+01	370	780	mg/kg OC	<1	<1
EPA Site Inspection	DR265	8/26/1998	Total LPAH (calc'd)	2.00E-01	1.03	1.94E+01	370	780	mg/kg OC	<1	<1
EPA Site Inspection	DR273	8/26/1998	Total LPAH (calc'd)	2.00E-01	1.66	1.20E+01	370	780	mg/kg OC	<1	<1
EPA Site Inspection	DR285	8/25/1998	Total LPAH (calc'd)	1.90E-01	3.39	5.60E+00	370	780	mg/kg OC	<1	<1
EPA Site Inspection	DR275	9/15/1998	Total LPAH (calc'd)	1.90E-01	1.06	1.79E+01	370	780	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS146	3/9/2005	Total LPAH (calc'd)	1.80E-01	2.4	7.50E+00	370	780	mg/kg OC	<1	<1
EPA Site Inspection	DR263	8/25/1998	Total LPAH (calc'd)	1.60E-01	2.9	5.52E+00	370	780	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS133	3/9/2005	Total LPAH (calc'd)	1.52E-01	2.59	5.87E+00	370	780	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	Total LPAH (calc'd)	1.26E-01	2.98	4.23E+00	370	780	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS148	3/9/2005	Total LPAH (calc'd)	1.12E-01	2.55	4.39E+00	370	780	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS139	3/9/2005	Total LPAH (calc'd)	9.40E-02	1.67	5.63E+00	370	780	mg/kg OC	<1	<1
KC Water Quality Assessment	WQAHAMM	6/3/1997	Total LPAH (calc'd)	9.40E-02	1.95	4.82E+00	370	780	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2201-U	3/18/2011	Total LPAH (calc'd)	9.10E-02	1.69	5.38E+00	370	780	mg/kg OC	<1	<1
EPA Site Inspection	DR287	8/26/1998	Total LPAH (calc'd)	8.00E-02	1.31	6.11E+00	370	780	mg/kg OC	<1	<1
Duamish River RM 4.9 to 7.4	DRB-114	5/9/2008	Total LPAH (calc'd)	7.70E-02 J	2.18	3.53E+00	370	780	mg/kg OC	<1	<1
EPA Site Inspection	DR264	8/26/1998	Total LPAH (calc'd)	7.00E-02	1.48	4.73E+00	370	780	mg/kg OC	<1	<1
EPA Site Inspection	DR266	8/26/1998	Total LPAH (calc'd)	7.00E-02	1.38	5.07E+00	370	780	mg/kg OC	<1	<1
EPA Site Inspection	DR267	8/26/1998	Total LPAH (calc'd)	7.00E-02	0.85	8.24E+00	370	780	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS150	3/9/2005	Total LPAH (calc'd)	6.80E-02	1.79	3.80E+00	370	780	mg/kg OC	<1	<1
Duamish River RM 4.9 to 7.4	DRB-113	5/9/2008	Total LPAH (calc'd)	6.40E-02 J	1.9	3.37E+00	370	780	mg/kg OC	<1	<1
KC Water Quality Assessment	WQAHAMM	5/15/1997	Total LPAH (calc'd)	6.30E-02	1.75	3.60E+00	370	780	mg/kg OC	<1	<1
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	Total LPAH (calc'd)	6.10E-02	2.04	2.99E+00	370	780	mg/kg OC	<1	<1
EPA Site Inspection	DR269	8/26/1998	Total LPAH (calc'd)	6.00E-02	0.9	6.67E+00	370	780	mg/kg OC	<1	<1
EPA Site Inspection	DR270	8/26/1998	Total LPAH (calc'd)	6.00E-02	1.32	4.55E+00	370	780	mg/kg OC	<1	<1
KC Water Quality Assessment	WQAHAMM	5/28/1997	Total LPAH (calc'd)	6.00E-02	1.56	3.85E+00	370	780	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2200-D	3/18/2011	Total LPAH (calc'd)	5.80E-02	2.38	2.44E+00	370	780	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 3	LDW-SS340	10/3/2006	Total LPAH (calc'd)	5.20E-02 J	1.8	2.89E+00	370	780	mg/kg OC	<1	<1
KC Water Quality Assessment	WQAHAMM	5/20/1997	Total LPAH (calc'd)	5.20E-02	1.77	2.94E+00	370	780	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS151	3/15/2008	Total LPAH (calc'd)	5.00E-02	0.516	9.69E+00	370	780	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS141	3/15/2005	Total LPAH (calc'd)	4.00E-02 J	2.82	1.42E+00	370	780	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Total LPAH (calc'd)	3.80E-02	1.16	3.28E+00	370	780	mg/kg OC	<1	<1
Norfolk-cleanup1	NFK016	8/22/1994	Total LPAH (calc'd)	3.80E-02 J	1.1	3.45E+00	370	780	mg/kg OC	<1	<1

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
EPA Site Inspection	DR294 ^a	9/15/1998	Total LPAH (calc'd)	3.00E-02	0.15	2.00E+01	5.2	13	mg/kg DW	<1	<1
EPA Site Inspection	DR295 ^a	9/15/1998	Total LPAH (calc'd)	3.00E-02	0.15	2.00E+01	5.2	13	mg/kg DW	<1	<1
EPA Site Inspection	DR296	9/15/1998	Total LPAH (calc'd)	3.00E-02	0.65	4.62E+00	370	780	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-07	4/28/2008	Total LPAH (calc'd)	2.82E-02 J	0.892	3.16E+00	370	780	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-D ^a	3/3/2011	Total LPAH (calc'd)	2.80E-02	4.01	6.98E-01	5.2	13	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	Total LPAH (calc'd)	2.50E-02	2.33	1.07E+00	370	780	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	OR-11	May-08	Total LPAH (calc'd)	2.50E-02 J	1.58	1.58E+00	370	780	mg/kg OC	<1	<1
LDWRI-Benthic	B10b	8/19/2004	Total LPAH (calc'd)	2.30E-02 J	1.09	2.11E+00	370	780	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	Total LPAH (calc'd)	2.20E-02	1.7	1.29E+00	370	780	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	Total LPAH (calc'd)	2.10E-02	2.2	9.55E-01	370	780	mg/kg OC	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS136	3/15/2005	Total LPAH (calc'd)	2.00E-02	1.56	1.28E+00	370	780	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2201-D	3/18/2011	Total LPAH (calc'd)	1.70E-02 J	2.58	6.59E-01	370	780	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-117	5/9/2008	Total LPAH (calc'd)	1.48E-02 J	1.32	1.12E+00	370	780	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-115	5/9/2008	Total LPAH (calc'd)	1.35E-02 J	1.28	1.05E+00	370	780	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2098-A	3/4/2011	Total LPAH (calc'd)	1.00E-02 J	1.25	8.00E-01	370	780	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Total LPAH (calc'd)	7.70E-03 J	1.86	4.14E-01	370	780	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-112	5/9/2008	Total LPAH (calc'd)	7.30E-03 J	1.75	4.17E-01	370	780	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-116	5/9/2008	Total LPAH (calc'd)	6.42E-03 J	2.36	2.72E-01	370	780	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-10	4/28/2008	Total LPAH (calc'd)	1.80E-03 J	0.643	2.80E-01	370	780	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-08	4/28/2008	Total LPAH (calc'd)	1.50E-03 J	2.75	5.45E-02	370	780	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	DR-12	4/28/2008	Total LPAH (calc'd)	1.00E-03 J	1.12	8.93E-02	370	780	mg/kg OC	<1	<1
Duwamish River RM 4.9 to 7.4	OR-12 ^a	May-08	Total LPAH (calc'd)	9.80E-04 J	0.413	2.37E-01	5.2	13	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-09 ^a	4/28/2008	Total LPAH (calc'd)	0.000530 J	0.3	0.176667	5.2	13	mg/kg DW	<1	<1
LDWRI-Dioxin Sampling	comp	1/12/2010	Total LPAH (calc'd)	2.20E-02	1.88	1.17E+00	370	780	mg/kg OC	<1	<1
EPA Site Inspection	DR276	9/15/1998	Total PAH (calc'd)	7.00E+00	1.51	4.64E+02					
EPA Site Inspection	DR274	9/15/1998	Total PAH (calc'd)	5.40E+00	1.39	3.88E+02					
EPA Site Inspection	DR268	8/26/1998	Total PAH (calc'd)	5.11E+00	2.1	2.43E+02					
LDWRI-Surface Sediment Round 2	LDW-SS149	3/9/2005	Total PAH (calc'd)	4.60E+00 J	2.08	2.21E+02					
EPA Site Inspection	DR293	9/14/1998	Total PAH (calc'd)	2.21E+00	1.74	1.27E+02					
LDWRI-Surface Sediment Round 2	LDW-SS147	3/9/2005	Total PAH (calc'd)	2.15E+00	2.12	1.01E+02					
LDWRI-Surface Sediment Round 2	LDW-SS146	3/9/2005	Total PAH (calc'd)	2.05E+00	2.4	8.54E+01					
EPA Site Inspection	DR273	8/26/1998	Total PAH (calc'd)	1.98E+00	1.66	1.19E+02					
EPA Site Inspection	DR285	8/25/1998	Total PAH (calc'd)	1.86E+00	3.39	5.49E+01					
LDWRI-Surface Sediment Round 2	LDW-SS148	3/9/2005	Total PAH (calc'd)	1.67E+00	2.55	6.55E+01					
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	Total PAH (calc'd)	1.63E+00	2.98	5.47E+01					
EPA Site Inspection	DR263	8/25/1998	Total PAH (calc'd)	1.59E+00	2.9	5.48E+01					
EPA Site Inspection	DR275	9/15/1998	Total PAH (calc'd)	1.56E+00	1.06	1.47E+02					
LDWRI-Surface Sediment Round 2	LDW-SS133	3/9/2005	Total PAH (calc'd)	1.51E+00	2.59	5.83E+01					
EPA Site Inspection	DR265	8/26/1998	Total PAH (calc'd)	1.22E+00	1.03	1.18E+02					
LDWRI-Surface Sediment Round 2	LDW-SS139	3/9/2005	Total PAH (calc'd)	1.12E+00	1.67	6.71E+01					
EPA Site Inspection	DR287	8/26/1998	Total PAH (calc'd)	9.70E-01	1.31	7.40E+01					

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
EPA Site Inspection	DR264	8/26/1998	Total PAH (calc'd)	9.40E-01	1.48	6.35E+01					
EPA Site Inspection	DR269	8/26/1998	Total PAH (calc'd)	8.80E-01	0.9	9.78E+01					
EPA Site Inspection	DR266	8/26/1998	Total PAH (calc'd)	8.60E-01	1.38	6.23E+01					
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	Total PAH (calc'd)	8.60E-01 J	2.04	4.22E+01					
KC Water Quality Assessment	WQAHAMM	6/3/1997	Total PAH (calc'd)	8.20E-01	1.95	4.21E+01					
LDWRI-Surface Sediment Round 3	LDW-SS340	10/3/2006	Total PAH (calc'd)	8.00E-01 J	1.8	4.44E+01					
EPA Site Inspection	DR267	8/26/1998	Total PAH (calc'd)	7.60E-01	0.85	8.94E+01					
EPA Site Inspection	DR270	8/26/1998	Total PAH (calc'd)	7.10E-01	1.32	5.38E+01					
KC Water Quality Assessment	WQAHAMM	5/15/1997	Total PAH (calc'd)	4.76E-01	1.75	2.72E+01					
LDWRI-Surface Sediment Round 2	LDW-SS141	3/15/2005	Total PAH (calc'd)	4.10E-01 J	2.82	1.45E+01					
LDWRI-Surface Sediment Round 2	LDW-SS150	3/9/2005	Total PAH (calc'd)	4.06E-01	1.79	2.27E+01					
KC Water Quality Assessment	WQAHAMM	5/28/1997	Total PAH (calc'd)	3.31E-01	1.56	2.12E+01					
KC Water Quality Assessment	WQAHAMM	5/20/1997	Total PAH (calc'd)	2.82E-01	1.77	1.59E+01					
LDWRI-Surface Sediment Round 2	LDW-SS136	3/15/2005	Total PAH (calc'd)	2.45E-01	1.56	1.57E+01					
LDWRI-Benthic	B10b	8/19/2004	Total PAH (calc'd)	2.16E-01 J	1.09	1.98E+01					
EPA Site Inspection	DR294	9/15/1998	Total PAH (calc'd)	2.00E-01	0.15	1.33E+02					
LDWRI-Surface Sediment Round 2	LDW-SS140	3/8/2005	Total PAH (calc'd)	1.68E-01 J	1.52	1.11E+01					
Norfolk-cleanup1	NFK016	8/22/1994	Total PAH (calc'd)	1.26E-01 J	1.1	1.15E+01					
EPA Site Inspection	DR295	9/15/1998	Total PAH (calc'd)	9.00E-02	0.15	6.00E+01					
EPA Site Inspection	DR296	9/15/1998	Total PAH (calc'd)	6.00E-02	0.65	9.23E+00					
LDWRI-Surface Sediment Round 2	LDW-SS151	3/15/2008	Total PAH (calc'd)	5.00E-02	0.516	9.69E+00					
LDWRI-Surface Sediment Round 2	LDW-SS135	3/15/2005	Total PAH (calc'd)	4.60E-02	2.28	2.02E+00					
Norfolk-cleanup1	NFK014 ³	8/19/1994	Total PAH (calc'd)	4.40E-02 J	0.07	6.29E+01					
LDWRI-Surface Sediment Round 3	LDW-SS339	10/3/2006	Total PAH (calc'd)	3.20E-02 J	2.04	1.57E+00					
LDWRI-Dioxin Sampling	comp	1/12/2010	Total PAH (calc'd)	2.36E-01 J	1.88	1.26E+01					
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	Total PeCDD	7.69E-06	2.04	3.77E-04					
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	Total PeCDD	3.24E-06	1.7	1.91E-04					
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	Total PeCDD	2.48E-06	2.33	1.06E-04					
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	Total PeCDD	1.53E-06	2.2	6.95E-05					
LDW Outfall Sampling	LDW-SS2098-A	3/4/2011	Total PeCDD	2.82E-07	1.25	2.26E-05					
LDWRI-Dioxin Sampling	comp	1/12/2010	Total PeCDD	5.70E-06	1.88	3.03E-04					
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	Total PeCDF	2.45E-05	2.04	1.20E-03					
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	Total PeCDF	4.78E-06	1.7	2.81E-04					
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	Total PeCDF	3.24E-06	2.33	1.39E-04					
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	Total PeCDF	2.78E-06	2.2	1.26E-04					
LDW Outfall Sampling	LDW-SS2098-A	3/4/2011	Total PeCDF	9.08E-07	1.25	7.26E-05					
LDWRI-Dioxin Sampling	comp	1/12/2010	Total PeCDF	1.81E-05	1.88	9.63E-04					
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	Total TCDD	5.48E-06	2.04	2.69E-04					
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	Total TCDD	2.03E-06	1.7	1.19E-04					
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	Total TCDD	1.58E-06	2.33	6.78E-05					
EPA Site Inspection	DR264	8/26/1998	Total TCDD	9.50E-07	1.48	6.42E-05					

Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	Total TCDD	9.00E-07	2.2	4.09E-05					
LDW Outfall Sampling	LDW-SS2098-A	3/4/2011	Total TCDD	3.45E-07	1.25	2.76E-05					
LDWRI-Dioxin Sampling	comp	1/12/2010	Total TCDD	4.78E-06	1.88	2.54E-04					
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	Total TCDF	1.61E-05	2.04	7.89E-04					
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	Total TCDF	5.28E-06	1.7	3.11E-04					
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	Total TCDF	3.64E-06	2.33	1.56E-04					
EPA Site Inspection	DR264	8/26/1998	Total TCDF	3.00E-06	1.48	2.03E-04					
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	Total TCDF	2.32E-06	2.2	1.05E-04					
Duwamish River RM 4.9 to 7.4	DRB-114	5/9/2008	Total TCDF	1.70E-06	2.18	7.80E-05					
Duwamish River RM 4.9 to 7.4	DRB-113	5/9/2008	Total TCDF	1.10E-06	1.9	5.79E-05					
Duwamish River RM 4.9 to 7.4	DRB-115	5/9/2008	Total TCDF	9.40E-07	1.28	7.34E-05					
LDW Outfall Sampling	LDW-SS2098-A	3/4/2011	Total TCDF	9.35E-07	1.25	7.48E-05					
LDWRI-Dioxin Sampling	comp	1/12/2010	Total TCDF	1.94E-05	1.88	1.03E-03					
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	Tributyltin as ion	5.30E-02	2.98	1.78E+00					
EPA Site Inspection	DR264	8/26/1998	Tributyltin as ion	4.00E-03 J	1.48	2.70E-01					
EPA Site Inspection	DR273	8/26/1998	Tributyltin as ion	4.00E-03 J	1.66	2.41E-01					
EPA Site Inspection	DR266	8/26/1998	Tributyltin as ion	3.00E-03 J	1.38	2.17E-01					
LDWRI-Benthic	B10b	8/19/2004	Tributyltin as ion	2.30E-03	1.09	2.11E-01					
EPA Site Inspection	DR270	8/26/1998	Tributyltin as ion	2.00E-03 J	1.32	1.52E-01					
EPA Site Inspection	DR285	8/25/1998	Vanadium	7.00E+01	3.39	2.06E+03					
EPA Site Inspection	DR263	8/25/1998	Vanadium	6.90E+01	2.9	2.38E+03					
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	Vanadium	6.84E+01	2.98	2.30E+03					
LDWRI-Surface Sediment Round 2	LDW-SS133	3/9/2005	Vanadium	6.84E+01	2.59	2.64E+03					
LDWRI-Surface Sediment Round 2	LDW-SS135	3/15/2005	Vanadium	6.59E+01	2.28	2.89E+03					
LDWRI-Surface Sediment Round 2	LDW-SS146	3/9/2005	Vanadium	6.54E+01	2.4	2.73E+03					
EPA Site Inspection	DR268	8/26/1998	Vanadium	6.10E+01	2.1	2.90E+03					
LDWRI-Surface Sediment Round 2	LDW-SS147	3/9/2005	Vanadium	6.10E+01	2.12	2.88E+03					
LDWRI-Surface Sediment Round 2	LDW-SS139	3/9/2005	Vanadium	6.08E+01	1.67	3.64E+03					
LDWRI-Surface Sediment Round 2	LDW-SS141	3/15/2005	Vanadium	6.01E+01	2.82	2.13E+03					
EPA Site Inspection	DR287	8/26/1998	Vanadium	5.90E+01	1.31	4.50E+03					
LDWRI-Surface Sediment Round 2	LDW-SS136	3/15/2005	Vanadium	5.61E+01	1.56	3.60E+03					
EPA Site Inspection	DR293	9/14/1998	Vanadium	5.60E+01	1.74	3.22E+03					
LDWRI-Surface Sediment Round 2	LDW-SS148	3/9/2005	Vanadium	5.60E+01	2.55	2.20E+03					
EPA Site Inspection	DR276	9/15/1998	Vanadium	5.60E+01	1.51	3.71E+03					
EPA Site Inspection	DR266	8/26/1998	Vanadium	5.40E+01	1.38	3.91E+03					
EPA Site Inspection	DR269	8/26/1998	Vanadium	5.40E+01	0.9	6.00E+03					
EPA Site Inspection	DR273	8/26/1998	Vanadium	5.20E+01	1.66	3.13E+03					
LDWRI-Surface Sediment Round 1	LDW-SS134	1/24/2005	Vanadium	5.17E+01	0.39	1.33E+04					
EPA Site Inspection	DR275	9/15/1998	Vanadium	5.00E+01	1.06	4.72E+03					
EPA Site Inspection	DR274	9/15/1998	Vanadium	5.00E+01	1.39	3.60E+03					
LDWRI-Surface Sediment Round 3	LDW-SS340	10/3/2006	Vanadium	4.99E+01	1.8	2.77E+03					

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
LDWRI-Surface Sediment Round 2	LDW-SS149	3/9/2005	Vanadium	4.94E+01	2.08	2.38E+03					
LDWRI-Surface Sediment Round 2	LDW-SS140	3/8/2005	Vanadium	4.91E+01	1.52	3.23E+03					
EPA Site Inspection	DR265	8/26/1998	Vanadium	4.90E+01	1.03	4.76E+03					
LDWRI-Surface Sediment Round 2	LDW-SS145	3/14/2005	Vanadium	4.72E+01	0.189	2.50E+04					
EPA Site Inspection	DR267	8/26/1998	Vanadium	4.70E+01	0.85	5.53E+03					
LDWRI-Surface Sediment Round 2	LDW-SS150	3/9/2005	Vanadium	4.66E+01	1.79	2.60E+03					
LDWRI-Benthic	B10b	8/19/2004	Vanadium	4.61E+01	1.09	4.23E+03					
EPA Site Inspection	DR264	8/26/1998	Vanadium	4.60E+01	1.48	3.11E+03					
LDWRI-Surface Sediment Round 2	LDW-SS152	3/15/2008	Vanadium	4.49E+01	0.236	1.90E+04					
LDWRI-Surface Sediment Round 2	LDW-SS151	3/15/2008	Vanadium	4.30E+01	0.516	8.33E+03					
EPA Site Inspection	DR270	8/26/1998	Vanadium	4.10E+01	1.32	3.11E+03					
LDWRI-Surface Sediment Round 3	LDW-SS339	10/3/2006	Vanadium	4.07E+01	2.04	2.00E+03					
EPA Site Inspection	DR295	9/15/1998	Vanadium	3.60E+01	0.15	2.40E+04					
EPA Site Inspection	DR294	9/15/1998	Vanadium	3.40E+01	0.15	2.27E+04					
EPA Site Inspection	DR296	9/15/1998	Vanadium	2.90E+01	0.65	4.46E+03					
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Zinc	1.16E+02	1.16	1.00E+04	410	960	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	Zinc	1.13E+02	2.98	3.79E+03	410	960	mg/kg DW	<1	<1
EPA Site Inspection	DR285	8/25/1998	Zinc	1.05E+02	3.39	3.10E+03	410	960	mg/kg DW	<1	<1
EPA Site Inspection	DR263	8/25/1998	Zinc	9.90E+01	2.9	3.41E+03	410	960	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS133	3/9/2005	Zinc	9.90E+01	2.59	3.82E+03	410	960	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS148	3/9/2005	Zinc	9.70E+01	2.55	3.80E+03	410	960	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2099-D	3/3/2011	Zinc	8.90E+01 J	4.01	2.22E+03	410	960	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS147	3/9/2005	Zinc	8.60E+01	2.12	4.06E+03	410	960	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-114	5/9/2008	Zinc	8.20E+01 B	2.18	3.76E+03	410	960	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS135	3/15/2005	Zinc	8.01E+01	2.28	3.51E+03	410	960	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS146	3/9/2005	Zinc	8.00E+01	2.4	3.33E+03	410	960	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2201-D	3/18/2011	Zinc	7.90E+01	2.58	3.06E+03	410	960	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DRB-113	5/9/2008	Zinc	7.80E+01 B	1.9	4.11E+03	410	960	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 3	LDW-SS340	10/3/2006	Zinc	7.60E+01	1.8	4.22E+03	410	960	mg/kg DW	<1	<1
EPA Site Inspection	DR276	9/15/1998	Zinc	7.60E+01	1.51	5.03E+03	410	960	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	Zinc	7.50E+01	1.7	4.41E+03	410	960	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2201-U	3/18/2011	Zinc	7.40E+01	1.69	4.38E+03	410	960	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS139	3/9/2005	Zinc	7.10E+01	1.67	4.25E+03	410	960	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS141	3/15/2005	Zinc	7.10E+01	2.82	2.52E+03	410	960	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	Zinc	7.10E+01	2.33	3.05E+03	410	960	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2200-D	3/18/2011	Zinc	7.10E+01	2.38	2.98E+03	410	960	mg/kg DW	<1	<1
EPA Site Inspection	DR287	8/26/1998	Zinc	6.90E+01	1.31	5.27E+03	410	960	mg/kg DW	<1	<1
EPA Site Inspection	DR266	8/26/1998	Zinc	6.70E+01	1.38	4.86E+03	410	960	mg/kg DW	<1	<1
EPA Site Inspection	DR269	8/26/1998	Zinc	6.70E+01	0.9	7.44E+03	410	960	mg/kg DW	<1	<1
EPA Site Inspection	DR273	8/26/1998	Zinc	6.70E+01	1.66	4.04E+03	410	960	mg/kg DW	<1	<1
EPA Site Inspection	DR293	9/14/1998	Zinc	6.60E+01	1.74	3.79E+03	410	960	mg/kg DW	<1	<1

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
LDWRI-Surface Sediment Round 2	LDW-SS136	3/15/2005	Zinc	6.59E+01	1.56	4.22E+03	410	960	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS149	3/9/2005	Zinc	6.50E+01	2.08	3.13E+03	410	960	mg/kg DW	<1	<1
EPA Site Inspection	DR268	8/26/1998	Zinc	6.40E+01	2.1	3.05E+03	410	960	mg/kg DW	<1	<1
EPA Site Inspection	DR264	8/26/1998	Zinc	6.10E+01	1.48	4.12E+03	410	960	mg/kg DW	<1	<1
EPA Site Inspection	DR265	8/26/1998	Zinc	6.10E+01	1.03	5.92E+03	410	960	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS150	3/9/2005	Zinc	5.97E+01	1.79	3.34E+03	410	960	mg/kg DW	<1	<1
KC Water Quality Assessment	WQAHAMM	6/3/1997	Zinc	5.91E+01	1.95	3.03E+03	410	960	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-05	4/28/2008	Zinc	5.80E+01 B	0.394	1.47E+04	410	960	mg/kg DW	<1	<1
EPA Site Inspection	DR267	8/26/1998	Zinc	5.70E+01	0.85	6.71E+03	410	960	mg/kg DW	<1	<1
Norfolk-cleanup1	NFK016	8/22/1994	Zinc	5.70E+01	1.1	5.18E+03	410	960	mg/kg DW	<1	<1
EPA Site Inspection	DR270	8/26/1998	Zinc	5.60E+01	1.32	4.24E+03	410	960	mg/kg DW	<1	<1
EPA Site Inspection	DR274	9/15/1998	Zinc	5.60E+01	1.39	4.03E+03	410	960	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	OR-11	May-08	Zinc	5.40E+01 B	1.58	3.42E+03	410	960	mg/kg DW	<1	<1
EPA Site Inspection	DR275	9/15/1998	Zinc	5.30E+01	1.06	5.00E+03	410	960	mg/kg DW	<1	<1
KC Water Quality Assessment	WQAHAMM	5/15/1997	Zinc	5.25E+01	1.75	3.00E+03	410	960	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2098-A	3/4/2011	Zinc	5.20E+01	1.25	4.16E+03	410	960	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	Zinc	5.20E+01 J	2.2	2.36E+03	410	960	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS140	3/8/2005	Zinc	5.19E+01	1.52	3.41E+03	410	960	mg/kg DW	<1	<1
LDWRI-Benthic	B10b	8/19/2004	Zinc	5.14E+01	1.09	4.72E+03	410	960	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 3	LDW-SS339	10/3/2006	Zinc	5.10E+01	2.04	2.50E+03	410	960	mg/kg DW	<1	<1
KC Water Quality Assessment	WQAHAMM	5/20/1997	Zinc	4.99E+01	1.77	2.82E+03	410	960	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS151	3/15/2008	Zinc	4.96E+01	0.516	9.61E+03	410	960	mg/kg DW	<1	<1
KC Water Quality Assessment	WQAHAMM	5/28/1997	Zinc	4.89E+01	1.56	3.13E+03	410	960	mg/kg DW	<1	<1
Norfolk-cleanup1	NFK015	8/22/1994	Zinc	4.80E+01	3	1.60E+03	410	960	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS152	3/15/2008	Zinc	4.78E+01	0.236	2.03E+04	410	960	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 2	LDW-SS145	3/14/2005	Zinc	4.74E+01 J	0.189	2.51E+04	410	960	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-11	4/28/2008	Zinc	4.70E+01 B	0.296	1.59E+04	410	960	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Zinc	4.70E+01 J	1.86	2.53E+03	410	960	mg/kg DW	<1	<1
EPA Site Inspection	DR295	9/15/1998	Zinc	4.70E+01	0.15	3.13E+04	410	960	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-01	4/28/2008	Zinc	4.60E+01	0.814	5.65E+03	410	960	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2098-U	3/4/2011	Zinc	4.50E+01	0.844	5.33E+03	410	960	mg/kg DW	<1	<1
Norfolk-cleanup1	NFK014	8/19/1994	Zinc	4.50E+01	0.07	6.43E+04	410	960	mg/kg DW	<1	<1
EPA Site Inspection	DR294	9/15/1998	Zinc	4.40E+01	0.15	2.93E+04	410	960	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-03	4/28/2008	Zinc	4.30E+01 B	0.216	1.99E+04	410	960	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-04	4/28/2008	Zinc	4.30E+01 B	0.455	9.45E+03	410	960	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-09	4/28/2008	Zinc	4.30E+01 B	0.3	1.43E+04	410	960	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-10	4/28/2008	Zinc	4.30E+01 B	0.643	6.69E+03	410	960	mg/kg DW	<1	<1
EPA Site Inspection	DR296	9/15/1998	Zinc	4.30E+01	0.65	6.62E+03	410	960	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	OR-12	May-08	Zinc	4.20E+01 B	0.413	1.02E+04	410	960	mg/kg DW	<1	<1

**Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
										SQS	CSL
Duwamish River RM 4.9 to 7.4	DR-06	4/28/2008	Zinc	4.10E+01 B	0.392	1.05E+04	410	960	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-07	4/28/2008	Zinc	4.10E+01 B	0.892	4.60E+03	410	960	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-02	4/28/2008	Zinc	4.00E+01	1.27	3.15E+03	410	960	mg/kg DW	<1	<1
LDWRI-Surface Sediment Round 1	LDW-SS134	1/24/2005	Zinc	3.82E+01	0.39	9.79E+03	410	960	mg/kg DW	<1	<1
Duwamish River RM 4.9 to 7.4	DR-12	4/28/2008	Zinc	2.70E+01 B	1.12	2.41E+03	410	960	mg/kg DW	<1	<1

mg/kg - Milligram per kilogram

ug/kg - Microgram per kilogram

DW - Dry weight

TOC - Total Organic Carbon

OC - Organic carbon normalized

SQS - SMS Sediment Quality Standard

CSL - SMS Cleanup Screening Level

SMS - Sediment Management Standard (Washington Administrative Code 173-204)

PAHs - Polycyclic aromatic hydrocarbons

SVOCs - Semi-volatile organic compounds

PCB - Polychlorinated biphenyl

J - Estimated value between the method detection limit and the laboratory reporting limit

LDW - Lower Duwamish Waterway

TEQ - Toxic Equivalency

Table presents detected chemicals only.

Exceedance factors are the ratio of the detected concentrations to the CSL or SQS; exceedance factors are shown only if they are greater than 1.

Sampling events are listed in Table 2.

^a Due to the TOC in this sample, results were compared to the Lowest Apparent Effects Threshold (LAET) or the second LAET (2LAET) value rather than the SQS and/or CSL. The LAET is functionally equivalent to the SQS and the 2LAET is functionally equivalent to the CSL. OC-normalization is not considered to be appropriate for when TOC concentrations are less than or equal to 0.5 percent or greater than or equal to 4.0 percent.

Table A-1a
Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area

The following surface sediment samples collected near the Restoration Areas source control area were added to the sediment data set during the preparation of the SCAP. These samples were collected between RM 4.8 and 5.8 West.

Event Name	Location Name	Date Collected
Norfolk Cleanup 1	NFK14	8/19/1994
	NFK15	8/22/1994
	NFK16	8/22/1994
	NFK17	8/22/1994
	NFK18	8/22/1994
NOAA Site Characterization	EIT046	10/14/1997
	EST103	10/14/1997
	EST108	10/14/1997
	WIT247	10/1/1997
	WIT248	10/2/1997
	WIT254	10/17/1997
EPA Site Inspection	DR274	9/15/1998
	DR275	9/15/1998
	DR276	9/15/1998
	DR294	9/15/1998
	DR295	9/15/1998
	DR296	9/15/1998
LDWRI-Surface Sediment Round 2	LDW-SS145	3/14/2005
	LDW-SS151	3/15/2005
	LDW-SS152	3/15/2005
Duwamish River RM 4.9 to 7.4	DR-01	4/28/2008
	DR-02	4/28/2008

Table A-1b
Comparison of Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area
to Lower Duwamish Waterway Background Concentrations

Event Name	Location Name	Date Collected	Chemical	Conc'n	Units	LDW Background	Units	Exceedance Factor
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Arsenic	258	mg/kg DW	7	mg/kg DW	37
LDWRI-Surface Sediment Round 2	LDW-SS148	3/9/2005	Arsenic	15.6	mg/kg DW	7	mg/kg DW	2.2
EPA Site Inspection	DR263	8/25/1998	Arsenic	13.8	mg/kg DW	7	mg/kg DW	2.0
KC Water Quality Assessment	WQAHAMM	6/3/1997	Arsenic	13	mg/kg DW	7	mg/kg DW	1.9
EPA Site Inspection	DR285	8/25/1998	Arsenic	12.3	mg/kg DW	7	mg/kg DW	1.8
EPA Site Inspection	DR266	8/26/1998	Arsenic	12	mg/kg DW	7	mg/kg DW	1.7
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	Arsenic	12	mg/kg DW	7	mg/kg DW	1.7
EPA Site Inspection	DR265	8/26/1998	Arsenic	11.5	mg/kg DW	7	mg/kg DW	1.6
KC Water Quality Assessment	WQAHAMM	5/28/1997	Arsenic	11	mg/kg DW	7	mg/kg DW	1.6
LDW Outfall Sampling	LDW-SS2201-U	3/18/2011	Arsenic	11	mg/kg DW	7	mg/kg DW	1.6
KC Water Quality Assessment	WQAHAMM	5/15/1997	Arsenic	11	mg/kg DW	7	mg/kg DW	1.6
KC Water Quality Assessment	WQAHAMM	5/20/1997	Arsenic	11	mg/kg DW	7	mg/kg DW	1.6
EPA Site Inspection	DR273	8/26/1998	Arsenic	10.7	mg/kg DW	7	mg/kg DW	1.5
EPA Site Inspection	DR270	8/26/1998	Arsenic	10.6	mg/kg DW	7	mg/kg DW	1.5
Duwamish River RM 4.9 to 7.4	DRB-112	5/9/2008	Arsenic	10 B	mg/kg dw	7	mg/kg DW	1.4
EPA Site Inspection	DR264	8/26/1998	Arsenic	10	mg/kg DW	7	mg/kg DW	1.4
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	Arsenic	10	mg/kg DW	7	mg/kg DW	1.4
LDW Outfall Sampling	LDW-SS2200-D	3/18/2011	Arsenic	10	mg/kg DW	7	mg/kg DW	1.4
LDW Outfall Sampling	LDW-SS2201-D	3/18/2011	Arsenic	10	mg/kg DW	7	mg/kg DW	1.4
LDWRI-Surface Sediment Round 2	LDW-SS133	3/9/2005	Arsenic	10	mg/kg DW	7	mg/kg DW	1.4
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	Arsenic	10	mg/kg DW	7	mg/kg DW	1.4
LDWRI-Surface Sediment Round 2	LDW-SS135	3/15/2005	Arsenic	9.8	mg/kg DW	7	mg/kg DW	1.4
Duwamish River RM 4.9 to 7.4	DRB-114	5/9/2008	Arsenic	9.7	mg/kg dw	7	mg/kg DW	1.4
Norfolk-cleanup1	NFK014	8/19/1994	Arsenic	9.7	mg/kg dw	7	mg/kg DW	1.4
Duwamish River RM 4.9 to 7.4	DRB-113	5/9/2008	Arsenic	9.5	mg/kg dw	7	mg/kg DW	1.4
EPA Site Inspection	DR276	9/15/1998	Arsenic	9.5	mg/kg DW	7	mg/kg DW	1.4
LDWRI-Surface Sediment Round 2	LDW-SS147	3/9/2005	Arsenic	8.7	mg/kg DW	7	mg/kg DW	1.2
Duwamish River RM 4.9 to 7.4	DR-05	4/28/2008	Arsenic	8.6	mg/kg dw	7	mg/kg DW	1.2
EPA Site Inspection	DR287	8/26/1998	Arsenic	8.5	mg/kg DW	7	mg/kg DW	1.2
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	Arsenic	8.3	mg/kg DW	7	mg/kg DW	1.2
EPA Site Inspection	DR269	8/26/1998	Arsenic	8	mg/kg DW	7	mg/kg DW	1.1
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Arsenic	8	mg/kg DW	7	mg/kg DW	1.1
EPA Site Inspection	DR268	8/26/1998	Arsenic	8	mg/kg DW	7	mg/kg DW	1.1
EPA Site Inspection	DR275	9/15/1998	Arsenic	7.4	mg/kg DW	7	mg/kg DW	1.1
EPA Site Inspection	DR267	8/26/1998	Arsenic	7.2	mg/kg DW	7	mg/kg DW	1.0
LDWRI-Surface Sediment Round 2	LDW-SS146	3/9/2005	Arsenic	7.1	mg/kg DW	7	mg/kg DW	1.0
LDW Outfall Sampling	LDW-SS2098-A	3/4/2011	Arsenic	7	mg/kg DW	7	mg/kg DW	1.0
EPA Site Inspection	DR293	9/14/1998	Arsenic	7	mg/kg DW	7	mg/kg DW	1.0
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	Arsenic	7	mg/kg DW	7	mg/kg DW	1.0

Table A-1b
Comparison of Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area
to Lower Duwamish Waterway Background Concentrations

Event Name	Location Name	Date Collected	Chemical	Conc'n	Units	LDW Background	Units	Exceedance Factor
Duwamish River RM 4.9 to 7.4	DRB-116	5/9/2008	Arsenic	6.9 B	mg/kg dw	7	mg/kg DW	<1
Duwamish River RM 4.9 to 7.4	DRB-115	5/9/2008	Arsenic	6.8 B	mg/kg dw	7	mg/kg DW	<1
LDWRI-Surface Sediment Round 2	LDW-SS139	3/9/2005	Arsenic	6.8	mg/kg DW	7	mg/kg DW	<1
LDWRI-Surface Sediment Round 2	LDW-SS141	3/15/2005	Arsenic	6.7	mg/kg DW	7	mg/kg DW	<1
LDWRI-Surface Sediment Round 3	LDW-SS340	10/3/2006	Arsenic	6.6	mg/kg DW	7	mg/kg DW	<1
LDWRI-Dioxin Sampling	LDW-SS544-	1/12/2010	Arsenic	6.4	mg/kg DW	7	mg/kg DW	<1
LDWRI-Surface Sediment Round 2	LDW-SS149	3/9/2005	Arsenic	6.4	mg/kg DW	7	mg/kg DW	<1
Duwamish River RM 4.9 to 7.4	OR-11	May-08	Arsenic	6.3	mg/kg dw	7	mg/kg DW	<1
LDWRI-Surface Sediment Round 3	LDW-SS339	10/3/2006	Arsenic	6.2	mg/kg DW	7	mg/kg DW	<1
EPA Site Inspection	DR274	9/15/1998	Arsenic	6.1	mg/kg DW	7	mg/kg DW	<1
Duwamish River RM 4.9 to 7.4	DR-01	4/28/2008	Arsenic	6.1	mg/kg DW	7	mg/kg DW	<1
LDWRI-Surface Sediment Round 2	LDW-SS150	3/9/2005	Arsenic	5.8	mg/kg DW	7	mg/kg DW	<1
Duwamish River RM 4.9 to 7.4	DR-10	4/28/2008	Arsenic	5.7	mg/kg dw	7	mg/kg DW	<1
Duwamish River RM 4.9 to 7.4	DR-07	4/28/2008	Arsenic	5.6	mg/kg dw	7	mg/kg DW	<1
LDWRI-Surface Sediment Round 2	LDW-SS136	3/15/2005	Arsenic	5.6	mg/kg DW	7	mg/kg DW	<1
Duwamish River RM 4.9 to 7.4	DRB-117	5/9/2008	Arsenic	5.5 B	mg/kg dw	7	mg/kg DW	<1
EPA Site Inspection	DR296	9/15/1998	Arsenic	5.3	mg/kg DW	7	mg/kg DW	<1
Duwamish River RM 4.9 to 7.4	DR-02	4/28/2008	Arsenic	5.3	mg/kg DW	7	mg/kg DW	<1
Duwamish River RM 4.9 to 7.4	DR-03	4/28/2008	Arsenic	5.1	mg/kg dw	7	mg/kg DW	<1
LDWRI-Benthic	B10b	8/19/2004	Arsenic	5.05 J	mg/kg DW	7	mg/kg DW	<1
LDWRI-Surface Sediment Round 2	LDW-SS140	3/8/2005	Arsenic	5	mg/kg DW	7	mg/kg DW	<1
Duwamish River RM 4.9 to 7.4	DR-04	4/28/2008	Arsenic	4.9	mg/kg dw	7	mg/kg DW	<1
Duwamish River RM 4.9 to 7.4	OR-12	May-08	Arsenic	4.9	mg/kg dw	7	mg/kg DW	<1
EPA Site Inspection	DR295	9/15/1998	Arsenic	4.9	mg/kg DW	7	mg/kg DW	<1
Duwamish River RM 4.9 to 7.4	DR-09	4/28/2008	Arsenic	4.8	mg/kg dw	7	mg/kg DW	<1
Duwamish River RM 4.9 to 7.4	DR-06	4/28/2008	Arsenic	4.7	mg/kg dw	7	mg/kg DW	<1
Duwamish River RM 4.9 to 7.4	DR-11	4/28/2008	Arsenic	4.7	mg/kg dw	7	mg/kg DW	<1
LDWRI-Surface Sediment Round 2	LDW-SS152	3/15/2005	Arsenic	4.7	mg/kg DW	7	mg/kg DW	<1
EPA Site Inspection	DR294	9/15/1998	Arsenic	4.6	mg/kg DW	7	mg/kg DW	<1
LDWRI-Surface Sediment Round 2	LDW-SS145	3/15/2005	Arsenic	4.5	mg/kg DW	7	mg/kg DW	<1
LDWRI-Surface Sediment Round 2	LDW-SS151	3/15/2005	Arsenic	4.1	mg/kg DW	7	mg/kg DW	<1
Duwamish River RM 4.9 to 7.4	DR-12	4/28/2008	Arsenic	3.7	mg/kg dw	7	mg/kg DW	<1
LDWRI-Surface Sediment Round 1	LDW-SS134	1/24/2005	Arsenic	3.5	mg/kg DW	7	mg/kg DW	<1
EPA Site Inspection	DR268	8/26/1998	Carcinogenic PAHs (calc'd)	1,210	ug/kg DW	9	ug/kg DW	134
EPA Site Inspection	DR293	9/14/1998	Carcinogenic PAHs (calc'd)	1,070	ug/kg DW	9	ug/kg DW	119
EPA Site Inspection	DR273	8/26/1998	Carcinogenic PAHs (calc'd)	980	ug/kg DW	9	ug/kg DW	109
EPA Site Inspection	DR285	8/25/1998	Carcinogenic PAHs (calc'd)	850	ug/kg DW	9	ug/kg DW	94
EPA Site Inspection	DR263	8/25/1998	Carcinogenic PAHs (calc'd)	660	ug/kg DW	9	ug/kg DW	73
EPA Site Inspection	DR274	9/15/1998	Carcinogenic PAHs (calc'd)	620	ug/kg DW	9	ug/kg DW	69

Table A-1b
Comparison of Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area
to Lower Duwamish Waterway Background Concentrations

Event Name	Location Name	Date Collected	Chemical	Conc'n	Units	LDW Background	Units	Exceedance Factor
EPA Site Inspection	DR276	9/15/1998	Carcinogenic PAHs (calc'd)	500	ug/kg DW	9	ug/kg DW	56
EPA Site Inspection	DR287	8/26/1998	Carcinogenic PAHs (calc'd)	480	ug/kg DW	9	ug/kg DW	53
EPA Site Inspection	DR269	8/26/1998	Carcinogenic PAHs (calc'd)	460	ug/kg DW	9	ug/kg DW	51
EPA Site Inspection	DR264	8/26/1998	Carcinogenic PAHs (calc'd)	430	ug/kg DW	9	ug/kg DW	48
EPA Site Inspection	DR265	8/26/1998	Carcinogenic PAHs (calc'd)	420	ug/kg DW	9	ug/kg DW	47
EPA Site Inspection	DR266	8/26/1998	Carcinogenic PAHs (calc'd)	420	ug/kg DW	9	ug/kg DW	47
EPA Site Inspection	DR267	8/26/1998	Carcinogenic PAHs (calc'd)	380	ug/kg DW	9	ug/kg DW	42
EPA Site Inspection	DR270	8/26/1998	Carcinogenic PAHs (calc'd)	350	ug/kg DW	9	ug/kg DW	39
KC Water Quality Assessment	WQAHAMM	6/3/1997	Carcinogenic PAHs (calc'd)	345.2	ug/kg DW	9	ug/kg DW	38
KC Water Quality Assessment	WQAHAMM	5/15/1997	Carcinogenic PAHs (calc'd)	193.4	ug/kg DW	9	ug/kg DW	21
EPA Site Inspection	DR275	9/15/1998	Carcinogenic PAHs (calc'd)	180	ug/kg DW	9	ug/kg DW	20
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	Carcinogenic PAHs (calc'd)	110 J	ug/kg DW	9	ug/kg DW	12
Duwamish River RM 4.9 to 7.4	DRB-114	5/9/2008	Carcinogenic PAHs (calc'd)	89.87 J	ug/kg dw	9	ug/kg DW	10
KC Water Quality Assessment	WQAHAMM	5/28/1997	Carcinogenic PAHs (calc'd)	89.7	ug/kg DW	9	ug/kg DW	10
KC Water Quality Assessment	WQAHAMM	5/20/1997	Carcinogenic PAHs (calc'd)	77	ug/kg DW	9	ug/kg DW	8.6
Duwamish River RM 4.9 to 7.4	DRB-113	5/9/2008	Carcinogenic PAHs (calc'd)	70.45 J	ug/kg dw	9	ug/kg DW	7.8
LDW Outfall Sampling	LDW-SS2099-D	3/3/2011	Carcinogenic PAHs (calc'd)	39	ug/kg DW	9	ug/kg DW	4.3
LDW Outfall Sampling	LDW-SS2200-D	3/18/2011	Carcinogenic PAHs (calc'd)	35 J	ug/kg DW	9	ug/kg DW	3.9
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	Carcinogenic PAHs (calc'd)	31 J	ug/kg DW	9	ug/kg DW	3.4
Duwamish River RM 4.9 to 7.4	OR-11	May-08	Carcinogenic PAHs (calc'd)	29.43 J	ug/kg dw	9	ug/kg DW	3.3
LDWRI-Dioxin Sampling	LDW-SS544-	1/12/2010	Carcinogenic PAHs (calc'd)	29 J	ug/kg DW	9	ug/kg DW	3.2
EPA Site Inspection	DR294	9/15/1998	Carcinogenic PAHs (calc'd)	29	ug/kg DW	9	ug/kg DW	3.2
LDW Outfall Sampling	LDW-SS2201-U	3/18/2011	Carcinogenic PAHs (calc'd)	26 J	ug/kg DW	9	ug/kg DW	2.9
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	Carcinogenic PAHs (calc'd)	20 J	ug/kg DW	9	ug/kg DW	2.2
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	Carcinogenic PAHs (calc'd)	19 J	ug/kg DW	9	ug/kg DW	2.1
LDW Outfall Sampling	LDW-SS2201-D	3/18/2011	Carcinogenic PAHs (calc'd)	19 J	ug/kg DW	9	ug/kg DW	2.1
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	Carcinogenic PAHs (calc'd)	17 J	ug/kg DW	9	ug/kg DW	1.9
Duwamish River RM 4.9 to 7.4	DRB-115	5/9/2008	Carcinogenic PAHs (calc'd)	14.818	ug/kg dw	9	ug/kg DW	1.6
Duwamish River RM 4.9 to 7.4	DRB-117	5/9/2008	Carcinogenic PAHs (calc'd)	13.462	ug/kg dw	9	ug/kg DW	1.5
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	Carcinogenic PAHs (calc'd)	13 J	ug/kg DW	9	ug/kg DW	1.4
Duwamish River RM 4.9 to 7.4	DRB-112	5/9/2008	Carcinogenic PAHs (calc'd)	12.445 J	ug/kg dw	9	ug/kg DW	1.4
Duwamish River RM 4.9 to 7.4	DR-07	4/28/2008	Carcinogenic PAHs (calc'd)	9.726 J	ug/kg dw	9	ug/kg DW	1.1
Duwamish River RM 4.9 to 7.4	DRB-116	5/9/2008	Carcinogenic PAHs (calc'd)	9.445 J	ug/kg dw	9	ug/kg DW	1.0
Duwamish River RM 4.9 to 7.4	DR-11	4/28/2008	Carcinogenic PAHs (calc'd)	2.082 J	ug/kg dw	9	ug/kg DW	<1
Duwamish River RM 4.9 to 7.4	DR-05	4/28/2008	Carcinogenic PAHs (calc'd)	2.0774 J	ug/kg dw	9	ug/kg DW	<1
Duwamish River RM 4.9 to 7.4	DR-12	4/28/2008	Carcinogenic PAHs (calc'd)	2.0751 J	ug/kg dw	9	ug/kg DW	<1
Duwamish River RM 4.9 to 7.4	DR-03	4/28/2008	Carcinogenic PAHs (calc'd)	1.9879 J	ug/kg dw	9	ug/kg DW	<1

Table A-1b
Comparison of Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area
to Lower Duwamish Waterway Background Concentrations

Event Name	Location Name	Date Collected	Chemical	Conc'n	Units	LDW Background	Units	Exceedance Factor
Duwamish River RM 4.9 to 7.4	DR-04	4/28/2008	Carcinogenic PAHs (calc'd)	0.8804 J	ug/kg dw	9	ug/kg DW	<1
Duwamish River RM 4.9 to 7.4	OR-12	May-08	Carcinogenic PAHs (calc'd)	0.8714 J	ug/kg dw	9	ug/kg DW	<1
Duwamish River RM 4.9 to 7.4	DR-08	4/28/2008	Carcinogenic PAHs (calc'd)	0.8242 J	ug/kg dw	9	ug/kg DW	<1
Duwamish River RM 4.9 to 7.4	DR-10	4/28/2008	Carcinogenic PAHs (calc'd)	0.8 J	ug/kg dw	9	ug/kg DW	<1
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	Dioxin/Furan TEQ	15.4 J	ng/kg	2	ng/kg	7.7
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	Dioxin/Furan TEQ	3.79 J	ng/kg	2	ng/kg	1.9
LDWRI-Dioxin Sampling	LDW-SS544-comp	1/12/2010	Dioxin/Furan TEQ	3.73 J	ng/kg	2	ng/kg	1.9
Duwamish River RM 4.9 to 7.4	DRB-114	5/9/2008	Dioxin/Furan TEQ	2.2482 J	ng/kg	2	ng/kg	1.1
Duwamish River RM 4.9 to 7.4	DRB-113	5/9/2008	Dioxin/Furan TEQ	1.7842 J	ng/kg	2	ng/kg	<1
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	Dioxin/Furan TEQ	1.57 J	ng/kg	2	ng/kg	<1
Duwamish River RM 4.9 to 7.4	DRB-117	5/9/2008	Dioxin/Furan TEQ	1.323 J	ng/kg	2	ng/kg	<1
Duwamish River RM 4.9 to 7.4	DRB-112	5/9/2008	Dioxin/Furan TEQ	1.2414 J	ng/kg	2	ng/kg	<1
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	Dioxin/Furan TEQ	1.22 J	ng/kg	2	ng/kg	<1
Duwamish River RM 4.9 to 7.4	DRB-115	5/9/2008	Dioxin/Furan TEQ	1.1182 J	ng/kg	2	ng/kg	<1
Duwamish River RM 4.9 to 7.4	DRB-116	5/9/2008	Dioxin/Furan TEQ	1.0033 J	ng/kg	2	ng/kg	<1
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	Dioxin/Furan TEQ	0.800 J	ng/kg	2	ng/kg	<1
Duwamish River RM 4.9 to 7.4	OR-11	May-08	Dioxin/Furan TEQ	0.6111 J	ng/kg	2	ng/kg	<1
LDW Outfall Sampling	LDW-SS2098-A	3/4/2011	Dioxin/Furan TEQ	0.294 J	ng/kg	2	ng/kg	<1
Duwamish River RM 4.9 to 7.4	DR-01	4/28/2008	Dioxin/Furan TEQ	0.287	ng/kg	2	ng/kg	<1
Duwamish River RM 4.9 to 7.4	DR-12	4/28/2008	Dioxin/Furan TEQ	0.2619	ng/kg	2	ng/kg	<1
Duwamish River RM 4.9 to 7.4	OR-12	May-08	Dioxin/Furan TEQ	0.1803 J	ng/kg	2	ng/kg	<1
Duwamish River RM 4.9 to 7.4	DR-10	4/28/2008	Dioxin/Furan TEQ	0.1569 J	ng/kg	2	ng/kg	<1
Duwamish River RM 4.9 to 7.4	DR-09	4/28/2008	Dioxin/Furan TEQ	0.1351 J	ng/kg	2	ng/kg	<1
Duwamish River RM 4.9 to 7.4	DR-11	4/28/2008	Dioxin/Furan TEQ	0.1136 J	ng/kg	2	ng/kg	<1
Duwamish River RM 4.9 to 7.4	DR-08	4/28/2008	Dioxin/Furan TEQ	0.0841 J	ng/kg	2	ng/kg	<1
LDWRI-Surface Sediment Round 2	LDW-SS148	3/9/2005	PCBs (total calc'd)	520	ug/kg DW	2	ug/kg DW	260
NOAA Site Characterization	WIT258	10/1/1997	PCBs (total calc'd)	340	ug/kg DW	2	ug/kg DW	170
LDWRI-Surface Sediment Round 2	LDW-SS135	3/15/2005	PCBs (total calc'd)	240	ug/kg DW	2	ug/kg DW	120
LDWRI-Dioxin Sampling	LDW-SS544-comp	1/12/2010	PCBs (total calc'd)	127	ug/kg DW	2	ug/kg DW	64
LDWRI-Surface Sediment Round 2	LDW-SS149	3/9/2005	PCBs (total calc'd)	98	ug/kg DW	2	ug/kg DW	49
LDWRI-Surface Sediment Round 3	LDW-SS340	10/3/2006	PCBs (total calc'd)	88 J	ug/kg DW	2	ug/kg DW	44
LDWRI-Surface Sediment Round 3	LDW-SS339	10/3/2006	PCBs (total calc'd)	60	ug/kg DW	2	ug/kg DW	30
NOAA Site Characterization	WST303	10/23/1997	PCBs (total calc'd)	60	ug/kg DW	2	ug/kg DW	30
LDWRI-Surface Sediment Round 2	LDW-SS150	3/9/2005	PCBs (total calc'd)	54	ug/kg DW	2	ug/kg DW	27
EPA Site Inspection	DR285	8/25/1998	PCBs (total calc'd)	53	ug/kg DW	2	ug/kg DW	27
NOAA Site Characterization	WIT259	10/1/1997	PCBs (total calc'd)	51	ug/kg DW	2	ug/kg DW	26
EPA Site Inspection	DR266	8/26/1998	PCBs (total calc'd)	51	ug/kg DW	2	ug/kg DW	26
EPA Site Inspection	DR264	8/26/1998	PCBs (total calc'd)	51	ug/kg DW	2	ug/kg DW	26

Table A-1b
Comparison of Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area
to Lower Duwamish Waterway Background Concentrations

Event Name	Location Name	Date Collected	Chemical	Conc'n	Units	LDW Background	Units	Exceedance Factor
EPA Site Inspection	DR263	8/25/1998	PCBs (total calc'd)	50	ug/kg DW	2	ug/kg DW	25
NOAA Site Characterization	EIT046	10/14/1997	PCBs (total calc'd)	47 J	ug/kg DW	2	ug/kg DW	24
NOAA Site Characterization	WIT257	10/2/1997	PCBs (total calc'd)	46	ug/kg DW	2	ug/kg DW	23
EPA Site Inspection	DR273	8/26/1998	PCBs (total calc'd)	45	ug/kg DW	2	ug/kg DW	23
NOAA Site Characterization	WIT252	9/29/1997	PCBs (total calc'd)	43	ug/kg DW	2	ug/kg DW	22
NOAA Site Characterization	WIT252	9/29/1997	PCBs (total calc'd)	43	ug/kg DW	2	ug/kg DW	22
NOAA Site Characterization	WST306	10/21/1997	PCBs (total calc'd)	39	ug/kg DW	2	ug/kg DW	20
NOAA Site Characterization	CH0003	10/9/1997	PCBs (total calc'd)	37	ug/kg DW	2	ug/kg DW	19
LDWRI-Surface Sediment Round 2	LDW-SS133	3/9/2005	PCBs (total calc'd)	36 J	ug/kg DW	2	ug/kg DW	18
NOAA Site Characterization	WST306	10/21/1997	PCBs (total calc'd)	35	ug/kg DW	2	ug/kg DW	18
LDW Outfall Sampling	LDW-SS2201-U	3/18/2011	PCBs (total calc'd)	34	ug/kg DW	2	ug/kg DW	17
NOAA Site Characterization	WIT249	10/11/1997	PCBs (total calc'd)	34	ug/kg DW	2	ug/kg DW	17
EPA Site Inspection	DR268	8/26/1998	PCBs (total calc'd)	34	ug/kg DW	2	ug/kg DW	17
NOAA Site Characterization	WST301	10/20/2007	PCBs (total calc'd)	32	ug/kg DW	2	ug/kg DW	16
EPA Site Inspection	DR276	9/15/1998	PCBs (total calc'd)	32	ug/kg DW	2	ug/kg DW	16
LDWRI-Dioxin Sampling	LDW-SS547	1/11/2010	PCBs (total calc'd)	30	ug/kg DW	2	ug/kg DW	15
NOAA Site Characterization	WST310	11/13/1997	PCBs (total calc'd)	29	ug/kg DW	2	ug/kg DW	15
NOAA Site Characterization	WST304	10/21/1997	PCBs (total calc'd)	26	ug/kg DW	2	ug/kg DW	13
EPA Site Inspection	DR287	8/26/1998	PCBs (total calc'd)	25	ug/kg DW	2	ug/kg DW	13
NOAA Site Characterization	WIT255	9/29/1997	PCBs (total calc'd)	25	ug/kg DW	2	ug/kg DW	13
NOAA Site Characterization	WST308	10/1/1997	PCBs (total calc'd)	23	ug/kg DW	2	ug/kg DW	12
LDWRI-Surface Sediment Round 2	LDW-SS131	3/8/2005	PCBs (total calc'd)	22 J	ug/kg DW	2	ug/kg DW	11
EPA Site Inspection	DR267	8/26/1998	PCBs (total calc'd)	21	ug/kg DW	2	ug/kg DW	11
NOAA Site Characterization	WST305	10/21/1997	PCBs (total calc'd)	21	ug/kg DW	2	ug/kg DW	11
NOAA Site Characterization	WST312	10/23/1997	PCBs (total calc'd)	21	ug/kg DW	2	ug/kg DW	11
LDW Outfall Sampling	LDW-SS2099-D	3/3/2011	PCBs (total calc'd)	19	ug/kg DW	2	ug/kg DW	9.5
NOAA Site Characterization	WIT248	10/2/1997	PCBs (total calc'd)	19 J	ug/kg DW	2	ug/kg DW	9.5
NOAA Site Characterization	WST300	10/8/1997	PCBs (total calc'd)	17	ug/kg DW	2	ug/kg DW	8.5
NOAA Site Characterization	WIT260	10/1/1997	PCBs (total calc'd)	16	ug/kg DW	2	ug/kg DW	8.0
NOAA Site Characterization	WST309	10/1/1997	PCBs (total calc'd)	16	ug/kg DW	2	ug/kg DW	8.0
NOAA Site Characterization	WIT250	10/1/1997	PCBs (total calc'd)	16	ug/kg DW	2	ug/kg DW	8.0
LDW Outfall Sampling	LDW-SS2200-A	3/18/2011	PCBs (total calc'd)	16 J	ug/kg DW	2	ug/kg DW	8.0
NOAA Site Characterization	WIT256	11/13/1997	PCBs (total calc'd)	13	ug/kg DW	2	ug/kg DW	6.5
LDW Outfall Sampling	LDW-SS2099-A	3/3/2011	PCBs (total calc'd)	12	ug/kg DW	2	ug/kg DW	6.0
LDW Outfall Sampling	LDW-SS2200-D	3/18/2011	PCBs (total calc'd)	12	ug/kg DW	2	ug/kg DW	6.0
NOAA Site Characterization	WST302	10/1/1997	PCBs (total calc'd)	11	ug/kg DW	2	ug/kg DW	5.5
NOAA Site Characterization	WIT261	10/1/1997	PCBs (total calc'd)	11	ug/kg DW	2	ug/kg DW	5.5
LDWRI-Benthic	B10b	8/19/2004	PCBs (total calc'd)	9.8 J	ug/kg DW	2	ug/kg DW	4.9
LDW Outfall Sampling	LDW-SS2098-D	3/4/2011	PCBs (total calc'd)	9.1	ug/kg DW	2	ug/kg DW	4.6

Table A-1b
Comparison of Chemicals Detected in Surface Sediment Samples
Near the Restoration Areas Source Control Area
to Lower Duwamish Waterway Background Concentrations

Event Name	Location Name	Date Collected	Chemical	Conc'n	Units	LDW Background	Units	Exceedance Factor
NOAA Site Characterization	WIT251	9/29/1997	PCBs (total calc'd)	8.7	ug/kg DW	2	ug/kg DW	4.4
LDW Outfall Sampling	LDW-SS2201-A	3/18/2011	PCBs (total calc'd)	8.5 J	ug/kg DW	2	ug/kg DW	4.3
LDW Outfall Sampling	LDW-SS2201-D	3/18/2011	PCBs (total calc'd)	8 J	ug/kg DW	2	ug/kg DW	4.0
LDW Outfall Sampling	LDW-SS2099-U	3/3/2011	PCBs (total calc'd)	7.3	ug/kg DW	2	ug/kg DW	3.7
NOAA Site Characterization	WIT247	10/1/1997	PCBs (total calc'd)	7 J	ug/kg DW	2	ug/kg DW	3.5
NOAA Site Characterization	WIT254	10/17/1997	PCBs (total calc'd)	6.1 J	ug/kg DW	2	ug/kg DW	3.1
NOAA Site Characterization	EST108	10/14/1997	PCBs (total calc'd)	5.9 J	ug/kg DW	2	ug/kg DW	3.0
Duwamish River RM 4.9 to 7.4	DR-03	4/28/2008	PCBs (total calc'd)	3.4 J	ug/kg DW	2	ug/kg DW	1.7
NOAA Site Characterization	EST103	10/14/1997	PCBs (total calc'd)	3.1 J	ug/kg DW	2	ug/kg DW	1.6
Duwamish River RM 4.9 to 7.4	DR-06	4/28/2008	PCBs (total calc'd)	3 J	ug/kg DW	2	ug/kg DW	1.5
Duwamish River RM 4.9 to 7.4	DR-04	4/28/2008	PCBs (total calc'd)	2.9 J	ug/kg DW	2	ug/kg DW	1.5
Duwamish River RM 4.9 to 7.4	DR-09	4/28/2008	PCBs (total calc'd)	2.7 J	ug/kg DW	2	ug/kg DW	1.4
Duwamish River RM 4.9 to 7.4	DR-12	4/28/2008	PCBs (total calc'd)	2.7 J	ug/kg DW	2	ug/kg DW	1.4
Duwamish River RM 4.9 to 7.4	DR-05	4/28/2008	PCBs (total calc'd)	2.6 J	ug/kg DW	2	ug/kg DW	1.3
Duwamish River RM 4.9 to 7.4	DR-08	4/28/2008	PCBs (total calc'd)	2.6 J	ug/kg DW	2	ug/kg DW	1.3
Duwamish River RM 4.9 to 7.4	DR-10	4/28/2008	PCBs (total calc'd)	2.5 J	ug/kg DW	2	ug/kg DW	1.3
Duwamish River RM 4.9 to 7.4	DR-07	4/28/2008	PCBs (total calc'd)	2.3 J	ug/kg DW	2	ug/kg DW	1.2
Duwamish River RM 4.9 to 7.4	DRB-115	5/9/2008	PCBs (total calc'd)	2.1 J	ug/kg DW	2	ug/kg DW	1.1
Duwamish River RM 4.9 to 7.4	DRB-112	5/9/2008	PCBs (total calc'd)	1.9	ug/kg DW	2	ug/kg DW	<1
Duwamish River RM 4.9 to 7.4	DRB-116	5/9/2008	PCBs (total calc'd)	1.7 J	ug/kg DW	2	ug/kg DW	<1
Duwamish River RM 4.9 to 7.4	DRB-117	5/9/2008	PCBs (total calc'd)	0.86 J	ug/kg DW	2	ug/kg DW	<1

mg/kg - Milligram per kilogram

ug/kg - Microgram per kilogram

ng/kg - nanogram per kilogram

DW - Dry weight

PAHs - Polycyclic aromatic hydrocarbons

PCB - Polychlorinated biphenyl

J - Estimated value between the method detection limit and the laboratory reporting limit

LDW - Lower Duwamish Waterway

TEQ - Toxic Equivalency

Table presents detected chemicals only.

Exceedance factors are the ratio of the detected concentrations to the LDW Background Level (AECOM 2010); exceedance factors are shown only if they are greater than 1.

Sampling events are listed in Table 2.

Table A-2a
Chemicals Detected in Subsurface Sediment Samples
Near the Restoration Areas Source Control Area

Event Name	Location Name	Date Collected	Sample Depth (feet)	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
											SQS	CSL
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	0 - 2	Acenaphthene	1.60E-02 J	1.67	9.58E-01	16	57	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	0 - 2	Anthracene	3.50E-02	1.67	2.10E+00	220	1200	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	0 - 2	Aroclor 1248	4.10E-02	1.51	2.72E+00					
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	2 - 4	Aroclor 1248	3.30E-02	1.55	2.13E+00					
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	0 - 2	Aroclor 1254	3.30E-01	1.67	1.98E+01					
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	2 - 4	Aroclor 1254	5.00E-02	1.55	3.23E+00					
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	0 - 2	Aroclor 1254	4.40E-02	1.51	2.91E+00					
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	2 - 4	Aroclor 1260	2.80E-02	1.55	1.81E+00					
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	0 - 2	Aroclor 1260	2.40E-02	1.51	1.59E+00					
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	0 - 2	Arsenic	1.20E+01	1.51	7.95E+02	57	93	mg/kg DW	<1	<1
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	2 - 4	Arsenic	1.10E+01	1.55	7.10E+02	57	93	mg/kg DW	<1	<1
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	0 - 2	Arsenic	7.00E+00	1.67	4.19E+02	57	93	mg/kg DW	<1	<1
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	2 - 4	Arsenic	6.00E+00	0.303	1.98E+03	57	93	mg/kg DW	<1	<1
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	0 - 2	Benzo(a)anthracene	1.10E-01	1.67	6.59E+00	110	270	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	2 - 4	Benzo(a)anthracene	8.60E-02	1.55	5.55E+00	110	270	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	0 - 2	Benzo(a)anthracene	8.30E-02	1.51	5.50E+00	110	270	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	0 - 2	Benzo(a)pyrene	1.40E-01	1.67	8.38E+00	99	210	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	2 - 4	Benzo(a)pyrene	9.90E-02	1.55	6.39E+00	99	210	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	0 - 2	Benzo(a)pyrene	7.60E-02	1.51	5.03E+00	99	210	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	2 - 4	Benzo(b)fluoranthene	1.50E-01	1.55	9.68E+00	230	450	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	0 - 2	Benzo(b)fluoranthene	1.50E-01	1.67	8.98E+00	31	78	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	0 - 2	Benzo(b)fluoranthene	1.40E-01	1.51	9.27E+00	230	450	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	0 - 2	Benzo(g,h,i)perylene	2.90E-02	1.67	1.74E+00	31	78	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	2 - 4	Benzo(k)fluoranthene	1.60E-01	1.55	1.03E+01	230	450	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	0 - 2	Benzo(k)fluoranthene	1.50E-01	1.51	9.93E+00	230	450	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	0 - 2	Benzo(k)fluoranthene	1.40E-01	1.67	8.38E+00	230	450	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	2 - 4	Benzo(a)fluoranthenes (total-calc'd)	3.10E-01	1.55	2.00E+01	230	450	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	0 - 2	Benzo(a)fluoranthenes (total-calc'd)	2.90E-01	1.51	1.92E+01	230	450	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	0 - 2	Benzo(a)fluoranthenes (total-calc'd)	2.90E-01	1.67	1.74E+01	230	450	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	0 - 2	Benzoic acid	2.80E-01 J	1.51	1.85E+01	650	650	ug/kg DW	<1	<1
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	2 - 4	Benzoic acid	1.20E-01 J	1.55	7.74E+00	650	650	ug/kg DW	<1	<1
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	0 - 2	Benzoic acid	9.00E-02	1.67	5.39E+00	650	650	ug/kg DW	<1	<1
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	2 - 4	Benzoic acid	5.40E-02 J	0.303	1.78E+01	650	650	ug/kg DW	<1	<1
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	2 - 4	Bis(2-ethylhexyl)phthalate	1.30E-01	1.55	8.39E+00	47	78	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	0 - 2	Bis(2-ethylhexyl)phthalate	1.00E-01	1.51	6.62E+00	47	78	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	0 - 2	Bis(2-ethylhexyl)phthalate	2.30E-02	1.67	1.38E+00	47	78	mg/kg OC	<1	<1

Table A-2a
Chemicals Detected in Subsurface Sediment Samples
Near the Restoration Areas Source Control Area

Event Name	Location Name	Date Collected	Sample Depth (feet)	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
											SQS	CSL
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	0 - 2	Butyl benzyl phthalate	2.20E-02	1.51	1.46E+00	4.9	64	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	2 - 4	Butyl benzyl phthalate	1.60E-02	1.55	1.03E+00	4.9	64	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	0 - 2	Carcinogenic PAHs (calc'd)	1.85E+02							
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	2 - 4	Carcinogenic PAHs (calc'd)	2.80E+02							
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	0 - 2	Carcinogenic PAHs (calc'd)	3.42E+02							
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	2 - 4	Chromium	2.44E+01	1.55	1.57E+03	260	270	mg/kg DW	<1	<1
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	0 - 2	Chromium	2.38E+01	1.51	1.58E+03	260	270	mg/kg DW	<1	<1
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	0 - 2	Chromium	1.61E+01	1.67	9.64E+02	260	270	mg/kg DW	<1	<1
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	2 - 4	Chromium	1.16E+01	0.303	3.83E+03	260	270	mg/kg DW	<1	<1
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	0 - 2	Chrysene	1.30E-01	1.67	7.78E+00	110	460	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	0 - 2	Chrysene	1.10E-01	1.51	7.28E+00	110	460	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	2 - 4	Chrysene	1.10E-01	1.55	7.10E+00	110	460	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	0 - 2	Cobalt	8.50E+00	1.51	5.63E+02					
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	2 - 4	Cobalt	8.50E+00	1.55	5.48E+02					
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	2 - 4	Cobalt	5.30E+00	0.303	1.75E+03					
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	0 - 2	Cobalt	5.30E+00	1.67	3.17E+02					
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	0 - 2	Copper	3.65E+01	1.51	2.42E+03	390	390	mg/kg DW	<1	<1
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	2 - 4	Copper	3.59E+01	1.55	2.32E+03	390	390	mg/kg DW	<1	<1
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	0 - 2	Copper	2.18E+01	1.67	1.31E+03	390	390	mg/kg DW	<1	<1
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	2 - 4	Copper	1.18E+01	0.303	3.89E+03	390	390	mg/kg DW	<1	<1
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	0 - 2	Di-n-butyl phthalate	1.60E-02 J	1.67	9.58E-01	220	1700	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC56 ^a	02/07/06	2 - 4	Di-n-butyl phthalate	1.00E-02 J	0.303	3.30E+00	1400	5100	ug/kg DW	<1	<1
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	0 - 2	Fluoranthene	3.10E-01	1.67	1.86E+01	160	1200	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	2 - 4	Fluoranthene	2.10E-01	1.55	1.35E+01	160	1200	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	0 - 2	Fluoranthene	2.00E-01	1.51	1.32E+01	160	1200	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	0 - 2	Fluorene	1.50E-02 J	1.67	8.98E-01	23	79	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	0 - 2	Indeno(1,2,3-cd)pyrene	3.20E-02	1.67	1.92E+00	34	88	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	0 - 2	Lead	4.00E+01 J	1.67	2.40E+03	450	530	mg/kg DW	<1	<1
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	2 - 4	Lead	1.80E+01	1.55	1.16E+03	450	530	mg/kg DW	<1	<1
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	0 - 2	Lead	1.70E+01	1.51	1.13E+03	450	530	mg/kg DW	<1	<1
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	2 - 4	Mercury	1.30E-01	1.55	8.39E+00	0.41	0.59	mg/kg DW	<1	<1
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	0 - 2	Mercury	1.00E-01	1.51	6.62E+00	0.41	0.59	mg/kg DW	<1	<1
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	0 - 2	Mercury	5.00E-02	1.67	2.99E+00	0.41	0.59	mg/kg DW	<1	<1
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	2 - 4	Molybdenum	1.20E+00	1.55	7.74E+01					
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	0 - 2	Molybdenum	6.00E-01	1.67	3.59E+01					

Table A-2a
Chemicals Detected in Subsurface Sediment Samples
Near the Restoration Areas Source Control Area

Event Name	Location Name	Date Collected	Sample Depth (feet)	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
											SQS	CSL
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	2 - 4	Nickel	2.00E+01	1.55	1.29E+03					
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	0 - 2	Nickel	1.80E+01	1.51	1.19E+03					
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	0 - 2	Nickel	1.20E+01	1.67	7.19E+02					
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	2 - 4	Nickel	1.00E+01	0.303	3.30E+03					
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	0 - 2	PCBs (total calc'd)	3.30E-01	1.67	1.98E+01	12	65	mg/kg OC	1.6	<1
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	2 - 4	PCBs (total calc'd)	1.11E-01	1.55	7.16E+00	12	65	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	0 - 2	PCBs (total calc'd)	1.09E-01	1.51	7.22E+00	12	65	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	0 - 2	Phenanthrene	1.70E-01	1.67	1.02E+01	100	480	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	2 - 4	Phenanthrene	7.60E-02	1.55	4.90E+00	100	480	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	0 - 2	Phenanthrene	5.90E-02	1.51	3.91E+00	100	480	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	2 - 4	Pyrene	2.20E-01	1.55	1.42E+01	1000	1400	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	0 - 2	Pyrene	2.20E-01	1.67	1.32E+01	1000	1400	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	0 - 2	Pyrene	1.70E-01	1.51	1.13E+01	1000	1400	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	0 - 2	Total HPAH (calc'd)	1.26E+00	1.67	7.54E+01	960	5300	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	2 - 4	Total HPAH (calc'd)	1.04E+00	1.55	6.71E+01	960	5300	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	0 - 2	Total HPAH (calc'd)	9.30E-01	1.51	6.16E+01	960	5300	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	0 - 2	Total LPAH (calc'd)	2.40E-01 J	1.67	1.44E+01	370	780	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	2 - 4	Total LPAH (calc'd)	7.60E-02	1.55	4.90E+00	370	780	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	0 - 2	Total LPAH (calc'd)	5.90E-02	1.51	3.91E+00	370	780	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	0 - 2	Total PAH (calc'd)	1.50E+00 J	1.67	8.98E+01					
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	2 - 4	Total PAH (calc'd)	1.11E+00	1.55	7.16E+01					
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	0 - 2	Total PAH (calc'd)	9.90E-01	1.51	6.56E+01					
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	2 - 4	Vanadium	6.27E+01	1.55	4.05E+03					
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	0 - 2	Vanadium	6.10E+01	1.51	4.04E+03					
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	0 - 2	Vanadium	5.01E+01	1.67	3.00E+03					
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	2 - 4	Vanadium	4.78E+01	0.303	1.58E+04					
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	0 - 2	Zinc	8.10E+01	1.51	5.36E+03	410	960	mg/kg DW	<1	<1
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	2 - 4	Zinc	8.00E+01	1.55	5.16E+03	410	960	mg/kg DW	<1	<1
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	0 - 2	Zinc	6.85E+01 J	1.67	4.10E+03	410	960	mg/kg DW	<1	<1
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	2 - 4	Zinc	2.99E+01 J	0.303	9.87E+03	410	960	mg/kg DW	<1	<1

**Table A-2a
Chemicals Detected in Subsurface Sediment Samples
Near the Restoration Areas Source Control Area**

Event Name	Location Name	Date Collected	Sample Depth (feet)	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
											SQS	CSL

mg/kg - Milligram per kilogram
 ug/kg - Microgram per kilogram
 ng/kg - nanogram per kilogram
 DW - Dry weight
 TOC - Total Organic Carbon
 OC - Organic carbon normalized
 SQS - SMS Sediment Quality Standard
 CSL - SMS Cleanup Screening Level

SMS - Sediment Management Standard (Washington Administrative Code 173-204)
 PAHs - Polycyclic aromatic hydrocarbons
 SVOCs - Semi-volatile organic compounds
 PCB - Polychlorinated biphenyl
 J - Estimated value between the method detection limit and the laboratory reporting limit
 LDW - Lower Duwamish Waterway
 TEQ - Toxic Equivalency

Table presents detected chemicals only.

Exceedance factors are the ratio of the detected concentrations to the CSL or SQS; exceedance factors are shown only if they are greater than 1.

Sampling events are listed in Table 2.

^a Due to the TOC in this sample, results were compared to the Lowest Apparent Effects Threshold (LAET) or the second LAET (2LAET) value rather than the SQS and/or CSL. The LAET is functionally equivalent to the SQS and the 2LAET is functionally equivalent to the CSL. OC-normalization is not considered to be appropriate for when TOC concentrations are less than or equal to 0.5 percent or greater than or equal to 4.0 percent.

Table A-2b
Comparison of Chemicals Detected in Subsurface Sediment Samples
Near the Restoration Areas Source Control Area
to Lower Duwamish Waterway Background Concentrations

Event Name	Location Name	Date Collected	Sample Depth (feet)	Chemical	Conc'n	Units	LDW Background	Units	Exceedance Factor
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	0 - 2	Arsenic	12	mg/kg dw	7	mg/kg DW	1.7
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	2 - 4	Arsenic	11	mg/kg dw	7	mg/kg DW	1.6
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	0 - 2	Arsenic	7	mg/kg dw	7	mg/kg DW	<1
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	2 - 4	Arsenic	6	mg/kg dw	7	mg/kg DW	<1
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	0 - 2	Carcinogenic PAHs (calc'd)	185	ug/kg DW	9	ug/kg DW	21
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	2 - 4	Carcinogenic PAHs (calc'd)	140	ug/kg DW	9	ug/kg DW	16
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	0 - 2	Carcinogenic PAHs (calc'd)	114	ug/kg DW	9	ug/kg DW	13
LDW Subsurface Sediment 2006	LDW-SC56	02/07/06	0 - 2	PCBs (total calc'd)	330	ug/kg dw	2	ug/kg DW	165
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	2 - 4	PCBs (total calc'd)	111	ug/kg dw	2	ug/kg DW	56
LDW Subsurface Sediment 2006	LDW-SC54	02/23/06	0 - 2	PCBs (total calc'd)	109	ug/kg dw	2	ug/kg DW	55

mg/kg - Milligram per kilogram
ug/kg - Microgram per kilogram
DW - Dry weight
PCB - Polychlorinated biphenyl
LDW - Lower Duwamish Waterway

Table presents detected chemicals only.
Exceedance factors are the ratio of the detected concentrations to the CSL or SQS; exceedance factors are shown only if they are greater than 1.
Sampling events are listed in Table 2.

Table A-3a
Comparison of Chemicals Detected in Bank Soil Samples
Near the Restoration Areas Source Control Area
to Sediment Management Standards

Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
									SQS	CSL
HC-BS-3	5/10/2011	1,2,3,4,6,7,8-HpCDD	2.20E-05							
HC-BS-2	5/10/2011	1,2,3,4,6,7,8-HpCDD	1.50E-05							
HC-BS-1	5/10/2011	1,2,3,4,6,7,8-HpCDD	1.38E-05							
HC-BS-3	5/10/2011	1,2,3,4,6,7,8-HpCDF	3.99E-06							
HC-BS-2	5/10/2011	1,2,3,4,6,7,8-HpCDF	3.35E-06							
HC-BS-1	5/10/2011	1,2,3,4,6,7,8-HpCDF	2.61E-06							
HC-BS-3	5/10/2011	1,2,3,4,7,8,9-HpCDF	3.82E-07 T							
HC-BS-3	5/10/2011	1,2,3,4,7,8-HxCDD	8.21E-07 T							
HC-BS-2	5/10/2011	1,2,3,4,7,8-HxCDD	4.74E-07 T							
HC-BS-1	5/10/2011	1,2,3,4,7,8-HxCDD	3.88E-07 T							
HC-BS-3	5/10/2011	1,2,3,4,7,8-HxCDF	1.07E-06 T							
HC-BS-2	5/10/2011	1,2,3,4,7,8-HxCDF	8.33E-07 T							
HC-BS-1	5/10/2011	1,2,3,4,7,8-HxCDF	3.78E-07 T							
HC-BS-3	5/10/2011	1,2,3,6,7,8-HxCDD	1.42E-06 T							
HC-BS-2	5/10/2011	1,2,3,6,7,8-HxCDD	9.49E-07 T							
HC-BS-3	5/10/2011	1,2,3,6,7,8-HxCDF	4.64E-07 T							
HC-BS-2	5/10/2011	1,2,3,6,7,8-HxCDF	2.99E-07 T							
HC-BS-3	5/10/2011	1,2,3,7,8,9-HxCDD	1.29E-06 T							
HC-BS-2	5/10/2011	1,2,3,7,8,9-HxCDD	7.83E-07 T							
HC-BS-2	5/10/2011	1,2,3,7,8,9-HxCDF	2.07E-07 T							
HC-BS-3	5/10/2011	1,2,3,7,8-PeCDD	8.18E-07 T							
HC-BS-2	5/10/2011	1,2,3,7,8-PeCDD	4.80E-07 T							
HC-BS-1	5/10/2011	1,2,3,7,8-PeCDD	4.06E-07 T							
HC-BS-2	5/10/2011	1,2,3,7,8-PeCDF	1.93E-07 T							
HC-BS-3	5/10/2011	1-Methylnaphthalene	3.90E-03 T	0.554	7.04E-01					
HC-BS-2	5/10/2011	1-Methylnaphthalene	3.30E-03 T	0.711	4.64E-01					
HC-BS-3	5/10/2011	2,3,4,6,7,8-HxCDF	4.94E-07 T							
HC-BS-2	5/10/2011	2,3,4,6,7,8-HxCDF	3.54E-07 T							
HC-BS-2	5/10/2011	2,3,4,7,8-PeCDF	2.19E-07 T							
HC-BS-1	5/10/2011	2,3,4,7,8-PeCDF	2.07E-07 T							
HC-BS-2	5/10/2011	2,3,7,8-TCDF	2.34E-07 T							
HC-BS-3	5/10/2011	2-Methylnaphthalene	4.00E-03 T	0.554	7.22E-01	38	64	mg/kg OC	<1	<1
HC-BS-2	5/10/2011	2-Methylnaphthalene	3.70E-03 T	0.711	5.20E-01	38	64	mg/kg OC	<1	<1
HC-BS-2	5/10/2011	Arsenic	6.40E+00	0.711	9.00E+02	57	93	mg/kg DW	<1	<1
HC-BS-3	5/10/2011	Arsenic	6.10E+00	0.554	1.10E+03	57	93	mg/kg DW	<1	<1
HC-BS-1	5/10/2011	Benzo(a)anthracene	2.90E-03 T	1.28	2.27E-01	110	270	mg/kg OC	<1	<1
HC-BS-2	5/10/2011	Benzo(a)anthracene	2.90E-03 T	0.711	4.08E-01	110	270	mg/kg OC	<1	<1
HC-BS-3	5/10/2011	Benzo(a)pyrene	3.30E-03 T	0.554	5.96E-01	99	210	mg/kg OC	<1	<1
HC-BS-1	5/10/2011	Benzo(a)pyrene	3.10E-03 T	1.28	2.42E-01	99	210	mg/kg OC	<1	<1
HC-BS-1	5/10/2011	Benzo(g,h,i)perylene	3.90E-03 T	1.28	3.05E-01	31	78	mg/kg OC	<1	<1

Table A-3a
Comparison of Chemicals Detected in Bank Soil Samples
Near the Restoration Areas Source Control Area
to Sediment Management Standards

Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
									SQS	CSL
HC-BS-1	5/10/2011	Benzofluoranthenes (total-calc'd)	7.90E-03	1.28	6.17E-01	230	450	mg/kg OC	<1	<1
HC-BS-2	5/10/2011	Benzofluoranthenes (total-calc'd)	7.70E-03	0.711	1.08E+00	230	450	mg/kg OC	<1	<1
HC-BS-3	5/10/2011	Benzofluoranthenes (total-calc'd)	6.70E-03	0.554	1.21E+00	230	450	mg/kg OC	<1	<1
HC-BS-2	5/10/2011	Cadmium	2.00E-01	0.711	2.81E+01	5.1	6.7	mg/kg DW	<1	<1
HC-BS-3	5/10/2011	Cadmium	2.00E-01	0.554	3.61E+01	5.1	6.7	mg/kg DW	<1	<1
HC-BS-2	5/10/2011	Chromium	1.21E+01	0.711	1.70E+03	260	270	mg/kg DW	<1	<1
HC-BS-3	5/10/2011	Chromium	1.18E+01	0.554	2.13E+03	260	270	mg/kg DW	<1	<1
HC-BS-1	5/10/2011	Chromium	1.17E+01	1.28	9.14E+02	260	270	mg/kg DW	<1	<1
HC-BS-2	5/10/2011	Chrysene	5.20E-03	0.711	7.31E-01	110	460	mg/kg OC	<1	<1
HC-BS-3	5/10/2011	Chrysene	4.80E-03	0.554	8.66E-01	110	460	mg/kg OC	<1	<1
HC-BS-1	5/10/2011	Chrysene	4.50E-03 T	1.28	3.52E-01	110	460	mg/kg OC	<1	<1
HC-BS-2	5/10/2011	Copper	1.11E+01	0.711	1.56E+03	390	390	mg/kg DW	<1	<1
HC-BS-3	5/10/2011	Copper	1.06E+01	0.554	1.91E+03	390	390	mg/kg DW	<1	<1
HC-BS-1	5/10/2011	Copper	9.90E+00	1.28	7.73E+02	390	390	mg/kg DW	<1	<1
HC-BS-1	5/10/2011	Diethyl phthalate	1.50E-02 T	1.28	1.17E+00	61	110	mg/kg OC	<1	<1
HC-BS-2	5/10/2011	Diethyl phthalate	1.20E-02 T	0.711	1.69E+00	61	110	mg/kg OC	<1	<1
HC-BS-2	5/10/2011	Fluoranthene	5.60E-03	0.711	7.88E-01	160	1200	mg/kg OC	<1	<1
HC-BS-1	5/10/2011	Fluoranthene	4.90E-03	1.28	3.83E-01	160	1200	mg/kg OC	<1	<1
HC-BS-3	5/10/2011	Fluoranthene	4.90E-03	0.554	8.84E-01	160	1200	mg/kg OC	<1	<1
HC-BS-1	5/10/2011	Fluorene	3.40E-03 T	1.28	2.66E-01	23	79	mg/kg OC	<1	<1
HC-BS-1	5/10/2011	Indeno(1,2,3-cd)pyrene	2.80E-03 T	1.28	2.19E-01	34	88	mg/kg OC	<1	<1
HC-BS-2	5/10/2011	Lead	3.00E+00	0.711	4.22E+02	450	530	mg/kg DW	<1	<1
HC-BS-3	5/10/2011	Lead	3.00E+00	0.554	5.42E+02	450	530	mg/kg DW	<1	<1
HC-BS-3	5/10/2011	OCDD	1.18E-04							
HC-BS-1	5/10/2011	OCDD	9.59E-05							
HC-BS-2	5/10/2011	OCDD	9.23E-05							
HC-BS-2	5/10/2011	OCDF	5.39E-06							
HC-BS-3	5/10/2011	OCDF	4.86E-06 T							
HC-BS-1	5/10/2011	OCDF	3.78E-06 T							
HC-BS-2	5/10/2011	o-Xylene	7.80E-01	0.711	1.10E+02					
HC-BS-1	5/10/2011	o-Xylene	2.30E-01	1.28	1.80E+01					
HC-BS-3	5/10/2011	o-Xylene	4.20E-02	0.554	7.58E+00					
HC-BS-3	5/10/2011	Phenanthrene	8.70E-03	0.554	1.57E+00	100	480	mg/kg OC	<1	<1
HC-BS-1	5/10/2011	Phenanthrene	8.20E-03	1.28	6.41E-01	100	480	mg/kg OC	<1	<1
HC-BS-2	5/10/2011	Phenanthrene	7.90E-03	0.711	1.11E+00	100	480	mg/kg OC	<1	<1
HC-BS-1	5/10/2011	Phenol	1.80E-02 T	1.28	1.41E+00	420	1200	ug/kg DW	<1	<1
HC-BS-2	5/10/2011	Pyrene	6.20E-03	0.711	8.72E-01	1000	1400	mg/kg OC	<1	<1
HC-BS-1	5/10/2011	Pyrene	5.50E-03	1.28	4.30E-01	1000	1400	mg/kg OC	<1	<1
HC-BS-3	5/10/2011	Pyrene	5.00E-03	0.554	9.03E-01	1000	1400	mg/kg OC	<1	<1
HC-BS-3	5/10/2011	Total HpCDD	4.32E-05							

Table A-3a
Comparison of Chemicals Detected in Bank Soil Samples
Near the Restoration Areas Source Control Area
to Sediment Management Standards

Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	Exceedance Factors	
									SQS	CSL
HC-BS-1	5/10/2011	Total HpCDD	3.54E-05							
HC-BS-2	5/10/2011	Total HpCDD	3.00E-05							
HC-BS-3	5/10/2011	Total HpCDF	9.26E-06							
HC-BS-2	5/10/2011	Total HpCDF	7.91E-06							
HC-BS-1	5/10/2011	Total HpCDF	5.51E-06							
HC-BS-3	5/10/2011	Total HxCDD	1.57E-05							
HC-BS-2	5/10/2011	Total HxCDD	9.10E-06							
HC-BS-1	5/10/2011	Total HxCDD	3.63E-06							
HC-BS-3	5/10/2011	Total HxCDF	1.03E-05							
HC-BS-2	5/10/2011	Total HxCDF	6.77E-06							
HC-BS-1	5/10/2011	Total HxCDF	4.32E-06							
HC-BS-3	5/10/2011	Total PeCDD	7.55E-06							
HC-BS-2	5/10/2011	Total PeCDD	2.53E-06							
HC-BS-1	5/10/2011	Total PeCDD	1.91E-06							
HC-BS-3	5/10/2011	Total PeCDF	7.09E-06							
HC-BS-2	5/10/2011	Total PeCDF	4.70E-06							
HC-BS-1	5/10/2011	Total PeCDF	2.08E-06							
HC-BS-3	5/10/2011	Total TCDD	4.05E-06							
HC-BS-2	5/10/2011	Total TCDD	3.31E-06							
HC-BS-1	5/10/2011	Total TCDD	3.05E-06							
HC-BS-3	5/10/2011	Total TCDF	3.67E-06							
HC-BS-2	5/10/2011	Total TCDF	2.96E-06							
HC-BS-1	5/10/2011	Total TCDF	1.32E-06							
HC-BS-2	5/10/2011	Zinc	3.80E+01	0.711	5.34E+03	410	960	mg/kg DW	<1	<1
HC-BS-3	5/10/2011	Zinc	3.80E+01	0.554	6.86E+03	410	960	mg/kg DW	<1	<1
HC-BS-1	5/10/2011	Zinc	3.30E+01	1.28	2.58E+03	410	960	mg/kg DW	<1	<1

mg/kg - Milligram per kilogram
ug/kg - Microgram per kilogram
DW - Dry weight
TOC - Total Organic Carbon
OC - Organic carbon normalized

SQS - SMS Sediment Quality Standard
CSL - SMS Cleanup Screening Level
SMS - Sediment Management Standard (Washington Administrative Code 173-204)
J - Estimated value between the method detection limit and the laboratory reporting limit
T - Value is between the method detection limit and the laboratory reporting limit

Table presents detected chemicals only.
Exceedance factors are the ratio of the detected concentrations to the CSL or SQS; exceedance factors are shown only if they are greater than 1.

Table A-3b
Comparison of Chemicals Detected in Bank Soil Samples
Near the Restoration Areas Source Control Area
to Lower Duwamish Waterway Background Concentrations

Location Name	Date Collected	Chemical	Conc'n	Units	LDW Background	Units	Exceedance Factor
HC-BS-2	5/10/2011	Arsenic	6.4	mg/kg	7	mg/kg	<1
HC-BS-3	5/10/2011	Arsenic	6.1	mg/kg	7	mg/kg	<1

mg/kg - Milligram per kilogram

LDW - Lower Duwamish Waterway

Table presents detected chemicals only.

Exceedance factors are the ratio of the detected concentrations to the LDW Background Level (AECOM 2010);
exceedance factors are shown only if they are greater than 1.

**Table A-4
Chemicals Detected in Seep Samples
Near the Restoration Areas Source Control Area**

Source	Sample Location	Date Sampled	Chemical	Conc'n	Units	Marine Chronic WQS	Marine Acute WQS	Chronic WQS Exceedance Factor	GW-to-Sediment Screening Level ^a	Exceedance Factor
Filtered Sample										
LDWRI-Seep	SP-39	7/1/2004	Arsenic	0.054	ug/L	36	69	<1	370	<1
LDWRI-Seep	SP-39	7/1/2004	Cadmium	0.206	ug/L	9.3	42	<1	3.4	<1
LDWRI-Seep	SP-39	7/1/2004	Copper	10.1 J	ug/L	3.1	4.8	3.3	120	<1
LDWRI-Seep	SP-39	7/1/2004	Lead	0.051	ug/L	8.1	210	<1	13	<1
LDWRI-Seep	SP-39	7/1/2004	Mercury	0.00087	ug/L	0.025	1.8	<1	0.0074	<1
LDWRI-Seep	SP-39	7/1/2004	Nickel	2.78	ug/L	8.2	74	<1	--	--
LDWRI-Seep	SP-39	7/1/2004	Silver	0.028	ug/L	--	1.9	--	1.5	<1
LDWRI-Seep	SP-39	7/1/2004	Zinc	8.3	ug/L	81	90	<1	76	<1
LDWRI-Seep	SP-39	7/1/2004	Heptachlor epoxide	0.009	ug/L	--	--	--	--	--
Unfiltered Sample										
LDWRI-Seep	SP-39	7/1/2004	Arsenic	0.058	ug/L	36	69	<1	370	<1
LDWRI-Seep	SP-39	7/1/2004	Cadmium	0.272	ug/L	9.3	42	<1	3.4	<1
LDWRI-Seep	SP-39	7/1/2004	Copper	12.2 J	ug/L	3.1	4.8	3.9	120	<1
LDWRI-Seep	SP-39	7/1/2004	Lead	0.161	ug/L	8.1	210	<1	13	<1
LDWRI-Seep	SP-39	7/1/2004	Mercury	0.00095	ug/L	0.025	1.8	<1	0.0074	<1
LDWRI-Seep	SP-39	7/1/2004	Nickel	6.43	ug/L	8.2	74	<1	--	--
LDWRI-Seep	SP-39	7/1/2004	Silver	0.025	ug/L	--	1.9	--	1.5	<1
LDWRI-Seep	SP-39	7/1/2004	Zinc	9.9	ug/L	81	90	<1	76	<1
LDWRI-Seep	SP-39	7/1/2004	Heptachlor epoxide	0.0076	ug/L	--	--	--	--	--
LDWRI-Seep	SP-39	7/1/2004	Total Suspended Solids	5.8 J	mg/L	--	--	--	--	--

ug/L - micrograms per Liter

mg/L - milligrams per Liter

WQS - Water Quality Standards

CSL - Sediment Management Standards Cleanup Screening Level

a - Groundwater to sediment screening level, based on sediment CSLs. From SAIC 2006

J - Estimated value between the method detection limit and the laboratory reporting limit

Exceedance factors are the ratio of the detected concentration to the screening level; exceedance factors are shown only if they are greater than or equal to 1.

**Table A-5
Chemicals Detected in Storm Drain Samples
Restoration Areas Source Control Area**

Source	LocationID	Collection Date	Grab Type	Parameter	Result	Units	SQS/ LAET ¹	CSL/ 2LAET	Exceedance Factors	
									SQS	CSL
SPU 2011	RCB270	5/13/2011	ROW Catch Basin	4-Methylphenol	0.11	mg/kg	0.67	0.67	<1	<1
KTA 2012	TUK-06	8/23/2011	ROW Catch Basin	Arsenic ²	10	mg/kg	57	93	<1	<1
SPU 2010	HC-ST1	4/15/2009	Inline	Arsenic	6 J	mg/kg	57	93	<1	<1
SPU 2010	HC-ST1	4/15/2009	Inline	Arsenic	6	mg/kg	57	93	<1	<1
SPU 2011	RCB270	5/13/2011	ROW Catch Basin	Benzo(a)anthracene	0.068 J	mg/kg	1.3	1.6	<1	<1
Ecology 2013	HC-ST1	6/14/2012	Sediment Trap	Benzo(a)anthracene	0.051 J	mg/kg	1.3	1.6	<1	<1
KTA 2012	TUK-06	8/23/2011	ROW Catch Basin	Benzo(a)anthracene	0.026	mg/kg	1.3	1.6	<1	<1
SPU 2010	HC-ST1	11/4/2010	Sediment Trap	Benzo(a)anthracene	0.015 J	mg/kg	1.3	1.6	<1	<1
SPU 2010	HC-ST1	11/4/2010	Inline	Benzo(a)anthracene	0.01 J	mg/kg	1.3	1.6	<1	<1
SPU 2011	RCB270	5/13/2011	ROW Catch Basin	Benzo(a)pyrene	0.082 J	mg/kg	1.6	3.0	<1	<1
Ecology 2013	HC-ST1	6/14/2012	Sediment Trap	Benzo(a)pyrene	0.054 J	mg/kg	1.6	3.0	<1	<1
KTA 2012	TUK-06	8/23/2011	ROW Catch Basin	Benzo(a)pyrene	0.029	mg/kg	1.6	3.0	<1	<1
SPU 2010	HC-ST1	11/4/2010	Sediment Trap	Benzo(a)pyrene	0.016 J	mg/kg	1.6	3.0	<1	<1
SPU 2010	HC-ST1	11/4/2010	Inline	Benzo(a)pyrene	0.014 J	mg/kg	1.6	3.0	<1	<1
SPU 2011	RCB270	5/13/2011	ROW Catch Basin	Benzo(g,h,i)perylene	0.17	mg/kg	0.67	0.72	<1	<1
SPU 2010	HC-ST1	11/4/2010	Sediment Trap	Benzo(g,h,i)perylene	0.027	mg/kg	0.67	0.72	<1	<1
SPU 2010	HC-ST1	11/4/2010	Inline	Benzo(g,h,i)perylene	0.027	mg/kg	0.67	0.72	<1	<1
KTA 2012	TUK-06	8/23/2011	ROW Catch Basin	Benzo(g,h,i)perylene	0.019 J	mg/kg	0.67	0.72	<1	<1
SPU 2011	RCB270	5/13/2011	ROW Catch Basin	bis(2-Ethylhexyl)phthalate	1.5	mg/kg	1.3	1.9	1.2	<1
KTA 2012	TUK-06	8/23/2011	ROW Catch Basin	bis(2-Ethylhexyl)phthalate	0.19 B	mg/kg	1.3	1.9	<1	<1
Ecology 2013	HC-ST1	6/14/2012	Sediment Trap	bis(2-Ethylhexyl)phthalate	0.16	mg/kg	1.3	1.9	<1	<1
SPU 2010	HC-ST1	4/15/2009	Inline	bis(2-Ethylhexyl)phthalate	0.082	mg/kg	1.3	1.9	<1	<1
SPU 2010	HC-ST1	4/15/2009	Inline	bis(2-Ethylhexyl)phthalate	0.072	mg/kg	1.3	1.9	<1	<1
KTA 2012	TUK-06	8/23/2011	ROW Catch Basin	Butyl benzyl phthalate	0.029	mg/kg	0.063	0.9	<1	<1
SPU 2011	RCB270	5/13/2011	ROW Catch Basin	Carcinogenic PAHs (calc'd)	0.11225	mg/kg	0.009		12	
Ecology 2013	HC-ST1	6/14/2012	Sediment Trap	Carcinogenic PAHs (calc'd)	0.08338	mg/kg	0.009		9.3	
SPU 2010	HC-ST1	11/4/2010	Sediment Trap	Carcinogenic PAHs (calc'd)	0.02071	mg/kg	0.009		2.3	
SPU 2010	HC-ST1	11/4/2010	Inline	Carcinogenic PAHs (calc'd)	0.01816	mg/kg	0.009		2.0	
SPU 2011	RCB270	5/13/2011	ROW Catch Basin	Chrysene	0.18	mg/kg	1.4	2.8	<1	<1
Ecology 2013	HC-ST1	6/14/2012	Sediment Trap	Chrysene	0.063	mg/kg	1.4	2.8	<1	<1
KTA 2012	TUK-06	8/23/2011	ROW Catch Basin	Chrysene	0.047	mg/kg	1.4	2.8	<1	<1
SPU 2010	HC-ST1	11/4/2010	Sediment Trap	Chrysene	0.021	mg/kg	1.4	2.8	<1	<1
SPU 2010	HC-ST1	11/4/2010	Inline	Chrysene	0.016 J	mg/kg	1.4	2.8	<1	<1
KTA 2012	TUK-06	8/23/2011	ROW Catch Basin	Copper	50.2	mg/kg	390	390	<1	<1
SPU 2011	RCB270	5/13/2011	ROW Catch Basin	Copper	23.9	mg/kg	390	390	<1	<1
SPU 2010	HC-ST1	11/4/2010	Sediment Trap	Copper	22.6	mg/kg	390	390	<1	<1
SPU 2010	HC-ST1	4/15/2009	Inline	Copper	18.7	mg/kg	390	390	<1	<1
SPU 2010	HC-ST1	4/15/2009	Inline	Copper	15.8 J	mg/kg	390	390	<1	<1
Ecology 2013	HC-ST1	6/14/2012	Sediment Trap	Copper	14.7	mg/kg	390	390	<1	<1
SPU 2010	HC-ST1	11/21/2008	Inline	Copper	12.6	mg/kg	390	390	<1	<1
SPU 2010	HC-ST1	11/4/2010	Inline	Copper	12	mg/kg	390	390	<1	<1
SPU 2011	RCB270	5/13/2011	ROW Catch Basin	Dibutyl phthalate	0.1	mg/kg	1.4	5.1	<1	<1
SPU 2010	HC-ST1	11/4/2010	Sediment Trap	Diethyl phthalate	0.017 J	mg/kg	0.2	1.2	<1	<1
SPU 2011	RCB270	5/13/2011	ROW Catch Basin	Dimethyl phthalate	0.097	mg/kg	0.071	0.16	1.4	<1

**Table A-5
Chemicals Detected in Storm Drain Samples
Restoration Areas Source Control Area**

Source	LocationID	Collection Date	Grab Type	Parameter	Result	Units	SQS/ LAET ¹	CSL/ 2LAET	Exceedance Factors	
									SQS	CSL
KTA 2012	TUK-06	8/23/2011	ROW Catch Basin	Di-n-octyl phthalate	0.015 J	mg/kg	6.2		<1	
Ecology 2013	HC-ST1	6/14/2012	Sediment Trap	Fluoranthene	0.18	mg/kg	1.7	2.5	<1	<1
SPU 2011	RCB270	5/13/2011	ROW Catch Basin	Fluoranthene	0.17	mg/kg	1.7	2.5	<1	<1
KTA 2012	TUK-06	8/23/2011	ROW Catch Basin	Fluoranthene	0.075	mg/kg	1.7	2.5	<1	<1
SPU 2010	HC-ST1	11/4/2010	Sediment Trap	Fluoranthene	0.034	mg/kg	1.7	2.5	<1	<1
SPU 2010	HC-ST1	4/15/2009	Inline	Fluoranthene	0.031	mg/kg	1.7	2.5	<1	<1
SPU 2010	HC-ST1	11/4/2010	Inline	Fluoranthene	0.03	mg/kg	1.7	2.5	<1	<1
SPU 2011	RCB270	5/13/2011	ROW Catch Basin	Indeno(1,2,3-cd)pyrene	0.058 J	mg/kg	0.6	0.69	<1	<1
KTA 2012	TUK-06	8/23/2011	ROW Catch Basin	Indeno(1,2,3-cd)pyrene	0.019 J	mg/kg	0.6	0.69	<1	<1
SPU 2011	RCB270	5/13/2011	ROW Catch Basin	Lead	34	mg/kg	450	530	<1	<1
KTA 2012	TUK-06	8/23/2011	ROW Catch Basin	Lead	30	mg/kg	450	530	<1	<1
SPU 2010	HC-ST1	11/4/2010	Sediment Trap	Lead	18	mg/kg	450	530	<1	<1
SPU 2010	HC-ST1	4/15/2009	Inline	Lead	12 J	mg/kg	450	530	<1	<1
Ecology 2013	HC-ST1	6/14/2012	Sediment Trap	Lead	9	mg/kg	450	530	<1	<1
SPU 2010	HC-ST1	11/21/2008	Inline	Lead	8	mg/kg	450	530	<1	<1
SPU 2010	HC-ST1	11/4/2010	Inline	Lead	8	mg/kg	450	530	<1	<1
SPU 2010	HC-ST1	4/15/2009	Inline	Lead	7	mg/kg	450	530	<1	<1
Ecology 2013	HC-ST1	6/14/2012	Sediment Trap	Mercury	0.28	mg/kg	0.41	0.59	<1	<1
SPU 2010	HC-ST1	11/4/2010	Inline	Mercury	0.11	mg/kg	0.41	0.59	<1	<1
SPU 2010	HC-ST1	11/4/2010	Sediment Trap	Mercury	0.04	mg/kg	0.41	0.59	<1	<1
SPU 2010	HC-ST1	4/15/2009	Inline	Mercury	0.03 J	mg/kg	0.41	0.59	<1	<1
KTA 2012	TUK-06	8/23/2011	ROW Catch Basin	Mercury	0.02	mg/kg	0.41	0.59	<1	<1
Ecology 2013	HC-ST1	6/14/2012	Sediment Trap	Phenanthrene	0.13	mg/kg	1.5	5.4	<1	<1
SPU 2011	RCB270	5/13/2011	ROW Catch Basin	Phenanthrene	0.12	mg/kg	1.5	5.4	<1	<1
KTA 2012	TUK-06	8/23/2011	ROW Catch Basin	Phenanthrene	0.035	mg/kg	1.5	5.4	<1	<1
SPU 2010	HC-ST1	11/4/2010	Sediment Trap	Phenanthrene	0.025	mg/kg	1.5	5.4	<1	<1
SPU 2010	HC-ST1	4/15/2009	Inline	Phenanthrene	0.021	mg/kg	1.5	5.4	<1	<1
SPU 2010	HC-ST1	11/4/2010	Inline	Phenanthrene	0.017 J	mg/kg	1.5	5.4	<1	<1
SPU 2011	RCB270	5/13/2011	ROW Catch Basin	Phenol	0.058 J	mg/kg	0.42	1.2	<1	<1
SPU 2011	RCB270	5/13/2011	ROW Catch Basin	Pyrene	0.18	mg/kg	2.6	3.3	<1	<1
Ecology 2013	HC-ST1	6/14/2012	Sediment Trap	Pyrene	0.13	mg/kg	2.6	3.3	<1	<1
KTA 2012	TUK-06	8/23/2011	ROW Catch Basin	Pyrene	0.058	mg/kg	2.6	3.3	<1	<1
SPU 2010	HC-ST1	4/15/2009	Inline	Pyrene	0.036	mg/kg	2.6	3.3	<1	<1
SPU 2010	HC-ST1	11/4/2010	Sediment Trap	Pyrene	0.035	mg/kg	2.6	3.3	<1	<1
SPU 2010	HC-ST1	11/4/2010	Inline	Pyrene	0.024	mg/kg	2.6	3.3	<1	<1
SPU 2011	RCB270	5/13/2011	ROW Catch Basin	Total benzofluoranthenes	0.11	mg/kg	3.2	3.6	<1	<1
Ecology 2013	HC-ST1	6/14/2012	Sediment Trap	Total benzofluoranthenes	0.094 J	mg/kg	3.2	3.6	<1	<1
KTA 2012	TUK-06	8/23/2011	ROW Catch Basin	Total benzofluoranthenes	0.071	mg/kg	3.2	3.6	<1	<1
SPU 2011	RCB270	5/13/2011	ROW Catch Basin	Total Dioxin/Furan TEQ	2.99 J	ng/kg	2		1.5	
SPU 2010	HC-ST1	11/4/2010	Inline	Total Dioxin/Furan TEQ	0.614 J	ng/kg	2		<1	
SPU 2010	HC-ST1	11/4/2010	Sediment Trap	Total Dioxin/Furan TEQ	0.592 J	ng/kg	2		<1	
SPU 2011	RCB270	5/13/2011	ROW Catch Basin	Total HPAHs	1.018	mg/kg	12	17	<1	<1
Ecology 2013	HC-ST1	6/14/2012	Sediment Trap	Total HPAHs	0.572 J	mg/kg	12	17	<1	<1
SPU 2010	HC-ST1	11/4/2010	Sediment Trap	Total HPAHs	0.148	mg/kg	12	17	<1	<1

**Table A-5
Chemicals Detected in Storm Drain Samples
Restoration Areas Source Control Area**

Source	LocationID	Collection Date	Grab Type	Parameter	Result	Units	SQS/ LAET ¹	CSL/ 2LAET	Exceedance Factors	
									SQS	CSL
SPU 2010	HC-ST1	11/4/2010	Inline	Total HPAHs	0.121	mg/kg	12	17	<1	<1
SPU 2010	HC-ST1	4/15/2009	Inline	Total HPAHs	0.067	mg/kg	12	17	<1	<1
Ecology 2013	HC-ST1	6/14/2012	Sediment Trap	Total LPAHs	0.13	mg/kg	5.2	13	<1	<1
SPU 2011	RCB270	5/13/2011	ROW Catch Basin	Total LPAHs	0.12	mg/kg	5.2	13	<1	<1
SPU 2010	HC-ST1	11/4/2010	Sediment Trap	Total LPAHs	0.025	mg/kg	5.2	13	<1	<1
SPU 2010	HC-ST1	4/15/2009	Inline	Total LPAHs	0.021	mg/kg	5.2	13	<1	<1
SPU 2010	HC-ST1	11/4/2010	Inline	Total LPAHs	0.017	mg/kg	5.2	13	<1	<1
SPU 2010	HC-ST1	11/4/2010	Sediment Trap	Total PCBs	0.11	mg/kg	0.13	1.0	<1	<1
KTA 2012	TUK-06	8/23/2011	ROW Catch Basin	TPH - Diesel range	250	mg/kg	2,000		<1	
Ecology 2013	HC-ST1	6/14/2012	Sediment Trap	TPH - Diesel range	9.2	mg/kg	2,000		<1	
SPU 2011	RCB270	5/13/2011	ROW Catch Basin	TPH - Diesel range	0.17	mg/kg	2,000		<1	
Ecology 2013	HC-ST1	6/14/2012	Sediment Trap	TPH - Motor oil range	56	mg/kg	2,000		<1	
SPU 2011	RCB270	5/13/2011	ROW Catch Basin	TPH - Motor oil range	0.81	mg/kg	2,000		<1	
KTA 2012	TUK-06	8/23/2011	ROW Catch Basin	Zinc	199	mg/kg	410	960	<1	<1
SPU 2010	HC-ST1	11/21/2008	Inline	Zinc	72	mg/kg	410	960	<1	<1
SPU 2010	HC-ST1	4/15/2009	Inline	Zinc	72 J	mg/kg	410	960	<1	<1
Ecology 2013	HC-ST1	6/14/2012	Sediment Trap	Zinc	71	mg/kg	410	960	<1	<1
SPU 2010	HC-ST1	11/4/2010	Sediment Trap	Zinc	65	mg/kg	410	960	<1	<1
SPU 2011	RCB270	5/13/2011	ROW Catch Basin	Zinc	65	mg/kg	410	960	<1	<1
SPU 2010	HC-ST1	4/15/2009	Inline	Zinc	62	mg/kg	410	960	<1	<1
SPU 2010	HC-ST1	11/4/2010	Inline	Zinc	60	mg/kg	410	960	<1	<1

mg/kg - milligram per kilogram

ng/kg - nanogram per kilogram

SQS - Sediment Quality Standard

CSL - Cleanup Screening Level

LAET - lowest apparent effects threshold

2LAET - second lowest apparent effects threshold

J - Estimated value between the method detection limit and the laboratory reporting limit

B - Analyte was detected in the associated method blank

PCB - polychlorinated biphenyl

TPH - total petroleum hydrocarbons

PAH - polycyclic aromatic hydrocarbon

TEQ - toxic equivalence quotient

1 - Total cPAHs and Total Dioxin/Furan TEQ were compared to the LDW Natural Background concentrations. TPH results were compared to MTCA Method A cleanup levels for unrestricted land use.

2 - Concentration exceeds the LDW Natural Background concentration: Arsenic (7 mg/kg)

Table presents chemicals that exceed a screening level in at least one sample.

Exceedance factors are the ratio of the detected concentration to the SQS or CSL; exceedance factors are shown only if they are greater than 1.