DEPARTMENT OF ECOLOGY
State of Washington

Lower Duwamish Waterway
RM 1.6 to 2.1 West
(Terminal 115)

Source Control Action Plan

October 2011

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Lower Duwamish Waterway
RM 1.6 to 2.1 West
(Terminal 115)

Source Control Action Plan

Produced by

Toxics Cleanup Program
Northwest Regional Office
Washington State Department of Ecology
Bellevue, Washington

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The Port of Seattle

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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) 1.6 to 2.1 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 1.6 to 2.1 West (Terminal 115), Summary of Existing Information and Identification of Data Gaps* (SAIC 2011a).

The LDW, located in Seattle, Washington, was added to the National Priorities List by the U.S. Environmental Protection Agency (EPA) on September 13, 2001. Chemicals of concern (COCs) found in waterway sediments include polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), mercury, bis(2-ethylhexyl)phthalate (BEHP), dioxins/furans, and organo-tin compounds. 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 Port), 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, the City of Tukwila, and EPA.

Phase 1 of the RI/FS (Windward 2003a) 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 2003b). Ecology's *Lower Duwamish Waterway Source Control Status Report, 2003 to June 2007* (Ecology 2007a) and *Lower Duwamish Waterway Source Control Status Report, July 2007 to March 2008* (Ecology 2008c) identified another 16 areas where source control actions may be necessary. The Terminal 115 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 Terminal 115 source control area. PCBs; PAHs, phthalates, and other semivolatile organic compounds (SVOCs); 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 Terminal 115 source control area, including outfalls, spills to the

waterway, and releases from adjacent properties or upland properties within the Terminal 115, Highland Park Way SW and SW Kenny Street[1] storm drain (SD) basins and the Terminal 115 and West Michigan combined sewer overflow (CSO) basins; 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 Terminal 115 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 Terminal 115 source control area was not scheduled at the time this SCAP was prepared.

[1] Upland properties in the SW Kenny Street SD basin were included in this SCAP only if the property was not included in the Data Gaps Report (SAIC 2007) or SCAP (Ecology 2007b) for the Glacier Bay source control area (RM 1.3-1.6 West).

Table ES-1. Source Control Actions – Terminal 115 Source Control Area

Potential Sources	Action Items	Priority	Responsible Party(ies)	Status	Target Date
SW Kenny Street SD/POS SD 6132/Terminal 115 CSO (Outfall 2127)					
Concentrations of metals; PCBs; PAHs, phthalates, and other SVOCs; and petroleum hydrocarbons exceeding storm drain screening levels are present in storm drain solids samples collected from SW Kenny Street SD basin.	Identify and evaluate potential sources of the sediment COCs reported above screening values in storm drain structures within the SW Kenny Street SD basin.	Medium	SPU, Ecology	Planned	TBD
Highland Park Way SW SD/POS 6162 (Outfall 2125)					
Concentrations of metals; phthalates and other SVOCs; and petroleum hydrocarbons exceeding storm drain screening levels are present in storm drain solids samples collected from Highland Park Way SW SD basin.	Identify and evaluate potential sources of the sediment COCs reported above screening values in storm drain structures within the Highland Park Way SW SD basin.	Medium	SPU, Ecology	Planned	TBD
	Review data from storm drain solids samples collected upgradient of Outfall 2125 in April and October 2010 and May 2011, and data from sand cover samples collected from the clean sand cover placed on the maintenance dredged area in Berth 1, to evaluate the potential for sediment recontamination.	Medium	Ecology, Port of Seattle, SPU	Planned	TBD
West Michigan CSO (Outfall 2506)					
Concentrations of phthalates and other SVOCs and PCBs have been detected in an effluent sample collected from the West Michigan CSO.	Evaluate the 2009 King County effluent discharge data to assess whether the effluent concentrations from the West Michigan CSO represent a potential source of contaminants to the sediments near the Terminal 115 source control area.	Medium	Ecology	Planned	TBD

Table ES-1. Source Control Actions – Terminal 115 Source Control Area

Potential Sources	Action Items	Priority	Responsible Party(ies)	Status	Target Date
Terminal 115					
Port of Seattle Storm Drain Outfalls (Outfalls 2122, 2123, 2124, 2220, and POS 6146)					
Concentrations of metals; PAHs and other SVOCs; and petroleum hydrocarbons exceeding storm drain screening levels are present in storm drain solids samples collected from the Terminal 115 SD system.	Review data from storm drain solids samples collected upgradient of Outfalls 2123, 2124, and 2220 in April and October 2010 and May 2011; storm drain solids samples collected upgradient of Outfall 2128 in September 2011; and data from sand cover samples collected from the clean sand cover placed on the maintenance dredged area in Berth 1 to evaluate the potential for sediment recontamination.	Medium	Ecology, Port of Seattle	Planned	TBD
Groundwater drains into the storm drain system and is discharged to the LDW through Outfall 2220. Groundwater drainage structures are present at several tenant facilities. Groundwater is known to be contaminated with metals; PAHs, phthalates, and other SVOCs; petroleum hydrocarbons; and VOCs in some areas of the Terminal 115 property, including N Terminal 115.	The Port will collect base flow samples from the portions of the Terminal 115 SD system that discharge to Outfalls 2128 and 2220 to determine if contaminants in base flow (i.e., groundwater draining into the storm drain system through French drains and groundwater drainage structures) are present at concentrations exceeding Washington State Water Quality Standards (WAC 173-201A) and/or the draft groundwater-to-sediment screening levels.	Medium	Port of Seattle	Planned	TBD
Historical operations at the Terminal 115 property have resulted in soil and groundwater contamination beneath the property. Stormwater discharges have the potential to contain LDW sediment COCs.	Negotiate an Agreed Order with the Port. The Agreed Order will include Terminal-wide investigations to characterize the nature and extent of potential COC sources in fill material, soil, groundwater, and stormwater at Terminal 115. These investigations will include, at minimum, the items listed below.	High	Ecology, Port of Seattle	Planned	TBD
	Perform investigations of known and suspected source areas, including but not limited to, the areas historically operated by Boeing Plant 1, the area occupied by Shultz Distributing, historical and current USTs and ASTs, areas where French drains/groundwater drainage structures are installed, areas of exposed bank soil south of Berth 1, and areas where groundwater infiltration to the storm drain system is suspected.	High	Port of Seattle	In Progress (Shultz Distributing area) and Planned	January 2012 (Shultz Distributing Area) and TBD

Table ES-1. Source Control Actions – Terminal 115 Source Control Area

Potential Sources	Action Items	Priority	Responsible Party(ies)	Status	Target Date
Terminal 115, continued					
Historical operations at the Terminal 115 property have resulted in soil and groundwater contamination beneath the property. Stormwater discharges have the potential to contain LDW sediment COCs.	Collect storm drain solids samples from the storm drain lines discharging to Outfalls 2122, 2123, 2124, 2128, 2220, and POS 6146 and provide the data to Ecology to identify potential contaminant sources. Samples were recently collected from the storm drain lines discharging to Outfalls 2123, 2124, 2128, and 2220.	High	Port of Seattle	In Progress	TBD
	Perform a video inspection of storm drain lines to identify areas where groundwater infiltrates the storm drain system.	High	Port of Seattle	Planned	TBD
	Provide information regarding discharges to the deck drains north of Berth 1 to Ecology. Information to be provided will include, at minimum, a description of BMPs employed to prevent pollution of the stormwater runoff that is conveyed to the deck drains.	High	Port of Seattle	Planned	TBD
	Provide additional information to Ecology regarding stormwater drainage to the LDW from the 150 SW Michigan Street area of the Terminal 115 property. Information to be provided will include, at minimum, a map showing the area draining to the two small outfalls and a description of BMPs employed to prevent stormwater pollution.	High	Port of Seattle	Planned	TBD
Icicle Seafoods					
Stormwater from this facility is discharged to the LDW via outfalls on the Terminal 115 property.	Review SPU's 2009 and Ecology's 2010 inspection reports to verify that operations and materials used at the facility do not represent a potential source of sediment COCs, which could commingle with stormwater or be spilled directly to the LDW.	Medium	Ecology	Planned	TBD
	Review the responses to CERCLA Section 104(e) Request for Information letters from the companies that provide services to or are affiliated with Icicle Seafoods to identify potential sources of sediment recontamination. These companies include: Cypress Island Seafood, LLC, Murphy Overseas, LLC, and Smoki Foods.	Low	Ecology	Planned	TBD
Gene Summy Lumber and Commercial Fence (N Terminal 115)					
Historical operations at this area of Terminal 115 have resulted in soil and groundwater contamination beneath the property.	Review the response to the CERCLA Section 104(e) Request for Information letter from SGM to identify potential sources of sediment recontamination that may be associated with historical operations.	Low	Ecology	Planned	TBD

Table ES-1. Source Control Actions – Terminal 115 Source Control Area

Potential Sources	Action Items	Priority	Responsible Party(ies)	Status	Target Date
Terminal 115, continued					
Northwest Container Services					
Stormwater from this facility is discharged to the LDW via outfalls on the Terminal 115 property. Lead and zinc concentrations in effluent stormwater have historically exceeded NPDES permit limits. However, Northwest Container Services appears to have implemented appropriate source control BMPs.	Perform a follow-up stormwater inspection at Northwest Container Services to verify compliance with applicable regulations and BMPs to prevent the release of contaminants to the LDW.	Medium	Ecology, SPU	Planned	TBD
Shultz Distributing					
Stormwater from this facility may be conveyed to an OWS and then discharged to the sanitary sewer. During a CSO event, stormwater from the facility may be discharged to the LDW via the Terminal 115 CSO. However, SPU indicates that some stormwater from the facility may be conveyed to the city-owned storm drain system, which is not treated prior to discharge.	Determine if stormwater from the Shultz Distributing facility is conveyed to the Highland Park Way SW SD system without treatment.	High	SPU, Port of Seattle	Planned	TBD
	Perform a facility inspection to verify compliance with applicable regulations and BMPs to prevent the release of contaminants to the LDW.	Medium	Ecology, SPU, King County	Planned	TBD
Seafreeze Cold Storage					
Stormwater from this facility is discharged to the LDW via outfalls on the Terminal 115 property.	Review the responses from Seafreeze, Custom Seafoods, and Northwest Seafood Processors to the CERCLA Section 104(e) Request for Information letter to identify potential sources of sediment recontamination (if any) that may be associated with current or historical operations.	Low	Ecology	Planned	TBD

Table ES-1. Source Control Actions – Terminal 115 Source Control Area

Potential Sources	Action Items	Priority	Responsible Party(ies)	Status	Target Date
Seattle Engineering Department Penn Yard					
Stormwater from this facility is likely conveyed to the LDW via surface runoff or infiltration/ groundwater discharge, but may be conveyed to the Terminal 115 CSO during a CSO event via the sanitary or combined sewer. Contaminants in soil and/or groundwater may reach the LDW via the groundwater discharge and/or bank erosion pathways.	Perform a property inspection to determine current use of the property and determine if stormwater and/or spills may be conveyed to the LDW via sheet flow or groundwater discharge.	Medium	Ecology	Planned	TBD
	Request information from the City of Seattle Engineering Department regarding historical operations performed by the department to determine if operations may have resulted in releases of contaminants to soil and/or groundwater.	Medium	Ecology	Planned	TBD
Former Foss Environmental Services					
Stormwater from this facility is discharged to the LDW via the Terminal 115 SD system and the Terminal 115 CSO (Outfall 2127) during CSO events. Historical operations have resulted in soil and groundwater contamination beneath the property. Sediment COCs may be conveyed to the LDW via groundwater discharge.	Request additional information regarding the status of the utility-owned pad-mounted electrical transformer from Haslund MP to determine if it remains at the property, and if so, to determine if it contains PCB-bearing fluid.	Medium	Ecology	Planned	TBD
	Request additional information from Haslund MP to determine the locations of storm drain lines on the former Foss Environmental property.	Medium	Ecology	Planned	TBD
	Review responses from McGraw-Hill Companies, Inc. and Ilahie Holdings, Inc. to the CERCLA Section 104(e) Request for Information letters to identify potential sources of sediment recontamination that may be associated with current or historical operations.	Low	Ecology	Planned	TBD
	Request that Haslund MP perform an environmental investigation to characterize the nature and extent of potential sediment COCs in soil and groundwater beneath the property. Soil and groundwater contamination may be present due to historical operations by Boeing.	High	Ecology	Planned	TBD
Aluminum & Bronze Fabricators					
Stormwater from this facility is discharged to the LDW via the SW Kenny Street SD system and the Terminal 115 CSO.	Determine if Aluminum & Bronze can obtain a CNE certificate or is required to obtain coverage under the Industrial Stormwater General Permit.	Medium	Ecology	Planned	TBD
Catholic Printery					
Stormwater from this facility is discharged to the LDW via the SW Kenny Street SD system and the Terminal 115 CSO.	Review the April 2010 local source control inspection report to determine if there is a potential for sediment recontamination via the stormwater pathway.	Medium	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

AST	aboveground storage tank
BMP	best management practice
CERCLA	Confirmed and Suspected Contaminated Sites List
CNE	Conditional No Exposure
COC	chemical of concern
CSO	combined sewer overflow
LDW	Lower Duwamish Waterway
NPDES	National Pollutant Discharge Elimination System
OWS	oil/water separator
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
POS	Port of Seattle
SD	storm drain
SGM	Strategic Global Mobility
SPU	Seattle Public Utilities
SVOC	semivolatile organic compound
TBD	to be determined
UST	underground storage tank
VOC	volatile organic compound
WAC	Washington Administrative Code

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SoundEarth Strategies, Inc., Environmental Consultants to the Port of Seattle

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Acronyms/Abbreviations

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
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CKD	cement kiln dust
CNE	Conditional No Exposure
COC	chemical of concern
CSCSL	Confirmed and Suspected Contaminated Sites List
CSL	Cleanup Screening Level
CSO	combined sewer overflow
DMR	Discharge Monitoring Report
DW	dry weight
EAA	Early Action Area
Ecology	Washington State Department of Ecology
ECR	Environmental Conditions Report
EPA	United States Environmental Protection Agency
ESA	Environmental Site Assessment
FS	Feasibility Study
HPAH	high molecular weight polycyclic aromatic hydrocarbon
ID	identification
IEC	Issue of Environmental Concern
KC	King County
KCHD	King County Health Department
KCIW	King County Industrial Waste
Klinker	Klinker Sand and Gravel Company
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
µg/L	micrograms per liter
mg/kg	milligrams per kilogram
mgy	million gallons per year
MSI	Marine Services International
MTCA	Model Toxics Control Act
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
OC	organic carbon
OWS	oil/water separator
PAH	polycyclic aromatic hydrocarbon
PBT	persistent bioaccumulative toxin
PCB	polychlorinated biphenyl
POS	Port of Seattle

ppm	parts per million
PSCAA	Puget Sound Clean Air Agency
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
SCWG	Source Control Work Group
SD	storm drain
SGM	Strategic Global Mobility
SKCDPH	Seattle/King County Department of Public Health
SMS	Sediment Management Standards
SPU	Seattle Public Utilities
sq ft	square foot or feet
SQS	Sediment Quality Standard
SVOC	semivolatile organic compound
SWPPP	Stormwater Pollution Prevention Plan
TBT	tributyltin
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	toxic equivalency
TOC	total organic carbon
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
UST	underground storage tank
VCP	Voluntary Cleanup Program
VOC	volatile organic compound
WAC	Washington Administrative Code
WQS	water quality standards
WSDOT	Washington State Department of Transportation

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) 1.6 to 2.1 West[1] (Terminal 115) source control area[2] 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 Terminal 115 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 documents:

- *Lower Duwamish Waterway, RM 1.6 to 2.1 West (Terminal 115) – Summary of Existing Information and Identification of Data Gaps*, (Data Gaps Report) Science Applications International Corporation (SAIC), June 2011, located on Ecology's website: http://www.ecy.wa.gov/programs/tcp/sites_brochure/lower_duwamish/sites/RM_16_21W/terminal115_hp.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
- *Terminal 115 Environmental Conditions Report*, SoundEarth Strategies, Inc. (SoundEarth), April 2011.

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 Terminal 115 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 Terminal 115 source control area, including outfalls, spills, properties adjacent to the LDW, and upland properties within the Terminal 115, Highland Park Way SW and SW Kenny Street storm drain (SD) basins,[3] and the Terminal 115 and West Michigan combined sewer overflow (CSO) basins. Section 3 also

[1] River miles as defined in this report are measured from the southern tip of Harbor Island.
[2] This SCAP incorporates data published through June 15, 2011. Section 5, Tracking and Reporting of Source Control Activities, describes how newer data will be disseminated.
[3] Upland properties in the SW Kenny Street SD basin were included in this SCAP only if the property was not included in the Data Gaps Report (SAIC 2007) or SCAP (Ecology 2007b) for the Glacier Bay source control area (RM 1.3-1.6 West).

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 sites 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 2007a, 2008c, 2008d, 2009g 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 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 2003a). 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 may pose threats to people, fish, and wildlife.

In December 2000, EPA and Ecology signed an agreement with King County, the Port of Seattle (the Port), the City of Seattle, and The Boeing Company, collectively known as the Lower Duwamish Waterway Group (LDWG). Under the agreement, the LDWG is conducting 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 2003a).

The Phase 1 RI used existing data to characterize the nature and extent of chemical distributions 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 2010). No additional early cleanup areas were identified. An FS, which will address cleanup options for contaminated sediments in the LDW, is currently in progress.

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* (Windward 2003b) was issued. Seven candidate sites for early action were recommended. The sites, as listed in the Technical Memorandum (Windward 2003b), 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.[4] EPA is the lead agency for managing cleanup at Terminal 117 and Slip 4. The other three early action cleanup projects were begun before the current LDW RI/FS was initiated. Cleanup at Boeing Plant 2, under EPA Resource Conservation and Recovery Act (RCRA) management, is currently

[4] These five sites are identified as EAAs in the Draft Final FS for the Lower Duwamish Waterway, published on October 15, 2010 (AECOM 2010). The two candidate EAAs without sponsors are identified in the Draft Final FS as Areas of Potential Concern.

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. An additional sediment removal action was completed by Boeing inshore of the Norfolk CSO/SD area in September 2003. 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 2008c). The Terminal 115 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. Subsequently, 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 and CSO basins located in the vicinity of the Terminal 115 source control area are shown on Figures 2 and 3, respectively.

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).[5] Existing administrative and legal authorities will be used to perform inspections and require necessary source control actions.

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 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.

[5] Washington Administrative Code (WAC) 173-204

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 Phase 2 of 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 2008c). 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, City of Tukwila, and EPA. All of these agencies, except the City of Tukwila, are involved in the source control activities for the Terminal 115 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 1.6 to 2.1 West (Terminal 115)

The Terminal 115 source control area is located along the western side of the LDW Superfund Site between 1.6 and 2.1 miles from the southern tip of Harbor Island (Figure 1). Elevated concentrations of chemicals, including PCBs; PAHs, phthalates, and other semivolatile organic compounds (SVOCs); and dioxins/furans have been measured in sediments near the source control area; these may be a result of historical and/or ongoing sources within the source control area. Organotin metals have also been identified as COCs in sediments near the source control area. 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.

RM 1.6-2.1 West (Terminal 115) extends from the southern side of Glacier Bay to SW Michigan Street and the 1st Avenue S Bridge (Figure 4). The source control area includes three storm drain basins and two CSO basins:

- The Terminal 115 SD basin, which covers approximately 100 acres and includes the Terminal 115 and former Foss Environmental properties;
- The Highland Park Way SW SD basin, which covers 289 acres, and spans east-to-west from 8th Avenue SW to 13th Avenue SW and north-to-south from Highland Park Way SW to SW Trenton Street;
- The SW Kenny Street SD basin, which covers 155 acres, and spans east-to-west from West Marginal Way SW/Glacier Bay to South Seattle Community College/16th Avenue SW and north-to-south from southern end of Kellogg Island to SW Holly Street;
- The Terminal 115 CSO basin, which covers approximately 110 acres, and spans east-to-west from the LDW to properties west of West Marginal Way SW and north-to-south from the northern boundary line of Terminal 115 to just south of SW Michigan Street; and
- The West Michigan CSO basin, which covers approximately 200 acres, and spans east-to-west from 8th Avenue SW to 13th Avenue SW and north-to-south from West Marginal Way SW to SW Roxbury Street.

Upland properties in the SW Kenny Street SD basin were included in this source control area if they were not included in the Data Gaps Report (SAIC 2007) or SCAP (Ecology 2007b) for the Glacier Bay source control area (RM 1.3-1.6 West).

The Terminal 115 source control area includes the following (Figure 4).

- Properties and facilities adjacent to the LDW:
    - Terminal 115 and its tenants:
        - Commercial Fence Corporation
        - Gene Summy Lumber Company
        - Northland Services, Inc. and its subtenant:
            - Northwest Container Services, Inc.

        - Sea Pac Services, LLC
        - Seafreeze Cold Storage and its subtenants:
            - Icicle Seafoods, Inc.
            - Custom Seafoods
            - Northwest Seafood Processors
        - Shultz Distributing, Inc. and its subtenants:
            - Subway Corporation
            - Portside Coffee Company
    - Seattle Engineering Department Penn Yard
    - Former Foss Environmental Services
- Upland facilities located within the Highland Park Way SW SD basin:
    - A&E Auto Repair
    - Enviro Metal Co.
    - Lloyd Electric Apparatus Co.
    - Pacific Plumbing Supply
    - Pioneer Industries Seattle
    - SPU SW Trenton Tank
- Upland facilities located within the SW Kenny Street SD basin and Terminal 115 CSO basin, which were not previously addressed as part of the RM 1.3-1.6 West (Glacier Bay) Data Gaps Report (SAIC 2007) and SCAP (Ecology 2007b):
    - Aluminum & Bronze Fabricators, Inc.
    - Catholic Printery, Inc.
    - Emswiler Construction
    - Pacific Rim Equipment Rental/Krueger Sheet Metal Company

In addition, Ecology's Facility/Site Database was reviewed to identify any additional facilities that could represent potential sediment recontamination sources within the West Michigan and Terminal 115 CSO basins. No additional facilities were identified within the Terminal 115 CSO basin. Two facilities were identified within the West Michigan CSO basin.

- Molner's One Stop, Inc.
- SPU Vactor Pit

These facilities are shown on Figure 4. The tax parcels associated with these facilities are identified on Figure 5.

2.1 Chemicals of Concern in Sediment

Sediments near the Terminal 115 source control area generally consist of 60 to 100 percent fines with small areas of 20 to 60 percent fines between approximately RM 1.8 and 1.9 West, and 40 to 60 percent fines from approximately RM 1.95 to 2.1 West. Total organic carbon (TOC) in this area ranges from 0.5 to 4 percent (Windward 2010).

Several environmental investigations have included the collection of sediment near the Terminal 115 source control area (Figure 6), including the following:

- Seven surface sediment samples collected as part of a National Oceanic and Atmospheric Administration (NOAA) sediment characterization of the Duwamish River in 1997 (NOAA 1998);
- Eight surface samples collected during a Boeing Site Characterization in 1997 (Exponent 1998);
- Eighteen surface sediment samples collected during an EPA Site Inspection in 1998 (Weston 1999);
- Nine surface sediment and five subsurface sediment samples from two coring locations collected during the LDW Phase 2 RI from 2005 to 2006 (Windward 2005a, 2005b, 2007a, 2007b);
- Nine subsurface sediment samples collected from two coring locations during the Terminal 115 Sediment Characterization in 2008 (Anchor 2008);
- Five surface sediment samples collected during the Terminal 115 Slope Area Surface Sediment Characterization in 2009 (Anchor 2009); and
- Thirty-one subsurface sediment samples collected from seven coring locations and four sand cover samples during the Post-Dredge Subsurface Sediment Characterization in 2010 (SEE 2010a,b).

Sediment data near the Terminal 115 source control area are detailed in the Terminal 115 Data Gaps Report (SAIC 2011a). Chemical data were compared to the SMS, which include both the Sediment Quality Standards (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.

Dioxin and furan data were compared to the background toxic equivalency (TEQ) concentrations of dioxins and furans as described in *Lower Duwamish Waterway Remedial Investigation Report* (Windward 2010). The results of this comparison are provided in Tables 1 and 2.

COCs were identified based on the results of sediment sampling in the vicinity of the Terminal 115 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 Terminal 115 source control area. The greatest exceedances were observed for fluoranthene and chrysene in composite subsurface sample S1-CS, hexachlorobenzene in surface sample LDW-SS68, bis(2-ethylhexyl)phthalate (BEHP) in composite subsurface sample S2-CS, PCBs in surface sample R7, and butyl benzyl phthalate in surface sample DR131. These samples were collected offshore of the southern half of Terminal 115 (Figure 6). The greatest dioxin/furan TEQ exceedance was observed in surface sample LDW-SS59, which is located near the Terminal 115 CSO/SW Kenny Street SD outfall. Additional information on SQS/CSL exceedances is provided in the Terminal 115 Data Gaps Report (SAIC 2011a).

The following chemicals were detected in sediments near the Terminal 115 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
PAHs				
Acenaphthene			●	
Benzo(a)anthracene			●	
Benzo(a)pyrene			●	
Chrysene			●	●
Fluoranthene			●	●
Pyrene			●	●
Total benzofluoranthenes			●	●
Total HPAH			●	
Phthalates				
Bis(2-ethylhexyl)phthalate	●	●	●	●
Butyl benzyl phthalate	●		●	
SVOCs				
Hexachlorobenzene	●	●		
Benzyl alcohol			●	●
PCBs				
PCBs (total)	●	●	●	

HPAH – high molecular weight PAHs
Exceedance factors, which are a measure of the degree to which maximum detected concentrations exceed the SQS/CSL values, are listed in Tables 1 and 2.
Dioxin/furan TEQ exceeded the LDW background (Windward 2010) in surface and subsurface sediment samples.

Organotin compounds are persistent bioaccumulative toxins (PBTs) and are generally considered to be 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 milligrams per kilogram (mg/kg) dry weight (DW) (AECOM 2010). Organotin compounds were detected at four sampling locations near the Terminal 115 source control area in 1998, with concentrations

of TBT up to 0.07 mg/kg DW at locations DR152 and DR154 (SAIC 2011a). Since the maximum TBT concentration in sediments near the Terminal 115 source control area is three orders of magnitude below the mean TBT concentration in LDW sediment, organotin compounds are not considered to be COCs for the sediments adjacent to the Terminal 115 source control area. However, because organotins have been detected near the Terminal 115 source control area, analysis for organotin compounds should be performed when future sediment samples are collected in this area.

2.2 Potential Pathways to Sediment

Transport pathways that could potentially contribute to the recontamination of sediments near the Terminal 115 source control area following remedial activities (if any) include direct discharges via storm drain and CSO 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 Terminal 115 Data Gaps Report (SAIC 2011a). Specific contaminant sources and transport pathways are discussed in Section 3.

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. The storm drain systems in the Terminal 115 source control areas are publicly-owned by the Port and the City of Seattle.

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 Terminal 115 and West Michigan CSOs discharge to the LDW within the Terminal 115 source control area.

Additional information on public storm drains and CSOs is presented in the Terminal 115 Data Gaps Report (SAIC 2011a). There are nine outfalls discharging to the LDW within the Terminal 115 source control area, including seven public storm drain outfalls, one CSO outfall, and one CSO/SD outfall (Figure 4).

These are discussed in more detail in Section 3.0.

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.

Groundwater Discharges

The area between RM 1.9 and 2.0 West has been identified as an area with a generally higher seepage level. Two seeps were identified between RM 2.0 and 2.1 West but were not sampled for chemical analysis. The area between RM 1.6 and approximately 1.8 West was not evaluated for seeps because of limited access to the shoreline due to the presence of the Terminal 115 pier and barges (Windward 2004).

Groundwater flow in the Terminal 115 source control area is generally to the east, toward the LDW, although the direction may vary locally depending on the nature of the subsurface material, and temporally, based on proximity to the LDW and the influence of tidal action. 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 Terminal 115 source control area.

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. 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 site-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 site-specific conditions, to evaluate the likelihood that they will lead to exceedances of the SMS.

Soil and groundwater contaminated by metals; PAHs, phthalates, and other SVOCs; petroleum hydrocarbons; and volatile organic compounds (VOCs) have been documented at Terminal 115.

Bank Erosion

The banks of the LDW shoreline are susceptible to erosion by wind and surface water, particularly in areas where banks are steep and/or exposed. 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 shoreline under the pier north of Berth 1 is engineered with riprap. Within Berth 1, the bank is engineered riprap with exposed riparian areas. The area south of Berth 1 contains some riprap and exposed banks.

Spills to the LDW

Near-water and over-water activities have the potential to impact adjacent sediments from spills of material containing COCs. Tenants at Terminal 115 conduct loading and unloading activities within the Terminal 115 source control area. Accidental spills during loading/unloading operations may result in transport of contaminants to sediment.

Atmospheric Deposition

Atmospheric deposition occurs when 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. None of the properties within the Terminal 115 source control area, Terminal 115 CSO, or West Michigan CSO are currently regulated as point sources of air emissions.

Contaminants originating from nearby properties and streets may be transported through the air and deposited in the LDW or in areas that drain to the LDW. 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 is summarized in the LDW Source Control Status Reports (Ecology 2007a and subsequent updates). Ecology plans to conduct an air deposition scoping study to inventory known point sources and make recommendations on how to address air deposition for source control.

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3.0 Potential Sources of Sediment Recontamination

Potential sources of sediment recontamination are described in detail in the Terminal 115 Data Gaps Report (SAIC 2011a). This section summarizes the information on public outfalls (Section 3.1), Terminal 115 and tenants (Section 3.2), other adjacent properties (Section 3.3), and upland properties (Section 3.4).

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 stormwater system. In addition, contaminants in soil or groundwater could enter the storm drain system through cracks or gaps in the stormwater piping.

Seven public storm drain outfalls (six Port-owned, one city-owned), one King County CSO outfall, and one King County- and city-owned CSO/SD outfall discharge to the LDW within the RM 1.6-2.1 West source control area (Figure 7a). The outfalls are listed below, from north to south:

SPU Outfall No.[1]	Outfall Name	Port Outfall No.	Diameter/Material	Outfall Type
2128	POS 6133	6133	18-inch concrete	Port outfall
2127	Terminal 115 CSO/ SW Kenny Street SD	6132	48-inch concrete	KC CSO/SPU SD
N/A	POS 6146	6146	24-inch concrete	Port outfall
2220	POS 6153	6153	20-inch concrete	Port outfall
2123	POS 6161	6161	12-inch composite	Port outfall
2125	Highland Park Way SW SD	6162	32-inch concrete	SPU SD
2124	POS 6163	6163	18-inch concrete lined ductile iron pipe	Port outfall
2122	POS 6165	6165	24-inch concrete	Port outfall
2506	West Michigan CSO	NA	36-inch concrete	KC CSO

[1] Outfall number as listed in Windward 2010, Appendix H.
KC – King County SPU = Seattle Public Utilities
POS – Port of Seattle

The approximate drainage area associated with each of the Port outfalls is shown on Figure 7a, and the storm drain and sanitary sewer lines and structures on Terminal 115 are shown on Figure 7b. Storm drain and sanitary sewer lines at Terminal 115 and within the Highland Park Way SW SD basin and the Terminal 115 and West Michigan CSO basins are shown on Figures 8a and 8b.

Seattle Public Utilities (SPU) and the Port have collected storm drain solids samples from the storm drain structures associated with Outfalls 2123, 2124, 2125, 2127, 2128, and 2220.[6] The SCWG compares analytical results from these samples to the SQS, apparent effects threshold (AET), and Model Toxics Control Act (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 2010h). In this document, values described above (SQS/CSL, lowest AET [LAET]/second lowest AET [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 the system.

3.1.1 Public Storm Drain Outfalls

Terminal 115 CSO/SW Kenny Street SD (Outfall 2127)

The T115 CSO/SW Kenny Street SD (also known as Port Outfall 6132) is located on the northeastern corner of the Terminal 115 property. This outfall functions as both a CSO for the King County combined sewer system and as a storm drain for the city's drainage system. Information regarding CSO discharges through this outfall is discussed in Section 3.1.2.

Storm Drain Solids Sampling (2006 to 2010)

To date, SPU has collected one sediment trap sample (location KN-ST1, collected in March 2009), three in-line solids samples (location KN-ST1, collected in September 2008, March 2009, and May 2010), and four right-of-way catch basin samples (RCB52, RCB53, RCB54, and RCB55, collected in March 2006) in the SW Kenny Street SD basin. Metals, PAHs, phthalates, PCBs, and petroleum hydrocarbon concentrations exceeded the storm drain screening values. These exceedances are summarized below.

[6] Storm drain solids analytical data for the samples collected by the Port were not available for review.

			Sample Location	KN-ST1	KN-ST1	RCB52, RCB53, RCB54, RCB55
			Sample Type	In-line	Sediment Trap	Catch Basin
			Sample Dates	9/10/08, 3/17/09, 5/6/10	3/17/09	3/26/06
Chemical	**SQS-LAET[a]**	**CSL-2LAET**				
Metals						
Arsenic	57	93	30 – **70**	10	7 – 20
Lead	450	530	184 – **470**	69	11 – 402
Mercury	0.41	0.59	0.19 – **0.42**	0.11	<0.05 – 0.09
Zinc	410	960	**707** – **879**	**463**	370
PAHs					
Anthracene	0.96	4.4	<0.075 – **1.4**	0.25	<0.12 – 0.53
Phenanthrene	1.5	5.4	0.085 – **3.3**	1.2	<0.12 – **2.5**
Total LPAH	5.2	13.0	0.085 – 5.2 J	1.45	0.069 J – 3.32 J
Benzo(a)anthracene	1.3	1.6	0.4 – 0.99 J	0.7	<0.12 – **2.4**
Benzo(a)pyrene	1.6	3.0	0.15 – 1.1	0.74	<0.12 – **2.9**
Benzo(b)fluoranthene	3.2	3.6	0.31 – 1.7	1.1	<0.12 – **5.7**
Benzo(g,h,i)perylene	0.67	0.72	0.093 – 0.64 J	**0.76**	<0.12 – **3.5**
Chrysene	1.4	2.8	0.21 – **2.4 J**	**1.4**	<0.12 – **4.9**
Dibenz(a,h)anthracene	0.23	0.54	<0.075 – 0.19	**0.25**	<0.12 – **0.62**
Fluoranthene	1.7	2.5	0.42 – **6.9**	**2.1**	<0.12 – **5.7**
Indeno(1,2,3-cd)pyrene	0.6	0.69	0.083 – 0.59	**0.64**	<0.12 – **3.3**
Pyrene	2.6	3.3	0.29 – **2.9 J**	1.8	<0.12 – **4.2**
Total HPAH	12.0	17.0	1.95 – **19.0 J**	10.7	<0.12 – **36.5**
Phthalates					
Bis(2-ethylhexyl)phthalate	1.3	1.9	0.83 – **2.9 J**	**4.9**	0.19 – **3.8**
Butyl benzyl phthalate	0.063	0.9	<0.075 – **0.15 J**	**0.16**	<0.12 – **1.1**
PCBs					
Total PCBs	0.13	1.0	**0.167** – **0.5**	0.1	<0.02 – 0.058
Petroleum Hydrocarbons					
Heavy-oil range	2,000	--	660 – **4,600**	**4,700**	370 – 1,700

All concentrations are in mg/kg dry weight (DW).
a – Petroleum hydrocarbons compared to MTCA Method A cleanup standards.
J – Estimated concentration between the method detection limit and the laboratory reporting limit.
< - Analyte not detected at or below the laboratory reporting limit, number represents the laboratory reporting limit.
Bold concentrations exceed the SQS, AET, or MTCA Method A cleanup standards.

The September 2008 in-line sample at KN-ST1 was also analyzed for dioxins/furans. The total dioxin/furan TEQ was 50.4 ng/kg in this sample (Schmoyer 2011).

Highland Park Way SW SD (Outfall 2125)

The Highland Park Way SW SD (also known as Port Outfall 6162) discharges to the LDW in the middle portion of Terminal 115, near Berth 1 (Figure 8a). The Highland Park Way SW SD system discharges to Outfall 2125.

Storm Drain Solids Sampling (2008 to 2011)

SPU collected samples from two sediment traps (HP-ST4 and HP-ST6) in the Highland Park Way SW SD basin in March and April 2009, respectively (Figure 9). In addition, SPU collected in-line grab samples from HP-ST4 in September 2008 and from HP-ST6 in September 2008 and April 2009 (SPU 2010h). Concentrations of metals, phthalates, other SVOCs, and petroleum hydrocarbons exceeded the storm drain screening values. These exceedances are summarized below.

		Sample Location	**HP-ST4, HP-ST6**	**HP-ST4, HP-ST6**
		Sample Type	**In-Line**	**Sediment Trap**
		Sample Dates	**9/10/08, 9/25/08, 4/15/09**	**3/12/09, 4/15/09**
Chemical	**SQS-LAET[a]**	**CSL-2LAET**		
Metals				
Zinc	410	960	184 – **882**	228 – **779**
Phthalates				
Bis(2-ethylhexyl)phthalate	1.3	1.9	0.29 – **5.1**	**4.0** – **7.3**
Butyl benzyl phthalate	0.063	0.9	<0.039 – **0.60**	**0.40** – **0.42**
Dimethylphthalate	0.071	0.16	<0.039 – **0.072**	**<0.093** – **<0.16**
SVOCs				
4-Methylphenol	0.67	0.67	<0.039 - <0.14	<0.16 – **3.4**
Benzyl alcohol	0.057	0.073	<0.039 – **0.43**	**<0.093** – **<0.16**
Petroleum Hydrocarbons				
Heavy-oil range	2,000	--	540 – **3,800**	1,600 – **4,800**

All concentrations are in mg/kg dry weight (DW).
a – Petroleum hydrocarbons compared to MTCA Method A cleanup standards.
J – Estimated concentration between the method detection limit and the laboratory reporting limit.
< - Analyte not detected at or below the laboratory reporting limit, number represents the laboratory reporting limit.
Bold concentrations exceed the SQS, AET, or MTCA Method A cleanup standards.

The Port collected sediment trap samples from Port-owned storm drain lines that are plumbed to the city's Highland Park Way SW SD system in April and October 2010 and May 2011 (Figure 10). The samples were analyzed for metals, phthalates, PAHs, and pentachlorophenol (Kuroiwa

2010, 2011). The complete analyte list and validated analytical data were not available for review during the preparation of this SCAP.

Port of Seattle Storm Drain Outfalls (Outfalls 2122, 2123, 2124, 2128, 2220, and POS 6146)

Outfall 2128 is located on Glacier Northwest property, just to the north of Terminal 115 (Figure 8a). This outfall was discussed in the Data Gaps Report for the Glacier Bay source control area (SAIC 2007); however, little information about drainage to this outfall was available at the time the Glacier Bay Data Gaps Report was prepared. Based on a recent inspection of storm drain lines, the drainage area of Outfall 2128 includes the French drain/groundwater drainage structures south of Building W-2 and the roof drains associated with the building. The Port has scheduled cleaning of the storm drain line from Manhole 358 to Outfall 2128 in October 2011 (Takasaki 2011b).

Based on the Port storm drain map (Figures 7b and 8a) and the 2006 survey performed by Phoinix (Phoinix 2006), POS 6146 drains the northern portions of the Northland Services and Northwest Container Services facilities; Outfall 2220 drains the middle portion of the Northland Services, Northwest Container Services, and Sea Pac Services facilities; Outfall 2123 drains the area directly in front of Berth 1; Outfall 2124 drains the area northeast of the Seafreeze building; and Outfall 2122 drains the eastern and southern portions of the Seafreeze/Icicle Seafoods facility (Figure 7a).

Groundwater drains into the storm drain system on the Northland Services, Northwest Container Services, Sea Pac Services, and Gene Summy Lumber facilities (Figures 7a and 8a) and is discharged to the LDW through Outfall 2220. Discharges of uncontaminated groundwater are permitted under Northland Services NPDES permit (Anchor 2010).

Storm Drain Solids Sampling (2006 through 2011)

In May 2006, SPU collected a grab storm drain solids sample from CB91 (SPU 2010h), which appears to be equivalent to catch basin number 575 or 580 on Figure 7b. The catch basin is located on the Northland Services facility in an area described by SPU as “adjacent to sweepings disposal area” (SPU 2010h). Stormwater entering this catch basin is conveyed to the LDW via Outfall 2220. Copper, zinc, and PAHs were detected at concentrations significantly above the storm drain screening values in this sample:

Chemical	SQS-LAET (mg/kg DW)	CSL-2LAET (mg/kg DW)	Concentration (mg/kg DW)
Metals			
Copper	390	390	**697**
Zinc	410	960	**1,720**
PAHs			
Acenaphthene	0.5	0.73	**74.0**
Anthracene	0.96	4.4	**95.0**
Fluorene	0.54	1.0	**99.0**

Chemical	SQS-LAET (mg/kg DW)	CSL-2LAET (mg/kg DW)	Concentration (mg/kg DW)
Naphthalene	2.1	2.4	**15.0**
Phenanthrene	1.5	5.4	**970**
Total LPAH	5.2	13.0	**1,253**
Benzo(a)anthracene	1.3	1.6	**130**
Benzo(a)pyrene	1.6	3.0	**45.0**
Benzo(b)fluoranthene	3.2	3.6	**90.0**
Benzo(g,h,i)perylene	0.67	0.72	**25.0**
Benzo(k)fluoranthene	3.2	3.6	**52.0**
Chrysene	1.4	2.8	**160**
Fluoranthene	1.7	2.5	**890**
Indeno(1,2,3-cd)pyrene	0.60	0.69	**20.0**
Pyrene	2.6	3.3	**650**
Total HPAH	12.0	17.0	**2,062**
SVOCs			
2-Methylnaphthalene	0.67	0.67	**16.0**
Dibenzofuran	0.54	0.54	**53.0**

Bold concentrations exceed the SQS or AET cleanup standards.

In addition, diesel-range and heavy-oil range petroleum hydrocarbons exceeded the MTCA Method A soil cleanup level in this sample, with concentrations of 8,100 mg/kg and 6,900 mg/kg, respectively. The detection limits for most SVOCs were elevated due to the high concentrations of PAHs in this sample (Schmoyer 2011); therefore, this sample may not be representative for SVOCs.

The Port collected sediment trap samples from storm drain lines connected to Outfalls 2123, 2124, and 2220 in April and October 2010 and May 2011 (Figure 10). The samples were analyzed for metals, phthalates, PAHs, and pentachlorophenol (Kuroiwa 2010, 2011). SPU collected a storm drain solids sample from Manhole 358 in September 2011 (Takasaki 2011b). The complete analyte list and validated analytical data were not available for review during the preparation of this SCAP.

Potential for Future Releases to LDW Sediments

Sediment trap and in-line storm drain solids sampling has indicated that concentrations of sediment COCs exceeding storm drain screening values are present in the storm drain systems discharging to the Terminal 115 source control area. A summary of sediment COCs identified in each storm drain basin is provided below.

Sediment COC	Storm Drain Basin		
	Terminal 115 Outfall 2220	Highland Park Way SW	SW Kenny Street
Metals	●□	●	●
PCBs			●
PAHs	●□		●□
Phthalates		●□	●□
Other SVOCs	●□	●□	
Petroleum Hydrocarbons	●	●	●

● Chemical detected in storm drain solids samples at a concentration that exceeds the SQS/LAET or MTCA Method A cleanup level.

□ Chemical detected in storm drain solids samples at a concentration that exceeds the CSL/2LAET.

Groundwater drains into the storm drain system and is discharged to the LDW through Outfall 2220. Groundwater drainage structures are present at the Northland Services, Northwest Container Services, Sea Pac Services facilities, and immediately south of the Gene Summy Lumber facility. Discharges of uncontaminated groundwater are permitted under Northland Services' NPDES permit (Anchor 2010).

Groundwater is known to be contaminated in some areas of the Terminal 115 property (Section 3.2.1), including N Terminal 115. A dry season survey in 2008 indicated that groundwater was not being discharged through the storm drain system to Outfall 2220 (Anchor 2010); however, no surveys have been performed during the wet season. Contaminants in groundwater (if any) may have the potential to recontaminate LDW sediments.

Ecology will continue to perform facility inspections to determine if undocumented industrial operations are occurring within the Highland Park Way SW and SW Kenny Street SD basins that may be an ongoing source of sediment recontamination. SPU plans to inspect high-risk businesses throughout the LDW SD basins every two years. High-risk businesses perform operations which present a high potential for sediment recontamination. Pacific Rim Trench & Shoring and Pioneer Human Services have been identified as high-risk businesses in the SW Kenny Street and Highland Park Way SD basins.

Source Control Actions

Information needed to assess the potential for sediment recontamination associated with the storm drain outfalls was summarized in the Terminal 115 Data Gaps Report. The following source control actions will be conducted to fill the identified data gaps and reduce the potential for recontamination of sediments near the Terminal 115 source control area:

- SPU and Ecology will identify and evaluate potential sources of the sediment COCs reported above screening values in storm drain structures within the Highland Park Way SW and SW Kenny Street SD basins.

- Ecology, the Port, and SPU will review data from storm drain solids samples collected upgradient of Outfalls 2123, 2124, 2125, and 2220 in April and October 2010 and May 2011, a storm drain solids sample collected upgradient of Outfall 2128 in September 2011, and data from sand cover samples collected from the clean sand cover placed on the maintenance dredged area in Berth 1 to evaluate the potential for sediment recontamination.
- The Port will collect base flow samples from the portions of the Terminal 115 SD system that discharge to Outfalls 2128 and 2220 to determine if contaminants in base flow (i.e., groundwater draining into the storm drain system through French drains and groundwater drainage structures) are present at concentrations exceeding Washington State Water Quality Standards[7] (WQS) and/or draft groundwater-to-sediment screening levels.

3.1.2 King County Combined Sewer Overflows

The Terminal 115 and West Michigan CSOs discharge to the LDW within the Terminal 115 source control area. King County Industrial Waste (KCIW) estimates that, on a county-wide basis, industrial discharges comprise less than 0.5 percent of the total volume of a CSO event (Tiffany 2008a). Typically, domestic users of the combined sewer system contribute a larger percentage of the chemical loading than industrial users. For example, KCIW testing has indicated that industrial users of the combined sewer system contribute less than 10 percent of the phthalate load, with the remainder coming from uncontrollable sources such as domestic users.

Terminal 115 CSO (038)/SW Kenny Street SD (Outfall 2127)

The Terminal 115 CSO basin covers approximately 110 acres, spanning east-to-west from the LDW to properties immediately west of West Marginal Way SW and north-to-south from the northern boundary line of Terminal 115 to just south of SW Michigan Street (Figure 8a). Land uses within the CSO basin include residential, parks, industrial, and commercial properties.

The CSO has been under King County authority since 1962. The Terminal 115 CSO discharges to the LDW via the city's 48-inch diameter SW Kenny Street storm drain outfall (Outfall 2127), which is located at the northeast corner of the Terminal 115 source control area (King County 2009a). From 2000 to 2007, combined wastewater and stormwater overflows were discharged through the Terminal 115 CSO on average three times per year, with an annual average volume of approximately 3.52 million gallons per year (mgy) (Tiffany 2008b). The northern portion of the 8th Avenue CSO basin overlaps with most of the Terminal 115 CSO basin. Therefore, during CSO events, discharges through the Terminal 115 CSO may include contributions of stormwater and wastewater from facilities within the 8th Avenue CSO basin. Facilities that are co-located in the Terminal 115 and 8th Avenue CSO basins are included in this SCAP.[8]

[7] WAC 173-201A

[8] The 8th Avenue CSO discharges to the LDW within the RM 2.2-3.4 West (Riverside Drive) source control area. Facilities located within the 8th Avenue CSO only will be described in the Data Gaps Report for the Riverside Drive source control area (SAIC 2011b, in preparation).

Historical and current industrial and commercial facilities within the Terminal 115 CSO basin have been identified. Twenty-six facilities in the Terminal 115 CSO basin have been assigned Ecology Facility/Site Identification (ID) numbers (Table 3). Of these facilities:

- Two are listed on Ecology's Confirmed and Suspected Contaminated Sites List (CSCSL),
- Four have active EPA ID numbers,
- Four hold NPDES permits,
- Two have KCIW discharge authorizations or permits,
- One is listed on Ecology's Leaking Underground Storage Tank (LUST) list, and
- Four are listed on Ecology's Underground Storage Tank (UST) list.

All of these facilities either discharge stormwater directly to the LDW or are located within the Highland Park Way SW or SW Kenny Street SD basins. Additional information about these facilities is provided in the Terminal 115 Data Gaps Report (SAIC 2011a).

West Michigan CSO (Outfall 2506)

The West Michigan CSO basin covers approximately 200 acres, spanning east-to-west from 8th Avenue SW to 13th Avenue SW and north-to-south from West Marginal Way SW to SW Roxbury Street (Figures 8a and 8b). Land uses within the CSO basin include mostly residential areas, the Riverview Playfield and Highland Park Playground, and some industrial and commercial properties.

The CSO discharges to the LDW via a 36-inch diameter outfall at the southeast corner of the Terminal 115 source control area. From 2000 to 2007, combined wastewater and stormwater overflows were discharged through the West Michigan CSO on average four times per year, with an annual average volume of approximately 1.23 mgy (Tiffany 2008b).

King County collected one effluent sample from the West Michigan CSO in April 2009. Several sediment COCs were detected in the water sample.

Sediment COC	Concentration (µg/L)	Sample Date
Phthalates		
Bis(2-ethylhexyl)phthalate	4.76	April 12, 2009
Butyl benzyl phthalate	0.354	April 12, 2009
SVOCs		
Benzyl Alcohol	1.19	April 12, 2009
PCBs		
PCBs, total	0.0132	April 12, 2009

Source: King County 2009a,b
µg/L – micrograms per liter

Industrial and commercial facilities within the West Michigan CSO basin have been identified. Six facilities in the West Michigan CSO basin have been assigned Ecology Facility/Site ID numbers (Table 4). Of these:

- One facility has an active EPA ID number (Pioneer Industries),
- One facility has an NPDES permit and a KCIW discharge permit (Pioneer Industries),
- One facility is listed on Ecology's UST list (Molner's One Stop), and
- None of these facilities are listed on Ecology's CSCSL or LUST lists.

Additional information about these facilities is provided in the Terminal 115 Data Gaps Report (SAIC 2011a).

Potential for Future Releases to LDW Sediments

Although COCs from individual industrial and commercial facilities within the CSO basin are significantly diluted, the cumulative effects of CSO events could contribute to recontamination of sediments near the Terminal 115 source control area. Industrial and commercial facilities discharging industrial wastes and/or stormwater to the combined sewer system are therefore considered to represent potential but relatively minor sources of sediment recontamination.

Additionally, undocumented industrial operations may take place within the Terminal 115 and West Michigan CSO basins. Undocumented industrial activities may be an ongoing source of contaminants to sediments adjacent to the Terminal 115 source control area. Ecology, SPU, and/or KCIW will continue to perform facility inspections within the CSO basin as part of ongoing source control efforts. Information regarding these inspections will be included in Source Control Status Reports. Source control actions that are identified as a result of these inspections, if any, will be listed in the Source Control Status Reports.

Source Control Actions

Information needed to assess the potential for sediment recontamination associated with the Terminal 115 and West Michigan CSOs was summarized in the Terminal 115 Data Gaps Report (SAIC 2011a). The following source control actions will be conducted to fill the identified data gaps and reduce the potential for recontamination of sediments near the Terminal 115 source control area:

- Ecology will evaluate the 2009 King County effluent discharge data to assess whether effluent concentrations from the West Michigan CSO represent a potential source of contaminants to sediments near the Terminal 115 source control area.

3.2 Adjacent Properties: Terminal 115 and Tenants

Several facilities are located adjacent to the LDW in the Terminal 115 source control area; information about these facilities relevant to recontamination of LDW sediments was presented in the Terminal 115 Data Gaps Report (SAIC 2011a). Terminal 115 is the largest property adjacent to the LDW within this source control area. Terminal 115 and tenant facilities (Figure 11) 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	Address	Potential Contaminant Pathways
Terminal 115	6000 to 6720 West Marginal Way SW	Stormwater; surface runoff/spills; groundwater discharge; bank erosion
Terminal 115 Tenants and Subtenants		
Northland Services	6700 West Marginal Way SW	Stormwater; surface runoff/spills
Northwest Container Services (Northland Services subtenant)	6110 West Marginal Way SW	Stormwater
Gene Summy Lumber and Commercial Fence	6000 West Marginal Way SW	Stormwater
Sea Pac Services	6100 West Marginal Way SW	Stormwater
Shultz Distributing	6760 West Marginal Way SW	Stormwater
Seafreeze Cold Storage	250 SW Michigan Street	Stormwater
Icicle Seafoods (Seafreeze subtenant)	206 SW Michigan Street	Stormwater; surface runoff/spills

These facilities are discussed in more detail in Sections 3.2.1 through 3.2.8 below. The following sections summarize historical operations, the potential for sediment recontamination, and source control actions to be implemented for Port-owned property at Terminal 115. Overall status and history of the property is discussed first in Section 3.2.1, followed by a detailed discussion of current tenant activities and regulatory status in Section 3.2.2 through 3.2.8. As the property owner, the Port is responsible for source control actions related to historical operations and environmental contamination at the property. The tenants are responsible for source control actions related to current operations.

Other properties that are adjacent to the LDW are discussed in Section 3.3.

3.2.1 Terminal 115

Current Operations	Marine services including bulk cargo operations; cargo shipping container maintenance and repair; cargo warehouse activities; metal and wood construction materials storage; vessel outfitting, maintenance, and repair; commercial refueling operations; seafood processing; retail food shops; and rail spur
Historical Operations	Boatyard, Boeing Plant 1, gasoline service stations, refinery (operations unknown), aluminum smelter, gravel mining and mixing, cement and concrete mixing plant and shipping terminal, tin reclamation, asphalt batch plant, lumber products plant, auto salvage and repair
Address	6000 to 6720 West Marginal Way SW

Facility/Site ID	2177 (Port of Seattle North Terminal 115) 15700 (Port of Seattle Terminal 115 Berth 1) 4040072 (Seattle Port Terminal 115) 98422914 (Terminal 115/Crowley Marine Services) 71289955 (Samson Tug & Barge Co Inc)
Chemicals of Concern	Metals; PAHs, phthalates, other SVOCs; petroleum hydrocarbons; VOCs
Media Affected	Storm drain solids, soil, groundwater

Terminal 115 is adjacent to the LDW and consists of a 98.7-acre parcel (2505) and a 0.75-acre parcel (2503), both owned by the Port. The two parcels are leased to several different companies as listed above. Figure 11 shows the locations of the current Terminal 115 tenants and subtenants.

Parcel 2505 is bordered by the LDW to the east, Glacier Northwest to the north, West Marginal Way SW to the west, and SW Michigan Street to the south. Twenty permanent structures are present on parcel 2505 (Anchor 2010; SoundEarth 2011). The larger structures include the following (Figure 11):

- Building A-5, built in 1971, was historically used as a fueling facility and is currently used as the Terminal Office.
- Building C-1 Former Car Wash, built in 1971, is currently used as a repair shop and maintenance facility by Northland Services and Northwest Container Services.
- Building C-2 West Warehouse, built in 1971, was historically used as a body shop and is currently used as a maintenance facility by Northland Services.
- Building C-3 Chemical Building is used by Commercial Fence.
- Building C-4 Seafreeze, a 358,700 sq ft masonry structure built in 1978, is used as a cold storage facility by Seafreeze and its subtenants, including Icicle Seafoods.
- Building M-2, built in 1972, is currently used to maintenance dock equipment by Northland Services.
- Building W-2 Maintenance Building/Refrigerated and Container Repair Shops is used by Northland Services.
- Container Freight Warehouse and office, Diesel Shop, Container Repair, Paint Tent, and Bulk Storage Buildings are used by Northland Services.
- A 1,568 sq ft fast food restaurant, built in 1980, is used by Subway.
- A 2,250 sq ft fueling station, built in 1990, is used by Shultz Distributing.

According to King County tax records and the Port, parcel 2503 is vacant.

Stormwater from Terminal 115 is discharged to the LDW through eight outfalls on the Port property (Section 3.1.1). Additionally, numerous deck drains are present north of Berth 1 (Figure 7b). All stormwater conveyed through the Terminal 115 storm drain system to the Port-owned outfalls passes through an oil/water separator (OWS) prior to discharge. Discharge from

the deck drains and to Outfalls 2125 and 2127 (city-owned outfalls) (Schmoyer 2011) is conveyed to the LDW without treatment. French drains and groundwater drainage structures are present along West Marginal Way SW (leased by Sea Pac Services) and in the areas leased by Northland Services and Northwest Container Services (Figures 7b and 8a).

Tenants at Terminal 115 have primary responsibility for maintaining the storm drain system at the property in accordance with their NPDES permits.[9] This includes cleaning and maintaining catch basins and OWSs (Port of Seattle 2011a).

At least 33 USTs and 20 aboveground storage tanks (ASTs) have been installed at the Terminal 115 property. A list of the current and historical USTs and ASTs is provided in Table 5, and the locations of these tanks are shown on Figure 12 (note that Tank 40 consists of 13 former ASTs). Four USTs and three ASTs are currently active and are used to store primarily gasoline and diesel fuel. One UST is present but currently not in service (Tank 35) (SoundEarth 2011).

Historical Operations

Many historical industrial activities have been performed at the current Terminal 115 property. Historical operations and the history of land reclamation and fill activities are summarized in this section. Additional information regarding these activities is available in the *Terminal 115 Environmental Conditions Report* (ECR) (SoundEarth 2011). If a historical operation was identified as an issue of environmental concern (IEC) by the Port, the IEC number is included for reference. The IECs are listed in Table 6 and shown on Figure 13.

Fill History, Activities, and Materials (IEC No. 11)

Terminal 115 is built on the former Duwamish River banks, the historical Foss Island, and reclaimed land. Filling activities occurred from the 1930s through 1971. A program to reclaim and expand Terminal 115 was started in November 1969, which involved extensive filling, dredging, and excavation of the portion of the LDW south and west of Foss Island and Turning Basin No. 1 (currently the area west of Berth 1 at the Terminal 115 property).

Fill material used at Terminal 115 included dredge spoils, excavated earth, sanitary landfill, concrete and cement products, and other materials of unknown origin. Cement kiln dust (CKD) and dredge material were reportedly used as fill material north of Boeing Plant 1 and west of Foss Island (Port of Seattle 1987; Shannon & Wilson 1991), which is approximately the central area of present-day Terminal 115. Materials interpreted as miscellaneous debris and garbage were reportedly used to fill the historical McAllister Slough (SoundEarth 2011), which is the southwest corner of present-day Terminal 115. No environmental investigations have been performed to characterize the fill material. As stated in the Terminal 115 ECR, contaminants potentially associated with the fill materials include metals, petroleum hydrocarbons, creosote, and solvents (SoundEarth 2011).

[9] Northland Services, Icicle Seafoods, and Northwest Container Services are covered under NPDES permits.

Edward Heath Boatyard

The Edward Heath Boatyard was built on the southern portion of the Terminal 115 property in 1909. The boatyard building (now known as the Boeing Red Barn and present at the Museum of Flight) was built on 200 wooden pilings above the banks of Turning Basin No. 1. Wood processing, treating, and assembly took place at the yard. Boeing purchased the property and boatyard in 1910; however, wooden boats were built at the facility until Boeing occupied the property in 1917 (SoundEarth 2011).

Boeing Plant 1 (IEC No. 4)

Boeing historically owned 24.6 acres of the Terminal 115 property (Port of Seattle Reporter 1971). From 1917 to 1969, Boeing Plant 1 occupied the southern portion of the parcel along the southern bank of Turning Basin No. 1 (E&E 1988; Landau 1994). The Plant 1 facility was adjacent to the LDW along its northern and eastern boundaries. The historical McAllister Slough was adjacent to the western boundary of the facility. Boeing sold the property to the Port in January 1970. The buildings associated with Boeing's operations were removed from the property between 1970 and 1977 (SoundEarth 2011).

Boeing manufactured bi-plane seaplanes at the facility from 1917 to the early 1930s. In the mid-1930s, the Plant was transitioned to an assembly shop, which assembled parts for the manufacturing operations at Boeing Plant 2, Boeing Plant 3 (historically located north of Slip 6 [Seattle Army Service Forces Depot 1943]), and the Boeing Factory in Renton. In the late 1930s and early 1940s, Boeing expanded operations at Plant 1 to include structural component and engine testing facilities. The plant was expanded again in the 1950s to include fuel testing and hazardous materials storage facilities (SoundEarth 2011).

A transformer house (Building 1-07, IEC 4.03), containing one 26,000-volt transformer, was present on the property from 1928 to 1978. Transformers were also located in the vicinity of Building 1-02, which was present on the property until 1974 (SoundEarth 2011). It is not known if PCB-bearing fluid was used in the transformers.

It is not known if storage tanks 14 and 15 (Table 5, Figure 12), which are associated with former Boeing Plant 1, were USTs or ASTs. If these storage tanks were USTs, then these tanks may still be present on the property. In addition, the status of Tank Nos. 4 through 8 and 16 is unknown and these USTs may remain on the property (SoundEarth 2011). An in-depth review of the historical operations at Boeing Plant 1 is available in the Terminal 115 ECR (SoundEarth 2011). Figure 14 shows the layout of the former Boeing Plant 1 facility and the locations of IECs associated with historical operations at the plant.

Standard Oil (IEC No. 1) and Richfield (IEC No. 3) Gasoline Service Stations

Standard Oil and Richfield service stations were present on the southeastern portion of the Terminal 115 property, in the currently vacant area south of the Seafreeze facility (Figure 12).

The Standard Oil service station operated from approximately 1923 to 1965. Three fuel dispensers were located at the service station. It is not known if the facility operated ASTs or USTs to store the fuel. If USTs were used, they were likely located below these dispensers,

based on the type of dispensers and age of the facility. Additionally, if USTs were used, it is not known if the storage tanks have been removed or if these USTs remain on the property. A service garage also operated at the facility (SoundEarth 2011).

The Richfield service station operated from approximately 1938 to 1964. Two 500-gallon USTs and one 1,000-gallon UST were operated at the facility. It is not known if these USTs have been removed or if they remain on the property. A service garage with a hydraulic lift was operated at the service station (SoundEarth 2011).

Refinery Building (IEC No. 2)

Archived tax documents indicate that a refinery building was constructed on the southeastern portion of the Terminal 115 property in 1952. Based on historical photographs, the building was likely used only for oil storage, not for refinery operations. The building was apparently demolished between 1964 and 1965, based on aerial photographs of the property (SoundEarth 2011; Takasaki 2011a).

SAV-MOR Service Station (IEC No. 6)

A gasoline service station was constructed at the southwest corner of the Terminal 115 property in 1930.The 1930s-era service station consisted of an office, two fuel dispensers, and a service garage/grease shed, which was equipped with a hydraulic lift. It is not known if the facility operated ASTs or USTs to store the fuel. If USTs were used, they were likely located below these dispensers, based on the type of dispensers and age of the facility. Additionally, if USTs were used, it is not known if the storage tanks have been removed or if these USTs remain on the property. The 1930s-era service garage/grease shed was used for automobile salvage from 1930 through at least 1967. In 1949, Texaco built a new service garage adjoining the existing service station office. The service station was operated by Texaco from at least 1949 to approximately 1956 and was operated by SAV-MOR from approximately 1956 to 1963. In 1963, the service garage was converted to a tavern. The service station was demolished in 1970 (SoundEarth 2011).

Materials Reclamation and Maralco Aluminum/Foley Cardlock Facility (IEC Nos. 7 and 8)

From 1952 to 1985, Materials Reclamation and Maralco Aluminum operated an aluminum smelter on the Terminal 115 property in the area currently occupied by Shultz Distributing. A 9,500-gallon rail car bunker, converted to a fuel oil UST (Tank No. 26), was used at the facility (Figure 12). The building currently identified as Building W-4 was used as an aluminum warehouse with an attached maintenance building and office.

In 1995, the 9,500-gallon UST was removed. During construction of the Foley Cardlock facility, a 600-gallon heating oil UST (Tank No. 25) was discovered and removed from the property. Three 10,000-gallon USTs (Tanks 22 through 24) associated with current operations were installed in 1996 (SoundEarth 2011; Wells 2003).

Klinker Sand and Gravel Company (IEC No. 9)

The Klinker Sand and Gravel Company (Klinker) was located along West Marginal Way SW across from the historical shoreline of Foss Island. The facility operated as a gravel mining and mixing plant from approximately 1922 until the 1960s. From the 1960s to approximately 1971, Ready-Mix Concrete's Graystone Division operated a cement shipping terminal and cement and concrete plant in this area of the Terminal 115 property. Ready-Mix's operations extended to a mound of reclaimed in the former turning basin. The facility's production operations were likely limited to aggregate sorting and cement mixing (SoundEarth 2011; Takasaki 2011a).

Klinker constructed a cement mixer and storage bunkers at the facility between 1926 and 1928. A U.S. Army Corps of Engineers (USACE) investigation from 1930 indicated that Klinker operated a gravel washer at the facility, which discharged the wash water and fine sands and silt into Turning Basin 1 (SoundEarth 2011). In 1945, it was reported that the gravel washer discharged at the rate of 600 gallons per minute, 6 hours a day, 5 days a week. Additionally, excess concrete and washings from trucks were dumped over the river bank to help create fill (Foster 1945).

Crowley Marine Services/Jones Stevedoring Company

Crowley Marine Services (Crowley) leased 130,000 sq ft of landlocked yard area and rail track at Terminal 115 from 1981 through 1991. Crowley loaded rail cars from trucks and trailers for transport to Alaska. Crowley also performed tug, barge, and vessel maintenance and repair activities at Terminal 115, as a subtenant of Jones Stevedoring Company from 2001 until 2004 (SoundEarth 2011). A portion of this area is currently operated by Northwest Container Services (Takasaki 2011a).

Former Fueling Facility, Building A-5 (Maritime/Terminal Office Building, IEC No. 13)

As-built drawings from 1975 indicate that a fueling facility was present approximately 40 feet west of Building A-5. A 1,000-gallon gasoline UST (Tank No. 36) and a 2,000-gallon diesel UST (Tank No. 37) were used at the fueling facility. Tank Nos. 36 and 37 were removed in 1990 and replaced with a single 1,100-gallon UST in 1993. The 1,100-gallon UST has not been used since it was installed. The fuel dispensers have been removed from the area. No evidence of contaminated soil or groundwater was observed when the former USTs were removed (SoundEarth 2011).

According to SoundEarth, petroleum products were historically used, stored, and/or distributed at Building A-5. No environmental investigations have been performed in this area to determine if a petroleum release occurred in this area (SoundEarth 2011).

Former MRI Corporation/N Terminal 115 (IEC No. 14)

The former MRI Corporation, a tin reclamation facility, historically operated in the area of Terminal 115 that is currently occupied by Gene Summy Lumber and Commercial Fence. The tin reclamation operations took place between 1963 and 1997/1998. Historical operations and activities at the former MRI facility were summarized in the Glacier Bay Data Gaps Report

(SAIC 2007) and the Terminal 115 ECR (SoundEarth 2011). Stormwater from this area of Terminal 115 is discharged to the LDW through Outfall 2127.

Soil in this area is known to be contaminated with arsenic, chromium, lead, mercury, zinc, and PAHs (SAIC 2007, 2011a). Groundwater is known to be contaminated with antimony, arsenic, cadmium, chromium, copper, lead, mercury, zinc, PAHs, BEHP, phenols, petroleum hydrocarbons, and VOCs (SAIC 2011a).

Other Historical Operations

An asphalt batch plant (Landau 1994), a lumber products plant (SoundEarth 2011), and Samson Tug & Barge historically operated at Terminal 115. The lumber products plant operated from approximately 1940 to 1951 and was demolished between 1965 and 1970 (SoundEarth 2011). Additional information regarding the activities and operations performed by these companies at Terminal 115 was not available for review.

Additionally, EPA sent a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 104(e) Request for Information letter to a company named 2-3 LLC in January 2009 (USEPA 2009). The addressee did not respond to this letter. EPA sent a follow-up letter to the company, which was refused. The parcel number and the address listed on the request indicate that this company has some association with parcel 2505, although its connection to the Terminal 115 property is unknown. If EPA obtains a response to the 104(e) letter, it will be reviewed.

Current Operations

Terminal 115, owned by the Port, provides marine services such as receipt and shipment of bulk cargo; bulk cargo operations; repair and maintenance of cargo shipping containers; cargo warehouse activities; storage of metal and wood construction materials; and vessel outfitting, maintenance, and repair (TEC Inc. 2010). Terminal 115 was re-paved in 1986 (E&E 1988; Takasaki 2011a).

Northland Services and Icicle Seafoods (sublease from Seafreeze) are the only two facilities on Terminal 115 that perform operations adjacent to the LDW. The following facilities at Terminal 115, listed from north to south, are upland of the LDW (Figure 11).

- Gene Summy Lumber
- Commercial Fence
- Northwest Container Services (sublease from Northland Services)
- Sea Pac Services
- Shultz Distributing/Subway/Portside Coffee Company
- Seafreeze/Custom Seafoods/Northwest Seafood Processors

Regulatory History

Ecology prepared a Potential Hazardous Waste Site Preliminary Assessment for Terminal 115 in November 1984. Ecology determined that MRI Corporation (historically located on N Terminal 115) was the only known generator of hazardous waste operating at Terminal 115 at the time the assessment was completed. Ecology recommended contacting Boeing to determine historical activities and waste disposal practices at Boeing Plant 1, in order to evaluate the potential for soil and groundwater contamination and need for environmental investigation at Terminal 115 (Ecology 1984).

In April 2003, Ecology determined that, due to amendments to MTCA, concentrations of gasoline- and diesel-range hydrocarbons, lead, benzene, and xylenes present in soil and groundwater exceeded MTCA cleanup levels at the Seafreeze and former Foley Cardlock facilities (Ecology 2003c).

On January 20, 2009, Ecology sent the Port a notice of potential liability under MTCA for the release of hazardous substances for the area known as N Terminal 115 (former MRI Corporation). Ecology also added N Terminal 115 to the CSCSL (Ecology 2009a).

On February 19, 2009, the Port responded to Ecology's notice of potential liability under MTCA. The Port disagreed with Ecology's assessment that a historical release of hazardous substances in the N Terminal 115 area currently poses a threat to human health and the environment and suggested an independent investigation, as there was a lack of soil and groundwater data for the site. The Port also requested that the following companies be added as potentially liable parties: M&T Chemical, MRI Corporation, American Can Company, Proler International, and Schnitzer Steel Industries (Port of Seattle 2009a).

The Port submitted a Voluntary Cleanup Program (VCP) Agreement in May 2009 to Ecology (Port of Seattle 2009b). The VCP identification number for N Terminal 115 is NW2146. Ecology removed N Terminal 115 from the VCP on January 19, 2010, because Ecology decided to supervise further cleanup actions at the property under an Agreed Order (Ecology 2010).

EPA sent a CERCLA Section 104(e) Request for Information letter to a company named 2-3 LLC in January 2009 (USEPA 2009). The parcel number and the address listed on the request indicate that this company has some association with parcel 2505 and the area of the property that is currently leased by Seafreeze. The Port and Seafreeze are not aware of what operations 2-3 LLC may have performed at the property (Port of Seattle 2011a). The 2-3 LLC response to the request was not available for review at the time this SCAP was prepared.

On May 19, 2010, SPU performed an inspection at 150 SW Michigan Street, which is the address for the buildings located at the southeast corner of parcel 2505, adjacent to the LDW (this area was occupied at the time by Commercial Fence and is now vacant). SPU observed cans of paint and various liquids stored on a shelf in a fabrication shop at the facility. The shelf was adjacent to the LDW shoreline. SPU observed soap, brushes, rags, and a hose on a dock on the LDW. A boat maintained by Commercial Fence was moored at this dock. SPU determined that operations at Commercial Fence may require coverage under an NPDES permit and referred the facility to Ecology. The SPU inspector discovered that discharge from toilets and sinks were

discharged to a previously undocumented septic tank. Discharge from two catch basins at the facility was conveyed to an unknown location (SPU 2010c).

The Port determined that the septic system at the facility overflowed to the river, and disconnected the sanitary lines in July 2010. A video inspection was also performed to determine discharge points from two catch basins draining this portion of the property. Each catch basin discharged to the LDW via a small (less than 2-inch-diameter) pipe (Port of Seattle 2011a).

SPU performed a follow-up inspection at 150 SW Michigan Street on July 21, 2010, and verified that these illicit discharges had ceased (Wisdom 2010). Commercial Fence has since relocated to the area of the terminal referred to as N Terminal 115.

Environmental Investigations and Cleanups

Several environmental investigations and cleanups have been performed at Terminal 115. Information from investigations and cleanups is summarized below. Additional information regarding these investigations and cleanups is available in the Terminal 115 Data Gaps Report (SAIC 2011a) and Terminal 115 ECR (SoundEarth 2011).

Property-Wide Terminal 115 Environmental Conditions Report (2011)

The Port performed an evaluation of Terminal 115 and adjacent properties to identify historical and current environmental conditions and evaluate environmental concerns including spills and releases, operations, and land development that could adversely affect environmental media on and adjacent to Terminal 115, including LDW sediments (SoundEarth 2011).

As a result of this process, the Port identified 38 IECs for the Terminal 115 property (including 24 IECs related to former Boeing Plant 1 operations) and five off-property IECs (Table 6, Figures 13 and 14). Environmental investigations have been performed at many of the areas where IECs were identified (Figures 15a through 15f). These investigations are summarized in the following sections.

Tin Reclamation/N Terminal 115 (IEC No. 14)

Three investigations have been performed at N Terminal 115. These include:

- Waste Characterization Program (ENSR 1991)
- Site Hazard Assessment (SKCDPH 1998)
- Environmental Investigation (Landau 2009)

In February 1991, 36 samples of black mud were collected from two stockpiles. The samples were analyzed for corrosivity (pH) and RCRA Toxicity Characteristic Leaching Procedure (TCLP) metals. One composite sample was analyzed for ignitability and reactivity characteristics. No analytes were detected above the maximum concentration limits listed in WAC 173-303-090 (ENSR 1991). The former locations of the mud lagoons are shown on Figure 15b.

In November 1997, SKCDPH collected three soil samples from the unpaved railroad spur area. The samples were collected between 5 and 6 inches below ground surface (bgs) (SKCDPH 1998).

Ten groundwater monitoring wells and one soil boring were installed at N Terminal 115 in 2009; soil and groundwater samples were collected from each well and the soil boring (Figure 15b). Two sediment traps were installed in catch basins on this portion of the property and one storm drain solids sample was collected (Landau 2009).

Concentrations of SVOCs and metals were detected in soil and groundwater at concentrations that exceeded the MTCA Method A or B cleanup level and/or draft groundwater-to-sediment screening levels. In the storm drain solids sample, zinc and BEHP were detected at concentrations that exceeded the SQS/LAET and CSL/2LAET (Landau 2009).

Exceedances are summarized below:

COC	Soil	Groundwater	Storm Drain Solids
SVOCs			
2-Methylnaphthalene	●		
Acenaphthene	●	●	
Benzo(a)anthracene		●	
Benzo(a)pyrene	♦	♦	
Benzo(b)fluoranthene		●	
Benzo(g,h,i)perylene		●	
BEHP		●	●
Dibenz(a,h)anthracene		●	
Dibenzofuran	●		
Fluorene	●		
Indeno(1,2,3-cd)pyrene		●	
m,p-Cresol		♦	
Naphthalene	●		
Phenanthrene	●		
Metals			
Antimony		♦	
Arsenic	♦	●♦	
Cadmium		●♦	
Chromium		●♦	
Copper		●	
Lead	●♦	●♦	
Mercury	●	●	
Zinc	●	●	●

COC	Soil	Groundwater	Storm Drain Solids
VOCs			
Acetone		♦	
Benzene		♦	
Petroleum Hydrocarbons			
Heavy-Oil Range		♦	

● Chemical detected in soil or groundwater at a concentration that exceeds the draft soil-to-sediment or groundwater-to-sediment screening level; chemical detected in storm drain solids at a concentration that exceeds the SQS/LAET.

♦ Chemical detected in soil or groundwater at a concentration that exceeds the MTCA Method A or B cleanup level.

On March 2, 2011, Ecology and the Port entered into Agreed Order No. DE 8099. Under the Agreed Order, the Port will complete an RI/FS and draft Cleanup Action Plan for N Terminal 115 (Port of Seattle 2011b).

Building M-2 Area[10] (IEC No. 12)

Two environmental investigations have been conducted in the Building M-2 Area.

- Underground Storage Tank Removal and Remedial Excavation (Coastal Tank Services 1993)
- Groundwater Assessment (ESE 1994)

In April 1993, UST T-115C (Tank No. 33) was removed from the area currently occupied by Northland Services, near Berth 1 (Figure 15c). In May 1993, the former UST area was over-excavated to remove petroleum-contaminated soils. Confirmation samples collected from the bottom and sidewalls of the remedial excavation indicated that all soil containing diesel-range hydrocarbon concentrations that exceeded the MTCA Method A cleanup level had been removed. Approximately 220 tons of contaminated soils were removed from the property (Coastal Tank Services 1993).

In April 1994, three groundwater monitoring wells were installed in the vicinity of former UST T-115C (Figure 15c). Diesel-range hydrocarbons were detected in the groundwater samples collected from all three wells; however, all concentrations were below the MTCA Method A cleanup level. Heavy oil-range hydrocarbons were detected in one well at a concentration below the MTCA Method A cleanup level (ESE 1994).

Building C-1 Former Car Wash Area (IEC No. 10)

One environmental investigation has been performed in this area of the property.

- UST Removal and Subsurface Investigation (Harding Lawson 1990)

[10] This building is identified as Building W-2 in the ECR (SoundEarth 2011).

A 5,000-gallon kerosene UST (Tank No. 28) was removed from the property near Building C-1 in 1989 (Figure 15d). Two soil samples were collected from the tank excavation. Following the tank removal, four soil borings and four groundwater monitoring wells were installed (Harding Lawson 1990).

Concentrations of petroleum hydrocarbons were detected in soil at concentrations that exceeded the MTCA Method A cleanup level. Petroleum hydrocarbons were not detected in groundwater (SoundEarth 2011). These exceedances are summarized below.

COC	Soil
Petroleum Hydrocarbons	
Diesel fuel #1/Kerosene	♦
Total petroleum hydrocarbons	♦

♦ Chemical detected in soil or groundwater at a concentration that exceeds the MTCA Method A or B cleanup level.

Southwest Tank Yard/Cardlock Facility/Shultz Distributing Facility (IEC No. 8)

Several environmental investigations have been performed in this area of Terminal 115.

- Geotechnical Evaluation (GeoScience Management 1995a)
- Subsurface Investigation (GeoScience Management 1995a,b)
- Underground Storage Tank Removal and Remedial Excavation (Columbia Environmental 1995)
- Soil Investigations (Columbia Environmental 1996a,b)
- Underground Storage Tank Removal (GeoScience Management 1996b)
- Groundwater Monitoring (GeoScience Management 1996a)
- Monitoring Well Installation and Groundwater Sampling (Columbia Environmental 1997)
- Monitoring and Extraction Well Installation (GeoScience Management 1998)
- Groundwater Monitoring (OnSite Environmental 2009a,b)

A 9,500-gallon heating oil UST (Tank No. 26) was removed from this area in August 1995 and a 600-gallon diesel fuel UST (Tank No. 25) was removed in July 1996 (Figure 15e). Approximately 25 cubic yards of petroleum hydrocarbon-contaminated soil were removed from the excavation associated with the 600-gallon UST (Columbia Environmental 1995; GeoScience Management 1996b). Twelve soil samples were collected in September 1996 prior to the construction of the fueling facility (Columbia Environmental 1996b; SoundEarth 2011).

Twelve groundwater monitoring wells, five extraction wells, and 18 soil borings were installed in this portion of the Terminal 115 property between 1994 and 1998. Seven groundwater monitoring events were performed between 1995 and 1996 and two rounds of groundwater monitoring were performed in October and December 2009. Floating product has been observed

in four groundwater monitoring wells (Columbia Environmental 1996a, 1997; GeoScience Management 1995a,b, 1998; OnSite Environmental 2009a,b; SoundEarth 2011).

Concentrations of petroleum hydrocarbons were detected in soil at concentrations that exceeded the MTCA Method A cleanup level. In groundwater, concentrations of petroleum hydrocarbons and metals have exceeded the MTCA Method A or B cleanup level. These exceedances are summarized below.

COC	Soil	Groundwater
Metals		
Arsenic		♦
Cadmium		●
Lead		●♦
Petroleum Hydrocarbons		
Diesel Range	♦	♦
Gasoline Range	♦	
Heavy-Oil Range		♦

● Chemical detected in soil or groundwater at a concentration that exceeds the draft soil-to-sediment or groundwater-to-sediment screening level; chemical detected in storm drain solids at a concentration that exceeds the SQS/LAET.

♦ Chemical detected in soil or groundwater at a concentration that exceeds the MTCA Method A or B cleanup level.

The Port is currently performing groundwater and product monitoring at the Shultz Distributing facility. The Port plans to publish an assessment report in January 2012 (Kuroiwa 2011).

Seafreeze Facility Area (IEC No. 5)

Three environmental investigations have been performed in this area of Terminal 115.

- Underground Storage Tank Removal (EMCON 1995a)
- Soil and Groundwater Investigation (EMCON 1995b)
- Compliance Monitoring (Port of Seattle 1996, 1997)

Three 6,000-gallon USTs (Tank Nos. 10, 11, and 12) were removed in May 1994 (Figure 15f). The USTs may have been installed to support operations at Boeing Plant 1. Free product accumulation was observed floating on groundwater, which was present in the excavation at approximately 9 feet bgs. Approximately 750 cubic yards of contaminated soil were removed from the excavation (EMCON 1995a).

In October 1994, four monitoring wells and four hand-auger borings were advanced in the area of the former 6,000-gallon USTs. Groundwater samples were collected in November 1994 and five compliance groundwater monitoring events were performed between April 1995 and February 1997 (EMCON 1995b; Port of Seattle 1996, 1997).

Concentrations of petroleum hydrocarbons and VOCs were detected in soil at concentrations that exceeded the MTCA Method A or B cleanup level. In groundwater, concentrations of metals, petroleum hydrocarbons, and VOCs have exceeded the MTCA Method A or B cleanup level. These exceedances are summarized below.

COC	Soil	Groundwater
Metals		
Lead		●♦
Petroleum Hydrocarbons		
Diesel Range	♦	♦
Gasoline Range	♦	
Heavy-Oil Range		♦
VOCs		
Benzene	♦	♦
Total Xylenes	♦	
Vinyl Chloride		♦

● Chemical detected in soil or groundwater at a concentration that exceeds the draft soil-to-sediment or groundwater-to-sediment screening level; chemical detected in storm drain solids at a concentration that exceeds the SQS/LAET.

♦ Chemical detected in soil or groundwater at a concentration that exceeds the MTCA Method A or B cleanup level.

Potential for Sediment Recontamination

The potential for sediment recontamination associated with operations at Terminal 115 is summarized below.

- Stormwater from Terminal 115 is discharged directly to the LDW through several outfalls and numerous deck drains. Sediment trap and in-line storm drain solids samples collected by SPU indicate that metals, PCBs, PAHs, phthalates, and other SVOCs are present in the storm drain system at concentrations above the SQS/LAET.
- Stormwater from the area of the property at 150 SW Michigan Street (former location of Commercial Fence) is apparently discharged to the LDW through two small outfalls, which are less than 2 inches in diameter (Port of Seattle 2011a). The potential for sediment recontamination via the stormwater pathway is unknown.
- Based on the storm drain system maps provided by the Port and in the Northland Services Storm Water Pollution Prevention Plan (SWPPP) (Anchor 2010), groundwater drains into the storm drain system in the areas currently occupied by Northland Services, Northwest Container Services, Sea Pac Services, and Gene Summy Lumber (N Terminal 115). Groundwater in the N Terminal 115 area is known to be contaminated with metals, PAHs, phthalates, and other SVOCs at concentrations exceeding MTCA cleanup levels and/or draft groundwater-to-sediment screening levels; groundwater has not been evaluated in the other areas where groundwater drains to the storm drain. The potential for sediment recontamination via this pathway is high.

- Operations performed by tenants at Terminal 115 include offloading many types of cargo. The potential for spills related to this activity is evaluated in the facility-specific section for each tenant.
- Due to the property's proximity to the LDW, contaminants (if any) suspended in surface runoff have the potential to reach the LDW and the sediments adjacent to the Terminal 115 source control area. Numerous deck drains are present north of Berth 1. Discharges through these drains are not treated. The potential for sediment recontamination via this pathway is moderate to high.
- Soil and groundwater contamination has been identified at the property. The nature and extent of soil and groundwater contamination at the property is unknown. Groundwater at Terminal 115 is contaminated with PAHs, phthalates, metals, petroleum hydrocarbons, and VOCs. 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 is a COC for LDW sediments, although arsenic was not identified as a COC for the sediments adjacent to the Terminal 115 source control area. The potential for sediment recontamination via this pathway is high.
- Sediment COCs, including metals and PAHs (associated with creosote) may be present in the fill material used to create present-day Terminal 115. If present in the fill material, these COCs may be conveyed to the LDW via the storm drain system (if groundwater infiltration occurs), groundwater discharge, and bank erosion/leaching pathways.
- Construction of the banks beneath the piers and within Berth 1 is reinforced with riprap. Exposed bank areas at Terminal 115 are present primarily south of Berth 1. The potential for sediment recontamination via the bank erosion/leaching pathway is low to high depending on the potential for erosion of the exposed soil and the leaching potential of contaminants in soil (if any) near the shoreline.

Source Control Actions

Information needed to assess the potential for sediment recontamination associated with current or historical operations at Terminal 115 was summarized in the Terminal 115 Data Gaps Report (SAIC 2011a).

The Port is responsible for source control actions related to historical operations and environmental contamination at the property. Ecology will review environmental data to identify potential contaminant sources and potential for sediment recontamination. The following source control actions will be conducted to fill the identified data gaps and reduce the potential for recontamination of sediments near the Terminal 115 source control area:

- Ecology will negotiate an Agreed Order with the Port. The Agreed Order will include Terminal-wide investigations to characterize the nature and extent of potential COC sources in fill material, soil, groundwater, and stormwater at Terminal 115. These investigations will include, at minimum, the items listed below.
    - The Port will perform investigations of known and suspected source areas, including but not limited to, the areas historically operated by Boeing Plant 1, the

area occupied by Shultz Distributing, historical and current USTs and ASTs, areas where French drains/groundwater drainage structures are installed, areas of exposed bank soil south of Berth 1, and areas where groundwater infiltration to the storm drain system is suspected.

- The Port will collect storm drain solids samples from the storm drain lines discharging to Outfalls 2122, 2123, 2124, 2128, 2220, and POS 6146 and provide the data to Ecology to identify potential contaminant sources. Samples were recently collected from the storm drain lines discharging to Outfalls 2123, 2124, 2128, and 2220.
- The Port will perform a video inspection of storm drain lines to identify areas where groundwater infiltrates the storm drain system.
- The Port will provide information regarding discharges to the deck drains north of Berth 1 to Ecology. Information to be provided will include, at minimum, a description of BMPs employed to prevent pollution of the stormwater runoff that is conveyed to the deck drains.
- The Port will provide additional information to Ecology regarding stormwater drainage to the LDW from the 150 SW Michigan Street area of the Terminal 115 property. Information to be provided will include, at minimum, a map showing the area draining to the two small outfalls and a description of BMPs employed to prevent stormwater pollution.

3.2.2 Northland Services

Current Operations	Receipt and shipment of bulk marine cargo, cargo container and equipment repair and maintenance, warehouse activities, and vessel outfitting
Historical Operations	Same as current
Address	6700 West Marginal Way SW
Facility/Site ID	15163955 (Northland Services/JORE Services) 56256949 (Alaska Cargo) 60993417 (Aloha Cargo) 1752283 (America Cargo) 57823643 (D&S Transport) 88521782 (Victory Marine)

Northland Services has leased the northern portion of parcel 2505 from the Port of Seattle since 2002. The facility occupies approximately 70 acres at Terminal 115. The facility is bordered by Glacier Bay to the north, the LDW to the east, Seafreeze and Icicle Seafoods to the south, and Northwest Container Services, Gene Summy Lumber, and West Marginal Way SW to the west.

Current Operations

Northland Services supports marine activities including: receipt and shipment of bulk cargo; barge cargo operations; repair and maintenance of cargo shipping containers; cargo warehouse activities; storage of metal and wood construction materials; and vessel outfitting, equipment

washing, fueling, painting, and maintenance and repair (Anchor 2010; TEC Inc. 2010). Northland Services provides freight and transportation services from Seattle to Alaska and Hawaii. Aloha Cargo Transport (Aloha Cargo), a division of Northland Services, provides freight and transportation services to Hawaii. Northland Services currently operates under the same Ecology Facility/Site ID number, EPA ID number, and NPDES permit number that were used by JORE Services, the previous tenant at the facility.

The Northland Services facility consists of paved yard space, a main pier, a finger pier, and Berth 1. Berth 1 consists of two timber piers (A and C[11]), with a portable ramp between them for loading and unloading. Almost the entire Northland Services facility is paved and in good condition. An employee parking lot at the northern end of the facility is unpaved; this unpaved area is approximately 1 percent of the entire facility area (Anchor 2010). Figure 16 shows the layout of the Northland Services facility.

Regulatory History

Northland Services currently operates under Industrial Stormwater General Permit number WAR000471. The SWPPP is updated regularly, the most recent copy is dated December 2010 (Anchor 2010). The current permit will expire on January 1, 2015 (Ecology 2006). Northwest Container Services leases a parcel of land from Northland Services and operates under a separate Industrial Stormwater General Permit (Port of Seattle 2011a).

Stormwater Compliance Inspections

On January 21, 2009, Ecology conducted an inspection. Several areas of noncompliance were observed including: discharge of wash water to the storm drain system, improper wastewater handling by a subcontractor at the facility, a small petroleum spill, cement dust and debris outside of the M-2 Building, stormwater accumulated in secondary containment structures, and uncontained sand blast grit and painted materials in the container repair area (Ecology 2009b,c).

Ecology performed a follow-up inspection on April 2, 2009, in conjunction with a Dangerous Waste Compliance inspection. Housekeeping in the diesel fuel containment area was inadequate. Spent sand blast grit was observed on the ground outside the maintenance building (Ecology 2009d).

Following the April 2009 inspection, Northland Services sent a letter to Ecology (Port of Seattle 2011a) documenting the following corrective actions:

- Northland Services ceased the practice of pressure washing equipment near the container repair/sand blasting area as of the January 21, 2009, inspection.
- Northland Services painted lines showing areas draining to storm drain versus sanitary sewer. Signs were added at the facility stating that any wastewater discharging outside of the sanitary sewer discharge area must be immediately addressed. Copies of existing permits allowing this discharge were provided to Ecology.

[11] Pier B was removed in 2010.

- Procedures at the container wash pit area were modified so that the east-facing doors were now closed whenever dust may be generated (i.e., when washing Portland cement containers).
- Northland Services obtained a custom sandblasting tent with vacuum system to contain all sandblasting activities and collect particulate generated for disposal off site.
- Northland Services updated the SWPPP to provide required information, including new representative sampling locations.
- In 2010, Northland Services updated the Spill Prevention Control Plan.

Northland Services met with Ecology at the facility on January 6, 2011, in order to walk through additional site improvements made and discuss permit requirements (Port of Seattle 2011a).

Dangerous Waste and 10-day Transfer Operations Compliance Inspections

Ecology conducted a Dangerous Waste Compliance Inspection on April 2, 2009, at Northland Services, and found several areas of non-compliance. In 2006, 2007, and 2008, Northland Services had incorrectly reported as a medium quantity generator, when it was a large quantity generator. Sludge in a parts washing unit in the maintenance building had not been properly designated. Labeling practices had improved since the January 21, 2009, stormwater compliance inspection, but improvements were still necessary. Additionally, drums containing used oil and/or blasting grit and bags of blasting grit were not properly designated and labeled. Ecology required Northland Services to provide documentation showing that all containers of dangerous waste were properly managed, designated, and labeled, including proper listing of accumulation start and end dates. Ecology directed Northland Services to manage used oil mixed with dangerous waste as dangerous waste (Ecology 2009d). Northland Services complied with the corrective actions (Ecology 2009f).

Ecology conducted a Dangerous Waste Compliance Inspection for Northland Services 10-day Transfer Operations on April 20, 2009, and found one item of noncompliance. Northland Services did not notify Ecology of 10-day transfer operations during 2007 and 2008 (Ecology 2009e). Northland Services followed the actions requested by Ecology and registered online with TurboWaste as a 10-day transfer facility for 2007 and 2008 (Ecology 2009f).

Potential for Sediment Recontamination

The potential for sediment recontamination associated with operations at Northland Services is summarized below.

Stormwater

- Stormwater from the facility discharges to the LDW via deck drains and Outfalls 2123, 2124, 2125, 2220, and 6146. Stormwater discharging to Outfall 2125 (Highland Park Way SW SD) is not treated prior to discharge (Schmoyer 2011). Concentrations of metals, PAHs, and SVOCs exceeded storm drain screening values in a storm drain solids sample collected from a catch basin plumbed to storm drain lines connected to Outfall 2220.

- Based on historical DMRs, copper and zinc concentrations have exceeded the NPDES permit limits; however, the source of these contaminants has not been identified. Potential sources include railway drainage and/or Northwest Container Services. Stormwater discharges from this facility may represent a potential source of sediment recontamination for metals.
- Groundwater beneath the Northland Services facility drains into the storm drain system and may discharge to the LDW through Outfalls 2128 and 2220. Base flow samples have not been collected to confirm that groundwater draining into the storm drain system is uncontaminated, which is a condition of the facility's NPDES permit. The potential for sediment recontamination via this pathway is unknown.

Source Control Actions

Northland Services appears to maintain appropriate source control best management practices (BMPs) and has worked with Ecology to address the corrective actions identified by Ecology inspectors. As part of its BMPs and source control practices, Northland Services cleans catch basins and jet-cleans the storm drain lines every 6 months (Anchor 2010). No source control actions have been identified for the Northland Services facility; however, as identified in Section 3.1.1, an environmental evaluation is needed in this area of Terminal 115 to determine if sediment COCs are present in groundwater at concentrations that exceed draft groundwater-to-sediment screening levels (SAIC 2006).

3.2.3 Icicle Seafoods

Current Operations	Seafood processing and packaging
Historical Operations	Seafood processing and packaging
Address	206 SW Michigan Street
Facility/Site ID	12398

Icicle Seafoods, Inc. sublets approximately 26,000 sq ft of the Seafreeze facility (Icicle Seafoods 2008). The facility is bordered on the east by the LDW, on the north by Northland Services, on the west by the remainder of the Seafreeze facility and the former Foss Environmental property, and on the south by SW Michigan Street. Icicle Seafoods uses the eastern portion of the 308,521 sq ft cold storage facility that is present on this portion of the Terminal 115 property.

Historical Operations

Smoki Foods, Inc. (Smoki Foods) was a tenant at the Seafreeze property from February 28, 2003, to June 26, 2008. On June 26, 2008, Smoki Foods sold most of its assets and the leasehold at the Seafreeze facility to Icicle Seafoods (Icicle Seafoods 2009). Smoki Foods' operations were identical to the operations currently performed by Icicle Seafoods.

Current Operations

Icicle Seafoods has operated at this location since June 26, 2008. Fresh fish is delivered to Icicle Seafoods by truck or vessel. Icicle Seafoods then processes and packages the fish for wholesale or retail sale. Seafreeze provides offloading, storage, and loading services for Icicle Seafoods.

At the shoreline, fish are pumped from vessels and transferred to a stainless steel table and then into a tote. Water falling through the table and tote is generally recovered through a gravity assisted system and conveyed back to the vessel holding tanks. Historically, depending on the tide level, the system did not provide adequate recovery and some water seeped into the LDW. Icicle Seafoods has made improvements to the pumping system to prevent seepage into the LDW (Icicle Seafoods 2008). Icicle Seafoods currently operates under an Industrial Stormwater General Permit (WAR010720).

Regulatory History

In November 2007, Ecology responded to a complaint regarding foamy discharge water to the LDW from the dock at the Seafreeze property. Ecology determined that Smoki Foods failed to control fish water during the transfer of salmon from a vessel to containers on the dock. In January 2008, Ecology determined that operations at Smoki Foods required coverage under an NPDES permit (Ecology 2008b).

EPA sent CERCLA Section 104(e) Request for Information letters to Smoki Foods in January 2009 and to Icicle Seafoods in April 2009. Smoki Foods' response to the 104(e) letter was not available for review at the time this SCAP was prepared. The response prepared by Icicle Seafoods was available for review, and information relevant to source control was summarized in the Terminal 115 Data Gaps Report (SAIC 2011a).

In January 2009, EPA sent CERCLA Section 104(e) Request for Information letters to Cypress Island Seafood, LLC and Murphy Overseas, LLC, which provide services to or are affiliated with Icicle Seafoods. The responses were not available for review at the time this SCAP was prepared.

SPU conducted a screening source control facility visit on July 16, 2009. Ecology conducted a stormwater inspection at Icicle Seafoods on October 7, 2010. Inspection reports were not available for review at the time this SCAP was prepared.

Environmental Investigations and Cleanups

Phase I Environmental Site Assessment (2007)

A Phase I Environmental Site Assessment (ESA) was performed at the Smoki Foods facility in 2007 (ERM 2008). No recognized environmental conditions were identified during the Phase I ESA. However, as discussed in Section 3.2.1 and the Terminal 115 ECR, Boeing Plant 1 (IEC No. 4) historically occupied this portion of the property and several IECs were identified by SoundEarth (Table 6 and Figure 13).

Potential for Sediment Recontamination

The potential for sediment recontamination associated with operations at Icicle Seafoods is summarized below.

Stormwater

- Icicle Seafoods discharges stormwater to the LDW through Outfalls 2122 and 2124. Materials used at the facility do not appear to contain sediment COCs. The facility, in conjunction with the Port, appears to maintain good BMPs to prevent potential contaminants from its operations from commingling with stormwater. The potential for sediment recontamination via this pathway appears to be low, but it depends on the frequency of discharges to the LDW and the potential concentrations of sediment COCs, if any, in discharges originating from this facility.

Surface Runoff/Spills

- Icicle Seafoods is adjacent to the LDW and over-water activities are performed. Although spills to the LDW may occur, fish water is not a potential source of contaminants to LDW sediments. However, spills of fish water may potentially harm the river environment. Corrective measures have been taken to prevent spills of fish water to the LDW. The potential for sediment recontamination via this pathway appears to be 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 Terminal 115 Data Gaps Report (SAIC 2011a). The following source control actions will be conducted to fill the identified data gaps and reduce the potential for recontamination of sediments near the Terminal 115 source control area:

- Ecology will review SPU's 2009 and Ecology's 2010 inspection reports to verify that operations and materials used at the facility do not represent a potential source of sediment COCs.
- Ecology will review responses to the CERCLA Section 104(e) Request for Information letters from the companies that provide services to or are affiliated with Icicle Seafoods to identify potential sources of sediment recontamination that may be associated with operations within the Terminal 115 source control area.
    - Cypress Island Seafood, LLC
    - Murphy Overseas, LLC
    - Smoki Foods

3.2.4 Gene Summy Lumber and Commercial Fence (N Terminal 115)

Current Operations	Lumber distribution, fencing contractor
Historical Operations	Tin reclamation, storage yard for scrap metal, marine equipment, trucks and other vehicles
Address	6000 West Marginal Way SW
Facility/Site ID	23498: Gene Summy Lumber 23743: Commercial Fence

Gene Summy Lumber and Commercial Fence operate at the northwest corner of parcel 2505 (N Terminal 115). Limited information was available for these facilities. The facilities are bordered by a public access road serving Terminal 115 to the north, West Marginal Way SW to the west, and by Northland Services to the east and south. Glacier Bay is north of the public access road.

Historical Operations

MRI Corporation

The former MRI Corporation, a tin reclamation facility, historically operated in this area of Terminal 115. The tin reclamation operations took place between 1963 and 1997/1998. Source control actions related to the historical operations for this facility are addressed in the Glacier Bay SCAP (Ecology 2007b) and updated in the Source Control Status Reports (Ecology 2008c and subsequent updates).

Schnitzer Steel

General Metals of Tacoma, Inc./Proler International Corp. (Proler) operated at this property from 1997 to 1999 under the business name of Schnitzer Steel Industries (Schnitzer Steel). The property was used to sort recycled metal. The recycled metal was shipped off site for processing via truck and rail. Some materials were bailed prior to shipment (General Metals of Tacoma 2009; Proler 1998). Schnitzer Steel used two ASTs at the facility to store stormwater and a concrete vault inside the main building to store tin cans. Appliances and lightweight scrap metal were stored on the east yard of the facility. The east yard was paved with concrete. The west yard was used to offload and store scrapped automobiles. The west yard was partially paved with asphalt and partially covered by concrete (Proler 1998; Schnitzer Steel 1999).

Polar Supply and Subtenants

Marine Services International (MSI), Polar Supply, Strategic Global Mobility (SGM), and Taras Trucking operated at N Terminal 115 during the 2000s. Polar Supply leased the property from the Port. MSI, SGM, and Taras Trucking were apparently subtenants to Polar Supply (SPU 2006l). Gene Summy Lumber was formerly a subtenant to Polar Supply (Stewart 2006).

Polar Supply sold used highway supplies (Industrial Lumber Sales 2009). MSI stored marine equipment (SPU 2006k). SGM loaded vehicles into shipping containers and fixed toy cars for re-

sale (SPU 2006m). Taras Trucking stored trucks at the property and performed maintenance activities such as replacing tires, lights, and bolts. No oil changes or truck washing was performed (SPU 2006s). Taras Trucking closed in summer 2006 (SPU 2006w).

Current Operations

Gene Summy Lumber uses the western half of the facility to distribute lumber (Landau 2009), and Commercial Fence uses the eastern half of the facility to store fencing materials awaiting installation at various sites (Duke 2011). This portion of the property is unpaved and no catch basins are present (Port of Seattle 2011a). In 2010, SPU noted that sheet flow from the facility flows toward the public access road (SPU 2010a).

Untreated lumber is stored outdoors at the Gene Summy Lumber facility. A fueling station with ASTs is present; the fueling station serves forklifts used at the facility. The ASTs are covered and have secondary containment (SPU 2006j). Industrial Lumber Sales is the parent company of Gene Summy Lumber (Industrial Lumber Sales 2009).

Commercial Fence occasionally constructs gates and performs touch-up painting on gate welds using spray paint (Duke 2011).

Regulatory History

SPU inspected the Polar Supply facility and each of its subtenants, including Gene Summy Lumber (see below), in June and July 2006. Polar Supply was responsible for cleaning the storm drain catch basins and performing maintenance (SPU 2006l). SPU directed Polar Supply to clean all catch basins at the facility and directed MSI, SGM, and Taras Trucking to prepare spill plans, obtain spill kits, and educate employees with regard to the spill plan and response materials (SPU 2006n,p,q,t). Additionally, SPU directed MSI to properly dispose of paint chips, excess waste, and old equipment, cover metal scrap piles, sweep the lot regularly and the loading area after transferring materials, and properly contain and label wastes (SPU 2006p). All facilities achieved compliance by September 2006, with the exception of Taras Trucking, which closed (SPU 2006r, v,w,x).

SPU inspected Gene Summy Lumber on June 23, 2006. Housekeeping at the facility was described as good. SPU instructed the facility to complete a spill plan, purchase spill kits, and move forklift maintenance operations to a covered area (SPU 2006j,o). SPU re-inspected the facility in August 2006 and determined that the corrective actions had been implemented and the facility was in compliance with Seattle's Stormwater, Grading, and Drainage Code (SPU 2006u).

SPU conducted an environmental compliance inspection at Gene Summy Lumber on May 11, 2010. SPU required that Gene Summy Lumber sweep road surfaces more frequently to remove accumulated debris and dispose of debris properly, and to develop a spill prevention plan to prevent spills and other accidental releases of materials that may contaminate stormwater. Additionally, SPU recommended stabilizing the entrance road to the facility in order to reduce or eliminate track-out at the source (SPU 2010b). SPU performed a follow-up inspection in July 2010 and found the facility to be in compliance (SPU 2010d).

In January and April 2009, EPA sent CERCLA Section 104(e) Request for Information letters to Gene Summy Lumber and other companies associated with this area of Terminal 115. These companies include Industrial Lumber Sales, Schnitzer Steel, and SGM. The combined response from Gene Summy Lumber, Industrial Lumber Sales, and Schnitzer Steel was reviewed, and pertinent information was included in the Terminal 115 Data Gaps Report (SAIC 2011a). The response from SGM was not available for review.

Potential for Sediment Recontamination

The potential for sediment recontamination associated with operations at Gene Summy Lumber and Commercial Fence is summarized below.

- Stormwater in unpaved areas of the Gene Summy Lumber and Commercial Fence facilities infiltrates the ground surface (Port of Seattle 2011a). In July 2010, SPU determined that Gene Summy Lumber is in compliance with source control BMPs (SPU 2010d).
- Gene Summy Lumber and Commercial Fence are located adjacent to Glacier Bay. SPU determined that surface runoff from paved areas of these facilities flows north toward the public access road and Glacier Bay and to the west toward West Marginal Way SW. Catch basins are present in the public access road; stormwater runoff is collected by catch basins and then discharged through Outfall 2127 (Landau 2009; Port of Seattle 2011a). Spills that may occur on the facilities have the potential to reach the LDW through the Terminal 115 SD system.
- Groundwater beneath N Terminal 115 is contaminated with metals, SVOCs, VOCs, and petroleum hydrocarbons. The extent of the groundwater plume has not been defined. Groundwater may drain to the French drain and groundwater drainage structures that are present to the south of these facilities and be conveyed to Glacier Bay via Outfall 2128 or to the LDW via Outfall 2220.

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 Terminal 115 Data Gaps Report (SAIC 2011a). Environmental contamination related to historical operations at N Terminal 115 is being addressed under Agreed Order No. DE 8099. As part of the Agreed Order, the Port will complete an RI/FS and draft Cleanup Action Plan for N Terminal 115 (Port of Seattle 2011b). The following source control actions will be conducted to fill the identified data gaps and reduce the potential for recontamination of sediments:

- Ecology will review the response to the CERCLA Section 104(e) Request for Information letter from SGM to identify potential sources of sediment recontamination that may be associated with historical operations.

3.2.5 Northwest Container Services

Current Operations	Intermodal rail container loading, storage, maintenance, and cargo container repair
Historical Operations	Gravel mining and mixing, cement and concrete mixing plant, and shipping terminal
Address	6110 West Marginal Way SW
Facility/Site ID	84427474

Northwest Container Services subleases 11.7 acres of parcel 2505 from Northland Services (Waste Connections 2009) and operates under a separate NPDES permit (Port of Seattle 2011a). The facility is bordered by Northland Services to the north, south, and east; by West Marginal Way SW, Sea Pac Services, and railroad tracks to the west; and by Shultz Distributing to the south.

Historical Operations

Klinker and Ready-Mix Concrete's Graystone Division historically operated in this portion of the Terminal 115 property (SAIC 2011a). Additional information regarding Klinker's historical operations is available in Section 3.2.1.

Current Operations

Northwest Container Services occupies an unpaved area of the Terminal 115 property (Ecology 2009b). The facility includes one single-story concrete block building (Waste Connections 2009).

Northwest Container Services has operated at Terminal 115 since 1998. The company performs intermodal rail container loading, storage, maintenance, and repair of cargo containers for international shipping companies. Intermodal containers are loaded from trucks to trains. The containers are lifted off a truck, stacked on site, and loaded onto a train. Some of the containers may contain hazardous materials. Empty containers may undergo maintenance activities such as welding and painting. Metal repair work is performed on containers and the scrap metal is recycled. The interior of containers are steam cleaned (Ecology 2003b; Waste Connections 2009).

Diesel fuel is used to operate container lifts and propane is used to operate small forklifts. Motor oil, hydraulic fluid, antifreeze, and parts cleaners are also used at the facility (Waste Connections 2009).

From 1998 to 2004, Northwest Container Services was a wholly-owned direct subsidiary of DRP Investments, Inc. The company was sold in 2004 and is currently a wholly-owned direct subsidiary to Waste Connections, Inc. (Waste Connections 2009).

Northwest Container Services is covered under the Industrial Stormwater General Permit (WAR003779). Stormwater from the facility is conveyed to the LDW through the Terminal 115 SD system. Stormwater from the facility is discharged to the LDW through three outfalls. Stormwater discharge originating on the northern portion is conveyed through POS 6146;

stormwater originating on the middle portion is conveyed through Outfall 2220; and stormwater originating on the southern portion is conveyed through Outfall 2125 (Highland Park Way SW SD). Effluent samples are collected from storm drain structures connected to these three outfalls to comply with NPDES permit requirements. Groundwater enters the storm drain system through a perforated pipe installed 2 to 4 feet below the finished pavement surface. Groundwater entering the pipe commingles with stormwater and is discharged to the LDW through Outfall 2220.

Regulatory History

Ecology conducted a Dangerous Waste Compliance Inspection at Northwest Container Services on February 10, 2003, and found one area of non-compliance. Containers were steam cleaned and the resulting water drained to a nearby storm drain. The contents of the containers being cleaned were unknown, and the OWS sludge was not designated prior to disposal. Additionally, the secondary containment for the used oil tank was 75 percent full of used oil and water. Ecology recommended that this area be kept clean in order to identify any leaks or spills of oil in the secondary containment (Ecology 2003b).

In June 2003, Northwest Container Services inspected and cleaned the 500-gallon aboveground OWS and inspected a catch basin. Sludge from the OWS was analyzed for TCLP metals for purposes of waste characterization (Rivers Edge Services Inc. 2003). In November 2003, Ecology determined that Northwest Container Services had successfully completed the corrective actions (Ecology 2003d).

Ecology performed an NPDES compliance inspection at the facility in February 2007 (Ecology 2011a). The inspection report was not available for review.

EPA sent a CERCLA Section 104(e) Request for Information letter to Northwest Container Services in July 2008. Waste Connections submitted a response to the request in 2009. Information relevant to source control was included in the Terminal 115 Data Gaps Report (SAIC 2011a).

Ecology performed an NPDES compliance inspection at Northwest Container Services on January 26, 2011 (Wright 2011). Discharges from the facility in 2010 triggered Level 3 corrective actions for turbidity and copper. Northwest Container Services was performing monthly inspections as required by the NPDES permit. Ecology recommended that Northwest Container Services sweep the facility more frequently than once per quarter (the frequency required by the NPDES permit), keep liquid chemical and petroleum products and wastes/dumpsters under cover when stored outdoors, and ensure that floor drains within the facility buildings are not connected to the storm drain system. Ecology issued the following corrective actions to meet the requirements of the NPDES permit (Ecology 2011a):

- Review and update the SWPPP.
- Update the monitoring plan and facility map.
- Comply with Permit Condition S8.D, Level 3 Corrective Actions, which include:
    - Completion of a comprehensive study to identify stormwater contamination sources;

- Selection of applicable and appropriate capital, operational source control, and treatment BMPs to reduce stormwater contaminant levels to or below benchmark values;
- Preparation of a Level 3 report to Ecology with implementation schedule for selected BMPs; and
- Inclusion of the Level 3 report in the SWPPP.

Potential for Sediment Recontamination

The potential for sediment recontamination associated with operations at Northwest Container Services is summarized below:

- Stormwater from the Northwest Container Services facility is conveyed to the LDW through Outfalls 2125 and 2220. The storm drain lines also collect stormwater near the railroad tracks and the Northland Services facility before discharging to the LDW. Northwest Container Services carries an NPDES permit, which allows the facility to discharge wastewater from a steam cleaning system to the storm drain. Based on historical discharge monitoring reports (DMRs), lead and zinc concentrations have exceeded the NPDES permit limits; however, it is not clear if the source of these contaminants is from offsite sources, Northwest Container Services, and/or Northland Services. Stormwater discharges from this facility may represent a potential source of sediment recontamination.

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 Terminal 115 Data Gaps Report (SAIC 2011a). The following source control actions will be conducted to fill the identified data gaps and reduce the potential for recontamination of sediments:

- Ecology and/or SPU will perform a follow-up stormwater inspection at Northwest Container Services to verify compliance with applicable regulations and BMPs to prevent the release of contaminants to the LDW.

3.2.6 Sea Pac Services

Current Operations	Warehouse, equipment storage, and maintenance
Historical Operations	Gravel mining and mixing, cement and concrete plant
Address	6000 West Marginal Way SW
Facility/Site ID	23498: Gene Summy Lumber 23743: Commercial Fence

Sea Pac Services leases a small southwest portion of parcel 2505. The facility is bordered by Northwest Container Services to the north and east, Shultz Distributing to the south, and West Marginal Way SW to the west.

Historical Operations

Klinker and Ready-Mix Concrete's Graystone Division historically operated in this portion of the Terminal 115 property (SAIC 2011a). Additional information regarding Klinker's historical operations is available in Section 3.2.1.

Current Operations

According the facility's NDPES permit application, Sea Pac Services operates a warehouse and stores and maintains equipment at the facility. Petroleum and/or petrochemical products are stored indoors. New and used equipment and materials awaiting disposal/recycling are stored outdoors (SPU 2006y).The facility has been in operation since February 1989 (Sea Pac Services 2000). Sea Pac Services identified itself as small quantity generator in 1997. Stormwater from this facility appears to discharge to the LDW via Outfall 2125 (Highland Park Way SW SD).

Six storm drain catch basins are present at the facility (SPU 2006y). Groundwater enters the storm drain system through a perforated pipe installed 2 to 4 feet below the finished pavement surface along the western boundary of the facility (Figures 8a and 16). Groundwater entering the pipe commingles with stormwater and is discharged to the LDW through Outfall 2220.

Regulatory History

According to Ecology's Facility/Site Database, the facility's NPDES permit was cancelled in January 2006. No additional information regarding the NPDES permit was available for review.

SPU performed an environmental compliance inspection at the facility in October 2006. SPU required Sea Pac Services to prepare a spill plan, clean and maintain catch basins, and improve housekeeping (SPU 2006z). SPU re-inspected the facility in May 2007 and determined that Sea Pac Services had performed all corrective actions (SPU 2007).

Potential for Sediment Recontamination

The potential for sediment recontamination associated with operations at Sea Pac Services is summarized below:

- Stormwater from Sea Pac Services is discharged to the LDW through the Terminal 115 SD system. Contaminants in stormwater (if any) may represent a source of contaminants to the LDW.

Source Control Actions

Sea Pac Services appears to maintain appropriate source control BMPs and has worked with SPU to address the corrective actions identified by SPU inspectors. No source control actions have been identified for the Sea Pac Services facility; however, as identified in Section 3.1.1, an environmental evaluation is needed in this area of Terminal 115 to determine if sediment COCs are present in groundwater at concentrations that exceed draft groundwater-to-sediment screening levels.

3.2.7 Shultz Distributing

Current Operations	Gasoline and diesel fueling station
Historical Operations	Gasoline and diesel fueling, aluminum smelter
Address	6760 West Marginal Way SW
Facility/Site ID	94368646

Shultz Distributing leases the southwestern portion of parcel 2505 from the Port. The facility is bordered by Northland Services to the east, Northwest Container Services to the northeast, Sea Pac Services to the north, West Marginal Way SW to the west, and SW Front Street to the south. Shultz Distributing occupies the 260,000 sq ft masonry structure on the Terminal 115 property. A Subway sandwich shop and Portside Coffee Company are also located on this portion of the Terminal 115 property.

Historical Operations

Materials Reclamation and Maralco Aluminum historically operated in this portion of the Terminal 115 property (SAIC 2011a). Additional information regarding these historical operations is available in Section 3.2.1.

The fueling station was historically known as the Foley Cardlock facility (Section 3.2.1).

Current Operations

Shultz Distributing operates a gasoline and diesel fueling station at this portion of the Terminal 115 property. Three 10,000-gallon USTs and dispenser islands are currently used at the fueling station.

Regulatory History

No records of regulatory actions regarding the facility were available for review.

Potential for Sediment Recontamination

The potential for sediment recontamination associated with operations at Shultz Distributing is summarized below:

- Stormwater from Shultz Distributing is conveyed to an OWS and then discharged to the sanitary sewer (Port of Seattle 2011a). Stormwater may be discharged to the LDW via the Terminal 115 CSO during a CSO event. However, SPU indicates that some of the catch basins at the facility are plumbed to the Highland Park Way SW SD system, which discharges to the LDW via Outfall 2125. Stormwater conveyed to the city-owned storm drain system is not treated prior to discharge (Schmoyer 2011).

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 Terminal 115 Data Gaps Report (SAIC 2011a). The following source control actions will be conducted to fill the identified data gaps and reduce the potential for recontamination of sediments:

- SPU and the Port will determine if stormwater from the Shultz Distributing facility is conveyed to the Highland Park Way SW SD system without treatment.
- Ecology, SPU, and/or King County will perform a facility inspection to verify compliance with applicable regulations and BMPs to prevent the release of contaminants to the LDW.

3.2.8 Seafreeze Cold Storage

Current Operations	Frozen seafood warehouse, processing, and distribution
Historical Operations	Boatyard, Boeing Plant 1
Address	250 SW Michigan Street
Facility/Site ID	82536515

The Seafreeze Cold Storage facility is located on the southern portion of the Terminal 115 property. It is bordered by Northland Services to the north, West Marginal Way SW to the west, the former Foss Environmental property and SW Michigan Street to the south, and by the LDW to the east. Icicle Seafoods, a tenant at the Seafreeze facility, occupies the eastern portion of the facility, which is adjacent to the LDW.

Historical Operations

The Edward Heath Boatyard and Boeing Plant 1 historically operated in this portion of Terminal 115. Additional information regarding these historical operations is summarized in Section 3.2.1.

Seafreeze historically maintained a 500-gallon diesel fuel AST. The diesel fuel was used for a tractor at the facility. Frying and cooking operations were performed at the facility until December 1991 (Seafreeze 1991). The 500-gallon AST has been removed (Port of Seattle 2011a).

Current Operations

Seafreeze operates a frozen food warehouse and distribution facility. Icicle Seafoods, Northwest Seafood Processors, and Custom Seafood Services lease warehouse and processing space from Seafreeze at this location (ERM 2008).

Fish processing occurs on the first floor of the building. Fish arrive in ice-packed pallets. The fish are cleaned, if necessary, then filleted and packed for distribution. Equipment is cleaned daily with a chlorinated alkyln soap. The second floor of the building is used for breading operations (Ecology 1991b).

Two large dumpsters for recyclable and non-recyclable wastes are present in the yard. Wooden pallets, equipment, tanks, and empty and full drums are stored throughout the yard. Storm drain catch basins are located throughout the Seafreeze yard (Ecology 1991b). It appears that the yard is a common area used by all tenants at the facility.

A 40-gallon diesel fuel AST is present at the facility. The fuel is for use in the emergency generator (Port of Seattle 2011a).

Regulatory History

In August 1987, METRO issued an Enforcement Action Informal Compliance Schedule due to discharge violations from May 27 to 30, 1986, and on May 1, 1987. Solid food waste was discharged to the municipal sanitary sewer. METRO required Seafreeze to provide an explanation for the solids collection system deficiencies, propose corrective measures and an implementation schedule for the corrective measures, and begin weekly inspections for the presence of food waste over ¼-inch in diameter and keep a written record of the inspections (METRO 1987).

Seafreeze was issued an Industrial Wastewater permit to discharge industrial wastewater into the METRO sewer system on September 21, 1988 (KCIW 1988). The permit expired on September 21, 1998 (KCIW 1993).

The King County Health Department (KCHD) received an anonymous tip on September 12, 1991, that Seafreeze was discharging wastewater to the LDW. An inspector from KCHD determined that Seafreeze disposed large quantities of ice, which was used for seafood packaging, on the banks of the LDW. The inspector did not observe any unusual discharges from the storm drain outfalls associated with the facility (Outfalls 2122 and Port-SF[12]). The inspector noted drums stored outside without cover or secondary containment and ASTs stored outside with secondary containment but not covered (Ecology 1991a).

Ecology conducted a follow-up inspection to the wastewater complaint on September 20, 1991. The Ecology inspector observed ice from freezer coils and seafood packaging that were placed on the embankment to melt off to the LDW. The Ecology inspector confirmed that drums and ASTs were improperly stored without cover, and additionally, that drums containing diesel fuel and waste oil were stored without secondary containment. Drums were also used to store salad oil, kerosene, corrosives, and chlorinated products. Ecology inspectors observed an employee washing spilled oil, soap, and water into the storm drain (Ecology 1991b,c).

Seafreeze performed the following corrective actions and employed new BMPs in response to the September 1991 Ecology inspection: discontinuing use of the fryer in December 1991; removing all drums of salad oil by January 1992; storing all drums containing cleanup chemicals and kerosene inside the plant near floor drains connected to the sanitary sewer; and discontinuing use of the outside waste oil tank and storing waste oil only in drums. Seafreeze began spreading dirty ice on the pavement where it would drain into the sanitary sewer system and requested approval from Ecology to spread the dirty ice on the embankment (Seafreeze 1991).

[12] Outfall Port-SF has been abandoned (Port of Seattle 2011a).

On September 1, 1994, METRO issued a Final Notice and Compliance Order for violations that occurred on July 25, 1994. Solid wastes were discharged to the sanitary sewer, due to a lack of effective maintenance and monitoring of the pretreatment system, which was a violation of the effluent limitations and violation criteria (Condition S11) of the discharge permit (METRO 1994). The order required the following corrective actions:

- Install a screen across the entire opening below the exterior rotoscreen to prevent entry of solid waste into the sanitary sewer.
- Immediately begin performing daily inspections and monthly preventative maintenance.

Ecology performed a stormwater compliance inspection at the facility in January 2008 to determine if Seafreeze was eligible for a Conditional No Exposure (CNE) certificate. Ecology determined that the facility was eligible (Ecology 2008a), and the CNE certificate was issued in May 2008. Northwest Seafood Processors and Custom Seafoods, both subtenants to Seafreeze, were issued CNE certificates in February 2008 and 2009, respectively (Port of Seattle 2011a).

EPA sent a CERCLA Section 104(e) Request for Information letter to Seafreeze, Custom Seafoods, and Northwest Seafood Processors in January 2009. The responses to the requests were not available for review at the time this SCAP was prepared.

SPU inspected the Seafreeze facility on July 16, 2009. The facility was in compliance and no corrective actions were identified (Ecology 2011b). The inspection report was not available for review.

Potential for Sediment Recontamination

The potential for sediment recontamination associated with operations at Shultz Distributing is summarized below:

- Stormwater from the Seafreeze facility is discharged to the LDW through Outfall 2122. Recyclable and non-recyclable wastes, equipment, and empty and full drums are stored throughout the Seafreeze yard in two containment areas that are encircled by containment drains connected to the sanitary sewer. Wastes are to be placed in containment areas; however, based on information provided by Icicle Seafoods, some tenants at Seafreeze fail to properly handle waste in this area. However, no spills have been recorded since May 2009 (Port of Seattle 2011a). Storm drain catch basins are present in the yard. Contaminants in stormwater (if any) may represent a potential source of sediment recontamination.
- Icicle Seafoods reported six spills in an area shared by tenants at the Seafreeze facility in 2009. None of these spills reached the LDW. Spilled materials included food oil, grease, waste ice, and hydraulic oil. No spills have been recorded since May 2009 (Port of Seattle 2011a). These materials do not represent a potential source of sediment contamination. However, these materials can potentially harm the river environment. 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 facility was summarized in the Terminal 115 Data Gaps Report (SAIC 2011a). The following source control actions will be conducted to fill the identified data gaps and reduce the potential for recontamination of sediments:

- Ecology will review the responses from Seafreeze, Custom Seafoods, and Northwest Seafood Processors to the CERCLA Section 104(e) Request for Information letter to identify potential sources of sediment recontamination (if any) that may be associated with current or historical operations.

3.3 Other Adjacent Properties

Two properties located adjacent to the LDW in the Terminal 115 source control area are not owned by the Port. Information about these facilities relevant to recontamination of LDW sediments was presented in the Terminal 115 Data Gaps Report (SAIC 2011a).

Facility	Address	Potential Contaminant Pathways
Seattle Engineering Department Penn Yard	1st Avenue SW & SW Peninsula Place	Stormwater, surface runoff/spills, groundwater discharge, bank erosion
Former Foss Environmental	200 SW Michigan Street	Stormwater, groundwater discharge

The former Foss Environmental property is not immediately adjacent to the LDW; however, it was historically part of Terminal 115. Based on stormwater drainage maps provided by the Port and SPU, the storm drains on the property appear to be connected to the Terminal 115 SD system. For these reasons, the former Foss Environmental property is considered an adjacent property within the source control area.

These facilities are discussed in more detail in Sections 3.3.1 and 3.3.2 below.

3.3.1 Seattle Engineering Department Penn Yard

Current Operations	Public park and parking
Historical Operations	Unknown
Address	1st Avenue SW & SW Peninsula Place
Facility/Site ID	64412161
Chemicals of Concern	None identified
Media Affected	None identified

The Penn Yard is located adjacent to the LDW and consists of four small parcels. The property is bordered by Terminal 115 on the north and west, SW Michigan Street on the south, a public

right-of-way area supporting the 1st Avenue S bridge to the east, and the LDW to the northeast (Figures 4 and 5).

Historical Operations

Penn Yard was operated by the City of Seattle Engineering Department. Operations at the property are unknown. The EPA ID No. for Penn Yard was active from July 28, 1989, to December 31, 1995. Penn Yard was listed as a hazardous waste generator. Additional information regarding historical operations by the Seattle Engineering Department at the property was not available for review.

Based on aerial photographs and Sanborn maps included in the Terminal 115 ECR, it appears that two restaurants and an office building were present on the property from approximately 1929 to 1946. These buildings had been demolished by 1956 (SoundEarth 2011).

Current Operations

Based on a review of aerial photographs and King County tax assessor records, parcel 2518 is Seaview Park, parcels 2512 and 2514 are used as parking areas, and parcel 2510 is a right-of-way, which is used for access to the southeast corner of the Terminal 115 property and the parking areas for Seaview Park. The parking areas do not appear to be paved. The West Michigan CSO discharges at Seaview Park.

Based on maps provided by SPU, there do not appear to be any storm drain structures on this property. Stormwater may infiltrate the ground surface or be conveyed to the LDW via sheet flow.

Regulatory History

The EPA ID No. for Penn Yard has been inactive since December 31, 1995. Additional information regarding the regulatory history for Penn Yard was not available for review.

Potential for Sediment Recontamination

The potential for sediment recontamination associated with operations at Penn Yard is summarized below:

- Stormwater and spills from this property may be conveyed to the LDW via sheet flow. Contaminants in spilled materials, if any, may become entrained with surface runoff and be conveyed to the LDW. The potential for sediment recontamination via the stormwater pathway is low.
- Alternatively, stormwater and spills may infiltrate the ground surface. Contaminants may leach to groundwater. Contaminants in groundwater, if any, may be conveyed to the LDW via groundwater discharge.

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 Terminal 115 Data Gaps Report. 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 property inspection to determine current use of the property and determine if stormwater and/or spills may be conveyed to the LDW via sheet flow or groundwater discharge.
- Ecology will request information from the City of Seattle Engineering Department regarding historical operations performed by the department to determine if operations may have resulted in releases of contaminants to soil and/or groundwater.

3.3.2 Former Foss Environmental Services

Current Operations	Office building
Historical Operations	Boatyard, Boeing Plant 1, 10-day transfer facility, industrial cleaning, waste emergency response and transportation services
Address	200 SW Michigan Street
Facility/Site ID	36326474
Chemicals of Concern	PCBs
Media Affected	None identified

Information regarding parcel 2506, currently owned by Haslund MP LLC (Haslund MP) and historically owned by Foss Redevelopment and the Port, is included as an adjacent property because stormwater from this property discharges to the LDW through the storm drain system on the Terminal 115 property.

The property is bordered on the west, north, and east by Terminal 115, and to the south by SW Michigan Street. According to King County tax records, an 85,126 sq ft three-story masonry building constructed in 1929 is present on this parcel.

Foss Environmental Services formerly occupied parcel 2506 from 1998 until 2002. Foss Redevelopment was the property owner during that time. Haslund MP is the current owner of the property. This property was historically owned by the Port and was referred to as Parcel B of Terminal 115.

Historical Operations

The property was part of the former Boeing Plant 1 site from approximately 1917 to 1969. The southern portion of the building was constructed in 1929 and the northern portion was constructed in 1939. The building served as the administrative and engineering offices of Boeing Plant 1. Boeing sold the property and improvements to the Port in 1971 (Arai/Jackson 1981; ADI Geoscience 1998; IVI International 2002).

Boeing operated an x-ray laboratory, a specimen preparation room, a dark room, a polish room, a general testing room, and a metallurgical office and laboratory within the building. Three outbuildings were present on the property during Boeing's tenure: a metal flammable storage shed on a concrete pad, a test building, and a sand blasting building. The types of tests performed in the test building are unknown but were likely metallurgical-related or similar to other historical testing operations performed by Boeing (Golder Associates 2006; SoundEarth 2011).

The Port owned the property from 1971 to 1997. During the Port's ownership of the building, the building was largely vacant (ADI Geoscience 1998), although Lockheed Shipbuilding and Construction Company rented a large portion of the building in the early 1980s (Arai/Jackson 1981).

Foss Environmental occupied the building at the property from approximately 1997 to 2001. Foss Redevelopment renovated the building in 1989 and again in 1999 (IVI International 2002b). This facility supported the emergency response services of Foss Environmental and served as the base for its transportation services and corporate offices. Emergency response services were provided to many clients, including some state agencies. Foss Environmental specialized in responding to releases to water, industrial cleaning, transportation of waste related to emergency response and industrial cleaning, and regular pick up and transfer of wastes for its clients. A 10-day transfer facility was also present at this location. Tank pulls were also performed by Foss Environmental; however, all scrap metal and other waste was typically removed from the client's property without being transferred through the Foss Environmental facility (Ecology 2001).

Foss Environmental rarely transferred wastes from truck containers to other containers or holding areas. Trucks generally parked on the property only overnight. Truck maintenance was not performed at the SW Michigan Street facility. The company maintained emergency spill equipment and a Coast Guard-approved spill contingency plan. No spills occurred at the facility (Ecology 2001).

Information regarding use of this facility between 2002, when Foss Environmental ceased operations at the property, and 2006, when Haslund MP purchased the property from Foss Redevelopment, was not available for review at the time this SCAP was prepared.

Current Operations

The building on this property has been used as office space for tenants of Haslund MP since its ownership began in 2006. Current tenants at the building include State of Washington Employment Security Department, Washington State Department of Transportation (WSDOT), and McGraw-Hill Companies, Inc. (Real Property Law Group 2009).

Three Seattle City Light transformers are present at the west end of the office building. Labels affixed to the transformers state that they contain less than 50 parts per million (ppm) PCBs (Real Property Law Group 2009). A utility-owned pad-mounted electrical transformer is present on the property (IVI International 2002).

The property sits approximately 3 to 6 feet below the elevations of the Seafreeze facility on the west and SW Michigan Street on the south (ADI Geoscience 1998). Stormwater runoff from the facility is conveyed to a pumping station via storm drains at the western end of the building. The pumping station pumps the stormwater to the portion of Highland Park Way SW SD system that

is located on Terminal 115. Stormwater discharging from roof drains and sewage are conveyed to the pumping station at the eastern end of the building and then pumped to the City of Seattle sanitary sewer system (Real Property Law Group 2009).

Regulatory History

Ecology performed a Dangerous Waste Compliance Inspection at the Foss Environmental facility in October 2001. The company was planning to move to Point Wells in December 2001. Written logs recording the entry and exit of vehicles carrying manifested waste were not kept. Foss Environmental was required to keep a log for each vehicle, which included: the date the vehicle entered the facility, the manifest number of the shipment, and the date the vehicle left the facility. Ecology required Foss Environmental to maintain a similar log at the Point Wells facility. Foss Environmental was required to retain the log for three years (Ecology 2001). Foss Environmental agreed to comply with this request (Foss Environmental 2001).

Following a remedial excavation and groundwater compliance monitoring performed in 2002 and 2003, Ecology issued a No Further Action letter to Foss Development with regard to petroleum-contaminated soil and groundwater at the property (Ecology 2003a).

EPA sent CERCLA Section 104(e) Request for Information letters to McGraw-Hill Companies, Inc., Haslund MP, and Ilahie Holdings, Inc. in January and April 2009 and December 2010, respectively. EPA requested information relevant to Foss Redevelopment's operations at this property from Ilahie Holdings, Inc. The response from Haslund MP was available for review. Information relevant to source control was included in the Terminal 115 Data Gaps Report (SAIC 2011a). The responses from McGraw-Hill Companies, Inc. and Ilahie Holdings, Inc. were not available for review.

Environmental Investigations and Cleanups

Several environmental investigations and cleanups have been performed at this property.

- Asbestos, Lead Paint and PCB Survey (1993–1994) (Pickering Environmental 1994)
- Underground Storage Tank Closure (1998) (SD&C 1998)
- Phase I Environmental Site Assessment (1998) (ADI Geoscience 1998)
- Phase I Environmental Site Assessment (2002) (IVI International 2002)
- Limited Subsurface Soil Investigation (2002) (Urban Redevelopment 2002)
- Phase II Environmental Site Assessment (2002) (IVI Environmental 2002)
- Remedial Excavation (2002) (Urban Redevelopment 2002, 2003b)
- Groundwater Compliance Monitoring (2003) (Urban Redevelopment 2003b)
- Environmental Due Diligence Review (2006) (Golder Associates 2006)

Three USTs have been removed from the former Foss Environmental property. These include 1,000- and 4,000-gallon diesel USTs, and a 3,000-gallon Bunker C fuel oil UST. Diesel- and heavy oil-range hydrocarbon concentrations in soil samples collected from 1,000-gallon UST

excavation exceeded the current MTCA Method A cleanup levels. Two groundwater monitoring wells were installed, one each in the 1,000- and 3,000-gallon UST excavations. Diesel-range hydrocarbons were detected in both groundwater samples; however, only the concentration from the 1,000-gallon UST excavation exceeded current MTCA Method A cleanup levels (ADI Geoscience 1998; SD&C 1998).

From August to October 2002, four temporary wells were installed in the vicinity of the former 1,000-gallon UST, ten soil borings were advanced near the 1,000- and 3,000-gallon UST excavations, and a remedial excavation was performed to remove petroleum-contaminated soil associated with the former 1,000-gallon diesel UST. Diesel-range hydrocarbons exceeded the MTCA Method A cleanup level in soil boring and groundwater samples associated with the 1,000-gallon UST excavation. Approximately 45 tons of petroleum-contaminated soil were removed from the property during the excavation. Diesel-range hydrocarbons in bottom and sidewall samples from the remedial excavation were either not detected or were below MTCA Method A cleanup level. The areas where concentrations of diesel-range hydrocarbons in groundwater exceeded the MTCA Method A cleanup level were over-excavated during the remedial excavation (Urban Redevelopment 2002, 2003a; IVI Environmental 2002).

In January 2003, four temporary wells were installed around the former 1,000-gallon diesel UST area. Groundwater samples were collected from each well and analyzed for diesel-range hydrocarbons. Diesel-range hydrocarbons were not detected in any of the samples (Urban Redevelopment 2003b).

A complete copy of the Asbestos, Lead Paint and PCB Survey report (Pickering Environmental 1994) was not available for review by SAIC during the preparation of the Data Gaps Report. SAIC reviewed the laboratory data appendix, which includes laboratory analysis of potentially asbestos-bearing building materials and lead-based paint. Information regarding the PCB survey was not available in the appendix.

During a property visit in support of the 2002 Phase I ESA, one pad-mounted transformer owned by Seattle City Light was observed on the property. Based on its most probable date of installation, the transformer may have contained PCBs; however, the equipment appeared to be in good condition and no evidence of leaks was observed. An elevator had been installed in the building in 1998 or 1999. The hydraulic fluid used in the elevator system was determined to be unlikely to contain PCBs since PCB-bearing hydraulic fluid has not been manufactured since 1979 (IVI International 2002).

In 2006, an Environmental Due Diligence Review of the property was performed for Puget Sound Realty Advisors, LLC, who was under contract to purchase the property from Foss Redevelopment. The building maintenance supervisor indicated that the interior of the building was renovated in 1997 and 1998, including mechanical and heating, ventilating and air-conditioning systems, flooring, interior walls, windows, and window moldings; any asbestos-bearing materials and lead-based paint would likely have been removed from the interior of the building (Golder Associates 2006).

An elevator was previously installed in the building. Based on the age of the former elevator, PCBs may have been present in the hydraulic system; however, there was no evidence indicating

that the hydraulics may have leaked or that it may have contained PCBs. The building maintenance supervisor indicated that the elevator pit had been filled with concrete (Golder Associates 2006). It is not clear if this elevator is the same elevator identified during the 2002 Phase I ESA or if it is a second historical elevator.

Potential for Sediment Recontamination

The potential for sediment recontamination associated with operations at the former Foss Environmental property is summarized below:

- The locations of storm drain lines on the former Foss Environmental property are unknown; however, based on the information currently available, it appears that stormwater from the property is conveyed to the LDW through the Highland Park Way SW SD system. Stormwater from roof drains is discharged to the combined sewer system and may be conveyed to the LDW through the Terminal 115 CSO during a storm event.
- A previous building assessment included a survey for PCB-bearing building materials. The PCB survey was not available for review. Given the age of the building, there is potential that some PCB-bearing materials, such as paint, may have been applied to the building exterior. However, given that the building exterior is comprised primarily of brick, the potential for the presence of PCB-bearing materials is likely to be low.
- Four transformers appear to be present at the property. Three of these transformers have been identified as containing less than 50 ppm PCBs. It is unclear if the utility-owned, pad-mounted transformer remains at the property or if this transformer could contain PCB-bearing fluid. A spill of fluid from the transformer, if present, may represent a risk to LDW sediments if the spill was conveyed to the LDW through the storm drain system.
- The building on the property is used for business offices. Only small amounts of potentially hazardous materials, such as cleaning products typically associated with an office, are stored on the property (Real Property Law Group 2009). Leaks from vehicles parked at the facility may have the potential to reach the storm drain system; however, spills of this nature are unlikely to represent a source of contaminants to sediment.
- Conflicting information regarding a former elevator(s) within the building suggests that PCB-bearing hydraulic fluid may have been used in the elevator(s). However, there is no evidence to suggest that PCBs were released to the subsurface.
- Petroleum-contaminated soil and groundwater at the property appear to have been adequately addressed. Petroleum hydrocarbons are not a COC with regard to sediment recontamination. 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 is a COC for LDW sediments, although arsenic was not identified as a COC for the sediments adjacent to the Terminal 115 source control area. The potential for sediment recontamination via this pathway is unknown.

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 Terminal 115 Data Gaps Report.

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 regarding the status of the utility-owned pad-mounted electrical transformer from Haslund MP to determine if it remains at the property, and if so, to determine if it contains PCB-bearing fluid.
- Ecology will request additional information from Haslund MP to determine the locations of storm drain lines on the former Foss Environmental property.
- Ecology will review responses from McGraw-Hill Companies, Inc. and Ilahie Holdings, Inc. to the CERCLA Section 104(e) Request for Information letters to identify potential sources of sediment recontamination that may be associated with current or historical operations.
- Ecology will request that Haslund MP perform an environmental investigation to characterize the nature and extent of potential sediment COCs in soil and groundwater beneath the property. Soil and groundwater contamination may be present due to historical operations by Boeing.

3.4 Upland Properties

The following industrial and commercial facilities within the Highland Park Way SW and SW Kenny Street SD basins and the Terminal 115 and West Michigan CSO basins have been identified.

- A&E Auto Repair
- Aluminum & Bronze Fabricators
- Catholic Printery
- Emswiler Construction
- Enviro Metal
- Lloyd Electric
- Molner's One Stop
- Pacific Plumbing Supply
- Pacific Rim Equipment Rental/Krueger Sheet Metal Company
- Pioneer Industries
- SPU SW Trenton Tank
- SPU Vactor Pit

Relevant information about these facilities was summarized in the Terminal 115 Data Gaps Report (SAIC 2011a). Upland properties identified as potential sediment recontamination sources or for which insufficient information was available to assess the potential for sediment recontamination include Aluminum & Bronze Fabricators and Catholic Printery.

These facilities are discussed in more detail in Sections 3.4.1 and 3.4.2 below. Because these properties are not adjacent to the LDW, surface runoff, spills directly to the waterway, and bank erosion are not potential sediment recontamination pathways and therefore are not discussed further in this section. Contaminants from upland properties could be transported to the LDW via stormwater, groundwater, and CSO pathways.

Facility/property-specific source control actions were not identified for the remaining upland properties, although it is recommended that all upland properties be inspected periodically as part of ongoing source control efforts for the LDW to verify continued compliance with source control BMPs.

3.4.1 Aluminum & Bronze Fabricators

Current Operations	Metal fabrication services, including pipe bending and fitting
Historical Operations	Residence
Address	6301 West Marginal Way SW
Facility/Site ID	35163443
Chemicals of Concern	None identified
Media Affected	None identified

Aluminum & Bronze Fabricators operates on parcel 3024049082. The parcel is bordered by West Marginal Way SW to the east, a currently vacant industrial parcel to the north, a City of Seattle park to the west, and Catholic Printery to the south. King County tax records indicate that a 16,040 sq ft building, constructed in 1964, is present on the property.

Historical Operations

This property was initially developed in the 1910s as a wood-framed, one-story residence. The building was heated by a stove. The residence was demolished in 1964 and replaced by the current facility (SoundEarth 2011).

Current Operations

The facility performs metal fabrication services, including pipe bending and fitting, and produces metal hand and guard rails. All work is performed indoors. Waste streams generated through production include waste paints, coating, and oils (SPU 2010e).

Regulatory History

Ecology's Facility/Site Database indicates that the EPA ID number associated with this facility became inactive effective December 31, 2005.

SPU performed an inspection at the Aluminum & Bronze Fabricators facility on March 24, 2006. Sandblasting material was observed in the storm drain catch basins (SPU 2006c). SPU observed

several areas of noncompliance with City of Seattle codes and issued the following corrective actions (SPU 2006f):

- Develop a spill plan, obtain spill response materials, and educate employees.
- Clean catch basins on the property.
- Cease outdoor sandblasting operations.
- Properly label containers of hazardous wastes.
- Properly dispose of fluorescent tubes and used oil.

SPU re-inspected the facility in May and June 2006 and learned that the business was under a sale agreement. SPU again directed the facility to cease outdoor sandblasting operations (SPU 2006g,h). SPU determined that Aluminum & Bronze Fabricators had satisfactorily completed the corrective actions following the June 2006 inspection (SPU 2006i).

SPU performed an inspection at the Aluminum & Bronze Fabricators facility on July 30, 2010. The SPU inspector observed wash water being discharged to the storm drain (SPU 2010e). Based on code violations observed during the inspection, SPU issued the following corrective actions (SPU 2010f):

- Develop a spill plan, obtain spill response materials, and educate employees.
- Perform routine maintenance of the storm drain system, including cleaning the catch basins and installing outlet traps.
- Implement source control BMPs with regard to housekeeping.
- Prevent wash water from entering the storm drain system.
- Properly label and dispose of hazardous wastes.

Additionally, SPU referred the facility to PSCAA to determine if paint booth operations require additional permits and registrations and to Ecology in order to obtain coverage under the Industrial Stormwater General Permit (SPU 2010f). SPU re-inspected the facility in September 2010 and determined that the corrective actions had been satisfactorily implemented. Aluminum & Bronze Fabricators had also applied for a CNE certificate with Ecology (SPU 2010g).

Potential for Sediment Recontamination

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

- Stormwater associated with this property is conveyed to the LDW through the SW Kenny Street SD system. Sediment COCs, if any, suspended in stormwater associated with this property may be conveyed to LDW.

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 Terminal 115 Data Gaps Report

(SAIC 2011a). The following source control actions will be conducted to fill the identified data gaps and reduce the potential for recontamination of sediments:

- Ecology will determine if Aluminum & Bronze Fabricators can obtain a CNE certificate or is required to obtain coverage under the Industrial Stormwater General Permit.

3.4.2 Catholic Printery

Current Operations	Electronic and type printing
Historical Operations	Unknown
Address	6327 West Marginal Way SW
Facility/Site ID	14533
Chemicals of Concern	None identified
Media Affected	None identified

Catholic Printery, Inc. is located on the west side of West Marginal Way SW across from Terminal 115, to the south of Aluminum & Bronze Fabricators. A vacant industrial parcel is to the south, and a City of Seattle park is to the west. According to King County tax records, one building is present on the property, a 25,500 sq ft storage warehouse, constructed in 1981.

Historical Operations

Information on historical operations at this property was not available for review at the time this report was prepared.

Current Operations

Catholic Printery has occupied this property since approximately 2005 (SPU 2008a). The company operates electronic and type printing presses. Approximately 5 gallons of waste ink is generated each year. The waste ink is recycled. All work is performed indoors. No materials are stored outdoors (SPU 2006a).

There are six storm drain catch basins present on the property (SPU 2008a).

Regulatory History

SPU inspected the facility on March 13, 2006. The following corrective actions were identified (SPU 2006b):

- Clean catch basins, install outlet traps, and perform regular maintenance and inspections.
- Properly dispose of used fluorescent tubes.

SPU re-inspected the facility on March 31, 2006. The facility had complied with the corrective actions (SPU 2006d,e).

SPU inspected the facility on June 26, 2008. SPU directed Catholic Printery to clean the catch basins at the property and recommended increased sweeping in the parking lot in order to reduce the amount of solids reaching the storm drain catch basins (SPU 2008b). SPU re-inspected the facility on July 8, 2008. Catholic Printery had complied with the corrective action (SPU 2006c).

According to Ecology's Facility/Site Database, a local source control inspection was performed at Catholic Printery in April 2010; no additional information regarding this inspection was available for review.

Potential for Sediment Recontamination

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

- Stormwater associated with this property is conveyed to the LDW through the SW Kenny Street SD system. Sediment COCs, if any, suspended in stormwater associated with this property may be conveyed to LDW.

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 Terminal 115 Data Gaps Report. The following source control actions will be conducted to fill the identified data gaps and reduce the potential for recontamination of sediments:

- Ecology will review the April 2010 local source control inspection report to determine if there is a potential for sediment recontamination via the stormwater pathway.

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 Terminal 115 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 Terminal 115 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 to 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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Tables

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Table 1
Chemicals Detected Above Screening Levels in Surface Sediment
Terminal 115 Source Control Area

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)[1]	TOC %	Conc'n (mg/kg OC)	SQS	CSL	LDW Background	Units	SQS Exceedance Factor	CSL Exceedance Factor	LDW Background Exceedance
Phthalates													
Boeing Site Characterization	R3	10/15/97	Bis(2-ethylhexyl)phthalate	3.5	3.7	95	47	78		mg/kg OC	2.0	1.2	
EPA Site Inspection	DR155	8/13/98	Bis(2-ethylhexyl)phthalate	2.5	2.7	93	47	78		mg/kg OC	2.0	1.2	
LDW RI Phase 2 Round 1	LDW-SS70	1/21/05	Bis(2-ethylhexyl)phthalate	1.7	3.05	56	47	78		mg/kg OC	1.2	<1	
EPA Site Inspection	DR131	8/13/98	Bis(2-ethylhexyl)phthalate	1.5	1.47	102	47	78		mg/kg OC	2.2	1.3	
EPA Site Inspection	DR126	8/12/98	Butyl benzyl phthalate	0.46	3.09	15	4.9	64		mg/kg OC	3.0	<1	
EPA Site Inspection	DR131	8/13/98	Butyl benzyl phthalate	0.46 J	1.47	31	4.9	64		mg/kg OC	6.4	<1	
Boeing Site Characterization	R3	10/15/97	Butyl benzyl phthalate	0.32	3.7	8.6	4.9	64		mg/kg OC	1.8	<1	
Slope Sediment Characterization	T115-SS05	4/28/09	Butyl benzyl phthalate	0.16	1.84	8.7	4.9	64		mg/kg OC	1.8	<1	
Other SVOCs													
LDW RI Phase 2 Round 2	LDW-SS68	3/7/05	Hexachlorobenzene	0.095 J	2.58	3.7	0.38	2.3		mg/kg OC	9.7	1.6	
PCBs													
Boeing Site Characterization	R7	10/15/97	PCBs (total-calc'd)	1.2	1.4	86	12	65		mg/kg OC	7.1	1.3	
LDW RI Phase 2 Round 1	LDW-SS75	1/21/05	PCBs (total calc'd)	0.52	1.75	30	12	65		mg/kg OC	2.5	<1	
Boeing Site Characterization	R8	10/16/97	PCBs (total-calc'd)	0.40	1.55	26	12	65		mg/kg OC	2.1	<1	
Dioxin and Furan TEQ													
LDW RI Phase 2 Round 2	LDW-SS59	3/14/05	Dioxin/furan TEQ - Mammal - Half DL	46.6 J					1.6	ng/kg DW			29
Slope Sediment Characterization	T115-SS04	4/28/09	Dioxin/furan TEQ - Mammal - Half DL	23.4					1.6	ng/kg DW			15
Slope Sediment Characterization	T115-SS03	4/28/09	Dioxin/furan TEQ - Mammal - Half DL	19.6					1.6	ng/kg DW			12
Slope Sediment Characterization	T115-SS02	4/28/09	Dioxin/furan TEQ - Mammal - Half DL	15.6					1.6	ng/kg DW			10
Slope Sediment Characterization	T115-SS05	4/28/09	Dioxin/furan TEQ - Mammal - Half DL	5.5					1.6	ng/kg DW			3.4
Slope Sediment Characterization	T115-SS05	4/28/09	Dioxin/furan TEQ - Mammal - Half DL	5.0					1.6	ng/kg DW			3.1
Slope Sediment Characterization	T115-SS01	4/28/09	Dioxin/furan TEQ - Mammal - Half DL	4.0					1.6	ng/kg DW			2.5

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

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

[1] Dioxin and furan TEQ units are ng/kg DW.

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 2
Chemicals Detected Above Screening Levels in Subsurface Sediment
Terminal 115 Source Control Area

Event Name	Location Name	Date Collected	Sample Depth (feet)	Chemical	Conc'n (mg/kg DW)[1]	TOC %	Conc'n (mg/kg OC)	SQS/ LAET	CSL/ 2LAET	LDW Background	Units	SQS Exceedance Factor	CSL Exceedance Factor	LDW Background
PAHs														
Post-Dredge Subsurface Sediment Characterization	SC-01	1/27/2010	3 - 4	Acenaphthene	2.20E-01 D	1.01	2.18E+01	16	57		mg/kg OC	1.4	<1	
Terminal 115 Sediment Characterization	S1-CS	3/14/2008	C	Benzo(a)anthracene	6.80E+00	2.59	2.63E+02	110	270		mg/kg OC	2.4	<1	
Post-Dredge Subsurface Sediment Characterization	SC-03-2	3/10/2010	1 - 2	Benzo(a)anthracene	1.90E+00 D	1.3	1.46E+02	110	270		mg/kg OC	1.3	<1	
Terminal 115 Sediment Characterization	S1-CS	3/14/2008	C	Benzo(a)pyrene	3.40E+00	2.59	1.31E+02	99	210		mg/kg OC	1.3	<1	
Terminal 115 Sediment Characterization	S1-02	3/14/2008	0.5 - 1.5	Chrysene	2.60E+00 J	1.98	1.31E+02	110	460		mg/kg OC	1.2	<1	
Terminal 115 Sediment Characterization	S1-CS	3/14/2008	C	Chrysene	1.60E+01	2.59	6.18E+02	110	460		mg/kg OC	5.6	1.3	
Terminal 115 Sediment Characterization	S2-02*	3/14/2008	1 - 2	Chrysene	1.50E+00	5.02	2.99E+01	1.4	2.8		mg/kg DW	1.1	<1	
Post-Dredge Subsurface Sediment Characterization	SC-03-2	3/10/2010	1 - 2	Chrysene	2.10E+00 D	1.3	1.62E+02	110	460		mg/kg OC	1.5	<1	
Terminal 115 Sediment Characterization	S1-02	3/14/2008	0.5 - 1.5	Fluoranthene	7.40E+00 J	1.98	3.74E+02	160	1200		mg/kg OC	2.3	<1	
Terminal 115 Sediment Characterization	S1-CS	3/14/2008	C	Fluoranthene	4.70E+01	2.59	1.81E+03	160	1200		mg/kg OC	11	1.5	
Post-Dredge Subsurface Sediment Characterization	SC-01	1/27/2010	3 - 4	Fluoranthene	2.70E+00 D	1.01	2.67E+02	160	1200		mg/kg OC	1.7	<1	
Terminal 115 Sediment Characterization	S1-CS	3/14/2008	C	Pyrene	3.40E+01	2.59	1.31E+03	1000	1400		mg/kg OC	1.3	<1	
Terminal 115 Sediment Characterization	S2-02*	3/14/2008	1 - 2	Pyrene	4.60E+00	5.02	9.16E+01	2.6	3.3		mg/kg DW	1.8	1.4	
Terminal 115 Sediment Characterization	S1-CS	3/14/2008	C	Total Benzofluoranthenes	1.42E+01	2.59	5.48E+02	230	450		mg/kg OC	2.4	1.2	
Terminal 115 Sediment Characterization	S1-02	3/14/2008	0.5 - 1.5	Total HPAH (calc'd)	1.95E+01 J	1.98	9.84E+02	960	5300		mg/kg OC	1.0	<1	
Terminal 115 Sediment Characterization	S1-CS	3/14/2008	C	Total HPAH (calc'd)	1.23E+02	2.59	4.75E+03	960	5300		mg/kg OC	4.9	<1	
Post-Dredge Subsurface Sediment Characterization	SC-03-2	3/10/2010	1 - 2	Total HPAH (calc'd)	1.86E+01	1.3	1.43E+03	960	5300		mg/kg OC	1.5	<1	
Phthalates														
LDW Subsurface Sediment 2006	LDW-SC34	2/17/2006	1 - 2	Bis(2-ethylhexyl)phthalate	3.90E+00	3.02	1.29E+02	47	78		mg/kg OC	2.7	1.7	
Terminal 115 Sediment Characterization	S2-02	3/14/2008	0 - 1	Bis(2-ethylhexyl)phthalate	1.00E+00 J	1.6	6.25E+01	47	78		mg/kg OC	1.3	<1	
Terminal 115 Sediment Characterization	S2-CS	3/14/2008	C	Bis(2-ethylhexyl)phthalate	6.70E+00 J	1.84	3.64E+02	47	78		mg/kg OC	7.7	4.7	
Post-Dredge Subsurface Sediment Characterization	SC-01	1/27/2010	1 - 2	Bis(2-ethylhexyl)phthalate	7.30E-01	1.54	4.74E+01	47	78		mg/kg OC	1.0	<1	
LDW Subsurface Sediment 2006	LDW-SC34	2/17/2006	0 - 1	Butyl benzyl phthalate	4.40E-01	2.9	1.52E+01	4.9	64		mg/kg OC	3.1	<1	
LDW Subsurface Sediment 2006	LDW-SC34	2/17/2006	1 - 2	Butyl benzyl phthalate	4.00E-01	3.02	1.32E+01	4.9	64		mg/kg OC	2.7	<1	
Post-Dredge Subsurface Sediment Characterization	SC-01	1/27/2010	1 - 2	Butyl benzyl phthalate	1.40E-01	1.54	9.09E+00	4.9	64		mg/kg OC	1.9	<1	
Post-Dredge Subsurface Sediment Characterization	SC-02	1/27/2010	1 - 2	Butyl benzyl phthalate	1.00E-01	1.94	5.15E+00	4.9	64		mg/kg OC	1.1	<1	
Other SVOCs														
LDW Subsurface Sediment 2006	LDW-SC34	2/17/2006	1 - 2	Benzyl alcohol	2.10E-01	3.02	6.95E+00	0.057	0.073		mg/kg DW	3.7	2.9	
PCBs														
LDW Subsurface Sediment 2006	LDW-SC34	2/17/2006	2 - 4	PCBs (total calc'd)	2.50E-01	2.05	1.22E+01	12	65		mg/kg OC	1.0	<1	
LDW Subsurface Sediment 2006	LDW-SC35	2/14/2006	0 - 2	PCBs (total calc'd)	3.70E-01 J	1.86	1.99E+01	12	65		mg/kg OC	1.7	<1	
Terminal 115 Sediment Characterization	S2-01	3/14/2008	0 - 1	PCBs (total calc'd)	2.97E-01	2.23	1.33E+01	12	65		mg/kg OC	1.1	<1	
Terminal 115 Sediment Characterization	S2-01	3/14/2008	1 - 2	PCBs (total calc'd)	2.64E-01	1.89	1.40E+01	12	65		mg/kg OC	1.2	<1	
Terminal 115 Sediment Characterization	S2-01*	3/14/2008	2 - 3	PCBs (total calc'd)	1.77E-01	5.25	3.37E+00	0.13	1.0		mg/kg DW	1.4	<1	
Terminal 115 Sediment Characterization	S2-02*	3/14/2008	1 - 2	PCBs (total calc'd)	3.24E-01	5.02	6.45E+00	0.13	1.0		mg/kg DW	2.5	<1	

Table 2
Chemicals Detected Above Screening Levels in Subsurface Sediment
Terminal 115 Source Control Area

Event Name	Location Name	Date Collected	Sample Depth (feet)	Chemical	Conc'n (mg/kg DW)[1]	TOC %	Conc'n (mg/kg OC)	SQS/ LAET	CSL/ 2LAET	LDW Background	Units	SQS Exceedance Factor	CSL Exceedance Factor	LDW Background
Post-Dredge Subsurface Sediment Characterization	SC-01	1/27/2010	0 - 1	PCBs (total calc'd)	3.30E-01	2.15	1.54E+01	12	65		mg/kg OC	1.3	<1	
Post-Dredge Subsurface Sediment Characterization	SC-01	1/27/2010	1 - 2	PCBs (total calc'd)	3.33E-01	1.54	2.16E+01	12	65		mg/kg OC	1.8	<1	
Post-Dredge Subsurface Sediment Characterization	SC-01	1/27/2010	3 - 4	PCBs (total calc'd)	4.25E-01	1.01	4.21E+01	12	65		mg/kg OC	3.5	<1	
Post-Dredge Subsurface Sediment Characterization	SC-01*	1/27/2010	2 - 3	PCBs (total calc'd)	5.90E-01	4.69	1.26E+01	0.13	1.0		mg/kg DW	4.5	<1	
Post-Dredge Subsurface Sediment Characterization	SC-02	1/27/2010	0 - 1	PCBs (total calc'd)	3.49E-01	2.44	1.43E+01	12	65		mg/kg OC	1.2	<1	
Post-Dredge Subsurface Sediment Characterization	SC-02	1/27/2010	1 - 2	PCBs (total calc'd)	2.94E-01	1.94	1.52E+01	12	65		mg/kg OC	1.3	<1	
Post-Dredge Subsurface Sediment Characterization	SC-03-2	3/10/2010	0 - 1	PCBs (total calc'd)	3.11E-01	1.88	1.65E+01	12	65		mg/kg OC	1.4	<1	
Post-Dredge Subsurface Sediment Characterization	SC-03-2	3/10/2010	1 - 2	PCBs (total calc'd)	3.02E-01	1.3	2.32E+01	12	65		mg/kg OC	1.9	<1	
Post-Dredge Subsurface Sediment Characterization	SC-03-2*	3/10/2010	2 - 3	PCBs (total calc'd)	5.40E-01	0.33	1.66E+02	0.13	1.0		mg/kg DW	4.2	<1	
Post-Dredge Subsurface Sediment Characterization	SC-04-3	3/10/2010	0 - 1	PCBs (total calc'd)	2.03E-01	0.81	2.49E+01	12	65		mg/kg OC	2.1	<1	
Post-Dredge Subsurface Sediment Characterization	SC-05-3-2	3/10/2010	0 - 1	PCBs (total calc'd)	2.82E-01	2.04	1.38E+01	12	65		mg/kg OC	1.2	<1	
Dioxin and Furan TEQ														
Post-Dredge Subsurface Sediment Characterization	SC-04-2	1/27/2010	0 - 1	Dioxin/furan TEQ - Mammal - Half DL	7.6					1.6	ng/kg DW			4.8
Post-Dredge Subsurface Sediment Characterization	SC-03-2	1/27/2010	3 - 3.7	Dioxin/furan TEQ - Mammal - Half DL	6.7					1.6	ng/kg DW			4.2
Post-Dredge Subsurface Sediment Characterization	SC-04-2	1/27/2010	2 - 3	Dioxin/furan TEQ - Mammal - Half DL	6.4					1.6	ng/kg DW			4.0
Post-Dredge Subsurface Sediment Characterization	SC-04-2	1/27/2010	1 - 2	Dioxin/furan TEQ - Mammal - Half DL	6.4					1.6	ng/kg DW			4.0
Post-Dredge Subsurface Sediment Characterization	SC-04-2	1/27/2010	3 - 4	Dioxin/furan TEQ - Mammal - Half DL	6.2					1.6	ng/kg DW			3.9

Table 2
Chemicals Detected Above Screening Levels in Subsurface Sediment
Terminal 115 Source Control Area

Event Name	Location Name	Date Collected	Sample Depth (feet)	Chemical	Conc'n (mg/kg DW)[1]	TOC %	Conc'n (mg/kg OC)	SQS/ LAET	CSL/ 2LAET	LDW Background	Units	SQS Exceedance Factor	CSL Exceedance Factor	LDW Background

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

LAET - Lowest Apparent Effects Threshold
2LAET - Second Lowest Apparent Effects Threshold
PAHs - Polycyclic aromatic hydrocarbons
SVOCs - Semi-volatile organic compounds
TEQ - Toxic Equivalency
C - Composite sample
J - Estimated value between the method detection limit and the laboratory reporting limit
D - Duplicate sample

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

[1] Dioxin and furan TEQ units are ng/kg DW.

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.

* Due to the TOC in this sample, results were compared to the LAET or 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 3
Facilities within the Terminal 115 CSO Basin that are Listed in the Ecology Facility/Site Database

Facility/ Site ID	Facility Name	Alternate Name(s)	Address	Active EPA ID No.	Ecology CSCSL	NPDES Permit	KCIW Discharge Authorization or Permit	LUST	UST	Ecology NFA Deter-mination	EPA CERCLA Section 104(e) Request for Information Letter
56256949	Alaska Cargo Transport Inc	Alaska Cargo Transport Inc	6700 Marginal Way SW								
60993417	Aloha Cargo Transport Inc	Jore Marine Services, Terminal 115	6700 W Marginal Way SW								
35163443	Aluminum Bronze Fab Inc	Aluminum Bronze Fab Inc	6301 W Marginal Way SW								
1752283	America Cargo Transport Inc	America Cargo Transport Inc	6700 W Marginal Way SW Ste 100								
14533	Catholic Printery Inc.	None	6327 W Marginal Way SW								
23743	Commercial Fence Corp	None	150 SW Michigan Street[a]								
57823643	D & S Transport Inc	D & S Transport Inc	6700 W Marginal Way SW								
15223	Emswiler Const	None	6045 W Marginal Way SW								
36326474	Foss Environmental Svcs Co Transfer Facility	Haslund MP, LLC	200 SW Michigan Street							●	●
23498	Gene Summy Lumber	None	6000 W Marginal Way SW								●
12398	Icicle Seafoods, Inc.	Icicle Seafoods Duwamish Plant	206 SW Michigan Street			●					●
58864121	Lloyd Electric Apparatus Co	Lloyd Electric Apparatus Co	7126 W Marginal Way SW								
17445598	Norbuk LTD	Pacific Rim Equipment Rental, Mono Roofing, AL Bolsers Tire Stores	6515 W Marginal Way SW						●		
15163955	Northland Terminal Services, Inc. Seattle	Jore Marine Services, Transfer Facility, Terminal 115	6700 W Marginal Way SW	●		●					
84427474	Northwest Container Services, Inc.	Coastal Trailer Repair	6110 W Marginal Way SW			●	●				●
5151	Pacific Plumbing Supply	None	7115 W Marginal Way SW								
2177	Port of Seattle North Terminal 115	M&T Chemicals, MRI, Proeler, Proler Recycling Inc Seattle, Schnitzer Steel Inc	6000 W Marginal Way SW	●	●						
15700	Port of Seattle Terminal 115 Berth 1	None	6375 W Marginal Way SW								
71289955	Samson Tug & Barge Co, Inc.	None	6700 W Marginal Way SW								
11466114	Sea Pac Service Co	SeaPac Service Company	6100 W Marginal Way SW								
82536515	Seafreeze Ltd Terminal 115	Seafreeze Cold Storage, Seafreeze Limited Partnership	206 SW Michigan Street	●			●		●		●
64412161	Seattle City Engineering Dept. Penn Yard	None	1st Avenue SW & SW Peninsula Place								
4040072	Seattle Port Terminal 115	Terminal 115 Improvements	6020-6760 W Marginal Way SW								
98422914	Seattle Port Terminal 115	Crowley Marine Services Inc Terminal 115	6020 W Marginal Way		●			●	●		
94368646	Shultz Distributing, Inc.	Falcon Fast Fuel	6760 W Marginal Way	●					●		
88521782	Victory Marine Inc	Victory Marine Inc	6700 W Marginal Way SW								

CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act
CSCSL - Confirmed or Suspected Contaminated Sites List
CSO - Combined Sewer Overflow
EPA - U.S. Environmental Protection Agency
KCIW - King County Industrial Waste
LUST - Leaking Underground Storage Tank
NFA - No Further Action
NPDES - National Pollutant Discharge Elimination System
UST - Underground Storage Tank

Facility names and alternate names are as described in Ecology's Facility/Site Database
a - The facility/site ID is associated with the former address for Commercial Fence. The current address is 6000 W Marginal Way SW.

Table 4
Facilities within the West Michigan CSO Basin that are Listed in the Ecology Facility/Site Database

Facility/ Site ID	Facility Name	Alternate Name(s)	Address	Active EPA ID No.	Ecology CSCSL	NPDES Permit	KCIW Discharge Authorization or Permit	LUST	UST	Ecology NFA Deter-mination	EPA CERCLA Section 104(e) Request for Information Letter
19424	A & E Auto Repair, Inc.	None	7902 9th Avenue SW								
96557226	Enviro Metal Co	None	8145 9th Avenue SW								
68363744	Molners One Stop Inc.	None	8855 9th Avenue SW						●		
66464199	Pioneer Industries Seattle	None	7000 Highland Parkway SW	●		●	●				
70721925	Seattle Public Utilities SW Trenton Tank	None	SW Trenton Street & 8th Avenue SW								
2192441	Seattle Public Utilities Vactor Pit	None	9200 8th Avenue SW								

CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act
CSCSL - Confirmed or Suspected Contaminated Sites List
CSO - Combined Sewer Overflow
EPA - U.S. Environmental Protection Agency
KCIW - King County Industrial Waste
LUST - Leaking Underground Storage Tank
NFA - No Further Action
NPDES - National Pollutant Discharge Elimination System
UST - Underground Storage Tank

Facility names and alternate names are as described in Ecology's Facility/Site Database.

Table 5
Historical and Current Underground and Aboveground Storage Tanks at Terminal 115

Tank #	Contents	Capacity (Gallons)	Type	Status	Description	Port Designation
1	Diesel	4,000	UST	Removed	Boeing 1-01 Heating Oil Tank	T-115L
2	Bunker C	3,000	UST	Removed	Boeing 1-01 Heating Oil Tank	--
3	Diesel	1,000	UST	Removed	Boeing 1-01 Heating Oil Tank	--
4	Unknown	Unknown	UST	Unknown	Concrete Fuel Tank 4	--
5	Suspected Jet Fuel/Avgas	5,000	UST	Unknown	Boeing 1-02 Engine Testing USTs	--
6	Suspected Jet Fuel/Avgas	5,000	UST	Unknown	Boeing 1-02 Engine Testing USTs	--
7	Suspected Jet Fuel/Avgas	5,000	UST	Unknown	Boeing 1-02 Engine Testing USTs	--
8	Unknown	Unknown	UST	Unknown	Buried Fuel Tanks & Dispenser	--
9	Diesel	4,000	UST	Unknown	Unknown Seafreeze UST	--
10	Suspected Jet Fuel/Avgas	6,000	UST	Removed	Unknown Boeing USTs	T-115Q
11	Suspected Jet Fuel/Avgas	6,000	UST	Removed	Unknown Boeing USTs	T-115R
12	Suspected Jet Fuel/Avgas	6,000	UST	Removed	Unknown Boeing USTs	T-115O
13	Gasoline	3,000	UST	Unknown	Boeing 1-21 UST	T-115I
14	Unknown	Unknown	Unknown	Unknown	Boeing Personal Tank	--
15	Unknown	Unknown	Unknown	Unknown	Boeing Tank B-5	--
16	Bunker/Diesel	4,200	UST	Unknown	Boeing 1-11 UST	--
17	Diesel	20,000	UST	Closed in Place	Steam Plant Tank	T-115H
18	Unknown	Unknown	Unknown	Closed in Place	Boeing 1-41 Storage Tanks	T-115F
19	Unknown	Unknown	Unknown	Closed in Place	Boeing 1-41 Storage Tanks	T-115G
20	Unknown	Unknown	AST	Removed	Boeing 1-40 ASTs	--
21	Unknown	Unknown	AST	Removed	Boeing 1-40 ASTs	--
22	Diesel	10,000	UST	Active	Shultz Distributing	--
23	Diesel	10,000	UST	Active	Shultz Distributing	--
24	Diesel	10,000	UST	Active	Shultz Distributing	--
25	Diesel	600	UST	Removed	Smelter Heating Oil UST	T-115S
26	Diesel	9,500	UST	Removed	Smelter Tanker Truck UST	T-115P
27	Kerosene	2,000	AST	Removed	Car Wash Kerosene Tanks	--
28	Kerosene	5,000	UST	Removed	Car Wash Kerosene Tanks	T-115E
29	Gasoline	1,000	AST	Active	Building C-1 Diesel Dispenser	--
30	Diesel	10,000	UST	Removed	Building C-2 refueling tank	T-115D
31	Diesel	1,000	AST	Active	T115 Building M-2 Tanks	--
32	Gasoline	1,000	AST	Active	T115 Building M-2 Tanks	--
33	Diesel	6,000	UST	Removed	T115 Building M-2 Tanks	T-115C
34	Diesel	6,000	UST	Active	T115 Building M-2 Tanks	T-115N
35	Diesel	1,100	UST	Not in Service	T115 Building A-5 Tanks	T-115M
36	Diesel	2,000	UST	Removed	T115 Building A-5 Tanks	T-115A
37	Gasoline	1,000	UST	Removed	T115 Building A-5 Tanks	T-115B
38	Diesel/Bunker Fuel	1,100	UST	Removed	T115-North Heating Oil Tank	--
39	Diesel	250	AST	Removed	T115-North Diesel Tank	--
40	H2SO4, NaOH, chemical wastes	13 Bulk ASTs	AST	Removed	T115-North Chemical Storage	--

-- No applicable Port designation is known.

Closed in Place - Tank decommissioned in place before 1980.

Not in Service - Tank is not decommissioned; however, it does not store fuel products.

Suspected Jet Fuel Avgas - Analytical results and/or historical data suggest that the tank stored aviation fuel.

Adapted from the *Terminal 115 Environmental Conditions Report* (SoundEarth 2011).

Table 6
Issues of Environmental Concern At and Near Terminal 115

Issue No.	Description
1	Former Standard Oil service station
2	Former Refinery Building
3	Former Richfield Oil service station
4	Former Boeing Plant 1
4.01	Building 1-03: Seaplane assembly building
4.02	Building 1-06: Boiler house
	Building 1-10: Dry kiln
4.03	Building 1-07: Transformer house
4.04	Building 1-08: Parts assembly, welding, paint spraying, crating, materials testing, shipping, plaster shop, and engineering drafting offices
4.05	Building 1-04: Paint spraying and plating shop, finishing and inspection
4.06	Building 1-12: Parts storage and maintenance welding facility
4.07	Building 1-02: Brazing and welding facilities, machine shop, sheet metal shop, heat treating facilities, assembly, metal cutting, burning, and grinding shops, welding and fuel equipment storage, and transformers
4.08	Tank No. 8: Gasoline UST
4.09	Building 1-39: Compressor house
4.10	Building 1-29: Drop hammer and aluminum foundry
4.11	Building 1-40: Static test building, fuel testing, and foundry
4.12	Building 1-42: Incinerator
4.13	Building 1-40: Paint, rivets, and lubrication oil storage building and drum storage yard
4.14	Building 1-34: Engine and structural test facility
4.15	Building 1-30: Steam plant
4.16	Wastewater lift station
4.17	Building 1-44: Sandblasting facility
4.18	Building 1-45: Acid test building
4.19	Building 1-50: Revetment test building
4.2	Building 1-21: Fuel test lab
4.21	Building 1-22: Fuel storage facility
4.22	Building 1-26: Acid storage facility
4.23	Building 1-27: Hazardous materials storage building
4.24	Building 1-23: Paint storage building
5	Seafreeze Building
6	Former Auto Salvage Yard/Sav-Mor Service Station
7	Former Materials Reclamation Smelter
8	Former Southwest Tank Yard/Cardlock Facility/Shultz Distributing
9	Former Klinker Gravel/Ready Mix
10	Buildings C-1 & C-2/Former Car Wash
11	Fill Activities & Material
12	Building M-2/Maintenance Building
13	Building A-5/Maritime Office Building
14	Former Tin Reclamation/Terminal 115 N
15	Off-Property IECs
15.01	Former Foss Environmental (Boeing Building 1-01 USTs)
15.02	Pacific Rim/Krueger Sheet Metal/Former Al Bolser's Tire Store
15.03	Aluminum & Bronze Fabricators
15.04	Former Reichhold Chemical
15.05	Glacier Northwest

Adapted from *Terminal 115 Environmental Conditions Report* (SoundEarth 2011).

Figures

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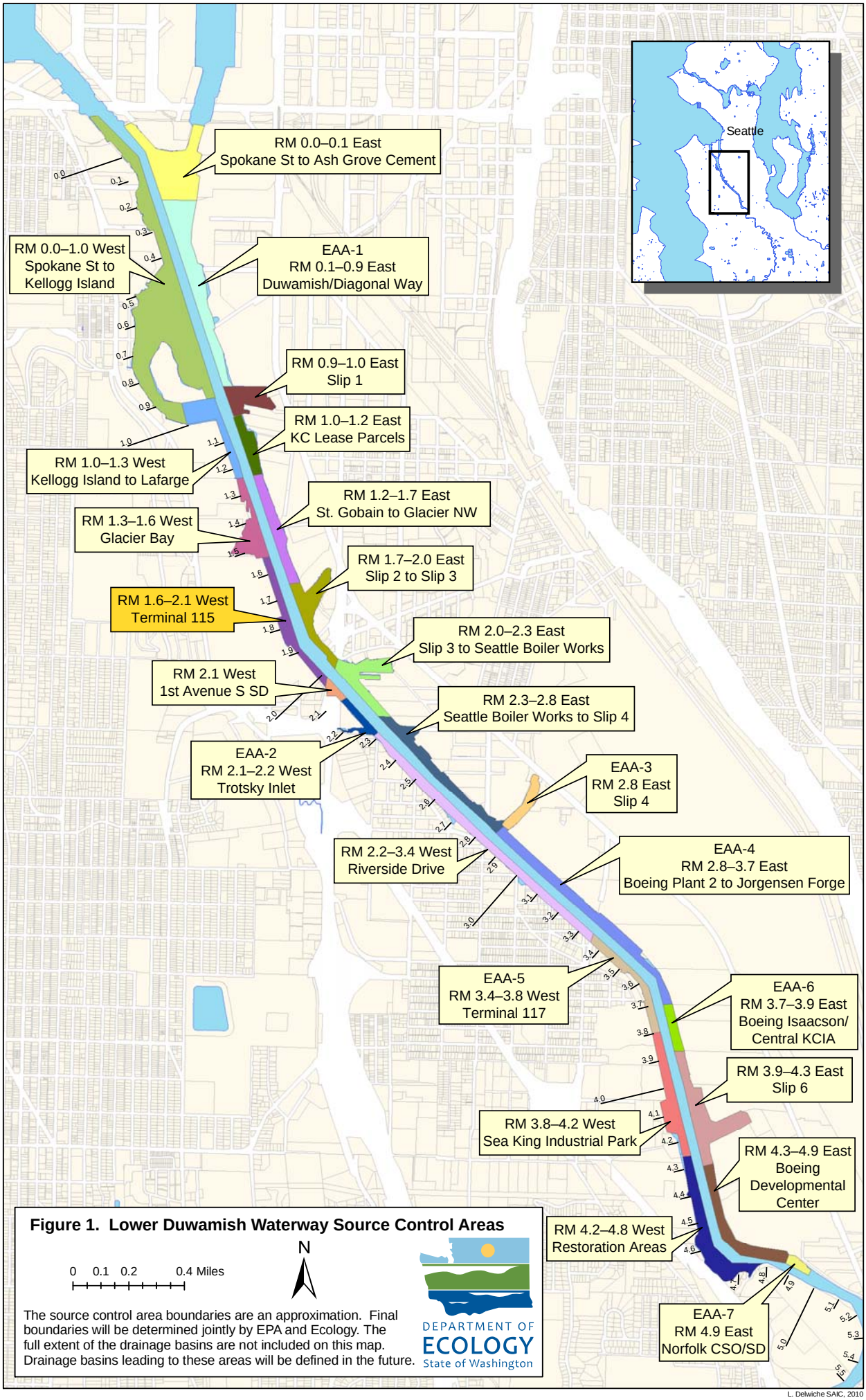
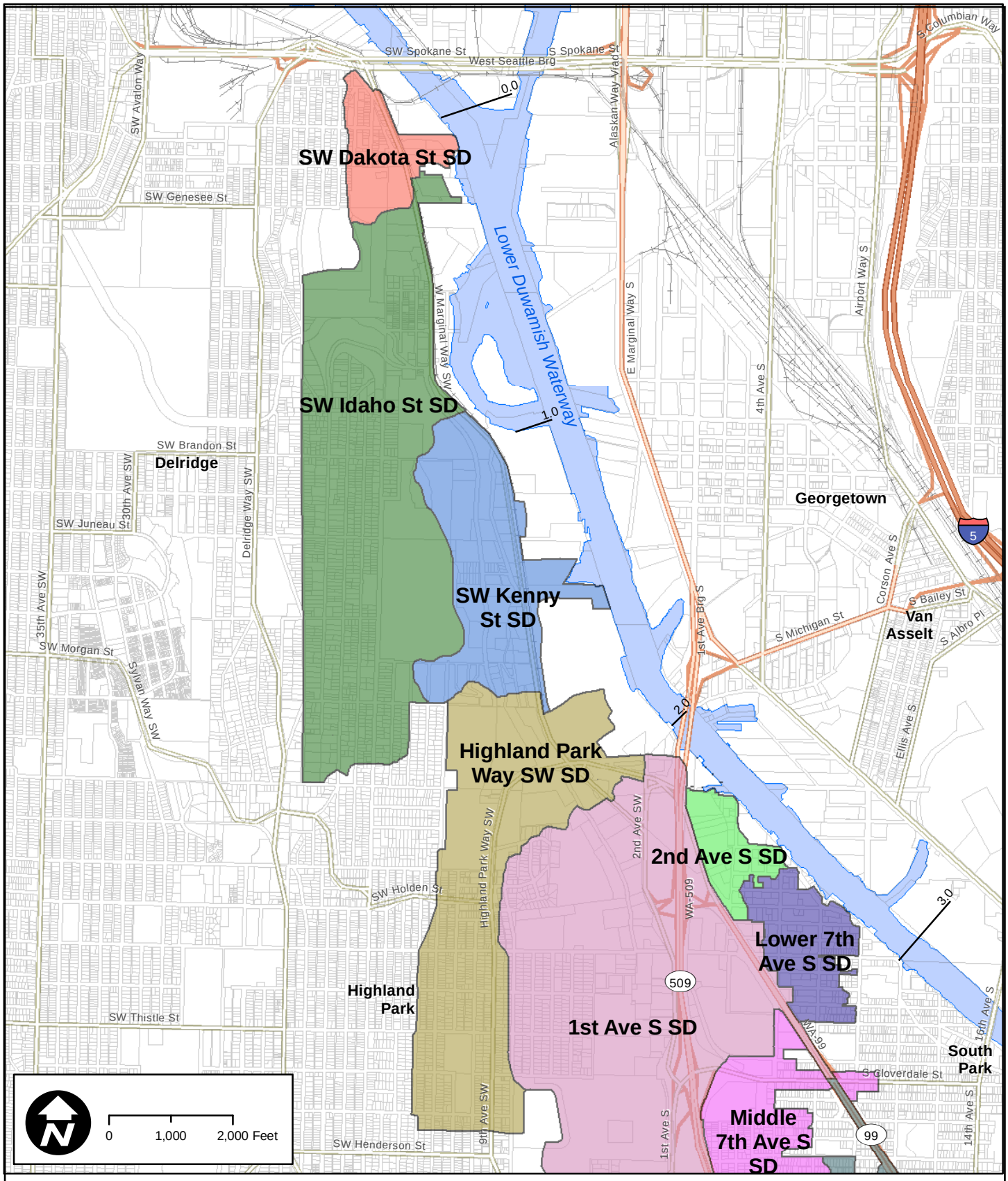


Figure 1. Lower Duwamish Waterway Source Control Areas

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.

L. Delwiche SAIC, 2010



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State of Washington

Figure 2. Lower Duwamish Waterway Storm Drain Basins – West Side

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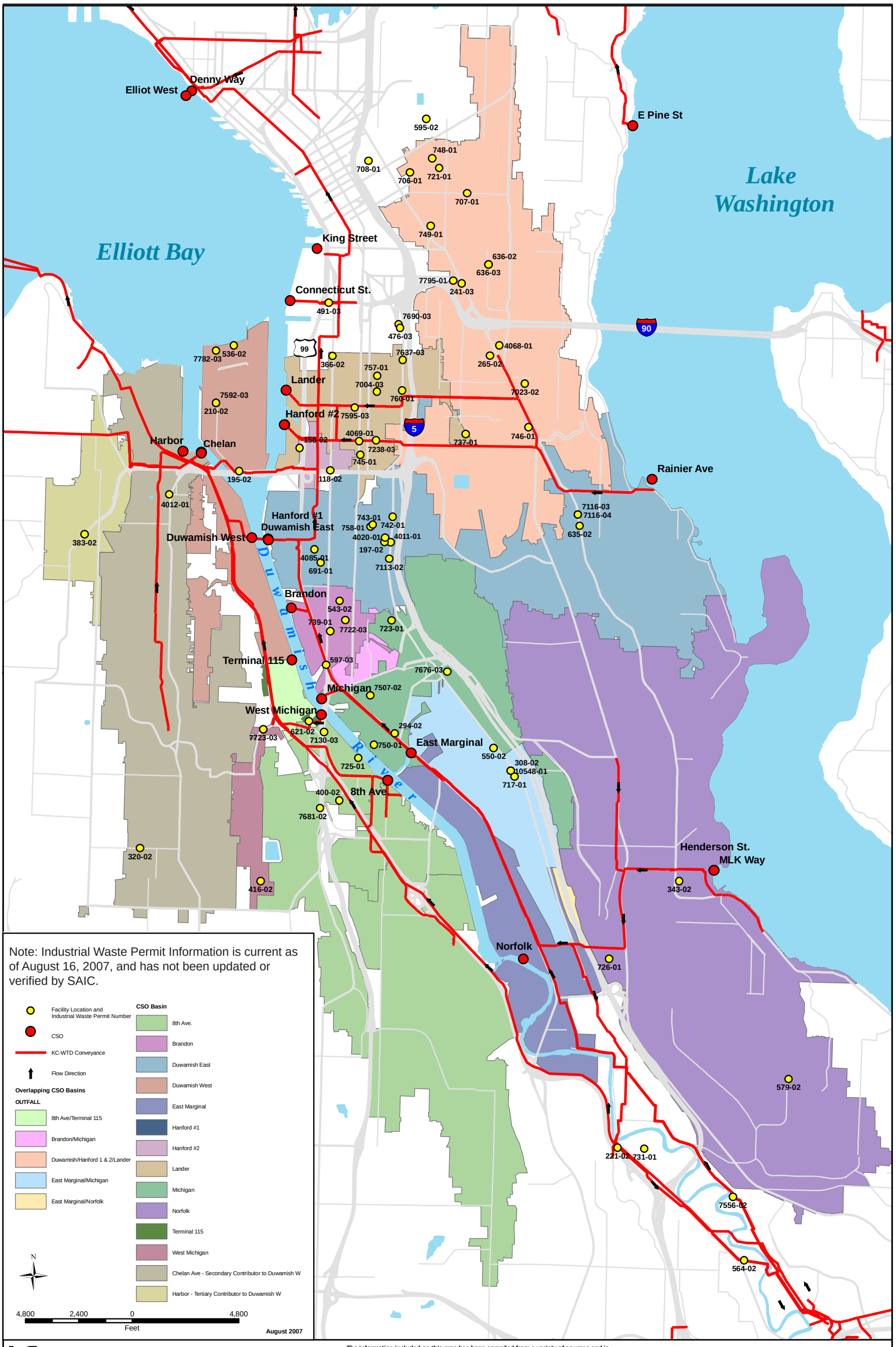

Note: Industrial Waste Permit Information is current as of August 16, 2007, and has not been updated or verified by SAIC.

Facility Location and Industrial Waste Permit Number

CSO

KC-WTD Conveyance

Flow Direction

Overlapping CSO Basins

OUTFALL

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

CSO Basin

- 8th Ave.
- 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

N

4,800 2,400 0 4,800

Feet

August 2007

King County
Department of
Natural Resources and Parks
Wastewater Treatment Division

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

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State of Washington

Source: King County 2007

Figure 3. Lower Duwamish Waterway Combined Sewer Overflow Basins

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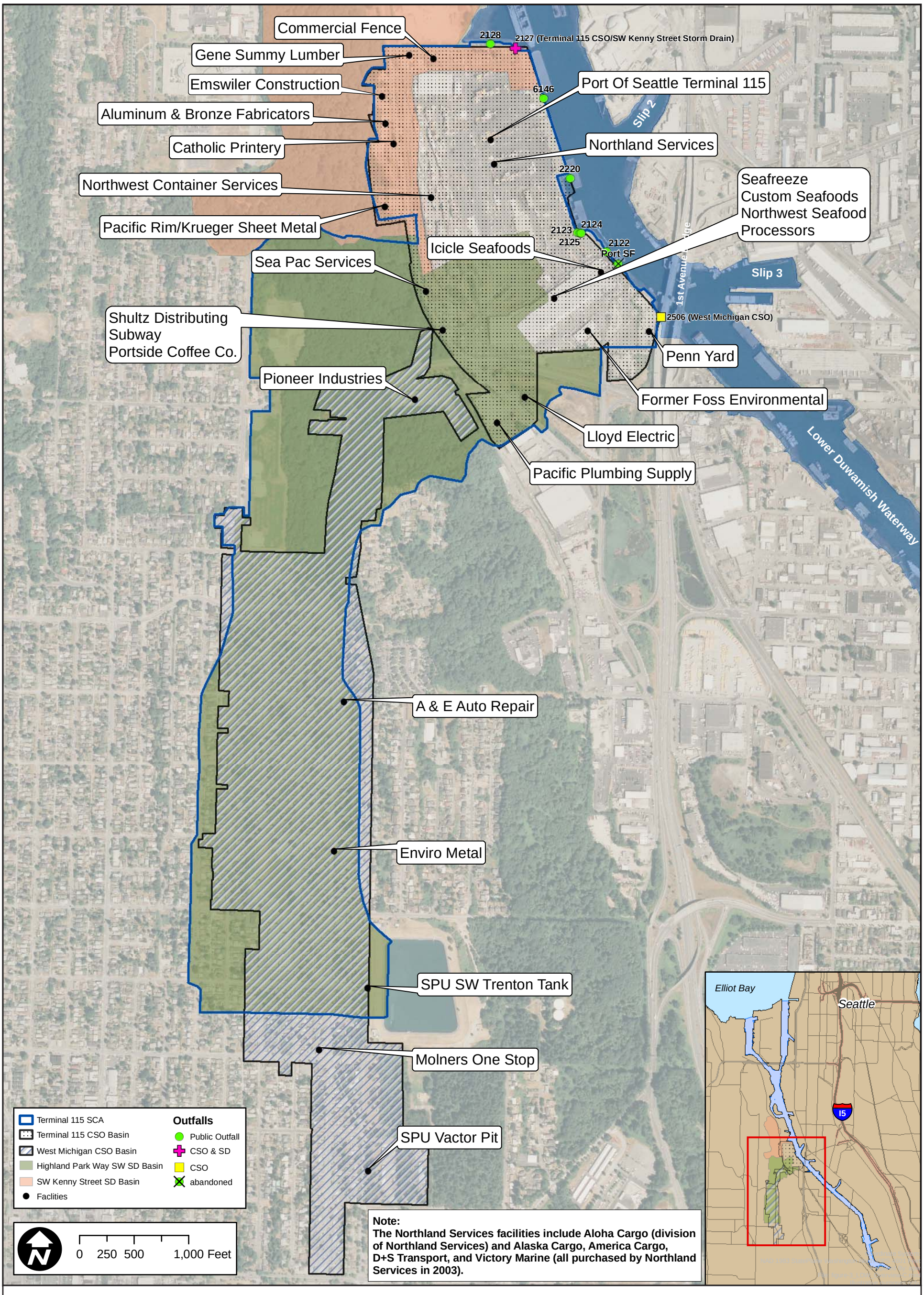

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Figure 4. Terminal 115 Source Control Area

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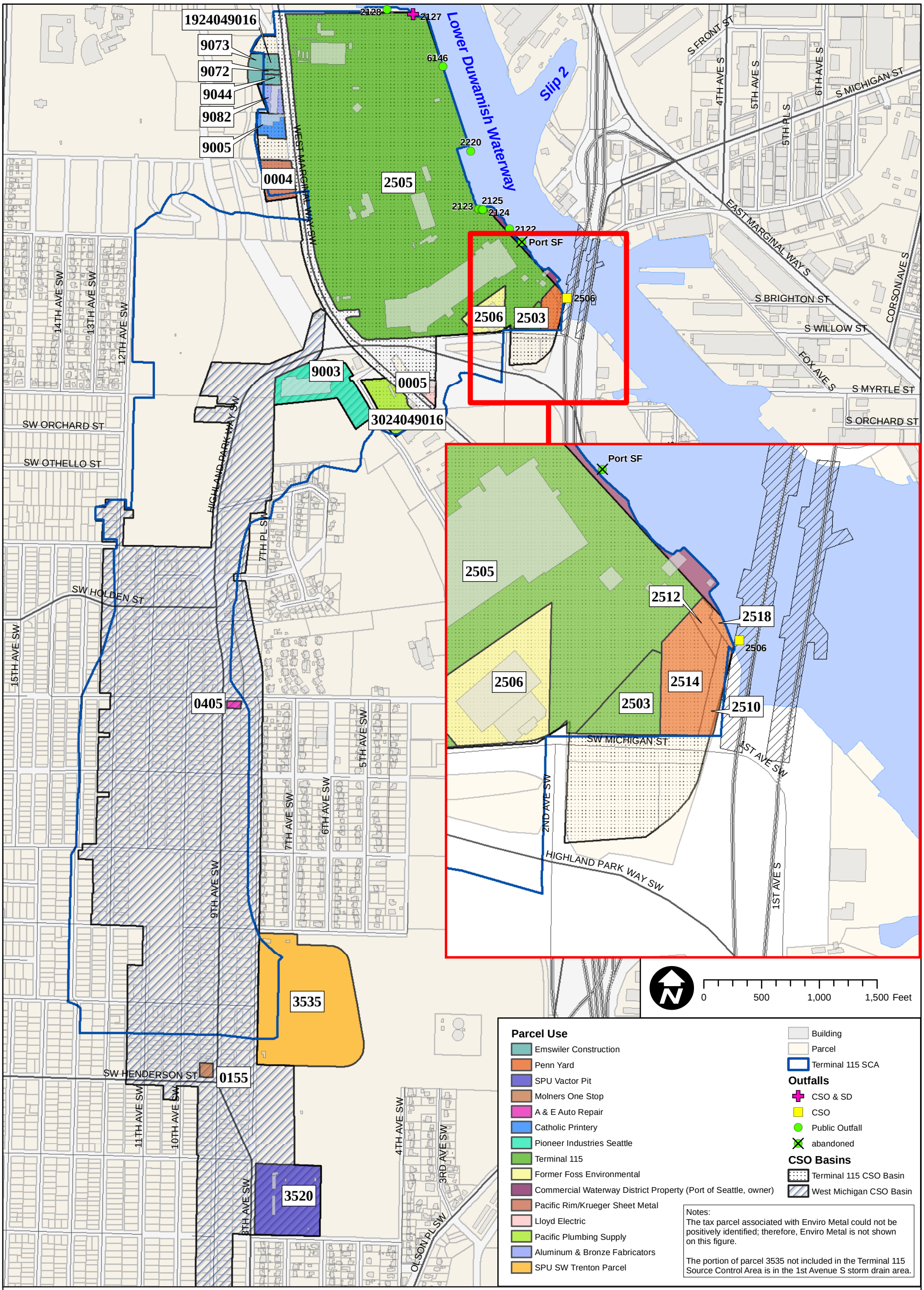

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Figure 5. Tax Parcels for Properties with Ecology Facility/Site Identification Numbers in the Terminal 115 Source Control Area and West Michigan CSO Basin

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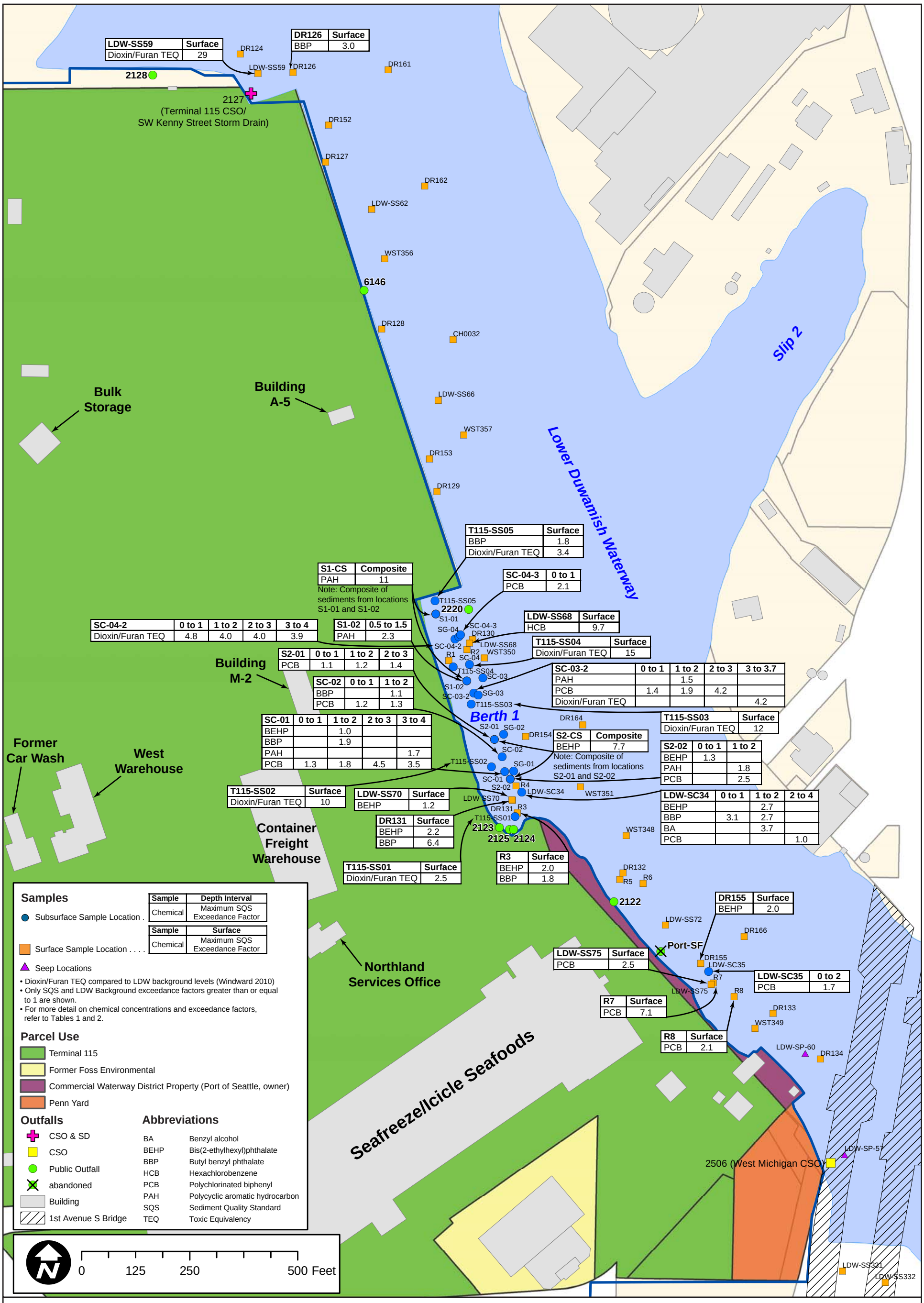

Figure 6. Sediment Sample Locations Near the Terminal 115 Source Control Area

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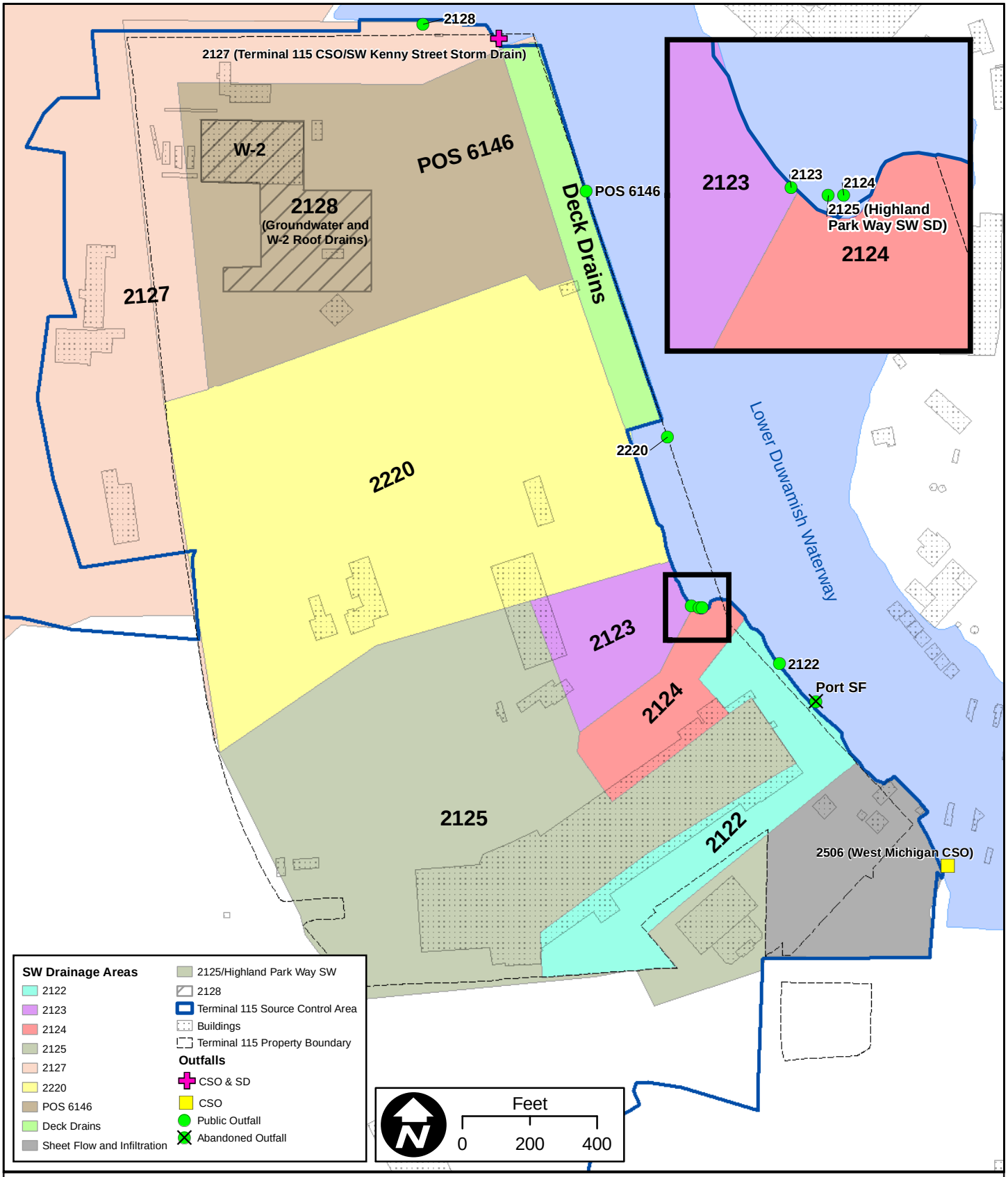

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Figure 7a. Terminal 115 Stormwater Drainage Areas

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LOWER DUWAMISH WATERWAY

BERTH 1

Legend

Point features

- Storm, Catch Basin
- Storm, Manhole
- Storm, Deck Drain
- Storm, Roof Drain
- Storm, Oil Water Separator
- Storm, Unknown
- Sewer, Manhole
- Sewer, Cleanout
- Sewer, Unknown
- Storm, Outfall
- Storm, Off Property Connection
- Storm, Network Driver
- Water, Manhole

Line features

- Storm, Pipe
- Storm, Roof Pipe
- Groundwater Drainage Structure
- Storm, Trench Drain
- Sanitary Sewer
- Tenant
- Terminal 115 Property Boundary
- Terminal 115 Source Control Area Boundary

Source: Aspect Consulting and The Phoinix Corporation 2007

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Figure 7b. Storm Drain and Sewer Lines and Structures at Terminal 115

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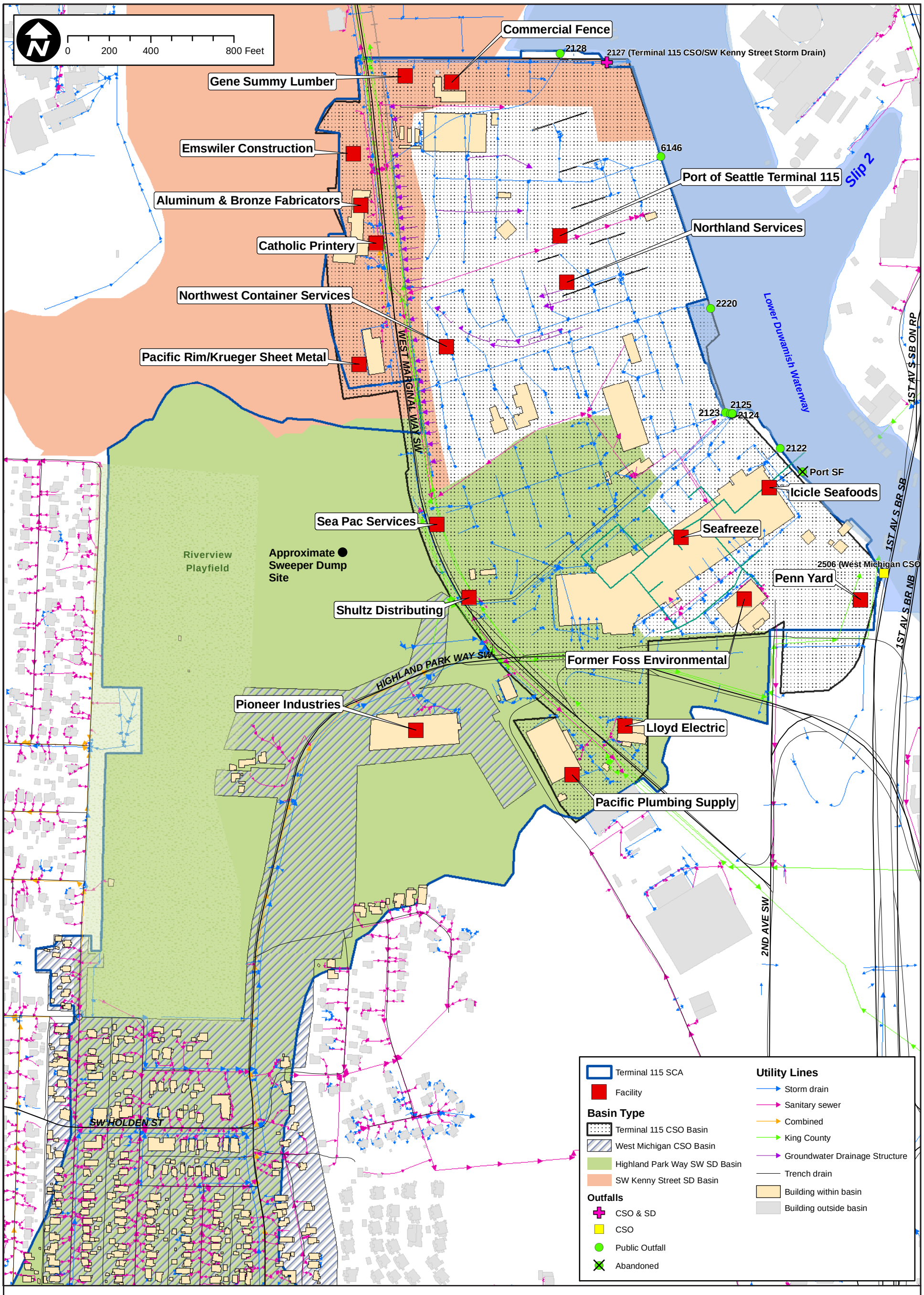

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Figure 8a. Storm Drain and Sanitary Sewer Lines in the Terminal 115 Source Control Area (Northern Portion)

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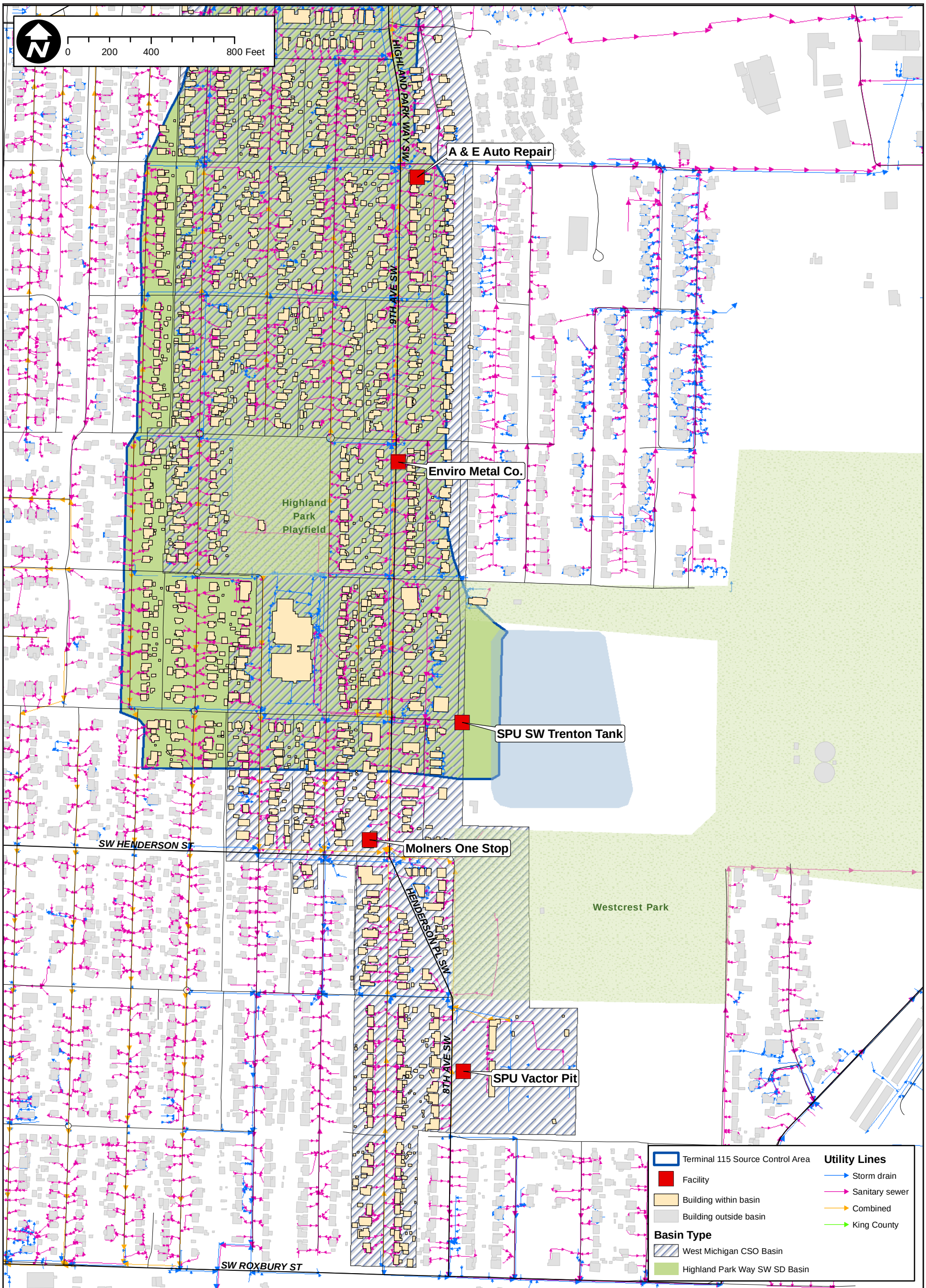

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Figure 8b. Storm Drain and Sanitary Sewer Lines in the Terminal 115 Source Control Area (Southern Portion)

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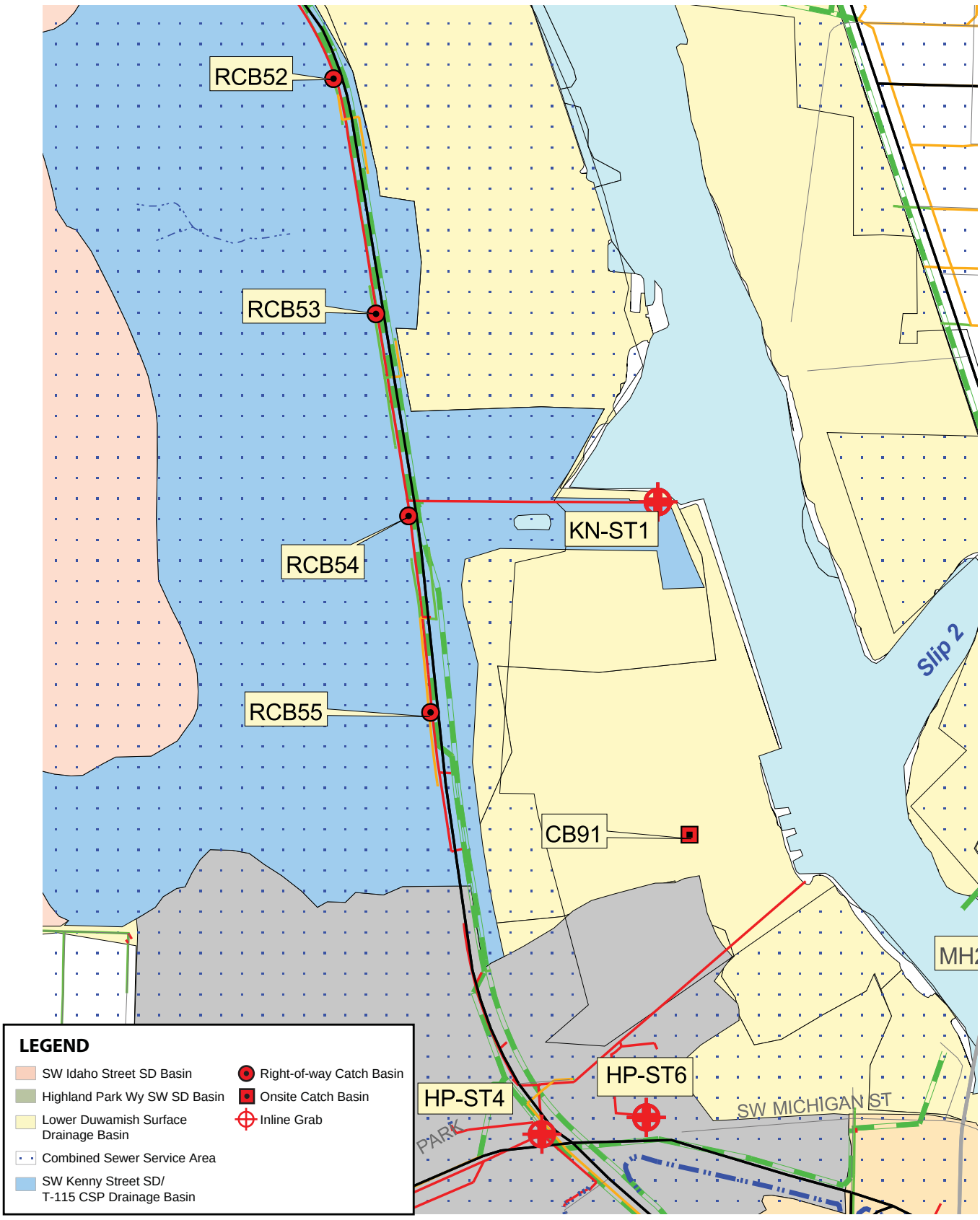

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Figure 9. SPU Storm Drain Sample Locations, Terminal 115 Source Control Area

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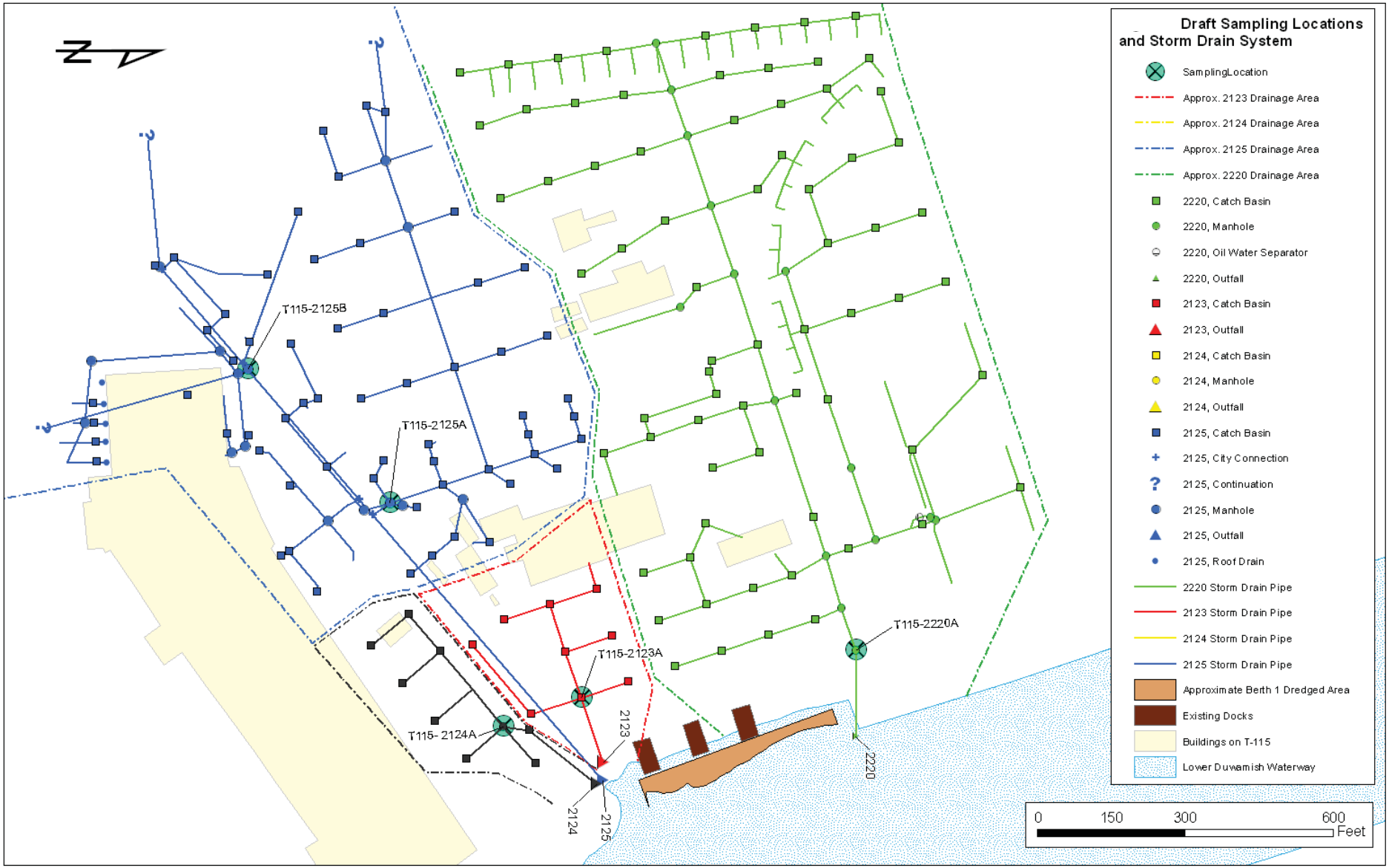

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Figure 10. Port of Seattle Terminal 115
Sediment Trap Sample Locations (2010)

Source: Kuroiwa 2010

SAIC® From Science to Solutions

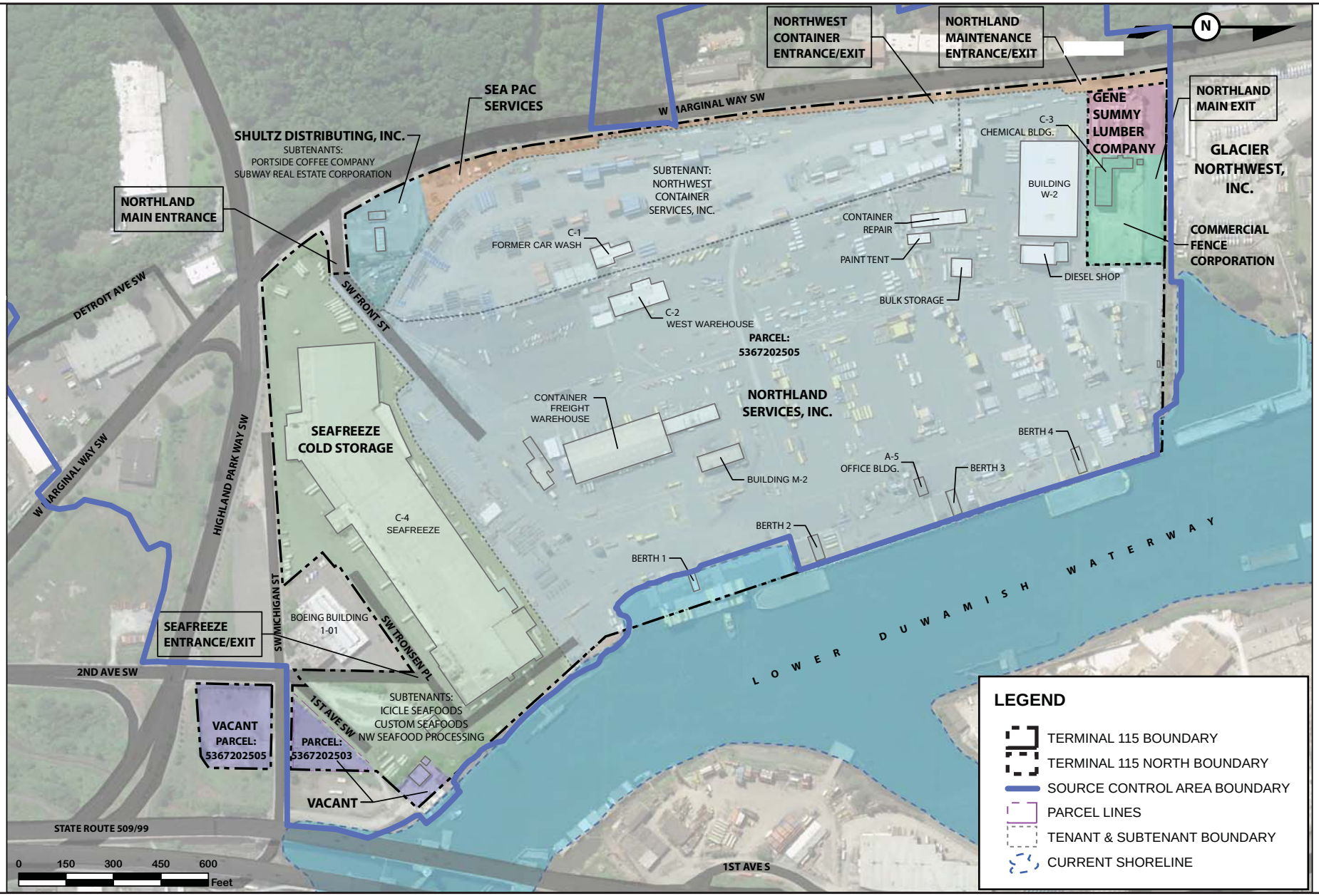

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Figure 11. Tenants at Port of Seattle Terminal 115

Source: SoundEarth 2011

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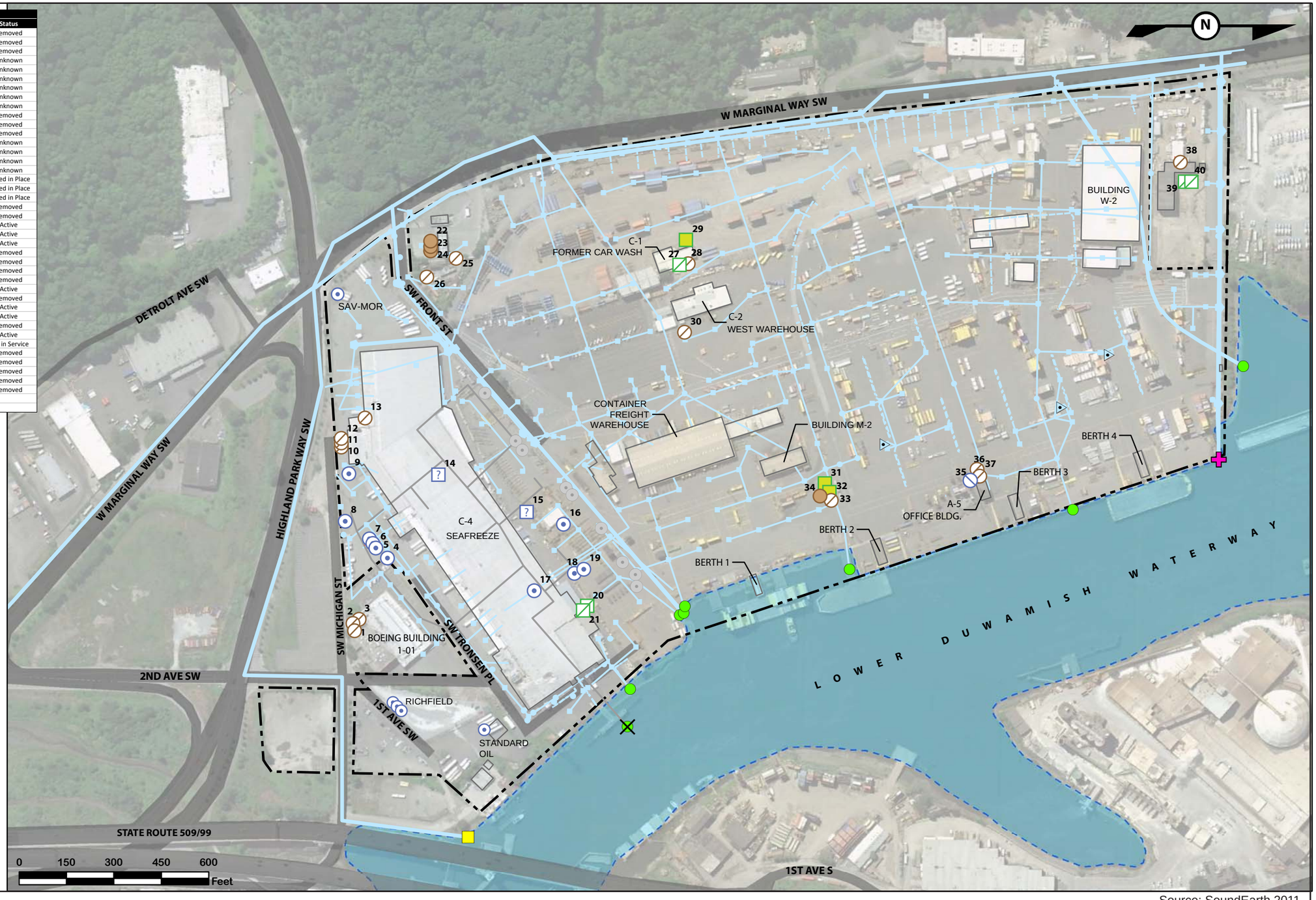
Tank Identification				
Tank #	Contents	Capacity (Gallons)	Type	Status
1	Diesel	4,000	UST	Removed
2	Bunker C	3,000	UST	Removed
3	Diesel	1,000	UST	Removed
4	Unknown	Unknown	UST	Unknown
5	Suspected Jet Fuel/Avgad	5,000	UST	Unknown
6	Suspected Jet Fuel/Avgad	5,000	UST	Unknown
7	Suspected Jet Fuel/Avgad	5,000	UST	Unknown
8	Unknown	Unknown	UST	Unknown
9	Diesel	4,000	UST	Unknown
10	Suspected Jet Fuel/Avgad	6,000	UST	Removed
11	Suspected Jet Fuel/Avgad	6,000	UST	Removed
12	Suspected Jet Fuel/Avgad	6,000	UST	Removed
13	Gasoline	3,000	UST	Unknown
14	Unknown	Unknown	Unknown	Unknown
15	Unknown	Unknown	Unknown	Unknown
16	Bunker/Diesel	4,200	UST	Unknown
17	Diesel	20,000	UST	Closed in Place
18	Unknown	Unknown	UST	Closed in Place
19	Unknown	Unknown	UST	Closed in Place
20	Unknown	Unknown	AST	Removed
21	Unknown	Unknown	AST	Removed
22	Diesel	10,000	UST	Active
23	Diesel	10,000	UST	Active
24	Diesel	10,000	UST	Active
25	Diesel	600	UST	Removed
26	Diesel	9,500	UST	Removed
27	Kerosene	2,000	AST	Removed
28	Kerosene	5,000	UST	Removed
29	Gasoline	1,000	AST	Active
30	Diesel	10,000	UST	Removed
31	Diesel	1,000	AST	Active
32	Gasoline	1,000	AST	Active
33	Diesel	6,000	UST	Removed
34	Diesel	6,000	UST	Active
35	Diesel	1,100	UST	Not in Service
36	Diesel	2,000	UST	Removed
37	Gasoline	1,000	UST	Removed
38	Diesel/Bunker Fuel	1,100	UST	Removed
39	Diesel	250	AST	Removed
40	H2SO4, NaOH, chemical wastes	13 Bulk ASTs	AST	Removed

Closed in place = Tank decommissioned in place before 1980

Not in Service = Tank is not decommissioned, however does not store fuel products.



LEGEND

- ACTIVE STORMWATER OUTFALL
- HISTORICAL STORMWATER OUTFALL
- COMBINED SEWER OVERFLOW/ STORMDRAIN OUTFALL
- COMBINED SEWER OVERFLOW
- HISTORICAL UTILITY LINES
- ACTIVE UTILITY LINES AND FEATURES
- TERMINAL 115 BOUNDARY
- TERMINAL 115 NORTH BOUNDARY
- CURRENT SHORELINE
- UST – ACTIVE
- UST – REMOVED
- AST – ACTIVE
- AST – REMOVED
- UST – UNKNOWN/CLOSED IN PLACE
- UST – NOT IN SERVICE
- UNKNOWN

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Figure 12. Storage Tank Locations, Terminal 115

Source: SoundEarth 2011

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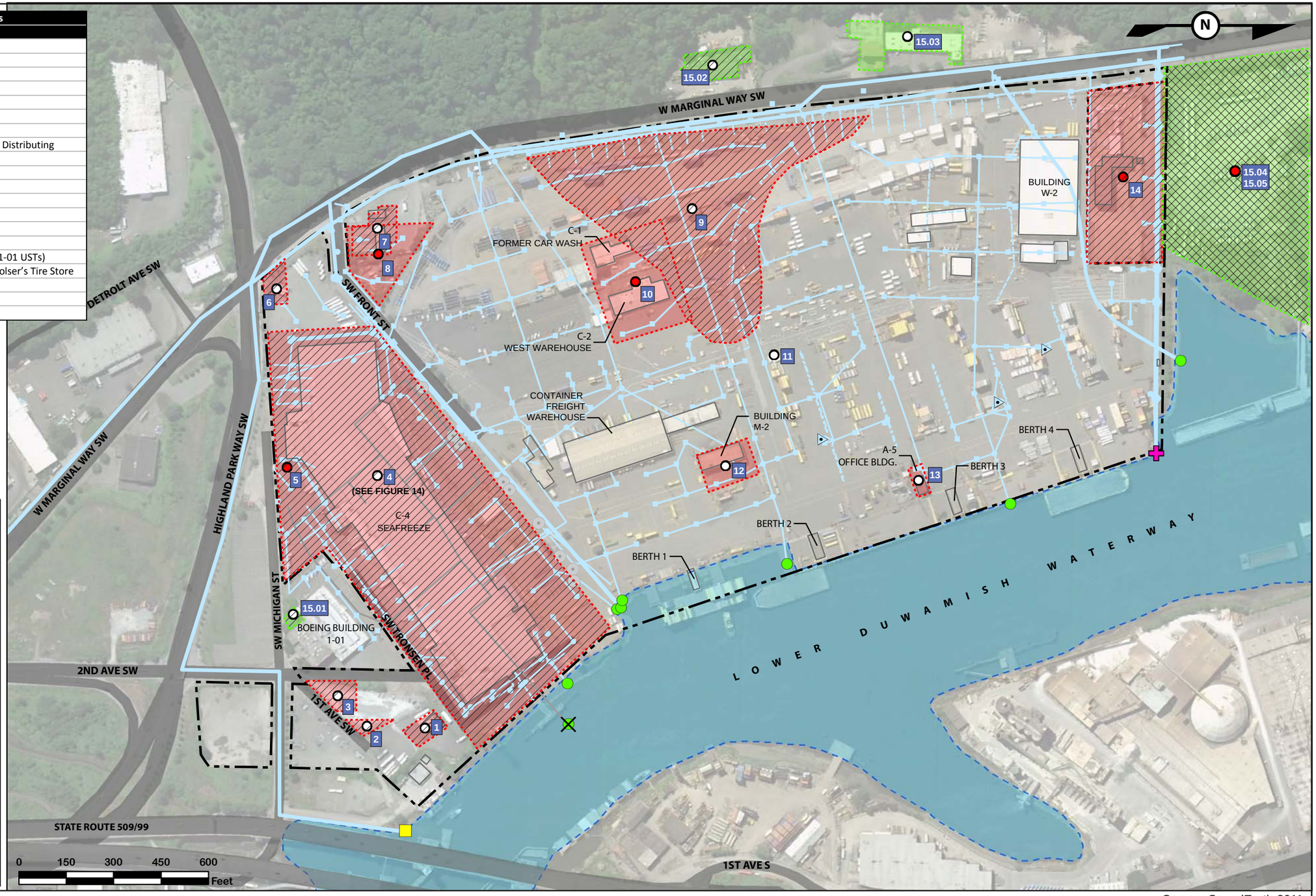
IEC Identification / Historical Operators	
IEC	**Description**
1	Standard Oil service station
2	Refinery Building
3	Richfield Oil service station
4	Edward Heath Boatyard/Boeing Plant 1
5	Seafreeze Building
6	Auto Salvage Yard/Sav-Mor Service Station
7	Materials Reclamation Smelter
8	Southwest Tank Yard/Cardlock Facility/Shultz Distributing
9	Klinker Gravel/Ready Mix
10	Buildings C-1 & C-2/Carwash
11	Historical Fill Activities & Material
12	Building M-2
13	Building A-5/Maritime Office Building
14	Tin Reclamation/N Terminal 115
15	
15.01	Former Foss Environmental (Boeing Building 1-01 USTs)
15.02	Pacific Rim/Krueger Sheet Metal/Former Al Bolser's Tire Store
15.03	Aluminum & Bronze Fabricators
15.04	Former Reichhold Chemical
15.05	Glacier Northwest



LEGEND

- SUSPECTED/POTENTIAL RELEASE
- CONFIRMED RELEASE
- ACTIVE STORMWATER OUTFALL
- HISTORICAL STORMWATER OUTFALL
- COMBINED SEWER OVERFLOW/ STORMDRAIN OUTFALL
- COMBINED SEWER OVERFLOW
- HISTORICAL UTILITY LINES
- ACTIVE UTILITY LINES AND FEATURES
- TERMINAL 115 BOUNDARY
- TERMINAL 115 NORTH BOUNDARY
- HISTORICAL INDUSTRIAL OPERATIONS
- HISTORICAL AND CURRENT INDUSTRIAL OPERATIONS
- ON-PROPERTY ISSUES OF ENVIRONMENTAL CONCERN
- OFF-PROPERTY ISSUES OF ENVIRONMENTAL CONCERN
- 1 ISSUE OF ENVIRONMENTAL CONCERN ID NUMBER
- CURRENT SHORELINE

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Figure 13. Environmental Concerns and Historical Industrial Operations at Terminal 115

Source: SoundEarth 2011

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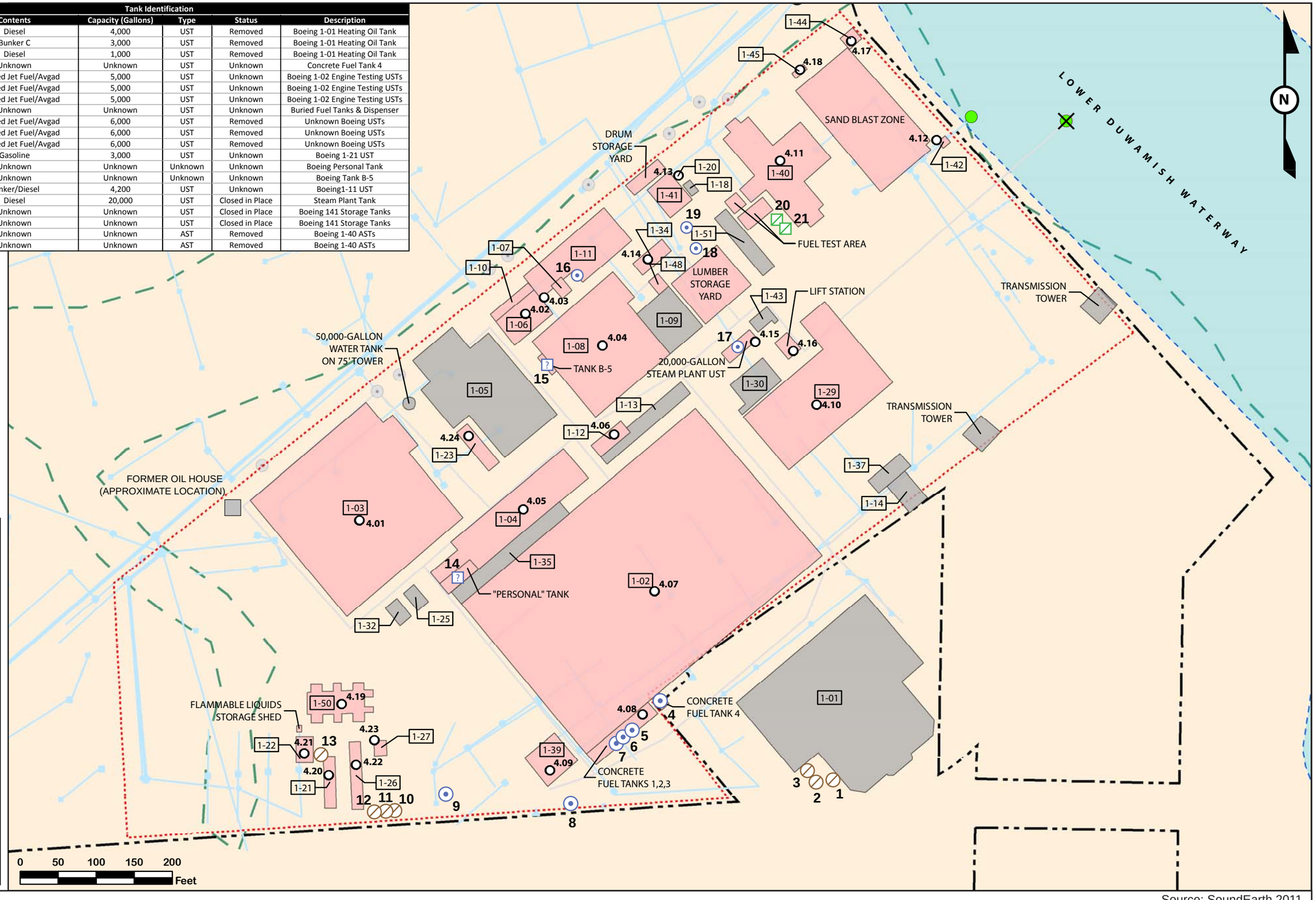
Building Identification	
Building #	Building Name
1-01	Administration Building
1-02	Main Factory Building
1-03	Assembly Building
1-04	Plating and Paint Shop
1-05	Factory and Maintenance
1-06	Boiler House/Test Warehouse
1-07	Transformer House
1-08	Paint Spraying, Welding, Maintenance Shop, and Materials Testing
1-09	Cafeteria
1-10	Dry Kiln/Spray Paint Shop
1-11	Structural Test Shop
1-12	Maintenance Welding Shop
1-13	Pattern Shop
1-14	Time Office and First Aid
1-18	Miscellaneous Storage
1-20	Paint Storage
1-21	Fuel Test Lab
1-22	Fuel Storage (includes fuel dispenser and storage tank)
1-23	Paint Storage
1-25	Maintenance Storage
1-26	Waste Acid Storage Facility
1-27	Hazardous Materials Storage
1-29	Hammer Shop & Aluminum Foundry
1-30	Steam Plant and UST
1-32	Maintenance Storage
1-34	Structural Test Office
1-35	Turbine Production Storage
1-37	Gate House
1-39	Compressor House
1-40	Statc Test Building
1-41	Test Shed
1-42	Incinerator
1-43	Toilet Building
1-44	Sandblast Building
1-45	Acid Test Bilding
1-48	Tank Testing
1-50	Revetment
1-51	Hydro Test Tank

Tank Identification					
Tank #	Contents	Capacity (Gallons)	Type	Status	Description
1	Diesel	4,000	UST	Removed	Boeing 1-01 Heating Oil Tank
2	Bunker C	3,000	UST	Removed	Boeing 1-01 Heating Oil Tank
3	Diesel	1,000	UST	Removed	Boeing 1-01 Heating Oil Tank
4	Unknown	Unknown	UST	Unknown	Concrete Fuel Tank 4
5	Suspected Jet Fuel/Avgad	5,000	UST	Unknown	Boeing 1-02 Engine Testing USTs
6	Suspected Jet Fuel/Avgad	5,000	UST	Unknown	Boeing 1-02 Engine Testing USTs
7	Suspected Jet Fuel/Avgad	5,000	UST	Unknown	Boeing 1-02 Engine Testing USTs
8	Unknown	Unknown	UST	Unknown	Buried Fuel Tanks & Dispenser
10	Suspected Jet Fuel/Avgad	6,000	UST	Removed	Unknown Boeing USTs
11	Suspected Jet Fuel/Avgad	6,000	UST	Removed	Unknown Boeing USTs
12	Suspected Jet Fuel/Avgad	6,000	UST	Removed	Unknown Boeing USTs
13	Gasoline	3,000	UST	Unknown	Boeing 1-21 UST
14	Unknown	Unknown	Unknown	Unknown	Boeing Personal Tank
15	Unknown	Unknown	Unknown	Unknown	Boeing Tank B-5
16	Bunker/Diesel	4,200	UST	Unknown	Boeing1-11 UST
17	Diesel	20,000	UST	Closed in Place	Steam Plant Tank
18	Unknown	Unknown	UST	Closed in Place	Boeing 141 Storage Tanks
19	Unknown	Unknown	UST	Closed in Place	Boeing 141 Storage Tanks
20	Unknown	Unknown	AST	Removed	Boeing 1-40 ASTs
21	Unknown	Unknown	AST	Removed	Boeing 1-40 ASTs



LEGEND

- ISSUES OF ENVIRONMENTAL CONCERN WITH SUSPECTED/POTENTIAL RELEASE (4.09)
- SUSPECTED/POTENTIAL RELEASE
- UST – REMOVED
- AST – REMOVED
- UST – UNKNOWN/ CLOSED IN PLACE
- UNKNOWN
- BOEING BUILDINGS
- BOEING ISSUES OF ENVIRONMENTAL CONCERN
- ISSUES OF ENVIRONMENTAL CONCERN BOUNDARY
- ACTIVE STORMWATER OUTFALL
- HISTORICAL STORMWATER OUTFALL
- ACTIVE UTILITY LINES AND FEATURES
- HISTORICAL UTILITY LINES
- PRE-1969 SHORELINE
- TERMINAL 115 BOUNDARY
- BUILDING NUMBER (1-01)

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Source: SoundEarth 2011

Figure 14. Boeing Plant 1 Facility Plan

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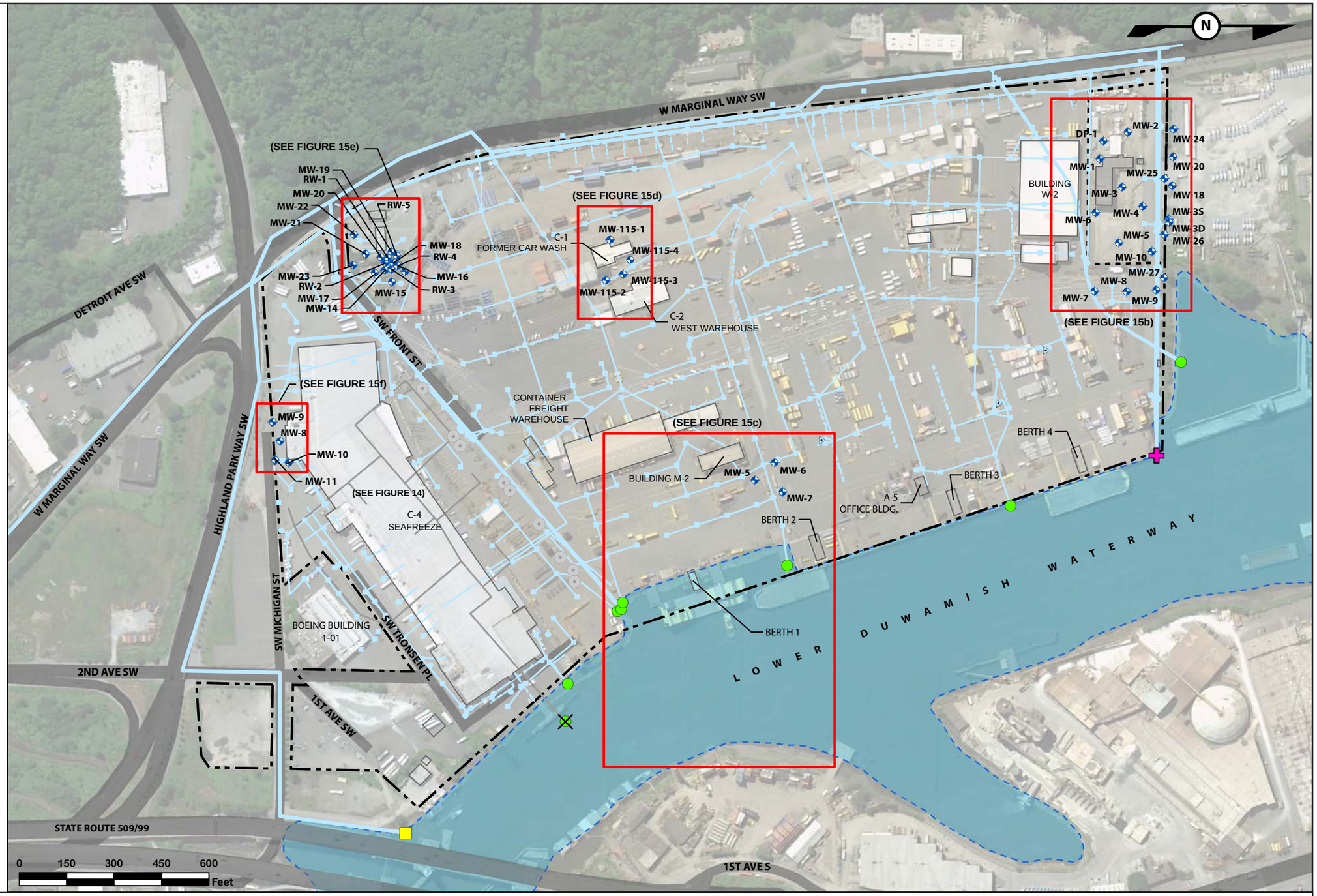

LEGEND

- MONITORING WELL
- ACTIVE STORMWATER OUTFALL
- HISTORICAL STORMWATER OUTFALL
- COMBINED SEWER OVERFLOW/ STORMDRAIN OUTFALL
- COMBINED SEWER OVERFLOW
- ACTIVE UTILITY LINES AND FEATURES
- HISTORICAL UTILITY LINES
- TERMINAL 115 BOUNDARY
- TERMINAL 115 NORTH BOUNDARY
- CURRENT SHORELINE

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Figure 15a. Environmental Investigation Areas Overview

Source: SoundEarth 2011

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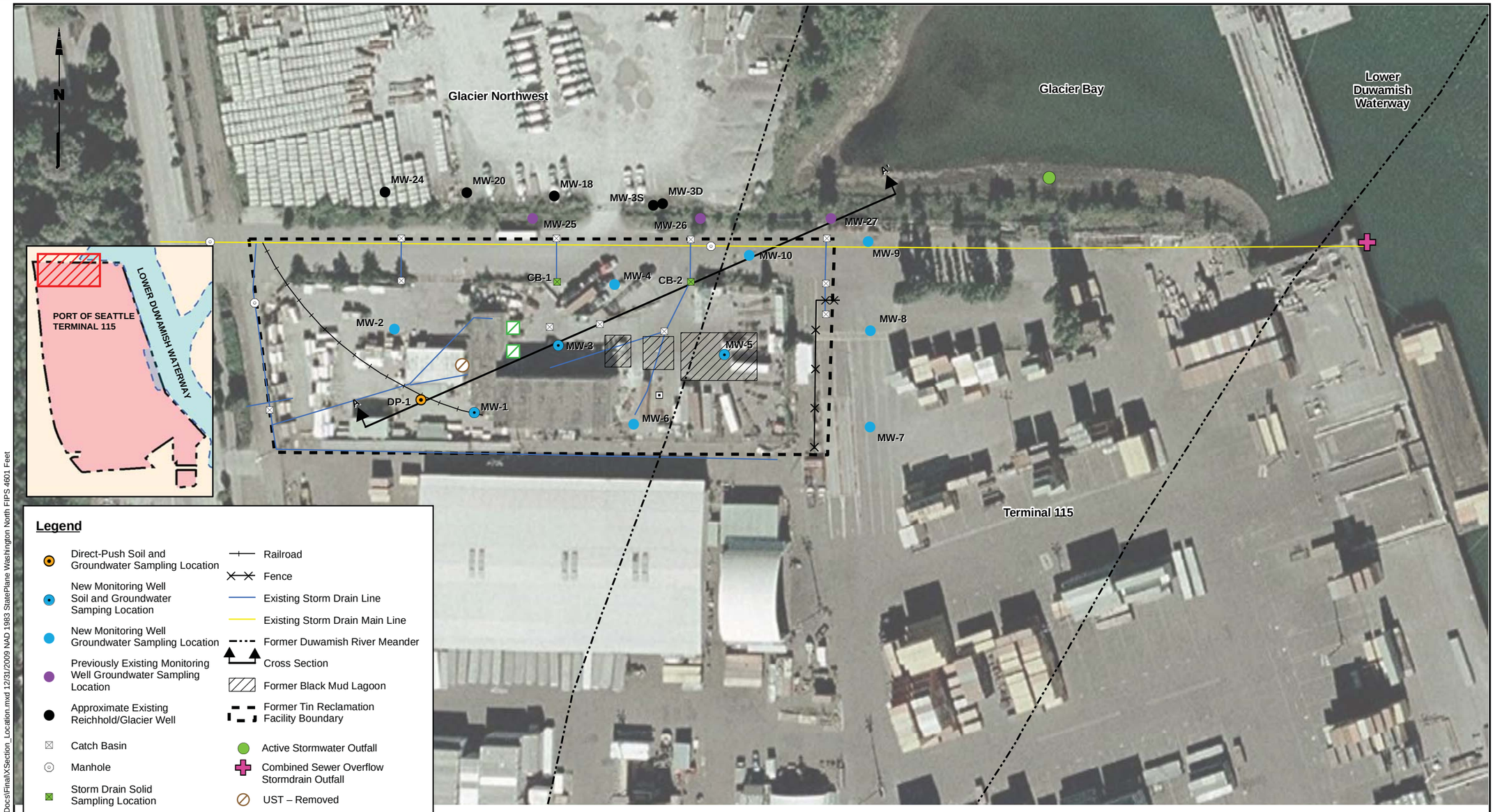

Legend

- Direct-Push Soil and Groundwater Sampling Location
- New Monitoring Well Soil and Groundwater Samping Location
- New Monitoring Well Groundwater Sampling Location
- Previously Existing Monitoring Well Groundwater Sampling Location
- Approximate Existing Reichhold/Glacier Well
- Catch Basin
- Manhole
- Storm Drain Solid Sampling Location
- Concrete Sump
- Railroad
- Fence
- Existing Storm Drain Line
- Existing Storm Drain Main Line
- Former Duwamish River Meander
- Cross Section
- Former Black Mud Lagoon
- Former Tin Reclamation Facility Boundary
- Active Stormwater Outfall
- Combined Sewer Overflow Stormdrain Outfall
- UST – Removed
- AST – Removed

Y:\Projects\0050026\MapDocs\Final\XSection_Location.mxd 12/31/2009 NAD 1983 StatePlane Washington North FIPS 4601 Feet

Data Source: ESRI Image Server 2007; Pinnacle GeoSciences; Aspect Consulting; SAIC; Shaw Environmental 2008

Note
1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

0 110 220
Scale in Feet

LANDAU ASSOCIATES

Terminal 115 - North Seattle, Washington	**Investigation Sampling Locations and Cross-Section Location**	Figure 3

Source: Landau 2009

Figure 15b. Environmental Investigations – N Terminal 115

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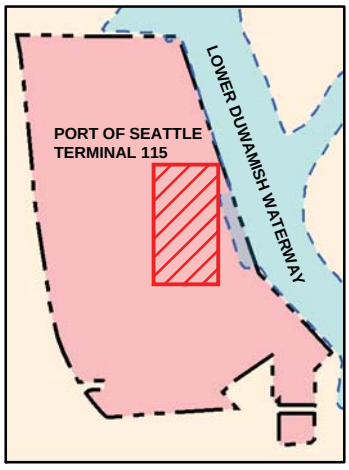

LEGEND

- MONITORING WELL
- UST – ACTIVE
- UST – REMOVED
- AST – ACTIVE
- TERMINAL 115 BOUNDARY

NOTE: TANK LOCATIONS ARE APPROXIMATE

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Source: SoundEarth 2011

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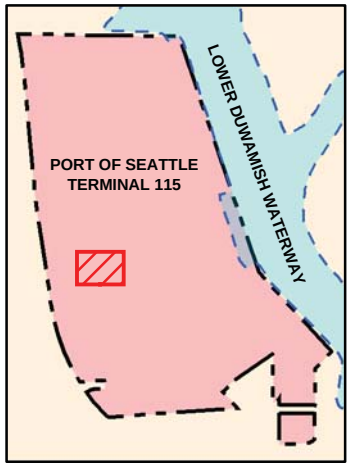
Figure 15c. Environmental Investigations – Building M-2 Area



LEGEND

- SOIL BORING
- SOIL SAMPLE
- MONITORING WELL
- AST– REMOVED
- UST – REMOVED
- ACTIVE UTILITY LINES AND FEATURES
- TERMINAL 115 BOUNDARY
- GROUNDWATER FLOW DIRECTION (JUNE 1990)

Note: All sample locations are approximate.

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N

Sources: Harding Lawson 1990; SoundEarth 2011

Figure 15d. Environmental Investigations – Building C-1 Former Car Wash Area

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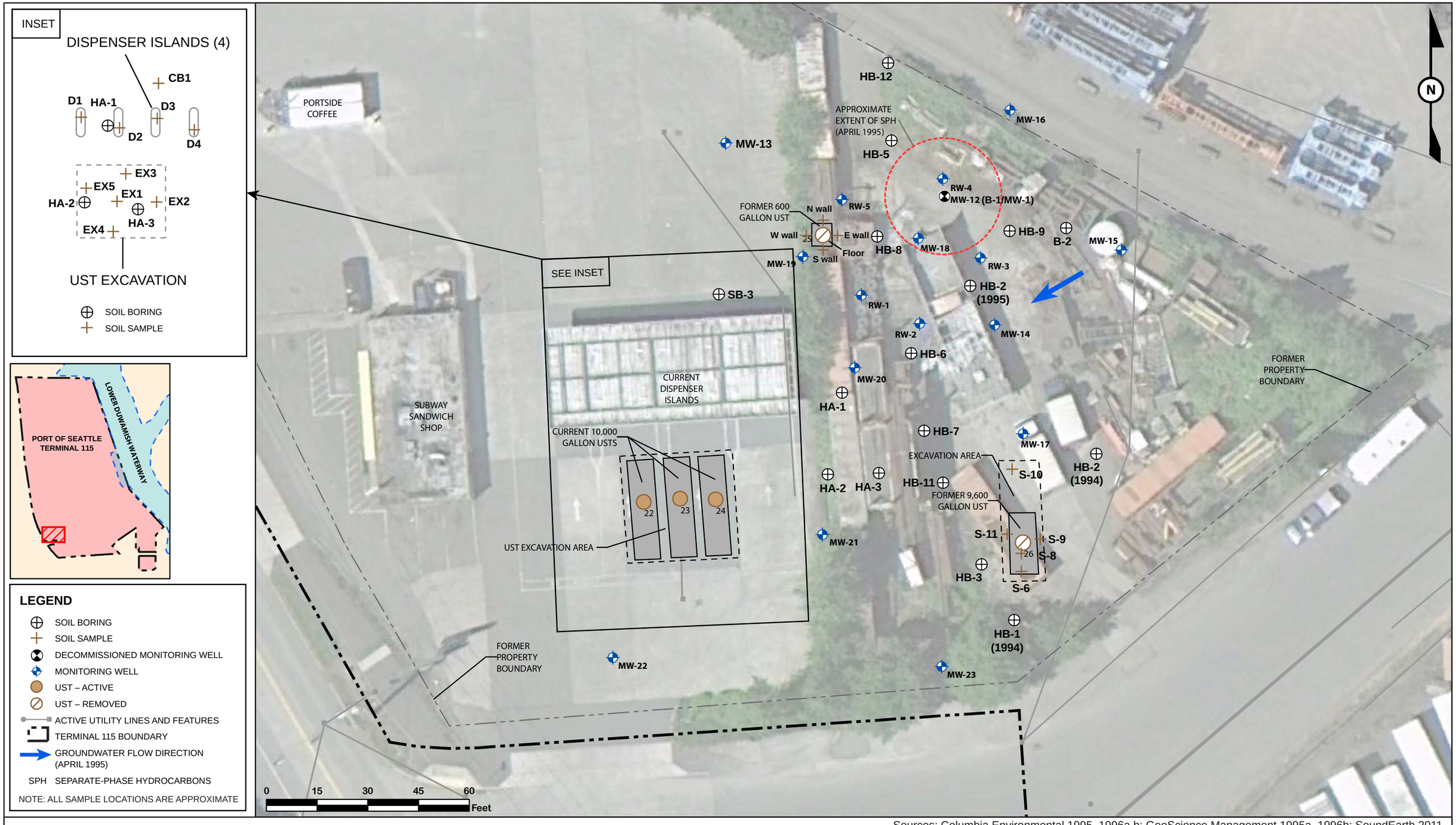

Sources: Columbia Environmental 1995, 1996a,b; GeoScience Management 1995a, 1996b; SoundEarth 2011

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Figure 15e. Environmental Investigations – Southwest Tank Yard / Cardlock Facility / Shultz Distributing

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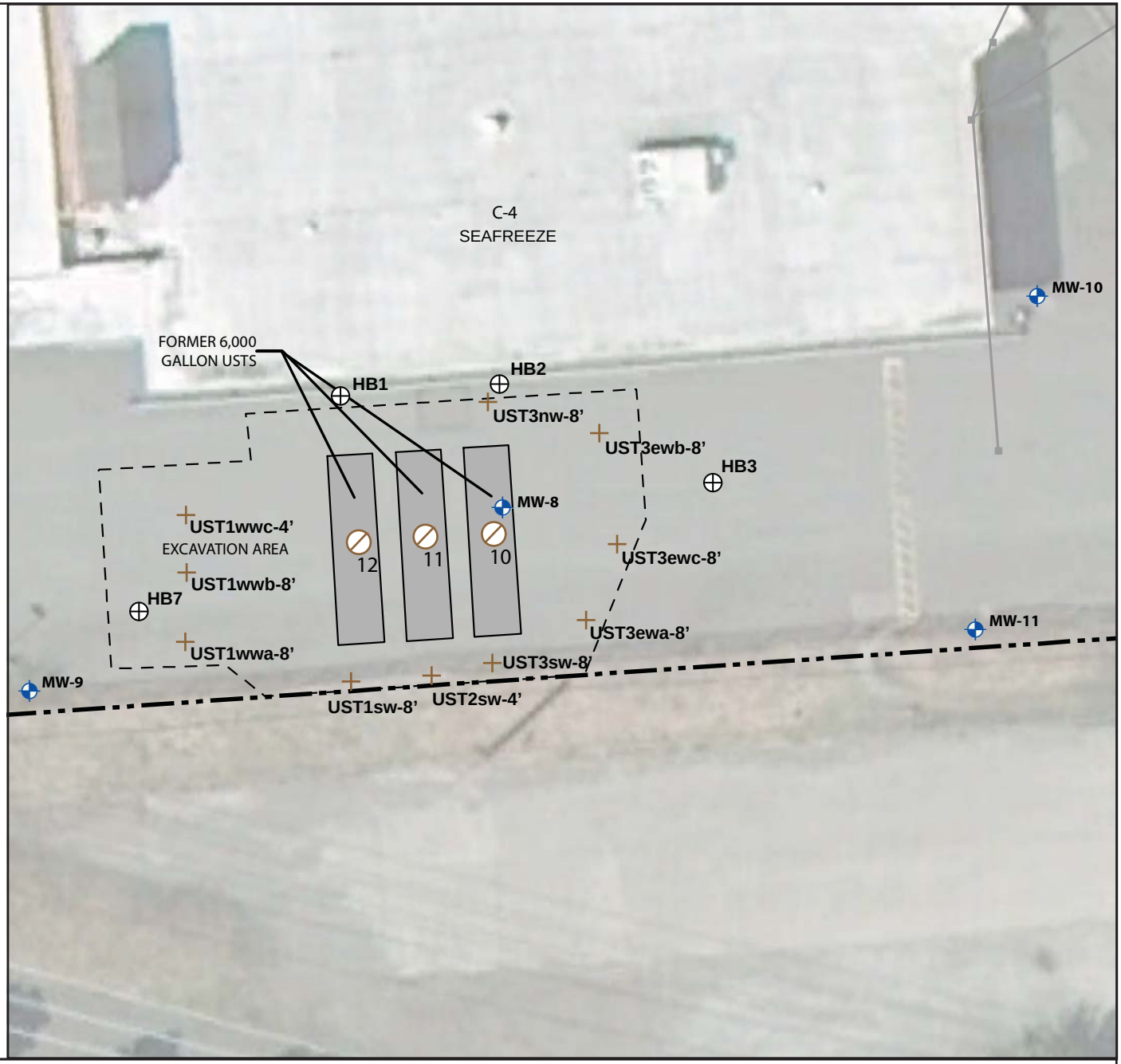

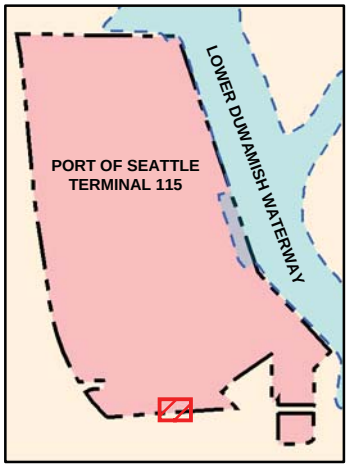

LEGEND

- MONITORING WELL
- ACTIVE UTILITY LINES AND FEATURES
- TERMINAL 115 BOUNDARY
- UST – REMOVED
- SOIL SAMPLE
- SOIL BORING

NOTE: ALL SAMPLE LOCATIONS ARE APPROXIMATE.

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Sources: EMCON 1995a,b; SoundEarth 2011

Figure 15f. Environmental Investigations – Seafreeze Facility Area

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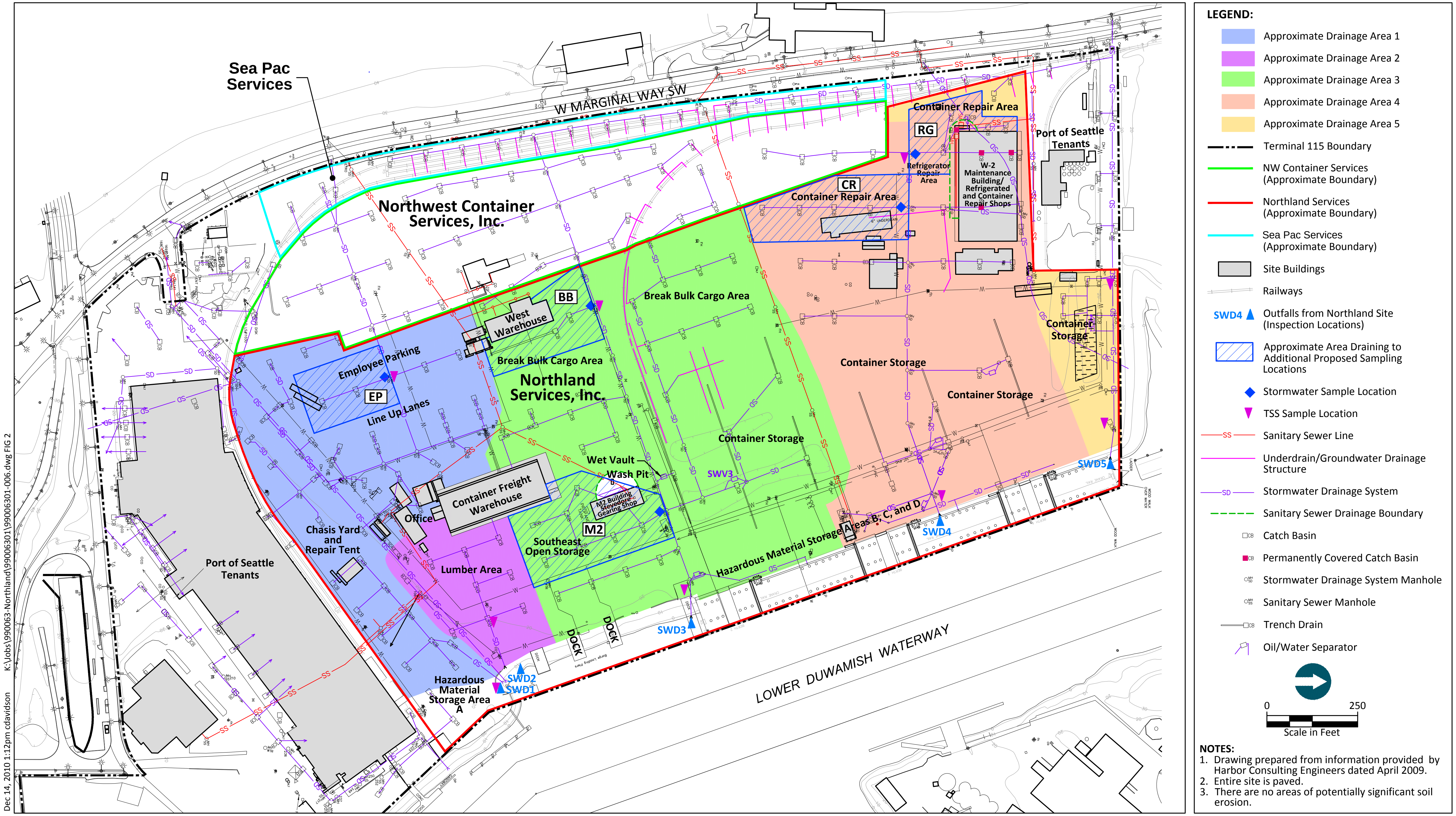

ANCHOR QEA

Figure 2
Current Site Stormwater Drainage Plan
Terminal 115
Northland Services, Inc.

Source: Anchor 2010

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Figure 16. Northland Services Facility Plan

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Source: King County iMap 2011

Figure 17a. Former Foss Environmental Facility

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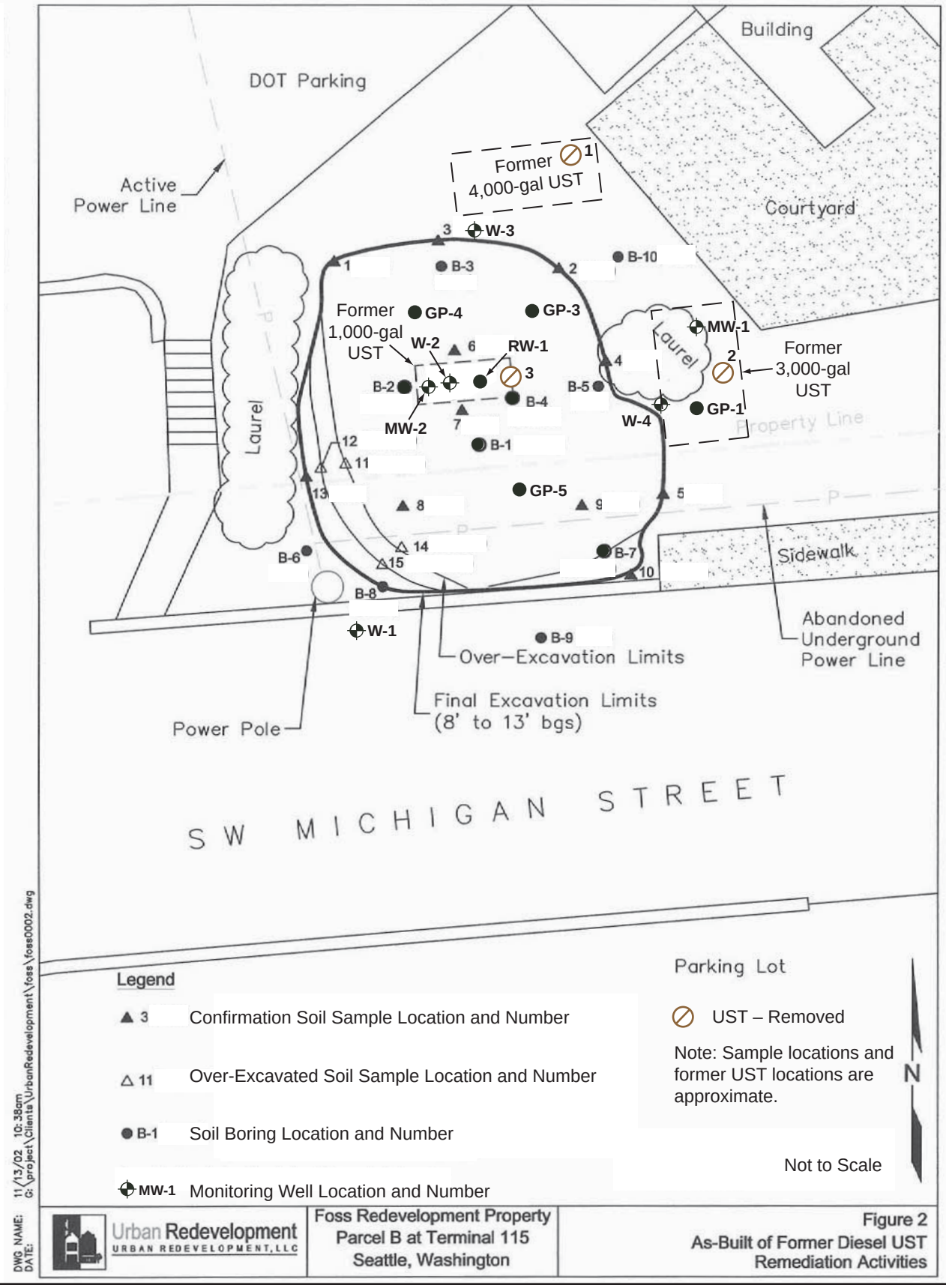

Sources: ADI Geoscience 1998; SD&C 1998; Urban Redevelopment 2002, 2003a,b

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Figure 17b. Environmental Investigations – Former Foss Environmental Facility

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