DEPARTMENT OF ECOLOGY
State of Washington

Lower Duwamish Waterway
RM 2.2 to 3.4 West
(Riverside Drive)

Source Control Action Plan

August 2012

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Lower Duwamish Waterway
RM 2.2 to 3.4 West
(Riverside Drive)

Source Control Action Plan

Produced by

Toxics Cleanup Program
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Bellevue, Washington

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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) 2.2 to 3.4 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 2.2 to 3.4 West (Riverside Drive), Summary of Existing Information and Identification of Data Gaps* (SAIC 2012).

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), dioxins/furans, arsenic and other metals, and phthalates. These COCs may pose threats to people, fish, and wildlife.

In December 2000, EPA and the Washington State Department of Ecology (Ecology) entered into an order with King County, the Port of Seattle (the 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 2003b) used existing data to identify potential human health and ecological risks, information needs, and high priority areas for cleanup. Seven candidate early action areas were identified (Windward 2003a). Ecology's *Lower Duwamish Waterway Source Control Status Report, 2003 to June 2007* (Ecology 2007c) and *Lower Duwamish Waterway Source Control Status Report, July 2007 to March 2008* (Ecology 2008e) identified another 16 areas where source control actions may be necessary. The Riverside Drive 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 Riverside Drive source control area. Mercury; 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 Riverside Drive source control area, including outfalls, spills to the

waterway, and releases from adjacent properties or upland properties within the 7th Avenue S storm drain (SD) basin and the 8th Avenue S combined sewer overflow (CSO) basin; an evaluation of the significance of these potential sources; and a listing of the actions that are planned or underway to control potential contaminant sources. Section 4 discusses monitoring activities that will be conducted to identify additional sources and assess progress, and Section 5 describes how source control efforts will be tracked and reported. Section 6 lists documents reviewed during preparation of this SCAP.

Table ES-1 lists the source control actions that have been identified for the Riverside Drive 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 Riverside Drive source control area was not scheduled at the time this SCAP was prepared.

Table ES-1. Source Control Actions – Riverside Drive Source Control Area

Potential Sources	Action Items	Priority	Responsible Party(ies)	Status	Target Date
7th Avenue S SD Outfall (Outfall 2112)					
Concentrations of mercury, PCBs, SVOCs, PAHs, and phthalates exceed screening levels in both LDW sediments near Outfall 2112 and in storm drain solids samples collected from the 7th Avenue S SD system.	Continue source tracing to identify potential sources of the sediment COCs reported above screening levels in storm drain structures in the 7th Avenue S SD basin.	Medium	SPU, Ecology	In Progress	TBD
King County Outfall (Outfall 3037)					
Concentrations of PCBs exceed screening levels in LDW sediments downstream of Outfall 3037.	Conduct source tracing to identify potential sources of sediment COCs reported above screening levels in LDW sediments adjacent to Outfall 3037.	Medium	King County	In Progress	TBD
Private Outfalls (Outfalls 2106, 2108, and 2113)					
Little information was available to determine whether Outfalls 2106, 2108, or 2113 are abandoned or active. Exceedances of sediment screening levels have been identified in LDW sediments near these outfalls.	Conduct an inspection during a storm event to determine if the three unresolved outfalls (Outfalls 2106, 2108, and 2113) are operational or have been abandoned.	Medium	SPU	Planned	TBD
	If discharge from these outfalls is observed, conduct dye testing to determine if storm drain lines are connected to the unresolved outfalls, and delineate the associated drainage areas.	Medium	SPU	Planned	TBD

Table ES-1. Source Control Actions – Riverside Drive Source Control Area

Potential Sources	Action Items	Priority	Responsible Party(ies)	Status	Target Date
Independent Metals Plant 2 (816 S Kenyon Street)					
Stormwater from Independent Metals is treated by an oil/water separator and sand filter treatment system before being discharged via Outfall 2010 to the LDW. Elevated levels of PCBs and mercury were detected in onsite catch basin solids samples. Untreated stormwater has the potential to discharge to the LDW if the facility's stormwater system capacity is exceeded. Paint, chemical, and petroleum products are sometimes mixed with recyclable materials and have the potential to leak to the ground in the process yard. In the past, heavy machinery operation has created holes in the pavement of the process yard. Contaminated stormwater and released/spilled fluids from recyclable materials had the potential to infiltrate groundwater through these holes, indicating the potential for soil and groundwater contamination at the property.	Conduct a follow-up stormwater compliance inspection to verify compliance with the corrective actions identified repeatedly by Ecology during inspections performed from 2007 to 2011, applicable regulations, and BMPs to prevent the release of contaminants to the LDW. Evaluate compliance with the following corrective actions, and take enforcement action as appropriate: • The facility must implement measures to prevent track-out of dirt and debris to 8th Avenue S. • The facility must prevent the discharge of petroleum and/or contaminated stormwater into holes in the pavement. • The facility must monitor stormwater discharge for total PCBs and total mercury using sampling techniques and analytical methods with detection limits acceptable to Ecology. • The facility must ensure that all industrial stormwater from the dock area at the former Silver Bay Logging is collected and routed into the storm drain system. • The facility's SWPPP must explicitly address plans or current measures to contain fluids from spills or releases from recyclable materials.	High	Ecology	Planned	TBD
	Review Independent Metals' revised SWPPP, when provided, and verify that the information identified in Ecology's October 21, 2011, corrective action letter is included in the SWPPP.	Low	Ecology	Planned	TBD
	Request drainage information from Independent Metals for Outfalls 2109 and 2111 to determine if the outfalls are operational and to identify the drainage areas associated with the outfalls, if any.	High	Ecology	Planned	TBD

Table ES-1. Source Control Actions – Riverside Drive Source Control Area

Potential Sources	Action Items	Priority	Responsible Party(ies)	Status	Target Date
Former Long Painting – 10th Avenue S Facility (8025 10th Avenue S)					
Unity Electric (parcel 1215) is adjacent to the LDW. If near-water activities are performed at the facility, there is potential that spilled materials may be conveyed to the LDW via spills and/or surface runoff.	Perform a facility inspection at Unity Electric to verify compliance with applicable regulations and BMPs to prevent the release of contaminants to the LDW.	Medium	King County	Planned	TBD
American Civil Constructors Barge Removal Ramp (5th Avenue S and S Fontanelle Street)					
American Civil Constructors built a ramp of fill material along the LDW to remove barges from an area near 5th Avenue S and S Fontanelle Street. USACE identified the barge removal ramp that extends from the shoreline to the LDW as a potential source of contaminants to the LDW.	Request American Civil Constructors to provide information about the fill used for a barge removal ramp, to determine if the fill is a potential source of contaminants to adjacent sediments.	High	USEPA, USACE	Planned	TBD
Machinists Inc – Main Facility (7600 5th Avenue S)					
Machinists Inc has implemented corrective actions to reduce concentrations of copper and zinc in its stormwater discharge and planned to install a stormwater treatment system at the facility in September 2011.	Evaluate the stormwater treatment system, when completed, to ensure compliance with applicable regulations and BMPs to prevent the release of contaminants to the LDW.	Low	Ecology	Planned	TBD

Table ES-1. Source Control Actions – Riverside Drive Source Control Area

Potential Sources	Action Items	Priority	Responsible Party(ies)	Status	Target Date
The Gear Works (500 S Portland Street)					
No information was available to determine if Gear Works completed the recommendations and corrective actions identified by Ecology in 2010. Potential for sediment recontamination due to current facility operation is low to moderate.	Conduct a follow-up inspection to verify that Gear Works has complied with the corrective actions and recommendations identified by Ecology during the June 2010 inspection.	Medium	Ecology	Planned	TBD
West Coast Wire Rope & Rigging (7777 7th Avenue S)					
No information was available to determine if West Coast Wire has complied with the corrective actions identified by Ecology during the May 2007 stormwater compliance inspection. During the inspection, Ecology determined that wash water appeared to have been discharged to the storm drain.	Re-inspect West Coast Wire to determine if the facility is in compliance with corrective actions identified during the May 2007 inspection.	Medium	Ecology	Planned	TBD
Olympic Steel Door (7800 7th Avenue S)					
Olympic Steel Door, Redox, and All Metal Arts share parcel 9710. Concentrations of PCBs, BEHP, butyl benzyl phthalate, dimethylphthalate, 2-methylphenol, and benzyl	Request Olympic Steel Door, Redox, and All Metal Arts to obtain coverage under the ISGP or apply for a CNE.	Low	Ecology	Planned	TBD

Table ES-1. Source Control Actions – Riverside Drive Source Control Area

Potential Sources	Action Items	Priority	Responsible Party(ies)	Status	Target Date
alcohol exceeded the storm drain screening values in a catch basin on the property. SPU directed the companies to apply for coverage under the ISGP or obtain a CNE. The potential for sediment recontamination via stormwater discharge may be high.	Conduct a follow-up business inspection to verify compliance with corrective actions identified by SPU in 2009, applicable regulations, and BMPs, to prevent release of contaminants to the LDW.	Medium	SPU	Planned	TBD
Marine Lumber Service Inc. (525 S Chicago Street)					
Leaching of ACZA-treated lumber has resulted in elevated concentrations of copper, zinc, and arsenic in catch basin samples collected near the South Yard.	Review the September 2011 inspection report to evaluate Marine Lumber Service's progress with regard to implementing source control BMPs and preventing ACZA leachate from entering the storm drain system.	Medium	Ecology	Planned	TBD
Rogers Machinery Co Inc. (7800 5th Avenue S)					
SPU performed a dye test to determine if wash water is conveyed to the storm drain system; however, the results were inconclusive. If the wash water is discharged to the storm drain system, it may represent a potential source of contaminants.	Request Rogers Machinery to discharge wash water to the sanitary sewer.	Low	Ecology	Planned	TBD

Table ES-1. Source Control Actions – Riverside Drive Source Control Area

Potential Sources	Action Items	Priority	Responsible Party(ies)	Status	Target Date
Independent Metals Plant 1 (747 S Monroe Street)					
Elevated PCBs were found in a catch basin solids sample collected from a sanitary sewer catch basin and manhole at the facility. There is no information available to determine if soil or groundwater contamination is present at the property; however, given the current metals recycling operations, there is a potential for soil and groundwater contamination.	Request Independent Metals to obtain environmental data to determine if soil and groundwater is contaminated by metals recycling operations and if COCs in soil and groundwater may be transported to the LDW.	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

ACZA	ammoniacal copper zinc arsenate	PAH	polycyclic aromatic hydrocarbon
BEHP	bis(2-ethylhexyl)phthalate	PCB	polychlorinated biphenyl
BMP	best management practice	SD	storm drain
BTEX	benzene, toluene, ethylbenzene, and xylenes	SPU	Seattle Public Utilities
CNE	Certificate of No Exposure	SVOC	semivolatile organic compound
COC	chemical of concern	SWPPP	Stormwater Pollution Prevention Plan
ISGP	Industrial Stormwater General Permit	TBD	to be determined
LDW	Lower Duwamish Waterway	USACE	U.S. Army Corps of Engineers
MTCA	Model Toxics Control Act	USEPA	U.S. Environmental Protection Agency

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Acronyms/Abbreviations

2LAET	second lowest apparent effects threshold
ACZA	ammoniacal copper zinc arsenate
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
CNE	Certificate of No Exposure
COC	chemical of concern
cPAHs	carcinogenic polycyclic aromatic hydrocarbons
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
EPA	United States Environmental Protection Agency
ESA	Environmental Site Assessment
FS	Feasibility Study
HPAH	high molecular weight polycyclic aromatic hydrocarbon
ID	identification
ISGP	Industrial Stormwater General Permit
KC	King County
KCIW	King County Industrial Waste
LAET	lowest apparent effects threshold
LDW	Lower Duwamish Waterway
LDWG	Lower Duwamish Waterway Group
LPAH	low molecular weight polycyclic aromatic hydrocarbon
LQG	large quantity generator
LUST	leaking underground storage tank
µg/L	micrograms per liter
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MTBE	methyl tertiary butyl ether
MTCA	Model Toxics Control Act
ng/kg	nanograms per kilogram
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
OC	organic carbon
PAH	polycyclic aromatic hydrocarbon
PBT	persistent bioaccumulative toxin
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
PSCAA	Puget Sound Clean Air Agency

PS/WQF	Pump Station and Water Quality Facility
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
SDOT	Seattle Department of Transportation
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
TCE	trichloroethylene
TEQ	toxic equivalency
TOC	total organic carbon
TPH	total petroleum hydrocarbons
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

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) 2.2 to 3.4 West[1] (Riverside Drive) source control area of the Lower Duwamish Waterway (LDW). The purpose of this plan is to evaluate the significance of these sources and to determine if actions are needed to minimize the potential for recontamination of sediment near the Riverside Drive 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[2]:

- *Lower Duwamish Waterway, RM 2.2 to 3.4 West (Riverside Drive) – Summary of Existing Information and Identification of Data Gaps*, (Data Gaps Report), Science Applications International Corporation (SAIC), April 2012, located on Ecology's website: http://www.ecy.wa.gov/programs/tcp/sites_brochure/lower_duwamish/sites/RM_2-2/RM2-2-W-Riverside-Dr.html
- *Lower Duwamish Waterway Source Control Strategy*, Washington State Department of Ecology (Ecology), January 2004, located on Ecology's website: http://www.ecy.wa.gov/biblio/0409043.html
- *Lower Duwamish Waterway Remedial Investigation,* Windward Environmental LLC (Windward), July 9, 2010, located on Lower Duwamish Waterway Group's website: http://www.ldwg.org/assets/phase2_ri/final%20ri/Final_LDW_RI.pdf
- *Lower Duwamish Waterway Draft Final Feasibility Study,* AECOM , October 15, 2010, located on Lower Duwamish Waterway Group's website: http://www.ldwg.org/rifs_docs9.htm#finalfs

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 Riverside Drive 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 Riverside Drive source control area, including

[1] River miles as defined in this report are measured from the southern tip of Harbor Island.
[2] This SCAP incorporates data published through March 31, 2012. Section 5, Tracking and Reporting of Source Control Activities, describes how newer data will be disseminated.

outfalls, spills, properties adjacent to the LDW, and upland properties within the 7th Avenue S storm drain (SD) basin, and the 8th Avenue S combined sewer overflow (CSO) basin. Section 3 also describes actions planned or currently underway to control potential sources of contaminants. Sections 4 and 5 describe monitoring and tracking/reporting activities, respectively. References are listed in Section 6, and figures and tables are presented at the end of the document.

As new information about the facilities and potential sources discussed in this document becomes available and as source control progress is made, Ecology will update the information in this SCAP as needed. The status of source control actions is summarized in the LDW Source Control Status Reports (Ecology 2007c, 2008e, 2009c, 2011f, 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 2003b). In 1988, the United States Environmental Protection Agency (EPA or USEPA) investigated sediments in the LDW as part of the Elliott Bay Action Program. Problem chemicals identified by the EPA study included metals, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), phthalates, and other organic compounds. In 1999, EPA completed a study of approximately 6 miles of the waterway, from the southern tip of Harbor Island to just south of the turning basin near the Norfolk CSO (Weston 1999). This study confirmed the presence of PCBs, PAHs, phthalates, mercury, and other metals. These contaminants pose threats to people, fish, and wildlife.

In December 2000, EPA and Ecology signed an agreement with King County, the Port of Seattle (the 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 2003b). 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 2010b). No additional early cleanup areas were identified. A draft final FS, which addresses cleanup options for contaminated sediments in the LDW, was completed in October 2010. A Proposed Plan for cleanup of 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 2003a) was issued. Seven candidate sites for early action were recommended. The sites, as listed in the Technical Memorandum (Windward 2003a), are:

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

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

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

[3] These five sites are identified as EAAs in the 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.

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

In 2007, Ecology, in consultation with EPA, identified eight additional source control areas based on available sediment data, size of the upland basin draining to the source control area, and general knowledge about facilities operating in the basin. In February 2008, Ecology identified the areas of the LDW not covered by a SCAP or planned SCAP. Using the same criteria as in 2007, eight additional potential source control areas were added to the list (Ecology 2008e). The Riverside Drive source control area was identified as one of these areas. One additional source control area was added by Ecology in 2010, for a total of 24 source control areas. Ecology and EPA redefined the boundaries of the source control areas, generally defined by stormwater drainage basins. The seven candidate EAAs and 17 additional source control areas are shown in Figure 1. Stormwater drainage basins and CSO basins located in the vicinity of the Riverside Drive 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).[4] 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

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

control in the LDW area, as well as prompt compliance by the businesses that must make necessary changes to control releases from their properties.

The source control strategy focuses on controlling contamination that affects LDW sediments. It is based on the principles of source control for sediment sites described in EPA's *Principles for Managing Contaminated Sediment Risks at Hazardous Waste Sites; February 12, 2002* (EPA 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 2008e). 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 Port and the City of Tukwila, are involved in the source control activities for the Riverside Drive 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 2.2 to 3.4 West (Riverside Drive)

The Riverside Drive source control area is located along the western side of the LDW Superfund Site between 2.2 and 3.4 miles from the southern tip of Harbor Island (Figure 1). Properties from RM 2.2 to 2.6 West include the Douglas Management Company and Boyer Towing/Logistics and were discussed in the SCAP for EAA-2. For the purpose of this SCAP, the Riverside Drive source control area will include adjacent and upland properties from RM 2.6 to 3.4 West and a barge removal ramp located at approximately RM 2.5 West. Facilities within the Riverside Drive source control area that are listed in Ecology's Facility/Site Database are included in Table 1. Elevated concentrations of chemicals, including mercury; 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.[5] Pesticides 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 2.2 to 3.4 West (Riverside Drive) extends from S Webster Street to the former South Park Bridge (Figure 4a). The source control area includes one storm drain basin and one CSO basin:

- The 7th Avenue S SD basin covers approximately 230 acres, and includes 75 facilities with Ecology Facility/Site ID numbers. The storm drain basin spans east-to-west from the LDW to SW 97th Place and north-to-south from S Webster Street to 550 feet north of SW100th Street.
- The 8th Avenue S CSO basin covers approximately 2,980 acres. The CSO basin spans east-to-west from the LDW to West Marginal Way SW in the northern area of the basin and from the LDW to WA-509 in the southern area of the basin.

Properties located directly adjacent to the LDW that could affect sediment from RM 2.2 to 3.4 West include:

- Pacific Pile and Marine
- 640 S Riverside Drive
- Former Hurlen Construction
- Lukas Machine Inc.
- Independent Metals Plant 2
- Former Long Painting – 10th Avenue S Facility.

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

Several residential properties are located adjacent to the LDW within the Riverside Drive source control area, between RM 3.1 and 3.4 West.

There are 69[6] upland properties that could potentially affect RM 2.6 to 3.4 West sediments. These facilities are shown on Figure 4a through 4d. The tax parcels associated with these facilities are identified on Figure 5a through 5c.

In addition, information about the 8th Avenue S CSO basin was reviewed to identify any additional facilities that could represent potential sediment recontamination sources. Ecology has assigned Facility/Site identification numbers to 310[7] facilities within the 8th Avenue S CSO basin. SAIC reviewed information on facilities in the 8th Avenue S CSO located outside the Riverside Drive source control area boundary and not included in other Data Gaps Reports or SCAPs. SAIC identified no data gaps or necessary source control actions.

2.1 Chemicals of Concern in Sediment

Sediments near the Riverside Drive source control area generally consist of less than 5 to greater than 80 percent fines. Total organic carbon (TOC) in this area ranges from 1 to 3.1 percent TOC (Windward 2010b).

Several environmental investigations have included the collection of sediment near the Riverside Drive source control area (Figure 6a, 6b, and 6c), including the following:

- Five surface sediment samples collected during a RCRA Facility Investigation in 1996 (Windward 2003b);
- Thirteen surface sediment samples collected during a King County CSO Water Quality Assessment in 1997 (Windward 2003b);
- Twenty-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);
- Twenty-two surface sediment samples collected during an EPA Site Inspection in 1998 (Weston 1999);
- Two surface sediment samples collected as part of a benthic invertebrate and clam tissues study in 2004 (Windward 2005a);
- Nineteen surface sediment and eight subsurface sediment samples from two coring locations collected during the LDW Phase 2 RI from 2005 to 2006 (Windward 2005a,b, 2007a,b);

[6]Fibres International, Inc. was not included with the upland properties of the Riverside Drive Data Gaps Report due to a mapping error in Ecology's Facility/Site Database (Wright 2012). Inclusion of Fibres International, Inc. in the SCAP changes the total number of upland facilities in the Riverside Drive source control area from 68 to 69 facilities.

[7] Inclusion of Fibres International, Inc. in the SCAP changes the total number of facilities in the 8th Avenue S CSO from 309 to 310 facilities.

- One surface sediment sample collected during a sediment profile imaging study in 2006 (as cited in AECOM 2010);
- One surface sample collected during the LDW Phase 2 RI in 2010 (Windward 2010a); and
- Eleven surface sediment samples collected as part of outfall sampling in 2011 (SAIC 2011).

Sediment data near the Riverside Drive source control area are detailed in the Riverside Drive Data Gaps Report (SAIC 2012). 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. The results of this comparison are provided in Tables 2 and 3.

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 2010a). The results of this comparison are provided in Table 4.

COCs were identified based on the results of sediment sampling in the vicinity of the Riverside Drive 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 Riverside Drive source control area. The greatest exceedances were observed for mercury in surface sample LDW-SS2112-A, fluorene and acenaphthene in surface sample LDW-SS95, bis(2-ethylhexyl)phthalate (BEHP) in surface sample LDW-SS335, hexachlorobenzene in surface sample B7a, and PCBs in subsurface sample LDW-SC47. These samples were collected offshore of the Riverside Drive source control area between RM 2.8 and 3.1 West (Figure 6b and 6c). The greatest dioxin/furan TEQ exceedance was observed in surface sample LDW-SS530, which is located near the 7th Avenue S SD outfall. Additional information on SQS/CSL exceedances is provided in the Riverside Drive Data Gaps Report (SAIC 2012).

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

Chemicals Detected at Concentrations Above the SQS/CSL	Surface Sediment		Subsurface Sediment	
	> SQS	> CSL	> SQS	> CSL
Metals				
Mercury	●	●		
PAHs				
2-Methylnaphthalene	●			
Acenaphthene	●	●		
Anthracene	●			
Benzo(a)anthracene	●			

Chemicals Detected at Concentrations Above the SQS/CSL	Surface Sediment		Subsurface Sediment	
	> SQS	> CSL	> SQS	> CSL
Benzo(a)pyrene	●			
Benzo(g,h,i)perylene	●	●		
Chrysene	●		●	
Dibenzo(a,h)anthracene	●	●		
Dibenzofuran	●	●		
Fluoranthene	●		●	
Fluorene	●	●		
Indeno(1,2,3-cd)pyrene	●			
Phenanthrene	●	●		
Total benzofluoranthenes	●			
Total HPAHs	●		●	
Total LPAHs	●	●		
Phthalates				
Bis(2-ethylhexyl)phthalate	●	●		
Butyl benzyl phthalate	●			
Other SVOCs				
1,4-Dichlorobenzene	●			
2,4-Dimethylphenol	●	●		
Benzoic acid	●	●		
Benzyl alcohol	●	●	●	
Phenol	●			
Hexachlorobenzene	●	●	●	
PCBs				
PCBs (total)	●		●	●

HPAH = high molecular weight PAH
LPAH = low molecular weight PAH
Exceedance factors, which are a measure of the degree to which maximum detected concentrations exceed the SQS/CSL values, are listed in Tables 2 and 3.
Dioxin/furan TEQ exceeded the LDW background (Windward 2010b) in surface samples, as listed in Table 4.

Although no SQS have been promulgated, pesticides are considered potential COCs at the Riverside Drive source control area. Concentrations of pesticides including DDT compounds, chlordane, endosulfan, enderin ketone, methoxychlor, and toxaphene were detected at three surface sampling locations. Greatest concentrations of pesticides were detected at surface sample location B7a. Because pesticides have been detected near the Riverside Drive source control area, analysis for pesticides should be considered when future sediment samples are collected in this area.

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 10 sampling locations near the Riverside Drive source control area between 1998 and 2006, with concentrations of TBT up to 0.86 mg/kg DW at location DR203 (SAIC 2012). Since the maximum TBT concentration in sediments near the Riverside Drive 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 Riverside Drive source control area. Dioxins and furans are considered potential COCs within the Riverside Drive source control area. These compounds were detected in five sediment samples at concentrations that exceed LDW background TEQ concentrations of dioxins and furans as described in *Lower Duwamish Waterway Remedial Investigation Report* (Windward 2010b). Dioxin/furan TEQs above LDW background levels ranged from 2.0 nanograms per kilogram (ng/kg) DW to 35.7 ng/kg DW (Table 4).

2.2 Potential Pathways to Sediment

Transport pathways that could potentially contribute to sediment contamination near the Riverside Drive source control area 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 Riverside Drive Data Gaps Report (SAIC 2012). Specific contaminant sources and transport pathways are discussed in Section 3.

2.2.1 Direct Discharges from Outfalls

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

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

Some areas of the LDW are served by combined sewer systems, which carry both stormwater and municipal/industrial wastewater in a single pipe. These systems were generally constructed before about 1970 because it was less expensive to install a single pipe rather than separate storm and sanitary systems. Under normal rainfall conditions, wastewater and stormwater are conveyed through this combined sewer pipe to a wastewater treatment facility. During large storm events, however, the total volume of wastewater and stormwater can sometimes exceed the conveyance and treatment capacity of the combined sewer system. When this occurs, the combined sewer system is designed to overflow through relief points, called CSOs. The CSOs prevent the

combined sewer system from backing up and creating flooding problems. The 8th Avenue S CSO discharges to the LDW within the Riverside Drive source control area.

Additional information on public storm drains and CSOs is presented in the Riverside Drive Data Gaps Report (SAIC 2012). There are nine outfalls discharging to the LDW within the Riverside Drive source control area, including two public storm drain outfalls, one CSO outfall, three private outfalls, and three outfalls of unknown or unresolved origin (Figure 4a).

These are discussed in more detail in Section 3.0.

2.2.2 Surface Runoff (Sheet Flow)

In areas lacking collection systems, spills or leaks on properties adjacent to the LDW could flow directly over impervious surfaces or through creeks and ditches to the waterway. Current operational practices at adjacent properties may contribute to the movement of contaminants to the LDW via runoff.

2.2.3 Groundwater Discharges

The Riverside Drive source control area has been identified as an area with generally higher seepage levels. Eight seeps were identified between RM 2.2 and 3.4 West. Seep SP-48 was selected for chemical analysis (Figure 6c). Copper was detected at a concentration of 10.1 micrograms per liter (µg/L), three times the Marine Chronic Water Quality Standard of 3.1 µg/L (Windward 2004).

Groundwater flow in the Riverside Drive 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 Riverside Drive 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 petroleum hydrocarbons have been documented in the Riverside Drive source control area.

2.2.4 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. Banks within the Riverside Drive source control area are composed of riprap, vegetation, wharfs, and exposed soil. Facilities with exposed soil along the shoreline include Pacific Pile and Marine, 640 S Riverside Drive, former Hurlen Construction, Lukas Machine, and Independent Metals Plant 2. Contaminants in soils along the banks of the LDW could be released directly to sediments via erosion.

In May 2011, four soil samples were collected from two boring locations along the LDW bank at RM 3.3 West[8] (Figure 6a and 6c). The surrounding area is residential and has high public use. Little is known about the bank conditions in this area. Soil samples were analyzed for metals, PCBs, PAHs, total petroleum hydrocarbons (TPH), TBT, pesticides, SVOCs, and dioxins/furans. Chemical concentrations in bank soil samples did not exceed the SMS or LAET. Concentrations of total carcinogenic polycyclic aromatic hydrocarbons (cPAH) exceeded LDW background concentrations in three of four samples. PCBs and dioxin/furan TEQ concentrations exceeded LDW background levels in samples collected from 0 to 2 feet below ground surface (bgs) at SP-BS-1a and 0 to 3 feet sample at SP-BS-2a (Hart Crowser 2012). Chemicals detected in soil samples collected along the LDW bank at RM 3.3 West are presented in Table 6.

2.2.5 Spills to the LDW

Near-water and over-water activities have the potential to impact adjacent sediments from spills of material containing COCs. Facilities along the LDW conduct loading and unloading activities within the Riverside Drive source control area. Accidental spills during loading/unloading operations may result in transport of contaminants to sediment. Facilities that conduct overwater activities include Pacific Pile and Marine, and Independent Metals Plant 2.

2.2.6 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-

[8] The Hart Crowser report documenting the May 2011 sampling event was published in March 2012. The data were not available for inclusion in the Riverside Drive Data Gaps Report.

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 Riverside Drive source control area 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 2007c, 2008e, 2009c, 2011f, 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.

3.0 Potential Sources of Sediment Recontamination

Potential sources of sediment recontamination are described in detail in the Riverside Drive Data Gaps Report (SAIC 2012). This section summarizes the information on outfalls (Section 3.1), adjacent properties (Section 3.2), and upland properties (Section 3.3 and 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.

Two public storm drain outfalls (one King County-owned, one city-owned), one King County CSO outfall, three private outfalls, and three outfalls of unknown or unresolved origin discharge to the LDW within the RM 2.2 to 3.4 West source control area (Figure 4a). The outfalls are listed below, from north to south:

Outfall No.[1]	Outfall Name	Location	Diameter/Material	Outfall Type
2113 (private)	355W	2.6 W	6-inch concrete	Unknown SD
2112 (public)	7th Avenue S SD	2.7 W	Unknown	SPU SD
2107 (public)	8th Avenue S CSO	2.8 W	36-inch reinforced concrete pipe	KC CSO
2106 (private)	358 W	2.8 W	24-inch ductile iron	Unknown SD
2108 (private)	359 W	2.8 W	8-inch ductile iron	Unknown SD
2111 (private)	360 W	2.9 W	12-inch ductile iron	Independent Metals Plant 2
2110 (private)	361 W	2.9 W	15-inch concrete	Independent Metals Plant 2
2109 (private)	362 W	2.9 W	11-inch wood	Independent Metals Plant 2
3037 (public)	OF6620	3.2 W	18-inch corrugated metal pipe	KC SD

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

The approximate drainage area associated with the 7th Avenue S SD outfall is shown on Figures 2 and 4a. The approximate drainage area associated with the 8th Avenue S CSO outfall is shown on Figure 3.

Seattle Public Utilities (SPU) has collected storm drain solids samples from the storm drain structures associated with Outfalls 2112 and 2107. 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

7th Avenue S SD Outfall (Outfall 2112)

The 7th Avenue S SD outfall (also known as Outfall 2112) is located on the right-of-way at approximately RM 2.7 West. Based on data provided by SPU, the 7th Avenue S SD basin drains an area of approximately 230 acres. Additional information regarding the drainage basin is provided in the Riverside Drive Data Gaps Report (SAIC 2012).

Industrial and commercial facilities within the 7th Avenue S SD basin have been identified as follows:

- 76 facilities within the 7th Avenue S SD basin have been assigned Ecology Facility/Site ID numbers.
- 6 of these facilities are listed on the CSCSL.
- 8 of these facilities have active EPA ID numbers.
- 7 of the facilities hold NPDES permits.
- 2 of these facilities have KCIW discharge authorizations or permits.
- 15 of these facilities are listed on Ecology's UST/LUST lists.

These facilities are listed by category in Table 1. Additionally, an unknown number of undocumented industrial operations may take place within the 7th Avenue S SD basin. Undocumented industrial activities may be an ongoing source of contaminants to sediments adjacent to the Riverside Drive source control area.

Storm Drain Solids Sampling (2005 to 2011)

Between 2005 and 2011, SPU collected three sediment trap samples, 17 in-line solids samples, and 13 right-of-way catch basin samples in the 7th Avenue S SD basin. Two solids samples were collected from catch basins on private property. SPU also collected soil samples from three locations in the right-of-way adjacent to Marine Lumber Service. Sample locations are presented in Figure 7; chemical concentrations above storm drain screening values are presented in Tables 7a, 7b, and 7c. Chemicals with concentrations above the storm drain screening values in sediment traps, inline grabs, and catch basins are listed below:

Chemical	Sediment Trap	Inline Grab	Catch Basin
	>Storm Drain Screening Value	>Storm Drain Screening Value	>Storm Drain Screening Value
Metals			
Copper			●
Lead			●
Mercury			●
Zinc	●	●	●
Petroleum Hydrocarbons			
TPH-diesel			●
TPH-oil	●	●	●
PAHs			
2-Methylnaphthalene			●
Benzo(a)anthracene			●
Benzo(a)pyrene			●
Benzo(g,h,i)perylene	●	●	●
Benzofluoranthenes, total			●
Chrysene			●
Dibenzo(a,h)anthracene			●
Fluoranthene		●	●
Fluorene			●
Indeno(1,2,3-cd)pyrene			●
Phenanthrene			●
Pyrene			●
Total HPAH			●
Total LPAH			●
Phthalates			
BEHP	●	●	●
Butyl benzyl phthalate	●	●	●
Dimethylphthalate		●	●
Di-n-butylphthalate			●
Di-n-octylphthalate			●
PCBs			
Total PCBs	●	●	●
Other SVOCs			
Phenol			●
2-Methylphenol			●
4-Methylphenol			●
Benzoic acid	●		●
Benzyl alcohol	●		●
N-Nitrosodiphenylamine			●

HPAH - high molecular weight polycyclic aromatic hydrocarbon
LPAH - low molecular weight polycyclic aromatic hydrocarbon

As of December 2010, SPU planned to clean the 7th Avenue S SD system prior to building the South Park Pump Station and Water Quality Facility (PS/WQF). The South Park PS/WQF Project involves construction of a pump station to allow the storm drain system to function under all tidal and storm conditions up to the 25 year storm. In addition, a treatment system that is designed to treat approximately 80 percent of the average annual stormwater runoff will be installed at the downstream end of the 7th Avenue S SD basin (SPU 2010h; Schmoyer 2012). Construction was scheduled for 2011–2012 but has been delayed. Construction of the PS/WQF is temporarily on hold pending re-evaluation of stormwater treatment technologies.

King County Outfall 3037

Outfall 3037 is an active stormwater outfall located just north of S Southern Street in unincorporated King County (Figure 4c and 6c). Land uses within the drainage area include industrial, residential, and commercial properties. Outfall 3037 is operated by King County and regulated under King County's Phase I Municipal Stormwater Permit. Stormwater source tracing has not been conducted for Outfall 3037.

Potential for Future Releases to LDW Sediments

Sediment trap, in-line, and catch basin storm drain solids sampling has indicated that concentrations of sediment COCs exceeding storm drain screening values are present in the storm drain system discharging to the Riverside Drive source control area.

Concentrations of mercury, PCBs, SVOCs, PAHs, and phthalates exceed screening levels in both LDW sediment samples near Outfall 2112 (Figure 6b) and in storm drain solids samples collected from the 7th Avenue S SD system.

In 1998, PCB concentrations exceeded the SQS in a surface sediment sample collected approximately 150 feet downstream of Outfall 3037. In subsequent sediment samples, COCs were either not detected or detected below screening levels.

Source Control Actions

Ecology will continue to perform facility inspections to determine if undocumented industrial operations are occurring within the 7th Avenue S SD basin that may be an ongoing source of sediment recontamination. SPU plans to inspect high-risk businesses throughout the LDW storm drain basins every two years. High-risk businesses perform operations that present a high potential for sediment recontamination.

Information needed to assess the potential for sediment recontamination associated with the public storm drain outfalls was summarized in the Riverside Drive 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 Riverside Drive source control area:

- SPU and Ecology will continue source tracing to identify potential sources of the sediment COCs reported above screening levels in storm drain structures within the 7th Avenue S SD basin.

- King County will conduct source tracing to identify potential sources of sediment COCs reported above screening levels in LDW sediments adjacent to Outfall 3037.

3.1.2 King County Combined Sewer Overflows

The 8th Avenue S CSO discharges to the LDW within the Riverside Drive 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 2008). 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.

8th Avenue S CSO (Outfall 2107)

The 8th Avenue S CSO basin covers approximately 2,980 acres, spanning east-to-west from the LDW to West Marginal Way SW in the northern area of the basin and from the LDW to WA-509 in the southern area of the basin (Figure 3). Land uses within the CSO basin include residential, parks, industrial, and commercial properties.

From 1991 to 1996, combined wastewater and stormwater overflows were discharged through the 8th Avenue S CSO on average 2.3 times per year. The 8th Avenue S CSO did not discharge between 1997 and 2009, as presented in Table 5. The CSO discharged a total of 18 gallons during one event in October 2010 (King County 2011).

Historical and current industrial and commercial facilities within the 8th Avenue S CSO basin have been identified. A total of 310 facilities in the 8th Avenue S CSO basin have been assigned Ecology Facility/Site Identification (ID) numbers. Of these facilities (Table 8):

- 28 are listed on Ecology's Confirmed and Suspected Contaminated Sites List (CSCSL),
- 48 have active EPA ID numbers,
- 25 hold NPDES permits,
- 11 have KCIW discharge authorizations or permits,
- 68 are listed on Ecology's underground storage tank (UST)/leaking underground storage tank (LUST) lists.

Additional information about these facilities is provided in the Riverside Drive Data Gaps Report (SAIC 2012).

Combined Sewer Sampling (2005 to 2011)

SPU conducted sampling within the combined sewer system in the South Park area during 2007, 2009, 2010, and 2011. SPU collected three catch basin samples on private property (CB113, National Products and CB206, Independent Metals Plant 2) and six right-of-way catch basin samples. Samples were analyzed for metals, TPH, PAHs, phthalates, PCBs, and other organic

compounds (SPU 2010h; Schmoyer 2011). Sampling locations are presented in Figure 7, and chemical concentrations are presented in Table 7b. Chemicals with concentrations above the storm drain screening values in catch basins are listed below:

Chemical	Catch Basin >Storm Drain Screening Value
Metals	
Copper	●
Lead	●
Mercury	●
Zinc	●
Petroleum Hydrocarbons	
TPH-diesel	●
TPH-oil	●
PAHs	
2-Methylnaphthalene	●
Benzo(g,h,i)perylene	●
Chrysene	●
Fluoranthene	●
Phenanthrene	●
Benzyl alcohol	●
Hexachlorobenzene	●

Chemical	Catch Basin >Storm Drain Screening Value
Phthalates	
BEHP	●
Butyl benzyl phthalate	●
Diethylphthalate	●
Dimethylphthalate	●
Di-n-butylphthalate	●
PCBs	
Total PCBs	●
Other SVOCs	
4-Methylphenol	●
Benzoic acid	●
Benzyl alcohol	●

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 Riverside Drive 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 8th Avenue S CSO basin. Undocumented industrial activities may be an ongoing source of contaminants to sediments adjacent to the Riverside Drive source control area.

However, this CSO did not discharge at all between 1999 and 2007 (Table 5), and discharged a total of 18 gallons in 2010. Therefore, the potential for sediment recontamination associated with releases of COCs from the 8th Avenue S CSO is considered very low (King County 2011).

Source Control Actions

No data gaps were identified for the 8th Avenue S CSO in the Riverside Drive Data Gaps Report (SAIC 2012). Ecology, SPU, and/or KCIW will continue to perform facility inspections within the CSO basin as part of ongoing source control efforts. Source control actions that are identified as a result of these inspections, if any, will be listed in the Source Control Status Reports.

3.1.3 Private Outfalls

Outfall 2110 is owned and operated by Independent Metals Plant 2. The outfall is located approximately 50 feet south of RM 2.9 West (Figure 4b). Outfalls 2109 and 2111 are located on the Independent Metals Plant 2 property but are not permitted to discharge to the LDW.

Three outfalls of unknown or unresolved origin are also present in the Riverside Drive source control area. Outfall 2113 is located south of RM 2.6 West and Outfall 2106 and 2108 are located south of RM 2.8 West (Figure 4a).

Potential for Future Releases to LDW Sediments

Little information was available to determine whether Outfalls 2106, 2108, 2109, 2111, or 2113 are abandoned or active. Exceedances of sediment screening levels have been identified in LDW sediments near these outfalls. Active outfalls with undocumented drainage have the potential to transport contaminants present in stormwater (if any) to LDW sediments near the Riverside Drive source control area.

Source Control Actions

Information needed to assess the potential for sediment recontamination associated with the unknown/unresolved storm drain outfalls was summarized in the Riverside Drive Data Gaps Report (SAIC 2012). The following source control actions will be conducted to fill the identified data gaps and reduce the potential for recontamination of sediments near the Riverside Drive source control area:

- SPU will conduct an inspection during a storm event to determine if the three unresolved outfalls (Outfall 2106, 2108 and 2113) are operational or have been abandoned.
- If discharge from these outfalls is observed, SPU will conduct dye testing to determine if storm drain lines are connected to the unresolved outfalls and delineate the associated drainage areas.

Source control actions related to Independent Metals Plant 2 and Outfalls 2109, 2110, and 2111 are described in Section 3.2.5.

3.2 Adjacent Properties

Several facilities are located adjacent to the LDW in the Riverside Drive source control area; information about these facilities relevant to recontamination of LDW sediments was presented in the Riverside Drive Data Gaps Report (SAIC 2012). Riverside Drive facilities (Figure 4b and 4c) 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
Pacific Pile and Marine	582 S Riverside Drive	Stormwater; surface runoff/spills; bank erosion
640 S Riverside Drive	640 S Riverside Drive	Stormwater; soil and groundwater; bank erosion
Former Hurlen Construction	700 S Riverside Drive	Stormwater; bank erosion
Lukas Machine Inc	707 S Riverside Drive	Stormwater
Independent Metals Plant 2	816 S Kenyon Street	Stormwater; surface runoff/spills; groundwater discharge; bank erosion, air deposition
Former Long Painting – 10th Avenue Facility	8025 10th Avenue S	Stormwater; surface runoff/spills
American Civil Constructors Barge Removal Ramp	5th Avenue S and S Fontanelle Street	Bank erosion

These facilities are discussed in more detail in Sections 3.2.1 through 3.2.7 below. The following sections summarize historical operations, current operations, regulatory history, environmental investigations, the potential for sediment recontamination, and source control actions to be implemented for the facilities adjacent to the LDW.

3.2.1 Pacific Pile and Marine

Current Operations	Marine and heavy civil construction services such as pile driving, dredging, bridge construction, and foundation projects
Historical Operations	Unknown
Tax Parcel No.	7327906755
Address	582 S Riverside Drive
Facility/Site ID	56779778: DC Tooling Repair
Chemicals of Concern	None identified
Media Affected	None identified

Pacific Pile and Marine is adjacent to the LDW and operates on parcel 6755 (Figure 5a), owned by Brackish Properties LLC. The parcel is bordered by the LDW to the east, S Webster Street and S Riverside Drive to the west, and a residential property to the south.

Historical Operations

Ecology's Facility/Site database indicates DC Tooling Repair began operation at this property in 1967. DC Tooling Repair historical operations are unknown.

The property at 582 S Riverside Drive was previously owned by Hurlen Construction Company. Hurlen Construction Company sold the parcel to Brackish Properties LLC in September 2008 (Foster Pepper 2012). Additional information regarding historical operations conducted by Hurlen Construction Company on parcel 6755 was not available for review.

Current Operations

Pacific Pile and Marine specializes in marine and heavy civil construction services such as pile driving, dredging, bridge construction, and foundation projects (Jones 2011). Pacific Pile and Marine has operated at this location since 2008. In 2009, a SPU inspection determined stormwater at the facility discharges directly to the LDW. No catch basins were observed at the facility (SPU 2009n). There is one 2,400 square foot (sq ft) building on the 0.12-acre property. Two temporary office trailers are located on the northern portion of the property. One wharf extends from the northern portion of the property, and another wharf extends from the southern portion of the property. Barges and marine construction equipment are moored along the wharfs. The riverbank is lined with riprap and vegetation. Ecology blocks line the boundary between the pavement and riverbank.

Regulatory History

SPU conducted an initial inspection of Pacific Pile and Marine in December 2009. SPU instructed the facility to develop and implement spill response procedures, educate employees on best management practices (BMPs), implement proper washing practices, properly store and containerize materials, implement proper fueling operations, and properly perform maintenance of vehicles and equipment (SPU 2010h). In February 2010, a follow-up inspection by SPU determined that Pacific Pile and Marine achieved stormwater and spill management corrective actions and was in compliance (SPU 2010c).

EPA sent Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 104(e) Request for Information Letters to Hurlen Construction and American Civil Constructors in August 2007 (EPA 2007a,b) and to Pacific Pile and Marine in December 2010 (EPA 2010c). EPA sent supplemental information requests to American Civil Constructors in November 2009 (EPA 2009c) and to Hurlen Construction in September 2010 (EPA 2010b). Responses to the requests were not available for review at the time this report was prepared.

Potential for Sediment Recontamination

The potential for sediment recontamination associated with operations at Pacific Pile and Marine is summarized below.

- Stormwater and surface runoff from this property discharges directly to the LDW (SPU 2009n). Contaminants in stormwater/surface runoff, if any, could contaminate sediments via surface runoff.
- Pacific Pile and Marine performs barge loading and unloading operations, where spills to the dock area have the potential to enter the LDW. Spills from loading and unloading activities are a potential pathway for sediment recontamination.

Source Control Actions

Pacific Pile and Marine appears to maintain appropriate source control BMPs and has worked with Ecology and SPU to address the corrective actions identified during inspections in 2010. No source control actions were identified for the Pacific Pile and Marine facility.

3.2.2 640 S Riverside Drive

Current Operations	Planned construction of a new pump station and water quality facility
Historical Operations	Metal fabrication and water proofing service
Tax Parcel No.	7327905700,7327905710
Address	5700: 640 S Riverside Drive 5710: 636 S Riverside Drive
Facility/Site ID	22726
Chemicals of Concern	Arsenic, lead, PAHs, petroleum hydrocarbons, and VOCs
Media Affected	Soil and groundwater, bank erosion/leaching

Parcels 5700 and 5710 (Figure 5a) are being developed as the South Park PS/WQF, owned and operated by SPU. The property is bordered by the former Hurlen Construction facility to the north and south, S Riverside Drive to the west, and the LDW to the east. The combined parcels are referred to as the 640 S Riverside Drive property by Ecology and in this report.

Historical Operations

According to a Phase I Environmental Site Assessment (ESA), Rocket Research Corporation (a design and development firm), The Peyser Company and TNW Company, Inc. (manufacturing businesses), and Tnemec Coatings (a waterproofing service) occupied parcel 5700 from the 1960s to the early 1990s. No information was found that indicated whether any of these businesses used, stored, or handled hazardous materials during their operations. There is potential for Tnemec Coatings to have mixed or handled paint products in the mid- to late-1980s. Pro-Fab Inc., a metal fabrication business, occupied the property from the early 1990s until February 2009, when the property was acquired by SPU (Herrera 2007).

Parcel 5710 was a residential property from the early 1900s until it was acquired by SPU in 2009 (SPU 2009e).

Current Operations

SPU acquired parcels 5700 and 5710 via condemnation on February 24, 2009 (SPU 2009e). SPU planned to build the South Park PS/WQF on parcels 5700 and 5710 during 2011–2012; however, construction has been delayed. The South Park PS/WQF Project involves construction of a pump station to allow the storm drain system to function under all tidal and storm conditions up to the 25-year storm. Construction of the PS/WQF is temporarily on hold pending re-evaluation of stormwater treatment technologies. Removal of contaminated soil present at the property began in spring 2012 (Schmoyer 2012) and is ongoing.

Regulatory History

EPA sent a CERCLA Section 104(e) Request for Information Letter to Mark Hansen (historical owner of parcel 5710 and operator of Pro Fab, Inc.) in July 2008 (EPA 2008c). A response to the request was not available for review.

Prior to SPU's acquisition, Phase I and II assessments conducted at the 640 S Riverside Drive property found limited soil and groundwater contamination. COCs in soil include lead, cPAHs, tetrachloroethene (PCE), and trichloroethylene (TCE). COCs in groundwater include PCE, TCE, cis-1,2-dichloroethene, and vinyl chloride (SPU 2009f). SPU entered the Voluntary Cleanup Program (VCP) with Ecology on July 8, 2009, in preparation for construction of the South Park PS/WQF (SPU 2009g).

SPU submitted a cleanup action plan to Ecology on October 9, 2009. Ecology determined that, upon completion of the proposed cleanup, further remedial action would likely be necessary to clean up contamination at the property (Ecology 2009e).

Environmental Investigations and Cleanups

Several environmental investigations and cleanups have been performed at 640 S Riverside Drive and are summarized below. Additional information regarding these investigations and cleanups is available in the Riverside Drive Data Gaps Report (SAIC 2012).

- Phase I Environmental Site Assessment (2007) (Herrera 2007)
- Limited Phase II Site Investigation (2008) (Herrera 2008)
- Groundwater Investigation 7th Avenue S and S Riverside Drive (2008) (PGG 2008)
- Soil and Groundwater Characterization (2009) (PGG 2009a)
- Interim Action Plan South Park Pump Station & Water Quality Facility (2010) (PGG 2010)
- Cleanup Action Plan South Park Pump Station & Water Quality Facility (2009) (PGG 2009b)

A Phase I ESA was performed at the 640 S Riverside Drive facility in 2007. Potential COCs associated with the operations of previous property occupants and surrounding businesses include petroleum products, solvents, acidic and caustic materials, and metals (Herrera 2007). COCs in LDW sediments adjacent to surrounding properties include PCBs, PAHs, and heavy metals (Figure 6b)

Three soil borings were advanced near the property to determine if groundwater had been impacted by offsite and upgradient contaminant sources. Field observations of soil samples indicated no signs of contamination. Groundwater samples from each boring were analyzed for TPH, volatile organic compounds (VOCs), and metals. Diesel-range hydrocarbons, VOCs, and PAH constituents were detected in groundwater at concentrations below their respective cleanup levels, with the exception of vinyl chloride. Vinyl chloride was detected in one sample at a concentration of 40 µg/L, 200 times the MTCA Method A cleanup level (Herrera 2008).

In January 2008, groundwater samples were collected from 14 direct push borings and one existing City monitoring well. The groundwater samples were analyzed for VOCs. Groundwater from the existing monitoring well was also analyzed for dissolved arsenic. Four soil samples were collected and analyzed for VOCs, PAHs, petroleum hydrocarbons, and metals (PGG 2008).

Concentrations of PCE and 1,1,2,2-tetrachloroethane exceeding the MTCA Method A and MTCA Method B cleanup levels, respectively, were found in groundwater at one location (B-3) near the previous detection of vinyl chloride. Low concentrations measured in nearby samples indicate the contamination was localized (PGG 2008).

Dissolved arsenic and lead concentrations in groundwater exceeded the MTCA Method A cleanup levels at Stations ALN-493 and B-2, respectively. No other exceedances were reported. Lead, total cPAHs, and naphthalene exceeded MTCA Method A cleanup levels in one soil sample (PGG 2008). Concentrations of arsenic and PAHs exceeded the draft soil-to-sediment screening levels at Stations B-2A and B-8S, respectively. Lead concentrations in groundwater exceeded the draft groundwater-to-sediment screening level at Station B-2.

In April 2009, 23 soil samples and 7 groundwater samples were collected in the proposed footprints of the water quality facility, the pump station, the yard piping, and other areas of the yard. Soil samples were analyzed for VOCs, PAHs, TPH, total arsenic, and total lead. Groundwater grab samples were analyzed for VOCs, PAHs, TPH, and dissolved arsenic and lead (PGG 2009a).

PAH, lead, diesel- and heavy oil-range hydrocarbon, PCE, and TCE concentrations in soil exceeded MTCA Method A cleanup levels. PCE and associated breakdown products in groundwater appeared to be localized around two soil source areas. Dissolved lead was detected in one sample, but was below MTCA Method A cleanup levels. Dissolved arsenic concentrations were slightly above the background level of 8.0 µg/L. PAHs and TPH were not detected in groundwater. Concentrations of PAHs and lead in soil exceeded the draft soil-to-sediment screening levels (PGG 2009a). An overview of the facility and sample locations is presented in Figure 8.

Concentrations of metals and PAHs were detected in soil at concentrations that exceeded the MTCA Method A or B cleanup levels and draft soil-to-sediment screening levels. In groundwater, concentrations of metals exceeded MTCA Method A or B cleanup levels and draft groundwater-to-sediment screening levels. Concentrations of VOCs and petroleum hydrocarbons exceeded the MTCA Method A or B cleanup levels. These exceedances are summarized below.

COC	Soil	Groundwater
Metals		
Arsenic	♦	♦
Lead	●♦	●♦
PAHs		
Acenaphthene	●	
Acenaphthylene	●	
Benzo(a)anthracene	●♦	
Benzo(a)pyrene	●♦	
Benzo(b)fluoranthene	●♦	
Benzo(g,h,i)perylene	●	
Benzo(k)fluoranthene	●♦	
Chrysene	●	
Dibenzo(a,h)anthracene	●♦	
Fluoranthene	●	
Fluorene	●	
Indeno(1,2,3,-c,d)pyrene	●♦	
Naphthalene	●♦	
Phenanthrene	●	
Pyrene	●	

COC	Soil	Groundwater
VOCs		
1,1,2,2-Tetrachloroethane		♦
1,1,2-Trichloroethane		♦
Methylene Chloride	♦	
PCE	♦	♦
TCE	♦	♦
Petroleum Hydrocarbons		
Diesel-range	♦	♦
Heavy-oil range	♦	
Benzene		♦

- ● 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 soil or groundwater at a concentration that exceeds the MTCA Method A or B cleanup level

SPU submitted a Cleanup Action Plan to Ecology in October 2009 and an Interim Action Plan in September 2010 for excavation and removal of contaminated soils from PCE/TCE, cPAH, lead, diesel, and oil areas. Cleanup of contaminated soil present at the property began in spring 2012 (Schmoyer 2012) and is ongoing.

SPU is working closely with Ecology to ensure that appropriate cleanup levels are established with regard to soil and groundwater contamination at the property. Ecology has directed SPU to develop property-specific cleanup levels that will be protective of LDW sediments. Final cleanup levels[9] will not be established for the 640 S Riverside Drive property until cleanup levels specific to the LDW have been established (Ecology 2011a).

Potential for Sediment Recontamination

The potential for sediment recontamination associated with operations at 640 S Riverside Drive is summarized below:

[9] MTCA allows that an interim cleanup action may be designed and implemented before the final cleanup action is determined. This allows for timely resolution of obvious cleanup problems while work continues on establishing site-specific, protective cleanup levels for the ultimate, final cleanup action.

- SPU plans to construct the South Park PS/WQF at 640 S Riverside Drive. The facility will be paved and stormwater will be treated prior to being discharged to the LDW. Surface runoff will be collected and processed at the PS/WQF. Once operational, the potential for sediment recontamination via stormwater discharge at the South Park PS/WQF is considered low.
- Soil and groundwater contamination has been identified at the property. In soil, concentrations of arsenic, lead, PAHs, petroleum hydrocarbons, and VOCs have exceeded MTCA cleanup levels. In groundwater, concentrations of arsenic, lead, and VOCs have exceeded MTCA cleanup levels. SPU will excavate PCE/TCE-contaminated soil as part of the 2012 property cleanup. Groundwater monitoring will be conducted to confirm that soil removal action is effective in controlling the groundwater pathway (Schmoyer 2012). The potential for sediment recontamination via groundwater will be reduced following the remediation of the property.
- Due to the property's proximity to the LDW, contaminants in bank soils have the potential to enter the LDW through erosion or leaching. Currently, the potential for sediment recontamination via the bank erosion/leaching pathway is high. During remediation, lead and PAH contaminated soil located adjacent to the river will be removed to the extent practicable, and the material left in place will be covered with clean soil or pavement. The potential for sediment recontamination via bank erosion/leaching will be reduced following remediation of the property.

Source Control Actions

SPU will continue to manage soil and groundwater remediation at 640 S Riverside Drive. The potential for sediment recontamination will be reduced following remediation of the property and completion of the South Park PS/WQF; therefore, no source control actions have been identified for 640 S Riverside Drive.

3.2.3 Former Hurlen Construction Company

Current Operations	Storage of marine construction material and equipment
Historical Operations	Storage yard for marine equipment
Tax Parcel No.	7327905350, 7327905725
Address	5350: 700 S Riverside Drive 5725: 620 S Riverside Drive
Facility/Site ID	42127616
Chemicals of Concern	PCBs, PAHs, phthalates, and other SVOCs
Media Affected	Stormwater and surface runoff, bank erosion/leaching

The former Hurlen Construction Company (Hurlen Construction) property consists of parcels 5725 and 5350 and is located at approximately RM 2.7 W (Figure 5a). The 640 S Riverside Drive property is located between the parcels that compose the former Hurlen Construction property. Parcel 5350 is bordered on the northwest by 640 S Riverside Drive, on the south by

S Riverside Drive, and by the LDW on the east (Figure 4b). Parcel 5725 is bordered on the north by a residential property, on the south by 640 S Riverside Drive, S Riverside Drive on the west, and the LDW on the east.

Historical Operations

Hurlen Construction operated at 700 S Riverside Drive from the early 1970s until May 2002 (Herrera 2007). Hurlen Construction used the property as a boneyard for storage of surplus marine construction material and equipment and for repair of floating equipment (City of Seattle 1980). During the 1980s and 1990s, Hurlen Construction developed its waterway and shoreline property. In the mid-1980s, Hurlen Construction built pier and wharf extensions, a storage grid, and a marine lift over the LDW. In addition, the company installed riprap and conducted maintenance dredging offshore along the wharfs (USACE 1983).

In 2006, American Civil Constructors built a ramp of fill material for barge removal operations at an area near the intersection of 5th Avenue S and S Fontanelle (Pell 2008). The location of the barge removal ramp is presented in Figures 4a and 4b. Additional information regarding fill material and barge removal is provided in Section 3.2.7.

Current Operations

Hurlen Construction was acquired by American Civil Constructors in May 2002. American Civil Constructors continued marine construction operations. American Civil Constructors relocated to Tacoma in 2010. The company has used the property for storage since March 2010 (SPU 2010e; Schmoyer 2012).

Regulatory History

EPA sent a CERCLA Section 104(e) Request for Information Letter to Hurlen Construction and American Civil Constructors in August 2007 (EPA 2007a,b). Additionally, EPA sent a follow-up letter to American Civil Constructors in February 2008 after no response to the August letter was received (EPA 2008a). EPA sent requests for supplemental information to American Civil Constructors in November 2009 and to Hurlen Construction in September 2010 (EPA 2009c), EPA 2010b). All of these letters included requests for information for parcel 7327905760, one of the three residential properties that are located between Pacific Pile and Marine and the former Hurlen Construction property, which is currently owned by Mark Hansen (the historical owner of the 640 S Riverside Drive property). Responses to the requests were not available for review.

In January 2010, Ecology and SPU conducted a joint inspection at American Civil Constructors. American Civil Constructors notified inspectors that the company had been recently sold and was relocating to Tacoma (SPU 2010e). SPU instructed American Civil Constructors to develop a plan and implement a procedure to prevent spills and other accidental releases of materials that may contaminate drainage water, train employees on the spill plan, and implement housekeeping measures and BMPs to achieve source control. The corrective actions were to be implemented while they remained at the 700 S Riverside Drive facility (SPU 2010b).

Compliance was achieved when American Civil Constructors left the property in March 2010 (SPU 2010e).

Environmental Investigations and Cleanups

Two environmental investigations and cleanups have been performed at the property and are summarized below. Additional information regarding these investigations and cleanups is available in the Riverside Drive Data Gaps Report (SAIC 2012).

- Shoreline management (1980–1990) (Laucks 1980, 1984, 1986; USACE 1983; City of Seattle 1984; Ecology 1986b, 1990)
- UST closure (A-1 Pump Service 1993)

Hurlen Construction conducted sediment sampling between 1980 and 1990 for maintenance dredging and shoreline development. Concentrations of PAHs and PCBs in subsurface sediment samples exceeded LAET during sampling in 1984. Concentrations of PAHs in subsurface sediment samples exceeded LAET during sampling 1986 and 1990.

A 1,000-gallon diesel UST and a 675-gallon gasoline UST were decommissioned and removed in March 1993. Gasoline-range hydrocarbon concentrations were detected above MTCA Method A cleanup levels in soil samples collected from the sidewalls and bottom of the excavation. Groundwater was not encountered in the excavation. Approximately 60 cubic yards of soil were excavated and stockpiled for treatment. According to Ecology records, the excavation was backfilled with clean soil (A-1 Pump Service 1993).

Potential for Sediment Recontamination

The potential for sediment recontamination associated with operations at the Former Hurlen Construction is summarized below.

- The main areas of the former Hurlen Construction properties slope to the west, away from the LDW. There are no catch basins, storm drain systems, or private outfalls present on the properties (Foster Pepper 2012). Stormwater and surface runoff are conveyed to the city right-of-way and enter the 7th Avenue S SD system via sheet flow (SPU 2010e). Surface runoff from the dock area is conveyed to the LDW via direct discharge. The potential for contaminants in stormwater and surface runoff, if any, to be released to the LDW via stormwater discharge is considered low.
- Gasoline-range hydrocarbons and xylenes were detected at concentrations below MTCA Method A cleanup levels in soil samples collected during the excavation of USTs in 1993. Petroleum hydrocarbons are not LDW sediment COCs. While the presence of petroleum hydrocarbons in soil and groundwater may mobilize naturally occurring arsenic (Harter and Rollins 2008), arsenic is not a sediment COC for the Riverside Drive source control area. Therefore, the potential for sediment recontamination via the groundwater discharge pathway is low.
- Concentrations of PCBs and phthalates exceeded SQS in sediments adjacent to the former Hurlen Construction property. However, review of historical documents did not indicate the use of PCB-containing equipment or bulk use of phthalates at the property. A potential source of COCs includes piling and other in-water construction equipment and

materials that were not decontaminated properly prior to transport to the Hurlen Construction property.

- The shoreline at the property is a mix of exposed soil, riprap, piers, wharfs, and bulkhead. Contaminants in the exposed bank soils, if any, could be released directly to sediments via erosion or leaching and are a potential source of sediment recontamination.

Source Control Actions

No active operations at the former Hurlen Construction/American Civil Constructors property are currently conducted; though American Civil Constructors use the property for storage. During recent Ecology and SPU inspections, American Civil Constructors appeared to maintain appropriate source control BMPs and worked to address the corrective actions identified during previous inspections. No source control actions were identified for the former Hurlen Construction facility.

3.2.4 Lukas Machine Inc.

Current Operations	Milling, tuning, assembly, repairs, fabrications, and tooling operations
Historical Operations	Unknown
Tax Parcel No.	7327904100, 7327904135, 7327904190
Address	4100: None 4135: 707 S Riverside Drive 4190: 712 S Portland Street
Facility/Site ID	39232961: Lukas Machine Inc. 41888934: Hansen Machine Corp.
Chemicals of Concern	PCBs and 1,4-dichlorobenzene
Media Affected	None identified

Lukas Machine Inc. (Lukas Machine) operates on parcels 4100, 4135, and 4190 (Figure 5a). The facility is bordered by S Portland Street and Cain, Bolt & Gasket to the south, 7th Avenue S to the west, S Holden Street to the north, and the LDW to the east.

Historical Operations

Hansen Machine Corp. operated at parcel 4190 from at least 1982 until 1996 using 712 S Portland Street as its operating address. According to Ecology's Facility/Site Database, the facility was regulated as a hazardous waste generator from December 14, 1982, until December 31, 1996.

Current Operations

The Lukas Machine facility consists of buildings and paved areas with a small, vegetated area located between the manufacturing buildings. Lukas Machine performs milling, tuning,

assembly, repairs, fabrications, and tooling operations and provides short-run and full production runs of prototype and research and development parts.

Lukas Machine has operated under an Industrial Stormwater General Permit (ISGP) since October 2008. A sump pump, located in the southeastern corner of the property, pumps stormwater north to S Riverside Drive. There is one catch basin located on the northwestern corner of the property. The facility does not have a stormwater detention or treatment system. Stormwater from the facility discharges to the 7th Avenue S SD system (SPU 2008b).

Regulatory History

Ecology and SPU conducted a joint inspection of Lukas Machine on January 30, 2008. Inspectors identified corrective actions pertaining to industrial waste discharges, stormwater pollutant source control BMPs, and general hazardous product storage and disposal BMPs (SPU 2008f). SPU and Ecology determined Lukas Machine was in compliance during follow-up inspections in March and July 2008 (SPU 2008j,o).

Lukas Machine completed an ISGP annual report on April 4, 2011. The facility exceeded benchmarks for copper (3rd and 4th quarter) and zinc (3rd quarter) during 2010. In order to address these exceedances, Lukas Machine increased sweeping frequency and repaired a berm to prevent stormwater runoff originating at other properties from entering the facility (Lukas Machine 2011).

EPA sent CERCLA Section 104(e) Request for Information Letters to Lukas Machine, Inc. and Billie Macksene Lukas in October 2011 (EPA 2011a,b). Responses to the requests were not available for review at the time this report was prepared. Additional information about regulatory history is provided in the Riverside Drive Data Gaps Report (SAIC 2012).

Potential for Sediment Recontamination

The potential for sediment recontamination associated with operations at Lukas Machine is summarized below:

- Stormwater and surface runoff from Lukas Machine is pumped to the 7th Avenue S SD system. Lukas Machine completed corrective actions identified by SPU following a January 2008 source control inspection. Lukas Machine exceeded benchmarks for zinc in the 3rd quarter and copper in the 3rd and 4th quarter monitoring of 2010. The facility implemented BMPs and structural controls to address the exceedances. Potential for sediment recontamination via the stormwater pathway is low provided that the improvements and source control BMPs are maintained.

Source Control Actions

Lukas Machine appears to maintain appropriate source control BMPs and has worked with Ecology and SPU to address the corrective actions identified during inspections. No source control actions were identified for the Lukas Machine facility.

3.2.5 Independent Metals Plant 2

Current Operations	Scrap metal sorting and processing
Historical Operations	Workboats Northwest: Boat manufacturing Silver Bay Logging: Logging transport
Tax Parcel No.	7327902520, 7327903645
Address	2520: 7814 8th Avenue S (Silver Bay Logging, Former Workboats Northwest) 3645: 7760 8th Avenue S (Silver Bay Logging Inc.) Independent Metals Plant 2 operating address: 816 S Kenyon Street
Facility/Site ID	16139: Independent Metals Plant 2 861945: Silver Bay Logging 95749157: Former Workboats Northwest
Chemicals of Concern	PCBs, metals, PAHs, phthalates, other SVOCs, and petroleum hydrocarbons
Media Affected	Stormwater and surface runoff, soil and groundwater, bank/leaching erosion

Independent Metals Plant 2 operates on parcels 2520 and 3645 (Figure 5a). The facility is bordered by S Kenyon Street to the south, 8th Avenue S to the west, and the LDW to the east.

Historical Operations

Workboats Northwest

Workboats Northwest operated on parcel 2520 from 1976 to 1995 under the address 7814 8th Avenue S. Workboats Northwest produced a variety of industrial boats, including fishing boats, police and fire boats, oil-spill cleanup boats, and Coast Guard tenders (Seattle PI 2008). Fiberglass and paint were used during the manufacturing process. Workboats Northwest stopped operating at the facility after filing for bankruptcy in 1995.

Silver Bay Logging

Beginning in 1996, Silver Bay Logging operated at parcels 3645 and 2520 under the addresses 7760 8th Avenue S and 7814 8th Avenue S, respectively. It is assumed that the facility served as a base for Silver Bay Marine, the company's sea transport operation in Seattle. Processed logs were loaded onto barges in Alaska and offloaded in Seattle before being transferred to a lumber mill (Bridgestone 2011).

Current Operations

Independent Metals operates a scrap metal sorting and handling facility on parcels 3645 and 2520. Independent Metals began leasing the property at 816 S Kenyon Street from Silver Bay Logging in 2006. The facility began operating a new shredder in 2009 (Nisqually 2011).

Trucks carrying scrap metal enter through an access gate on 8th Avenue S and S Kenyon Street. These materials can include ferrous and non-ferrous metals, cars, trucks, heavy machinery shells, and metal construction debris (Nisqually 2011). The facility also accepts raw materials by barge. Scrap is unloaded, sorted, and then cut or sheared to a manageable size. Most of the heavy scrap

metal processing at the facility takes place outdoors (Ecology 2008a). Items received with incidental oils are cleaned and the recovered oils are sent to an oil recycler (Nisqually 2011). Once the scrap is broken down, it is transferred inside the warehouse to a scrap processor. Finished scrap metal is loaded onto trucks and exits the facility via the street access points. The property includes a paved process yard, dock for barge loading/unloading, parking areas, and three buildings, as well as an area occupied by heavy equipment temporarily stored by Silver Bay Logging (Figure 9) (Nisqually 2010).

Stormwater Discharges

According to a Stormwater Pollution Prevention Plan (SWPPP) prepared in February 2010, the southern portion of the property conveys stormwater to the combined sewer system via sheet flow. Catch basins on 8th Avenue S are connected to the combined sewer system (Ecology 2011g). A single catch basin drains the interior yard and eastern roof drains. Stormwater from the Silver Bay Logging storage area also drains to this catch basin. The catch basin is routed to an oil/water separator (installed in 2008), which is connected to a stormwater treatment system (installed in 2009). After stormwater is treated, it is discharged via Outfall 2010 to the LDW (Nisqually 2010).

SPU's outfall survey (Herrera 2004) identified three outfalls on the Independent Metals property (Outfalls 2109, 2110, and 2111). Independent Metals is not permitted to discharge via Outfall 2109 or 2111. Further investigation is needed to determine if Outfalls 2109 and 2111 are operational and the drainage area associated with these outfalls.

Regulatory History

SPU Storm Drain Sampling

In June 2009, SPU collected a sediment sample from the catch basin filter insert (CB206). Concentrations of PCBs, copper, lead, mercury, zinc, PAHs, phthalates, diesel- and heavy oil-range hydrocarbons, 4-methylphenol and benzoic acid exceeded storm drain screening values (SPU 2010h). Due to the high PCBs and mercury concentrations, Ecology required Independent Metals to include these two parameters in its stormwater discharge monitoring (Ecology 2009f). Independent Metals is also required to monitor TPH, zinc, copper, lead, pH, and turbidity under its NPDES permit.

In March and April 2011, SPU collected storm drain solids samples from a right-of-way catch basin (RCB229) located near Independent Metals and from onsite catch basin CB206. Concentrations of PCBs, copper, mercury, zinc, PAHs, phthalates, phenol, benzyl alcohol, n-nitrosophenylamine, and diesel- and heavy oil-range hydrocarbons exceeded storm drain screening values (Schmoyer 2011). Additional information regarding chemical concentrations for storm drain solids samples is presented in the Riverside Drive Data Gaps Report (SAIC 2012).

Stormwater Compliance Inspections

Independent Metals was issued coverage under NPDES Permit No. SO3009725 on August 15, 2007. Ecology conducted inspections at Independent Metals in December 2007, February 2008,

and November 2009. During the inspections, Ecology identified corrective actions pertaining to SWPPP modifications, track-out prevention, and source control and pollution prevention BMPs. Ecology issued a noncompliance warning letter to Independent Metals on December 23, 2009 (Ecology 2009g). Additional information regarding inspections between 2007 and 2009 is presented in the Riverside Drive Data Gaps Report (SAIC 2012).

Ecology conducted a follow-up stormwater compliance inspection on August 16, 2011. Independent Metals had been analyzing stormwater discharge samples for PCBs and mercury for almost two years, but samples had not been collected or analyzed using methods acceptable to Ecology. The following corrective actions were identified (Ecology 2011g):

- Revise and update the SWPPP to address the collection of industrial stormwater from dock areas, the prevention of flow into holes in pavement, and the vacuum sweeping of all paved surfaces.
- Include the hydraulic analysis calculations for the stormwater treatment system in the SWPPP.
- Implement measures to prevent track-out of dirt and debris to 8th Avenue S.
- Prevent the discharge of petroleum and/or contaminated stormwater into holes in the pavement.
- Monitor stormwater discharge for total PCBs and total mercury using sampling techniques and analytical methods with detection limits acceptable to Ecology.
- The facility must ensure that all industrial stormwater from the dock area at the former Silver Bay Logging is collected and routed into the storm drainage system.
- Stormwater flow patterns near the auto fluff (non-metallic vehicle residue from shredding) dumpster must be verified and included in the SWPPP.

On October 21, 2011, Ecology issued a warning letter to Independent Metals for failure to comply with corrective actions identified during the August 2011 inspection. Independent Metals was directed to submit an updated SWPPP to Ecology within 30 days (Ecology 2011g).

Discharge monitoring report (DMR) data indicate Independent Metals exceeded benchmarks for zinc during the fourth quarter of 2011. Copper, lead, petroleum hydrocarbons, and turbidity did not exceed benchmarks during the 2011 monitoring period (Ecology 2012a).

Baghouse Emissions Test

Independent Metals installed a new shredder at Plant 2 in 2009. Independent Metals did not obtain an air quality permit in a timely manner and was directed to limit the production of the shredder by PSCAA. In November and December 2010, Independent Metals conducted baghouse emissions sampling to support a notice of construction (NOC) application with PSCAA. Air quality samples were analyzed for filterable particulate matter, metals, hexavalent chromium, PCBs, and organic toxic air pollutants (TAPS). Concentrations of metals, PCBs, hexavalent chromium, benzene, and ethylbenzene were detected in the emission samples collected from the baghouse (AmTest 2011).

Chemicals Detected in Baghouse Emission Samples	COCs in Sediments Near RM 2.2-3.4 West[a]	COCs in LDW Sediments[b]
Metals		
Arsenic		●
Cadmium		●
Chromium		●
Copper		●
Lead		●
Mercury	●	●
Zinc		●
Hexavalent Chromium		
PCBs		
PCBs	●	●

a. Chemical exceeded lower screening level in surface sediment sample collected near the Riverside Drive source control area (SAIC 2012).
b. Chemical exceeded lower screening level in surface sediment sample collected in one or more LDW source control areas (SAIC and NewFields 2011).

According to PSCAA's website, the NOC was approved on June 16, 2011 (PSCAA 2011). Additional information regarding baghouse emissions at Independent Metals Plant 2 was not available for review.

CERCLA Section 104(e) Requests

EPA sent a CERCLA Section 104(e) Request for Information Letter to Silver Bay Logging in March 2008 (EPA 2008b) and Independent Metals in February 2010 (EPA 2010a). Additionally, EPA sent a follow-up letter to Silver Bay Logging in November 2009 after a response to the August letter was not received (EPA 2009b). Independent Metals responded to the information request on February 22, 2011 (Nisqually 2011). Relevant information from the 104(e) response has been incorporated into this SCAP.

Potential for Sediment Recontamination

The potential for sediment recontamination associated with operations at Independent Metals Plant 2 is summarized below:

- Paint, chemical, and petroleum products are sometimes mixed with recyclable materials and have the potential to leak to the ground in the process yard and co-mingle with stormwater. Elevated levels of PCBs and mercury were detected in onsite catch basin solids samples. Stormwater from Independent Metals is treated by an oil/water separator and sand filter treatment system before being discharged via Outfall 2010 to the LDW. Stormwater bypasses the oil/water separator during heavy rainfall events and has the potential for sediment recontamination. Independent Metals has implemented source control BMPs to mitigate the potential for waste fluids contained in recyclable materials to co-mingle with stormwater. Independent Metals plans to design a process area that would contain fluids released from recyclable materials. The potential for sediment recontamination via this

pathway is moderate to high depending on the effectiveness of other source control BMPs and frequency of untreated stormwater discharges to the LDW.

- Independent Metals receives scrap metal from barges on the LDW. Ecology has observed scrap metal periodically spilling over storage bins and onto the LDW bank. Independent Metals has moved the storage bins away from the LDW and has implemented a monitoring program to prevent spills to the LDW. The potential for sediment recontamination via the spills is currently low to moderate, provided that these BMPs are maintained. The potential for sediment recontamination via this pathway will decrease if the plans to design a process area, which will contain spills of fluids from recyclable material, are completed and implemented.
- In the past, heavy machinery operation has created holes in the pavement of the process yard. Contaminated stormwater and released/spilled fluids from recyclable materials had the potential to infiltrate groundwater through these holes, indicating the potential for soil and groundwater contamination at the property. Therefore, there is a potential for sediment recontamination via the soil and groundwater discharge pathway. No environmental investigations have been performed to assess the potential for soil and groundwater contamination.
- Metals and PCBs in baghouse emissions may represent a potential source of contaminants to LDW sediment via air deposition.
- Exposed soil is present along the banks adjacent to Independent Metals. In 2009, Ecology observed scrap metal periodically spilled over storage bins and onto the riverbank. Paint, chemical, or petroleum products contained in the scrap metal had the potential to leak into bank soils. An environmental investigation has not been performed to evaluate the potential presence of contamination in the bank soil. There is a potential for sediment recontamination via the bank erosion/leaching pathway.

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 Riverside Drive Data Gaps Report (SAIC 2012). The following source control actions will be conducted to fill the identified data gaps and reduce the potential for recontamination of sediments:

- Ecology will conduct a follow-up stormwater compliance inspection to verify compliance with the corrective actions identified repeatedly by Ecology during inspections performed from 2007 to 2011, applicable regulations, and BMPs to prevent the release of contaminants to the LDW. Evaluate compliance with the following corrective actions, and take enforcement action as appropriate:
    - The facility must implement measures to prevent track-out of dirt and debris to 8th Avenue S.
    - The facility must prevent the discharge of petroleum and/or contaminated stormwater into holes in the pavement.

- The facility must monitor stormwater discharge for total PCBs and total mercury using sampling techniques and analytical methods with detection limits acceptable to Ecology.
- The facility must ensure that all industrial stormwater from the dock area at the former Silver Bay Logging is collected and routed into the storm drainage system.
- The facility's SWPPP must explicitly address plans or current measures to contain fluids from spills or releases from recyclable materials.

- Ecology will review Independent Metals' revised SWPPP, when provided, and verify that the information identified in Ecology's October 21, 2011, corrective action letter is included in the SWPPP.
- Ecology will request drainage information from Independent Metals for Outfalls 2109 and 2111 to determine if the outfalls are operational and the drainage areas associated with the outfalls, if any.

3.2.6 Former Long Painting – 10th Avenue S Facility

Current Operations	Electrical and design services (Unity Electric) Aluminum foundry, powder coating, acid etching, and dye casting operations (National Products) Intermodal transport services (Seattle Freight)
Historical Operations	Painting, sandblasting, and vehicle and equipment maintenance
Tax Parcel No.	2185000590, 2185000610, 3224049002, 3224049003, 3224049004, 3224049037, 7327900915, 7327901045, 7327901055, 7327901065, 7327901095, 7327901215, 7327906900, 7327906930, 7327907020
Address	6930: 8025 10th Avenue S 1065: 1015 S Elmgrove Street 1095: 1025 S Elmgrove Street 1215: 1024 S Elmgrove Street 0590, 0610, 0915, 1045, 1055, 9003, 9004, 9037: Private Residence 6900, 7020, 9002: None
Facility/Site ID	16838: National Products S Elmgrove 29633897: Shawnee Painting and Sandblasting 71678662: Former Long Painting
Chemicals of Concern	None identified
Media Affected	None identified

The former Long Painting facility includes four parcels that are adjacent to the LDW and ten upland parcels.

Parcel 1215, (Figure 5b) is located adjacent to the LDW. Parcels 9002, 9004, and 9037 are former Long Painting parcels that are now residential properties located adjacent to the LDW. The LDW borders the parcels to the northeast. The parcels are bordered by a residential property on the east, S Elmgrove Street to the south, and a public park to the west and north.

Parcels 1045, 1055, 1065, and 1095 (Figure 5b) are located on the south side of S Elmgrove Street, across from parcel 1215. Residential properties are located to the south of these parcels. Parcels 1045 and 1055 are bordered by 10th Avenue S to the west and by parcel 1065 to the east. Parcel 1065 is bordered by parcel 1095 to the east. Residential properties are present to the east of parcel 1095. These four parcels are collectively referred to as the Long Painting Southeast Parcels in this report.

Parcels 0915, 6900, 6930, and 7020 (Figure 5b) are located on the western side of 10th Avenue S, upland of the LDW. Parcel 6930 is bordered by 10th Avenue S to the east, residential properties to the south, 8th Avenue S to the west, and Sound Propeller Systems and Smith Berger Marine to the north. Parcel 6900 is located adjacent to the northwest corner of parcel 6930 and parcel 7020 is located adjacent to the southwest corner of parcel 6930.

Historical Operations

Long Painting operated from 1970 to 2002 (Ecology 2002). Painting, sandblasting, and vehicle and equipment maintenance were performed at the facility (KCIW 1996). Prior to development by Long Painting, the property was primarily used for agriculture. Residences in the footprint of the facility were acquired by the company for its employees. Several of the residences were demolished as the Long Painting facility expanded. Heating oil USTs may be associated with the former residential buildings (AGRA 1997). Long Painting has indicated that heating oil USTs were removed from residential units that were converted to commercial uses, such as the former main office and from one residential unit that is now privately owned (Kleinfelder 2000b).

The Long Painting facility consisted of commercial paint application buildings, automotive maintenance and repair facilities, office buildings, and residential buildings. Numerous paint booths were operated at the facility and included indoor and outdoor booths. Sandblasting, painting, zinc metalizing, waste storage, and vehicle maintenance occurred at the facility.

Long Painting was a large quantity generator (LQG) of RCRA-regulated materials including paints, resins, acids, flammable solvents, spent solvents, solvent contaminated water, and ignitable, expired chemicals. Liquid and solid hazardous wastes were stored in drums on the property. Liquid wastes were generally recycled, while solid wastes were generally disposed of off property. Parcel 1215 was developed as a holding facility with containment for hazardous materials and a recycling still. Paints and solvents were stored in this area. The recycling still was used to recover solvents from paint/solvent waste (AGRA 1997).

On March 4, 1996, a spill of diesel fuel occurred at the portion of the facility that was adjacent to the LDW. A 250-gallon fuel tank fell from a forklift. Less than 150 gallons of fuel leaked from the damaged tank into soil and the LDW (Ecology 1996a). An Ecology letter dated August 1996 indicates that the fuel spill was cleaned up and that Long Painting was preparing a final cleanup report (Ecology 1996b). Approximately 21,000 pounds of contaminated soil associated with the spill was excavated and removed from the property (AGRA 1997; Kleinfelder 2000a).

Current Operations

Unity Electric

Unity Electric operates on parcel 1215. The company is an electrical and design services contractor (Unity Electric 2011). Unity Electric began operating at parcel 1215 after 2003 (when Long Painting relocated to Kent, Washington); however, the start date of its operations at this facility is unknown. No additional information regarding Unity Electric's current operations was available for review.

National Products

National Products operates on parcels 1065 and 1095. The company uses 1017 S Elmgrove Street as its operating address. Based on King County tax assessor records, the owner of National Products purchased parcel 1065 in 1990 and parcel 1095 in 2003. A single family home was present on parcel 1065 until 2001, when construction of the current warehouse and office building began. Parcel 1095 was purchased from Long Painting.

National Products operates an aluminum foundry. Powder coating, acid etching, and die-casting operations are performed at the facility. Two storm drain catch basins and a stormwater detention system are present on the National Products facility. Floor drains are present in the buildings, but have been blocked (SPU 2008c, 2010i).

Seattle Freight

Seattle Freight operates on the eastern half of parcel 6930. The company provides intermodal transport services to railroads and ports in the Pacific Northwest (Seattle Freight 2011). A King County METRO bus yard operates on the western half of parcel 6930.

Stormwater from the facilities located on these parcels is discharged to the combined sewer system.

Regulatory History

Long Painting

Between 1994 and 2002, Long Painting was inspected six times by agencies including Ecology, EPA, KCIW, and City of Seattle. Issues identified during the inspections include improper hazardous waste management, failure to obtain proper permits, and improper personal training.

In August 1999, Ecology notified Long Painting that the property had been added to the CSCSL due to TCE, PCE, and diesel-range hydrocarbon contamination at the facility (Ecology 1999). Long Painting applied for the VCP in March 2000 (Kleinfelder 2000a). In 2002 and 2003, Long Painting conducted UST and contaminated soil excavations. In February 2003, Ecology determined that no further actions were necessary with regard to TCE, PCE, and diesel-range hydrocarbon contamination at the facility, and removed Long Painting from the CSCSL (Ecology 2003). Additional information regarding regulatory history at Long Painting is provided in the Riverside Drive Data Gaps Report (SAIC 2012).

National Products

In October 2007, a citizen reported to SPU the presence of aluminum shavings near the storm drain catch basins on S Elmgrove Street, near the National Products facility (Lord 2007). In response, SPU performed an inspection of the facility on December 5, 2007. National Products was discharging a waste fluid from its machinery to catch basins on the property. The SPU inspector collected a sample of a water and aluminum mixture in the stormwater detention tank (CB113). As a result of the inspection, SPU instructed the facility to properly label and dispose of waste containers, improve spill response procedures, cease disposal of waste to catch basins on the facility, and clean the stormwater detention system (SPU 2007c, 2008c).

Analytical results from the water/aluminum sample indicated high concentrations of aluminum (25,100 mg/kg) and concentrations of copper (285 mg/kg), lead (40 mg/kg), and zinc (392 mg/kg) (Robinson 2008). Concentrations of phenanthrene, BEHP, and diesel- and heavy oil-range hydrocarbons exceeded storm drain screening values (Table 7b). National Products cleaned the stormwater detention system and installed a filter and holding tank to prevent metal shavings from entering the storm drain system (Wilkinson 2007). SPU re-inspected the facility on February 5, 2008. SPU determined that National Products had achieved compliance with the corrective actions (SPU 2008c,d).

SPU performed a re-inspection of the National Products facility on December 8, 2010. No corrective actions were identified during the inspection (SPU 2010i,j).

CERCLA Section 104(e) Requests

EPA sent a CERCLA Section 104(e) Request for Information letter to Elm Grove LLC, the current owner of parcels 1215 and 9002, in April 2009 (EPA 2009a). A response to the request was not available for review. Unity Electric currently operates at parcel 1215.

Environmental Investigations and Cleanups

Several environmental investigations and cleanups have been performed at the facility. Information from investigations and cleanups is summarized below. Additional information regarding these investigations and cleanups is available in the Riverside Drive Data Gaps Report (SAIC 2012).

- Phase I Environmental Site Assessment (1997) (AGRA 1997)
- Limited Phase II Environmental Site Assessment (1997) (AGRA 1997)
- UST Excavation Assessment (1998) (AGRA 1998)
- Site Investigation Report (2000) (Kleinfelder 2000c)
- Evaluation of Surface Soil Samples Collected on Residential and Park Properties near Long Painting Company (2001) (Department of Health 2001)
- Cleanup Action Report (2002) (Kleinfelder 2002)
- Compliance Sampling Results – 10,000-gallon Diesel & Gasoline UST Removals (2003) (RETEC 2003a)
- Geoprobe Groundwater Sampling Results – Former Fuel USTs Area (2003) (RETEC 2003b)

Two 10,000-gallon USTs were removed from the facility (parcel 1215) in October 1998. In November 1998, two new 10,000-gallon USTs were installed in the same location and used to store gasoline and diesel fuel (RETEC 2003a). In September 2002, a 350-gallon paint thinner UST and 550-gallon heating oil UST were removed from the upland property (parcel 6930). A 1,000-gallon gasoline UST was abandoned in place because underground utilities blocked access to the UST (Kleinfelder 2002). Soil samples were collected from each UST removal or abandonment and analyzed for petroleum hydrocarbons. No analytes were detected.

In September 2002, a concrete sump and 12 tons of TCE-contaminated soil was removed from parcel 6930. A second sump and 17 tons of PCE-contaminated soil was removed from parcel 1215 (Kleinfelder 2002).

In June 2003, the 10,000-gallon gasoline and diesel USTs on parcel 1215 (installed in November 1998) were removed from the property. Gasoline-range hydrocarbons, benzene, methyl tertiary butyl ether (MTBE), and lead concentrations exceeded MTCA cleanup levels (RETEC 2003a).

Approximately 100 soil samples and 18 groundwater samples were collected at the Long Painting facility between 1997 and 2003. The samples were collected as part of site assessments, soil and groundwater investigations, and cleanup actions.

Concentrations of arsenic, methylene chloride, PCE, and TCE 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 cleanup level. These exceedances are summarized below.

COC	Soil	Groundwater
Metals		
Arsenic	♦	♦
Lead	♦	♦●
Chromium		♦
VOCs		
Methylene Chloride	♦	
PCE	♦	
TCE	♦	
Petroleum Hydrocarbons		
Gasoline-range		♦
Benzene		♦

- ● 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 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 Long Painting is summarized below:

- Stormwater from the facilities/parcels associated with the former Long Painting facility is discharged to the combined sewer system. However, given that Unity Electric (parcel 1215) is adjacent to the LDW, there is potential for surface runoff to be conveyed to the LDW. Contaminants in surface runoff, if any, may have the potential to be released to the LDW.
- Unity Electric (parcel 1215) is adjacent to the LDW. If near-water activities are performed at the facility, there is potential that spilled materials may be conveyed to the LDW. Contaminants in spilled materials, if any, may have the potential to recontaminate sediments near the Riverside Drive source control area. The remaining parcels associated with the former Long Painting facility are upland of the LDW; therefore, the spills pathway is incomplete.
- Concentrations of arsenic, lead, and VOCs have been identified in soil and groundwater at parcel 1215. Arsenic concentrations in soil and groundwater are below the draft soil-to-sediment and groundwater-to-sediment screening levels (SAIC 2006). Lead concentrations in groundwater exceeded the draft groundwater-to-sediment screening level (SAIC 2006). Although arsenic and lead are COCs for LDW sediments, these metals were not identified as COCs for the sediments adjacent to the Riverside Drive source control area. 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 Riverside Drive Data Gaps Report (SAIC 2012). The following source control actions will be conducted to fill the identified data gaps and reduce the potential for recontamination of sediments:

- King County will perform a facility inspection at Unity Electric to verify compliance with applicable regulations and BMPs to prevent the release of contaminants to the LDW.

3.2.7 American Civil Constructors Barge Removal Ramp

In 2006, American Civil Constructors built a ramp of fill material along the LDW shoreline near the intersection of 5th Avenue S and S Fontanelle Street (Figures 4a and 4b). Source control information regarding the barge removal ramp was originally included in the Riverside Drive Data Gaps Report (SAIC 2012) section discussing the former Hurlen Construction/American Civil Constructors facility. New information provided after the publication of the Riverside Drive Data Gaps Report indicates the removal operations were conducted along the shoreline at

RM 2.5 West[10], not at the former Hurlen Construction/American Civil Constructors facility as previously described (Foster Pepper 2012; Pell 2008).

Additional information regarding current and historical operations of the Hurlen Construction Company and American Civil Constructors is provided in Section 3.2.3.

Potential for Sediment Recontamination

In April 2008, the United States Army Corps of Engineers (USACE) inspected the ramp and determined the fill material was stable and no erosion was observed. The composition of the fill materials was not described in the available information. In photographs of the ramp (Pell 2008), the fill materials appear to consist primarily of soil mixed with rocks, pieces of wood and vegetation, and possibly pieces of metal and rebar. Contaminants in the fill material, if any, may be transported to LDW sediments.

Source Control Actions

Information needed to assess the potential for sediment recontamination associated with the American Civil Constructors barge removal ramp was summarized in the Riverside Drive Data Gaps Report (SAIC 2012). The following source control action will be conducted to fill the identified data gaps and reduce the potential for recontamination of sediments:

- USEPA and USACE will request American Civil Constructors to provide information about the fill used for a barge removal ramp to determine if the fill is a potential source of contaminants to adjacent sediments.

3.3 Upland Properties in the 7th Avenue S SD Basin

The following industrial and commercial facilities within 7th Avenue S SD basin were identified:

- 76 facilities within the 7th Avenue S SD basin have been assigned Ecology Facility/Site ID numbers.
- 6 of these facilities are listed on the CSCSL.
- 8 of these facilities have active EPA ID numbers.
- 7 of the facilities hold NPDES permits.
- 2 of these facilities have KCIW discharge authorizations or permits.
- 15 of these facilities are listed on Ecology's UST/LUST lists.

Relevant information about these facilities was summarized in the Riverside Drive Data Gaps Report (SAIC 2012).

[10] The location of the ramp is adjacent to properties in the EAA-2 source control area; however, information for the American Civil Constructors barge removal operations was not included in the EAA-2 Data Gaps or SCAP Reports (SAIC 2007; Ecology 2007b) because the existence of the barge removal ramp was not known at the time of the EAA-2 Data Gaps investigation.

No facility-specific data gaps were identified for the facilities listed below. These facilities have been inspected by Ecology or SPU within the past four years (2008 or later). Ecology and SPU inspectors identified corrective actions for the facilities and verified that the facilities complied with the corrective actions during a re-inspection. For some of these facilities, no corrective actions related to source control were identified during the inspection. The following facilities are in compliance and no source control actions have been identified.

Facility or Property Name	Address	Facility/ Site ID	King County Tax Parcel
African Northwest, Inc.	470 S Kenyon Street	72668839	7328401005 7328401010 7328401020 7328401030
Cain Bolt & Gasket	7724 7th Avenue S	7503	7327904170
Cloverdale Business Park	309 S Cloverdale Street	4328 7170 6253396 12724197 28226866 38246778 78879968	3224049012
Coach Maintenance	255 S Holden Street	4612472	7327904510
Consistent Coatings, Inc.	719 S Riverside Drive	9604	7327904110
Custom Crating	233 S Holden Street	82818857	7327904570
Graham Trucking	7222 S Chicago Street	62275925 73412486	7327902670 7327902700 7327903375 7327903380
Hudson Bay Insulation	8230 5th Avenue S	76764554	7883600005
Ness Cranes, Inc.	500 S Sullivan Street	4203517 38576231	7883600600
Portable Storage of America	7510 5th Avenue S	7936495	7327905855
Rasmussen Equipment Company	8727 5th Avenue S	81158515 22497475	3224049014 3224049061
Seattle Heat Treaters[1]	521 S Holden Street	6407	7327904315
Tierney Electrical Manufacturing Company	7901 7th Avenue S	12333317	7327901825
Tours Northwest	8221 7th Avenue S	9457	7883600054

All Facility/Site ID numbers associated with a facility/property are listed in the table.

[1] A data gap was identified for this facility in the Riverside Drive Data Gaps Report related to cooling water discharges at the facility. An inspection report dated February 19, 2009 (SPU 2009a) indicated that the facility generates 5 gallons of waste cooling water every 10 years and that the facility was in compliance with the City of Seattle's Stormwater, Grading, and Drainage Code (Seattle Municipal Code 22.800).

The upland properties listed below were identified as potential sediment recontamination sources. Additional information regarding source control actions for these upland properties is provided in Sections 3.3.1 through 3.3.10.

Facility	Address	Potential Contaminant Pathways
Machinists Inc. – Main Facility	7600 5th Avenue S	Stormwater
Fire King of Seattle, Inc.	240 S Holden Street	Stormwater; groundwater discharge/infiltration
The Gear Works	500 S Portland Street	Stormwater; groundwater discharge/infiltration
West Coast Wire Rope & Rigging	7777 7th Avenue S	Stormwater
Fabrication Specialties Ltd Art	527 S Portland Street	Stormwater; groundwater discharge/infiltration
Olympic Steel Door	7800 7th Avenue S	Stormwater; groundwater discharge/infiltration
Marine Lumber Service Inc.	525 S Chicago Street	Stormwater; groundwater discharge/infiltration
Rogers Machinery Co Inc.	7800 5th Avenue S	Stormwater
Former Glitsa American	327 S Kenyon Street	Stormwater; groundwater discharge/infiltration
Coast Crane Company	8250 5th Avenue S	Groundwater discharge/infiltration
Fibres International, Inc.	9208 4th Avenue S	Stormwater

Source control actions were identified for 23 additional upland properties. Information regarding these actions is provided in Section 3.3.11.

3.3.1 Machinists Inc – Main Facility

Current Operations	Welding, machining, and engineering applications
Historical Operations	Unknown
Tax Parcel No.	7327905070, 7327905170
Address	5070: 540 S Holden Street 5170: 7600 5th Avenue S
Facility/Site ID	22736 (Machinists Inc. 5th Ave) 72567932 (Machinists Inc Plant 2)
Chemicals of Concern	Metals
Media Affected	Stormwater

Machinists Inc. operates at parcels 5070 and 5170 (Figure 5a). The facility is bordered by S Holden Street to the south, Industrial Tire Services to the east, S Austin Street to the north, and 5th Avenue S to the west.

Historical Operations

Information regarding historical operations at the property was not available for review.

Current Operations

Machinists Inc. has been in operation for more than 50 years and specializes in welding, machining, and engineering applications serving the aerospace, energy, marine, research lab, and transportation industries (Machinists Inc. 2011).

Stormwater enters storm drains on the city right-of-way from several locations and is conveyed to the LDW through the 7th Avenue S SD system (Ecology 2008c).

Regulatory History

On May 6, 2008, Ecology conducted a stormwater compliance inspection at Machinists Inc. Inspectors determined that the facility is required to have coverage under the ISGP due to its listing as a machine shop, because industrial activity at the facility is exposed to stormwater, and because the facility discharges stormwater to surface waters. Inspectors made the following observations during the inspection (Ecology 2008c):

- Metal chips and fines were present on the ground near the scrap metal bin.
- Liquid products and wastes were stored outside without adequate cover and containment.
- Pressure washing generated wastewater that could not be discharged to storm drains or surface waters.
- Cutting oils used inside the main machine shop were tracked out onto outside paved areas.
- Oily residue at the northeast corner of the facility migrated beyond the fence toward the LDW.
- The strip drain along the eastern edge of the facility was clogged with dirty oily sediment.
- Facility representatives were not sure where a strip drain terminates.

On May 19, 2008, Ecology sent a Noncompliance Notification for discharging stormwater from an industrial activity without proper coverage under the ISGP (Ecology 2008d).

Industrial stormwater testing was performed during the fourth quarter of 2008. High levels of zinc (180–1,460 µg/L) and oil and grease (16 milligrams per liter [mg/L]) were detected at two monitoring points. Locations of the monitoring points were not provided in the report. The cutting shed and the drip tray of the shavings bin were identified as two potential sources for zinc. The nearby parking lot and shaving bin were identified as sources of oil and grease. Construction of a roof over a large portion of the area between buildings was recommended to increase the protected storage area for the shavings bin (Nisqually 2009).

According to the PARIS database, Ecology issued coverage under the ISGP to Machinists Inc. in October 2009.

Machinists Inc. submitted an ISGP Annual Report to Ecology on May 12, 2011. Discharges from the facility exceeded benchmarks for copper and zinc during all four quarters of sampling conducted in 2010 and exceeded the turbidity benchmark during the third and fourth quarter of 2010. Machinists Inc. increased sweeping frequency and repaired a crack in the asphalt at an upstream location of the sampling point (Ecology 2011c). The facility discharges exceeded benchmarks for copper, zinc, and turbidity (1st and 2nd quarter) during 2011 (Ecology 2012b).

The facility planned to install a treatment system in September 2011 (Ecology 2011c).

Potential for Sediment Recontamination

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

- Machinists Inc. has implemented corrective actions to reduce concentrations of copper and zinc in its stormwater discharge and planned to install a stormwater treatment system at the facility in September 2011. Copper and zinc have not been identified as sediment COCs for the Riverside Drive source control area.

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 Riverside Drive Data Gaps Report (SAIC 2012). The following source control action will be conducted to fill the identified data gaps and reduce the potential for recontamination of sediments:

- Ecology will evaluate the stormwater treatment system, when completed, to ensure compliance with applicable regulations and BMPs to prevent the release of contaminants to the LDW.

3.3.2 Fire King of Seattle, Inc.

Current Operations	Fire equipment manufacturer
Historical Operations	Private residence; metal fabrication and pipe fitting
Tax Parcel No.	7327904985, 7327905005
Address	4985: 244 S Holden Street 5005: 240 S Holden Street
Facility/Site ID	68488062
Chemicals of Concern	PCBs
Media Affected	Soil and groundwater

Fire King of Seattle, Inc. (Fire King) operates at parcels 4985 and 5005 (Figure 5a), which are bordered by S Holden Street to the south, Global Fabricators to the east, Modern Coach Modern Pattern and the former Guinns Automotive & Electric to the north, and a forging and tooling company to the west.

Historical Operations

A single-family residence occupied parcel 5005 from approximately 1898 to 1963. A dirt floor garage was used by the property owner for automotive maintenance of personal vehicles. Heavy oil contamination was identified in soils inside the garage during a 1995 Phase II ESA. The garage was demolished in July 1985 in preparation for remedial excavation (Columbia Environmental 1995). Historical records indicate that a metal fabrication and pipe fitting shop

operated at the property (Bison Environmental 1995). It is assumed that this operation happened after residential use and before operations by Fire King.

Current Operations

Fire King operates at 240 S Holden Street and has a warehouse at the adjacent property at 244 S Holden Street. Fire King is an industrial gas and fire equipment company. There is a carbon dioxide aboveground storage tank (AST) on the northern boundary of 240 S Holden Street (parcel 5005). The warehouse building at 244 S Holden Street (parcel 4985) is used for cylinder storage.

Scrap metal from the facility is sent to a metal recycler. A shot-blast machine preps compressed gas cylinders to be painted with water-based paint. Powder from the used fire extinguishers is put into a plastic bag and disposed of as solid waste. Employees sweep the yard monthly. Water from hydrostatic pressure testing is conveyed to the sanitary sewer drain. There are two catch basins at the facility, which are located on the central southern boundary of each parcel (SPU 2007a).

Regulatory History

SPU performed an initial inspection of the facility on November 20, 2007, and a follow-up inspection on January 8, 2008. SPU identified a corrective action to clean the catch basin located near the office entrance at 240 S Holden Street (parcel 5005) (SPU 2007b). SPU determined Fire King was in compliance during the follow-up inspection in March 2008 (SPU 2008a).

Environmental Investigations and Cleanups

Two environmental investigations and cleanups have been performed at the facility and are summarized below. Additional information regarding investigation and cleanup activities is available in the Riverside Drive Data Gaps Report (SAIC 2012).

- Phase II Environmental Site Assessment (1995) (Bison 1995)
- Independent Remedial Action Report (1995) (Columbia Environmental 1995)

Five hand auger borings were advanced on the property. All samples were analyzed for heavy-oil range hydrocarbons, and the samples from the fill area were also analyzed for metals. Arsenic, cadmium, and chromium concentrations exceeded MTCA Method A cleanup levels (Bison Environmental 1995).

Remedial excavation of the property was conducted in July 1995. Approximately 223 cubic feet of petroleum-contaminated soil was excavated and removed from the property. One sample was collected from the bottom of the excavation and each sidewall. Samples were analyzed for heavy oil-range hydrocarbons and PCBs. Heavy-oil range hydrocarbons, methylene chloride, and PCBs were detected above MTCA Method A cleanup levels (Columbia Environmental 1995). PCB concentrations exceeded the draft soil-to-sediment screening level (SAIC 2006). Sampling locations are presented in Figure 10; exceedances are summarized below.

COC	Soil	Groundwater
Metals		
Arsenic	♦	
Cadmium	♦	
Chromium	♦	
PCBs		
Total PCBs	●♦	
VOCs		
Methylene Chloride	♦	
Petroleum Hydrocarbons		
Heavy-oil range hydrocarbons	♦	

- ● 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 soil or groundwater at a concentration that exceeds the MTCA

Potential for Sediment Recontamination

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

- Fire King completed the corrective actions required by SPU in 2008 (SPU 2008a). Potential for sediment recontamination due to current facility operations is low provided that the improvements and source control BMPs are maintained.
- Concentrations of PCBs in soil exceeding the draft soil-to-sediment screening levels were identified at the property. Groundwater beneath this property has not been tested for PCBs. Concentrations of arsenic, cadmium, and chromium in soil exceeded MTCA Method A cleanup levels; however, the contaminated soil may have been removed through remedial excavation. These metals have not been identified as sediment COCs for the Riverside Drive source control area. The facility is approximately 800 feet southwest of the LDW. The potential for sediment recontamination via the groundwater discharge pathway is unknown, but is likely to be low due to the distance between the facility and the LDW.
- There is potential that the groundwater beneath this property may be contaminated by PCBs. Contaminants in groundwater, if any, may infiltrate the storm drain system and be conveyed to LDW sediments via the 7th Avenue S SD outfall (Outfall 2112). PCB concentrations exceeded the SQS in sediment sample LDW-SS530, which was collected near the 7th Avenue S SD outfall 2112 in December 2009. PCB concentrations in MH20, which is downstream from the property, exceeded the LAET storm drain screening value but did not exceed the 2LAET storm drain screening value. The potential for sediment recontamination via this pathway is low.

Source Control Actions

The potential for sediment recontamination associated with current or historical operations at this facility is low. It has not been determined if PCBs are present in groundwater beneath the property. However, due to the distance of the property from the LDW and the observed PCB concentrations in storm drain structures downstream from the property, no source control actions have been identified for Fire King.

3.3.3 The Gear Works

Current Operations	Gear manufacturing
Historical Operations	Unknown
Tax Parcel No.	7327903180, 7327903210, 7327904230
Address	3180 & 3210: 500 S Chicago Street 4230: 500 S Portland Street Mill Engineering & Supply Co.: 516 S Chicago Street
Facility/Site ID	26215242: Rockwell Automation 78952325: Mill Engineering & Supply Co. 93436287: Gear Works Seattle, Inc.
Chemicals of Concern	PAHs and PCBs
Media Affected	Stormwater, soil and groundwater

The Gear Works (Gear Works) operates at parcels 3180, 3210, and 4230 (Figure 5a). The facility is bordered by S Chicago Street to the south, 5th Avenue S to the west, S Holden to the north, and 7th Avenue S and West Coast Wire Rope & Rigging to the east.

Historical Operations

Mill Engineering & Supply Co historically operated at 516 S Chicago Street, on parcel 3210. R**ockwell Automation** historically operated at 500 S Chicago Street, on parcel 3210. No additional information regarding historical operations at the property was available for review.

Current Operations

Gear Works is a gear manufacturing facility providing precision gear products and power transmission services. Gear types include industrial, marine, mining, wind, and high speed compressor gears. Gear Works serves the aerospace, military, mining, oil and gas, utilities, and steel industry (Gear Works 2011). Gear Works has been operating at this property since 1962 (SPU 2008l).

Gear Works stores feedstock material and raw steel at parcel 4230. Petroleum, chemical, and scrap metal products are stored under covered areas. All stormwater from the outside industrial activity area is conveyed to an oil/water separator and is then pumped through a stormwater treatment system (Ecology 2010c).

Parcels 3180 and 3210 are used for materials and gear box testing and have minimal outside industrial activity (Ecology 2010c).

Regulatory History

In February 1986, EPA received an anonymous complaint that Gear Works dumped approximately 40 gallons of cutting oil and coolant to the ground and/or storm drain. Ecology inspected the facility in March 1986 and found evidence of oil on the ground around the drum storage and dumpster area and observed oil leaching to stormwater. In July 1986, a follow-up inspection found that the drum storage area was bermed and covered and the dumpster was no longer in use. Ecology determined Gear Works was in compliance (Ecology 1986a).

Gear Works was granted coverage under the NPDES Permit in March 1993. Ecology inspected Gear Works in April 1997, December 2002, and March 2003. Inspectors identified corrective actions pertaining to spill prevention, hazardous waste management, and source control BMPs. The facility was in compliance following the March 2003 inspection.

SPU and Ecology conducted an initial inspection in April 2008. SPU instructed the facility to complete a spill plan, discontinue vehicle washing or install a permanent connection to the sanitary sewer, properly contain spills, provide cover for outside storage, and perform proper waste storage (SPU 2008l). Ecology provided guidance on management of dangerous waste generated from an acid etch inspection process and a water-based spray cabinet parts washer (Ecology 2008b). SPU determined all corrective actions were completed during a follow-up inspection in June 2008 (SPU 2008n).

Ecology conducted a stormwater compliance inspection on June 8, 2010. The Ecology inspector recommended using pads or trays to collect fluid drips during forklift maintenance, making additional efforts to minimize track-out, and providing secondary containment and cover for plastic totes and drums near doorways. Ecology requested Gear Works to update the SWPPP to include the facility at 500 S Chicago Street. An operations and maintenance manual was needed for the stormwater treatment system at the main facility where petroleum, chemical, and scrap metal products are stored (Ecology 2010c).

Gear Works did not exceed benchmarks for pH, turbidity, zinc, or copper during the 2011 monitoring period (Ecology 2012c). Additional regulatory history information was included in the Riverside Drive Data Gaps Report (SAIC 2012).

Potential for Sediment Recontamination

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

- Gear Works completed the corrective actions required by SPU and Ecology in 2008 (SPU 2008n). No information was available to determine if Gear Works completed the recommendations and corrective actions identified by Ecology in 2010. Potential for sediment recontamination due to current facility operations is low to moderate.
- There is potential that the groundwater at this facility may be contaminated by waste oil and metals. Historical waste oil disposal practices at this facility may have resulted in soil

and/or groundwater contamination. Waste oils may contain many COCs, including PAHs and PCBs. However, these practices were apparently discontinued over 25 years ago. Metals contamination may also be present due to the historical gear manufacturing operations; however, metals are not sediment COCs for the Riverside Drive source control area (with the exception of mercury). The facility is approximately 800 feet southwest of the LDW. The potential for sediment recontamination via the groundwater discharge pathway is unknown, but is likely to be low due to the distance between the facility and the LDW.

- Contaminants in groundwater, if any, may infiltrate the storm drain system and be conveyed to LDW sediments via the 7th Avenue S SD outfall (Outfall 2112). PCB and PAH concentrations exceeded the SQS in sediment samples collected near Outfall 2112. PCB concentrations at station 7th-ST1 and MH20, which are downstream from the property, exceeded the LAET storm drain screening value but did not exceed the 2LAET storm drain screening value. Benzo(g,h,i)perylene concentrations in inline and sediment trap samples at station 7th-ST1 exceeded the 2LAET storm drain screening value in 2010; however, there are many upstream inputs to this station. 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 Riverside Drive Data Gaps Report (SAIC 2012). The following source control actions will be conducted to fill the identified data gaps and reduce the potential for recontamination of sediments:

- Ecology will conduct a follow-up inspection to verify that Gear Works has complied with the corrective actions and recommendations identified by Ecology during the June 2010 inspection.

3.3.4 West Coast Wire Rope & Rigging

Current Operations	Heat treat materials in gas-fired furnaces
Historical Operations	Unknown
Tax Parcel No.	7327903120
Address	7777 7th Avenue S
Facility/Site ID	18137296
Chemicals of Concern	PCBs, PAHs
Media Affected	Stormwater

West Coast Wire Rope & Rigging (West Coast Wire) operates at parcel 3120 (Figure 5a), which is bordered by S Chicago Street to the south, 7th Avenue S to the east, S Portland Street to the north, and Gear Works and Fabrications Specialties Ltd. to the west.

Historical Operations

Information regarding historical operations at the property was not available for review.

Current Operations

West Coast Wire is a rigging fabrication facility. West Coast Wire supplies logging, construction, and marine industries with wire rope, chain, hardware, cordage, hoists, web slings, fall protection, and architectural railing and barrier systems (West Coast Wire 2011).

The facility has three catch basins and a sump pump located on the West Yard. A facility map indicates that the catch basins are connected to the 7th Avenue S SD line that runs along S Portland Street (West Coast Wire 2001). Equipment at the facility is fueled using a hand carried container. Equipment and vehicle maintenance is performed indoors (Ecology 2007a).

Regulatory History

Ecology granted West Coast Wire coverage under the ISGP on December 19, 1994 (Ecology 1994). The current permit is effective from January 1, 2010, to January 1, 2015.

Ecology conducted a stormwater compliance inspection in May 2007. Ecology instructed the facility to inspect and clean all catch basins, resume stormwater sampling and reporting, submit DMRs, develop a spill prevention and cleanup plan, and prevent wash water from entering the facility's storm drains. No additional information regarding compliance with the May 2007 inspection was available for review.

West Coast Wire did not submit DMRs for the second and fourth quarter of 2010 (Ecology 2010d, Ecology 2011b).

Potential for Sediment Recontamination

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

- No information was available to determine if West Coast Wire has complied with the corrective actions identified by Ecology during the May 2007 stormwater compliance inspection. During the inspection, Ecology determined that wash water appeared to have been discharged to the storm drain (Ecology 2007a).
- PCB and PAH concentrations exceeded the SQS in sediment samples collected near Outfall 2112. PCB concentrations at station 7th-ST1 and MH20 (Figure 7), which are downstream from the property, exceeded the LAET storm drain screening value, but did not exceed the 2LAET storm drain screening value. Benzo(g,h,i)perylene concentrations in inline and sediment trap samples at station 7th-ST1 exceeded the 2LAET storm drain screening value in 2010; however, there are many upstream inputs to this station. 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 Riverside Drive Data Gaps Report (SAIC 2012). The following source control actions will be conducted to fill the identified data gaps and reduce the potential for recontamination of sediments:

- Ecology will re-inspect West Coast Wire to determine if the facility is in compliance with corrective actions identified during the May 2007 inspection.

3.3.5 Fabrication Specialties Ltd Art

Current Operations	Wood, glass, and metal fabrication
Historical Operations	Pipe pickling
Tax Parcel No.	7327903160
Address	527 S Portland Street (Fabrication Specialties Ltd Art) 531 S Portland Street (Pipe Specialties Inc.)
Facility/Site ID	11942: Fabrication Specialties Ltd Art 6661875: Pipe Specialties Inc.
Chemicals of Concern	PCBs
Media Affected	Soil and Groundwater

Fabrication Specialties Ltd Art (Fabrication Specialties) operates at parcel 3160 (Figure 5a), which is bordered by Gear Works to the south and west, West Coast Wire Rope & Rigging to the south and east, and S Portland Street to the north.

Historical Operations

Pipe Specialties Inc. (Pipe Specialties) began operation at this property in 1974 and used 531 S Portland Street as its operating address (METRO 1984). The company specialized in pickling of pipe and miscellaneous steel for hydraulic and oxygen service. The process generated ten 55-gallon drums of caustic soda sludge per year. Approximately 20,000 gallons of spent hydrochloric acid was generated in the pickling process per year (Ecology 1983).

Current Operations

Fabrication Specialties Ltd Art is a small shop that fabricates wood, glass, bronze, and other metals. Painting is not conducted at the facility. Dirty rags are sent to a laundry service. Waste oil used to service equipment and trucks is removed by Waste Management. There is one catch basin on the street to the northwest of the facility (SPU 2009c).

Regulatory History

Pipe Specialties

In January 1985, METRO received an anonymous complaint describing waste PCB oils and metal cleaning wastes that were dumped on the ground around the property on a regular basis. The complaint claimed Pipe Specialties poured concrete slabs over some of the disposal areas and created a hidden waste storage pond for the PCB-oil and metal processing wastes (METRO 1985). No information regarding follow up on this complaint was available for review.

Fabrication Specialties

SPU conducted an inspection at Fabrication Specialties in March 2003. SPU instructed the facility to complete a spill plan, obtain spill containment and cleanup materials, and educate employees about the spill plan and kit (SPU 2003a). SPU determined the facility was in compliance during the follow-up inspection in June 2003 (SPU 2003c).

SPU performed an initial inspection at Fabrication Specialties on May 6, 2009. No corrective actions were identified (SPU 2009d).

Potential for Sediment Recontamination

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

- Fabrication Specialties was inspected by SPU in May 2009. No corrective actions were identified during the inspection. It appears that Fabrication Specialties is maintaining appropriate source control BMPs; therefore, the potential for sediment recontamination associated with the current operations at the facility is low.
- Soil and groundwater contamination may exist from improper disposal of PCB-oil and metal shavings. The property is approximately 500 feet southwest of the LDW. Metals, with the exception of mercury, are not sediment COCs for the Riverside Drive source control area. The potential for sediment recontamination via the groundwater discharge pathway is unknown, but is likely to be low.
- Contaminants in groundwater, if any, may infiltrate the storm drain system and be conveyed to LDW sediments via the 7th Avenue S SD outfall (Outfall 2112). PCB concentrations exceeded the SQS in a sediment sample LDW-SS530, which was collected near Outfall 2112 in December 2009. PCB concentrations at station 7th-ST1 and MH20, which are downstream from the property, exceeded the LAET storm drain screening value but did not exceed the 2LAET storm drain screening value. 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 Riverside Drive Data Gaps Report

(SAIC 2012). The following source control actions will be conducted to fill the identified data gaps and reduce the potential for recontamination of sediments:

The potential for sediment recontamination associated with current operations at this facility is low. It has not been determined if PCBs are present in groundwater beneath the property. However, due to the distance of the property from the LDW and the observed PCB concentrations in storm drain structures downstream from the property, no source control actions have been identified for Fabrication Specialties.

3.3.6 Olympic Steel Door

Current Operations	Steel door and frame distributor
Historical Operations	Unknown
Tax Parcel No.	7327902710
Address	7800 7th Avenue S
Facility/Site ID	45787437
Chemicals of Concern	PCBs, phthalates, and other SVOCs
Media Affected	Stormwater, Soil and Groundwater

Olympic Steel Door operates at parcel 2710 (Figure 5a), which is bordered by residential properties to the south, Graham Trucking storage lots to the east, S Chicago Street to the north, and 7th Avenue S to the west.

Historical Operations

Information regarding historical operations at the property was not available for review.

Current Operations

Olympic Steel Door distributes steel doors and door frames. A limited amount of repair work is done at the facility. Three other companies operate at the address (SPU 2009h):

- **Redox** – a supplier of piping cleaning and fittings for hydraulic systems;
- **OB Williams** – a millwork storage warehouse; and
- **All Metal Arts** – a small metal fabrication shop.

Olympic Steel Door is the only facility that has been assigned a Facility/Site ID.

Redox has operated at the property since 2005 (SPU 2009i). **All Metal Arts** has operated at the property since 2008 (SPU 2009k).

There are two catch basins located on the eastern portion of the facility. The catch basins are equipped with elbow traps. Stormwater is conveyed to the 7th Avenue SD system (SPU 2002a).

Regulatory History

In November 2009, SPU collected a storm drain solids sample from a catch basin (CB154) on the property. Concentrations of PCBs, BEHP, butyl benzyl phthalate, dimethylphthalate, 2-methylphenol, and benzyl alcohol exceeded the storm drain screening values (Table 7a) (SPU 2010h).

Olympic Steel Door

SPU conducted an inspection at Olympic Steel Door in November 2002. SPU instructed the facility to complete a written spill plan, obtain spill containment materials, educate employees about the spill plan, and clean and maintain all catch basins on the property (SPU 2002b). No further action was required during a SPU follow-up inspection in April 2003 (SPU 2003b).

SPU conducted an initial inspection on September 14, 2009, and a follow-up inspection on October 19, 2009. Inspectors found three old drums of soil boring spoils from a UST removal. Both of the catch basins were full of material. SPU identified the following corrective actions (SPU 2009j):

- Apply for coverage under the ISGP or obtain a Certificate of No Exposure (CNE).
- Clean and maintain all catch basins on the property.
- Properly label and dispose of the three drums.

During the follow-up inspection in October 2009, the catch basins had been cleaned. Olympic Steel Door was still working to have the soil drums removed and resolve coverage under an ISGP or CNE (SPU 2009l).

Redox

SPU inspected Redox on September 14, 2009. The pipe cleaning process generates metal sludge. The inspector noted that the sludge disposal methods were unclear. SPU identified the following corrective actions (SPU 2009i):

- Apply for coverage under the ISGP or obtain a CNE.
- Designate and properly dispose of any sludge generated from the pipe manufacturing process, waste oils, and spent machine coolant.
- Complete a written spill plan and post at appropriate locations at the facility.
- Obtain spill containment and cleanup materials.
- Educate employees about the spill plan and spill kit.

On October 20, 2009, SPU sent Redox information regarding the ISGP and King County Waste Characterization Program (SPU 2009m).

All Metal Arts

SPU inspected All Metal Arts on October 1, 2009. The facility has a portable sink that discharges outside to the ground. The shop owner indicated that the sink is only used for hand washing. SPU identified the following corrective actions (SPU 2009k):

- Complete a written spill plan and post at appropriate locations at the facility.
- Obtain spill containment and cleanup materials.
- Ensure that all cleaning and washing activities comply with requirements for prevention, minimization, and management of pollutants.

SPU conducted follow-up inspections on November 9, 2009, and January 5, 2010. The sink was disconnected during the inspection. Outdoors, the inspector observed an oil spill from a leaking vehicle, uncovered metal, and old gas cans. SPU recommended the facility apply for coverage under the ISGP if outdoor housekeeping conditions did not improve (SPU 2010a).

Environmental Investigations and Cleanups

Three environmental investigations and cleanups have been performed at the facility. Information from investigations and cleanups is summarized below. Additional information regarding these investigations and cleanups is available in the Riverside Drive Data Gaps Report (SAIC 2012).

- Results of Soil and Groundwater Sample Analysis (2000) (Global Environmental 2000)
- Limited Subsurface Sampling & Testing (2002) (Environmental Associates 2002)

In 1999, a survey of subsurface conditions was performed that focused on the suspected location of the former UST. Eight vapor probe borings were advanced to various depths in and around the suspected former UST. Elevated readings for combustible vapors were recorded at each of the borings. One soil sample was collected from the boring with the highest vapor reading. Gasoline-range hydrocarbons were detected at a concentration of 1,900 mg/kg, exceeding the MTCA Method A cleanup level (Global Environmental 2000).

In October 2000, 245 tons of petroleum-contaminated soil was excavated from the former UST location. One bottom and four sidewall soil samples were collected from the excavation (Figure11). The samples were analyzed for gasoline-range hydrocarbons and BTEX. Analytical results indicated that some gasoline-contaminated soil remained along the southern sidewall of the excavation. Gasoline-range hydrocarbons and BTEX concentrations in an additional sample collected from the south sidewall were not detected or were below MTCA Method A cleanup levels. The excavation was backfilled with clean recycled concrete rubble and smaller gravel.

Groundwater was encountered at approximately 10 feet bgs. One groundwater sample was collected approximately 3 feet north of the northeast corner of the excavation. Gasoline-range hydrocarbons were detected in the groundwater sample at a concentration that exceeded the MTCA Method A cleanup level (Global Environmental 2000).

In February 2002, two push probe soil borings and groundwater samples were collected from beneath the Olympic Steel Door building and the asphalt parking lot on the northwest portion of the property. A groundwater sample was collected from a previously installed monitoring well, MW-3. Soil and groundwater samples were analyzed for gasoline-range hydrocarbons and BTEX. Gasoline-range hydrocarbons and BTEX were not detected in soil samples and were not detected or were below MTCA Method A cleanup levels in groundwater samples (Environmental Associates 2002). Sampling locations are presented in Figure 11.

According to the ISIS database, an initial investigation was completed on August 8, 2011. No information regarding this investigation was available for review.

Potential for Sediment Recontamination

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

- Concentrations of PCBs, BEHP, butyl benzyl phthalate, dimethylphthalate, 2-methylphenol, and benzyl alcohol exceeded the storm drain screening values in a catch basin located on the property. SPU has directed three of the four companies operating at this facility, Olympic Steel Door, Redox, and All Metal Arts, to apply for coverage under the ISGP or obtain a CNE. The potential for sediment recontamination via the stormwater pathway may be high.
- Subsurface testing in February 2002 indicated that concentrations of gasoline-range hydrocarbons and BTEX constituents were detected below MTCA Method A cleanup levels. Further monitoring of groundwater was not conducted. Petroleum hydrocarbons are not considered to be LDW sediment COCs. While the presence of petroleum hydrocarbons in soil and groundwater may mobilize naturally occurring arsenic (Harter and Rollins 2008), arsenic is not a sediment COC for the Riverside Drive source control area. Therefore, the potential for sediment recontamination via the groundwater discharge pathway is very low.

Source Control Actions

Information needed to assess the potential for sediment recontamination associated with current or historical operations at this facility was summarized in the Riverside Drive Data Gaps Report (SAIC 2012). 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 Olympic Steel Door, Redox, and All Metal Arts to obtain coverage under the ISGP or apply for a CNE.
- SPU will conduct a follow-up business inspection to verify compliance with corrective actions identified by SPU in 2009, applicable regulations, and BMPs, to prevent release of contaminants to the LDW.

3.3.7 Marine Lumber Service Inc.

Current Operations	Lumber products supply
Historical Operations	None Identified
Tax Parcel No.	7327901925, 7327902850, 7327902895, 7327902900, 7327902920
Address	1925: 7915 5th Avenue S 2850: 558 S Kenyon Street 2895: 546 S Kenyon Street 2900: 525 S Chicago Street 2920: 525 S Chicago Street
Facility/Site ID	38921541: Marine Lumber Service Inc. 73969348: Marine Lumber Service Shop
Chemicals of Concern	PCBs, metals, TPH
Media Affected	Storm drain solids

Marine Lumber Service Inc. (Marine Lumber Service) operates five lumberyards in the LDW basin, four of which are located within the Riverside Drive source control area. These yards are known as the South Yard, Plant Yard, Shipping Yard, and East Yard (Figures 12a and 12b). The East Yard, Shipping Yard, and Plant Yard comprise contiguous parcels 2920, 2900, 2895, and 2850 (Figure 5a). This portion of the facility is bordered by S Kenyon Street to the south, 7th Avenue S to the east, S Chicago Street to the north, and Rogers Machinery to the west. The South Yard is located across the street on parcel 1925 (Figure 5a).

The South Yard is bordered by S Monroe Street to the south, a storage yard to the east, S Kenyon Street to the north, and 5th Avenue S to the west. The parcel is a 20,000 sq ft storage yard.

The fifth yard operated by Marine Lumber Service is the West Yard. The West Yard is located one and a half blocks to the west of the rest of the facility and is located within the 1st Avenue S SD basin.

Historical Operations

Marine Lumber Service has been in operation for over 65 years (Marine Lumber Service 2011b). No additional information regarding historical operations at the facility was available for review.

Current Operations

Marine Lumber Service operates at the 525 S Chicago Street facility (parcels 2900 and 2920). The facility supplies the marine shipping industry with lumber products such as custom wedges, wheel-chocks, and special dimensional lumber, timbers, beams, and planks.

The South Yard is used to store ammoniacal copper zinc arsenate (ACZA) treated lumber on an asphalt pad. There is no cover provided for any of the wood products stored on the South Yard. Leaching of ACZA has caused green staining on the pavement, which may lead to offsite contamination (Ecology 2009a). Stormwater runoff flows from northwest to southeast and is

conveyed to S Monroe Street. S Monroe Street is gravel covered. Stormwater most likely infiltrates into the gravel surface or flows into low areas of surrounding properties (EPI 2010). The adjacent property (American Plastics) located east of the South Yard historically pumped stormwater that ran toward its facility from the South Yard into the American Plastics stormwater system, which is connected to the 7th Avenue S SD system (Schmoyer 2012).

Additional information regarding yard operations and stormwater drainage at Marine Lumber Service is provided in the Riverside Drive Data Gaps Report (SAIC 2012).

Regulatory History

On November 11, 2008, Ecology conducted a source control inspection at the facility. Issues identified during the inspection include cleaning catch basins, the need for the facility to obtain coverage under the ISGP, and concern about the storage of ACZA-treated lumber outside. On January 8, 2009, Ecology received an ISGP application from Marine Lumber Service (Ecology 2009a). Coverage was granted on July 13, 2009 (Ecology 2010b). Marine Lumber Service monitors stormwater for turbidity, pH, oil sheen, copper, zinc, arsenic, TSS, and chemical oxygen demand (EPI 2010).

In December 2008, SPU collected a storm drain solids sample from a right-of-way catch basin (RCB159) to the south of the South Storage Yard. Concentrations of PCBs, arsenic, copper, zinc, and heavy oil-range hydrocarbons exceeded the storm drain screening values (Table 7c). On March 27, 2009, SPU collected two storm drain solids samples from catch basins to assess the extent of the leaching of metals from the storage of uncovered treated lumber at the South Yard. Sample CB137 was collected from the southeastern portion of the South Yard. Sample RCB165 was collected immediately north of the Plant Yard, which represents street runoff and a portion of runoff from the Plant Yard for non-treated lumber. Arsenic, copper, zinc, BEHP, butyl benzyl phthalate, and benzoic acid were detected at concentrations above the storm drain screening values in catch basin CB137. Zinc, BEHP, butyl benzyl phthalate, and heavy oil-range hydrocarbons were detected above storm drain screening values in catch basin RCB165 (SPU 2009b, 2010h). Chemicals detected above screening levels are presented in Table 7c.

On March 24, 2009, Ecology and SPU conducted a stormwater compliance inspection at Marine Lumber Service. Inspectors recommended installation of storm drain catch basin filter inserts for areas of the facility with chronic sources of dust and dirt. Inspectors determined that the West Yard, which drains to the 1st Avenue S SD basin, did not need to be included under the ISGP coverage for the facility. The East Yard, Shipping Yard, Plant Yard, and South Yard should be considered contiguous and covered by one ISGP permit. Inspectors observed green staining on the pavement in the South Yard, which is indicative of ACZA dripping off or leaching out of treated wood. Data from SPU sampling of surface dirt in the city right-of-way (RCB159) and dirt on the pavement at the southeast corner of the South Yard (CB137) showed extremely high levels of copper (4,520–4,930 mg/kg) and arsenic (710–750 mg/kg). However, a storm drain solids sample collected from a right-of-way catch basin on the north side of the main office building at 525 S Chicago Street contained much lower concentrations of arsenic (21 mg/kg) and copper (99.6 mg/kg) (Ecology 2009a).

On May 18, 2009, Ecology sent a Warning Letter to Marine Lumber Service, which required the facility to submit a plan for cleaning up the green ACZA staining on the pavement at the South Yard (Ecology 2009b).

As a result of Marine Lumber Service's failure to submit a source control plan, SWPPP, or stormwater sample results as required by the ISGP, Ecology issued an Immediate Action Order No. 7247 on January 25, 2010. The Immediate Action Order required compliance with the following corrective actions (Ecology 2010b):

- Submit a source control plan for preventing the discharge of copper, arsenic, zinc, and other associated pollutants from the outside treated lumber storage area of the South Yard.
- Submit an updated SWPPP for the facility.
- Effective the first quarter of 2010, add arsenic to the permit-required sampling parameters.

On February 17, 2010, SPU sent a Second and Final Notice letter requesting the same corrective actions from Marine Lumber Service (SPU 2010d).

On March 8, 2010, SPU and Marine Lumber Service conducted a dye test to determine the discharge location of the facility storm drains located in the Shipping Yard. All drains are connected and discharge to the sanitary sewer system in Kenyon Street. KCIW confirmed that Marine Lumber Service could discharge stormwater from the Shipping Yard to the sanitary sewer without treatment if the stormwater met KCIW discharge limits.

Marine Lumber Service submitted a source control plan for the South Yard and a SWPPP for the entire facility to Ecology on March 19, 2010 (EPI 2010). The company has also worked with its supplier to obtain a drier product that is less susceptible to leaching, and it has moved the ACZA treated lumber to an adjacent property that is located in the combined sewer service area (SPU 2010h). Overstock of the treated lumber is still stored in the South Yard. Marine Lumber Service power washed pavement in the South Yard and collected wash water in order to remove the green staining caused by the treated lumber (SPU 2010f). The SWPPP also included the following source control actions to be completed by July 31, 2010:

- Install drains in driveways to divert oncoming stormwater away from the yard.
- Conduct a feasibility study and possible installation of an onsite treatment system.
- Evaluate the effectiveness and cost for roof installation over the South Yard.

Ecology and SPU conducted dye testing and inspections in July, September, and November 2010. Photographs from the November 2010 inspection indicate that ACZA leaching continues to be a problem at the facility (SPU 2010g). On November 12, 2010, SPU warned of a Notice of Violation and/or Voluntary Compliance Agreement if progress on source control was not made (Robinson 2010). A follow-up inspection was conducted on September 7, 2011. Details from the September 2011 inspection were not available for review.

Marine Lumber Service submitted an ISGP Annual Report on May 17, 2011. High turbidity was reported during the 2nd quarter at the South Yard and 4th quarter at the Plant Yard. The facility

purchased a vacuum sweeper to sweep the yards and constructed berms to prevent off-property stormwater from draining to the facility (Marine Lumber Service 2011a).

SPU collected samples of soil on the right-of-way surfaces around the Marine Lumber Service facility in May 2011. Samples were collected from three locations: near catch basin RCB159, near catch basin RCB273, and catch basin RCB275. Concentrations of arsenic and copper were detected above storm drain screening values in seven of the nine samples. Concentrations of arsenic and copper remain elevated in the sample collected directly off the Marine Lumber Service's driveway entrance on S Monroe Street. Zinc concentrations exceeded the storm drain screening value in six of the nine samples. Concentrations of PCBs, benzo(g,h,i)perylene, BEHP, butyl benzyl phthalate, dimethylphthalate, benzoic acid, benzyl alcohol, and heavy oil-range hydrocarbons exceeded the storm drain screening values in some samples (Table 7c) (Schmoyer 2011).

Marine Lumber Service has taken the following steps to address source control concerns (Schmoyer 2012):

- Applied for and received a grant from King County to install covering over storage areas.
- Pressure washed the South Yard area and moved material to the Shipping Yard, which drains to the combined sewer system.
- Purchased different material with less leaching potential.

SPU indicated that Marine Lumber Service and Seattle Department of Transportation (SDOT) were working on a cleanup plan for removal of arsenic-contaminated soil from the right-of-way associated with the South Yard (Schmoyer 2012). Additional information regarding the cleanup plan will be included in an LDW Source Control Status Report.

Environmental Investigations and Cleanups

Two environmental investigations and cleanups have been performed at the facility. Information from investigations and cleanups is summarized below. Additional information regarding these investigations and cleanups is available in the Riverside Drive Data Gaps Report (SAIC 2012).

- UST Removal and Site Assessment Report (1994) (Bison Environmental 1994)
- Soil and groundwater cleanup (2003) (Marine Lumber Service 2003)

In June 1994, a 500-gallon leaded gasoline UST and 2,000-gallon unleaded gasoline UST were removed from the Plant Yard. Two 2,000-gallon unleaded gasoline USTs were removed from the East Yard. The 500-gallon leaded gasoline UST and associated product line were in poor condition. Gasoline-range hydrocarbon and BTEX concentrations in soil samples collected from the UST excavations exceeded MTCA Method A cleanup levels. Gasoline-range hydrocarbon, benzene, toluene, and xylene concentrations in a water sample collected from seepage at the Plant Yard exceeded MTCA Method A cleanup levels for groundwater (Bison Environmental 1994).

Between 1996 and 1998, an in-situ soil vapor extraction system was installed near the office building and Oxygen Release Compound was injected into the subsurface. In August 1998,

groundwater samples collected from a monitoring well at the front of the office building showed TPH and BTEX exceeded the MTCA Method A groundwater cleanup level. In September 2000, groundwater samples collected from the monitoring well indicated that BTEX concentrations had declined, but TPH concentrations had increased slightly. Based on these results, an additional injection of Oxygen Release Compound was recommended to complete groundwater cleanup (Marine Lumber Service 2003).

In 2003, Marine Lumber Service notified Ecology that 90 percent of the remediation work deemed necessary to meet state regulatory requirements at the facility had been performed. The only area of the facility that still contained soil and groundwater with petroleum hydrocarbon concentrations exceeding regulatory requirements was located in front of the Marine Lumber Service office at the Plant Yard.

Potential for Sediment Recontamination

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

- Leaching of ACZA-treated lumber has resulted in elevated concentrations of copper, zinc, and arsenic in catch basin samples collected near the South Yard. Metals suspended in stormwater associated with this property may be conveyed to the LDW. SDOT inspectors will work with Ecology and Marine Lumber Service to remove arsenic-contaminated soil from the city right-of-way associated with the South Yard during 2011–2012 (SPU 2010h).
- Groundwater monitoring in September 2000 indicated that concentrations of gasoline-range hydrocarbons, benzene, toluene, and xylene were detected above MTCA Method A cleanup levels. Further groundwater monitoring data were not available for review. It appears that soil and groundwater have not been tested for ACZA constituents. If these constituents are present in soil and groundwater, they may represent a potential source of sediment recontamination, either through the groundwater discharge pathway or through infiltration to the storm drain system. However, the individual ACZA constituents are not sediment COCs for the Riverside Drive source control area; therefore, the potential for sediment recontamination via the groundwater discharge 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 Riverside Drive Data Gaps Report (SAIC 2012). 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 September 2011 inspection report to evaluate Marine Lumber Service's progress with regard to implementing source control BMPs and preventing ACZA leachate from entering the storm drain system.

3.3.8 Rogers Machinery Co Inc.

Current Operations	Supplies industrial equipment and service for compressed air, vacuum, and pump systems
Historical Operations	Unknown
Tax Parcel No.	7327902960
Address	7800 5th Avenue S
Facility/Site ID	59283333
Chemicals of Concern	None Identified
Media Affected	None Identified

Rogers Machinery Co Inc. (Rogers Machinery) occupies parcel 2960 (Figure 5a). The facility is bordered by 5th Avenue S on the west, S Kenyon Street to the south, Marine Lumber Service to the east, and S Chicago Street to the north.

Historical Operations

Information regarding the historical operations at this property was not available for review.

Current Operations

Rogers Machinery is an industrial equipment and service supplier for compressed air systems, process and house vacuum systems, and blower and pump systems. Sales and parts and service have been performed at this location since 1968 (Rogers Machinery 2011; SPU 2008e).

Rogers Machinery uses antifreeze, batteries, and petroleum/oils for servicing equipment. The waste is temporarily stored in a covered area equipped with secondary containment and later shipped off property for disposal. Rogers Machinery disposes of antifreeze, petroleum/oils, and batteries through third-party vendors. Wash water is generated through pressure washing of equipment (SPU 2008e).

The Rogers Machinery facility has one catch basin on the south side of the main office building (Rogers Machinery 2008). The facility has a stormwater detention system with flow control pumps. Stormwater from the detention system is not treated before it discharges to the LDW via the 7th Avenue S SD system (SPU 2002c).

Regulatory History

Rogers Machinery reported to Ecology as a hazardous waste generator from July 1992 to August 2003. From 1995 to 1997, the facility reported as an SQG. The facility reported as a no quantity generator from 1998 to 2011 (Ecology 2011d).

SPU conducted an initial inspection at Rogers Machinery in February 2008. SPU instructed the facility to complete a spill plan, train employees on spill plan procedures, properly label waste, discontinue vehicle washing, and perform required maintenance on equipment wash pad and comply with discharge limits (SPU 2008i). The facility was in compliance during a follow-up inspection in May 2008 (SPU 2008m).

On February 21, 2008, SPU performed a dye test at the catch basin that receives wash water from the pressure washing of equipment to determine if the catch basin ultimately discharges to the 7th Avenue S SD. The test was inconclusive (Jeffers 2008b).

Potential for Sediment Recontamination

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

- Rogers Machinery has complied with corrective actions identified by SPU in 2003 and 2008. SPU performed a dye test to determine if wash water is conveyed to the storm drain system; however, the results were inconclusive. If the wash water is discharged to the storm drain system, it may represent a potential source of contaminants to sediment. The potential for sediment recontamination associated with this facility is low provided that Rogers Machinery maintains appropriate source control BMPs.

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 Riverside Drive Data Gaps Report (SAIC 2012). 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 Rogers Machinery to discharge wash water to the sanitary sewer.

3.3.9 Former Glitsa American

Current Operations	Vacant property
Historical Operations	Hardwood floor finishes; paint manufacturer
Tax Parcel No.	7328400740
Address	327 S Kenyon Street
Facility/Site ID	63168342
Chemicals of Concern	VOCs
Media Affected	Soil and groundwater

The former Glitsa American Inc. (Glitsa American) facility historically operated at parcel 0740 (Figure 5a), which is bordered by Custom Roofing to the south, 5th Avenue S to the east, S Kenyon Street to the north, and West Marginal Way S to the west.

Historical Operations

The Farwest Paint Manufacturing Company operated at the facility from 1965 to 1977. The company manufactured paint products for companies in the Seattle area. The facility operated a 7,500-gallon mineral spirit (Stoddard solvent) UST on the eastern portion of the facility. The company moved to Tukwila in 1977 (Farwest Paint 2011).

Glitsa American operated at this facility from 1978 until 2008. The company was a wholesale distributor of hardwood floor finishes. Water-based finishes were manufactured at the facility. The facility had a KCIW discharge permit for a cleaning/rinsing process in the building. Approximately 5 to 10 gallons of wash water were discharged to the sanitary sewer daily. The manufacturing area had a baghouse for silica dust that was reused in the manufacturing process (SPU 2008g).

Current Operations

The property is currently vacant. Environmental investigations and cleanups have been ongoing at the property since 2009. There is one catch basin present on the northeast corner of the property (SPU 2008g).

Regulatory History

Glitsa American notified Ecology of its intent to close the 7,500-gallon UST at the property in July 1992. In September 1992, Glitsa American notified Ecology of a confirmed release of mineral spirits from the UST (Ecology 1992a) and stated that the tank had not been used since the company purchased the facility in 1978 (Glitsa 2002). The UST was removed in 2009.

SPU conducted an initial inspection at the facility in February 2008. SPU instructed the facility to complete a spill plan, educate employees about the spill plan, clean the catch basin on the northeast portion of the property, and label all waste containers properly (SPU 2008h). During the follow-up inspection in April 2008, SPU determined Glitsa American was in compliance and no further action was required (SPU 2008k).

Environmental Investigations and Cleanups

Several environmental investigations and cleanups have been performed at the property. These are summarized below. Additional information regarding these investigations and cleanups is available in the Riverside Drive Data Gaps Report (SAIC 2012).

- UST closure (1992) (Bison Environmental 1992)
- UST Removal & Limited Cleanup Action (2009) (Environmental Associates 2009a)
- Supplemental Exploration & Further Remediation Feasibility Study (2009) (Environmental Associates 2009b)
- Independent cleanup action (Environmental Associates 2010)

In 1992, a 7,500-gallon mineral spirit UST was reportedly pumped and cleaned in order to close the tank in place. Mineral spirit concentrations in soil samples exceeded MTCA cleanup levels.

Stoddard solvent concentrations in groundwater samples were detected in monitoring wells installed in December 2008. In March 2009, approximately 178 tons of soil were excavated and removed from the property. The excavation was backfilled with clean quarry spalls and gravel. Between April and July 2009, eight soil borings, 16 monitoring wells and a vapor extraction system were installed at the property (Figure 13).

Concentrations of arsenic, Stoddard solvent, ethylbenzene, and total xylenes in soil samples exceeded MTCA Method A cleanup levels and/or draft. Concentrations of VOCs, Stoddard solvent, and benzene in groundwater were detected above MTCA Method A cleanup levels (Environmental Associates 2009b). Sample results did not exceed draft soil-to-sediment screening levels for arsenic. Exceedances are summarized below:

COC	Soil	Groundwater
Metals		
Arsenic	♦	
VOCs		
Vinyl Chloride		♦
Petroleum Hydrocarbons		
Benzene		♦
Gasoline-range hydrocarbons		♦
Ethylbenzene	♦	
Stoddard solvents	♦	♦
Xylenes	♦	

♦ 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 the Former Glitsa American is summarized below.

- Environmental investigations and cleanups have been ongoing at the property since 2009. It is not known if appropriate source control BMPs have been implemented to prevent impacts to surface water during the environmental remediation of the property.
- Contaminated groundwater associated with the former Glitsa American facility may infiltrate the 7th Avenue S SD system. Sediment COCs have not been detected in groundwater at Glitsa American. Therefore, the potential that contaminants from this property will impact sediments adjacent to the Riverside Drive source control area is very low, and given the distance between the property and the LDW (2,100 feet), the groundwater discharge pathway may be incomplete.

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 Riverside Drive Data Gaps Report (SAIC 2012). The potential for sediment recontamination associated with current operations at this facility is low. Due to the distance of the property from the LDW and because no sediment COCs have been identified at the property, no source control actions have been identified for Glitsa American.

3.3.10 Coast Crane Company

Current Operations	Boom truck, lift, and crane distributor
Historical Operations	Boom truck, lift, and crane distributor
Tax Parcel No.	7883600350
Address	8250 5th Avenue S
Facility/Site ID	2430
Chemicals of Concern	PAHs, metals, petroleum hydrocarbons, and VOCs
Media Affected	Soil and groundwater

Coast Crane Company (Coast Crane) is the current operator on parcel 0350 (Figure 5a), which is bordered by Ness Crane to the south, West Marginal Way S to the east, Hudson Bay Insulation to the north, and 5th Avenue S to the west.

Historical Operations

Manitowoc Western began to develop the facility around 1971. Manitowoc Western indicated the facility is the location of a former landfill. Approximately 15,800 cubic yards of fill material of unknown origin was added to the facility during development. Manitowoc Western was a large equipment repair and sales company; its operations were consistent with the current operations of Coast Crane. Gasoline/diesel engines and hydraulic systems were repaired in the service garage. A paint stall with a sand blaster was installed at the facility. Wastes generated at the facility included solvents, waste oils, antifreeze, sludge, and used oil filters contaminated with chromium and zinc. A wash pad was located adjacent to the repair garage. A drain conveyed wash water to an oil/water separator located beneath the wash pad. The oil/water separator was connected to a perforated pipe that discharged the wash water and groundwater to the 7th Avenue S SD system. Two 500-gallon USTs, used for the storage of gasoline and diesel, and an AST, used for the storage of used oil generated at the facility, were present near the wash pad. The USTs, drain, and oil/water separator were removed in 1995 (PNG 1995, Environ 2008a), Manitowoc Western 1995). Manitowoc Western was sold to Ness Cranes in approximately 1995.

Current Operations

Coast Crane has operated at this facility since 1999. The company is a boom truck, lift, and crane distributor. The facility has been expanded with mobile offices north of the permanent structures. Immediately adjacent to the east of the maintenance/repair building is a concrete wash pad. The wash pad was expanded in 2006 or 2007.

Regulatory History

Manitowoc Western

Ecology conducted an inspection of the facility in May 1992. At the time, the wash pad discharged to a 200-foot perforated pipe, which leached into the soil. The company had been washing greasy

equipment at the location for many years. Inspectors also observed two piles of black sludge and a considerable amount of oil staining on the soil (Ecology 1992b). Ecology instructed the facility to determine if solid waste is a dangerous waste or extremely hazardous waste and manage appropriately, properly label waste containers, and not discharge waste materials from any commercial or industrial operation into groundwater (Ecology 1993). On November 17, 1992, Ecology added Manitowoc Western to the CSCSL due to the environmental conditions that were observed during the May 1992 inspection (Ecology 1992c).

Coast Crane Company

In August 2008, Ecology conducted a source control inspection at Coast Crane. Ecology instructed the facility to implement proper washing practices for outdoor vehicle washing and properly store product/waste with secondary containment (Jeffers 2008c).

In September 2008, Coast Crane submitted a letter to Ecology detailing steps taken to minimize waste generated during equipment cleanup and implement proper storage of products/waste (Coast Crane 2008). Ecology determined the facility was in compliance (Ecology 2008g).

Coast Crane submitted a VCP application on August 11, 2008, for the cleanup of TPH and VOCs. The agreement was signed on October 1, 2008. Ecology assigned VCP ID NW1984 to Coast Crane (Environ 2008b).

Coast Crane withdrew from the RCRA ID program on June 19, 2009 (Ecology 2009d).

Environmental Investigations and Cleanups

Several environmental investigations and cleanups have been performed at the property. Information from investigations and cleanups is summarized below. Additional information regarding these investigations and cleanups is available in the Riverside Drive Data Gaps Report (SAIC 2012).

- Limited Phase II ESA (1995) (PNG 1995)
- Investigation of wash pad area (2007) (Environ 2007b)
- Remedial Action Completion Report (2008) (Environ 2008a)

In September 1995, one 500-gallon gasoline UST, one 500-gallon diesel UST, and approximately 50 tons of petroleum-contaminated soil were removed from beneath the wash pad adjacent to the east side of the main building. The gasoline UST and oil/water separator connected to the perforated pipe on the wash pad were determined to be the sources of contamination. Five soil samples collected from the limits of the investigation indicated the presence of gasoline-range hydrocarbon concentrations above MTCA cleanup levels for soil. An additional 200 tons of petroleum-contaminated soil was excavated and removed from the property. Analytical results from the limits of the excavation were below MTCA Method A cleanup levels (PNG 1995).

In September 1995, six soil borings were drilled in the vicinity of the former septic drain field and near the former catch basin drain pipe. Samples were analyzed for TPH and VOCs. TPH was not detected at concentrations greater than the detection limits used by the laboratory. Concentrations of VOCs identified at the facility were below MTCA cleanup levels. No remedial action was recommended (PNG 1995).

In June 2007, diesel- and heavy oil-range hydrocarbon concentrations in soil samples collected from the wash pad area exceeded the MTCA cleanup levels. PAHs and BTEX constituents were detected at concentrations below MTCA cleanup levels with the exception of xylene in one sample. Lead was detected in all soil samples, where concentrations in samples collected at depths between 3 to 5 feet bgs were detected at levels that exceeded the MTCA cleanup level. Benzo(a)pyrene exceeded the MTCA Method B cleanup level in one sample. Dibenzo(a,h)anthracene and naphthalene were detected at concentrations below MTCA cleanup levels (Environ 2007a,b). Lead, benzo(a)pyrene, dibenzo(a,h)anthracene, and naphthalene concentrations exceeded the draft soil-to-sediment screening levels. Sampling locations are presented in Figure 14; exceedances are summarized below.

COC	Soil	Groundwater
Metals		
Lead	●♦	
PAHs		
Benzo(a)pyrene	♦	
Dibenzo(a,h)anthracene	●	
Naphthalene	●	
PCBs		
Total PCBs	●♦	
Petroleum Hydrocarbons		
Diesel-range hydrocarbons	♦	
Motor oil-range hydrocarbons	♦	
Mineral Oil	♦	

COC	Soil	Groundwater
VOCs		
Benzene	♦	
Ethylbenzene	♦	
Methylene Chloride	♦	
PCE	♦	
TCE	♦	
Toluene	♦	
Xylenes	♦	

- ● 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 soil or groundwater at a concentration that exceeds the MTCA

In May 2008, approximately 222 tons of contaminated soil was excavated from the facility. Confirmation soil samples were collected and analyzed at a mobile laboratory. Areas where samples contained TPH and VOC concentrations above applicable cleanup levels were over-excavated and re-sampled until sample results were below MTCA Method A cleanup levels for unrestricted land use. Results were sent to Ecology for review in August 2008 (Environ 2008a). In December 2008, Ecology determined further remedial action was necessary because the vertical and horizontal extent of hazardous substances such as lead, arsenic, and cadmium associated with industrial waste fill material used at the facility had not been defined (Ecology 2008i).

Potential for Sediment Recontamination

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

- Concentrations of benzo(a)pyrene, lead, petroleum hydrocarbons and VOCs in soil exceed MTCA cleanup levels. In addition, benzo(a)pyrene, dibenzo(a,h)anthracene, naphthalene, and lead concentrations in soil exceeded the draft soil-to-sediment screening levels. The vertical and horizontal extent of arsenic, cadmium, and lead contaminations in fill material and soil is unknown. Groundwater samples have not been collected at this property. Benzo(a)pyrene and dibenzo(a,h)anthracene concentrations in a sediment sample collected near Outfall 2112 exceeded the SQS and CSL. However, the property is approximately 2,000 feet southwest of the LDW; therefore, sediment recontamination via the groundwater discharge pathway is low and may be incomplete.
- There is potential that the groundwater beneath this property may be contaminated by arsenic, cadmium, lead, and PAHs; of the contaminants, only PAHs are sediment COCs for the Riverside Drive source control area. PAHs in groundwater, if any, may infiltrate the storm drain system and be conveyed to LDW sediments via the 7th Avenue S SD outfall (Outfall 2112). PAH concentrations at station 7th-ST3 and MH22, which are downstream from the property, exceeded the 2LAET storm drain screening value for benzo(g,h,i)perylene and the LAET storm drain screening value for fluoranthene; however, there are many upstream inputs to these stations. The potential for sediment recontamination via this pathway is very low.

Source Control Actions

Information needed to assess the potential for sediment recontamination associated with current or historical operations at this facility was summarized in the Riverside Drive Data Gaps Report (SAIC 2012). The potential for sediment recontamination associated with current operations at this facility is low. It has not been determined if PAHs are present in groundwater beneath the property. However, due to the distance of the property from the LDW and the observed PAH concentrations in storm drain structures downstream from the property, no source control actions have been identified for Coast Crane.

3.3.11 Fibres International, Inc.

Current Operations	Business is currently relocating
Historical Operations	Recycled glass collection
Tax Parcel No.	3224049023
Address	9208 4th Avenue S
Facility/Site ID	8610624
NPDES Permit No.	WAR003598
Chemicals of Concern	Metals
Media Affected	Stormwater

Fibres International Inc. (Fibres International) occupies parcel 9023 (Figure 5a). The facility is bordered by a vacant industrial parcel to the west, NW Grating to the south, residential properties to the east, and vegetated land to the north. The property has a 12,000 sq ft building and an approximately 90,000 sq ft paved area.

Additional information for Fibres International was not included in the Riverside Drive Data Gaps Report because the facility incorrectly mapped outside of the source control area on Ecology's Facility/Site database. All information available for the facility is included below.

Historical Operations

Information regarding historical operations at the property was not available for review.

Current Operations

While in operation, the facility performed equipment maintenance/repairs, recycled glass collection, and vehicle fueling. Materials stored at the facility include antifreeze, used lead-acid batteries, detergents and cleaners, hydraulic fluids, lubricating fluids, parts cleaning solvents, and diesel and unleaded gasoline. Drainage ditches, treatment devices, sediment traps and basins, and pavement were used on the property to minimize pollutants from entering stormwater (Fibres International 2008).

Primary drainage at the facility is towards the north into an underground retention structure that runs the length of the paved area. Stormwater is conveyed to the King County storm sewer system on 4th Avenue S. Stormwater is permitted to discharge from the eastern undeveloped portion of the property (Fibres International 2008).

As of July 20, 2010, the facility was shutting down and going out of business. The facility intends to retain NPDES coverage until all equipment and material are removed from the property (Wright 2010). However, the company's website still lists the 9208 4th Avenue S location as an operating address. A 2011 ISGP annual report indicates treatment options are under review to prevent zinc from exceeding benchmarks. An update of operations is needed to determine if the facility still requires coverage under an ISGP.

Regulatory History

According to the PARIS database, Ecology issued Fibres International an ISGP in November 1995. Ecology reissued the permit in October 2009 and inspected the facility on July 20, 2010. The company notified Ecology that the business was closing. Fibres International intended to retain the ISGP coverage until all equipment and materials were removed from the property (Wright 2010).

Fibres International submitted an ISGP annual report in May 2011. Discharges from the facility exceeded benchmarks for zinc during all four quarters of sampling conducted in 2010 and exceeded benchmarks for lead during the first and third quarter of 2010. Fibres International cleaned catch basins and stormwater conveyance pipes with a vactor truck. The report indicates sample results showed improvements after the cleaning (Fibres International 2011).

Potential for Sediment Recontamination

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

- During a July 2010 inspection, Fibres International notified Ecology that the facility plans to retain ISGP coverage until all equipment and materials are removed from the property.
- Concentrations of zinc and lead exceeded benchmarks during stormwater monitoring in 2011; however, zinc and lead are not considered COCs for the sediments adjacent to the Riverside Drive source control area. The majority of the facility discharges to the sanitary sewer. The potential for sediment contamination associated with stormwater discharge is low.

Source Control Actions

The potential for sediment recontamination associated with current operations at this facility is low. The company is retaining coverage under the ISGP until all equipment and materials are removed from the property. No source control actions have been identified for Fibres International.

3.3.12 Other Upland Properties in the 7th Avenue S SD Basin

Source control actions identified for 23 upland properties in the 7th Avenue S SD basin fall into three categories: initial inspections, follow-up inspections, and obtain coverage under the ISGP or obtain a CNE. Additional information for these upland properties is provided in the Riverside Drive Data Gaps Report (SAIC 2012).

Source Control Action: Initial Inspections

Facility inspections have not been performed by Ecology or SPU at the following properties, or new activities have been introduced since the facility was last inspected. Current operations may represent potential sediment recontamination sources. Insufficient information was available to assess the potential for sediment recontamination from the properties/facilities. Ecology and/or SPU will perform initial inspections at the following properties.

Facility or Property Name	Current Operator	Address	Facility/ Site ID	King County Tax Parcel
Former Airport Towing	Unknown	301 S Sullivan Street	14644	3224049084
Former Brown Engineering	Mech Agents	550 S Monroe Street	29149762	7327901805
Former Guinns Automotive & Electric	Unknown	245 S Austin Street	36385877	7327904845
Interstate Coatings, Inc.	Same	745 S Chicago Street	2335 25623222	7327903330 7327903331
King Auto & Truck Wrecking, Inc.	Same	543 S Monroe Street	2278	7327901605

Facility or Property Name	Current Operator	Address	Facility/ Site ID	King County Tax Parcel
Former KJM Electric Co/Former Chemithon Surface Finishing Inc.	Unknown	521 S Monroe Street	1370584 88237831	7327901660
Manufacturing Technologies Inc. (MTI)	MTI, Swift Tools and Pretzel Logic	7709 5th Avenue S	15761	7327904470
Former Mike's Truck Repair & Fabrication	Unknown	515 S Southern Street	11457	7327900360
The Revere Group	Same	9310 4th Avenue S	17130	1646700010
Former Screen Matic Arts	Unknown	9354 4th Avenue S	84435338	Unknown
Seidelhuber Iron & Bronze Works Inc.	Same	8009 7th Avenue S	59692187	7327901775

All Facility/Site ID numbers associated with a facility/property are listed in the table.

Source Control Action: Follow-up Inspection

Corrective actions were identified at the following facilities during recent inspections performed from 2008 to 2011. To date, the corrective actions have not been achieved or the facility has not been re-inspected to confirm compliance with the corrective actions. Follow-up inspections are needed to verify compliance with Ecology's recommendations, applicable regulations, and BMPs to prevent the release of contaminants to the LDW. Ecology and/or SPU will conduct follow-up inspections at the following facilities:

Facility or Property Name	Address	Facility/ Site ID	King County Tax Parcel
American Plastic Manufacturing Incorporated	526 S Monroe Street	77734273	7327901990
Global Fabricators Inc.	7619 5th Avenue S	10128921	7327904770
Modern Coach Modern Pattern	7601 5th Avenue S 255 S Austin Street	8127	7327904792 7327904830
Northwest Grating Products, Inc.	9230 4th Avenue S	74745382	3224049051
Northwind Marine	605 S Riverside Drive	7221	732905775
Washington Liftruck	700 S Chicago Street	77384581	7327903385
Westec Industries, Inc. McFabco Steel Corporation	540 S Elmgrove Street 635 S Elmgrove Street	45558857 89886819	7327900430 7327900470
Westeel Company	8001 7th Avenue S	19739	7327901590

All Facility/Site ID numbers associated with a facility/property are listed in the table.

Source Control Action: Industrial Stormwater General Permits

The upland properties listed below have been directed by Ecology to obtain coverage under the ISGP, obtain a CNE, or Ecology has recommended that an evaluation be performed to determine if coverage under the ISGP is needed. Discharges to the storm drain from these facilities may contain sediment COCs. Ecology will require the following facilities to obtain coverage under the ISGP or obtain a CNE.

Facility or Property Name	Address	ISGP/CNE/ Evaluation	Facility/ Site ID	King County Tax Parcel
American Plastic Manufacturing Incorporated	526 S Monroe Street	ISGP/CNE	77734273	7327901990
Machinists Inc. Tooling Division	8201 7th Avenue S	ISGP	5885095	7327900310
MEECO Manufacturing Co.	432 S Cloverdale Street	ISGP	71378133 56766158	3224049045
Modern Machine Company	519 S Elmgrove Street	ISGP/CNE	7969 25678771 81861618 92291647	7327900600 7327901685
Olsson Manufacturing Co.	525 S Southern Street	ISGP/CNE	7969	7327900600 7327901685

All Facility/Site ID numbers associated with a facility/property are listed in the table.

3.4 Upland Properties in the 8th Avenue S CSO Basin

The following industrial and commercial facilities within 8th Avenue S CSO basin were identified (Table 8):

- 310 facilities within the 8th Avenue S CSO basin have been assigned Ecology Facility/Site ID numbers.
- 48 of these facilities have active EPA ID numbers.
- 28 of these facilities are listed on the CSCSL.
- 25 of the facilities hold NPDES permits.
- 11 of these facilities have KCIW discharge authorizations or permits.
- 68 of these facilities are listed on Ecology's UST/LUST lists.

Relevant information about these facilities was summarized in the Riverside Drive Data Gaps Report (SAIC 2012).

The following facilities have been inspected by Ecology or SPU within the past four years (2008 or later). Ecology and SPU inspectors identified corrective actions for the facilities and verified that the facilities complied with the corrective actions during a re-inspection. For some of these facilities, no corrective actions related to source control were identified during the inspection. The following facilities are in compliance and no source control actions have been identified.

Facility or Property Name	Address	Facility/ Site ID	King County Tax Parcel
Heartwood, Inc.	1414 Director Street	73671237	5388600041
National Products Inc.	8410 Dallas Avenue S/ 1205 S Orr Street	24615 7598 13132191	2185001130 2185001140 2185001160 2185001270
Sea Mar Family Housing	1000 S Henderson Street	9401	7883607842
Smith Berger Marine, Inc.	7915 10th Avenue S	12429	7819500000
Sound Propeller Services, Inc.	7916 8th Avenue S	6950604 70748294 56738526	7819500000

All Facility/Site ID numbers associated with a facility/property are listed in the table.

One upland property, Independent Metals Plant 1, was identified as a potential sediment recontamination source. Source control actions for Independent Metals are identified in Section 3.4.1. The available information for 14 facilities was insufficient for determining the potential for sediment recontamination associated with each facility. These facilities are listed in Section 3.4.2.

3.4.1 Independent Metals Plant 1

Current Operations	Metal recycler
Historical Operations	None Identified
Tax Parcel No.	7327901335, 7327901345, 7327901355, 7327901365, 7327901375, 7327901445, 7327901465, 7327901535, 7327901545, 7327902045
Address	1365: 747 S Monroe Street 1445: 703 S Monroe Street 1335, 1345, 1355, 1375, 1465, 1535, 1545, 2045: NA Container Storage Yard: 703 S Monroe Street
Facility/Site ID	38921541: Marine Lumber Service Inc. 73969348: Marine Lumber Service Shop
Chemicals of Concern	PCBs
Media Affected	Stormwater

Independent Metals Plant 1 operates its main facility on parcels 1335, 1345, 1355, 1365, 1375, 1535, 1545, and 2045 (Figure 5b). The main facility is bordered by residential properties to the south, 8th Avenue S to the east, S Monroe Street to the north, and an auto repair shop to the west. Independent Metals Plant 1 also operates on parcels 1445 and 1465 (Figure 5b), which are located at the corner of S Monroe Street and 7th Avenue S. The facility uses these parcels as a container storage yard. Large containers are distributed to other companies for scrap metal disposal.

Historical Operations

Independent Metals was founded in 1984 (Independent Metals 2011). Parcels 1355, 1535, and 2045 were residential properties until purchased by Independent Metals Plant 1 in 1996, 1994, and 2001, respectively (City of Seattle 2010). The use of these three parcels was not legally established until May 2010. On May 6, 2010, Independent Metals Plant 1 received a Determination of Non-Significance to legally expand the facility to these three parcels. The expansion did not have a significant adverse impact upon the environment (City of Seattle 2010).

Current Operations

The current operating address for the Independent Metals Plant 1 main facility is 747 S Monroe Street, Seattle, Washington. The container storage yard is located at 703 S Monroe Street. The facility recycles copper, insulated copper wire, brass, auto radiators, aluminum, stainless steel, electric motors, and iron/steel. Additionally, the facility accepts used electrical gear, transformers, balers, and trash compactors (Independent Metals 2011). The facility has a stationary fuel tank for fueling heavy equipment. According to a 2007 Ecology inspection, all storm drains at the facility have drain inserts and are conveyed to an oil/water separator. Stormwater drains to the sanitary sewer system (Jeffers 2008a).

Regulatory History

Ecology conducted a source control inspection at the Independent Metals Plant 1 main facility on December 13, 2007. The inspectors determined that an NPDES permit was not required for the facility (Jeffers 2008a).

On June 12, 2008, Ecology, SPU, King County, Seattle Code Enforcement, and Seattle Police Department conducted a Hazardous Waste Compliance Inspection at Independent Metals Plant 1. Inspectors observed Independent Metals staff do not routinely supervise incoming scrap material, metal containers used to hold machine shop metal turnings leak metalworking fluids and cooling fluids to the ground, spill kits were not present in strategic locations, and one lead/acid battery was left outside without secondary containment. Inspectors instructed the facility to assure that releases of used oil and cutting fluids are prevented from being released to the environment, place used lead/acid batteries in appropriate storage, and provide spill kits in outdoor areas where spills are most likely to occur (Ecology 2008f). Independent Metals completed the actions requested and was in compliance on September 2, 2008 (Ecology 2008h).

Ecology conducted a facility visit on December 9, 2009, to discuss how the shredding of appliances and metals creates residue waste streams. During the visit, Ecology saw a paint spill leaching out of one of the cement-blocked metal collection areas. Independent Metals employees quickly cleaned up the spill. Ecology requested that Independent Metals Plant 1 submit documentation showing that the accumulated paint waste was removed from the facility for proper disposal. Ecology determined a verification system was needed to ensure the facility does not receive waste materials prior to unloading scrap into the collection area (Ecology 2010a).

EPA sent a CERCLA Section 104(e) Request for Information Letter to Independent Metals Plant 1 in February 2010. A response to the request was not available for review.

The KCIW Program conducted a special study in 2010 focusing on metal recycling industrial users of the King County sanitary sewer system. Two rounds of whole water samples were collected from Independent Metals Plant 1. PCB concentrations near 1 µg/L were reported in the samples. A solid sample was collected on November 10, 2010, from the bottom of a manhole at the facility. The sample had a total PCB concentration of 27.8 mg/kg DW (KCIW 2010).

On November 24, 2010, Independent Metals Plant 1 reported to Ecology as an LQG for hazardous waste. The facility conducted a one-time cleanup of catch basins and a detention pipe that had not been cleaned for 20 years (Ecology 2011e).

Ecology and SPU inspected Independent Metals on February 16, 2012. The inspectors determined incoming scrap items (ballasts, transformers, electrical switches, etc.) were the sources of PCBs found at the facility (Schmoyer 2012). Additional information about the inspection was not available for review.

Potential for Sediment Recontamination

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

- Elevated levels of PCBs were found in a catch basin solids sample collected from a sanitary sewer catch basin and manhole at the facility. Stormwater from the facility is conveyed to an oil/water separator prior to discharge to the sanitary sewer. Combined sewer discharges are significantly diluted prior to discharge, so the potential that contaminants from this property will recontaminate sediments adjacent to the Riverside Drive source control area is very low.
- There is no information available to determine if soil or groundwater contamination is present at this property; however, given the current metals recycling operations, there is a potential for soil and groundwater contamination.

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 Riverside Drive Data Gaps Report (SAIC 2012). The following source control action will be conducted to fill the identified data gaps and reduce the potential for recontamination of sediments:

- Ecology will request Independent Metals to obtain environmental data to determine if soil and groundwater is contaminated by metals recycling operations and if COCs in soil and groundwater may be transported to the LDW.

3.4.2 Other Upland Properties in the 8th Avenue S CSO Basin

Initial inspections are needed for the following upland properties in the 8th Avenue S CSO basin. Information for these upland properties is provided in the Riverside Drive Data Gaps Report (SAIC 2012); however, the available information was insufficient for determining the potential for sediment recontamination associated with these facilities.

Source Control Action: Initial Inspection

Facility inspections have not been performed by Ecology or KCIW at the following properties, or new activities have been introduced since the facility was last inspected. Current operations may represent potential sediment recontamination sources. Ecology and/or KCIW will perform initial inspections at the following properties.

Facility or Property Name	Current Operator	Address	Facility/ Site ID	King County Tax Parcel
Former American Bathtub Refinishers Inc.	Modrock Concrete Design	1412 S Henderson Street	26135396	7883608608
Former Burned Laundry	Unknown	1414 S Concord Street	47552226	7883608623
Former Bus & Air Parcel Service Inc.	Unknown	9004 14th Avenue S	92792171	7883608578
Former Cascade Enterprises	Unknown	8709 14th Avenue S	93511879	7883608096
Former Crosby Auto Repair Shop	Unknown	8621 14th Avenue S	93927211	7883607842
Petrocard Systems Inc.	Pacific Pride	9014 14th Avenue S	1992812	7883608593
Reamco Electronics	Same	817 S Kenyon Street	83132785	7327906840
Former Scott Andrews Property	Unknown	8520 14th Avenue S	41287367	7883608714
Seattle Fire Station 26	Same	800 S Cloverdale Street	13152935	7883604285
Former Seattle Refrigeration and Manufacturing Co	Unknown	1057 S Director Street	18225132	2433700226
Service Specialties Inc.	Same	800 S Kenyon Street	15388822	7327906860
Former South Park BP/ Former Schauer Northwest Inc.	76 Service Station	8819 14th Avenue S	48968474 64285373	7883608370
Former Tom Thurber Property	Unknown	1420 S Henderson Street	23653754	7883608604
Warner's Foreign Auto Repair	Same	9001 14th Avenue S	1661671	7883608556

All Facility/Site ID numbers associated with a facility/property are listed in the table.

The 8th Avenue S CSO did not discharge between 1997 and 2009. The CSO discharged a total of 18 gallons during one event in October 2010 (King County 2011). Given the overflow history of the 8th Avenue S CSO, initial inspections at upland facilities is considered a low priority.

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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 Riverside Drive 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 Riverside Drive 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
Facilities within the Riverside Drive Source Control Area that are listed in Ecology's Facility/Site Database

Ecology Facility/ Site ID	Facility Name	Alternate Name(s)	Facility Address	Riverside Drive Data Gaps Report	Drainage Basin	Active EPA ID No.	Ecology CSCSL	NPDES Permit	KCIW Discharge Authoriza-tion or Permit	Ecology UST/ LUST List	LUST	Ecology NFA Determination	EPA CERCLA Section 104(e) Request for Information	Parcel	Figure
3963	14th Avenue S Street Improvements	none	14th Avenue S, S Cloverdale & S Director	■	●										
15642	4th Avenue S & S Trenton Storm Drain	none	4th Avenue S & S Trenton Street	■	❍										
22726	640 S Riverside Dr	Former Pro Fab Inc., Seattle Public Utilities S Riverside	640 S Riverside Drive	■	❍		♦						♦	5700	4b, 5a
72668839	African Northwest, Inc.	Former Elliott Bay Ind Cons, Elliott Bay Industries Inc	470 S Kenyon Street	■	❍					♦				1005, 1010, 1020, 1030	4b, 5a
6060	AIC International	none	736 S Chicago Street	■	❍									3372	4b, 5a
77734273	American Plastic Manufacturing Incorporated	Former Victory Auto Bumpers Inc,	526 S Monroe Street	■	❍									1990	4b, 5a
4328	Braicks Construction Inc	See Cloverdale Business Park	309 S Cloverdale Street Suite B3	■	❍									9012	4d, 5a
7503	Cain Bolt & Gasket	none	7724 7th Avenue S	■	❍									4170	4b, 5a
56766158	Cascade Diesel Engine Co LLC Cloverdale	Emerson Power Products, Frontier Door; See Meeco Manufacturing Co	426 S Cloverdale Street	■	□									9045	4b, 5a
43643315	Chevron 98484	none	8700 14th Avenue S		●					♦	♦				
38246778	Christian Brothers Floor Svc Inc	See Cloverdale Business Park	309 S Cloverdale Street Suite C20	■	❍	♦								9012	4d, 5a
4612472	Coach Maintenance	Royal Highway Tours	255 S Holden Street	■	❍					♦	♦			4510	4b, 5a
2430	Coast Crane Company	Former Manitowoc Western, Manitowoc Western Company Inc	8250 5th Avenue S	■	❍		♦		♦					0350	4b, 5a
9604	Consistent Coatings, Inc.	none	719 S Riverside Drive	■	❍									4110	4b, 5a
82818857	Custom Craiting	Former Besco Roofing Inc	233 S Holden Street	■	❍					♦				4570	4b, 5a
11942	Fabrication Specialties Ltd Art	none	527 S Portland Street	■	❍									3160	4b, 5a
8610624	Fibres International, Inc.	none	9208 4th Avenue S	■	❍			♦						9023	4d, 5c
68488062	Fire King of Seattle, Inc.	none	240 S Holden Street	■	❍									5005, 4985	4b, 5a
14644	Former Airport Towing	none	301 S Sullivan Street	■	❍									9084	4b, 5a
26135396	Former American Bathtub Refinishers Inc	none	1412 S Henderson Street	■	●	♦								8608	4c, 5b
29149762	Former Brown Engineering	none	550 S Monroe Street	■	❍									1805	4b, 5a
47552226	Former Burned Laundry	none	1414 S Concord Street	■	●									8623	4c, 5b
92792171	Former Bus & Air Parcel Service Inc	none	9004 14th Avenue S	■	●		♦			♦	♦			8578	4c, 5b
93511879	Former Cascade Enterprises	none	8709 14th Avenue S	■	●									8096	4c, 5b
88237831	Former Chemithon Surface Finishing Inc	none	521 S Monroe Street	■	❍									1660	4b, 5a
93927211	Former Crosby Auto Repair Shop	Stephanie Crosby Company	8621 14th Avenue S	■	●					♦	♦			7842	4c, 5b
28226866	Former Discount Drive Axle of Seattle	See Cloverdale Business Park	309 S Cloverdale Street Suite A11	■	❍									9012	4d, 5a
38576231	Former Emerald Services Group	Former Razore Enterprises, US Disposal; See Ness Cranes, Inc.	500 S Sullivan Street	■	●					♦	♦	♦		7883600600	4b, 5a
63168342	Former Glitsa American Inc	Glitsa American, Glitsa American Incorporated	327 S Kenyon Street	■	❍		♦			♦	♦			0740	4b, 5a
36385877	Former Guinns Automotive & Electric	none	245 S Austin Street	■	❍	♦								4845	4b, 5a
42127616	Former Hurlen Construction	Amercian Civil Const West Coast, Hurlen Construction Company	700 S Riverside Drive	■	❍		♦			♦	♦		♦	5725, 5350	4b, 5a
2278	Former King Auto & Truck Wrecking	none	543 S Monroe Street	■	❍							♦		1605	4b, 5a
1370584	Former KJM Electric Co	none	521 S Monroe Street	■	❍									1660	4b, 5a

Table 1
Facilities within the Riverside Drive Source Control Area that are listed in Ecology's Facility/Site Database

Ecology Facility/ Site ID	Facility Name	Alternate Name(s)	Facility Address	Riverside Drive Data Gaps Report	Drainage Basin	Active EPA ID No.	Ecology CSCSL	NPDES Permit	KCIW Discharge Authoriza-tion or Permit	Ecology UST/ LUST List	LUST	Ecology NFA Determination	EPA CERCLA Section 104(e) Request for Information	Parcel	Figure
71678662	Former Long Painting - 10th Avenue Facility	Long Interstate A Joint Ventur, Long Painting Company	8025 10th Avenue S	■	●					♦		♦		6900, 7020, 6930, 0915, 1055, 1045, 1065, 1095, 0590, 610, 9037, 9004, 9002, 1215	4c, 5b
12724197	Former Magnetic Penetrant Services Co Inc	See Cloverdale Business Park	309 S Cloverdale Street Unit B20	■	❍									9012	4d, 5a
11457	Former Mikes Truck Repair & Fabrication	none	515 S Southern Street	■	❍									0360	4b, 5a
78952325	Former Mill Engineering & Supply Co	See Gear Works Seattle, Inc.	516 S Chicago Street	■	❍									3180, 3210	4b, 5a
6661875	Former Pipe Specialities Inc	See Fabrication Specialties Ltd Art	531 S Portland Street	■	❍									3160	4b, 5a
92291647	Former Resource Recycling Technologies	Federal Marine & Defense Services, Fraser Boil & Ship Repair, LLC	8000 5th Avenue S	■	❍									0600, 1685	4b, 5a
26215242	Former Rockwell Automation	Reliance Electric; See Gear Works Seattle, Inc.	500 S Chicago Street	■	❍									3180, 3210	4b, 5a
64285373	Former Schauer Northwest Inc	See Former South Park BP	8819 14th Avenue S	■	●									8370	4c, 5b
41287367	Former Scott Andrews Property	Andrews Property	8520 14th Avenue S	■	●					♦	♦			8714	4c, 5b
84435338	Former Screen Matic Arts	none	9354 4th Avenue S	■	□										
18225132	Former Seattle Refrigeration and Manufacturing Co	Seattle Refrigeration & MFG Co	1057 S Director Street	■	●									0226	4c, 5b
48968474	Former South Park BP	none	8819 14th Avenue S	■	●					♦	♦			8370	4c, 5b
13132191	Former Spencer Industries Inc	See National Products Inc.	8410 Dallas Avenue S	■	●		♦							1140, 1160, 1130, 1270	4c, 5b
78879968	Former Superior Precision Analytical	See Cloverdale Business Park	309 S Cloverdale Street Suite B24	■	❍									9012	4d, 5a
23653754	Former Tom Thurber	none	1420 S Henderson Street	■	●					♦				8604	4c, 5b
45558857	Former Yale Materials Handling NW Inc	See Westec Industries, Inc.	8101 7th Avenue S	■	❍									0430, 0470	4b, 5a
10128921	Global Fabricators Inc.	Former Modern Iron & Steel Inc	7619 5th Avenue S	■	❍					♦				4770	4b, 5a
73412486	Graham Trucking, Inc.	South Park Truck & Trailer Repair	722 S Chicago Street	■	❍								♦	3375, 3380, 2670, 2700	4b, 5a
41888934	Hansen Machine Corp Seattle	See Lukas Machine Inc	712 S Portland Street	■	❍									4135, 4190, 4100	4b, 5a
73671237	Heartwood, Inc.	none	1414 S Director Street	■	●	♦								0041	4c, 5b
76764554	Hudson Bay Insulation	Former Long Painting Co 5th Ave	8230 5th Avenue S	■	❍									0005	4b, 5a
9309618	Independent Metals Plant 1	Independent Metals	747 S Monroe Street	■	●				♦				♦	2045, 1355, 1345, 1335,	4c, 5b
16139	Independent Metals Plant 2	Independent Metals S Kenyon St	816 S Kenyon Street	■	●			♦					♦	3645, 2520	4b, 5a
25623222	Interstate Coatings Inc UST 9194	See Interstate Coatings, Inc.	754 S Chicago Street	■	❍					♦	♦			3330, 3331	4b, 5a
2335	Interstate Coatings, Inc.	none	754 S Chicago Street	■	❍		♦							3330, 3331	4b, 5a
29892767	Kenyon Drum	none	Kenyon Street S at Transfer	■	❍										
39232961	Lukas Machine Inc	none	707 S Riverside Drive	■	❍			♦						4135, 4190, 4100	4b, 5a
5885095	Machinist Inc Tooling Division	none	8201 7th Avenue S	■	❍									0310	4b, 5a
72567932	Machinists Inc - Main Facility	See Machinists Inc.	509 S Austin Street	■	❍									5170, 5070	4b, 5a
22736	Machinists Inc.	Machinists Inc 5th Avenue	7600 5th Avenue S	■	❍			♦						5170, 5070	4b, 5a
15761	Manufacturing Technologies, Inc.	MTI	7709 5th Avenue S	■	❍									4470	4b, 5a
38921541	Marine Lumber Service Inc	none	525 S Chicago Street	■	❍			♦		♦	♦			2920, 2900, 2895, 1925	4b, 5a

Table 1
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Ecology Facility/ Site ID	Facility Name	Alternate Name(s)	Facility Address	Riverside Drive Data Gaps Report	Drainage Basin	Active EPA ID No.	Ecology CSCSL	NPDES Permit	KCIW Discharge Authoriza-tion or Permit	Ecology UST/ LUST List	LUST	Ecology NFA Determination	EPA CERCLA Section 104(e) Request for Information	Parcel	Figure
73969348	Marine Lumber Service Shop	See Marine Lumber Service Inc.	558 S Kenyon Street	■	❍					♦				2850	4b, 5a
15844	McFabco Steel Corporation	McFabco Steel	635 S Elmgrove Street	■	❍									0470	4b, 5a
71378133	Meeco Manufacturing Co.	Former Tri Emerald	432 S Cloverdale Street	■	□									9045	4b, 5a
8127	Modern Coach Modern Pattern	none	7601 5th Avenue S	■	❍									4792, 4830	4b, 5a
25678771	Modern Machine Company	Modern Machine Company	519 S Elmgrove Street	■	●									0600, 1685	4b, 5a
24615 7598	National Products Inc.	none	8410 Dallas Avenue S	■	●									1140, 1160, 1130, 1270	4c, 5b
16838	National Products S Elmgrove	See Former Long Painting - 10th Avenue Facility	1017 S Elmgrove Street	■	●				♦					1055, 1045, 1065, 1095,	4c, 5b
4203517	Ness Cranes, Inc	none	500 S Sullivan Street	■	❍									7883600600	4b, 5a
62275925	Northern Freight Lines Inc	See Graham Trucking, Inc.	730 S Chicago Street	■	❍					♦				3375, 3380, 2670, 2700	4b, 5a
74745382	Northwest Grating Products, Inc.	Northwest Grating Products	9230 4th Avenue S	■	❍			♦						9051	4d, 5c
7221	Northwind Marine	none	605 S Riverside Drive	■	●									5775	4b, 5a
7969	Olsson Manufacturing Co	See Modern Machine Company	525 S Elmgrove Street	■	❍									0600, 1685	4b, 5a
45787437	Olympic Steel Door	none	7800 7th Avenue S	■	❍		♦			♦	♦			2710	4b, 5a
56779778	Pacific Pile & Marine	Former DC Tooling Repair	582 S Riverside Drive	■	●								♦	6755	4b, 5a
1992812	Petrocard Systems Inc	Petrocard Services Inc 14th Avenue S	9014 14th Avenue S	■	●					♦				8593	4c, 5b
7170	Phils Custom Bindery	See Cloverdale Business Park	309 S Cloverdale Street, Suite A12	■	❍									9012	4d, 5a
7936495	Portable Sheds of America	REDD, Inc.	7510 5th Avenue S	■	❍					♦				5855	4b, 5a
81158515	Rasmussen Equipment Co Inc	See Rasmussen Equipment Company	415 S Cloverdale Street	■	❍					♦	♦	♦		9061	4b, 5a
22497475	Rasmussen Equipment Company	none	8727 5th Avenue S	■	❍									9014	4b, 5a
83132785	Reamco Electronics	none	817 S Kenyon Street	■	●									6840	4c, 5b
17130	Revere Group Seattle	none	9310 4th Avenue S	■	❍	♦								0010	4d, 5c
59283333	Rogers Machinery Co Inc	none	7800 5TH Avenue S	■	❍									2960	4b, 5a
3644425	S Chicago St Dump	none	251 S Chicago Street	■	❍										
17878123	S Holden Abandoned Container	none	750 Block S Holden Street	■	❍	♦									
1852818	S Kenyon St	none	832 S Kenyon Street	■	●										
9401	Sea Mar Family Housing	none	1000 S Henderson	■	●									8720	4c, 5b
6041351	Seattle City Turkey Duck Swale	Turkey Duck Swale	9311 4th Avenue S	■	□										
13152935	Seattle Fire Station 26	none	800 S Cloverdale Street	■	❍					♦				4285	4c, 5b
6407	Seattle Heat Treaters, Inc.	none	521 S Holden Street	■	❍									4315	4b, 5a
59692187	Seidehuber Iron & Bronze Works Inc	none	8009 7th Avenue S	■	❍					♦				1775	4b, 5a
15388822	Service Specialties Inc.	WFI	800 S Kenyon Street	■	●					♦				6860	4c, 5b
29633897	Shawnee Painting Sandblastin	See Former Long Painting - 10th Avenue Facility	8107 10th Avenue S	■	●										
861945	Silver Bay Logging Inc	See Independent Metals Plant 2	7760 8th Avenue S	■	●								♦	3645	4b, 5a
6253396	Sirius Maritime Company	See Cloverdale Business Park	309 S Cloverdale D21	■	❍									9012	4d, 5a
12429	Smith Berger Marine, Inc	none	7915 10th Avenue S	■	●									7819500000	4b, 5b

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Ecology Facility/ Site ID	Facility Name	Alternate Name(s)	Facility Address	Riverside Drive Data Gaps Report	Drainage Basin	Active EPA ID No.	Ecology CSCSL	NPDES Permit	KCIW Discharge Authoriza-tion or Permit	Ecology UST/ LUST List	LUST	Ecology NFA Determination	EPA CERCLA Section 104(e) Request for Information	Parcel	Figure
81861618	Snyder Industries Inc	See Modern Machine Company	524 S Southern Street	■	●									0600, 1685	4b, 5a
6950604	Sound Propeller Services, Inc.	none	7916 8th Avenue S	■	●									7819500000	4b, 5b
93436287	The Gear Works	The Gear Works Seattle Inc	500 S Portland Street	■	❍	♦		♦						4230, 3180, 3210	4b, 5a
12333317	Tierney Electrical Manufacturing Company	none	7901 7th Avenue S	■	❍	♦								1825	4c, 5a
9457	Tours Northwest	none	8221 7th Avenue S	■	❍									0054	4b, 5a
1661671	Warner's Foreign Auto Repair	Arthur J Warner, Waner's Auto Repair	9001 14th Avenue S	■	●	♦	♦			♦	♦			8556	4c, 5b
77384581	Washington Liftruck	Washington Liftruck Inc	700 S Chicago Street	■	❍				♦					3385	4b, 5a
18137296	West Coast Wire Rope & Rigging	West Coast Wire & Rope Rigging Inc	7777 7th Avenue S	■	❍	♦		♦						3120	4b, 5a
70748294	West Fork Nelson	See Sound Propeller Services, Inc.	7918 8th Avenue S	■	●					♦				7819500000	4b, 5b
89886819	Westec Industries, Inc.	none	8111 7th Avenue S	■	❍	♦								0430, 0470	4b, 5a
19739	Westeel Company	none	8001 7th Avenue S	■	❍									1590	4b, 5a
56738526	WestFork Nelson Inc	See Sound Propeller Services, Inc.	7916 8th Avenue S	■	●					♦				7819500000	4b, 5b
95749157	Workboats Northwest Inc	See Independent Metals Plant 2	7814 8th Avenue S	■	●									2520	4b, 5a

■ - Included in Sections 4.0, 5.0, and 6.0 in Riverside Drive Data Gaps Report
□ - Facility is located in the 7th Avenue S SD Basin Only
❍ - Facility is located in both the 7th Avenue S SD Basin and 8th Avenue S CSO Basin
● - Facility is located in the 8th Avenue S CSO Basin Only
♦ - Additional information regarding this facility is available in Appendix C

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

Table 2
Chemicals Detected Above Screening Levels in Surface Sediment Samples
Riverside Drive Source Control Area

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	SQS Exceedance Factor	CSL Exceedance Factor
Metals											
LDW Outfall Sampling	LDW-SS2112-A	4/8/2011	Mercury	6.50E+00	4.53		0.41	0.59	mg/kg dw	16	11
PAHs											
LDW Dioxin Sampling	LDW-SS530	12/15/2009	2-Methylnaphthalene	6.60E-01	1.56	4.20E+01	38	64	mg/kg OC	1.1	<1
LDW RI Phase 2 Round 2	LDW-SS95	3/9/2005	Acenaphthene	4.60E+00	2.65	1.74E+02	16	57	mg/kg OC	11	3.0
LDW Dioxin Sampling	LDW-SS530	12/15/2009	Acenaphthene	9.70E-01	1.56	6.20E+01	16	57	mg/kg OC	3.9	1.1
LDW RI Phase 2 Round 2	LDW-SS95	3/9/2005	Anthracene	1.00E+01	2.65	3.77E+02	220	1200	mg/kg OC	1.7	<1
LDW Dioxin Sampling	LDW-SS530	12/15/2009	Benzo(a)anthracene	3.10E+00	1.56	2.00E+02	110	270	mg/kg OC	1.8	<1
LDW RI Phase 2 Round 2	LDW-SS95	3/9/2005	Benzo(a)anthracene	4.00E+00	2.65	1.51E+02	110	270	mg/kg OC	1.4	<1
LDW Dioxin Sampling	LDW-SS530	12/15/2009	Benzo(a)pyrene	3.20E+00	1.56	2.10E+02	99	210	mg/kg OC	2.1	1
LDW Dioxin Sampling	LDW-SS530	12/15/2009	Benzo(g,h,i)perylene	2.30E+00	1.56	1.50E+02	31	78	mg/kg OC	4.8	1.9
LDW Dioxin Sampling	LDW-SS530	12/15/2009	Chrysene	3.80E+00	1.56	2.40E+02	110	460	mg/kg OC	2.2	<1
LDW RI Phase 2 Round 2	LDW-SS95	3/9/2005	Chrysene	5.70E+00	2.65	2.15E+02	110	460	mg/kg OC	2.0	<1
LDW Dioxin Sampling	LDW-SS530	12/15/2009	Dibenzo(a,h)anthracene	5.80E-01	1.56	3.70E+01	12	33	mg/kg OC	3.1	1.1
LDW RI Phase 2 Round 2	LDW-SS95	3/9/2005	Dibenzofuran	4.00E+00	2.65	1.51E+02	15	58	mg/kg OC	10	2.6
LDW Dioxin Sampling	LDW-SS530	12/15/2009	Dibenzofuran	4.60E-01	1.56	2.90E+01	15	58	mg/kg OC	1.9	<1
LDW RI Phase 2 Round 2	LDW-SS95	3/9/2005	Fluoranthene	1.70E+01	2.65	6.42E+02	160	1200	mg/kg OC	4.0	<1
LDW Dioxin Sampling	LDW-SS530	12/15/2009	Fluoranthene	8.10E+00	1.56	5.20E+02	160	1200	mg/kg OC	3.3	<1
EPA Site Investigation	DR221	8/13/1998	Fluoranthene	4.20E+00	1.57	2.68E+02	160	1200	mg/kg OC	1.7	<1
LDW RI Phase 2 Round 3	LDW-SS335	10/4/2006	Fluoranthene	7.50E+00	2.89	2.60E+02	160	1200	mg/kg OC	1.6	<1
LDW RI Phase 2 Round 2	LDW-SS95	3/9/2005	Fluorene	6.80E+00	2.65	2.57E+02	23	79	mg/kg OC	11	3.2
LDW Dioxin Sampling	LDW-SS530	12/15/2009	Fluorene	8.20E-01	1.56	5.30E+01	23	79	mg/kg OC	2.3	<1
LDW Dioxin Sampling	LDW-SS530	12/15/2009	Indeno(1,2,3-cd)pyrene	1.60E+00	1.56	1.00E+02	34	88	mg/kg OC	2.9	1.1
LDW RI Phase 2 Round 2	LDW-SS95	3/9/2005	Indeno(1,2,3-cd)pyrene	9.70E-01	2.65	3.66E+01	34	88	mg/kg OC	1.1	<1
LDW RI Phase 2 Round 2	LDW-SS95	3/9/2005	Phenanthrene	2.20E+01	2.65	8.30E+02	100	480	mg/kg OC	8.3	1.7
LDW Dioxin Sampling	LDW-SS530	12/15/2009	Phenanthrene	7.10E+00	1.56	4.60E+02	100	480	mg/kg OC	4.6	<1
LDW Dioxin Sampling	LDW-SS530	12/15/2009	Total benzofluoranthenes	4.40E+00 J	1.56	2.80E+02	230	450	mg/kg OC	1.2	<1
LDW Dioxin Sampling	LDW-SS530	12/15/2009	Total HPAH (calc'd)	3.45E+01 J	1.56	2.21E+03	960	5300	mg/kg OC	2.3	<1
LDW RI Phase 2 Round 2	LDW-SS95	3/9/2005	Total HPAH (calc'd)	4.26E+01 J	2.65	1.61E+03	960	5300	mg/kg OC	1.7	<1
LDW RI Phase 2 Round 2	LDW-SS95	3/9/2005	Total LPAH (calc'd)	4.40E+01	2.65	1.66E+03	370	780	mg/kg OC	4.5	2.1
LDW Dioxin Sampling	LDW-SS530	12/15/2009	Total LPAH (calc'd)	1.18E+01	1.56	7.56E+02	370	780	mg/kg OC	2	<1
Phthalates											
LDW RI Phase 2 Round 3	LDW-SS335	10/4/2006	Bis(2-ethylhexyl)phthalate	2.60E+00	2.89	9.00E+01	47	78	mg/kg OC	1.9	1.2
LDW RI Phase 2 Round 3	LDW-SS335	10/4/2006	Butyl benzyl phthalate	2.00E-01	2.89	6.90E+00	4.9	64	mg/kg OC	1.4	<1
Other SVOCs											
LDW Outfall Sampling	LDW-SS2106-D	3/4/2011	1,4-Dichlorobenzene	1.50E-01	2.26	6.60E+00	3.1	9	mg/kg OC	2.1	<1
Ecology SPI	TRI-095T	8/11/2006	2,4-Dimethylphenol	6.40E-02	2.39		29	29	ug/kg dw	2.2	2.2
LDW RI Phase 2 Round 3	LDW-SS336	10/3/2006	Benzoic acid	1.60E+00	2.09		650	650	ug/kg DW	2.5	2.5
LDW Outfall Sampling	LDW-SS2106-U	3/7/2011	Benzyl alcohol	6.50E-01	3.55	1.80E+01	57	73	ug/kg DW	11	8.9
LDW RI Phase 2 Round 3	LDW-SS336	10/3/2006	Benzyl alcohol	5.40E-01 J	2.09		57	73	ug/kg DW	9.5	7.4

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Chemicals Detected Above Screening Levels in Surface Sediment Samples
Riverside Drive Source Control Area

Event Name	Location Name	Date Collected	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	SQS Exceedance Factor	CSL Exceedance Factor
LDW Outfall Sampling	LDW-SS2112-A	4/8/2011	Benzyl alcohol	5.40E-01	4.53		57	73	ug/kg DW	9.5	7.4
LDW Outfall Sampling	LDW-SS2106-A	3/4/2011	Benzyl alcohol	3.50E-01	2.61	1.30E+01	57	73	ug/kg DW	6.1	4.8
LDW Outfall Sampling	LDW-SS2108-U	3/7/2011	Benzyl alcohol	3.30E-01 J	2.81	1.20E+01	57	73	ug/kg DW	5.8	4.5
LDW Outfall Sampling	LDW-SS2106-D	3/4/2011	Benzyl alcohol	2.10E-01	2.26	9.30E+00	57	73	ug/kg DW	3.7	2.9
LDW Outfall Sampling	LDW-SS2108-A	3/7/2011	Benzyl alcohol	1.70E-01	2.35	7.20E+00	57	73	ug/kg DW	3.0	2.3
LDW Outfall Sampling	LDW-SS2113-A	3/7/2011	Benzyl alcohol	1.20E-01 J	1.59	7.50E+00	57	73	ug/kg DW	2.1	1.6
Ecology SPI	TRI-095T	8/11/2006	Benzyl alcohol	7.10E-02	2.39		57	73	ug/kg DW	1.2	<1
LDWRI-Benthic	B7a	8/30/2004	Hexachlorobenzene	6.30E-02 J	1.64	3.84E+00	0.38	2.3	mg/kg OC	10	1.7
EPA Site Investigation	DR194	8/20/1998	Hexachlorobenzene	2.00E-02	3.06	6.54E-01	0.38	2.3	mg/kg OC	1.7	<1
EPA Site Investigation	DR203	8/27/1998	Phenol	7.10E-01	1.06	6.70E+01	420	1200	ug/kg DW	1.7	<1
PCBs											
LDW Dioxin Sampling	LDW-SS530	12/15/2009	PCBs	8.60E-01	1.56	5.50E+01	12	65	mg/kg OC	4.6	<1
LDW Outfall Sampling	LDW-SS2106-A	3/4/2011	PCBs	1.20E+00	2.61	4.60E+01	12	65	mg/kg OC	3.8	<1
EPA SI	DR201	8/27/1998	PCBs	6.55E-01	1.7	3.85E+01	12	65	mg/kg OC	3.2	<1
NOAA Site Characterization	CH0019	10/20/1997	PCBs	4.30E-01	1.5	2.87E+01	12	65	mg/kg OC	2.4	<1
KC WQA	WQASOPK	5/15/1997	PCBs	3.81E-01	1.67	2.28E+01	12	65	mg/kg OC	1.9	<1
LDWRI-SurfaceSedimentRound2	LDW-SS106	3/8/2005	PCBs	2.10E-01	0.945	2.20E+01	12	65	mg/kg OC	1.8	<1
NOAA Site Characterization	WIT270	11/4/1997	PCBs	1.00E-01	0.52	1.92E+01	12	65	mg/kg OC	1.6	<1
Plant 2 RFI-2b	SD-DUW75	4/2/1996	PCBs	2.70E-01	1.7	1.60E+01	12	65	mg/kg OC	1.3	<1
EPA SI	DR222	8/13/1998	PCBs	1.32E-01	0.95	1.40E+01	12	65	mg/kg OC	1.2	<1
KC WQA	WQASOPK	5/28/1997	PCBs	2.49E-01	1.77	1.41E+01	12	65	mg/kg OC	1.2	<1
NOAA Site Characterization	WIT275	11/12/1997	PCBs	2.00E-01	1.4	1.43E+01	12	65	mg/kg OC	1.2	<1
KC WQA	WQASOPK	5/20/1997	PCBs	2.25E-01	1.73	1.30E+01	12	65	mg/kg OC	1.1	<1
NOAA Site Characterization	WIT276	10/3/1997	PCBs	1.20E-01	0.91	1.32E+01	12	65	mg/kg OC	1.1	<1
NOAA Site Characterization	WST334	10/24/1997	PCBs	1.20E-01	0.95	1.26E+01	12	65	mg/kg OC	1.1	<1

mg/kg - Milligrams per kilogram
DW - Dry weight
TOC - Total organic carbon
OC - Organic carbon normalized
SQS - Sediment Quality Standard from Washington Sediment Management Standards
CSL - Cleanup Screening Level from Washington Sediment Management Standards
PAHs - Polycyclic aromatic hydrocarbons

J - Estimated value between the method detection limit and the laboratory reporting limit
Total HPAH - Total high molecular weight PAH
Total LPAH - Total low molecular weight PAH
SVOCs - Semi-volatile organic compounds
PCBs - Polychlorinated biphenyls

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

Table 3
Chemicals Detected Above Screening Levels in Subsurface Sediment Samples
Riverside Drive Source Control Area

Event Name	Location Name	Date Collected	Sample Depth (feet)	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	SQS Exceedance Factor	CSL Exceedance Factor
PAHs												
LDW Subsurface Sediment 2006	LDW-SC46	2/24/2006	1 - 2	Chrysene	1.50E+00	1.42	1.10E+02	110	460	mg/kg OC	1	<1
LDW Subsurface Sediment 2006	LDW-SC46	2/24/2006	0 - 1	Fluoranthene	3.90E+00	1.81	2.20E+02	160	1200	mg/kg OC	1.4	<1
LDW Subsurface Sediment 2006	LDW-SC46	2/24/2006	1 - 2	Fluoranthene	2.90E+00	1.42	2.00E+02	160	1200	mg/kg OC	1.3	<1
LDW Subsurface Sediment 2006	LDW-SC46	2/24/2006	1 - 2	Total HPAH (calc'd)	1.37E+01	1.42	9.60E+02	960	5300	mg/kg OC	1	<1
Other SVOCs												
LDW Subsurface Sediment 2006	LDW-SC46	2/24/2006	1 - 2	Benzyl alcohol	6.40E-02 J	1.42		57	73	ug/kg dw	1.1	<1
LDW Subsurface Sediment 2006	LDW-SC46	2/24/2006	1 - 2	Hexachlorobenzene	1.00E-02	1.42	7.00E-01	0.38	2.3	mg/kg OC	1.8	<1
PCBs												
LDW Subsurface Sediment 2006	LDW-SC47	2/23/2006	1 - 2	PCBs	2.00E+00	1.75	1.10E+02	12	65	mg/kg OC	9.2	1.7
LDW Subsurface Sediment 2006	LDW-SC47	2/23/2006	2 - 3	PCBs	4.90E-01 J	1.61	3.00E+01	12	65	mg/kg OC	2.5	<1
LDW Subsurface Sediment 2006	LDW-SC46	2/24/2006	2 - 4	PCBs	2.70E-01	1.94	1.40E+01	12	65	mg/kg OC	1.2	<1
LDW Subsurface Sediment 2006	LDW-SC46	2/24/2006	1 - 2	PCBs	1.85E-01	1.42	1.30E+01	12	65	mg/kg OC	1.1	<1
LDW Subsurface Sediment 2006	LDW-SC46	2/24/2006	0 - 1	PCBs	2.14E-01	1.81	1.20E+01	12	65	mg/kg OC	1	<1

mg/kg - Milligrams per kilogram
DW - Dry weight
TOC - Total organic carbon
OC - Organic carbon normalized
SQS - Sediment Quality Standard from Washington Sediment Management Standards
CSL - Cleanup Screening Level from Washington Sediment Management Standards

J - Estimated value between the method detection limit and the laboratory reporting limit
PAH - Polycyclic aromatic hydrocarbons
Total HPAH - Total high molecular weight PAH
SVOCs - Semi-volatile organic compounds
PCBs - Polychlorinated biphenyls

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

Table 4
Dioxins and Furans Detected Above LDW Background Concentrations in Surface Sediment Samples
Riverside Drive Source Control Area

Event Name	Location Name	Date Collected	Chemical	Conc'n (ng/kg DW)	TOC %	LDW Background	Units	LDW Background Exceedance
LDW Dioxin Sampling	LDW-SS530	12/15/2009	Dioxin/furan TEQ - mammal (half DL)	35.7 J	1.56	1.6	ng/kg DW	22
EPA SI	DR221	8/13/1998	Dioxin/furan TEQ - mammal (half DL)	3.9 J		1.6	ng/kg DW	2.4
LDW Outfall Sampling	LDW-SS2106-A	3/4/2011	Dioxin/furan TEQ - mammal (half DL)	3.2 J	2.61	1.6	ng/kg DW	2.0
EPA SI	DR203	8/27/1998	Dioxin/furan TEQ - mammal (half DL)	2.2 J		1.6	ng/kg DW	1.4
EPA SI	DR224	8/20/1998	Dioxin/furan TEQ - mammal (half DL)	2.0		1.6	ng/kg DW	1.3

ng/kg - nanograms per kilogram
DW - Dry weight
TOC - Total Organic Carbon
LDW - Lower Duwamish Waterway
TEQ - Toxic Equivalency
J - Estimated value between the method detection limit and the laboratory limit

Table 5
CSO/EOF Discharges to the Lower Duwamish Waterway

Outfall	Type (Owner)	Discharge Serial Number	Location	Average Overflow Frequency (events/year) 2000 to 2007	Annual Average Volume (mgy) 2000 to 2007
Diagonal Avenue S[a]	CSO (SPU) SD (SPU)	NA	RM 0.5 E	20.1	15.8[b]
Hanford No. 1[c]	CSO (King County)	031	RM 0.5 E	9	18.75
Duwamish pump station East	CSO (King County)	035	RM 0.5 E	<1.0	0.51
Duwamish pump station West	CSO (King County)	034	RM 0.5 W	<1.0	0.60
S. Brandon Street	CSO (King County)	041	RM 1.1 E	23	31.63
Terminal 115	CSO (King County)	038	RM 1.9 W	3	3.52
S. Brighton Street	CSO (SPU) SD (SPU)	NA	RM 2.1 E	NA[g]	NA
King County Airport SD#3/PS44 EOF[d]	SD (King County) EOF (SPU)	NA	RM 2.8 E	NA	NA
E. Marginal Way S. pump station	EOF (King County)	043	RM 2.8 E	None recorded	NA
8th Avenue S	CSO (King County)	040	RM 2.8 W	0	0
King County Airport SD#2/PS78 EOF[e]	SD (King County) EOF (SPU)	NA	RM 3.8 E	NA	NA
Michigan Street	CSO (King County)	039	RM 1.9 E	11	17.58
W. Michigan	CSO (King County)	042	RM 2.0 W	4	1.23
Norfolk	CSO (King County) SD (King County) EOF (SPU)[f]	044	RM 4.8 E	4	0.28

Source: King County 2008

a. The Diagonal Avenue S. SD outfall is shared by stormwater and seven separate overflow points, including the City's Diagonal CSOs and the County's Hanford No. 1 CSO. The overflow frequency and volume listed are for the Diagonal CSOs only.

b. This average volume does not include the contribution from King County's Hanford No. 1 CSO, but does include the remaining seven overflow points that discharge through the Diagonal Avenue S. CSO/SD.

c. Hanford No. 1 discharges to the LDW through the Diagonal Avenue S. SD.

d. SPU Pump Station 44 discharges via EOF No. 117 to King County Airport SD#3 at Slip 4.

e. SPU Pump Station 78 discharges via EOF No. 156 to King County Airport SD#2, near Boeing Isaacson.

f. SPU Pump Station 17 discharges to the Norfolk CSO/SD.

g. Has not overflowed since monitoring began in March 2000.

mgy – million gallons per year

NA – Not available

Table 6
Chemicals Detected in Bank Soil Samples
Riverside Drive Source Control Area

Sample Location	Date Sampled	Chemical	Conc'n (mg/kg)	SQS	CSL	Units	SQS Exceedance Factor	CSL Exceedance Factor	LDW Background	Units	LDW Background Exceedance Factor
SP-BS-2-1	5/12/2011	Arsenic	9	57	93	mg/kg dw	<1	<1	7.3	mg/kg dw	1.2
SP-BS-1-1	5/12/2011	Arsenic	7.4	57	93	mg/kg dw	<1	<1	7.3	mg/kg dw	1.0
SP-BS-2-2	5/12/2011	Arsenic	6.6	57	93	mg/kg dw	<1	<1	7.3	mg/kg dw	<1
SP-BS-1-2	5/12/2011	Arsenic	6.4	57	93	mg/kg dw	<1	<1	7.3	mg/kg dw	<1
SP-BS-2-1	5/12/2011	Cadmium	0.9	5.1	6.7	mg/kg dw	<1	<1			
SP-BS-2-1	5/12/2011	Chromium	21.5	260	270	mg/kg dw	<1	<1			
SP-BS-1-1	5/12/2011	Chromium	18.4	260	270	mg/kg dw	<1	<1			
SP-BS-2-2	5/12/2011	Chromium	15.7	260	270	mg/kg dw	<1	<1			
SP-BS-1-2	5/12/2011	Chromium	14.6	260	270	mg/kg dw	<1	<1			
SP-BS-2-1	5/12/2011	Copper	56.4	390	390	mg/kg dw	<1	<1			
SP-BS-1-1	5/12/2011	Copper	26.8	390	390	mg/kg dw	<1	<1			
SP-BS-1-2	5/12/2011	Copper	24.3	390	390	mg/kg dw	<1	<1			
SP-BS-2-2	5/12/2011	Copper	20.1	390	390	mg/kg dw	<1	<1			
SP-BS-2-1	5/12/2011	Diesel Range Organics	35								
SP-BS-1-1	5/12/2011	Diesel Range Organics	8.8								
SP-BS-2-1	5/12/2011	Lead	116	450	530	mg/kg dw	<1	<1			
SP-BS-1-1	5/12/2011	Lead	9	450	530	mg/kg dw	<1	<1			
SP-BS-1-2	5/12/2011	Lead	6	450	530	mg/kg dw	<1	<1			
SP-BS-2-1	5/12/2011	Lube Oil	360								
SP-BS-1-1	5/12/2011	Lube Oil	32								
SP-BS-2-2	5/12/2011	Mercury	0.09	0.41	0.59	mg/kg dw	<1	<1			
SP-BS-2-1	5/12/2011	Mercury	0.06	0.41	0.59	mg/kg dw	<1	<1			
SP-BS-1-2	5/12/2011	Mercury	0.04	0.41	0.59	mg/kg dw	<1	<1			
SP-BS-1-1	5/12/2011	Mercury	0.03	0.41	0.59	mg/kg dw	<1	<1			
SP-BS-2-1	5/12/2011	Zinc	149	410	960	mg/kg dw	<1	<1			
SP-BS-1-1	5/12/2011	Zinc	86	410	960	mg/kg dw	<1	<1			
SP-BS-2-2	5/12/2011	Zinc	51	410	960	mg/kg dw	<1	<1			
SP-BS-1-2	5/12/2011	Zinc	48	410	960	mg/kg dw	<1	<1			

Sample Location	Date Sampled	Chemical	Conc'n (ug/kg)	LAET	2LAET	Units	LAET Exceedance Factor	2LAET Exceedance Factor	LDW Background	Units	LDW Background Exceedance Factor
SP-BS-2-1	5/12/2011	1,2,3,4,6,7,8-HpCDD	3.52E-01								
SP-BS-1-1	5/12/2011	1,2,3,4,6,7,8-HpCDD	1.50E-01								
SP-BS-2-2	5/12/2011	1,2,3,4,6,7,8-HpCDD	1.22E-02								
SP-BS-1-2	5/12/2011	1,2,3,4,6,7,8-HpCDD	4.74E-03								
SP-BS-2-1	5/12/2011	1,2,3,4,6,7,8-HpCDF	1.64E-01								
SP-BS-1-1	5/12/2011	1,2,3,4,6,7,8-HpCDF	7.82E-02								
SP-BS-2-2	5/12/2011	1,2,3,4,6,7,8-HpCDF	2.37E-03								
SP-BS-1-2	5/12/2011	1,2,3,4,6,7,8-HpCDF	2.13E-03								
SP-BS-2-1	5/12/2011	1,2,3,4,7,8,9-HpCDF	6.69E-03								
SP-BS-1-1	5/12/2011	1,2,3,4,7,8,9-HpCDF	3.55E-03								
SP-BS-2-1	5/12/2011	1,2,3,4,7,8-HxCDD	4.45E-03								
SP-BS-1-1	5/12/2011	1,2,3,4,7,8-HxCDD	3.45E-03								

Table 6
Chemicals Detected in Bank Soil Samples
Riverside Drive Source Control Area

Sample Location	Date Sampled	Chemical	Conc'n (ug/kg)	LAET	2LAET	Units	LAET Exceedance Factor	2LAET Exceedance Factor	LDW Background	Units	LDW Background Exceedance Factor
SP-BS-2-1	5/12/2011	1,2,3,4,7,8-HxCDF	7.66E-03								
SP-BS-1-1	5/12/2011	1,2,3,4,7,8-HxCDF	4.20E-03								
SP-BS-2-1	5/12/2011	1,2,3,6,7,8-HxCDD	1.65E-02								
SP-BS-1-1	5/12/2011	1,2,3,6,7,8-HxCDD	8.69E-03								
SP-BS-2-1	5/12/2011	1,2,3,6,7,8-HxCDF	6.48E-03								
SP-BS-1-1	5/12/2011	1,2,3,6,7,8-HxCDF	5.21E-03								
SP-BS-2-1	5/12/2011	1,2,3,7,8,9-HxCDD	9.00E-03								
SP-BS-1-1	5/12/2011	1,2,3,7,8,9-HxCDD	7.04E-03								
SP-BS-2-1	5/12/2011	1,2,3,7,8-PeCDD	4.73E-03								
SP-BS-1-1	5/12/2011	1,2,3,7,8-PeCDD	2.80E-03								
SP-BS-2-1	5/12/2011	1,2,3,7,8-PeCDF	2.93E-03								
SP-BS-1-1	5/12/2011	1-Methylnaphthalene	22								
SP-BS-1-2	5/12/2011	2,2',4,4',5-Pentabromodiphenyl ether	0.6								
SP-BS-2-1	5/12/2011	2,3,4,6,7,8-HxCDF	1.18E-02								
SP-BS-1-1	5/12/2011	2,3,4,6,7,8-HxCDF	6.66E-03								
SP-BS-2-1	5/12/2011	2,3,4,7,8-PeCDF	5.29E-03								
SP-BS-1-1	5/12/2011	2,3,4,7,8-PeCDF	2.60E-03								
SP-BS-2-1	5/12/2011	2,3,7,8-TCDD	2.72E-03								
SP-BS-2-1	5/12/2011	2,3,7,8-TCDF	4.64E-03								
SP-BS-1-1	5/12/2011	2,3,7,8-TCDF	2.32E-03								
SP-BS-1-1	5/12/2011	2-Methylnaphthalene	50	670	1400	ug/kg dw	<1	<1			
SP-BS-2-1	5/12/2011	2-Methylnaphthalene	9.2	670	1400	ug/kg dw	<1	<1			
SP-BS-1-2	5/12/2011	2-Methylnaphthalene	8.2	670	1400	ug/kg dw	<1	<1			
SP-BS-2-1	5/12/2011	4,4'-DDT	18								
SP-BS-1-1	5/12/2011	4,4'-DDT	9.6								
SP-BS-1-1	5/12/2011	Acenaphthene	12	500	730	ug/kg dw	<1	<1			
SP-BS-2-2	5/12/2011	Acenaphthene	7.4	500	730	ug/kg dw	<1	<1			
SP-BS-1-1	5/12/2011	Acenaphthylene	5.8	1300	1300	ug/kg dw	<1	<1			
SP-BS-1-1	5/12/2011	Anthracene	22	960	4400	ug/kg dw	<1	<1			
SP-BS-2-2	5/12/2011	Anthracene	12	960	4400	ug/kg dw	<1	<1			
SP-BS-1-1	5/12/2011	Anthracene	7.2	960	4400	ug/kg dw	<1	<1			
SP-BS-2-1	5/12/2011	Aroclor 1260	34								
SP-BS-1-1	5/12/2011	Aroclor 1260	27								
SP-BS-1-1	5/12/2011	Benzo(a)anthracene	110	1300	1600	ug/kg dw	<1	<1			
SP-BS-2-1	5/12/2011	Benzo(a)anthracene	26	1300	1600	ug/kg dw	<1	<1			
SP-BS-2-1	5/12/2011	Benzo(a)anthracene	24	1300	1600	ug/kg dw	<1	<1			
SP-BS-1-1	5/12/2011	Benzo(a)anthracene	22	1300	1600	ug/kg dw	<1	<1			
SP-BS-2-2	5/12/2011	Benzo(a)anthracene	21	1300	1600	ug/kg dw	<1	<1			
SP-BS-1-1	5/12/2011	Benzo(a)pyrene	99	1600	3000	ug/kg dw	<1	<1			
SP-BS-2-1	5/12/2011	Benzo(a)pyrene	33	1600	3000	ug/kg dw	<1	<1			
SP-BS-2-1	5/12/2011	Benzo(a)pyrene	32	1600	3000	ug/kg dw	<1	<1			
SP-BS-1-1	5/12/2011	Benzo(a)pyrene	28	1600	3000	ug/kg dw	<1	<1			
SP-BS-2-2	5/12/2011	Benzo(a)pyrene	12	1600	3000	ug/kg dw	<1	<1			
SP-BS-1-1	5/12/2011	Benzo(g,h,i)perylene	80	670	720	ug/kg dw	<1	<1			
SP-BS-2-1	5/12/2011	Benzo(g,h,i)perylene	61	670	720	ug/kg dw	<1	<1			

Table 6
Chemicals Detected in Bank Soil Samples
Riverside Drive Source Control Area

Sample Location	Date Sampled	Chemical	Conc'n (ug/kg)	LAET	2LAET	Units	LAET Exceedance Factor	2LAET Exceedance Factor	LDW Background	Units	LDW Background Exceedance Factor
SP-BS-2-1	5/12/2011	Benzo(g,h,i)perylene	54	670	720	ug/kg dw	<1	<1			
SP-BS-1-1	5/12/2011	Benzo(g,h,i)perylene	29	670	720	ug/kg dw	<1	<1			
SP-BS-2-2	5/12/2011	Benzo(g,h,i)perylene	6.2	670	720	ug/kg dw	<1	<1			
SP-BS-2-1	5/12/2011	Benzoic acid	650	650	650	ug/kg dw	1	1			
SP-BS-2-1	5/12/2011	Bis(2-ethylhexyl)phthalate	140	1300	1900	ug/kg dw	<1	<1			
SP-BS-1-1	5/12/2011	Butyl benzyl phthalate	32	63	900	ug/kg dw	<1	<1			
SP-BS-2-1	5/12/2011	Butyl benzyl phthalate	30	63	900	ug/kg dw	<1	<1			
SP-BS-1-1	5/12/2011	Chrysene	140	1400	2800	ug/kg dw	<1	<1			
SP-BS-2-1	5/12/2011	Chrysene	66	1400	2800	ug/kg dw	<1	<1			
SP-BS-1-1	5/12/2011	Chrysene	56	1400	2800	ug/kg dw	<1	<1			
SP-BS-2-1	5/12/2011	Chrysene	56	1400	2800	ug/kg dw	<1	<1			
SP-BS-2-2	5/12/2011	Chrysene	34	1400	2800	ug/kg dw	<1	<1			
SP-BS-2-1	5/12/2011	cPAHs TEQ	48.66						8.9	ug/kg dw	5.5
SP-BS-1-1	5/12/2011	cPAHs TEQ	45.75						8.9	ug/kg dw	5.1
SP-BS-2-2	5/12/2011	cPAHs TEQ	18.19						8.9	ug/kg dw	2.0
SP-BS-1-1	5/12/2011	Dibenzo(a,h)anthracene	20	230	540	ug/kg dw	<1	<1			
SP-BS-2-1	5/12/2011	Dibenzo(a,h)anthracene	12	230	540	ug/kg dw	<1	<1			
SP-BS-1-1	5/12/2011	Dibenzo(a,h)anthracene	7.9	230	540	ug/kg dw	<1	<1			
SP-BS-1-1	5/12/2011	Dibenzofuran	16	540	700	ug/kg dw	<1	<1			
SP-BS-2-2	5/12/2011	Dibenzofuran	9.1	540	700	ug/kg dw	<1	<1			
SP-BS-2-1	5/12/2011	Dioxin/Furans TEQ (ng/kg)	21.67						1.6	ng/kg dw	13.5
SP-BS-1-1	5/12/2011	Dioxin/Furans TEQ (ng/kg)	10.42						1.6	ng/kg dw	6.5
SP-BS-2-2	5/12/2011	Dioxin/Furans TEQ (ng/kg)	1.29						1.6	ng/kg dw	<1
SP-BS-1-2	5/12/2011	Dioxin/Furans TEQ (ng/kg)	0.62						1.6	ng/kg dw	<1
SP-BS-1-1	5/12/2011	Fluoranthene	180	1700	2500	ug/kg dw	<1	<1			
SP-BS-2-2	5/12/2011	Fluoranthene	120	1700	2500	ug/kg dw	<1	<1			
SP-BS-2-1	5/12/2011	Fluoranthene	61	1700	2500	ug/kg dw	<1	<1			
SP-BS-1-1	5/12/2011	Fluoranthene	58	1700	2500	ug/kg dw	<1	<1			
SP-BS-2-1	5/12/2011	Fluoranthene	58	1700	2500	ug/kg dw	<1	<1			
SP-BS-1-1	5/12/2011	Fluorene	8.6	540	1000	ug/kg dw	<1	<1			
SP-BS-2-2	5/12/2011	Fluorene	8.3	540	1000	ug/kg dw	<1	<1			
SP-BS-1-1	5/12/2011	Indeno(1,2,3-cd)pyrene	66	600	690	ug/kg dw	<1	<1			
SP-BS-2-1	5/12/2011	Indeno(1,2,3-cd)pyrene	35	600	690	ug/kg dw	<1	<1			
SP-BS-2-1	5/12/2011	Indeno(1,2,3-cd)pyrene	32	600	690	ug/kg dw	<1	<1			
SP-BS-1-1	5/12/2011	Indeno(1,2,3-cd)pyrene	22	600	690	ug/kg dw	<1	<1			
SP-BS-2-2	5/12/2011	Indeno(1,2,3-cd)pyrene	6.1	600	690	ug/kg dw	<1	<1			
SP-BS-1-1	5/12/2011	Naphthalene	47	2100	2400	ug/kg dw	<1	<1			
SP-BS-2-1	5/12/2011	Naphthalene	10	2100	2400	ug/kg dw	<1	<1			
SP-BS-1-2	5/12/2011	Naphthalene	9	2100	2400	ug/kg dw	<1	<1			
SP-BS-2-2	5/12/2011	Naphthalene	7.1	2100	2400	ug/kg dw	<1	<1			
SP-BS-2-1	5/12/2011	OCDD	3.08E+00								
SP-BS-1-1	5/12/2011	OCDD	8.32E-01								
SP-BS-2-2	5/12/2011	OCDD	7.49E-02								
SP-BS-1-2	5/12/2011	OCDD	2.56E-02								
SP-BS-2-1	5/12/2011	OCDF	4.92E-01								

Table 6
Chemicals Detected in Bank Soil Samples
Riverside Drive Source Control Area

Sample Location	Date Sampled	Chemical	Conc'n (ug/kg)	LAET	2LAET	Units	LAET Exceedance Factor	2LAET Exceedance Factor	LDW Background	Units	LDW Background Exceedance Factor
SP-BS-1-1	5/12/2011	OCDF	1.09E-01								
SP-BS-2-2	5/12/2011	o-Xylene	1200								
SP-BS-1-1	5/12/2011	o-Xylene	1100								
SP-BS-2-1	5/12/2011	o-Xylene	340								
SP-BS-1-2	5/12/2011	o-Xylene	330								
SP-BS-2-2	5/12/2011	Phenanthrene	120	1500	5400	ug/kg dw	<1	<1			
SP-BS-1-1	5/12/2011	Phenanthrene	90	1500	5400	ug/kg dw	<1	<1			
SP-BS-1-1	5/12/2011	Phenanthrene	57	1500	5400	ug/kg dw	<1	<1			
SP-BS-2-1	5/12/2011	Phenanthrene	39	1500	5400	ug/kg dw	<1	<1			
SP-BS-2-1	5/12/2011	Phenanthrene	34	1500	5400	ug/kg dw	<1	<1			
SP-BS-1-2	5/12/2011	Phenanthrene	11	1500	5400	ug/kg dw	<1	<1			
SP-BS-2-1	5/12/2011	Phenol	45								
SP-BS-1-1	5/12/2011	Pyrene	190	2600	3300	ug/kg dw	<1	<1			
SP-BS-2-2	5/12/2011	Pyrene	96	2600	3300	ug/kg dw	<1	<1			
SP-BS-2-1	5/12/2011	Pyrene	61	2600	3300	ug/kg dw	<1	<1			
SP-BS-2-1	5/12/2011	Pyrene	58	2600	3300	ug/kg dw	<1	<1			
SP-BS-1-1	5/12/2011	Pyrene	51	2600	3300	ug/kg dw	<1	<1			
SP-BS-1-1	5/12/2011	Total Benzofluoranthenes	210	3200	3600	ug/kg dw	<1	<1			
SP-BS-1-1	5/12/2011	Total Benzofluoranthenes	120	3200	3600	ug/kg dw	<1	<1			
SP-BS-2-1	5/12/2011	Total Benzofluoranthenes	110	3200	3600	ug/kg dw	<1	<1			
SP-BS-2-1	5/12/2011	Total Benzofluoranthenes	83	3200	3600	ug/kg dw	<1	<1			
SP-BS-2-2	5/12/2011	Total Benzofluoranthenes	29	3200	3600	ug/kg dw	<1	<1			
SP-BS-1-1	5/12/2011	Total HPAHs	1095	12000	17000	ug/kg dw	<1	<1			
SP-BS-2-1	5/12/2011	Total HPAHs	449	12000	17000	ug/kg dw	<1	<1			
SP-BS-2-1	5/12/2011	Total HPAHs	413	12000	17000	ug/kg dw	<1	<1			
SP-BS-1-1	5/12/2011	Total HPAHs	393.9	12000	17000	ug/kg dw	<1	<1			
SP-BS-2-2	5/12/2011	Total HPAHs	324.3	12000	17000	ug/kg dw	<1	<1			
SP-BS-1-2	5/12/2011	Total HPAHs	7 **J**	12000	17000	ug/kg dw	<1	<1			
SP-BS-2-1	5/12/2011	Total HpCDD	6.43E-01								
SP-BS-1-1	5/12/2011	Total HpCDD	2.92E-01								
SP-BS-2-2	5/12/2011	Total HpCDD	2.54E-02								
SP-BS-1-2	5/12/2011	Total HpCDD	9.53E-03								
SP-BS-2-1	5/12/2011	Total HpCDF	5.36E-01								
SP-BS-1-1	5/12/2011	Total HpCDF	1.54E-01								
SP-BS-2-2	5/12/2011	Total HpCDF	5.73E-03								
SP-BS-1-2	5/12/2011	Total HpCDF	3.63E-03								
SP-BS-2-1	5/12/2011	Total HxCDD	1.29E-01								
SP-BS-1-1	5/12/2011	Total HxCDD	7.53E-02								
SP-BS-2-2	5/12/2011	Total HxCDD	1.03E-02								
SP-BS-1-2	5/12/2011	Total HxCDD	2.42E-03								
SP-BS-2-1	5/12/2011	Total HxCDF	2.41E-01								
SP-BS-1-1	5/12/2011	Total HxCDF	1.20E-01								
SP-BS-2-2	5/12/2011	Total HxCDF	1.54E-02								
SP-BS-1-2	5/12/2011	Total HxCDF	3.63E-03								
SP-BS-2-2	5/12/2011	Total LPAHs	154.8	5200	13000	ug/kg dw	<1	<1			

Table 6
Chemicals Detected in Bank Soil Samples
Riverside Drive Source Control Area

Sample Location	Date Sampled	Chemical	Conc'n (ug/kg)	LAET	2LAET	Units	LAET Exceedance Factor	2LAET Exceedance Factor	LDW Background	Units	LDW Background Exceedance Factor
SP-BS-1-1	5/12/2011	Total LPAHs	137.6	5200	13000	ug/kg dw	<1	<1			
SP-BS-1-1	5/12/2011	Total LPAHs	112	5200	13000	ug/kg dw	<1	<1			
SP-BS-2-1	5/12/2011	Total LPAHs	53.3 **J**	5200	13000	ug/kg dw	<1	<1			
SP-BS-2-1	5/12/2011	Total LPAHs	39	5200	13000	ug/kg dw	<1	<1			
SP-BS-1-2	5/12/2011	Total LPAHs	23.6 **J**	5200	13000	ug/kg dw	<1	<1			
SP-BS-2-1	5/12/2011	Total PCBs	34	130	1000	mg/kg dw	<1	<1	6.5	ug/kg dw	5.2
SP-BS-1-1	5/12/2011	Total PCBs	27	130	1000	mg/kg dw	<1	<1	6.5	ug/kg dw	4.2
SP-BS-2-1	5/12/2011	Total PeCDD	4.76E-02								
SP-BS-1-1	5/12/2011	Total PeCDD	2.59E-02								
SP-BS-2-2	5/12/2011	Total PeCDD	3.39E-03								
SP-BS-1-2	5/12/2011	Total PeCDD	1.25E-03								
SP-BS-2-1	5/12/2011	Total PeCDF	2.79E-01								
SP-BS-1-1	5/12/2011	Total PeCDF	8.80E-02								
SP-BS-2-2	5/12/2011	Total PeCDF	2.61E-02								
SP-BS-1-2	5/12/2011	Total PeCDF	2.52E-03								
SP-BS-2-1	5/12/2011	Total TCDD	3.05E-02								
SP-BS-1-1	5/12/2011	Total TCDD	1.70E-02								
SP-BS-2-2	5/12/2011	Total TCDD	2.57E-03								
SP-BS-1-2	5/12/2011	Total TCDD	8.93E-04								
SP-BS-2-1	5/12/2011	Total TCDF	1.35E-01								
SP-BS-1-1	5/12/2011	Total TCDF	4.52E-02								
SP-BS-2-2	5/12/2011	Total TCDF	6.07E-03								
SP-BS-1-2	5/12/2011	Total TCDF	2.05E-03								
SP-BS-1-1	5/12/2011	Tributyltin Ion	11								
SP-BS-2-1	5/12/2011	Tributyltin Ion	8.9								

mg/kg - Milligram per kilogram
ug/kg - Micrograms per kilogram
ng/kg - Nanograms per kilogram
SMS - Sediment Management Standard (Washington Administrative Code 173-204)
SQS - SMS Sediment Quality Standard
CSL - SMS Cleanup Screening Level
LAET - Lowest Apparent Effects Threshold
2LAET - Second LAET
cPAHs - Carginogenic polycyclic aromatic hydrocarbons
PCB - Polychlorinated biphenyl
LDW - Lower Duwamish Waterway
TEQ - Toxic Equivalency

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

Table 7a
Chemicals Detected Above Screening Levels at
Storm Drain Sample Locations in the 7th Avenue S SD Basin

Chemical	SQS/ LAET	CSL/ 2LAET	7th-ST1 09/10/08 Inline SD	7th-ST1 03/17/09 Inline SD	7th-ST1 04/29/10 Inline SD	7th-ST1 12/01/10 Inline SD	7th-ST1 03/17/09 Trap SD	7th-ST1 12/01/10 Trap SD	7th-ST2 09/16/08 Inline SD	7th-ST2 11/11/10 Inline SD	7th-ST2 03/17/09 Trap SD	7th-ST2 11/11/10 Trap SD	7th-ST3 08/28/08 Inline SD	7th-ST3 03/12/09 Inline SD	7th-ST3 04/29/10 Inline SD	7th-ST3 11/11/10 Inline SD
Metals (mg/kg)																
Arsenic	57	93	20	20	20	16	20	20	<6	<6	30	30	20	18	20	<8
Copper	390	390	251	223	208	211	193	198	19.2	8.9	27.7	28.9	159	176	154	37.5
Lead	450	530	188	189	157	180	149	127	3	4	27	33	173	190	160	35
Mercury	0.41	0.59	0.26	0.2	0.19	0.19	0.18	0.18	<0.05	<0.02	<0.1	0.09	0.26	0.28	0.23	<0.03
Zinc	410	960	**735**	**674**	**678**	**787**	**918**	**776**	84	50	229	216	**654**	**738**	**775**	160
Total petroleum hydrocarbons (mg/kg)																
TPH-diesel	2,000	--	240	930	330	490	--	890	<59	<64	<140	<130	<110	1,000	260	<79
TPH-oil	2,000	--	1,300	**4,800**	1,300	**2,800**	--	**5,000**	<120	<130	600	<270	220	**3,700**	1,300	600
LPAH (mg/kg DW)																
Acenaphthene	0.5	0.73	<0.14	<0.2	<0.17	<0.15	--	<0.22	<0.019	<0.02	<0.02	<0.059	<0.02	<0.15	<0.021	<0.079
Acenaphthylene	1.3	1.3	<0.14	<0.2	<0.17	<0.15	--	<0.22	<0.019	<0.02	<0.02	<0.059	<0.02	<0.15	0.02 J	<0.079
Anthracene	0.96	4.4	<0.14	<0.2	0.13 J	<0.15	--	0.15 J	<0.019	<0.02	<0.02	<0.059	<0.02	<0.15	0.057	<0.079
Fluorene	0.54	1.0	<0.14	<0.2	<0.17	<0.15	--	<0.22	<0.019	<0.02	<0.02	<0.059	<0.02	<0.15	0.021 J	<0.079
Naphthalene	2.1	2.4	<0.14	<0.2	<0.17	<0.15	--	<0.22	<0.019	<0.02	<0.02	<0.059	<0.02	<0.15	0.024 J	<0.079
Phenanthrene	1.5	5.4	0.24	0.42	0.59	0.28	--	0.37	<0.019	<0.02	<0.02	0.032 J	0.11	0.28	0.29	0.14
LPAH	5.2	13	0.24	0.42	0.72	0.28	--	0.52 J	<0.019	<0.02	<0.02	0.032 J	0.11	0.28	0.433	0.14
HPAH (mg/kg DW)																
2-Methylnaphthalene	0.67	1.4	<0.14	<0.2	<0.17	<0.15	--	<0.22	<0.019	<0.02	<0.02	<0.059	<0.02	<0.15	0.023 J	<0.079
Benzo(a)anthracene	1.3	1.6	0.24	0.36	0.68	0.29	--	0.30	<0.019	<0.02	<0.02	<0.059	0.089	0.27	0.22	0.078 J
Benzo(a)pyrene	1.6	3.0	0.42	0.46	0.78	0.44	--	0.40	<0.019	<0.02	<0.02	0.033 J	0.14	0.44	0.41	0.092
Benzo(g,h,i)perylene	0.67	0.72	0.27	0.33	0.40	***0.93***	--	***1.1***	<0.019	<0.02	<0.02	0.06	0.059	0.38	0.27	0.20
Total benzofluoranthenes	3.2	3.6	1.18	1.06	1.78	0.33	--	0.40	<0.019	<0.02	0.02	<0.059	0.41	1.03	0.82	0.056 J
Chrysene	1.4	2.8	0.52	0.56	1.2	0.50	--	0.85	<0.019	<0.02	0.02	0.043 J	0.14	0.45	0.45	0.14
Dibenzo(a,h)anthracene	0.23	0.54	<0.14	<0.2	0.17 J	<0.15	--	<0.22	<0.019	<0.02	<0.02	<0.059	<0.02	<0.15	0.086	<0.079
Fluoranthene	1.7	2.5	0.80	0.85	**1.9**	0.80	--	1.2	<0.019	<0.02	0.03	0.06	0.25	0.66	0.90	0.27
Indeno(1,2,3-cd)pyrene	0.6	0.69	0.19	0.28	0.36	0.23	--	0.26	<0.019	<0.02	<0.02	<0.059	0.047	0.27	0.21	<0.079
Pyrene	2.6	3.3	1.0	0.92	1.2	0.70	--	1.0	<0.019	<0.02	0.029	<0.059	0.21	0.64	0.54	0.22
HPAH	12	17	5.8	5.88	10.25	4.22	--	5.51	<0.019	<0.02	0.119	0.255 J	1.76	5.17	4.73	1.06 J
Phthalates (mg/kg DW)																
Bis(2-ethylhexyl)phthalate	1.3	1.9	***3.4***	**1.5 B**	***7.3***	***2.1 B***	--	***9.3 B***	<0.019	0.017 J	0.19 B	0.15	0.51	**1.5**	***2.1***	**1.4**
Butyl benzyl phthalate	0.063	0.9	**0.27**	**0.22**	**0.4 J**	**0.24**	--	<0.22	<0.019	<0.02	0.029	0.038 J	**0.10**	**0.20**	**0.32**	<0.079
Diethylphthalate	0.2	1.2	<0.14	<0.2	<0.17	<0.15	--	<0.22	<0.019	<0.02	<0.02	<0.059	<0.02	<0.15	<0.034	<0.079
Dimethylphthalate	0.071	0.16	<0.14	<0.2	<0.17	<0.15	--	<0.22	<0.019	<0.02	<0.02	<0.059	0.032	**0.091 J**	0.056	<0.079
Di-n-butylphthalate	1.4	5.1	<0.14	<0.2	0.13 J	<0.15	--	<0.22	<0.019	<0.02	<0.02	<0.059	0.04	0.12 J	0.11	<0.079
Di-n-octylphthalate	6.2	NV	<0.14	<0.2	0.21	<0.15	--	<0.22	<0.019	<0.02	<0.02	<0.059	<0.02	<0.15	0.046	<0.079

Table 7a
Chemicals Detected Above Screening Levels at
Storm Drain Sample Locations in the 7th Avenue S SD Basin

Chemical	SQS/ LAET	CSL/ 2LAET	7th-ST1 09/10/08 Inline SD	7th-ST1 03/17/09 Inline SD	7th-ST1 04/29/10 Inline SD	7th-ST1 12/01/10 Inline SD	7th-ST1 03/17/09 Trap SD	7th-ST1 12/01/10 Trap SD	7th-ST2 09/16/08 Inline SD	7th-ST2 11/11/10 Inline SD	7th-ST2 03/17/09 Trap SD	7th-ST2 11/11/10 Trap SD	7th-ST3 08/28/08 Inline SD	7th-ST3 03/12/09 Inline SD	7th-ST3 04/29/10 Inline SD	7th-ST3 11/11/10 Inline SD
PCBs (mg/kg DW)																
Total PCBs	0.13	1.0	***2.4***	**0.188**	**0.236**	**0.42**	**0.264**	**0.31**	<0.02	<0.019	<0.02	<0.019	0.114	0.06	0.082	<0.02
Other organic compounds (mg/kg DW)																
Phenol	0.42	1.2	<0.14	<0.2	<0.17	<0.15	--	<0.22	<0.019	<0.02	0.13	<0.059	<0.02	<0.15	0.069 B	<0.079
2-Methylphenol	0.063	0.063	<0.14	<0.2	<0.17	<0.15	--	<0.22	<0.019	<0.02	<0.02	<0.059	<0.02	<0.15	<0.034	<0.079
4-Methylphenol	0.67	0.67	<0.14	<0.2	<0.17	<0.15	--	<0.22	<0.019	<0.02	<0.02	<0.059	<0.02	<0.15	<0.034	0.059 J
Benzoic acid	0.65	0.65	<1.4	<2	<1.7	<1.5	--	<2.2	<0.19	<0.2	***0.81***	0.14 J	<0.2	<1.5	0.12 J	<0.79
Benzyl alcohol	0.057	0.073	<0.14	<0.2	<0.17	<0.77	--	<1.1	<0.019	<0.02	***0.25***	<0.059	<0.02	<0.15	0.041	0.43
Dibenzofuran	0.54	0.7	<0.14	<0.2	<0.17	<0.15	--	<0.22	<0.019	<0.02	<0.02	<0.059	<0.02	<0.15	<0.034	<0.079
Hexachlorobenzene	0.022	0.07	<0.14	<0.2	<0.17	<0.15	--	<0.22	<0.019	<0.02	<0.02	<0.059	<0.02	<0.15	<0.034	<0.079
N-Nitrosodiphenylamine	0.028	0.04	<0.14	<0.2	<0.17	<0.15	--	<0.22	<0.019	<0.02	<0.02	<0.059	<0.02	<0.15	<0.034	<0.079
Dioxins/furans (ng/kg) TEQ																
Dioxins/furans TEQ	1.6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Source: Ecology 2011

SPU - Seattle Public Utilities
SD - Storm Drain
CS - Combined sewer
SQS - Sediment Quality Standard from Washington Sediment Management Standards
CSL - Cleanup Screening Level from Washington Sediment Management Standards
LAET - Lowest Apparent Effects Threshold
2LAET - Second LAET
mg/kg - Milligrams per kilogram
DW - Dry weight
ng/kg - Nanograms per kilogram

TEQ - toxic equivalency
J - Estimated value between the method detection limit & the laboratory reporting limit
B- the analyte was detected in the method blank
N - tentative identification
-- - Not analyzed
TPH - Total petroleum hydrocarbons
LPAH - Low molecular weight polycyclic aromatic hydrocarbon
HPAH - High molecular weight polycyclic aromatic hydrocarbon
PCBs - Polychlorinated biphenyls
MTCA - Model Toxics Control Act

738 Exceeds the SQS/LAET, MTCA, LDW dioxin/furan background
0.74 Exceeds CSL/2LAET

Table 7a
Chemicals Detected Above Screening Levels at
Storm Drain Sample Locations in the 7th Avenue S SD Basin

Chemical	SQS/ LAET	CSL/ 2LAET	7th-ST3 03/12/09 Trap SD	7th-ST3 11/11/10 Trap SD	MH20 04/13/05 Inline SD	MH21B 04/13/05 Inline SD	MH22 04/13/05 Inline SD	MH203 11/17/08 Inline SD	MH228 05/26/09 Inline SD	MH229 05/26/09 Inline SD	MH230 05/27/09 Inline SD	CB154 11/18/09 CB SD	CB154-D 11/18/09 CB SD	RCB129 01/18/08 RCB SD	RCB131 02/15/08 RCB SD	RCB132 03/12/08 RCB SD
Metals (mg/kg)																
Arsenic	57	93	20	30	20	30	20	<8	20 J	20 J	13 J	<8	<8	5.4	50	8.5
Copper	390	390	126	139	175	148	129	111	135 J	137 J	59.4 J	274 J	267 J	135	166	***701***
Lead	450	530	104	110	151	130	119	116	121 J	124 J	30 J	17 J	17 J	54	***548***	110
Mercury	0.41	0.59	0.2	0.19	0.17	0.2	0.2	0.11	0.22 J	0.19 J	<0.03	<0.03	<0.03	<0.05	0.11	<0.06
Zinc	410	960	**619**	**724**	**547**	**515**	**575**	**562**	**477 J**	**426 J**	147 J	176 J	175 J	***3,650***	**827**	***1,650***
Total petroleum hydrocarbons (mg/kg)																
TPH-diesel	2,000	--	--	<170	720	560	380	780	680	350	380	920	980	1,300	360	1,500
TPH-oil	2,000	--	--	640	**2,900**	**3,100**	1,900	**3,900**	**2,600**	1,300	**2,100**	970	980	**4,200**	**2,200**	**6,300**
LPAH (mg/kg DW)																
Acenaphthene	0.5	0.73	<0.17	<0.22	<0.35	<0.29	<0.24	<0.17	<0.38	<0.34	<0.13	<0.089	<0.089	<0.25	<0.06	<0.35
Acenaphthylene	1.3	1.3	<0.17	<0.22	<0.35	<0.29	<0.24	<0.17	<0.38	<0.34	<0.13	<0.089	<0.089	<0.25	<0.06	<0.35
Anthracene	0.96	4.4	<0.17	<0.22	<0.35	<0.29	<0.24	<0.17	<0.38	<0.34	<0.13	<0.089	<0.089	<0.25	0.16	<0.35
Fluorene	0.54	1.0	<0.17	<0.22	<0.35	<0.29	<0.24	<0.17	<0.38	<0.34	<0.13	<0.089	<0.089	<0.25	<0.06	<0.35
Naphthalene	2.1	2.4	<0.17	<0.22	<0.35	<0.29	<0.24	<0.17	<0.38	<0.34	<0.13	<0.089	<0.089	<0.25	<0.06	<0.35
Phenanthrene	1.5	5.4	0.11 J	0.29	<0.35	<0.29	0.59	0.64	0.21 J	<0.34	<0.13	0.068 J	<0.089	0.31	0.70	<0.35
LPAH	5.2	13	0.11 J	0.29	0.35	0.29	0.59	0.64	0.21 J	<0.34	<0.13	0.068 J	<0.089	0.31	0.86	<0.35
HPAH (mg/kg DW)																
2-Methylnaphthalene	0.67	1.4	<0.17	<0.22	<0.35	<0.29	<0.24	<0.17	<0.38	<0.34	<0.13	<0.089	<0.89	<0.25	<0.06	<0.35
Benzo(a)anthracene	1.3	1.6	<0.17	0.24	0.39	<0.29	0.56	0.50	0.25 J	0.22 J	<0.13	<0.089	<0.089	<0.25	1.2	<0.35
Benzo(a)pyrene	1.6	3.0	0.11 J	0.30	0.50	0.31	0.76	0.56	0.38 J	0.32 J	0.076 J	<0.089	<0.089	<0.25	**2.2**	<0.35
Benzo(g,h,i)perylene	0.67	0.72	0.12 J	***0.76***	<0.35	<0.29	0.29	0.35	0.34 J	0.28 J	0.07 J	<0.089	<0.089	<0.25	***0.80***	<0.35
Total benzofluoranthenes	3.2	3.6	0.26 J	0.31	1.45	0.84	1.99	1.41	0.84	0.72	0.14 J	0.074 J	<0.089	<0.25	***5.1***	<0.35
Chrysene	1.4	2.8	0.20	0.55	0.72	0.38	0.94	0.77	0.53	0.43	0.13	0.068 J	0.065 J	0.27	**1.6**	<0.35
Dibenzo(a,h)anthracene	0.23	0.54	<0.17	<0.22	<0.35	<0.29	<0.24	<0.17	<0.38	<0.34	<0.13	<0.089	<0.089	<0.25	**0.44**	<0.35
Fluoranthene	1.7	2.5	0.22	0.75	1.4	0.57	**1.9**	1.5	0.65	0.56	0.1 J	0.19	0.18	0.98	***2.5***	<0.35
Indeno(1,2,3-cd)pyrene	0.6	0.69	<0.17	0.19 J	0.35	<0.29	0.24	0.26	0.24 J	0.19 J	<0.13	<0.089	<0.089	<0.25	***1.0***	<0.35
Pyrene	2.6	3.3	0.30	0.69	1.0	0.43	1.2	1.3	0.60	0.52	0.1 J	0.14	0.12	0.73	1.6	<0.35
HPAH	12	17	1.47 J	3.79 J	6.91	3.37	9.87	8.06	4.67 J	3.96 J	0.756 J	0.472 J	0.365 J	1.98	***22***	<0.35
Phthalates (mg/kg DW)																
Bis(2-ethylhexyl)phthalate	1.3	1.9	***3.4***	***7.0***	***6.4***	***3.8***	***6.1***	***8.3***	***4.9***	***4.0***	0.63	***33***	***36***	***3.6***	0.31	***4.2 B***
Butyl benzyl phthalate	0.063	0.9	**0.12 J**	**0.41**	<0.35	<0.29	**0.68**	***2.6***	<0.38	**0.44**	<0.13	**0.095 J**	**0.12**	**0.25**	**0.13**	**0.54**
Diethylphthalate	0.2	1.2	<0.17	<0.22	<0.35	<0.29	<0.24	<0.17	<0.38	<0.34	<0.13	<0.089	<0.089	<0.25	<0.06	<0.35
Dimethylphthalate	0.071	0.16	<0.17	<0.22	<0.35	<0.29	<0.24	<0.17	<0.38	<0.34	<0.13	***0.295***	***0.3***	<0.25	<0.06	<0.35
Di-n-butylphthalate	1.4	5.1	0.17 J	<0.22	<0.35	<0.29	<0.28	1.0	<0.38	<0.34	<0.13	0.245	0.23	<0.25	<0.06	<0.35
Di-n-octylphthalate	6.2	NV	0.17	<0.22	<0.35	<0.29	<0.24	0.66	0.31 J	<0.34	0.08 J	0.955	0.91	<0.25	<0.06	<0.35

Table 7a
Chemicals Detected Above Screening Levels at
Storm Drain Sample Locations in the 7th Avenue S SD Basin

Chemical	SQS/ LAET	CSL/ 2LAET	7th-ST3 03/12/09 Trap SD	7th-ST3 11/11/10 Trap SD	MH20 04/13/05 Inline SD	MH21B 04/13/05 Inline SD	MH22 04/13/05 Inline SD	MH203 11/17/08 Inline SD	MH228 05/26/09 Inline SD	MH229 05/26/09 Inline SD	MH230 05/27/09 Inline SD	CB154 11/18/09 CB SD	CB154-D 11/18/09 CB SD	RCB129 01/18/08 RCB SD	RCB131 02/15/08 RCB SD	RCB132 03/12/08 RCB SD
PCBs (mg/kg DW)																
Total PCBs	0.13	1.0	0.031	0.07	**0.44**	**0.274 J**	0.119 J	**0.182**	**0.45**	**0.44**	0.11	**0.23 J**	**0.226 J**	0.075	**0.139**	0.076
Other organic compounds (mg/kg DW)																
Phenol	0.42	1.2	<0.17	<0.22	<0.35	<0.29	<0.28	0.36	<0.38	<0.34	<0.13	0.245	0.24	<0.25	<0.06	<0.35
2-Methylphenol	0.063	0.063	<0.17	<0.22	<0.35	<0.29	<0.24	<0.17	<0.38	<0.34	<0.13	***0.14***	***0.14***	<0.25	<0.06	<0.35
4-Methylphenol	0.67	0.67	<0.17	<0.22	<0.35	<0.29	<0.24	<0.17	<0.38	<0.34	<0.13	0.098	0.1	<0.25	<0.06	<0.35
Benzoic acid	0.65	0.65	<1.7	<2.2	<3.5	<2.9	<2.4	<1.7	<3.8	<3.4	<1.3	0.34 J	0.36 J	<2.5	<0.6	<3.5
Benzyl alcohol	0.057	0.073	<0.17	<0.22	<0.35	<0.29	<0.24	0.30	<0.38	<0.34	<0.13	***5.05***	***5.5***	0.25	<0.06	<0.35
Dibenzofuran	0.54	0.7	<0.17	<0.22	<0.35	<0.29	<0.24	<0.17	<0.38	<0.34	<0.13	<0.089	<0.089	<0.25	<0.06	<0.35
Hexachlorobenzene	0.022	0.07	<0.17	<0.22	<0.35	<0.29	<0.24	<0.17	<0.38	<0.34	<0.13	<0.089	<0.089	<0.25	<0.06	<0.35
N-Nitrosodiphenylamine	0.028	0.04	<0.17	<0.22	<0.35	<0.29	<0.24	<0.17	<0.38	<0.34	<0.13	<0.089	<0.089	<0.25	<0.06	<0.35
Dioxins/furans (ng/kg) TEQ																
Dioxins/furans TEQ	1.6	--	--	--	**23 J**	--	--	--	--	--	--	--		--	--	--

Source: Ecology 2011

SPU - Seattle Public Utilities
SD - Storm Drain
CS - Combined sewer
SQS - Sediment Quality Standard from Washington Sediment Management Standards
CSL - Cleanup Screening Level from Washington Sediment Management Standards
LAET - Lowest Apparent Effects Threshold
2LAET - Second LAET
mg/kg - Milligrams per kilogram
DW - Dry weight
ng/kg - Nanograms per kilogram

TEQ - toxic equivalency
J - Estimated value between the method detection limit & the laboratory reporting limit
B- the analyte was detected in the method blank
N - tentative identification
-- - Not analyzed
TPH - Total petroleum hydrocarbons
LPAH - Low molecular weight polycyclic aromatic hydrocarbon
HPAH - High molecular weight polycyclic aromatic hydrocarbon
PCBs - Polychlorinated biphenyls
MTCA - Model Toxics Control Act

738 Exceeds the SQS/LAET, MTCA, LDW dioxin/furan background
0.74 Exceeds CSL/2LAET

Table 7a
Chemicals Detected Above Screening Levels at
Storm Drain Sample Locations in the 7th Avenue S SD Basin

Chemical	SQS/ LAET	CSL/ 2LAET	RCB137 03/25/08 RCB SD	RCB157 10/24/08 RCB SD	RCB165 03/27/09 RCB SD	RCB170 05/28/09 RCB SD	RCB203 03/17/09 RCB SD	RCB213 05/27/09 RCB SD	RCB214 05/27/09 RCB SD	RCB223 06/03/09 RCB SD	RCB227 03/11/11 RCB SD	RCB228 03/11/11 RCB SD	RCB239 04/01/11 RCB SD	RCB240 04/01/11 RCB SD	RCB263 04/29/11 RCB SD
Metals (mg/kg)															
Arsenic	57	93	<6	<7	21 J	36 J	11	17 J	15 J	11 J	10	7	<10	<10	10
Copper	390	390	9.1	36.1	99.6 J	161 J	131	127 J	98 J	48.8 J	***406***	81.6	37	88.9	27.7
Lead	450	530	4	16	45 J	200 J	**521**	116 J	91 J	25 J	363	45	26	74	15
Mercury	0.41	0.59	<0.05	<0.05	<0.06	0.08 J	0.22	0.09 J	0.08 J	0.07 J	**0.56**	0.04	<0.04	0.10	<0.02
Zinc	410	960	123	119	**517 J**	289 J	**521**	249 J	230 J	214 J	**823**	217	147	**458**	116
Total petroleum hydrocarbons (mg/kg)															
TPH-diesel	2,000	--	230	<67	440	480	440	840	700	100	**2,600**	<64	330	1,000	160
TPH-oil	2,000	--	1,200	400	**2,800**	**3,200**	**3,200**	**4,000**	**3,600**	510	**11,000**	280	1,700	**6,300**	760
LPAH (mg/kg DW)															
Acenaphthene	0.5	0.73	<0.034	0.10	<0.059	<0.23	<0.12	<0.16	<0.14	<0.039	<0.19	<0.021	<0.089	<0.24	<0.056
Acenaphthylene	1.3	1.3	<0.034	0.066	<0.059	<0.23	<0.12	<0.16	<0.14	<0.039	<0.19	<0.021	<0.089	<0.24	<0.056
Anthracene	0.96	4.4	<0.034	0.07	<0.059	<0.23	<0.12	<0.16	<0.14	<0.039	0.35 J	0.073 J	<0.089	<0.24	<0.056
Fluorene	0.54	1.0	<0.034	0.16	<0.059	<0.23	<0.12	<0.16	<0.14	<0.039	0.16 J	0.018 J	<0.089	<0.24	<0.056
Naphthalene	2.1	2.4	<0.034	0.19	<0.059	<0.23	<0.12	<0.16	<0.14	<0.039	0.11 J	0.012 J	<0.089	<0.24	<0.056
Phenanthrene	1.5	5.4	0.034 J	**3.1**	0.057 J	0.18 J	0.34	0.21	0.12 J	0.054	0.68	0.14	0.075 J	0.32	0.087
LPAH	5.2	13	0.034 J	3.69	0.057 J	0.18 J	0.34	0.21	0.12 J	0.054	1.3 J	0.243 J	0.075 J	0.32	0.087
HPAH (mg/kg DW)															
2-Methylnaphthalene	0.67	1.4	<0.034	0.072	<0.059	<0.23	<0.12	<0.16	<0.14	<0.039	0.21	0.14 J	<0.089	<0.24	<0.056
Benzo(a)anthracene	1.3	1.6	<0.034	0.07	0.051 J	0.14 J	0.22	0.13 J	0.12 J	0.065	0.49	0.056	<0.089	<0.24	<0.056
Benzo(a)pyrene	1.6	3.0	<0.034	0.068	0.086	0.18 J	0.27	0.14 J	0.12 J	0.085	1.2	0.044	<0.089	<0.24	<0.056
Benzo(g,h,i)perylene	0.67	0.72	<0.034	0.035 J	0.087	0.14 J	0.14	0.082 J	0.072 J	0.041	***1.4 J***	0.12 J	0.078 J	0.22 J	0.092
Total benzofluoranthenes	3.2	3.6	0.041	0.51	0.27	0.4 J	0.66	0.36	0.30	0.20	0.55	0.036	<0.089	0.19 J	0.05 J
Chrysene	1.4	2.8	0.058	0.58	0.25	0.51	0.39	0.38	0.32	0.11	**1.4 J**	0.12 J	0.076 J	0.24 J	0.084
Dibenzo(a,h)anthracene	0.23	0.54	<0.034	<0.058	<0.059	<0.23	<0.12	<0.16	<0.14	<0.039	<0.19	<0.021	<0.089	<0.24	<0.056
Fluoranthene	1.7	2.5	0.058 J	***3.2***	0.15	0.38	0.57	0.64	0.32	0.15	1.6	0.28	0.13	0.44	0.11
Indeno(1,2,3-cd)pyrene	0.6	0.69	<0.034	<0.058	0.046 J	<0.23	<0.12	<0.16	<0.14	0.032 J	0.29	0.027	0.089	<0.24	<0.056
Pyrene	2.6	3.3	0.10	1.7	0.21	0.26	0.58	0.43	0.29	0.11	1.7 J	0.16 J	0.08 J	0.27 J	0.10
HPAH	12	17	0.298 J	6.67 J	1.42 J	2.41 J	3.49	2.5 J	1.8 J	0.993 J	8.63 J	0.843 J	0.364 J	1.36 J	0.436 J
Phthalates (mg/kg DW)															
Bis(2-ethylhexyl)phthalate	1.3	1.9	***2.7***	1.1	**1.4**	***2.2 B***	***5.3 B***	***2.2***	***2.6***	0.20	***1,400***	0.74	1.2	***4.9***	**1.4 B**
Butyl benzyl phthalate	0.063	0.9	**0.17**	**0.074**	**0.11**	<0.23	**0.45**	**0.22**	**0.39**	**0.17**	***1.4 J***	**0.16 J**	**0.18 J**	**0.19 J**	**0.092 J**
Diethylphthalate	0.2	1.2	<0.034	<0.058	<0.059	<0.23	<0.12	<0.16	<0.14	<0.039	<0.19	<0.021	<0.089	<0.24	<0.056
Dimethylphthalate	0.071	0.16	<0.034	<0.058	<0.059	***0.31***	**0.12**	***0.40***	***0.18***	<0.039	***0.17 J***	0.014 J	<0.089	<0.24	<0.056
Di-n-butylphthalate	1.4	5.1	<0.034	<0.058	<0.059	<0.23	**0.17**	<0.16	<0.14	<0.039	<0.19	0.054 J	<0.089	<0.24	0.092
Di-n-octylphthalate	6.2	NV	0.052	0.045 J	0.077	0.34	**0.59**	0.34	0.20	0.029 J	<0.19	<0.021	<0.089	<0.24	<0.056

Table 7a
Chemicals Detected Above Screening Levels at
Storm Drain Sample Locations in the 7th Avenue S SD Basin

Chemical	SQS/ LAET	CSL/ 2LAET	RCB137 03/25/08 RCB SD	RCB157 10/24/08 RCB SD	RCB165 03/27/09 RCB SD	RCB170 05/28/09 RCB SD	RCB203 03/17/09 RCB SD	RCB213 05/27/09 RCB SD	RCB214 05/27/09 RCB SD	RCB223 06/03/09 RCB SD	RCB227 03/11/11 RCB SD	RCB228 03/11/11 RCB SD	RCB239 04/01/11 RCB SD	RCB240 04/01/11 RCB SD	RCB263 04/29/11 RCB SD
PCBs (mg/kg DW)															
Total PCBs	0.13	1.0	<0.02	<0.019	0.061 J	**0.209 J**	**0.202**	**0.251**	**0.195**	0.02	**0.54 J**	0.102 J	<0.02	0.02	<0.019
Other organic compounds (mg/kg DW)															
Phenol	0.42	1.2	<0.034	0.069	<0.059	<0.23	0.13	<0.16	<0.14	<0.039	<0.19	0.042	0.19	0.14 J	0.056
2-Methylphenol	0.063	0.063	<0.034	<0.058	<0.059	<0.23	<0.12	<0.16	<0.14	<0.039	<0.19	<0.021	<0.089	<0.24	<0.056
4-Methylphenol	0.67	0.67	<0.034	0.23	<0.059	<0.23	<0.12	<0.16	0.1 J	<0.039	***1.4***	0.48	***2.7***	0.21 J	0.61
Benzoic acid	0.65	0.65	<0.34	<0.58	<0.59	<2.3	<1.2	<1.6	<1.4	<0.39	<1.9	0.18 J	***1.1***	***1.3 J***	0.14 J
Benzyl alcohol	0.057	0.073	<0.034	<0.058	<0.059	<0.23	***0.55***	<0.16	<0.14	<0.039	<0.95	***0.85***	***0.089 J***	<1.2	<0.056
Dibenzofuran	0.54	0.7	<0.034	0.22	<0.059	<0.23	<0.12	<0.16	<0.14	<0.039	<0.19	<0.021	<0.089	<0.24	<0.056
Hexachlorobenzene	0.022	0.07	<0.034	<0.058	<0.059	<0.23	<0.12	<0.16	<0.14	<0.039	<0.19	0.018 J	<0.089	<0.24	<0.056
N-Nitrosodiphenylamine	0.028	0.04	<0.034	<0.058	<0.059	<0.23	<0.12	<0.16	<0.14	<0.039	<0.19	<0.021	<0.089	<0.24	<0.056
Dioxins/furans (ng/kg) TEQ															
Dioxins/furans TEQ	1.6	--	--	--	--	--	--	--	--	--	--	--	**10.1 J**	**7.09 J**	--

Source: Ecology 2011

SPU - Seattle Public Utilities
SD - Storm Drain
CS - Combined sewer
SQS - Sediment Quality Standard from Washington Sediment Management Standards
CSL - Cleanup Screening Level from Washington Sediment Management Standards
LAET - Lowest Apparent Effects Threshold
2LAET - Second LAET
mg/kg - Milligrams per kilogram
DW - Dry weight
ng/kg - Nanograms per kilogram

TEQ - toxic equivalency
J - Estimated value between the method detection limit & the laboratory reporting limit
B- the analyte was detected in the method blank
N - tentative identification
-- - Not analyzed
TPH - Total petroleum hydrocarbons
LPAH - Low molecular weight polycyclic aromatic hydrocarbon
HPAH - High molecular weight polycyclic aromatic hydrocarbon
PCBs - Polychlorinated biphenyls
MTCA - Model Toxics Control Act

738	Exceeds the SQS/LAET, MTCA, LDW dioxin/furan background
0.74	Exceeds CSL/2LAET

Table 7b
Chemicals Detected Above Screening Levels at
Catch Basin Sample Locations in the 8th Avenue S CSO Basin

Chemical	SQS/ LAET	CSL/ 2LAET	CB113[1] 12/05/07 CB CS	CB206[2] 06/03/09 CB SD	CB206[2] 04/13/11 CB SD	RCB181 03/10/10 RCB CS	RCB182 03/10/10 RCB CS	RCB183 03/10/10 RCB CS	RCB184 03/10/10 RCB CS	RCB229 03/11/11 RCB CS	SD14 03/10/10 RCB CS
Metals (mg/kg)											
Arsenic	57	93	<6	<18.1	12.2	9	8 J	10	10	<30	<8
Copper	390	390	285 J	***590***	***557***	105	116	85.5	103	***641***	112
Lead	450	530	40 J	***1,280***	400	83 J	101 J	***719 J***	61 J	280	111 J
Mercury	0.41	0.59	<0.05	***2.96***	***0.74***	0.04	<0.1	***0.87***	0.08	***3.80***	0.24
Zinc	410	960	392 J	***5,830***	***4,150 J***	278	**813**	**592**	**430**	***1,640***	**602**
Total petroleum hydrocarbons (mg/kg)											
TPH-diesel	2,000	--	**67,000**	**9,000**	**8,800**	--	860	1,000	530	1,500	580
TPH-oil	2,000	--	**390,000**	**28,000**	**38,000**	--	**3,100**	**2,200**	1,700	**5,900**	**2,700**
LPAH (mg/kg DW)											
Acenaphthene	0.5	0.73	<1.7	<1.5	0.39 J	<0.17	<0.19	<0.1	<0.23	<0.088	<0.33
Acenaphthylene	1.3	1.3	<1.7	<1.2	<0.56	<0.17	<0.19	<0.1	<0.23	<0.088	<0.33
Anthracene	0.96	4.4	<1.7	<3.8	0.87	<0.17	0.16 J	<0.1	<0.23	<0.088	0.38
Fluorene	0.54	1.0	<1.7	<1.9	**0.96**	<0.17	0.21	<0.1	0.14 J	<0.088	0.45
Naphthalene	2.1	2.4	<1.7	<0.67	1.4	<0.17	0.1 J	<0.1	<0.23	0.54	0.63
Phenanthrene	1.5	5.4	**1.9**	***19***	**5.0**	0.36	1.3	<0.1	0.75	0.51	**1.9**
LPAH	5.2	13	1.9	***26.9***	**8.62 J**	0.36	1.77 J	<0.1	0.89 J	1.05	3.36
HPAH (mg/kg DW)											
2-Methylnaphthalene	0.67	1.4	<1.7	<1.0	***3***	<0.17	0.32	<0.1	0.25	**0.7**	0.24 J
Benzo(a)anthracene	1.3	1.6	<1.7	***8.3***	***2.2***	0.3	0.34	<0.1	0.39	0.45	0.62
Benzo(a)pyrene	1.6	3.0	<1.7	***7.3***	**1.8**	0.42	0.58	0.11	0.45	0.43	0.65
Benzo(g,h,i)perylene	0.67	0.72	<1.7	***1.9***	***4.4***	0.18	0.44	0.11	0.33	***1.9 J***	0.37
Total benzofluoranthenes	3.2	3.6	<1.7	***19.2***	1.7 J	0.9	1.3	0.28	1.1	0.46	1.44
Chrysene	1.4	2.8	<1.7	***16***	***3.5***	0.6	**1.5**	0.28	0.87	1.0 J	1.1
Dibenzo(a,h)anthracene	0.23	0.54	<1.7	<1.2	**0.34 J**	<0.17	0.058 J	<0.1	<0.23	<0.088	<0.33
Fluoranthene	1.7	2.5	<1.7	***32***	***7.0***	0.85	**1.7**	0.28	0.92	1.3	**1.9**
Indeno(1,2,3-cd)pyrene	0.6	0.69	<1.7	***2.1***	***1.4 J***	0.14 J	0.2	0.053 J	0.19 J	0.37	0.23 J
Pyrene	2.6	3.3	2.7 Y	***22***	***5.8***	0.78	2.5	0.56	1.2	1.1 J	1.9
HPAH	12	17	2.7 Y	***128***	***28.1 J***	5.07 J	9.92 J	1.95 J	6.55 J	7.01 J	9.65 J
Phthalates (mg/kg DW)											
Bis(2-ethylhexyl)phthalate	1.3	1.9	***440***	***99***	***41***	***5.2***	***27***	***7.3***	***12***	***14***	***24***
Butyl benzyl phthalate	0.063	0.9	<1.7	***5.2***	***6.4 J***	**0.43**	<0.19	<0.1	***73***	***4.4 J***	***1.6***
Diethylphthalate	0.2	1.2	<1.7	<1.2	<0.56	<0.17	**0.65**	**0.2**	<0.23	<0.088	<0.33
Dimethylphthalate	0.071	0.16	<1.7	***0.60***	<0.56	<0.17	***1.2***	<0.1	<0.23	***0.28***	<0.33
Di-n-butylphthalate	1.4	5.1	<1.7	***5.8***	***32***	0.17 J	***0.33***	<0.1	<0.23	<0.088	0.35
Di-n-octylphthalate	6.2	NV	4.9 NJ	3.9	2.0	<0.17	<0.19	<0.1	<0.23	<0.088	<0.33
PCBs (mg/kg DW)											
Total PCBs	0.13	1.0	<0.81	***5.93 J***	***2.46***	**0.67 NJ**	**0.49 NJ**	***1.3 NJ***	**0.34**	**0.71 J**	**0.28 NJ**

Table 7b
Chemicals Detected Above Screening Levels at
Catch Basin Sample Locations in the 8th Avenue S CSO Basin

Chemical	SQS/ LAET	CSL/ 2LAET	CB113[1] 12/05/07 CB CS	CB206[2] 06/03/09 CB SD	CB206[2] 04/13/11 CB SD	RCB181 03/10/10 RCB CS	RCB182 03/10/10 RCB CS	RCB183 03/10/10 RCB CS	RCB184 03/10/10 RCB CS	RCB229 03/11/11 RCB CS	SD14 03/10/10 RCB CS
Other organic compounds (mg/kg DW)											
Phenol	0.42	1.2	<1.7	<1.4	***9.3***	<0.17	<0.19	<0.1	<0.23	<0.088	<0.33
2-Methylphenol	0.063	0.063	<1.7	<1.2	<0.56	<0.17	<0.19	<0.1	<0.23	<0.088	<0.33
4-Methylphenol	0.67	0.67	<1.7	***1.8***	0.34 J	***2***	***1.9***	0.14	0.23	0.068 J	0.3 J
Benzoic acid	0.65	0.65	<17	***12***	<5.6	<1.7	***0.8 J***	0.32 J	<2.3	0.36 J	<3.3
Benzyl alcohol	0.057	0.073	<1.7	<1.2	***0.39 J***	<0.17	<0.19	<0.1	<0.23	***0.2 J***	<0.33
Dibenzofuran	0.54	0.7	<1.7	<1.0	0.42 J	<0.17	<0.19	<0.1	<0.23	<0.088	0.24 J
Hexachlorobenzene	0.022	0.07	<1.7	<1.2	<0.56	<0.17	<0.19	<0.1	<0.23	<0.088	***0.22 J***
N-Nitrosodiphenylamine	0.028	0.04	<1.7	<1.2	***0.99***	<0.17	<0.19	<0.1	<0.23	<0.088	<0.33
Dioxins/furans (ng/kg) TEQ											
Dioxins/furans TEQ	1.6	--	--	--	--	--	--	--	--	--	--

[1] - Private Property Catch Basin (National Products)
[2] - Private Property Catch Basin (Independent Metals Plant 2)
SPU - Seattle Public Utilities
SD - Storm Drain
CS - Combined sewer
SQS - Sediment Quality Standard from Washington Sediment Management Standards
CSL - Cleanup Screening Level from Washington Sediment Management Standards
LAET - Lowest Apparent Effects Threshold
2LAET - Second LAET
mg/kg - Milligrams per kilogram
DW - Dry weight

ng/kg - Nanograms per kilogram
TEQ - toxic equivalency
J - Estimated value between the method detection limit & the laboratory reporting limit
B- the analyte was detected in the method blank
N - tentative identification
-- - Not analyzed
TPH - Total petroleum hydrocarbons
LPAH - Low molecular weight polycyclic aromatic hydrocarbon
HPAH - High molecular weight polycyclic aromatic hydrocarbon
PCBs - Polychlorinated biphenyls
MTCA - Model Toxics Control Act

813 Exceeds the SQS/LAET, MTCA, LDW dioxin/furan background
641 Exceeds CSL/2LAET

Table 7c
Chemicals Detected Above Screening Levels at
Storm Drain Sample Locations Near Marine Lumber Service

Chemical	SQS/ LAET	CSL/ 2LAET	CB137 03/27/09 Soil SD	RCB165 03/27/09 RCB SD	RCB159 12/05/08 Soil SD	RCB159-0 05/20/11 Soil SD	RCB159-3 05/20/11 Soil SD	RCB159-12 05/20/11 Soil SD	RCB273-0 05/20/11 Soil SD	RCB273-3 05/20/11 Soil SD	RCB273-12 05/20/11 Soil SD	RCB275-0 05/20/11 Soil SD	RCB275-3 05/20/11 Soil SD	RCB275-12 05/20/11 Soil SD
Metals (mg/kg)														
Arsenic	57	93	***710 J***	21 J	***750***	***474***	***950***	***260***	***204.5***	***245***	16	***544***	***430***	38
Copper	390	390	***4,930 J***	99.6 J	***4,520***	***3,240***	***8,370***	***2,110***	***404***	218.5	22.2	***2,730***	***1,890***	***419***
Lead	450	530	118 J	45 J	280	176	105	20	59	23	5.5	***1,040***	***995***	129
Mercury	0.41	0.59	<0.22	<0.06	0.27	0.27	0.26	0.13	0.19	0.12	0.07	0.20	0.17	0.11
Zinc	410	960	***1,950 J***	**517 J**	***1,490***	**825**	***1,660***	**594**	**458**	344	48	**938**	**733**	128
Total petroleum hydrocarbons (mg/kg)														
TPH-diesel	2,000	--	640	440	440	220	230	<63	<69	<61	<55	510	560	160
TPH-oil	2,000	--	**4,900**	**2,800**	**3,000**	1,500	1,900	420	445	185	<110	**3,700**	**2,900**	610
LPAH (mg/kg DW)														
Acenaphthene	0.5	0.73	<0.14	<0.059	<0.19	<0.098	<0.19	<0.099	<0.094	<0.093	<0.019	<0.19	<0.2	<0.098
Acenaphthylene	1.3	1.3	<0.14	<0.059	<0.19	<0.098	<0.19	<0.099	<0.094	<0.093	<0.019	<0.19	<0.2	<0.098
Anthracene	0.96	4.4	<0.14	<0.059	<0.19	<0.098	<0.19	<0.099	<0.094	<0.093	<0.019	<0.19	<0.2	<0.098
Fluorene	0.54	1.0	<0.14	<0.059	<0.19	<0.098	<0.19	<0.099	<0.094	<0.093	<0.019	<0.19	<0.2	<0.098
Naphthalene	2.1	2.4	<0.14	<0.059	<0.19	<0.098	<0.19	<0.099	<0.094	<0.093	<0.019	<0.19	<0.2	<0.098
Phenanthrene	1.5	5.4	0.13 J	0.057 J	<0.19	0.098	<0.19	<0.099	<0.094	0.015 J	0.016 J	0.1 J	<0.2	0.054 J
LPAH	5.2	13	0.13 J	0.057 J	<0.19	0.098	<0.19	<0.099	<0.094	0.015 J	0.016 J	0.1 J	<0.2	0.054 J
HPAH (mg/kg DW)														
2-Methylnaphthalene	0.67	1.4	<0.14	<0.059	<0.19	<0.098	<0.19	<0.099	<0.094	<0.093	0.019	<0.19	<0.2	<0.098
Benzo(a)anthracene	1.3	1.6	<0.14	0.051 J	<0.19	0.059 J	<0.19	<0.099	<0.094	<0.093	<0.019	0.17 J	<0.2	<0.098
Benzo(a)pyrene	1.6	3.0	<0.14	0.086	<0.19	0.078 J	0.096 J	<0.099	<0.094	0.014 J	<0.019	0.25	0.20	0.078 J
Benzo(g,h,i)perylene	0.67	0.72	0.11 J	0.087	<0.19	0.25	0.37	0.074 J	0.097	0.039	0.01 J	**0.67**	0.51	0.17
Total benzofluoranthenes	3.2	3.6	0.28 J	0.27	0.30	0.14	0.21	<0.099	0.0775 J	0.028	<0.019	0.30	0.23	0.078 J
Chrysene	1.4	2.8	0.22	0.25	0.28	0.21	0.29	0.064 J	0.071 J	0.023	0.0091 J	0.57	0.42	0.088 J
Dibenzo(a,h)anthracene	0.23	0.54	<0.14	<0.059	<0.19	<0.098	<0.19	<0.099	<0.094	<0.093	<0.019	<0.19	<0.2	<0.098
Fluoranthene	1.7	2.5	0.28	0.15	0.19	0.16	0.15 J	<0.099	0.0585 J	0.025	<0.018	0.29	0.21	0.093 J
Indeno(1,2,3-cd)pyrene	0.6	0.69	<0.14	0.046 J	<0.19	<0.098	0.096 J	<0.099	<0.094	<0.093	<0.019	0.15 J	<0.2	0.049 J
Pyrene	2.6	3.3	0.25	0.21	<0.19	0.17	0.15 J	<0.099	0.066 J	0.025	0.0097 J	0.46	0.32	0.11
HPAH	12	17	1.42	1.42 J	1.07	1.07 J	1.36 J	0.138 J	0.40 J	0.154 J	0.0242 J	2.86 J	1.89	0.666 J
Phthalates (mg/kg DW)														
Bis(2-ethylhexyl)phthalate	1.3	1.9	***1.9***	**1.4**	0.71	0.99 B	1.2 B	0.24 B	0.295 B	0.12 B	0.027 B	***2.3 B***	**1.7 B**	0.098 B
Butyl benzyl phthalate	0.063	0.9	**0.14**	**0.11**	<0.19	**0.083 J**	<0.19	<0.099	<0.094	0.012 J	<0.019	**0.45**	***4.9***	<0.098
Diethylphthalate	0.2	1.2	<0.14	<0.059	<0.19	<0.098	<0.19	<0.099	<0.094	<0.093	<0.045	<0.19	<0.2	<0.098
Dimethylphthalate	0.071	0.16	<0.14	<0.059	<0.19	<0.098	<0.19	<0.099	<0.094	<0.093	<0.019	***0.18 J***	**0.13 J**	<0.098
Di-n-butylphthalate	1.4	5.1	<0.14	<0.059	<0.19	<0.098	<0.19	<0.099	<0.094	<0.093	<0.019	<0.19	<0.2	<0.098
Di-n-octylphthalate	6.2	NV	0.13 J	0.077	<0.19	<0.098	<0.19	<0.099	<0.094	<0.093	<0.019	<0.19	<0.2	<0.098
PCBs (mg/kg DW)														
Total PCBs	0.13	1.0	0.032	0.061 J	**0.145**	**0.171**	0.127	0.058	**0.213**	0.076	0.02	**0.280**	**0.175**	**0.148**

Table 7c
Chemicals Detected Above Screening Levels at
Storm Drain Sample Locations Near Marine Lumber Service

Chemical	SQS/ LAET	CSL/ 2LAET	CB137 03/27/09 Soil SD	RCB165 03/27/09 RCB SD	RCB159 12/05/08 Soil SD	RCB159-0 05/20/11 Soil SD	RCB159-3 05/20/11 Soil SD	RCB159-12 05/20/11 Soil SD	RCB273-0 05/20/11 Soil SD	RCB273-3 05/20/11 Soil SD	RCB273-12 05/20/11 Soil SD	RCB275-0 05/20/11 Soil SD	RCB275-3 05/20/11 Soil SD	RCB275-12 05/20/11 Soil SD
Other organic compounds (mg/kg DW)														
Phenol	0.42	1.2	0.27	<0.059	<0.19	0.23	0.26	<0.099	0.073 J	0.027	<0.019	0.1 J	0.15 J	<0.098
2-Methylphenol	0.063	0.063	<0.14	<0.059	<0.19	<0.098	<0.19	<0.099	<0.094	<0.093	<0.019	<0.19	<0.2	<0.098
4-Methylphenol	0.67	0.67	<0.14	<0.059	<0.19	0.054 J	<0.19	<0.099	<0.094	<0.093	<0.036	<0.19	<0.2	<0.098
Benzoic acid	0.65	0.65	***1.0 J***	<0.59	<1.9	***0.94 J***	***1.7 J***	<0.99	0.405 J	0.15 J	<0.36	0.34 J	***0.69 J***	<0.98
Benzyl alcohol	0.057	0.073	<0.14	<0.059	<0.19	***3.7***	***1.6***	0.14	***1.75***	***0.285***	<0.019	***0.11 J***	***0.28***	<0.098
Dibenzofuran	0.54	0.7	<0.14	<0.059	<0.19	<0.098	<0.19	<0.099	<0.094	<0.019	<0.019	<0.019	<0.2	<0.098
Hexachlorobenzene	0.022	0.07	<0.14	<0.059	<0.19	<0.098	<0.19	<0.099	<0.094	<0.093	<0.018	<0.19	<0.2	<0.098
N-Nitrosodiphenylamine	0.028	0.04	<0.14	<0.059	<0.19	<0.098	<0.19	<0.099	<0.094	<0.019	<0.019	<0.19	<0.2	<0.098
Dioxins/furans (ng/kg) TEQ														
Dioxins/furans TEQ	1.6	--	--	--	--	--	--	--	--	--	--	--	--	--

SPU - Seattle Public Utilities
SD - Storm Drain
CS - Combined sewer
SQS - Sediment Quality Standard from Washington Sediment Management Standards
CSL - Cleanup Screening Level from Washington Sediment Management Standards
LAET - Lowest Apparent Effects Threshold
2LAET - Second LAET
mg/kg - Milligrams per kilogram
DW - Dry weight
ng/kg - Nanograms per kilogram

TEQ - toxic equivalency
J - Estimated value between the method detection limit & the laboratory reporting limit
B- the analyte was detected in the method blank
N - tentative identification
-- - Not analyzed
TPH - Total petroleum hydrocarbons
LPAH - Low molecular weight polycyclic aromatic hydrocarbon
HPAH - High molecular weight polycyclic aromatic hydrocarbon
PCBs - Polychlorinated biphenyls
MTCA - Model Toxics Control Act
825 Exceeds the SQS/LAET, MTCA, LDW dioxin/furan background
750 Exceeds CSL/2LAET

Table 8
Facilities in the 8th Avenue S CSO Basin that are listed in the Ecology Facility/Site Database

Facility/Site ID	Facility Name	Facility Address	Data Gaps Report[1]	Active EPA ID No.	CSCSL	NPDES Permit	KCIW Discharge Authorization or Permit	UST	Ecology NFA Determination	EPA CERCLA Section 104(e) Request for Information
3963	14th Avenue S Street Improvements	14th Avenue S, S Cloverdale & S Director	Riverside Drive							
46918719	1st Kenyon Drum	1st Avenue S & SW Kenyon Street	1st Avenue S SD							
15642	4th Avenue S & S Trenton Storm Drain	4th Avenue S & S Trenton Street	Riverside Drive							
64516429	5th Ave S Site	8229 5th Avenue S	1st Avenue S SD							
22726	640 S Riverside Dr	640 S Riverside Drive	Riverside Drive		•					
43565732	7 Eleven Food Store 230723931L	11657 Des Moines Way S	Restoration Areas					•		
97913617	ABC Metal Finishing	501 Elmgrove S	1st Avenue S SD							
10207	Absolute German	9510 14th Avenue S	Sea King Industrial Park			•				
2077	Ace Galvanizing Inc 96th	429 S 96th	Sea King Industrial Park	•	•	•		•		•
2079	Advance Electroplating	9585 8th Ave S	Sea King Industrial Park	•	•					•
82395194	Aero Lac Inc	420 S 96th Street Suite 11	Sea King Industrial Park							
72668839	African Northwest, Inc.	470 S Kenyon Street	Riverside Drive					•		
25327412	Ahrenius Manufacturing Inc	1425 S 93rd	Sea King Industrial Park							
6060	AIC International	736 S Chicago Street	Riverside Drive							
56256949	Alaska Cargo Transport Inc	6700 Marginal Way SW	Terminal 115							
22342251	All City Auto Wrecking & Sales Inc	9438 Des Moines Memorial Drive	Sea King Industrial Park						•	
5469634	Allied Body Works Inc	625 S 96th Street	Sea King Industrial Park	•						
63942573	Allied Bolt Co	8619 17th Avenue S	Terminal 117							
60993417	Aloha Cargo Transport Inc	6700 West Marginal Way SW Terminal 115	Terminal 115							
26135396	American Bathtub Refinishers Inc	1412 S Henderson Street	Riverside Drive	•						
77734273	American Plastic Manufacturing Incorporated	526 S Monroe Street	Riverside Drive							
21995	Architectural Stone Werkes	429 S 96th Street	Sea King Industrial Park			•				
73914265	ARCO Service Station 4375	11215 8th Avenue S	Sea King Industrial Park							
17746	Arrowhead Senior Housing Association	9200 2nd Avenue SW	1st Avenue S SD							
2882470	AT&T Wireless South Park	9128 10th Avenue S	Sea King Industrial Park							
8162841	ATC Distribution Group	401 S Webster	EAA-2		•			•		
16677	Atomic Fabrications	1605 S 93rd Street, Unit E R	Sea King Industrial Park							
53457146	Auto Site Automotive	11803 Des Moines Memorial Drive	Restoration Areas	•				•	•	
19959367	Bayside Automotive Storage Inc	NE Corner of 96th Street & 10th Avenue S	Sea King Industrial Park							
72626372	Beal Bucket Site	17th Place S 100 Yards E of Des Moines Way S	Restoration Areas							
82885756	BJ Truck Wrecking	7225 2nd Avenue S	EAA-2							
58835952	Boeing D & SG Oxbow Site	10700 West Marginal Way S	Restoration Areas	•						
60381981	Boeing South Park	1420 S Trenton Street	Terminal 117	•		•				
37926748	Boyer Logistics Inc	7318 4th Ave S	EAA-2	•		•				•
15947	Boyer Towing	7318 4th Avenue S	EAA-2							•
4328	Braicks Construction Inc	309 S Cloverdale Street, Suite B3	Riverside Drive							

Table 8
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24205	Brosson Co LLC	10808 Meyers Way S	Sea King Industrial Park							
3329	Bus Yard Site Preparation CSWGP	130 S Kenyon Street	1st Avenue S SD							
7503	Cain Bolt & Gasket	7724 7th Avenue S	Riverside Drive							
1866123	Carolyn M Burke Site	9326 7th Avenue S	Sea King Industrial Park							
56766158	Cascade Diesel Engine Co LLC Cloverdale	426 S Cloverdale Street	Riverside Drive							
4914795	CB Finishing	9587 8th Avenue S	Sea King Industrial Park							
11972772	Centimark Corp Seattle Office	430 S 96th Street 5	Sea King Industrial Park							
66498524	Chevron 306536	11845 Des Moines Way S	Restoration Areas							
43643315	Chevron 98484	8700 14th Avenue S	Riverside Drive					•		
38246778	Christian Brothers Floor Svc Inc	309 S Cloverdale Suite C20	Riverside Drive	•						
3479178	Cliff Housers Automotive	806 S 112th Street	Sea King Industrial Park					•		
1852542	Clyde West Inc	9615 West Marginal Way S	Restoration Areas	•						
4612472	Coach Maintenance	255 S Holden Street	Riverside Drive					•		
2430	Coast Crane Company	8250 5th Avenue S	Riverside Drive		•		•			
9604	Consistent Coatings, Inc.	719 S Riverside Drive	Riverside Drive							
67814731	Container Care Puget Sound	9600 8th Avenue S	Sea King Industrial Park			•				
15446	Craft Built	10714 1st Avenue S	Sea King Industrial Park							
98422914	Crowley Marine Services Inc Terminal 115	6020 West Marginal Way	Terminal 115					•		
39411556	Cunningham Manufacturing Co Inc	318 S Webster Street	EAA-2							
82818857	Custom Craiting	233 S Holden Street	Riverside Drive					•		
12865	Custom Metal Spinning LLC	9330 15th Avenue S, Unit C	Sea King Industrial Park							
61231536	Custom Roofing Inc	8001 5th Avenue S	1st Avenue S SD					•		
6915930	Delta Marine Industries	1608 S 96th Street	Sea King Industrial Park			•				
22978975	Delta Marine Industries Inc	1608 S 96th Street	Sea King Industrial Park	•						
89923232	DEOX	1605 S 93rd Street Building EC	Sea King Industrial Park							
21209	Diamond Painting	1601 S 92nd Place	Sea King Industrial Park							
2544945	Diamond Painting LLC 1601	1601 S 92nd Place, Suite B	Sea King Industrial Park							
97573251	Douglas Management Dock	7100 2nd Avenue SW	1st Avenue S SD		•			•		
75318226	Duwamish Manor	15th Avenue S & S 93rd st	Sea King Industrial Park	•						
2258	Eastern Supply Company	7745 1st Avenue S	1st Avenue S SD		•					
91926231	Eastmont Transfer Station	7155 West Marginal Way SW	1st Avenue S SD							
95735434	Ecolights Northwest LLC	9411 8th Avenue S Suite 3	Sea King Industrial Park	•						
15029	Emerald City Machine	160 S 108th Street	Sea King Industrial Park							
6955180	EMJ	1231A S Director Street	Sea King Industrial Park							
5542431	Exxon Co USA Div of Exxon Cor	7150 2nd Avenue SW	1st Avenue S SD							
11942	Fabrication Specialties Ltd Art	527 S Portland Street	Riverside Drive							

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47625361	Federal Express Corp BFI	9320 15th Avenue S	Sea King Industrial Park							
3565459	Ferguson Construction	7433 5th Avenue S	EAA-2		•		•	•	•	
8610624	Fibres International, Inc.	9208 4th Avenue S	Riverside Drive			•				
68488062	Fire King of Seattle, Inc.	240 S Holden Street	Riverside Drive							
90247719	First Student Seattle	130 S Kenyon Street	1st Avenue S SD			•				
1736255	Flamespray Northwest Inc	250 S Chicago Street	1st Avenue S SD							
10791	Flying Fish Express	7937 2nd Avenue S	1st Avenue S SD							
3533187	FMH Material Handling Solutions	1313 S 96th Street	Sea King Industrial Park	•	•			•		
14644	Former Airport Towing	301 S Sullivan Street	Riverside Drive							
29149762	Former Brown Engineering	550 S Monroe Street	Riverside Drive							
47552226	Former Burned Laundry	1414 S Concord Street	Riverside Drive							
92792171	Former Bus & Air Parcel Service Inc	9004 14th Avenue S	Riverside Drive		•			•		
93511879	Former Cascade Enterprises	8709 14th Avenue S	Riverside Drive							
88237831	Former Chemithon Surface Finishing Inc	521 S Monroe Street	Riverside Drive							
93927211	Former Crosby Auto Repair Shop	8621 14th Avenue S	Riverside Drive					•		
28226866	Former Discount Drive Axle of Seattle	309 S Cloverdale Street Suite A11	Riverside Drive							
38576231	Former Emerald Services Group	500 S Sullivan Street	Riverside Drive					•		
63168342	Former Glitsa American Inc	327 S Kenyon Street	Riverside Drive		•			•		
42127616	Former Hurlen Construction	700 S Riverside Drive	Riverside Drive		•			•		•
2278	Former King Auto & Truck Wrecking	543 S Monroe Street	Riverside Drive						•	
1370584	Former KJM Electric Co	521 S Monroe Street	Riverside Drive							
71678662	Former Long Painting - 10th Avenue Facility	8025 10th Avenue S	Riverside Drive					•	•	
12724197	Former Magnetic Penetrant Services Co Inc	309 S Cloverdale Street Unit B20	Riverside Drive							
11457	Former Mikes Truck Repair & Fabrication	515 S Southern Street	Riverside Drive							
78952325	Former Mill Engineering & Supply Co	516 S Chicago Street	Riverside Drive							
6661875	Former Pipe Specialities Inc	531 S Portland Street	Riverside Drive							
92291647	Former Resource Recycling Technologies	8000 5th Avenue S	Riverside Drive							
26215242	Former Rockwell Automation	500 S Chicago Street	Riverside Drive							
64285373	Former Schauer Northwest Inc	8819 14th Avenue S	Riverside Drive							
41287367	Former Scott Andrews Property	8520 14th Avenue S	Riverside Drive					•		
84435338	Former Screen Matic Arts	9354 4th Avenue S	Riverside Drive							
18225132	Former Seattle Refrigeration and Manufacturing	1057 S Director Street	Riverside Drive							
48968474	Former South Park BP	8819 14th Avenue S	Riverside Drive					•		
13132191	Former Spencer Industries Inc	8410 Dallas Avenue S	Riverside Drive		•					
78879968	Former Superior Precision Analytical	309 S Cloverdale Street Suite B24	Riverside Drive							
23653754	Former Tom Thurber	1420 S Henderson Street	Riverside Drive					•		

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45558857	Former Yale Materials Handling NW Inc	8101 7th Avenue S	Riverside Drive							
44534539	Formula Corp	7901 2nd Avenue S	1st Avenue S SD							
24384	Frog Hollow Corp	1425 S 93rd Street	Sea King Industrial Park							
27446996	Fruehauf Trailer Inc Seattle	9426 8th Avenue S	Sea King Industrial Park	●	●					
7727938	Gary Merlino Construction Company	9125 10th Avenue S	Sea King Industrial Park	●	●	●		●		
5152950	Gasoline Service Station Former	12249 8th Avenue S							●	
93436287	Gear Works Seattle, Inc.	500 S Portland Street	Riverside Drive	●		●				
23498	Gene Summy Lumber	6000 West Marginal Way SW	Terminal 115							●
18369741	Glen Acres Home Association	1000 S 112th	Sea King Industrial Park					●		
10128921	Global Fabricators Inc.	7619 5th Avenue S	Riverside Drive					●		
86343865	Global Intermodal Systems	1818 S 93rd Street	Sea King Industrial Park							●
54287319	Gold Co	12459 Des Moines Way S	Restoration Areas		●			●		
73412486	Graham Trucking, Inc.	722 S Chicago Street	Riverside Drive							●
7130166	Greg Peterson Duwamish River	None	1st Avenue S SD							
36385877	Guinns Automotive & Electric	245 S Austin Street	Riverside Drive	●						
1557860	Halfon Candy Co	9229 10th Avenue S	Sea King Industrial Park		●					
41888934	Hansen Machine Corp Seattle	712 S Portland Street	Riverside Drive							
73671237	Heartwood, Inc.	1414 S Director Street	Riverside Drive	●						
82131388	HSD Highline Boulevard Park Warehouse	12833 20th Avenue S	Restoration Areas							
76764554	Hudson Bay Insulation	8230 5th Avenue S	Riverside Drive							
94892538	Hussman Corp West Marginal Way	7440 A West Marginal Way S	EAA-2							
93252843	Icon Materials Seattle Asphalt	1115 S 96th Street	Sea King Industrial Park		●			●	●	
9309618	Independent Metals Plant 1	747 S Monroe Street	Riverside Drive				●			●
16139	Independent Metals Plant 2	816 S Kenyon Street	Riverside Drive			●				●
23115	Industrial Battery	211 S Austin Street	EAA-2	●						
2154	Industrial Container Services WA LLC	7152 1st Avenue S	EAA-2	●	●		●			●
99142846	International Construction Equipment	8101 Occidental Avenue S	1st Avenue S SD							
97992431	International Lubricants Inc	7930 Occidental S	1st Avenue S SD							
4154808	International Paint LLC	1541 S 92nd Place Suite C	Sea King Industrial Park	●						
25623222	Interstate Coatings Inc UST 9194	754 S Chicago Street	Riverside Drive					●		
2335	Interstate Coatings, Inc.	754 S Chicago Street	Riverside Drive		●					
2491	Jones Property	12441 20th Avenue S	Restoration Areas						●	
94931167	Jones Washington Stevedoring Co Ust2313	7245 West Marginal Way SW	1st Avenue S SD					●		
22294	Jons Recycling	7620 2nd Avenue S	EAA-2							

Table 8
Facilities in the 8th Avenue S CSO Basin that are listed in the Ecology Facility/Site Database

Facility/Site ID	Facility Name	Facility Address	Data Gaps Report[1]	Active EPA ID No.	CSCSL	NPDES Permit	KCIW Discharge Authorization or Permit	UST	Ecology NFA Determination	EPA CERCLA Section 104(e) Request for Information
13389849	Joseph B Meder	12025 Des Moines Way S	Restoration Areas					●		
11249	JV Constructors Inc	325 S Kenyon Street	EAA-2							
11797661	Karawis Inc	10723 1st Avenue S	Sea King Industrial Park					●		
2489	Kaspac Chiyoda Property	1237 S Director Street	Sea King Industrial Park					●	●	
87373824	Kelly Ryan Inc South Park	7235 2nd Avenue S	EAA-2							●
29892767	Kenyon Drum	Kenyon Street S at Transfer	Riverside Drive							
6292538	King County DOT Road Services Division	South Park Bridge Project	Terminal 117							
2404488	King Electrical Mfg Co	9131 10th Avenue S	Sea King Industrial Park	●						
12901	Koepping & Koepping	1705 S 93rd Street, Building F7	Sea King Industrial Park							
90355185	KRS Marine	1621 S 92nd Place	Sea King Industrial Park							
2320	Laidlaw	7739 1st Avenue S	1st Avenue S SD		●			●		
2010311	LDW 2nd Ave S Outfall	South Park Basin & Orchard Street	EAA-2							
16981594	Lion Trucking Inc	8425 1st Avenue S (share w/Old Dominion Freight)	1st Avenue S SD					●		
83549384	Liquid Air Corp of N America	7500 2nd Avenue S	EAA-2					●		
58864121	Lloyd Electric Apparatus Co	7126 West Marginal Way SW	Terminal 115	●						
39232961	Lukas Machine Inc	707 S Riverside Drive	Riverside Drive			●				
23949	M & M Grinding	10846 Meyers Way S								
21626	MacDonald Miller Co Inc	7717 Detroit Avenue SW	1st Avenue S SD							
36776588	MacDonald Miller Service Inc	7707 Detroit Avenue SW	1st Avenue S SD					●		
5885095	Machinist Inc Tooling Division	8201 7th Avenue S	Riverside Drive							
72567932	Machinists Inc Plant 2	509 S Austin Street	Riverside Drive							
22736	Machinists Inc.	7600 5th Avenue S	Riverside Drive			●				
46338473	Magnetic & Penetrant Services Co Inc	8135 1st Avenue S	1st Avenue S SD			●				
15761	Manufacturing Technologies, Inc.	7709 5th Avenue S	Riverside Drive							
38921541	Marine Lumber Service Inc	525 S Chicago Street	Riverside Drive			●		●		
73969348	Marine Lumber Service Shop	558 S Kenyon Street	Riverside Drive					●		
2263	Markey Property Parcel 4	9520 10th Avenue S	Sea King Industrial Park						●	
3546421	Mason Dixon Intermodal Inc	9515 10th Avenue S	Sea King Industrial Park	●						
7747737	Mccall Oil Seattle Home Heating Burien	11441 Des Moines Way			●			●	●	
15844	McFabco Steel Corporation	635 S Elmgrove Street	Riverside Drive							
36919863	McKinstry Co S Barton St	855 S Barton Street	Sea King Industrial Park					●		
71378133	Meeco Manufacturing Co.	432 S Cloverdale Street	Riverside Drive							
9677878	Metro Holden Marginal Way	West Marginal Way SW &S Holden Street	1st Avenue S SD							
54346566	Metro Term 117	West Marginal Way S Terminal 117	1st Avenue S SD							
12326	Meyers Way Sand Pit	9400 Meyers Way	1st Avenue S SD							

Table 8
Facilities in the 8th Avenue S CSO Basin that are listed in the Ecology Facility/Site Database

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2334	Mikes Aussie Machine Shop	12441 Des Moines Memorial Drive	Restoration Areas						•	
231954	MKT Southpark LLC	9525 14th Avenue S	Sea King Industrial Park							
8127	Modern Coach Modern Pattern	7601 5th Ave S	Riverside Drive							
25678771	Modern Machine Company	519 S Elmgrove Street	Riverside Drive							
95231135	Moimoi Property	10118 Des Moines Memorial Drive S	Restoration Areas		•					
42665774	Morgan Trucking Inc Seattle	9228 10th Avenue S	Sea King Industrial Park					•		
24615 7598	National Products Inc.	8410 Dallas Avenue S	Riverside Drive							
16838	National Products S Elmgrove	1017 S Elmgrove Street	Riverside Drive				•			
4203517	Ness Cranes, Inc	500 S Sullivan Street	Riverside Drive							
14108	Nicos Auto Service	10819 Myers Way S	Sea King Industrial Park							
66671686	Nonferrous Metals Inc	230 S Chicago Street	1st Avenue S SD							
2347	Norman Property	11603 10th Avenue S	Sea King Industrial Park						•	
25963342	North Star Ice Equipment Inc	8151 Occidental Avenue S	1st Avenue S SD					•		
62275925	Northern Freight Lines Inc	730 S Chicago Street	Riverside Drive					•		
14839	Northwest Connecting Rod	1705 S 93rd Street, Unit F7	Sea King Industrial Park							
84427474	Northwest Container Services Inc	6110 West Marginal Way SW Terminal 115	Terminal 115				•			
2536	Northwest EnviroService 2	8105 1st Avenue S	1st Avenue S SD							
74745382	Northwest Grating Products, Inc.	9230 4th Avenue S	Riverside Drive			•				
7221	Northwind Marine	605 S Riverside Drive	Riverside Drive							
24178231	NRC Environmental Sves Inc	20500 Richmond Beach Drive NW	Terminal 115	•				•		
74491434	NW Enviroservice 1st Ave Site	8105 1st Avenue S	1st Avenue S SD							
17445	Old Dominion Freight Line Inc	8425 1st Avenue S (share w/Lion Trucking)	1st Avenue S SD							
7969	Olsson Manufacturing Co	525 S Elmgrove Street	Riverside Drive							
45787437	Olympic Steel Door	7800 7th Avenue S	Riverside Drive		•			•		
72863999	Omnisource Inc	123 S Kenyon Street	1st Avenue S SD							
85495122	Omnisource Inc 121	121 1/2 S Kenyon Street	1st Avenue S SD							
82954349	Omnisource Inc 129	129 S Kenyon Street	1st Avenue S SD							
52276616	Pacific American Commercial Co	7400 2nd Avenue S	EAA-2							
9950	Pacific American Commercial Co Yard 2	7560 2nd Avenue S	EAA-2							
10293	Pacific American Commercial Co Yard 3	7601 2nd Avenue S	EAA-2							
1143511	Pacific Industrial Supply Director Street	1231 S Director Street	Sea King Industrial Park							
56779778	Pacific Pile & Marine	582 S Riverside Drive	Riverside Drive							
5151	Pacific Plumbing Supply	7115 W Marginal Way SW	Terminal 115							
86136757	Pacific Utility Equipment Co	1303 S 96th Street	Sea King Industrial Park							
79459683	Patent Construction Systems	8111 1st Avenue S	1st Avenue S SD							
1992812	Petrocard Systems Inc	9014 14th Avenue S	Riverside Drive					•		

Table 8
Facilities in the 8th Avenue S CSO Basin that are listed in the Ecology Facility/Site Database

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7170	Phils Custom Bindery	309 S Cloverdale Street, Suite A12	Riverside Drive							
3147742	Pioneer Industries Plant 2	7440 West Marginal Way S	Terminal 115							
15700	Port of Seattle Terminal 115 Berth 1	6375 West Marginal Way SW	Terminal 115							
7936495	Portable Sheds of America	7510 5th Avenue S	Riverside Drive					•		
2056	Precision Engineering Inc	1231 S Director Street	Sea King Industrial Park		•			•		
12264831	Professional Service Industries	7400 3rd Avenue S	EAA-2					•		
9246491	Progressive Fastening Inc	837 S Director Street	Sea King Industrial Park	•						
67478551	Progressive Medical Corp	1600 S 92nd Avenue Suite H	Sea King Industrial Park							
96897184	Proliance International Inc Seattle	7951 2nd Avenue S	1st Avenue S SD							
29834194	Propulsion Controls Engineering	1705 S 93rd Street F10	Sea King Industrial Park							
4210684	Protective Coating Consultants Inc	1501 S 92nd Place Suite A	Sea King Industrial Park	•						
76299717	PSF Industries Inc Field Yard	9322 14th Avenue S	Sea King Industrial Park							
18451551	PSF Mechanical Inc	9322 14th Avenue S	Sea King Industrial Park	•		•				
13397378	Puget Sound Coatings Inc	9400 8th Avenue S	Sea King Industrial Park						•	•
97263627	Puget Sound Coatings Machinists Inc	9220 8th Avenue S	Sea King Industrial Park	•		•		•		•
12462	Qual Fab Inc	1705 S 93rd Street, Building F Unit 11	Sea King Industrial Park							
96526349	R & J Autobody Inc	10832 Meyers Way S	Sea King Industrial Park							
78215825	Rainier Golf & Country Club	1856 S 112th	Restoration Areas		•			•		
81158515	Rasmussen Equipment Co Inc	415 S Cloverdale Street	Riverside Drive					•		
22497475	Rasmussen Equipment Company	8727 5th Avenue S	Riverside Drive							
83132785	Reamco Electronics	817 S Kenyon Street	Riverside Drive							
55695661	Recycle America	7901 1st Avenue S Clean up	1st Avenue S SD							
17130	Revere Group Seattle	9310 4th Avenue S	Riverside Drive	•						
66136556	Ricks Master Marine Inc	1411 S Thistle Street	Terminal 117	•						•
18925	RMC Inc	10766 Myers Way S	Sea King Industrial Park							
59283333	Rogers Machinery Co Inc	7800 5TH Avenue S	Riverside Drive							
63293426	Ryder Student Transportation Services	130 S Kenyon Street	1st Avenue S SD		•			•		
2058	S 96th Street Ditch	S 96th Street & Duwamish River	Sea King Industrial Park		•					
3644425	S Chicago St Dump	251 S Chicago Street	Riverside Drive							
17878123	S Holden Abandoned Container	750 Block S Holden Street	Riverside Drive	•						
1852818	S Kenyon St	832 S Kenyon Street	Riverside Drive							
87983518	Safway Steel Products	7501 2nd Avenue S	EAA-2					•		
24041	Samson Tug & Barge Detroit Ave SW	7553 Detroit Avenue SW	1st Avenue S SD			•				
15539	Samson Tug Maintenance Shop	7739 1st Avenue S	1st Avenue S SD							
9401	Sea Mar Family Housing	1000 S Henderson	Riverside Drive							

Table 8
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11466114	Sea Pac Service Co	6100 West Marginal Way SW	Terminal 115							
82536515	Seafreeze Ltd Terminal 115	206 SW Michigan Street	Terminal 115	●			●	●		●
91829569	Seattle City DOT West Seattle	9200 8th Avenue S	Sea King Industrial Park	●				●		
6041351	Seattle City Turkey Duck Swale	9311 4th Avenue S	Riverside Drive							
13152935	Seattle Fire Station 26	800 S Cloverdale Street	Riverside Drive					●		
6407	Seattle Heat Treaters, Inc.	521 S Holden Street	Riverside Drive							
4040072	Seattle Port Terminal 115	6020-6760 West Marginal Way SW	Terminal 115							●
77377391	Seattle Public Utilities W Seattle Res	8820 3rd Avenue SW	1st Avenue S SD							
58482618	Seattle Sludge Interim Project	7417 4th Avenue S	EAA-2							
2175	Seattle South Transfer Station	8100 2nd Avenue S	1st Avenue S SD		●		●			
59692187	Seidehuber Iron & Bronze Works Inc	8009 7th Avenue S	Riverside Drive					●		
37752719	Selland Auto Transport	615 S 96th Street	Sea King Industrial Park	●	●	●		●		
15388822	Service Specialties Inc.	800 S Kenyon Street	Riverside Drive					●		
29633897	Shawnee Painting Sandblasting	8107 10th Avenue S	Riverside Drive							
39258864	Sherwin Williams Store 4317	9530 10th Ave S	Sea King Industrial Park	●						
861945	Silver Bay Logging Inc	7760 8th Avenue S	Riverside Drive							
2236438	Simplex Grinnell	9520 10th Avenue S Suite 100	Sea King Industrial Park							
6253396	Sirius Maritime Company	309 S Cloverdale D21	Riverside Drive							
21077	SKBA Buddhist Temple	8th Avenue S & S 100th Street	Sea King Industrial Park							
12429	Smith Berger Marine, Inc	7915 10th Avenue S	Riverside Drive							
81861618	Snyder Industries Inc	524 S Southern Street	Riverside Drive							
26432659	Sound Delivery Service	9999 8th Avenue S	Sea King Industrial Park	●						
6950604	Sound Propeller Services, Inc.	7916 8th Avenue S	Riverside Drive							
5776	Sound Propeller Systems Inc	9130 15th Place S	Sea King Industrial Park							
27778576	South Park Chevron	9525 14th Avenue S	Sea King Industrial Park					●		
42131353	South Park Truck Trailer Rep	7265 2nd Avenue S	EAA-2							●
3665320	South Recycle & Disposal Station 5th Ave	8105 5th Avenue S	1st Avenue S SD							
3453	South Transfer Station	130 S Kenyon Street	1st Avenue S SD							
83597535	SPU Highline Well Boulevard Park	SW Corner of S 128th & 20th S	Restoration Areas							
81215768	SPU Highline Well Riverton Heights	NW Corner of S 148th & 24th S								
42718345	Standard Steel Fabricating Co Inc	8155 1st Avenue S	1st Avenue S SD			●		●		
48248356	Sunnydale Construction Company Inc	1119 S 96th	Sea King Industrial Park		●			●	●	
3291	Terex Utilities	9426 8th Avenue S	Sea King Industrial Park							

Table 8
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79578412	Teris LLC	9520 10th Avenue S Suite 150, Transfer Facility	Sea King Industrial Park	•						
74799553	Terrel Sommers Inc	9508 8th Avenue S	Sea King Industrial Park							
69951382	Thomas Equipment Rental	827 S Director Street								
12333317	Tierney Electrical Manufacturing Company	7901 7th Avenue S	Riverside Drive	•						
86979859	Tnemec Co Inc	7929 2nd Avenue S	1st Avenue S SD							
9457	Tours Northwest	8221 7th Avenue S	Riverside Drive							
2329	ToxGon Corp Seattle	631 S 96th Street	Sea King Industrial Park	•						
39937726	Transfer Sta Barrel	8100 Occidental Ave S 033	1st Avenue S SD							
4401006	Ultrapak Printing Inc Former Tenant	1600 S 92nd Place	Sea King Industrial Park	•						
78714998	United Iron Works Inc	7421 5th Avenue S	EAA-2	•		•		•		•
7327447	United States Seafoods	1605 S 93rd Business Park Unit EH	Sea King Industrial Park	•						
14193	Urban Hardwoods Sawmill	8427 1st Avenue S	1st Avenue S SD							
73123528	US DOJ DEA Kent Training	2450 S 142nd								
21141463	US EPA Technical Assistance Team Whse	1605 S 93rd Building E Unit R	Sea King Industrial Park							
9037205	US EPA Warehouse	1620 S 92nd Place Unit B	Sea King Industrial Park							
89337496	WA Argriculture King 2	8100 B 2nd Avenue S	1st Avenue S SD							
23821	Warner Transmission	10851 Meyers Way S								
1661671	Warner's Foreign Auto Repair	9001 14th Avenue S	Riverside Drive	•	•			•		
77384581	Washington Liftruck	700 S Chicago Street	Riverside Drive				•			
4709	Waste Management Cng Upgrades	149 SW Kenyon & 8111 1st Avenue S	1st Avenue S SD							
2425	Waste Management of Seattle	7201 West Marginal Way SW	1st Avenue S SD		•	•	•	•		
12494	West Coast Equipment 2	7746 Detroit Avenue SW	1st Avenue S SD							
2262	West Coast Equipment Inc	7777 Detroit Avenue SW	1st Avenue S SD		•					
18137296	West Coast Wire Rope & Rigging	7777 7th Avenue S	Riverside Drive	•		•				
70748294	West Fork Nelson	7918 8th Avenue S	Riverside Drive					•		
26116543	West Seattle Reservoir		1st Avenue S SD							
89886819	Westec Industries, Inc.	8111 7th Avenue S	Riverside Drive	•						
19739	Westeel Company	8001 7th Avenue S	Riverside Drive							
17467	Western Marine Construction	7245 2nd Avenue S	EAA-2							•
2463219	Western United Fish Company	9411 8th Avenue S	Sea King Industrial Park				•			
56738526	WestFork Nelson Inc	7916 8th Avenue S	Riverside Drive					•		
95749157	Workboats Northwest Inc	7814 8th Avenue S	Riverside Drive							
18788836	YRC Inc Seattle	600 S 96th	Sea King Industrial Park							

Table 8
Facilities in the 8th Avenue S CSO Basin that are listed in the Ecology Facility/Site Database

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[1] This Column indicates that a facility is discussed in the Data Gaps report associated with the listed source control area:

	RM 1.6-2.1 West: Terminal 115
	RM 2.1 West: 1st Avenue S SD (pending)
	EAA-2: RM 2.1-2.2 West: Trotsky Inlet
	RM 2.2-3.4: Riverside Drive
	EAA-5: RM 3.4-3.8 West: Terminal 117
	RM 3.8-4.2 West: Sea King Industrial Park
	RM 4.2-4.8 West: Restoration Areas
	Facility not located within a source control area

[2]- See Appendix C, Maps A-1 through C-5. Map ID number identifies the facility

•- Additional information regarding this facility is available in Appendix C

CSO - Combined sewer overflow

EPA - U.S. Environmental Protection Agency

CSCSL - Confirmed or Suspected Contaminated Sites List

NPDES - National Pollutant Discharge Elimination System

KCIW - King County Industrial Waste

UST - Underground Storage Tank

NFA - No Further Action

CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act

EAA - Early Action Area

RM - River Mile

Figures

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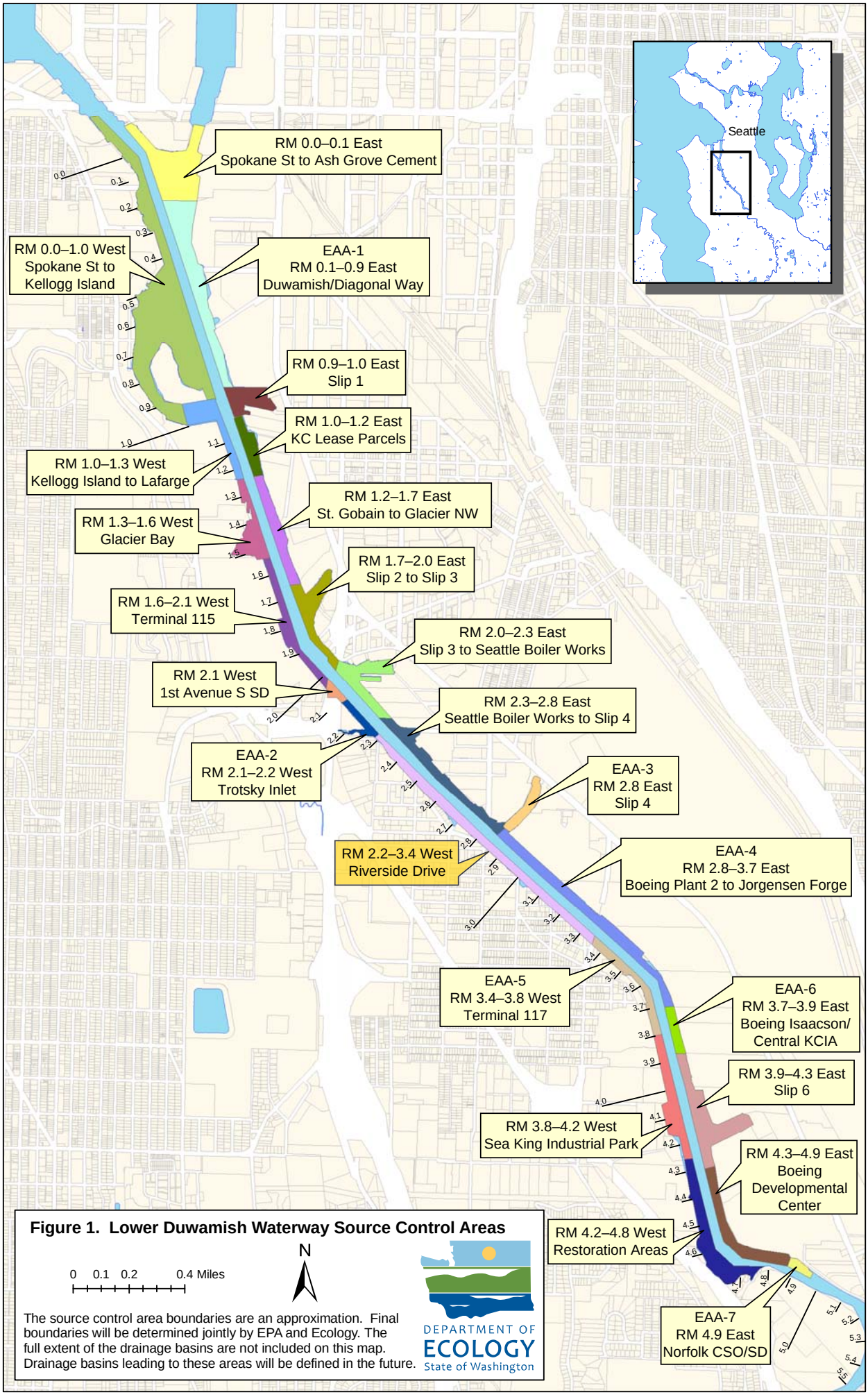
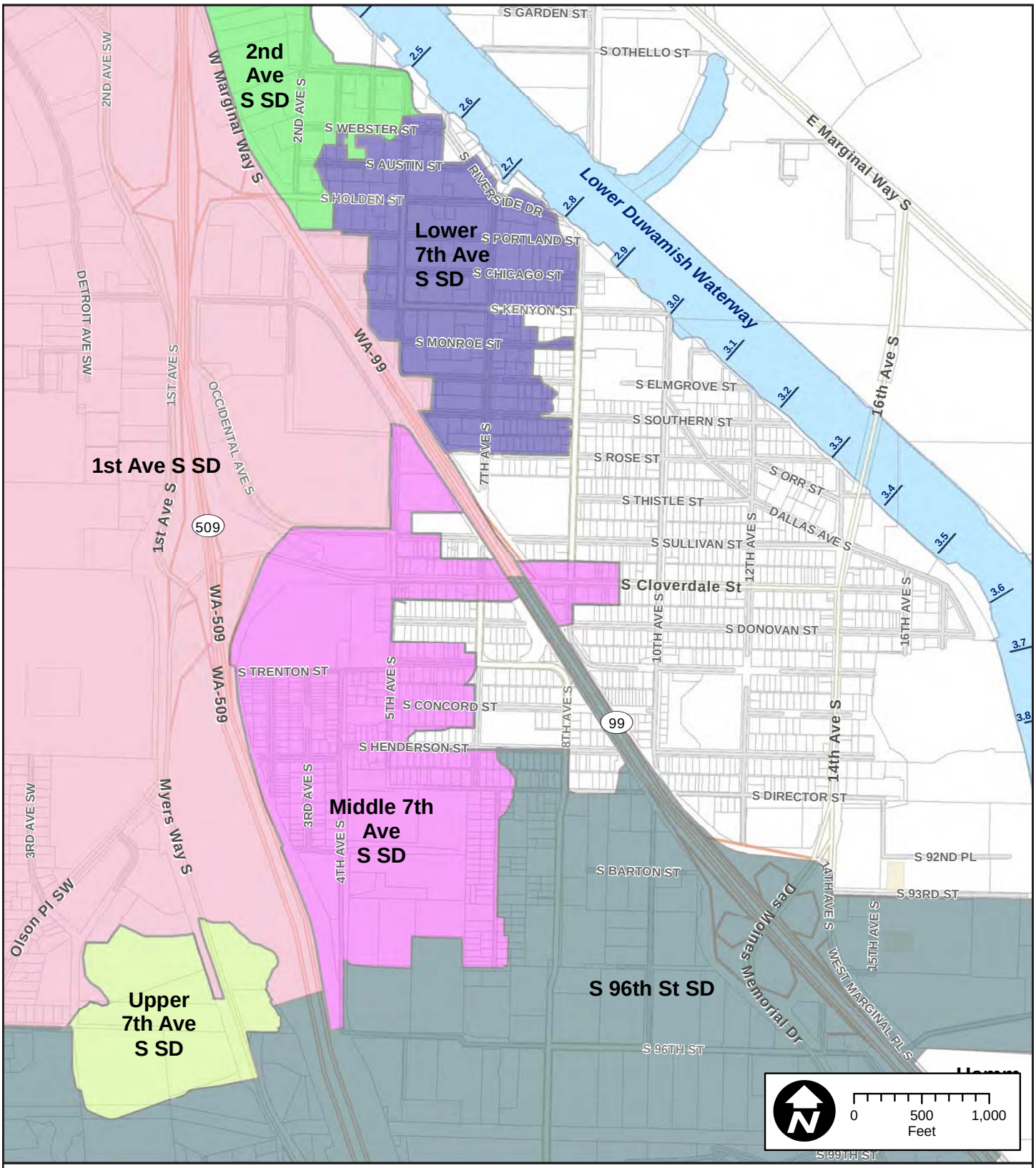


Figure 1. Lower Duwamish Waterway Source Control Areas

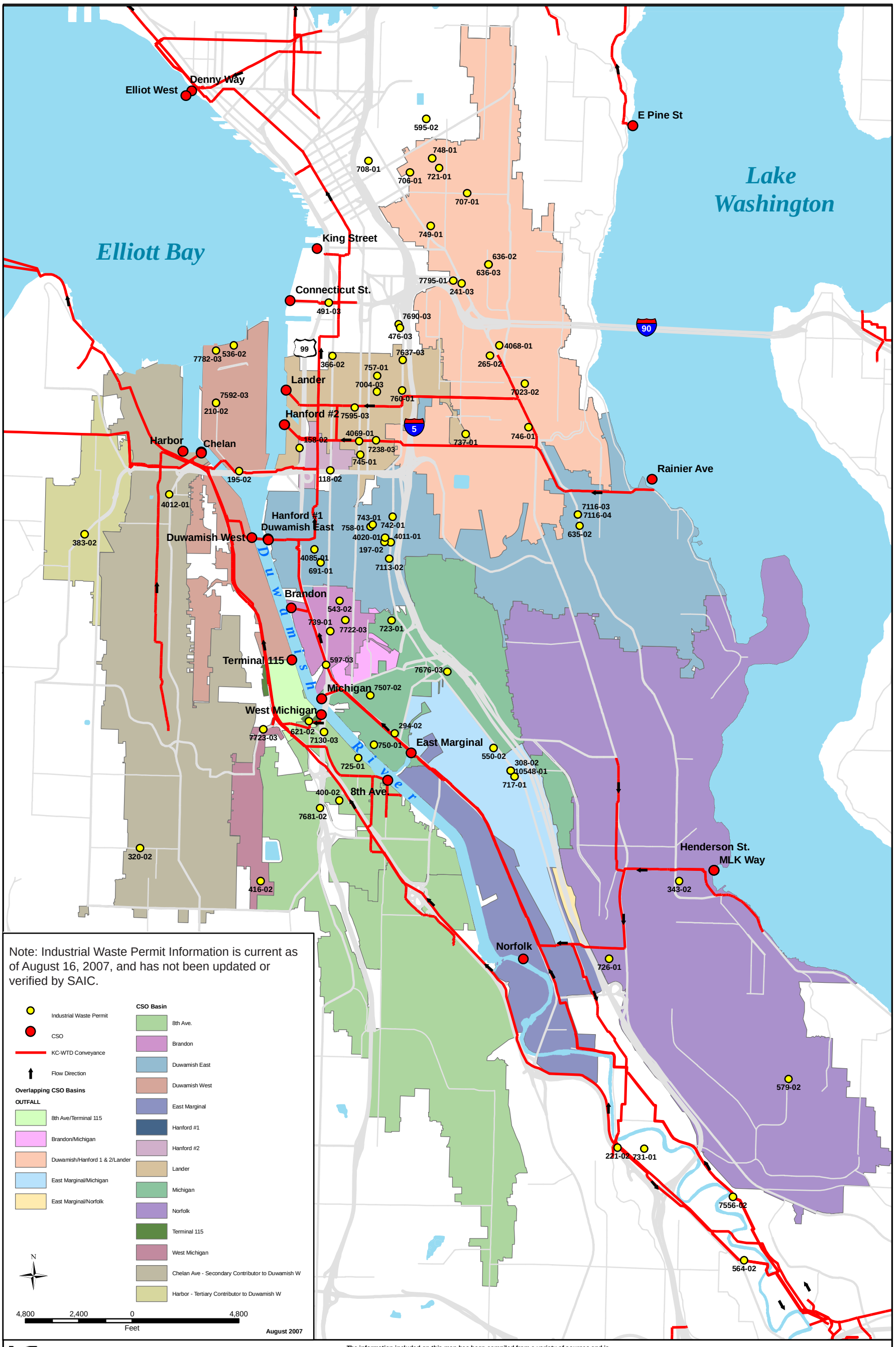
The source control area boundaries are an approximation. Final boundaries will be determined jointly by EPA and Ecology. The full extent of the drainage basins are not included on this map. Drainage basins leading to these areas will be defined in the future.



DEPARTMENT OF ECOLOGY
State of Washington

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

SAIC® From Science to Solutions



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

Industrial Waste Permit
CSO
KC-WTD Conveyance
Flow Direction

Overlapping CSO Basins

OUTFALL

- 8th 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

The information included on this map has been compiled from a variety of sources and is subject to change without notice. King County makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. This document is not intended for use as a survey product. King County shall not be liable for any general, special, indirect, incidential, or consequential damages including, but not limited to, lost revenues or lost profits resulting from the use or misue of the information contained on this map. Any sale of this map or information on this map is prohibited except by written permission of King County.

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

Source: King County 2007

DEPARTMENT OF ECOLOGY
State of Washington

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

SAIC® From Science to Solutions

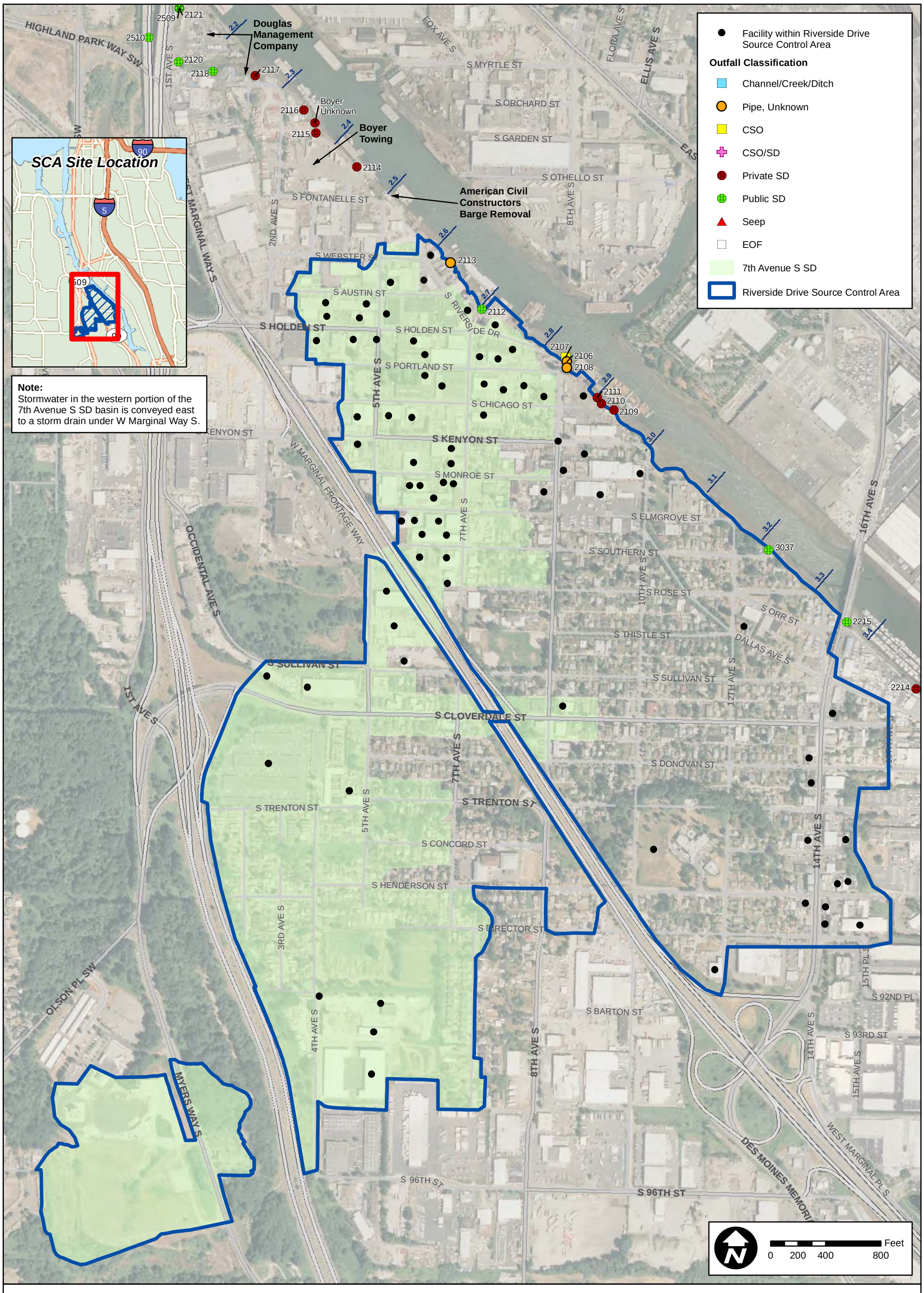


Figure 4a. Riverside Drive Source Control Area

DEPARTMENT OF ECOLOGY
State of Washington

SAIC
From Science to Solutions

Coordinate System:
NAD 1983 StatePlane Washington North FIPS 4601 Feet
Prepared By: mlf
File: Fig-4a_Riverside Drive Source Control Area.mxd
Illustrative purposes only.

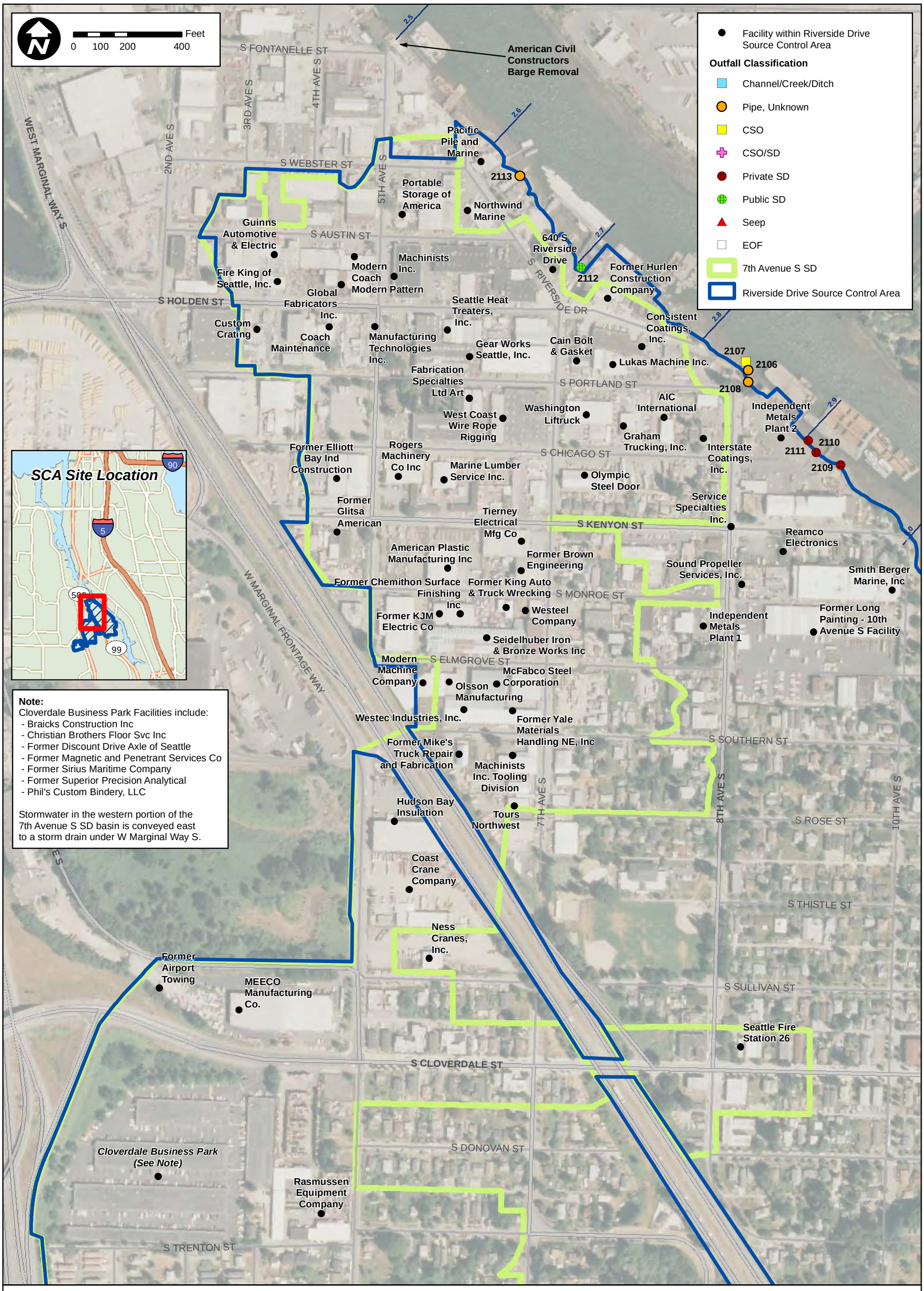


Figure 4b. Riverside Drive Source Control Area — Northern Portion

DEPARTMENT OF ECOLOGY
State of Washington

SAIC
From Science to Solutions

Coordinate System:
NAD 1983 StatePlane Washington North FIPS 4601 Feet
Prepared By: mlf
File: Fig-4_Riverside Drive Source Control Area.mxd
Illustrative purposes only.

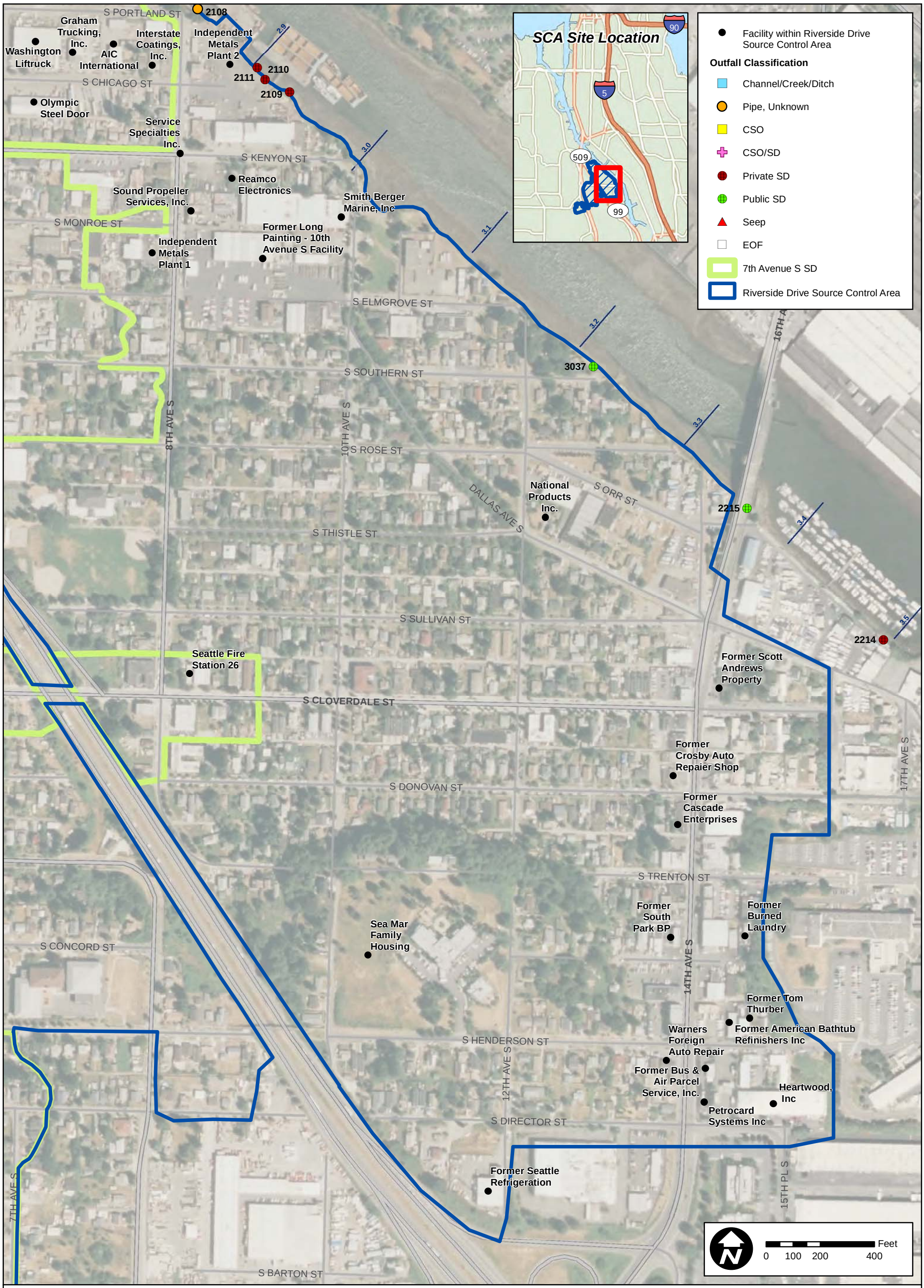


Figure 4c. Riverside Drive Source Control Area — Southeastern Portion

DEPARTMENT OF ECOLOGY
State of Washington

SAIC® From Science to Solutions

Coordinate System:
NAD 1983 StatePlane Washington North FIPS 4601 Feet
Prepared By: mlf
File: Fig-4_Riverside Drive Source Control Area.mxd
Illustrative purposes only.

Facility within Riverside Drive SCA

Outfall Classification

- Channel/Creek/Ditch
- Pipe, Unknown
- CSO
- CSO/SD
- Private SD
- Public SD
- Seep
- EOF
- 7th Avenue S SD
- Riverside Drive Source Control Area

Note:
Cloverdale Business Park Facilities include:
- Braicks Construction Inc
- Christian Brothers Floor Svc Inc
- Former Discount Drive Axle of Seattle
- Former Magnetic and Penetrant Services Co
- Former Sirius Maritime Company
- Former Superior Precision Analytical
- Phil's Custom Bindery, LLC

Former Airport Towing

MEECO Manufacturing Co.

Cloverdale Business Park (See Note)

Rasmussen Equipment Company

Former Screen Matic Arts

Fibres International, Inc.

Northwest Grating Products, Inc.

Revere Group Seattle

S SULLIVAN ST

S CLOVERDALE ST

S DONOVAN ST

S TRENTON ST

S CONCORD ST

S HENDERSON ST

S DIRECTOR ST

S BARTON ST

S 99TH ST

5TH AVE S

2ND AVE S

3RD AVE S

4TH AVE S

7TH AVE S

OLSON PL SW

2ND AVE SW

MYERS WAY S

SCA Site Location

Feet
0 100 200 400

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Figure 4d. Riverside Drive Source Control Area — Southwestern Portion

SAIC® From Science to Solutions

Coordinate System:
NAD 1983 StatePlane Washington North FIPS 4601 Feet
Prepared By: mlf
File: Fig-4_Riverside Drive Source Control Area.mxd
Illustrative purposes only.

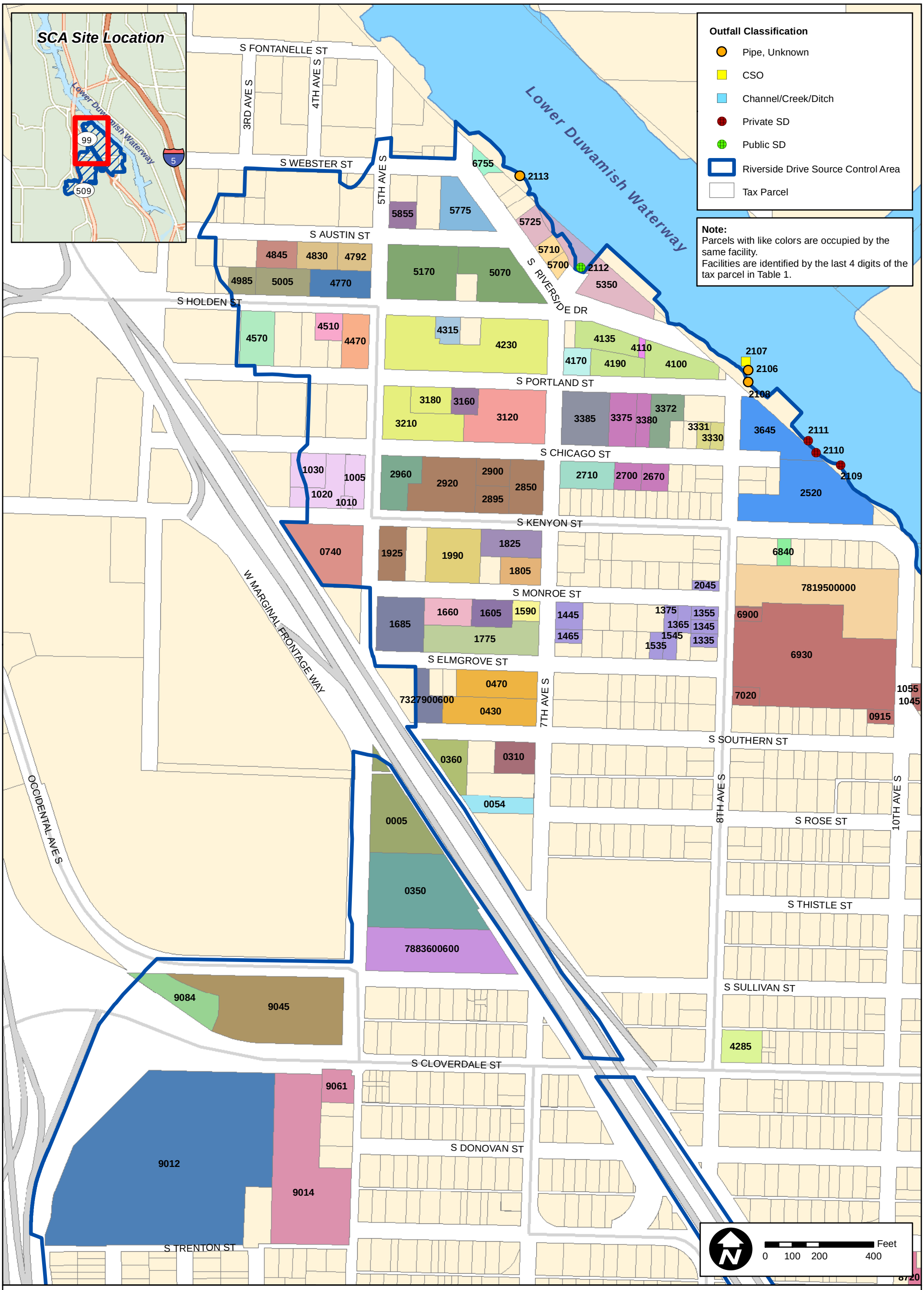
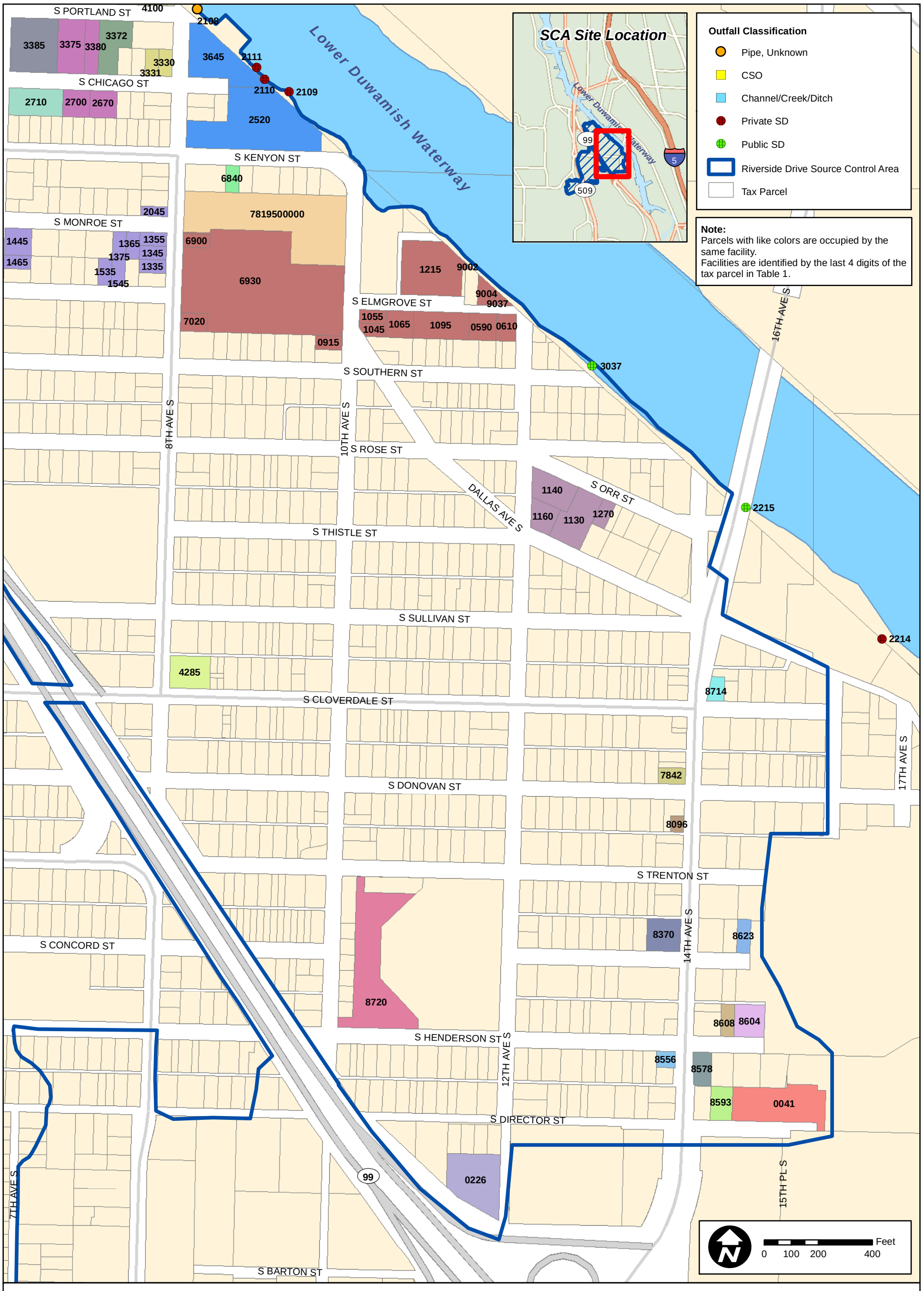


Figure 5a. Riverside Drive Source Control Area Tax Parcels – Northern Portion

Coordinate System:
NAD 1983 StatePlane Washington North FIPS 4601 Feet
Prepared By: mlf
File: Fig-5_Tax_Parcel_Map.mxd
Illustrative purposes only.



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State of Washington

Figure 5b. Riverside Drive Source Control Area Tax Parcels – Southeastern Portion

SAIC® From Science to Solutions

Coordinate System:
NAD 1983 StatePlane Washington North FIPS 4601 Feet
Prepared By: mlf
File: Fig-5_Tax_Parcel_Map.mxd
Illustrative purposes only.

Outfall Classification

- Pipe, Unknown
- CSO
- Channel/Creek/Ditch
- Private SD
- Public SD
- Riverside Drive Source Control Area
- Tax Parcel

Note:
Parcels with like colors are occupied by the same facility.
Facilities are identified by the last 4 digits of the tax parcel in Table 1.

7883600600
9084
9045
9061
9012
9014
9023
9051
1646700010
509
S SULLIVAN ST
S CLOVERDALE ST
S DONOVAN ST
S TRENTON ST
S CONCORD ST
S HENDERSON ST
S DIRECTOR ST
S BARTON ST
S 99TH ST
5TH AVE S
2ND AVE S
3RD AVE S
4TH AVE S
7TH AVE S
OLSON PL SW
2ND AVE SW
MYERS WAY S

SCA Site Location
Lower Duwamish Waterway
99
5
509

0 100 200 400 Feet

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State of Washington

Figure 5c. Riverside Drive Source Control Area Tax Parcels – Southwestern Portion

SAIC From Science to Solutions

Coordinate System:
NAD 1983 StatePlane Washington North FIPS 4601 Feet
Prepared By: mlf
File: Fig-5_Tax_Parcel_Map.mxd
Illustrative purposes only.

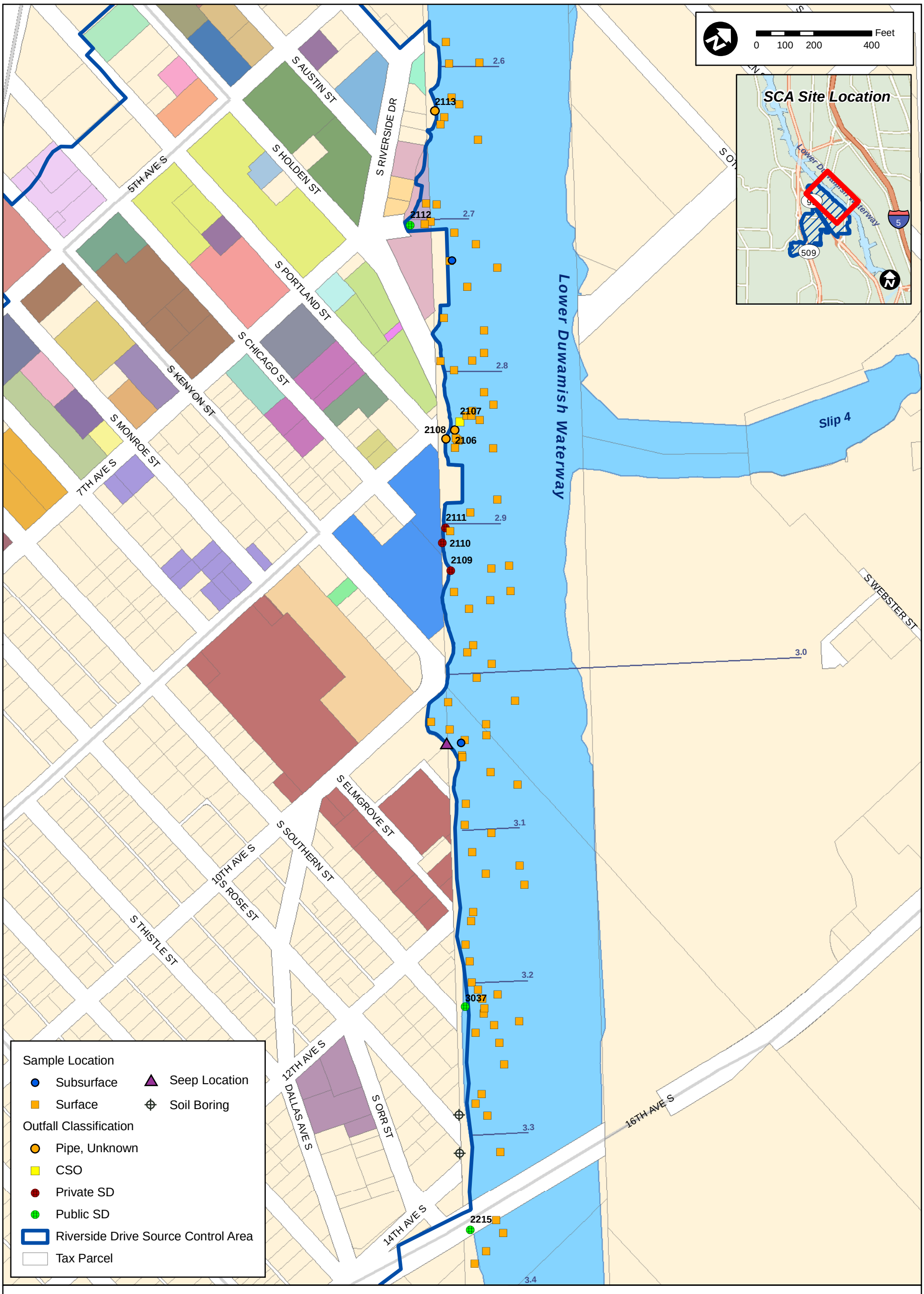

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Figure 6a. Sediment and Bank Soil Sample Locations Near the Riverside Drive Source Control Area (RM 2.6–3.4 W)

SAIC® From Science to Solutions

Coordinate System:
NAD 1983 StatePlane Washington North FIPS 4601 Feet
Prepared By: mlf
File: Fig-6a_Sediment_Sampling_Data.mxd
Illustrative purposes only.

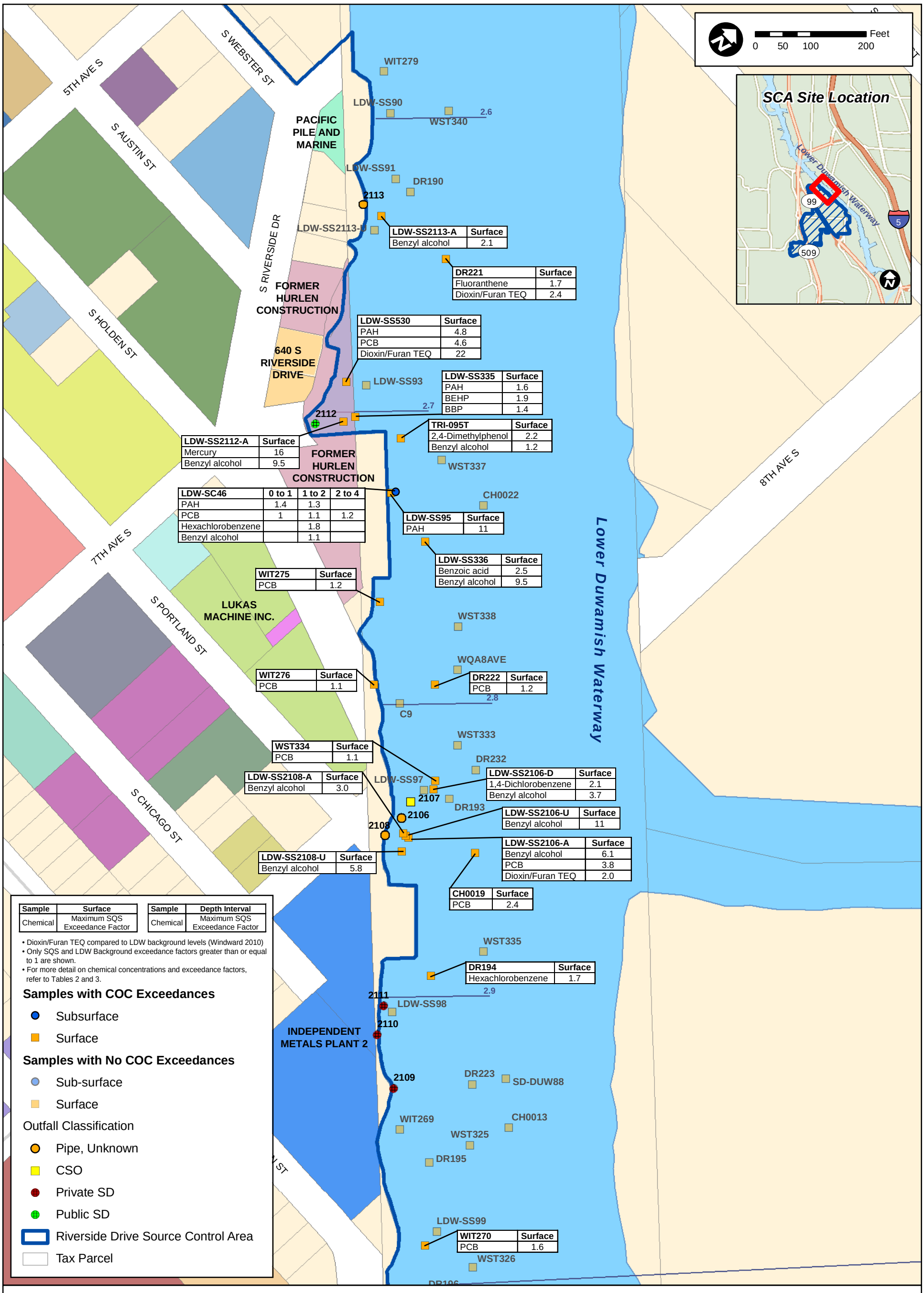

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Figure 6b. Sediment Sample Locations Near the Riverside Drive Source Control Area with Chemicals Detected Above Screening Levels (RM 2.6–3.0 W)

SAIC From Science to Solutions

Coordinate System:
NAD 1983 StatePlane Washington North FIPS 4601 Feet
Prepared By: mlf
File: Fig-6b_Sediment_Sampling_Data.mxd
Illustrative purposes only.

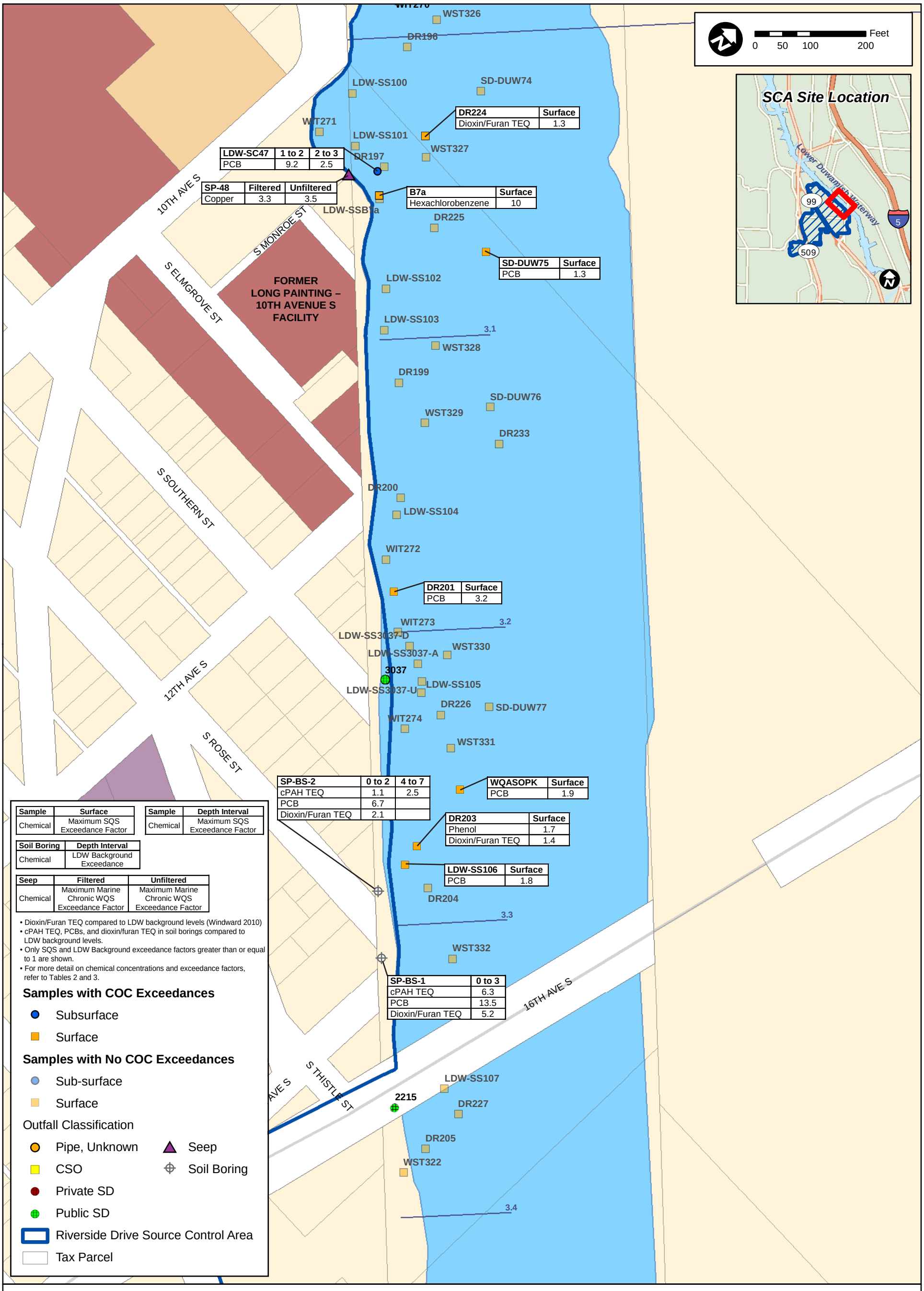

Figure 6c. Sediment and Bank Soil Sample Locations Near the Riverside Drive Source Control Area with Chemicals Detected Above Screening Levels (RM 3.0–3.4 W)

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SAIC
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Coordinate System:
NAD 1983 StatePlane Washington North FIPS 4601 Feet
Prepared By: mlf
File: Fig-6c_Sediment_Sampling_Data.mxd
Illustrative purposes only.

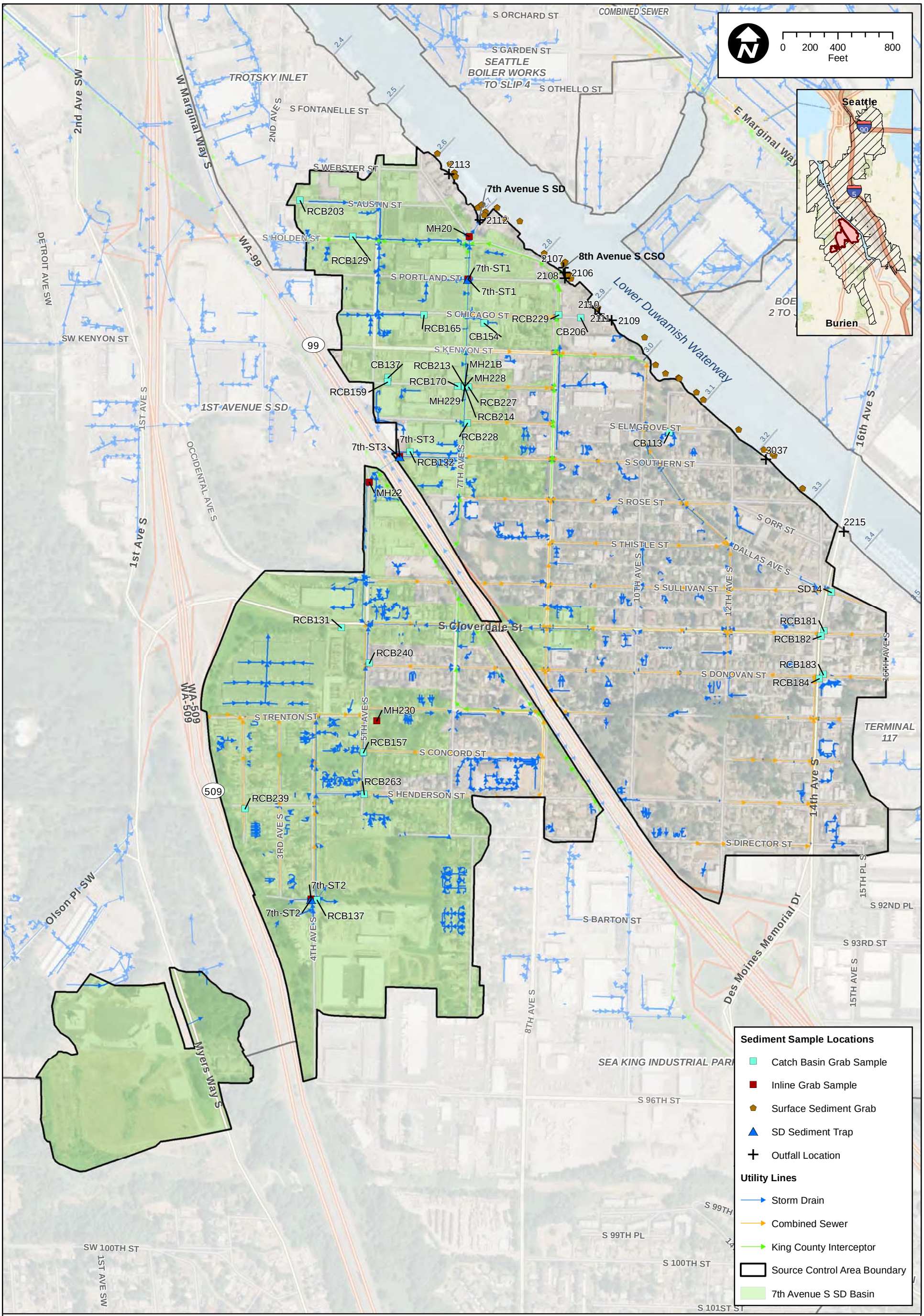

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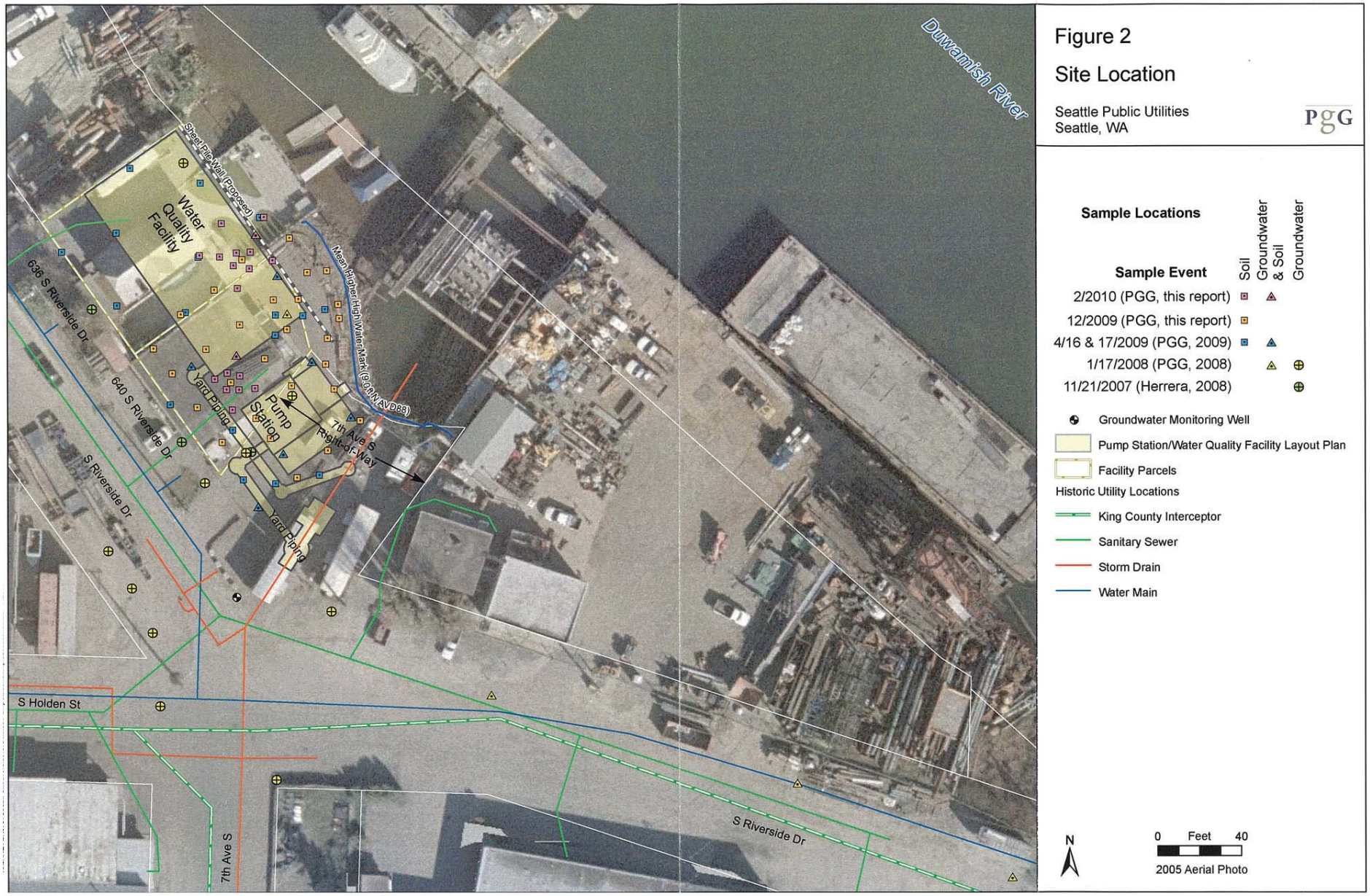
Figure 7. Storm Drain Sample Locations, Riverside Drive Source Control Area, 2005 to 2011

SAIC® From Science to Solutions



Source: PGG 2009a

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Figure 8. 640 S Riverside Drive Facility Map and Historical Sample Locations

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Appendix B Site Map

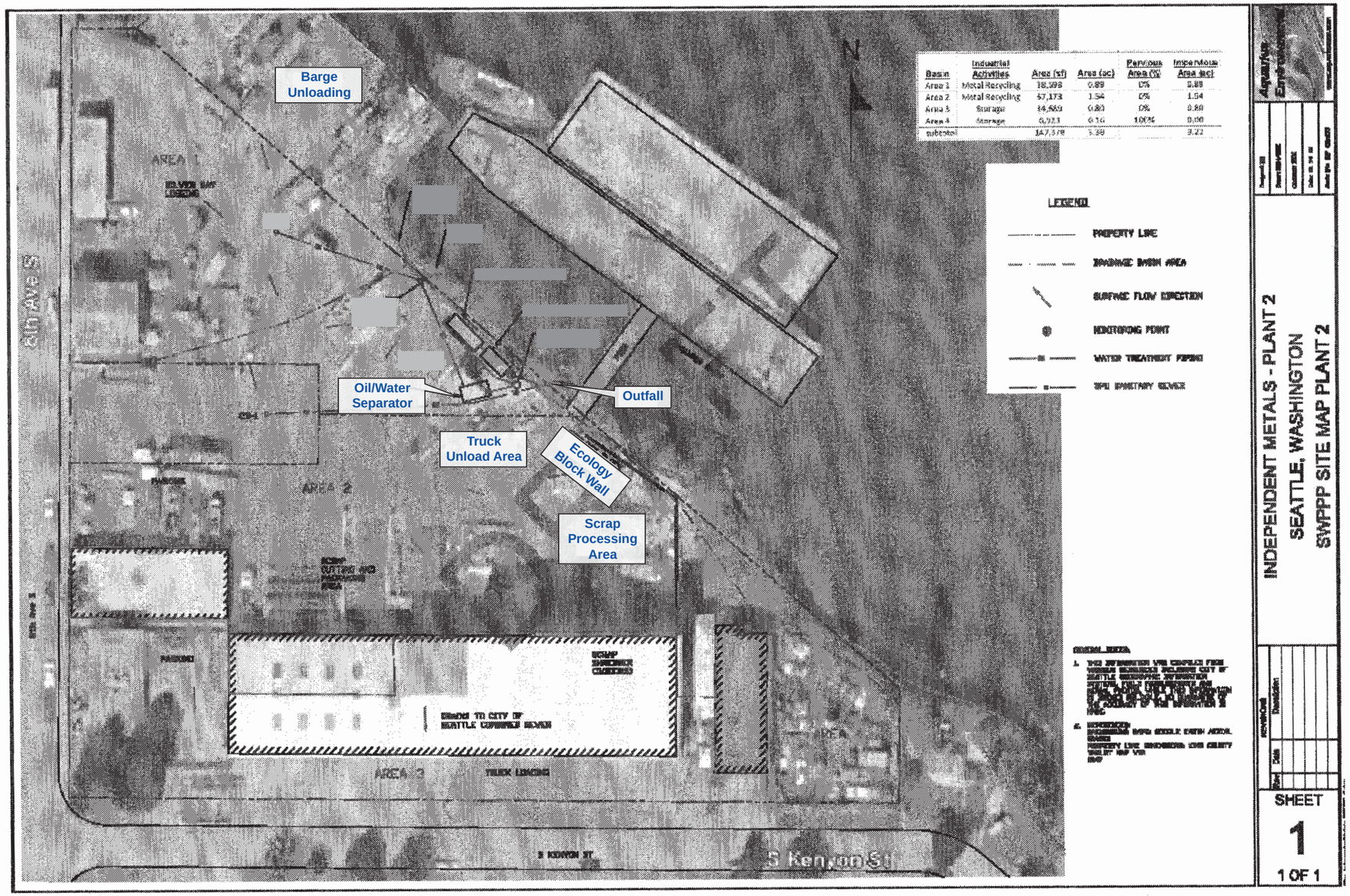
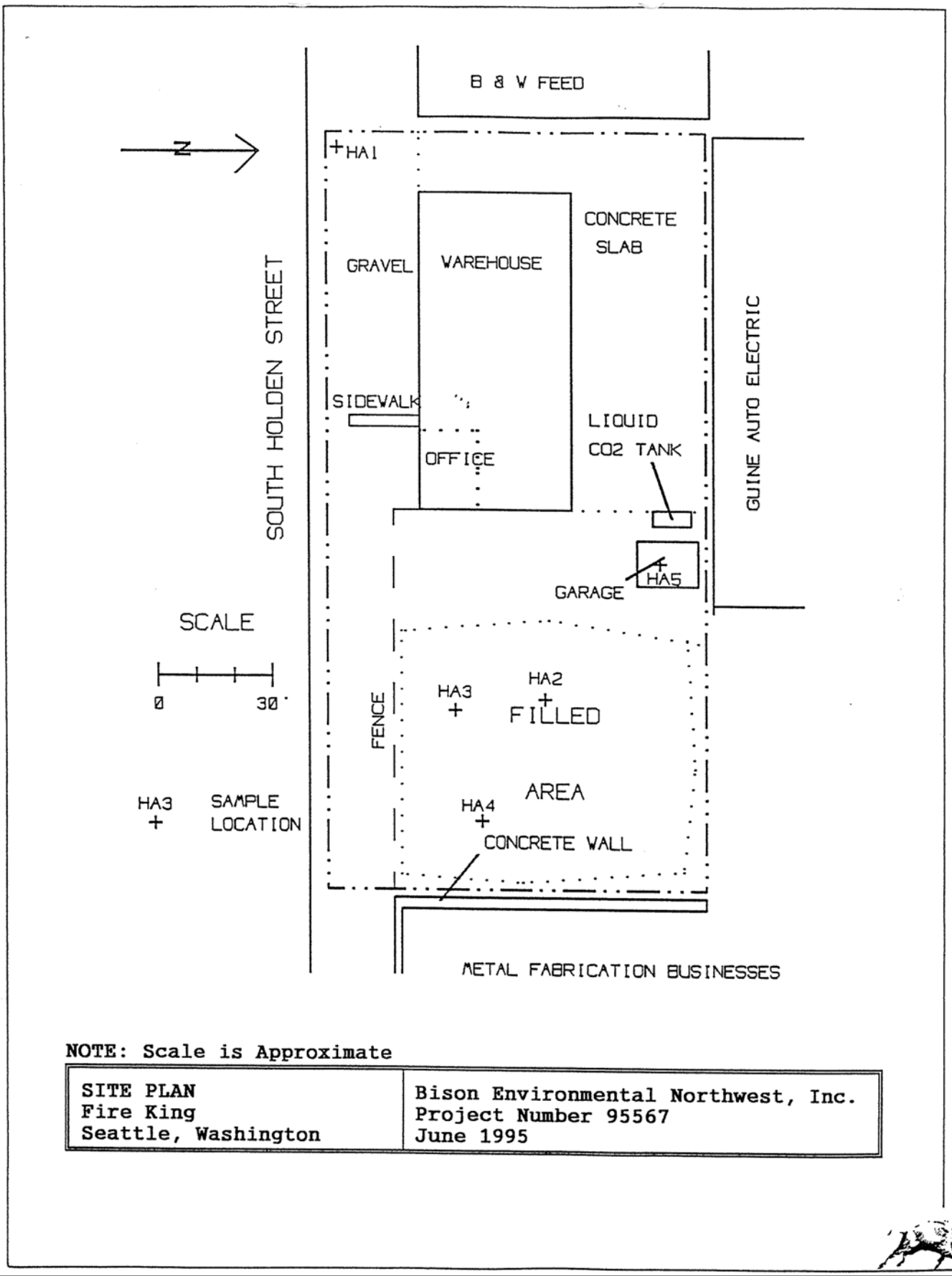


Figure 9. Independent Metals Plant 2 SWPPP Facility Map

Source: Nisqually 2010

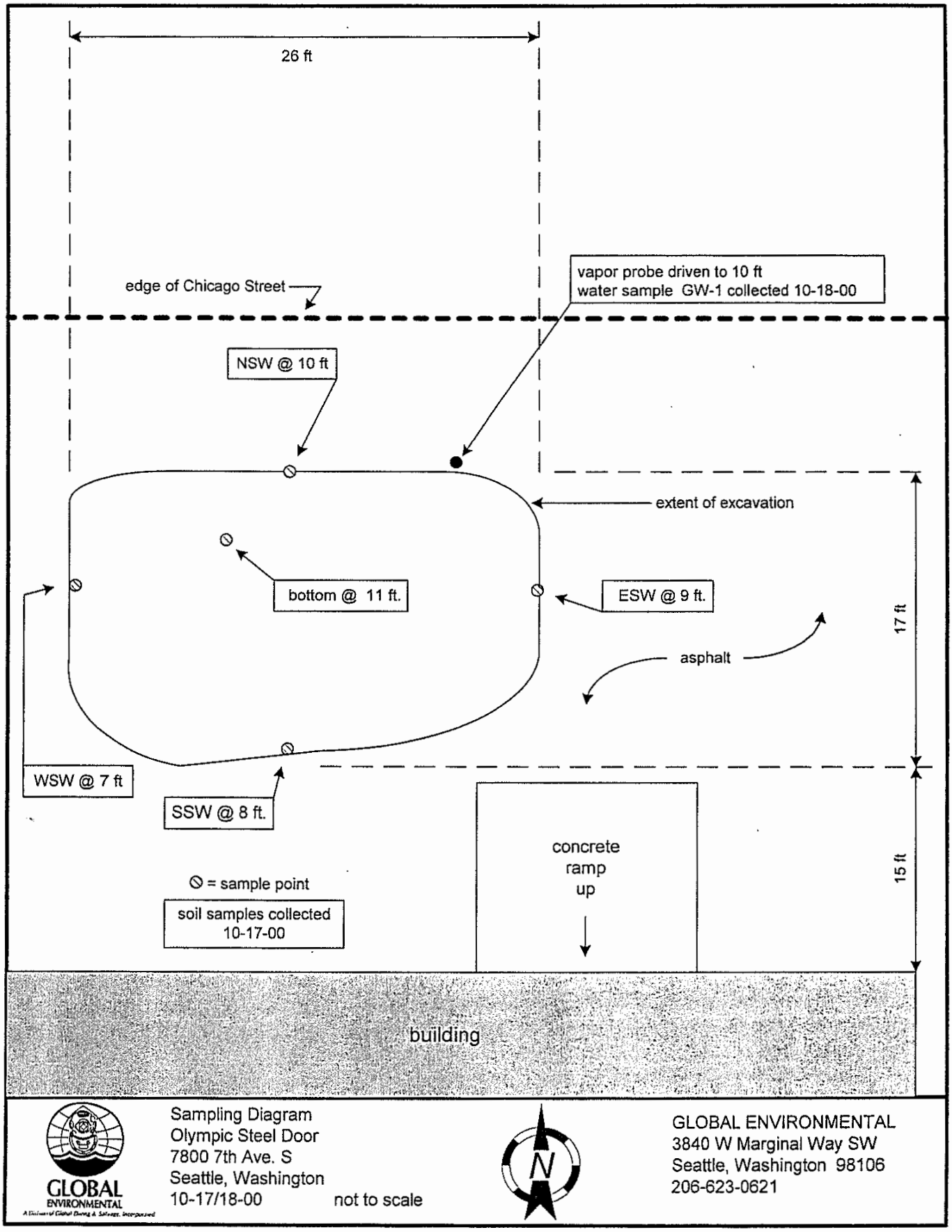


NOTE: Scale is Approximate

SITE PLAN **Fire King** **Seattle, Washington**	**Bison Environmental Northwest, Inc.** **Project Number 95567** **June 1995**

Source: Bison 1995

Figure 10. Fire King of Seattle UST Site Map



Source: Global Environmental 2000

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Figure 11. Olympic Steel Door Facility Map

SAIC
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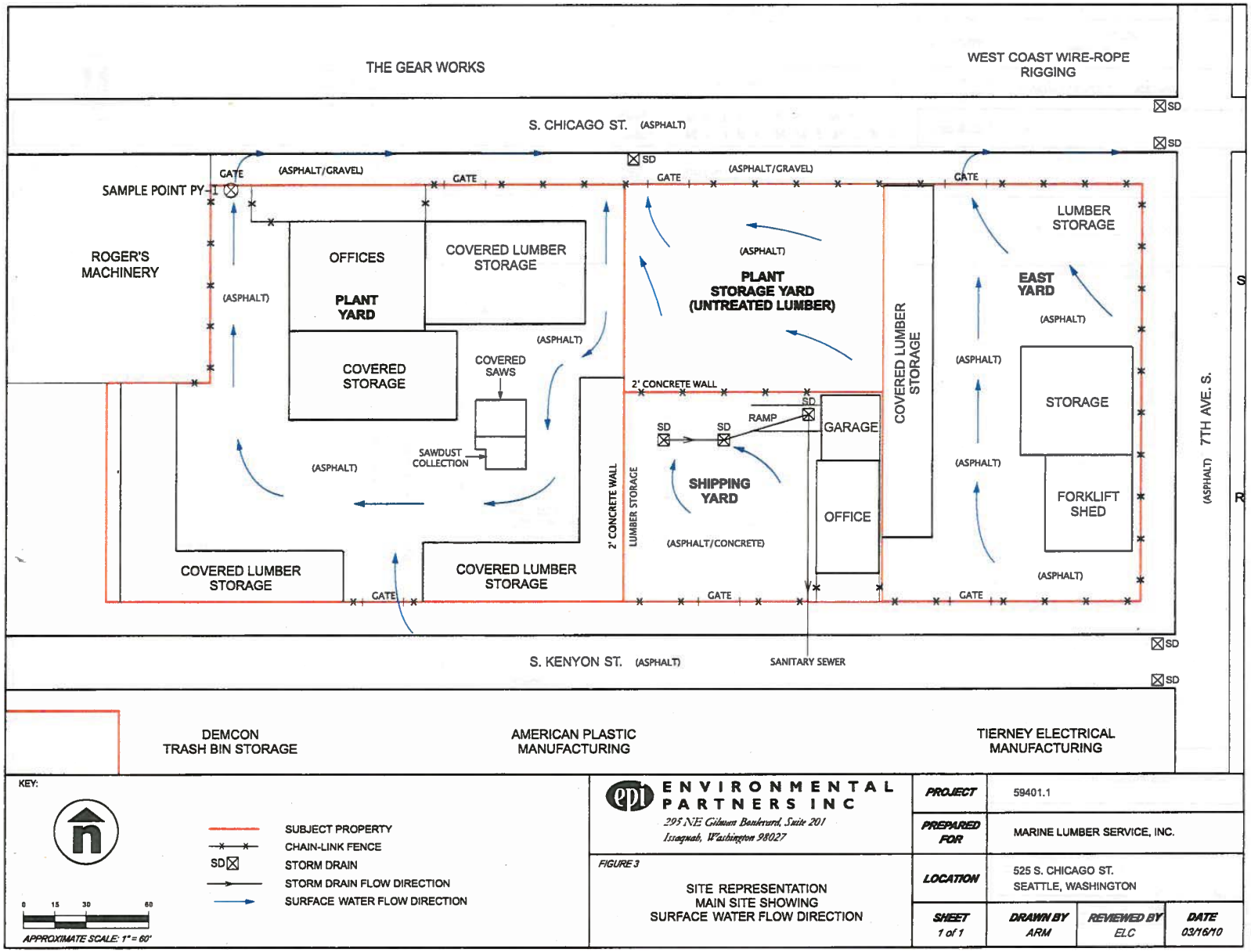

Source: EPI 2010

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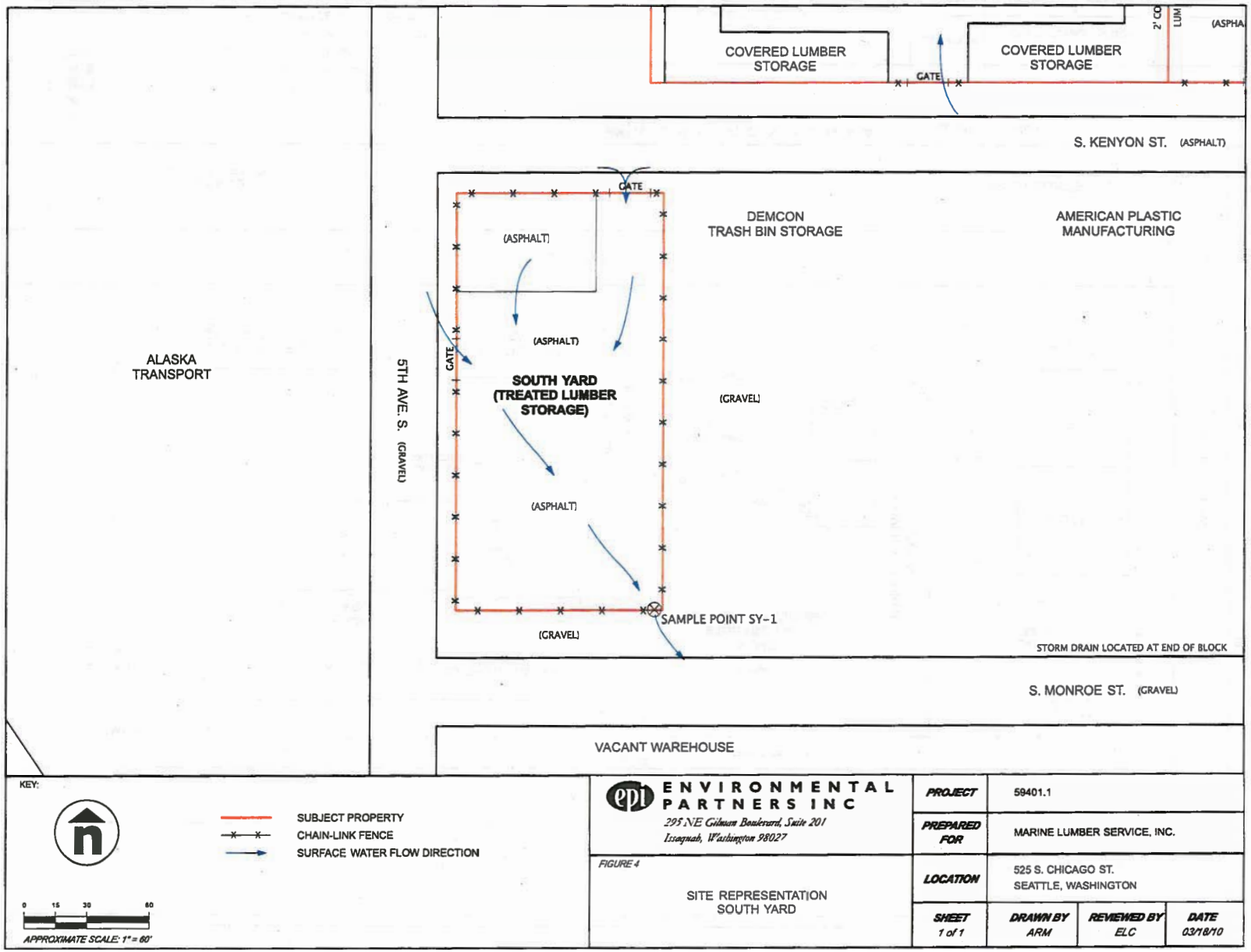
Figure 12a. Marine Lumber Service, Inc. Facility Map

SAIC® From Science to Solutions



Source: EPI 2010

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Figure 12b. Marine Lumber Service, Inc. Facility Map

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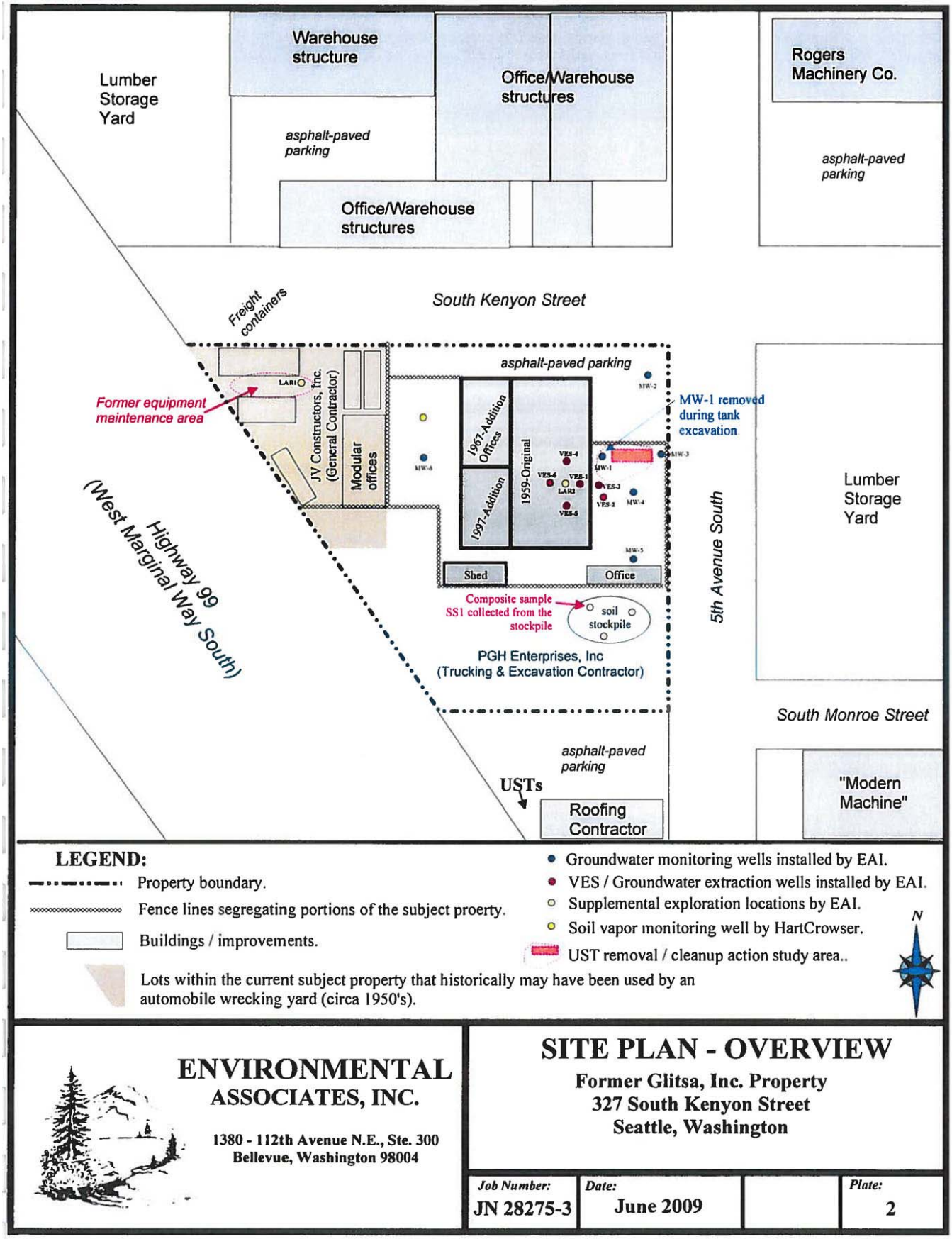

ENVIRONMENTAL ASSOCIATES, INC.

1380 - 112th Avenue N.E., Ste. 300
Bellevue, Washington 98004

SITE PLAN - OVERVIEW

Former Glitsa, Inc. Property
327 South Kenyon Street
Seattle, Washington

Job Number:	Date:		Plate:
JN 28275-3	June 2009		2

Source: Environmental Associates 2009b

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Figure 13. Former Glitsa, Inc.
Facility Map and Historical Sample Locations

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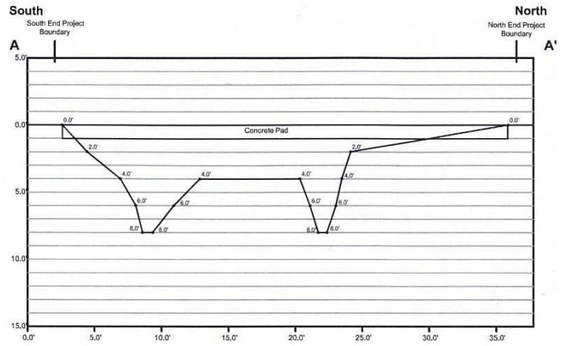

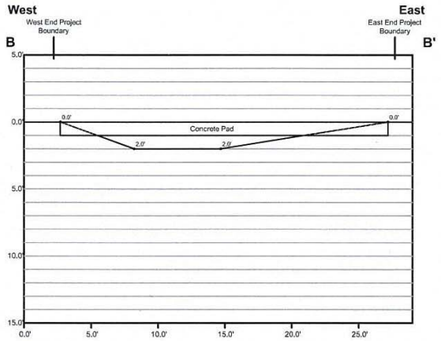

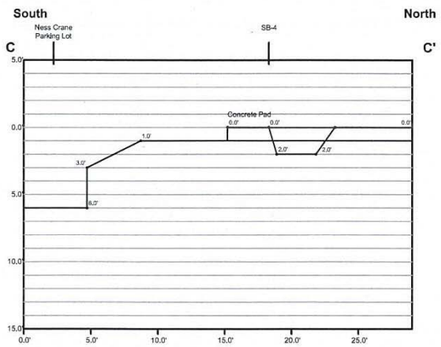

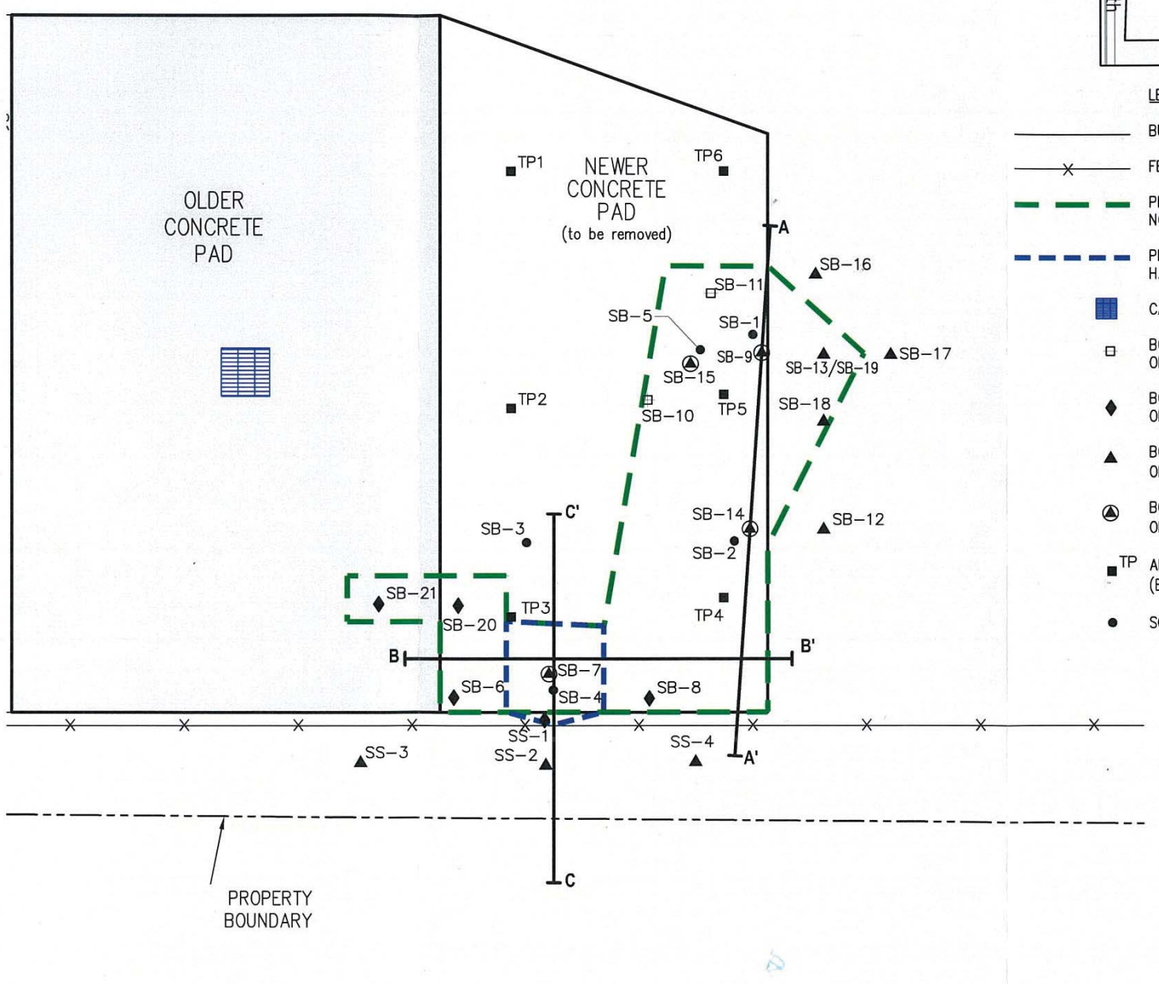

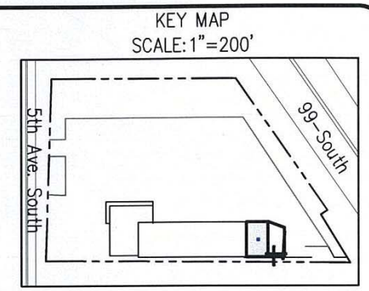

LEGEND

- BUILDING OUTLINE
- FENCE
- PROPOSED EXCAVATION OF SUBTITLE-D NON-HAZARDOUS WASTE
- PROPOSED EXCAVATION OF SUBTITLE-C HAZARDOUS WASTE
- CATCH BASIN
- BORING ADVANCED FOR LATERAL DELINEATION OF XYLENE
- BORING ADVANCED FOR LATERAL DELINEATION OF PETROLEUM HYDROCARBONS
- BORING ADVANCED FOR LATERAL DELINEATION OF PCE AND/OR TCE
- BORING ADVANCED FOR VERTICAL DELINEATION OF PCE AND/OR TCE
- TP APPROXIMATE TEST PIT (TP) LOCATION (ECO COMPLIANCE CORPORATION, 2006)
- SOIL BORING (ENVIRON, 2007)

N

0 10
Scale In Feet

ENVIRON

DRAFTED BY: CAD/RMS | DATE: 7/10/08

PRIOR SAMPLE LOCATIONS AND PROPOSED EXCAVATION BOUNDARIES
8250 5TH AVENUE SOUTH
SEATTLE, WASHINGTON

FIGURE 3

0318371A_FIG3-XSEC

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Figure 14. Manitowoc Western/Coast Crane Environmental Investigation Site Map

Source: Environ 2008a

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