Lower Duwamish Waterway
RM 1.0 to 1.2 East
(King County Lease Parcels)

Summary of Existing Information and Identification of Data Gaps

Prepared for

Toxics Cleanup Program
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Acronyms and Abbreviations

AGI	Applied Geotechnology, Inc.
AST	aboveground storage tank
BEHP	bis(2-ethylhexyl)phthalate
bgs	below ground surface
BMP	best management practice
BTEX	benzene, toluene, ethylbenzene, and xylenes
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	chemical of concern
CSCSL	Confirmed and Suspected Contaminated Sites List
CSL	Cleanup Screening Level
CSO	combined sewer overflow
DCA	dichloroethane
DCE	dichloroethene
DPD	City of Seattle Department of Planning and Development
DW	dry weight
EAA	Early Action Area
ECHO	Enforcement and Compliance History Online
Ecology	Washington State Department of Ecology
EOF	emergency overflow
EPA	U.S. Environmental Protection Agency
GE	General Electric
GIS	Geographic Information Systems
HPAH	high molecular weight polycyclic aromatic hydrocarbon
HVAC	heating, ventilating, and air-conditioning
ISIS	Integrated Site Information System
KC	King County
KCIW	King County Industrial Waste
KCLP	King County Lease Parcels
LDW	Lower Duwamish Waterway
LDWG	Lower Duwamish Waterway Group
LPAH	low molecular weight polycyclic aromatic hydrocarbon
LUST	leaking underground storage tank
MEK	methyl ethyl ketone
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
mg/kg	milligrams per kilogram
mgy	million gallons per year
MOU	Memorandum of Understanding
MTCA	Model Toxics Control Act
NAICS	North American Industry Classification System
NFA	No Further Action
ng/kg	nanograms per kilogram
NOAA	National Oceanic and Atmospheric Administration
NOV	Notice of Violation

Acronyms and Abbreviations (Continued)

NPDES	National Pollutant Discharge Elimination System
NWRO	Northwest Regional Office
O&M	Operations and Maintenance
OC	organic carbon
OWS	oil/water separator
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
ppb	parts per billion
ppm	parts per million
PSAPCA	Puget Sound Air Pollution Control Agency
PSCAA	Puget Sound Clean Air Agency
PVC	polyvinyl chloride
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
RM	River Mile
RZA	Rittenhouse-Zeman & Associates, Inc.
SAIC	Science Applications International Corporation
SCAP	Source Control Action Plan
SD	storm drain
SEA-DRU-NAR	Seattle Drug and Narcotics Center
SIC	Standard Industrial Classification
SMS	Sediment Management Standards
SPU	Seattle Public Utilities
sq ft	square foot
SQS	Sediment Quality Standard
SVOC	semivolatile organic compound
SWPPP	Stormwater Pollution Prevention Plan
TCA	trichloroethane
TCE	trichloroethylene
TEQ	toxic equivalency quotient
TOC	total organic carbon
TPH	total petroleum hydrocarbons
TRPH	total recoverable petroleum hydrocarbons
UPRR	Union Pacific Railroad
USEPA	U.S. Environmental Protection Agency
UST	underground storage tank
VCP	Voluntary Cleanup Program
VOC	volatile organic compound
WAC	Washington Administrative Code
WQS	water quality standards
WWTP	wastewater treatment plant

1.0 Introduction

1.1 Background and Purpose

This *Summary of Existing Information and Identification of Data Gaps Report* (Data Gaps Report) pertains to River Mile (RM) 1.0-1.2 East[1] (King County [KC] Lease Parcels), one of several source control areas identified as part of the overall cleanup process for the Lower Duwamish Waterway (LDW) Superfund Site (Figure 1). It summarizes readily available information regarding properties in the KC Lease Parcels source control area. The purpose of the Data Gaps Report is to:

- Identify chemicals of potential concern in sediments associated with the KC Lease Parcels source control area;
- Evaluate potential contaminant migration pathways to LDW sediments;
- Identify and describe potential adjacent or upland sources of contaminants that could be transported to sediments;
- Identify critical data gaps that should be addressed in order to assess the potential for recontamination of sediments and the need for source control; and
- Determine what, if any, effective source control is already in place.

The LDW consists of 5.5 miles of the Duwamish Waterway as measured from the southern tip of Harbor Island to just south of the Norfolk Combined Sewer Overflow (CSO). The LDW flows into Elliott Bay in Seattle, Washington. The LDW was added to the U.S. Environmental Protection Agency (USEPA or EPA) National Priorities List in September 2001 due to the presence of chemical contaminants in sediment. The key parties involved in the LDW site are EPA, the Washington State Department of Ecology (Ecology), and the Lower Duwamish Waterway Group (LDWG); which is composed of the City of Seattle, King County, the Port of Seattle, and The Boeing Company. In December 2000, EPA and Ecology signed an agreement with the LDWG to conduct a Remedial Investigation/ Feasibility Study (RI/FS) for the LDW site.

EPA is leading the effort to determine the most effective cleanup strategies for the LDW through the RI/FS process. Ecology is leading the effort to investigate upland sources of contamination and to develop plans to reduce contaminant migration to waterway sediments.[2] The LDWG collected data during the Phase I Remedial Investigation (RI) that were used to identify candidate locations for early cleanup action. Seven candidate early action sites (or Tier 1 sites) were identified. Ecology's *Lower Duwamish Waterway Source Control Status Report, 2003 to June 2007* (Ecology 2007b) and *Lower Duwamish Waterway Source Control Status Report, July 2007 to March 2008* (Ecology 2008a) identified another 16 areas where source control actions may be necessary. The KC Lease Parcels source control area was identified as one of these areas.

[1] River miles as defined in this report are measured from the southern tip of Harbor Island.
[2] EPA and Ecology signed an interagency Memorandum of Understanding (MOU) in April 2002 and updated the MOU in April 2004. The MOU divides responsibilities for the site. EPA is the lead agency for the sediment RI/FS, while Ecology is the lead agency for source control issues (EPA and Ecology 2002, 2004).

Subsequently, Ecology and EPA redefined the boundaries of the source control areas, generally defined by stormwater drainage basins.

Ecology is the lead agency for source control for the LDW site. Source control is the process of finding and eliminating or reducing releases of contaminants to LDW sediments, to the extent practicable. The goal of source control is to prevent sediments from being recontaminated after cleanup has been undertaken.

The LDW Source Control Strategy (Ecology 2004a) describes the process for identifying source control issues and implementing effective controls for the LDW. The plan is to identify and manage potential sources of sediment recontamination in coordination with sediment cleanups. Source control will be achieved by using existing administrative and legal authorities to perform inspections and require necessary source control actions.

The strategy is based primarily on the principles of source control for sediment sites described in EPA's Principles for Managing Contaminated Sediment Risks at Hazardous Waste Sites (USEPA 2002), and the Washington State Sediment Management Standards (SMS) (Washington Administrative Code [WAC] 173-340-370[7] and WAC 173-204-400). The Source Control Strategy involves developing and implementing a series of detailed, area-specific Source Control Action Plans (SCAPs).

Before developing a SCAP, Ecology prepares a Data Gaps Report for the source control area. Findings from the Data Gaps Report are reviewed by LDW stakeholders and are incorporated into the SCAP. This process helps to ensure that the action items identified in the SCAP will be effective, implementable, and enforceable. As part of the source control efforts for the KC Lease Parcels source control area, Ecology requested Science Applications International Corporation (SAIC) to prepare this Data Gaps Report.

1.2 Report Organization

Section 2.0 of this report provides background information on the KC Lease Parcels source control area, including location, physical characteristics, chemicals of concern, and pathways by which contaminants may reach sediments. Sections 3.0 and 4.0 describe potential sources of contaminants and data gaps that must be addressed in order to develop and implement a SCAP for the source control area. Section 5.0 provides a summary of data gaps, and Section 6.0 lists the documents cited in this report.

Information presented in this report was obtained from the following sources:

- Ecology Northwest Regional Office (NWRO) Central Records;
- Washington State Archives;
- EPA files;
- Seattle Public Utilities (SPU) business inspection reports;
- Ecology Underground Storage Tank (UST) and Leaking Underground Storage Tank (LUST) lists;
- Ecology Facility/Site Database;

- Ecology Integrated Site Information System (ISIS) Database;
- Washington State Confirmed and Suspected Contaminated Sites List (CSCSL);
- EPA Enforcement and Compliance History Online (ECHO);
- EPA Envirofacts Warehouse;
- King County Geographic Information Systems (GIS) Center Parcel Viewer, Property Tax Records, and iMap;
- GIS shape files produced by SPU; and
- Historical aerial photographs.

Information collected from the Facility/Site Database, ISIS, ECHO, EPA Envirofacts Warehouse and King County property tax records was current as of September 2009. Recent updates to these databases may not be reflected in this report.

1.3 Scope of Report

This report documents readily available information relevant to potential sources of contaminants to sediments associated with the KC Lease Parcels source control area, including outfalls, adjacent properties, and the S Brandon Street CSO basin.

Adjacent properties include Manson Construction Company, Cadman Seattle, Inc., United Western Supply, and J.A. Jack and Sons. In addition, this report includes information about facilities within the S Brandon Street CSO basin, which discharges to the LDW within the KC Lease Parcels source control area.

Air pollution is a potential source of sediment contamination with origins outside of the KC Lease Parcels source control area. Although limited discussion of atmospheric deposition is provided in Section 2.0, the scope of this report does not include an assessment of data gaps pertaining to the effects of air pollution on the sediments associated with the source control area. Because air pollution is a concern for the wider LDW region, Ecology will review work being conducted by the Washington State Department of Health and planned by the Puget Sound Partnership regarding atmospheric deposition.

Information presented in this report is limited to the KC Lease Parcels source control area, direct discharges to the sediments associated with the source control area, and potential adjacent and upland contaminant sources. This report focuses on sources that have the potential to recontaminate sediments associated with the source control area in the event that sediment remediation is required. It does not preclude the potential for recontamination from capped sediments if this remedial option is selected. Source control with regard to any contaminated sediments left in place will be important to address as part of the remedial action selection process for sediments associated with the KC Lease Parcels source control area.

Chemical data have been compared to relevant regulatory criteria and guidelines, as appropriate. The level of assessment conducted for the data reviewed in this report is determined by the source control objectives. The scope of this Data Gaps Report does not include data validation or analysis that exceeds what is required to reasonably achieve source control.

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2.0 King County Lease Parcels Source Control Area

The KC Lease Parcels source control area, also referred to as the RM 1.0-1.2 East source control area, is located along the eastern side of the LDW between RM 1.0 and 1.2, as measured from the southern end of Harbor Island (Figure 1). King County owns the property located directly adjacent to the LDW within this source control area and leases it to several facilities (Figure 2). From north to south, these facilities are:

- Manson Construction Company (Manson Construction),
- Cadman Seattle Inc. (Cadman) and Lehigh Northwest,
- United Western Supply, and
- J.A. Jack & Sons (J.A. Jack).

The LDW is west of these facilities. Located to the east of these properties are East Marginal Way S and other industrial facilities. Slip 1 is north of Manson Construction. Saint Gobain Glass (St. Gobain) is south of J.A. Jack.

There are three outfalls discharging to the LDW within the KC Lease Parcels source control area; all three outfalls are public outfalls maintained by King County (Figure 2):

2007: Unnamed (18-inch composite construction),
2223: S Brandon Street CSO (18-inch ductile iron), and
2244: Dock Pipe #2 Outfall (diameter and material unknown).

Outfall 2007 is located immediately south of RM 1.2 East. The outfall is included in the KC Lease Parcels source control area because stormwater from J.A. Jack may be conveyed to the LDW via Outfall 2007 during storm events.

2.1 Site Description

General background information on the LDW is provided in the Phase I RI Report (Windward 2003), which describes the history of dredging/filling and industrialization of the Duwamish River and its environs, as well as the physiography, physical characteristics, hydrogeology, and hydrology of the area.

The upland areas adjacent to the LDW have been industrialized for many decades; historical and current commercial and industrial operations in the vicinity of the KC Lease Parcels source control area include cement and limestone production facilities, boiler shops, and construction services. Seattle Boiler Works and I.F. Laucks (a paint and glue factory) historically operated in the KC Lease Parcels area (Foster 1945).

In the late 1800s and early 1900s, extensive topographic modifications were made to the Duwamish River to create a straightened channel; many of the current side slips are remnants of old river meanders. Slip 1, which is immediately north of the KC Lease Parcels source control area, is one of these remnants.

Groundwater in the Duwamish Valley alluvium is typically encountered within about 3 meters (10 feet) of the ground surface and under unconfined conditions (Windward 2003). The general direction of groundwater flow is 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. High tides can cause temporary groundwater flow reversals, generally within 100 to 150 meters (300 to 500 feet) of the LDW (Booth and Herman 1998). Groundwater flow in the vicinity of the source control area is generally to the west-southwest, toward the LDW.

Bottom sediment composition is variable throughout the LDW, ranging from sands to mud. Typically, the sediment consists of slightly sandy silt with varying amounts of organic detritus. Coarser sediments are present in nearshore areas adjacent to storm drain discharges (Weston 1999); finer-grained sediments are typically located in remnant mudflats and along channel side slopes. Sediments associated with the KC Lease Parcels source control area consist of 40.1 to 60 percent fines from approximately RM 1.0 to 1.1 East and greater than 80 percent fines from approximately RM 1.1 to 1.2 East. Total organic carbon (TOC) in this area ranges from 0.34 to 3.93 percent (Appendix A).

In an effort to more thoroughly understand and evaluate historical facility operations and development in the KC Lease Parcels source control area, SAIC reviewed historical aerial photographs from 1936 to 2002. These photographs represent conditions during roughly each decade. The aerial photographs and complete descriptions for the years 1936, 1946, 1956, 1969, 1977, 1990, 1999, and 2004 are provided in Appendix B. For ease of description the properties are identified by the current facility operators. The descriptions are summarized below.

- ***1936:*** The properties adjacent to the LDW are used to store lumber and other construction materials, with the exception of the Cadman and Lehigh Northwest facilities, which support buildings and parking. Docks extend to the LDW from the locations of the Manson Construction and United Western Supply facilities. Two large log booms are moored offshore of the properties occupied by the Cadman and Lehigh Northwest facility.
- ***1946:*** Development is ongoing at the properties occupied by the Manson Construction, Cadman, and Lehigh Northwest facilities, including the construction of a large wharf on the western edge of the property occupied by Manson Construction and additions to two of the buildings on the properties occupied by Cadman and Lehigh Northwest. Another large wharf has been constructed adjacent to the properties occupied by United Western Supply and J.A. Jack, parallel to the shoreline. Lumber and cargo are stored on the properties occupied by United Western Supply and J.A. Jack.
- ***1956:*** A boat ramp has been added at the southwest corner of the property occupied by Manson Construction and several small buildings have been erected. Barges and small vessels are moored offshore of the source control area. Cargo, equipment, and lumber are stored on the properties.
- ***1969:*** The activity at the property occupied by Manson Construction becomes increasingly industrial. Additional construction and demolition have taken place on

the properties occupied by the Cadman, Lehigh Northwest, and United Western Supply facilities. The large wharf adjacent to the United Western Supply facility has been replaced with a narrow dock parallel to the shoreline. J.A. Jack has begun operations at its current location.

- ***1977:*** Several out buildings have been constructed on the property occupied by the Manson Construction facility and two buildings have been demolished on the property occupied by Cadman and Lehigh Northwest. The properties occupied by the United Western Supply and J.A. Jack facilities are relatively unchanged.
- ***1990:*** The shoreline adjacent to the properties occupied by Cadman and Lehigh Northwest appears to have been filled in or a wharf has been constructed. Four silos are now present on the property. At the property occupied by United Western Supply, it appears that a small section of the shoreline has been paved. The properties occupied by the Manson Construction and J.A. Jack facilities are relatively unchanged.
- ***1999:*** Large stockpiles and an additional silo are present on the property occupied by the Cadman and Lehigh Northwest facilities. The remaining properties are relatively unchanged.
- ***2004:*** The source control area is relatively unchanged.

2.2 Chemicals of Concern in Sediment

Chemicals of concern (COCs) in sediment associated with the KC Lease Parcels source control area were identified based on sediment sampling conducted between 1997 and 2006.

2.2.1 Sediment Investigations

Sediment samples have been collected adjacent to the KC Lease Parcels source control area as part of the investigations listed below. Sampling locations are listed in Table 1, and are shown in Figure 3. Data and information regarding the investigations performed prior to 2005 were compiled by Windward Environmental for the LDW RI (Windward 2003, 2007c).

- **King County CSO Water Quality Assessment (King County 1999)**

  From March to June 1997, a total of 13 surface sediment samples were collected (one sample every 5 to 15 days) from one sampling station (WQABRAN) located approximately 150 feet southwest of the S Brandon Street CSO. The samples were analyzed for metals and trace elements, polycyclic aromatic hydrocarbons (PAHs), other semi-volatile organic compounds (SVOCs), phthalates, and polychlorinated biphenyls (PCBs).

- **Duwamish Waterway Sediment Characterization Study (NOAA 1998)**

  Seven surface sediment samples were collected adjacent to the source control area in 1997. All seven samples were analyzed for PCBs and polychlorinated terphenyls.

- **EPA Site Inspection, Lower Duwamish River (Weston 1999)**

  Nine surface sediment samples were collected adjacent to the source control area in August 1998. All samples were analyzed for metals and trace elements, PAHs, phthalates, other SVOCs, and PCBs. Three samples were also analyzed for pesticides, organometals, and volatile organic compounds (VOCs).

- **Lehigh Northwest (Windward 2007c)**

  Three subsurface sediment samples were collected adjacent to the source control area in August 2003. The samples were analyzed for metals and trace elements, PAHs, phthalates, other SVOCs, and PCBs.

- **LDW Phase 2 Remedial Investigation, Round 1, 2, and 3 Sediment Sampling (Windward 2005a, 2005b, 2007b)**

  Eight surface sediment samples were collected adjacent to the source control area during three rounds of sampling for the Phase 2 RI from 2005 to 2006. All samples were analyzed for metals and trace elements, SVOCs, PAHs, phthalates, and PCBs; four samples were analyzed for dioxins/furans; and one sample was analyzed for pesticides.

- **LDW Phase 2 RI Subsurface Sediment Sampling (Windward 2007a)**

  Twenty-three sediment samples were collected from four coring locations adjacent to the source control area during 2006. Ten samples were analyzed for metals and trace elements; 19 samples were analyzed for SVOCs, PAHs, and phthalates; 15 samples were analyzed for PCBs; and four samples were analyzed for organometals, dioxins/furans, and pesticides.

Sediment sampling results are listed in Appendices A-1 and A-2 for surface and subsurface sediments, respectively. In 2005, the sediments were dredged from the area between RM 1.0-1.1 East. Samples collected in 2004 before the dredging activity are included in Appendices A-1 and A-2 in order to understand which potential COCs have been present historically in the sediments associated with the KC Lease Parcels source control area. No additional records of dredging activities in this source control area were found in the files reviewed by SAIC.

2.2.2 Identification of Chemicals of Concern

A COC is defined in this report as a chemical that is present in sediments associated with the KC Lease Parcels source control area at concentrations above regulatory criteria, and is therefore of particular interest with respect to source control. These COCs are the initial focus of the evaluation of potential contaminant sources.

The Washington SMS (Chapter 173-204 WAC) establish marine Sediment Quality Standard (SQS) and Cleanup Screening Level (CSL) values for some chemicals that may be present in sediments. Sediments that meet the SQS criteria (i.e., are present at concentrations below the SQS) 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 the SQS levels. The SQS and CSL values provide a basis for identifying sediments that may pose a risk to some ecological receptors.

A chemical was identified as a COC for the KC Lease Parcels source control area if it was detected in surface or subsurface sediment at concentrations above the SQS in at least one sample. A comparison of sample results to the SQS and CSL values is provided in Appendix A, and those chemicals that were detected at concentrations above their respective SQS/CSL values are listed in Tables 2 and 3 for surface and subsurface sediments, respectively. For non-polar organics, the measured dry weight concentrations were organic carbon (OC) normalized to allow comparison to the SQS/CSL. Chemicals detected in sediment for which no SQS/CSL values are available may be identified as COCs on a case-by-case basis.

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

Although not explicitly addressed in the SMS, VOCs in pore water may cause adverse effects on benthic invertebrates and other aquatic biota, and are therefore considered additional COCs for source control efforts in the LDW.

Chemicals with concentrations above the SQS in surface or subsurface sediment samples are listed below. In general, chemicals were present in sediment samples at concentrations only slightly above the SQS values; the greatest exceedances were observed for PCBs at sample locations between the surface and 2 feet bgs offshore of Cadman and Lehigh Northwest, and for PAHs in a surface sample offshore of Cadman and Lehigh Northwest and between 3 to 3.5 feet bgs downstream of Outfall 2007 (Figure 3).

Chemicals Detected at Concentrations Above the SQS/CSL	**Surface Sediment**		**Subsurface Sediment**	
	> SQS	**> CSL**	**> SQS**	**> CSL**
Metals				
Mercury	●	●	●	●
PAHs				
2-Methylnaphthalene	●	●		

Chemicals Detected at Concentrations Above the SQS/CSL	Surface Sediment		Subsurface Sediment	
	> SQS	> CSL	> SQS	> CSL
Acenaphthene	●	●	●	●
Anthracene			●	
Benzo(a)anthracene	●		●	●
Benzo(a)pyrene			●	●
Benzo(b)fluoranthene			●	
Benzofluoranthenes (total calc'd)	●		●	●
Benzo(g,h,i)perylene			●	
Chrysene	●		●	●
Dibenzo(a,h)anthracene			●	
Dibenzofuran	●	●		
Fluoranthene	●		●	●
Fluorene	●	●	●	●
Indeno(1,2,3-cd)pyrene	●		●	
Naphthalene	●	●		
Phenanthrene	●	●	●	●
Pyrene			●	
Total HPAH	●		●	
Total LPAH	●	●	●	●
Phthalates				
Bis (2-ethylhexyl)phthalate			●	
PCBs				
PCBs (total)	●	●	●	●

Exceedance factors, which are a measure of the degree to which maximum detected concentrations exceed the SQS/CSL values, are listed in Tables 2 and 3.
HPAH = high molecular weight PAH
LPAH = low molecular weight PAH

Results for these chemicals are discussed in more detail below.

Metals

Mercury concentrations exceeded the SQS and CSL in surface and subsurface sediment samples. The highest concentration of mercury slightly exceeded the SQS and CSL from surface sample LDW-SS39, which was collected in the general vicinity of the S Brandon Street CSO (Figure 3).

PAHs

PAH concentrations exceeding the SQS were detected in two surface samples, DR087 and LDW-SS35. Concentrations of 2-methylnaphthalene, acenaphthene, dibenzofuran, fluorene, naphthalene, phenanthrene, and total LPAH exceeded the CSL in sample LDW-SS35. LDW-SS35 was collected near the northwest corner of the Cadman and Lehigh Northwest property. PAH concentrations exceeded the SQS in four subsurface sediment samples collected from sediment core LDW-SC23, located downstream of Outfall 2007 at approximately RM 1.2 East (Figure 3). Concentrations of acenaphthene, benzo(a)anthracene, benzo(a)pyrene, total

benzofluoranthenes, chrysene, fluoranthene, fluorene, phenanthrene, and total LPAH in the 3- to 3.5-foot sample and acenaphthene in the 3.5- to 4-foot sample exceeded the CSL.

Phthalates

Bis(2-ethylhexyl)phthalate (BEHP) concentrations exceeded the SQS in two subsurface samples collected from sediment core LDW-SC23 (Figure 3).

PCBs

PCB concentrations exceeded the SQS and/or CSL in eight surface and five subsurface sediment samples from two sediment cores. The greatest PCB concentrations were observed in surface sample LDW-SS37 and the 0- to 2-foot subsurface sample collected from sediment core LDW-SC20; the SQS exceedance factor for both samples was 18 and the CSL exceedance factor was 3.4 for the surface sample and 3.3 for the subsurface sample. These samples were collected from the navigation channel, downstream of the S Brandon Street storm drain (SD) outfall (Figure 3).

Other COCs

Although no sediment quality standards have been promulgated, dioxins and furans are considered to be potential COCs at the KC Lease Parcels source control area. These compounds were detected at five sampling locations. Mammalian dioxin/furan toxic equivalency quotients (TEQs) ranged from 10.6 to 133 ng/kg dry weight (DW) (see Appendix A). The highest concentrations of dioxins/furans were detected at location LDW-SS37.

Organo-tin compounds are considered to be potential COCs at the KC Lease Parcels source control area due to their presence in sediment samples collected in this area. Organo-tin compounds were detected at three sampling locations, with concentrations to 0.18 mg/kg DW tributyltin at location DR087 (see Appendix A).

2.2.3 Summary of Chemicals of Concern in Sediments

As described above, COCs were identified based on the results of sediment sampling conducted between 1997 and 2006. Chemicals that exceeded the SQS in at least one surface or subsurface sediment sample offshore of the KC Lease Parcels source control area are considered COCs. In addition, dioxins/furans, and organo-tin compounds were identified as potential COCs, as described above.

In summary, the following chemicals are considered to be COCs in sediment associated with the KC Lease Parcels source control area:

- PCBs
- PAHs
- Mercury
- BEHP
- Dioxins/furans
- Organo-tin compounds

2.3 Potential Pathways to Sediment

Potential sources of sediment recontamination associated with the KC Lease Parcels source control area include storm drains, CSO outfalls, and discharges from adjacent properties. Transport pathways that could contribute to the recontamination of sediments associated with the KC Lease Parcels source control area following remedial activities include direct discharges via outfalls, surface runoff (sheet flow) from adjacent properties, bank erosion, groundwater discharges, air deposition, and spills directly to the LDW. These pathways are described below and are discussed in more specific detail in Sections 3.0 and 4.0.

2.3.1 Direct Discharges via Outfalls

Direct discharges may occur from public or private SD systems, CSOs, and emergency overflows (EOFs). In the KC Lease Parcels source control area, there are two public storm drains and one CSO (Section 3.0).

Upland areas within the LDW are served by a combination of separated storm/sanitary systems and combined sewer systems. Storm drains convey stormwater runoff collected from pervious surfaces (yards, parks) and impervious surfaces (streets, parking lots, driveways, and rooftops) in the drainage basin. In the LDW, there are both public and private SD systems. Most of the waterfront properties are served by privately owned systems that discharge directly to the waterway. The other upland areas are served by a combination of private and publicly owned systems. Typically, private onsite SD systems discharge to the public storm drain in the street, which conveys runoff from private property and public rights-of-way to the LDW.

The sanitary sewer system collects municipal and industrial wastewater from throughout the LDW area and conveys it to King County's West Point wastewater treatment plant (WWTP), where it is treated before being discharged to Puget Sound. The smaller trunk sewer lines, which collect wastewater from individual properties, are owned and operated by the individual municipalities (e.g., Cities of Seattle and Tukwila) and local sewer districts. The large interceptor system that collects wastewater from the trunk lines is owned and operated by King County. A King County interceptor extends along the west side of East Marginal Way S.

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.

A mixture of untreated municipal/industrial wastewater and stormwater can potentially be discharged through CSOs to the LDW during these storm events. The City's CSO network has its own National Pollutant Discharge Elimination System (NPDES) permit; the County's CSOs are administered under the NPDES permit established for the West Point WWTP.

An EOF is a discharge that can occur from either the combined or sanitary sewer systems that is not necessarily related to storm conditions and/or system capacity limitations. EOF discharges typically occur as a result of mechanical issues (e.g., pump station failures) or when transport lines are blocked; pump stations are operated by both the City and County. Pressure relief points are provided in the drainage network to discharge flow to an existing storm drain or CSO pipe under emergency conditions to prevent sewer backups. EOF events are not covered under the City's or County's existing CSO wastewater permits.

There are 14 CSOs/EOFs in the LDW (Table 4). The county CSOs at S Brandon Street, Michigan Street, and Hanford No. 1 (discharging via the City's Diagonal Avenue S CSO/SD outfall) had the highest average discharge volumes between 2000 and 2007. The S Brandon Street CSO is located at RM 1.1 East, within the KC Lease Parcels source control area.

Annual stormwater discharge volumes are usually substantially higher than annual CSO discharges because storm drains discharge whenever it rains, while CSOs only occur when storm events exceed the system capacity. Annual stormwater discharges to the LDW have been estimated at approximately 4,000 million gallons per year (mgy) compared to less than 65 mgy from the county CSOs and less than 10 mgy from the city CSOs (Windward 2007c).

To minimize the frequency and volume of CSO events, the County utilizes different CSO control strategies to maximize system capacity. An automated control system manages flows through the King County interceptor system so that the maximum amount of flow is contained in pipelines and storage facilities until it can be conveyed to a regional WWTP for secondary treatment. In some areas of the system, where flows cannot be conveyed to the plant, the overflows are sent to CSO treatment facilities for primary treatment and disinfection prior to discharge. County CSOs discharge untreated wastewater only when flows exceed the capacity of these systems (King County 2007).[3]

As a result, some areas may overflow to different outfalls at different times, depending on the route that the combined stormwater/wastewater has taken through the County conveyance system. Furthermore, some industrial facilities in the LDW basin may discharge stormwater to a separated system and industrial wastewater to a combined system, or a conveyance that begins as a separated system may discharge to a combined system further downstream along the flow path.

When preparing a Data Gaps Report for a source control area, all properties that potentially discharge to that source control area (whether through a CSO/EOF or a separated storm drain) are identified to the extent that the boundaries of the drainage basin are known. However, for areas where drainage basins overlap, a property review is performed only if the property has not already been included in a previously published Data Gaps Report. Exceptions include situations where contaminants may be transported to the current source control area via a transport pathway that was not applicable for the earlier evaluation. The S Brandon Street CSO drainage basin includes properties that have been discussed in other Data Gaps Reports and SCAPs. Table 5 indicates the facilities/properties that are included in other source control areas and have been discussed in previously published Data Gaps Reports and SCAPs.

[3] City CSOs are generally smaller and flows are not treated prior to discharge.

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 the sediments associated with the KC Lease Parcels 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.

Large spills of hazardous substances and waste materials containing COCs may be transported to a storm drain or CSO and therefore have the potential to impact sediment in the LDW. There is a potential for spills of COCs from many of the industrial and commercial businesses in the S Brandon Street CSO drainage basin as well as from trucks and trains transporting hazardous substances and waste materials. Spills that occur in the S Brandon Street CSO basin could enter the onsite or public SD system and be discharged to the LDW through the CSO. Spill prevention is a major element of the business inspections conducted by SPU, King County, and Ecology. Many businesses are required to have spill prevention plans. In the event of a spill, Ecology and SPU respond to and investigate spill incidents.

2.3.2 Surface Runoff (Sheet Flow)

In areas lacking collection systems, spills or leaks on properties adjacent to the LDW could flow directly over impervious surfaces or through creeks and ditches to the waterway. Current operational practices at adjacent properties may contribute to the movement of contaminants to the LDW via runoff. Based on aerial photographs and the documents reviewed, it appears that the facilities adjacent to the LDW are paved. Stormwater treatment systems are used at Cadman and Lehigh Northwest and at J.A. Jack, which reduces the potential for surface runoff to reach the LDW. Surface runoff from other properties adjacent to the LDW may be a source of contaminants to sediments associated with the KC Lease Parcels source control area.

2.3.3 Spills to the LDW

Near-water and over-water activities have the potential to impact adjacent sediment from spills directly to the LDW of material containing COCs. Cadman, Lehigh Northwest, and J.A. Jack conduct loading and unloading activities within the KC Lease Parcels source control area. Accidental spills during loading/unloading operations may result in transport of contaminants to sediment.

2.3.4 Bank Erosion

The banks of the LDW shoreline are susceptible to erosion by wind and surface water, particularly in areas where banks are steep. Shoreline armoring and the presence of vegetation reduce the potential for bank erosion. Contaminants in soils along the banks of the LDW could be released directly to sediments via erosion. Little information was available on the construction of the banks within the KC Lease Parcels source control area and the potential for sediment recontamination via this pathway.

2.3.5 Groundwater Discharges

Contaminants in soil resulting from spills and releases to adjacent properties may be transported to groundwater and subsequently be released to the LDW and the KC Lease Parcels source control area. Groundwater contamination has not been documented at the adjacent properties.

2.3.6 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-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 KC Lease Parcels source control area are currently regulated as point sources of air emissions. Five properties within the S Brandon Street CSO basin are currently regulated as point sources of air emissions. These properties are listed below.

Facility	Air Facility System ID
Art Brass Plating Inc. Seattle	5303300386
Capital Industries Inc.	5303300385
Environmental Transport Inc.	5303317794
Longview Fibre Paper & Packaging Inc.	5303315019
Saint Gobain Containers Inc.	5303300004

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. In January 2010, the EPA filed a consent decree settlement with Saint Gobain Containers Inc. (St. Gobain) to address allegations of violations of the Clean Air Act by St. Gobain. Several states and state agencies, including Washington State and the Puget Sound Clean Air Agency (PSCAA) joined in the settlement. St. Gobain will enhance the five furnaces at the Seattle facility to reduce emissions of nitrogen oxides, sulfur dioxide, and particulate matter (USEPA 2010).

Additional information on recent and ongoing atmospheric deposition studies in the LDW area is summarized in the LDW Source Control Status Reports (Ecology 2007b and subsequent updates); Ecology will continue to monitor these efforts.

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3.0 Potential for Sediment Recontamination from 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 SD system through cracks or gaps in the stormwater piping.

3.1 Public Outfalls

As described in Section 2.3.1, public outfalls include public storm drains, CSOs, and EOFs. Within the KC Lease Parcels source control area there are two public storm drains and one CSO outfall, which discharge to the LDW (Figure 2):

Outfall No.[1]	Outfall Name	Diameter/Material	Outfall Type
2007	Unnamed	18-inch composite construction	KC SD
2223	S Brandon Street CSO	18-inch ductile iron	KC CSO
2244	Dock Pipe #2 Outfall	15-inch	KC SD

1. Outfall number as listed in Windward 2007c, Appendix H.

Lateral SD lines connect several of the surrounding facilities to these main lines. The extent of the areas from which stormwater drains to Outfalls 2007 and 2244 is shown on Figure 4. The S Brandon Street CSO basin is shown on Figure 5.

3.1.1 S Brandon Street CSO

The S Brandon Street CSO basin covers approximately 380 acres, spanning west-to-east from the LDW to Corson Avenue S and north-to-south from Denver Avenue S to S Michigan Street (Figure 5). Land uses within the CSO basin include industrial and commercial properties and approximately 18 acres of the Union Pacific Railroad (UPRR) Argo Yard. Parts of the S Brandon Street CSO basin overlap with the Duwamish/Diagonal CSO/SD and Michigan Street CSO basins. In areas where the CSO basins overlap, wastewater and stormwater within the S Brandon Street CSO basin may be redirected to the Duwamish/Diagonal or Michigan Street outfalls depending on the route that the combined wastewater and stormwater takes through the County conveyance system.

From 2000 to 2007, combined wastewater and stormwater overflows were discharged through the S Brandon Street CSO on average 23 times per year, with an annual average volume of approximately 31.63 mgy (Table 4) (Tiffany 2008b).

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.

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 associated with the KC Lease Parcels 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.

King County collected four effluent stormwater samples from the S Brandon Street CSO between 2008 and 2009. Several sediment COCs were detected in the samples. The highest concentration detected of each sediment COC is listed below:

Sediment COC	Concentration (µg/L)	Sample Date
Metals		
Mercury	0.43	January 7, 2009
PAHs		
2-Methylnaphthalene	0.155	April 2, 2009
Acenaphthene	0.0564	January 7, 2009
Anthracene	0.974	January 7, 2009
Benzo(a)anthracene	0.37	January 7, 2009
Benzo(a)pyrene	0.37	January 7, 2009
Benzo(b)fluoranthene	0.506	January 7, 2009
Benzo(g,h,i)perylene	0.257	January 7, 2009
Benzo(k)fluoranthene	0.33	April 2, 2009
Chrysene	0.497	April 2, 2009
Dibenzo(a,h)anthracene	0.0925	January 7, 2009
Dibenzofuran	0.0533	January 7, 2009
Fluoranthene	0.687	January 7, 2009
Fluorene	0.168	January 7, 2009
Indeno(1,2,3-cd)pyrene	0.212	January 7, 2009
Naphthalene	0.0122	April 2, 2009
Phenanthrene	0.623	January 7, 2009
Pyrene	0.793	January 7, 2009

Sediment COC	Concentration (µg/L)	Sample Date
Phthalates		
Bis(2-Ethylhexyl)phthalate	10.2	April 2, 2009
PCBs		
PCBs, total	455 nanograms/Liter	January 7, 2009

Source: King County 2009a, 2009b

The following industrial and commercial facilities within the S Brandon Street CSO basin have been identified:

- 128 facilities within the S Brandon Street CSO basin have been assigned Ecology Facility/Site ID numbers (Table 5).
- 11 of these facilities are listed on Ecology's CSCSL.
- 52 of these facilities have active EPA ID numbers.
- 8 of the facilities hold NPDES permits.
- 5 of these facilities have KCIW discharge authorizations or permits.[4]
- 18 of these facilities are listed on Ecology's LUST list.
- 43 of these facilities are listed on Ecology's UST list.

These facilities are listed by category in Appendix C-1 and their locations are shown on the maps in Appendix C-2. Twenty of the 128 facilities with Ecology Facility/Site ID numbers are included in a source control area for which a Data Gaps Report has already been prepared (Table C-10). Although activities at these 20 facilities, such as Art Brass Plating or Duwamish Marine Center, may result in discharges that are eventually conveyed to the S Brandon Street CSO, they are not discussed further in this Data Gaps Report because source control actions (if any) have been identified in previous reports and are considered to be adequate for source control with regard to the S Brandon Street CSO.[5]

Four of the 128 facilities are located adjacent to the LDW within the KC Lease Parcels source control area, and are discussed in Section 4.0 of this Data Gaps Report.

Seven of the 11 facilities on Ecology's CSCSL (Table C-3) have been addressed in Data Gaps Reports for other source control areas (Table C-10). The remaining four facilities are discussed in this (KC Lease Parcels) Data Gaps Report. Soil and/or groundwater contamination, which may be a source of sediment recontamination, exists at these properties. Air Tec Co. Parcel C, General Electric Aviation Division, Sahlberg Equipment, and Shell 121430 are discussed in Appendix C-3 of this Data Gaps Report.

Five of the eight facilities holding NPDES permits are within another source control area (Table C-4). Of the remaining three, Cadman and J.A. Jack are within the KC Lease Parcels source

[4] Note two additional facilities with KCIW discharge authorizations that have not been assigned Ecology Facility/Site ID numbers have been identified (see Table C-5).

[5] One exception is Manson Construction, which was included in the Data Gaps Report for Slip 1 (SAIC 2008). Manson Construction is explicitly included in the KC Lease Parcels source control area because the property is adjacent to the LDW. Potential releases to Slip 1 were discussed in the Slip 1 Data Gaps Report; potential releases to the LDW are discussed in this report.

control area (Section 4.0). A small portion of the UPRR Company, Dawson Street (aka UPRR Argo Yard) is located within the S Brandon Street CSO; however, a review of drainage maps for the facility showed that all stormwater from the property is discharged to the Diagonal Avenue S storm drain (EMR 2007). The Diagonal Avenue S storm drain discharges to the LDW within Early Action Area 1 (EAA-1). The majority of the UPRR facility is located within the Diagonal West SD basin and Duwamish/Diagonal CSO basin.

Three of the five facilities holding KCIW discharge authorizations or permits are within another source control area. Of the remaining two, Cadman is within the KC Lease Parcels source control area (Section 4.0), and General Electric Aviation Division (also listed on the CSCSL) is included in Appendix C-3. Two additional facilities holding KCIW discharge authorizations have been identified, City of Seattle – SPU Materials Storage Yard and Kamco Seafood, Inc. (Table C-5). These facilities have not been assigned Facility/Site ID numbers by Ecology; thus, no files were available to review for these two facilities.

Seven of the 18 LUST facilities are within another source control area. Due to a potential conflict of interest, SAIC did not evaluate the current or historical operations at two LUST facilities: Bob's Texaco Service and Chevron 9-0636. No files were available for review for Union Pacific Motor. Two of the facilities are also listed on the CSCSL (Air Tec Co. Parcel C and Shell 121430), and are discussed in Sections C-3.2.1 and C-3.2.4 of Appendix C-3. The six remaining LUST facilities are included in Sections C-3.3.1 to C-3.3.6 in Appendix C-3 of this Data Gaps Report. These facilities are:

- Draper Machine Works, Inc.
- Environmental Transport, Inc.
- Loomis & Fargo Company
- Former National Transfer, Inc. Seattle
- PNB Building
- Former Western Parcel Express Seattle

The facilities within the S Brandon Street CSO basin with Ecology Facility/Site ID numbers are listed in Table 5. The Standard Industrial Classification (SIC) and North American Industry Classification System (NAICS) codes associated with the activities performed at these companies are listed in Appendix C-1. Based on available information, current operations at these facilities are not likely to represent a source of contaminants to sediments associated with the KC Lease Parcels source control area.

Additionally, an unknown number of undocumented industrial operations may take place within the S Brandon Street CSO basin. Unregulated industrial activities may be an ongoing source of contaminants to sediments associated with the KC Lease Parcels source control area.

3.1.2 Dock Pipe #2 Outfall (Outfall No. 2244)

Based on data provided by SPU, the Dock Pipe #2 outfall drains an area of about 6.5 acres from KC Lease Parcels 9052 and 9070 (Figures 4 and 6). Although the outfall is owned by King County, it functions as a private outfall for the operators at Parcels 9052 and 9070. Cadman, the current operator at these parcels, has an NPDES permit.

3.1.3 Outfall No. 2007

Based on data provided by SPU, Outfall No. 2007 drains an area of about 3.5 acres from KC Lease Parcel 9043 (Figures 4 and 6). Although the outfall is owned by King County, it functions as a private outfall for the operator at Parcel 9043. J.A. Jack, the current operator at the parcel, has an NPDES permit.

3.1.4 Data Gaps

Information needed to assess the potential for sediment recontamination associated with the public SD outfalls and CSO is listed below:

- Data on contaminant concentrations in SD solids within the Cadman and Lehigh Northwest and J.A. Jack SD systems are needed to evaluate whether contaminants are being transported to LDW sediments via Outfalls 2244 and 2007.
- Data on contaminant concentrations in CSO discharges are needed to evaluate whether the S Brandon Street CSO is a significant source of contaminants to LDW sediments.
- Additional information is needed to determine if undocumented and unregulated industrial operations are occurring within the S Brandon Street CSO basin that may be an ongoing source of sediment recontamination.

Information needed to assess the potential for ongoing releases and sediment recontamination associated with current operations at each of the facilities in the S Brandon Street CSO Basin is listed below. This information can be obtained during the facility inspections currently performed by SPU, KCIW, and Ecology.

- Information regarding any ongoing industrial activities is needed to verify that these facilities are in compliance with all applicable regulations and best management practices (BMPs).
- Information on how and where any hazardous materials, chemicals, or hazardous wastes are stored or used at these facilities is needed to evaluate the potential for spills to commingle with wastewater and stormwater.
- Facility plans showing the locations of floor drains, catch basins, sewer connections, and storm drains (if any) are needed to evaluate the potential for contaminants suspended in wastewater and stormwater (if any) to be transported to the LDW via combined sewer discharges.
- Information regarding any containment systems at these properties is needed to evaluate the adequacy of the systems and determine the potential for spills to commingle with wastewater and stormwater.

Information regarding two LUST facilities, Bob's Texaco Service and Chevron 9-0636, needs to be evaluated to determine the potential for sediment recontamination, if any, that may be associated with these facilities.

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4.0 Potential for Sediment Recontamination from Adjacent Properties

Tax parcels in the vicinity of the KC Lease Parcels source control area are shown in Figure 6, identified by the last four digits of the tax identification number.

Aerial photographs of the source control area for the years 1936, 1946, 1956, 1969, 1977, 1990, 1999, and 2004 are provided in Appendix B. Oblique aerial photographs of the source control area shoreline, taken in 1993, 2001, and 2006, are also included in Appendix B.

The property adjacent to the LDW is owned by King County. The following facilities lease the property from King County and were identified as potential sources of contaminants to sediments associated with the KC Lease Parcels source control area:

- Manson Construction Company (Section 4.1),
- Cadman Seattle, Inc. and Lehigh Northwest (Section 4.2),
- United Western Supply (Section 4.3) and,
- J.A. Jack & Sons (Section 4.4).

The potential for sediment recontamination associated with each of these facilities is discussed in the following sections. Additional information needed to assess the potential for sediment recontamination is also identified.

4.1 Manson Construction Company

Facility Summary: Manson Construction Company	
Tax Parcel No.	1924049041, 1924049067
Address	5209 East Marginal Way S
Property Owner	King County
Parcel Size	3.19 acres (139,004 sq ft)
Facility/Site ID	80333167
SIC Code(s)	1629: Heavy Construction, Not Elsewhere Classified
EPA ID No.	WAD007942824
NPDES Permit No.	NA
UST/LUST ID No.	10795

King County leases two parcels adjacent to Slip 1 to Manson Construction Company (Manson Construction). Manson Construction uses 5209 East Marginal Way S as its operating address. The larger of the two parcels (9041) has two buildings erected on the property. The buildings are an 8,460 square foot (sq ft) warehouse built in 1946 and a 9,196 sq ft office built in 1953.[6] Based on aerial photographs, it appears the parcel is mostly paved. A wharf that extends from the

[6] King County GIS Center Parcel Viewer:
http://www.kingcounty.gov/operations/GIS/PropResearch/ParcelViewer.aspx

northern property line into Slip 1 was built in approximately 1946. A rectangular-shaped area at the southwestern edge of the property appears to be unpaved and may consist of native shoreline. Between 1977 and 1990, it appears that Manson Construction expanded their operations to a portion of Parcel 9070, the parcel adjacent to the south (Appendix B).

The smaller parcel (9067) encompasses most of Slip 1 with a small land area at the head of the slip (Figure 2). There are no buildings erected on this parcel. Most of this parcel is located outside the KC Lease Parcels source control area.

Manson Construction is bordered by Slip 1 and the former Snopac parcel to the north, East Marginal Way S to the east, and Lehigh Northwest and Cadman (both owned by Heidelberg Cement), and the LDW to the west.

Manson Construction also leases two King County-owned parcels (9070 and 9052) and sublets them to Cadman and Lehigh Northwest (Section 4.2). Both Cadman and Lehigh Northwest use 5225 East Marginal Way S as an operating address.

Manson Construction was included in the Data Gaps Report and SCAP that were previously published for RM 0.9-1.0 East (Slip 1). Summaries of current and historical operations and environmental investigations and cleanups are available in the *Lower Duwamish Waterway, RM 0.9 to 1.0 East, Slip 1, Summary of Existing Information and Identification of Data Gaps* (SAIC 2008). Source control actions were identified in the *Lower Duwamish Waterway, RM 0.9-1.0 East (Slip 1), Source Control Action Plan* (Ecology 2009f). The potential for sediment recontamination, data gaps, and source control actions identified in the previous reports are summarized in the following sections.

4.1.1 Regulatory History

In January 2008, King County investigated the existing stormwater systems on the King County Lease Parcels. City of Seattle Department of Planning and Development (DPD) records were reviewed. Plans for a stormwater system at the Cadman facility showed a catch basin on the property occupied by Manson Construction. King County inspectors confirmed the presence of a catch basin on the property that matches the location of the catch basin shown on the Cadman stormwater system plans (King County 2008).

Ecology inspected Manson Construction in June 2009 to evaluate source control practices at the facility (after publication of the Slip 1 SCAP [Ecology 2009f]). Ecology directed Manson Construction to improve source control practices at the facility, including providing proper cover and containment for all liquid products and wastes stored outside, control metal grindings and shavings in the vicinity of the machine shop, and to cease outdoor maintenance activities on vehicles and equipment without cover. Ecology indicated that if source control practices were not improved, Manson Construction would be required to obtain coverage under the Industrial General Stormwater Permit (Ecology 2009h).

4.1.2 Potential for Sediment Recontamination

The potential for sediment recontamination from this property, as described in the Slip 1 Data Gaps Report, is similar for the KC Lease Parcels source control area. Previous and possibly current operations at this property may have resulted in residual soil contamination. The potential for sediment recontamination associated with this property is summarized below by transport pathway.

Stormwater Discharge

Based on SPU maps, it appears that all stormwater and wastewater from this facility is conveyed to the sanitary sewer. However, based on plans in the DPD files and King County's observations, a stormwater catch basin may be present at the Manson Construction facility near the fence line that is shared with the Cadman facility. The potential for sediment recontamination via the stormwater pathway is unknown.

Surface Runoff/Spills

Due to the property's proximity to the LDW, contaminants (if any) suspended in surface runoff have the potential to reach the LDW and sediments associated with the KC Lease Parcels source control area.

Soil and Groundwater

A 2002 facility inspection report indicates that soil remediation was performed at the property; however, no additional information (e.g., site assessment report or laboratory data) regarding the remediation activities was available for review by SAIC. The potential for sediment recontamination via this pathway is low to high depending on the levels of residual contamination in soil and groundwater beneath the facility.

No records of seep sampling along the western shoreline of the Manson Construction property were located; however, Seep 76, near the southeast corner of Slip 1, was sampled by the LDWG in 2004 (Windward 2004). Arsenic, copper, lead, mercury, and zinc concentrations in the seep water sample exceeded the marine chronic water quality standards (WQS) and the groundwater-to-sediment screening levels. These metals concentrations may or may not be related to the Manson Construction property.

Bank Erosion/Leaching

Little information was available on the construction of the banks in this area and the potential for sediment recontamination via this pathway. Contaminants in soils, if any, along the banks of the LDW could be released directly to sediments via erosion.

4.1.3 Data Gaps

Information needed to assess the potential for sediment recontamination in Slip 1 was identified and addressed in the Slip 1 Data Gaps Report and SCAP (SAIC 2008; Ecology 2009f). Data gaps

relevant to the potential for recontamination of LDW sediments to the west of Manson Construction property (within the KC Lease Parcels source control area) are discussed below.

Stormwater Discharge

- A facility inspection is needed to determine if stormwater is discharged to the sanitary sewer or the LDW and to determine if the catch basin shown on DPD files and observed by King County personnel is connected to the SD system at the Cadman facility. A follow-up inspection is needed to determine if corrective measures have been implemented to ensure operations at Manson Construction are in compliance with applicable regulations and BMPs to prevent the release of contaminants to the LDW.

Surface Runoff/Spills

- A facility plan showing the locations of all catch basins and storm drains (if any) as well as an evaluation of the slope of impervious surfaces and any associated surface water collection and/or discharge points is needed to evaluate the potential for contaminant transport to the LDW via surface runoff.

Groundwater Discharge

- No laboratory data from site assessment(s) and remediation at the Manson Construction parcel were found in the files reviewed by SAIC. Additional information is needed to evaluate if contaminant concentrations in soil and groundwater beneath this facility have the potential to re-contaminate the sediments associated with the KC Lease Parcels source control area.

Bank Erosion/Leaching

- Additional information on the construction of the banks in this area is needed. Residual soil contamination may be present at this property; therefore, if bank erosion is likely, then data on contaminant concentrations in bank soils is necessary to evaluate the potential for sediment recontamination via this pathway.

With the addition of investigating the catch basin that may be connected to the stormwater system on the Cadman facility and performing a follow-up facility investigation, the action items identified in the Slip 1 SCAP adequately address the above data gaps associated with the LDW sediments to the west of the Manson Construction property.

4.2 Cadman Seattle, Inc. and Lehigh Northwest

Facility Summary: Cadman Seattle, Inc. and Lehigh Northwest	
Tax Parcel No.	1924049052, 1924049070
Address	5225 East Marginal Way S
Property Owner	King County
Parcel Size	9052: 2.16 acres (94,063 sq ft) 9070: 4.62 acres (201,324 sq ft)

Facility Summary: Cadman Seattle, Inc. and Lehigh Northwest	
Facility/Site ID	70313617 (Cadman) 5145176 (Lehigh Northwest)
SIC Code(s)	1442 Construction Sand & Gravel (Cadman) 3241 Cement, Hydraulic (Cadman) 3273 Ready-Mixed Concrete (Cadman) 5211 Lumber & Other Building Materials (Cadman)
EPA ID No.	WAD982651986 (Cadman)
NPDES Permit No.	WA-003094-5 (Cadman, historical permit) WAG503337 (Cadman)
KCIW Permit/ Authorization No.	392, Authorization (Cadman)
UST/LUST ID No.	97744 (UST, Active)

Cadman and Lehigh Northwest occupy two parcels adjacent to the LDW. The facility is bordered by Manson Construction to the north, East Marginal Way S to the east, J.A. Jack to the south, and the LDW to the west. Parcels 9052 and 9070 are leased to Manson Construction by King County. Manson Construction sublets the parcels to Cadman. There is one building on the parcel, a 57,540 sq ft warehouse built in 1969. The entire facility is paved (Cadman 1998).

The property is underlain by approximately 4.5 to 5 feet of fill. The fill consists of silty, clayey, gravelly sand, slightly silty sand, and gravel. A 2.5- to 3-foot thick layer of marsh deposits consisting of sandy silt with trace clay and scattered organics and wood fragments is present beneath the fill. The marshy layer is underlain by dense silty sand with some gravel (Shannon & Wilson 1997).

4.2.1 Current Operations

Cadman manufactures and distributes Portland cement concrete and concrete blocks, sand and gravel. Processed sand and gravel is stockpiled on the property. The washed or crushed materials are used in the production of ready-mix concrete or sold to contractors for construction projects (Cadman 1992). Lehigh Northwest operates a cement terminal at the property. Lehigh Northwest receives cement from barges (Ecology 2009a).

Approximately 11,500 tons of cement and 14,000 tons of sand and gravel are received at the facility by barge each month. The dry cement is piped ashore and stored in silos. Underground pipes convey the dry cement to the ready-mix plant. Sand and gravel are loaded onto a conveyor from the barges and then into trucks. The trucks move the sand and gravel to stockpiles (Ecology 1993d; PSAPCA 1995).

Materials Used in Operations

Cadman stores the following materials and chemicals on the property (Cadman 2009):

Material/Chemical Use	Material/Chemical Name	Quantity Stored (gallons, except as noted)	Storage Location
Concrete Batching Material	Aggregate (sand and gravel)	10,000 tons	Stockpiles
Concrete Binder	Portland Cement	5,000 tons 200 tons	Cement Silos Batch Plant
	Fly Ash	160 tons	Batch Plant
Concrete Additive	Calcium Chloride, MB AE 90, Pozzolith NC 534, Pozzolith 200N, Pozzolith 440N, Rheobuild 3000 FC, Rheomix 235	1,200 (each)	Batch Plant
Exterior Truck Cleaning	Zep TNT	400	Batch Plant
Ecology Blocks	Form Oil	55	Ecology Block Area
Vehicle Maintenance	Torque Fluid 30	110	Maintenance Area
	Engine Oil 40, Grease #2	55 (each)	Maintenance Area
Equipment Maintenance	Hydraulic Oil, NUTO H46	25	Maintenance Area
Vehicle Fuel	Diesel Fuel #2	10,000	Vehicle Fueling Area

The concrete additives are stored in aboveground storage tanks (ASTs) with concrete secondary containment. Diesel fuel is stored in a 10,000-gallon UST (Cadman 2000c). The UST was coated with a protective epoxy liner in 2004 (NW Tank Lining 2004).

Waste Handling

Cadman discharges some wastes to the sanitary sewer. Historically, Cadman discharged wastes under METRO Waste Discharge Permit No. 7536. In 1992, METRO determined that Cadman was not a Significant Industrial User and indicated that Cadman would be issued a Discharge Authorization (METRO 1992). Discharge Authorization Number 392 was issued in 1992 or 1993. Approximately 13,000 gallons of process water is discharged to the sanitary sewer daily. Process water includes noncontact cooling water, wash water from cement bulk trucks, rinse water from loading hoppers, and overflow water from the truck wheel wash (Ecology 1993d; Cadman 2009). Process water is also reused in the concrete pre-mix operation (CH2M Hill 1994).

Transit mixers are washed on a weekly basis using a muriatic acid wash in a Challenge-Cook Enviromatic unit. Concrete residue and the rinse water from the unit are collected and reused in the concrete batch plant (Ecology 1993d).

The property is cleaned daily with a vacuum/sweeper truck (Ecology 1993d).

Stormwater Discharges

Historically, straw bales were used to filter stormwater that had percolated through the sand and gravel stockpiles before discharge to the catch basins. Immediately upstream of Outfall 2244, the stormwater passed through a grit chamber, and baffle type oil/water separator (OWS) (Cadman 1992). Cadman employees and Ecology reported that the OWS was bypassed when stormwater flow exceeded 250 gallons per minute (CH2M Hill 1994). Seventeen catch basins are present on the property (Figure 7). Some catch basins have been sealed and stockpiles are present above the sealed catch basins (CH2M Hill 1994).

Beginning in 1993, carbon dioxide was used in the grit chamber to adjust the pH of the discharge (Ecology 1993d). Polymers were added to the stormwater at the inlet of the OWS to coagulate smaller particles and reduce the turbidity of the discharge (CH2M Hill 1994).

A stormwater treatment system was installed on the property and started up on January 24, 1997 (Cadman 1998). The treatment system adjusts the pH and removes particulate matter from stormwater prior to discharge to the LDW. The treatment system has four components:

- A pH neutralization system using gaseous carbon dioxide,
- A polymer feed system,
- A below ground pump station consisting of centrifugal duplex pumps operating on level control, and
- A plug-flow, above ground detention vault.

The treatment system is designed to operate continuously and has the capacity to contain a 10-year, 24-hour storm. Stormwater from the entire property collects at catch basin 13 and is diverted to the pump station, then diverted to the detention vault (pond) (Cadman 2000c). Most stormwater is recycled in the Cadman concrete batching process. When stormwater in the vault nears the overflow level, stormwater overflow is directed to the LDW (Cadman 2009). Note there is a discrepancy between the stormwater and sanitary sewer line placement information provided by SPU (Figure 4) and by Cadman (Figure 7).

The detention vault is cleaned at least monthly. Accumulated material is re-used for ready-mix concrete or fill dirt (Cadman 2000c). Storm drains and catch basins are cleaned quarterly (Ecology 2009a).

Aggregate and form oil are exposed to stormwater. Stormwater from the Ecology Block area flows into a sump and the water is recycled (Cadman 2000c).

Cadman and Lehigh Northwest's operations are both covered by the facility's Sand and Gravel NPDES permit (Ecology 2009a).

4.2.2 Historical Operations

Ocean Construction Supplies Company and Tilbury Cement Company are historical names for the facility (Anderson Bjornsten 1986). In 1991 the owners of Ocean Construction Supplies,

CBR, purchased Cadman. CBR decided to do business as Cadman in the state of Washington (Ecology 1993d).

Genstar Sand and Gravel Company and Tilbury Cement historically operated a cement distribution terminal at the property. Both companies are historical predecessors to Lehigh Northwest (Cadman 2000b; K&L Gates 2007).

4.2.3 Regulatory History

Stormwater Inspections

A Notice of Penalty was issued to Ocean Construction Supplies Company in June 1991 following two inspections of the facility in January and April 1991. The penalty was assessed because concrete trucks were washed in an area where wash water flowed to the SD system and the drain in the truck wash area was plugged, which caused overflow to be conveyed to the storm drain (Ecology 1993d).

A Notice of Violation (NOV) was issued in December 1992 for consistent noncompliance with the effluent limits mandated for pH and turbidity by the facility's NPDES permit. In February 1993, an Order was issued, requiring Cadman to submit an action plan to achieve compliance with the NPDES permit limitations. Cadman submitted the plan in June 1993 (Ecology 1993d)

Ecology inspected the Cadman facility as part of the NPDES renewal in July 1993. The major sources of stormwater contamination were from aggregate stock piles and solids tracked by truck traffic on the facility. Cadman had implemented BMPs in response to the Order issued in February 1993, including sweeping twice per day and installing the CO2 system to automatically adjust pH in the stormwater effluent. Cadman planned to install a polymer addition system to reduce stormwater turbidity. Overall, Ecology noted that conditions at the facility were satisfactory (Ecology 1993b).

In October 1994, Ecology inspected the Cadman facility as part of the AKART document review. The Ecology inspector noted that the wastewater treatment chemicals were stored with inadequate secondary containment. Runoff from a tool wash area was entering the stormwater system; secondary containment was needed in this area. A tank of form oil and the acid wash area were also lacking secondary containment (Ecology 1994b).

Cadman was granted coverage under the Sand and Gravel General Permit on October 27, 2000. The permit number is WAG503337. Ecology cancelled NPDES permit WA-003094-5 (Ecology 2000b). Ecology issued Administrative Order No. DE 00WQNR-1661 requiring Cadman to monitor stormwater discharges for pH, turbidity, and total suspended solids in addition to the monitoring required by the Sand and Gravel General Permit, and to monitor each discharge to the LDW at least once per day (Ecology 2000a).

Ecology performed a Stormwater Compliance Inspection at the facility in January 2009. Ecology determined that the stormwater pollution prevention plan (SWPPP), monitoring plan, and facility plan needed to be updated and that adequate cover and containment should be provided for all liquids and wastes stored outdoors. Ecology recommended installing catch basin filter inserts to reduce the sediment load to the manhole housing the carbon dioxide sparging unit, and

processing of cement trucks through the wheel-wash since track-out from the facility toward East Marginal Way S has been a chronic issue. Additionally, Ecology recommended that Cadman perform an inventory in the area known as the "boneyard," which is between the maintenance shop and the LDW. Parts and equipment stored in this area may pose a threat to stormwater runoff quality due to its proximity to the LDW (Ecology 2009a).

During the January 2009 inspection, Ecology identified the following issues regarding the facility plan, SWPPP, and stormwater treatment system (Ecology 2009a):

- Facility Plan:
  - Inconsistencies were found between the facility plan and actual facility layout of drain lines connecting to the sanitary sewer and overflow lines directed to the LDW.
  - Connections between the carbon dioxide sparging unit of the stormwater treatment system and the detention pond were not clear on the facility plan.
- SWPPP:
  - Include the storm drain maintenance log,
  - Include copies of the discharge monitoring reports, and
  - Include operating and maintenance manuals for the cement truck wash and concrete truck wheel-wash, carbon dioxide sparging unit, underground storm vault pumps, and detention pond.
- Stormwater Treatment System:
  - The pH meter on the carbon dioxide sparging unit was malfunctioning and the manhole housing the unit was clogged with sediment.
  - The as-built for the detention pond did not correctly depict the configuration of the baffles and outlet pipe at the downstream end of the pond.

In February 2009, Ecology issued a warning letter to Cadman based on the results of the January inspection (Ecology 2009d). Ecology required Cadman to complete the following actions:

- Complete a signed and updated SWPPP that meets the requirements outlined in the General Sand and Gravel Permit.
- Include in the SWPPP a comprehensive facility map that includes all SD lines, pumps, ponds, vaults, sparging systems, wheel and truck washes, and connections to the sanitary sewer.
- Provide proper cover and containment for all liquid products and wastes stored outdoors.
- Verify detention pond overflow system and procedures for discharges to the sanitary sewer or the LDW.

KCIW is currently reviewing archived files relating to the facility's discharge authorization (Mansfield 2009).

Underground Storage Tank Inspections

Ecology inspected the 10,000-gallon UST in 1995 and found it to be in compliance (Ecology 1995). Ecology inspected the UST again in March 2004. Ecology issued a notice of noncompliance due to lack of tightness testing results available for inspection, no recent records of calibration and maintenance of the automatic tank gauge, and a stick that was blocking the overfill protection shut-off valve. The stick was removed immediately and Ecology directed Cadman to perform a standard 3-year test for the UST and obtain a monitor certification for the automatic tank gauge by April 10, 2004 (Ecology 2004b).

Ecology inspected the UST in January 2009. Ecology observed two items of noncompliance: the presence of a stick in the fill pipe which defeated the overfill shut-off device, and failure to inspect the impressed current cathodic protection system every 60 days (Ecology 2009b). Ecology issued a penalty to Cadman due to the stick in the fill pipe (Ecology 2009c).

Air Emissions

In November 1987, Puget Sound Air Pollution Control Agency (PSAPCA) performed a routine inspection at the Ocean Construction/Tilbury Cement facility. No violations were noted and the air contaminant control equipment appeared to be in good working order (PSAPCA 1987a). The following day, PSAPCA issued an NOV to Tilbury Cement due to an emission from the cement storage silos (PSAPCA 1987b, 1987c).

PSAPCA inspected the Ocean Construction/Tilbury Cement facility again in July 1988 for a fugitive dust survey. The inspector noted that the facility was very clean and modern. Dust emissions from a front loader were considered reasonable. PSAPCA recommended that the facility install a conveyor to move materials from barges to storage piles instead of trucks in order to reduce dust emissions (PSAPCA 1988).

In September 1989, PSAPCA issued an NOV to Ocean Construction/Tilbury Cement due to excessive dust on the plant premises and track out to East Marginal Way S (PSAPCA 1989).

PSAPCA performed inspections of the Ocean Construction/Tilbury Cement facility in February 1991 and no violations or unregistered equipment were observed (PSAPCA 1991a).

In October 1991, PSAPCA issued NOV No. 28054 to Ocean Construction following a facility inspection. Fine particulate matter was tracked out from the facility to East Marginal Way S and fugitive dust emissions were observed (PSAPCA 1991b).

In August 1992, Tilbury Cement was issued an NOV by PSAPCA after large dust plumes were observed migrating from the Tilbury Cement facility to the LDW. The dust plumes were apparently generated by a mechanical sweeper that was not equipped with dust control mechanisms. Cadman halted the sweeping activities (PSAPCA 1992).

PSAPCA performed a routine inspection of the Cadman and Tilbury facilities in November 1992. Track out was observed from the plant out to East Marginal Way S and Ohio Avenue S. PSAPCA directed Cadman and Tilbury to update the Operations and Maintenance (O&M) plan

to include baghouse maintenance techniques and schedule out (PSAPCA 1992b). NOV No. 29063 was issued for the track out (PSAPCA 1992c).

NOV No. 31820 was issued to Tilbury Cement and Cadman by PSAPCA in July 1994. The NOV was for failure to have an overflow alarm and dust emissions (PSAPCA 1994).

Routine inspections were performed in January 1995 and May 1997 by PSAPCA and by PSCAA in October 2000 and June 2004. No violations or emissions were observed (PSAPCA 1995, 1997; PSCAA 2000, 2004).

In May 2005, PSCAA inspected the Cadman and Lehigh Northwest facility. Lehigh Northwest had upgraded the baghouses at the facility in February 2005 without first obtaining approval from PSCAA. O&M records for the dust collectors at the baghouses were inadequate. PSAPCA issued a warning to Cadman and Lehigh Northwest (PSCAA 2005).

PSCAA inspected the facility again in June 2006. No violations or emissions were observed (PSCAA 2006). Cadman holds PSCAA permit number 21007 (Cadman 2000d).

4.2.4 Environmental Investigations and Cleanups

Underground Storage Tank Removal

In February 1989 two 550-gallon USTs (Ocean Construction Supplies Company 1989a) storing solvent and waste oil were removed from the facility. Stained soil was present around the fill pipes and a petroleum odor was present in soil surrounding the solvent UST. Stained soil was not present around the waste oil UST. Soil samples were collected beneath each UST and from unstained soil near the solvent UST fill pipe. The samples were analyzed for total petroleum hydrocarbons (TPHs) and VOCs; no analytes were detected at concentrations exceeding the Ecology cleanup levels (Kennedy/Jenks/Chilton 1989). Three other USTs containing petroleum products were removed at the same time; however, no additional information regarding these USTs was available for review (Ocean Construction Supplies Company 1989b).

Phase I Environmental Site Assessment

A Phase I Environmental Site Assessment was performed at the facility in December 1996 to identify evidence of past or ongoing contamination. The investigation consisted of a visual reconnaissance of the Cadman and Tilbury facilities and the surrounding area. Environmental concerns identified for the properties leased by Manson Construction (note that Cadman sublets the property from Manson Construction) included: historic creosote use for pole treatment on the property; historic use of the properties as a factory site by WEC and Seattle Boiler Works; historic vehicle maintenance in the shop used by Cadman; and USTs at the Cadman facility (Boateng 1997). Only four pages from the Phase I Environmental Site Assessment report were available for review; therefore, additional information regarding Cadman and Manson Construction may be available in the full report.

4.2.5 Potential for Sediment Recontamination

Chemical concentrations[7] exceed the SQS in sediments near the Cadman and Lehigh Northwest facility (Figure 3, Tables 2 and 3).

The potential for sediment recontamination associated with this property is summarized below by transport pathway.

Stormwater

Stormwater at the facility is generally treated and recycled in the concrete batching process. When the capacity of the stormwater treatment system is exceeded, stormwater is discharged either to the sanitary sewer or to the LDW through Outfall 2244. In February 2009, Ecology determined that parts, equipment, liquid products, and wastes stored outdoors represented a potential threat to stormwater quality. The potential for sediment recontamination via this pathway is unknown and depends on the frequency of discharges to the LDW and the potential concentrations of sediment COCs, if any, in discharges originating from this property.

Surface Runoff/Spills

Operations at Cadman and Lehigh Northwest include offloading cement, sand, and gravel from barges. No spills have been reported. Although spills to the LDW may occur, cement, sand, and gravel are not sediment COCs; therefore, the potential for sediment recontamination via this pathway is low. Although rocks, sand, gravel, and cement are not sediment COCs, spills of these materials may potentially harm the river environment. The facility is adjacent to the LDW; therefore, surface runoff and spills have the potential to reach the LDW.

Soil and Groundwater

There is no information available to determine if soil or groundwater contamination is present at this property.

Bank Erosion/Leaching

Little information was available on the construction of the banks in this area and the potential for sediment recontamination via this pathway. Contaminants in soils, if any, along the banks of the LDW could be released directly to sediments via erosion.

4.2.6 Data Gaps

Information needed to assess the potential for sediment recontamination associated with current or historical operations at Cadman and Lehigh Northwest is listed below.

[7] Sediment COCs in the vicinity of the Cadman and Lehigh facility include mercury, PAHs, and PCBs (Figure 3).

Stormwater Discharge and Surface Runoff/Spills

- A follow-up business inspection of Cadman and Lehigh Northwest is needed to verify compliance with Ecology's recommendations, applicable regulations, and BMPs to prevent the release of contaminants to the LDW.
- A review of the updated SWPPP, when completed, is needed to ensure compliance with Ecology's requirements.

Bank Erosion/Leaching

- Additional information on the construction of the banks in this area is needed.

4.3 United Western Supply

Facility Summary: United Western Supply	
Tax Parcel No.	1924049051
Address	Operating: 5245 East Marginal Way S Parcel: 5409 Ohio Avenue S
Property Owner	King County
Parcel Size	4.67 acres (203,375 sq ft)
Facility/Site ID	9953954
SIC Code(s)	5085 Industrial Supplies
EPA ID No.	WAH000011379 (Inactive) CRK000015650
NPDES Permit No.	None
UST/LUST ID No.	None

United Western Supply subleases Parcel 9051 from ICONCO Inc. (ICONCO) operates on Parcel 9051. ICONCO leases the property from King County. The property is bordered by Cadman and Lehigh Northwest on the north and J.A. Jack on the south. The United Western Supply facility is bordered by the LDW on the west and East Marginal Way S on the east. 9051 is a large parcel adjacent to the LDW. The majority of the parcel is located on the western side of Ohio Avenue S; a small area (approximately 0.2 acre) of the parcel is located on the eastern side of Ohio Avenue S. This 0.2-acre portion is not included in the KC Lease Parcels source control area. Three buildings, owned by ICONCO, are present on the larger portion of the parcel:

- A 69,210 sq ft warehouse, constructed in 1919,
- A 27,312 sq ft warehouse, constructed in 1922, and
- A 3,510 sq ft office and warehouse, constructed in 1955.

A rail spur is present on the property between the 69,210 sq ft warehouse on the northern portion of the property and the smaller warehouses on the southern portion of the property (Figure 8). The property is roughly divided into two equal parts by the rail spur. According to King County Tax Assessor Records, the property is currently used as a terminal for marine and commercial

fishing. The property name is listed as Western Utilities. Western Utilities may have subleased a portion of the property in the early 1990s (HD Supply 2009).

The property is underlain by approximately 6.5 feet of sandy fill. Loose silt is present beneath the fill to a depth of approximately 10 feet bgs. The Duwamish sand, consisting of interbedded sandy silts and silty fine sands is present beneath the silt layer. Groundwater is encountered at approximately 7.5 feet bgs (Zipper Zeman 2001).

4.3.1 Current Operations

United Western Supply is a distributor of foundry and abrasive products, equipment, parts, and supplies for the foundry and surface preparation industries. According to the company's website the following products are available: foundry supplies, metal and carbon products, and abrasive media.

United Western Supply uses a conveyor belt to load and unload sand from rail cars. A bagging machine is used to package the sand. Other equipment used at the property includes a Muller mixer, a pallet wrapper carousel, and forklifts (United Western Supply 2009a).

The company also provides technical assistance on recycling and containment (United Western Supply 2009b). United Western Supply has operated in the northern portion of the property since September 1980 (Cascadia Law Group 2008).

From the documents available for review, SAIC was unable to determine if the buildings on the southern portion of the property are currently occupied.

Stormwater

According to ICONCO, roof drains from the office building discharge to the ground. Four catch basins on the southern portion of the property drain to the rail spur area

4.3.2 Historical Operations

Utilities Warehouse first leased the property from King County in August 1964. The lease stipulates that the property could be used only for manufacturing, industrial, warehousing, or commercial purposes. Apparently, Utilities Warehouse never occupied the property; instead it subleased the property to various tenants. In September 1980, Utilities Warehouse subleased the northern portion of the property to United Western Supply. In October 1994, Utilities Warehouse subleased the southern portion of the property to ICONCO, Inc. Tenants listed in the sublease agreement included Pacific Western Maritime, Inc., J.A. Jack & Sons, United Western Supply, and Ackerly Communication, Inc. Pacific Maritime leased moorage facilities at the property from 1994 to 1999.[8] Ackerly Communications maintained a billboard on a portion of the property. In May 1999, Utilities Warehouse assigned its land lease with King County and sold the buildings and improvements on the property to ICONCO, Inc. ICONCO, Inc. continued to

[8] Note that there are no visible moorage facilities associated with Parcel 9051 on the 2007 aerial photograph available on King County's iMAP website.

sublease the northern portion of the property to United Western Supply (Cascadia Law Group 2008).

In lease documents, ICONCO, Inc. is described as a demolition contractor. ICONCO's offices (e.g., sales and marketing) were located at the property. ICONCO also used the property to support field operations in Washington and Alaska. Equipment and vehicles were serviced at the property, including fueling and removal of waste oil. A 250-gallon AST with secondary containment was used to store waste oil. Lumber, steel plates and shapes used in construction and demolition operations, and salvaged lumber, steel, metal fixtures and masonry products were stored outdoors on the property (Cascadia Law Group 2008).

In 2005, LVI Environmental Services, Inc. (LVI Services) acquired ICONCO (LVI Services 2005). ICONCO's lease was assigned to LVI Services in July 2005. LVI Services operated on the southern portion of the property (Cascadia Law Group 2008). LVI Services' website presents conflicting information regarding its operations in Seattle. The "Locations" map indicates that there is a Seattle office; however, the page listing office addresses does not include an address for a Seattle office (LVI Services 2009). LVI Services's lease expired on December 31, 2009 (Cascadia Law Group 2008).

4.3.3 Regulatory History

EPA has sent CERCLA Section 104(e) Request for Information letters to ICONCO, Western Utilities, and United Western Supply.

4.3.4 Environmental Investigations and Cleanups

A 1998 letter from ICONCO to King County indicates that Boateng Environmental prepared an environmental property assessment report in March 1997. Small piles of sand blast grit were observed along the rail spur. United Western Supply indicated that the piles consisted of copper and nickel slags and silica sand. United Western Supply further indicated that the materials are inert and that the piles were periodically cleaned up to prevent excessive buildup on the rail spur (ICONCO 1998). A copy of the 1997 report, which apparently focuses on United Western Supply, was not available for review.

No records of environmental investigations or cleanups were available for review; however, a geotechnical study was performed at the property in June 2001. The geotechnical study was performed prior to the repair of the United Western Supply warehouse, which was damaged in a February 2001 earthquake (Zipper Zeman 2001).

4.3.5 Potential for Sediment Recontamination

Mercury concentrations exceed the SQS in sediments near the United Western Supply facility (Figure 3).

The potential for sediment recontamination associated with this property is summarized below by transport pathway.

Stormwater

There is no information available to determine if stormwater from the facility is conveyed to the combined sewer system or discharged to LDW.

Surface Runoff/Spills

The facility is adjacent to the LDW; therefore, surface runoff and spills have the potential to reach the LDW. In 1997, copper and nickel slag were observed in the rail spur area. United Western Supply indicated that the area is periodically cleaned; however, it is not known if the practice of allowing slag to accumulate at the rail spur continues.

Soil and Groundwater

There is no information available to determine if soil or groundwater contamination is present at this property.

Bank Erosion/Leaching

Little information was available on the construction of the banks in this area and the potential for sediment recontamination via this pathway. Contaminants in soils, if any, along the banks of the LDW could be released directly to sediments via erosion.

4.3.6 Data Gaps

Information needed to assess the potential for sediment recontamination associated with current or historical operations at United Western Supply is listed below.

Stormwater Discharge and Surface Runoff/Spills

- A business inspection of United Western Supply and the buildings on the southern portion of the property is needed to verify compliance with applicable regulations and BMPs to prevent the release of contaminants to the LDW.
    - Facility plans showing the locations of all catch basins and storm drains (if any) are needed to evaluate the potential for contaminant transport to the LDW via surface runoff.
    - Floor drains and SD lines on the property (if any) should be located and mapped.
    - Information regarding how any hazardous materials or chemicals are stored and used at the facility is needed to evaluate the potential for spills to reach sediments associated with the KC Lease Parcels source control area.
    - Information on any containment system(s) present at the site is needed to evaluate the potential for spills to reach sediments associated with the KC Lease Parcels source control area.

A review of the 1997 environmental assessment, prepared by Boateng, is needed to identify potential pollutant sources associated with United Western Supply. The complete Boateng report was not available for review by SAIC during preparation of this Data Gaps Report.

Bank Erosion/Leaching

- Additional information on the construction of the banks in this area is needed.

4.4 J.A. Jack & Sons

Facility Summary: J.A. Jack & Sons	
Tax Parcel No.	1924049002, 1924049043
Address	9002: 5801 East Marginal Way S 9043: 5427 Ohio Avenue S
Property Owner	King County
Parcel Size	9002: 8.76 acres (381,790 sq ft) 9043: 3.38 acres (147,103 sq ft) 9051: 4.67 acres (203,375 sq ft)
Facility/Site ID	37836248
SIC Code(s)	1422 Crushed & Broken Limestone
EPA ID No.	None
NPDES Permit No.	WAG503082
UST/LUST ID No.	803 (UST)

J.A. Jack & Sons' operations are performed primarily on Parcel 9043. The company also occupies approximately 1 acre on Parcel 9002. J.A. Jack is a subtenant of Saint Gobain Glass Containers (St. Gobain). St. Gobain leases both parcels from King County (J.A. Jack 2008). The facility is bordered by the LDW on the west, United Western Supply on the north, Ohio Avenue S on the east, and St. Gobain to the south. Four buildings are present on Parcel 9043:

- A 2,240 sq ft office building, constructed in 1947,
- A 640 sq ft office building and lunch room, constructed in 1940,
- An 11,840 sq ft batch plant, constructed in 1966, and
- A 4,000 sq ft warehouse, constructed in 1966.

Stormwater from J.A. Jack may be conveyed to Outfall 2007, which is located on Parcel 9002 (Figure 4). The buildings on Parcel 9002 and the remaining area are occupied by St. Gobain. St. Gobain was included in the Data Gaps Report and SCAP that were prepared for the RM 1.2 to 1.7 East Source Control Area.

The property is underlain by approximately 3 feet of crushed limestone and silty sand, followed by approximately 9 feet of moist sand with trace gravel and silt (Associated Earth Sciences 2002).

4.4.1 Current Operations

J.A. Jack has operated at this location since 1967 (SPU 2009a). Limestone is crushed, screened, and stockpiled at the facility (Eckhart 1994). The limestone is offloaded from barges. Front end loaders on the barges load limestone onto a conveyor system that carries the limestone to the

property. The offshore conveyor system apparently connects to additional onshore conveyors to stockpile the limestone on the facility. Crushed limestone is bagged or loaded onto trucks and railcars. Truck washing and parking lot cleaning is performed at the facility (Ecology 2002a, 2007c; J.A. Jack 2003a).

Material and Waste Handling

Approximately 250,000 tons per year of crushed limestone is handled at J.A. Jack. This raw material has been stored in an exposed area since at least November 1989. The facility is capable of storing up to 25,000 tons of crushed limestone at a time (J.A. Jack 2002).

J.A. Jack uses non-hazardous and nontoxic cleaning and degreasing fluids. Diesel fuel, gasoline, hydraulic fluid, and motor oil are stored on the property for company vehicles; however, all vehicle maintenance is performed off property to prevent collection of used oils and greases at the facility (J.A. Jack 2002).

A 10,000-gallon diesel UST was installed on the property in 1981. The UST was retrofit with an epoxy lining, spill and overfill prevention equipment, and cathodic protection equipment in December 1997 (Ulrich Industrial 1997; Pacific Environmental Services 1998). New fiberglass piping was installed in January 1998 (Cusick 1998). Ecology inspected the UST in January 2003; no corrective actions were identified (Wietfeld 2003).

Wash water is generated through truck and parking lot washing activities. Parking lot washing is performed to reduce dust buildup on the property (J.A. Jack 2003a). Wash water is cycled through an underground settling vault and discharged to a drain field (SPU 2009a).

Stormwater

The NPDES permit covers a paved area that is used primarily for truck loading and parking (J.A. Jack 2002). Stormwater and wash water drains to two catch basins on the property and is conveyed to the facility stormwater system (Figure 9). The stormwater system consists of an underground settling vault and ground discharge drain field on the property. The effluent from the catch basins drains to the settling vault and then discharges to the ground discharge drain field (identified as “Infiltration Gallery” in Figure 9). The system is designed to contain a 100-year storm. The drain field is set approximately 400 feet east of the LDW to minimize the potential for potentially contaminated groundwater to discharge to the LDW (J.A. Jack 2003b). The vault is cleaned annually (Ecology 2007c).

In the event of a stormwater system failure or storm event that exceeds that capacity of the system, stormwater and/or wash water can be diverted to the SD line on the St. Gobain property. The SD line on the St. Gobain property discharges to the LDW through Outfall 2007 (J.A. Jack 2003b).

The catch basin located in front of the warehouse (northern catch basin) is cleaned on a weekly basis and the main catch basin (southern catch basin) is cleaned on an as-needed basis, at least once per year (J.A. Jack 2002).

A lip has been built at the western edge of the property, adjacent to the LDW, to prevent sheet flow from reaching the LDW (Ecology 2002a).

4.4.2 Historical Operations

A septic drain field was present on the property until approximately 2003 when the septic tank was filled with sand and the property was connected to the sanitary sewer system (J.A. Jack 2003a). A lumber mill was operated on the property prior to J.A. Jack's operations (J.A. Jack 2008).

In 1987, J.A. Jack received a permit from the Army Corps of Engineers to dredge the LDW to recover spilled limestone from the waterway. The permit allowed J.A. Jack to dredge 1,000 cubic yards per year for 3 years. In 1995, J.A. Jack received a permit from the City of Seattle Department of Construction and Land Use to dredge 500 cubic yards from the LDW to recover spilled limestone. In 2008, J.A. Jack indicated that the recovery dredging would need to be performed again soon; no immediate plans for dredging had been made (J.A. Jack 2008).

4.4.3 Regulatory History

In September 1994, J.A Jack applied for coverage under the Sand and Gravel Industrial Stormwater General Permit (Ecology 1994a). Ecology issued permit number WAG503082 to J.A. Jack in November 1994. The permit allowed for discharge of stormwater only; discharging of process water was not allowed (Ecology 1994c). The permit was updated in 2003 to allow for the discharge of stormwater and process water to groundwater, following the installation of the discharge drain field on the J.A. Jack property (Ecology 2003c).

From January 2001 to January 2002, the turbidity of the stormwater (sampled quarterly) discharged to the LDW from J.A. Jack violated the NPDES permit discharge limits. In February 2001, the pH of stormwater also violated the permit limits (Ecology 2002c). In February, March, and July 2002, the Puget Soundkeeper's Alliance notified J.A. Jack of its intent to file a citizen suit against the company for violations of the Clean Water Act (Smith & Lowney PLLC 2002).

Ecology performed a Water Compliance Inspection at the facility in May 2002. Ecology expressed concern about the proximity of stockpiled limestone to the shoreline. The inspector also observed truck wash water being discharged to the storm drain, which was in violation of the facility's NPDES permit (Ecology 2002a).

Ecology performed a Stormwater Compliance Inspection at the facility in November 2007. The Ecology inspector observed that stormwater from the southern property boundary appeared to flow to the SD system at St. Gobain and indicated that monitoring would be required for the discharge. The inspector indicated that the area beneath the riverside conveyor belt needed to be re-graded and noted that the current condition of the bank was unlikely to prevent turbid discharges to the LDW during a storm event. Additionally, the inspector indicated that better BMPs and housekeeping were needed to address the accumulation of fines around parked trailers near the fire hydrant at the southeast corner of the facility, improved secondary containment was needed for a shipping container used to store petroleum products, and an updated facility plan was needed. The updated facility plan required better details of the locations and types of valves

associated with the stormwater system and possible drainage patterns to the St. Gobain property (Ecology 2007c).

In June 2008, Ecology sent J.A. Jack a warning letter for failure to submit discharge monitoring reports for February and March 2007 (Ecology 2008b).

SPU inspected J.A. Jack in January 2009. SPU indicated that there are three catch basins on the property and that these catch basins are cleaned on an annual basis. Outdoor housekeeping practices needed improvements, including proper storage of the limestone piles. Limestone was spilling into the LDW. SPU found that the spill response procedures were in need of improvement. The SPU inspector's notes include the following passage "Pinch Pt. dug out after each barge/weekly" (SPU 2009a). The Pinch Point area is just north of the barge-to-land conveyor belt (Flint 2010). SPU directed J.A. Jack to complete and post a spill plan, place spill containment and cleanup materials in high risk areas such as the fueling area, contain all materials stored on the property, and to recycle fluorescent tubes. With regard to containing the materials stored on the property, SPU directed J.A. Jack to ensure that piles of limestone do not exceed the height of the barriers that are placed to contain the piles and to move the limestone pile at the northwest corner of the property away from the water's edge or increase the height of the barrier to prevent the limestone from entering the LDW (SPU 2009b).

SPU reinspected the facility in April 2009. J.A. Jack completed the corrective actions with regard to the spill materials. The SWPPP required updates to include the limestone stockpiles. The height of the barriers around the limestone piles had been increased; however, the height of the piles continued to exceed the height of the barriers. The Pinch Point "re-grade" is mentioned again, indicating that Ecology approved the re-grade of the area. Uncontrolled discharges had occurred in the Pinch Point area. The SPU inspector indicated that Ecology blocks were situated in the area, apparently to allow for discharge. J.A. Jack's representative indicated that the Pinch Point area was a lake prior to re-grading the area (SPU 2009c).

EPA has sent a CERCLA Section 104(e) Request for Information letter to J.A. Jack.

J.A. Jack holds PSCAA permit number 11124 (J.A. Jack 2003a).

4.4.4 Environmental Investigations and Cleanups

Infiltration Feasibility Evaluation (2002)

An evaluation was performed in 2002 to determine the rate of stormwater infiltration to the subsurface at the J.A. Jack facility. A test pit (EP-1 on Figure 9) was excavated to a maximum depth of 12 feet below ground surface (bgs) near the northwest corner of the warehouse. Testing results indicated a long-term design infiltration rate of 2 inches per hour (Associated Earth Sciences 2002). No environmental samples were collected for chemical analysis.

4.4.5 Potential for Sediment Recontamination

Chemical concentrations[9] exceed the SQS in sediments near J.A. Jack (Figure 3, Tables 2 and 3). The potential for sediment contamination associated with this property is summarized below by transport pathway.

Stormwater

Stormwater from J.A. Jack is discharged to the onsite stormwater system, which discharges to groundwater. In the event of a system malfunction or storm event that exceeds the capacity of the system, stormwater is directed to SD lines on the St. Gobain property and then discharged to the LDW via Outfall 2007. In November 2007, Ecology observed that stormwater at the southern edge of the property appeared to flow to the SD catch basins on the St. Gobain property instead of to the onsite stormwater system. Contaminants in stormwater, if any, could therefore represent a source of sediment recontamination.

Surface Runoff

The property is paved, has a stormwater collection system, and has a lipped edge to contain surface runoff. In November 2007, Ecology indicated that the area adjacent to the LDW beneath the barge-to-land conveyer system needed to be re-graded to prevent surface runoff from reaching the LDW. Therefore, due to the property's proximity to the LDW, contaminants (if any) suspended in surface runoff have the potential to reach sediments associated with the KC Lease Parcels source control area.

Spills/Direct Discharge

Operations at J.A. Jack include offloading limestone from barges. J.A. Jack has previously dredged the barge offloading area to recover limestone spilled to the LDW during offloading operations. During two inspections in 2009, SPU and Ecology observed limestone spilling into the LDW from stockpiles that were not adequately contained. Although spills to the LDW have occurred, limestone is not a sediment COC. The potential for sediment recontamination via this pathway is very low. However, spills of limestone can potentially harm the river environment.

Soil and Groundwater

There is no information available to determine if soil or groundwater contamination is present at this property. However, stormwater and wash water that is discharged to the infiltration gallery may have the potential to contaminate groundwater. If sediment COCs are present in the groundwater, the groundwater may transport the sediment COCs to the LDW. The potential for sediment recontamination via this pathway is unknown.

[9] Sediment COCs in the vicinity of the J.A. Jack include mercury, BEHP, PAHs, and PCBs (Figure 3).

Bank Erosion/Leaching

In November 2007, Ecology noted that the area adjacent to the LDW and the barge-to-land conveyor system needed to be re-graded to prevent turbid discharges to the LDW. In April 2009, SPU indicated that the Pinch Point area had been re-graded. It appears that turbid discharges to the LDW continue to occur (SPU 2009c).

Little information was available on the construction of the banks in this area and the potential for sediment recontamination via this pathway. Contaminants in soils, if any, along the banks of the LDW could be released directly to sediments via erosion.

4.4.6 Data Gaps

Information needed to assess the potential for sediment recontamination associated with current or historical operations at the J.A. Jack property is listed below.

Stormwater Discharge and Surface Runoff/Spills

- A follow-up business inspection of J.A. Jack is needed to verify compliance with corrective actions identified by Ecology in 2007 and SPU in 2009, applicable regulations, and BMPs to prevent the release of contaminants to the LDW.
- The onsite stormwater collection system needs to be evaluated to determine its efficiency since Ecology inspectors observed stormwater flowing to the catch basins on the St. Gobain property.

Groundwater Discharge

- Information is needed regarding the groundwater quality in the infiltration gallery in order to determine if sediment COCs are present in groundwater and if these COCs may be transported to the LDW.

Surface Runoff and Bank Erosion/Leaching

- Additional information is needed to determine if J.A. Jack has re-graded the area adjacent to the LDW and beneath the barge-to-land conveyer system.
- Additional information is needed to determine if the discharges from the Pinch Point area are permissible and if these discharges are a potential source of sediment recontamination.

5.0 Summary of Data Gaps

Data gaps have been identified for outfalls, adjacent properties, and facilities within the S Brandon Street CSO basin in Sections 3.0 and 4.0. These data gaps are summarized by facility and pathway on Table 6. The data gaps are listed below by potential sediment recontamination pathway.

5.1 Stormwater and Combined Sewer Discharge

5.1.1 Outfalls

- Data on contaminant concentrations in SD solids within the Cadman and Lehigh Northwest and J.A. Jack SD systems are needed to evaluate whether contaminants are being transported to LDW sediments via Outfalls 2244 and 2007.
- Data on contaminant concentrations in CSO discharges are needed to evaluate whether the S Brandon Street CSO is a significant source of contaminants to LDW sediments.
- Additional information is needed to determine if undocumented and unregulated industrial operations are occurring within the S Brandon Street CSO basin that may be an ongoing source of sediment recontamination.

5.1.2 S Brandon Street CSO Facilities

Facility inspections, similar to those currently performed by SPU, KCIW, and Ecology, are needed to collect the following types of information:

- Information regarding any ongoing industrial activities is needed to verify that these facilities are in compliance with all applicable regulations and BMPs.
- Information on how and where any hazardous materials, chemicals, or hazardous wastes are stored or used at these facilities is needed to evaluate the potential for spills to commingle with wastewater and stormwater.
- Facility plans showing the locations of floor drains, catch basins, sewer connections, and storm drains (if any) are needed to evaluate the potential for contaminants suspended in wastewater and stormwater (if any) to be transported to the LDW via combined sewer discharges.
- Information regarding any containment systems at these properties is needed to evaluate the adequacy of the systems and determine the potential for spills to commingle with wastewater and stormwater.

Information regarding two LUST facilities, Bob's Texaco Service and Chevron 9-0636, needs to be evaluated to determine the potential for sediment recontamination, if any, that may be associated with these facilities.

5.1.3 Manson Construction Company

- A facility inspection is needed to determine if stormwater is discharged to the sanitary sewer or to the LDW and to determine if the catch basin shown on DPD files and observed by King County personnel is connected to the SD system at the Cadman facility. A follow-up inspection is needed to determine if corrective measures have been implemented to ensure operations at Manson Construction are in compliance with applicable regulations and BMPs to prevent the release of contaminants to the LDW.

5.1.4 Cadman and Lehigh Northwest

- A follow-up business inspection of Cadman and Lehigh Northwest is needed to verify compliance with Ecology's recommendations, applicable regulations, and BMPs to prevent the release of contaminants to the LDW.
- A review of the updated SWPPP, when completed, is needed to ensure compliance with Ecology's requirements.

5.1.5 United Western Supply

- A business inspection of United Western Supply and the buildings on the southern portion of the property is needed to verify compliance with applicable regulations and BMPs to prevent the release of contaminants to the LDW.
    - Facility plans showing the locations of all catch basins and storm drains (if any) are needed to evaluate the potential for contaminant transport to the LDW via surface runoff.
    - Floor drains and SD lines on the property (if any) should be located and mapped.
    - Information regarding how any hazardous materials or chemicals are stored and used at the facility is needed to evaluate the potential for spills to reach sediments associated with the KC Lease Parcels source control area.
    - Information on any containment system(s) present at the site is needed to evaluate the potential for spills to reach sediments associated with the KC Lease Parcels source control area.
- A review of the 1997 environmental assessment, prepared by Boateng, is needed to identify potential pollutant sources associated with United Western Supply.

5.1.6 J.A. Jack & Sons

- A follow-up business inspection of J.A. Jack is needed to verify compliance with corrective actions identified by Ecology in 2007 and SPU in 2009, applicable regulations, and BMPs to prevent the potential release of contaminants to the LDW.
- The onsite stormwater collection system needs to be evaluated to determine its efficiency since Ecology inspectors observed stormwater flowing to the catch basins on the St. Gobain property.

5.2 Surface Runoff/Spills

5.2.1 Manson Construction Company

- A facility plan showing the locations of all catch basins and storm drains (if any), as well as an evaluation of the slope of impervious surfaces and any associated surface water collection and/or discharge points, is needed to evaluate the potential for contaminant transport to the LDW via surface runoff.

5.3 Groundwater Discharge

5.3.1 Manson Construction Company

- No laboratory data from site assessment(s) and remediation at the Manson Construction parcel were found in the files reviewed by SAIC. Additional information is needed to evaluate if contaminant concentrations in soil and groundwater beneath this facility have the potential to re-contaminate sediments associated with the KC Lease Parcels source control area.

5.3.2 J.A. Jack & Sons

- Information is needed regarding the groundwater quality in the infiltration gallery in order to determine if sediment COCs are present in groundwater and if these COCs may be transported to the LDW.

5.4 Bank Erosion/Leaching

5.4.1 Manson Construction Company, Cadman and Lehigh Northwest, and United Western Supply

- Additional information on the construction of the banks in this area is needed to evaluate the potential for sediment recontamination via this pathway.

5.4.2 J.A. Jack & Sons

- Additional information is needed to determine if J.A. Jack has re-graded the area adjacent to the LDW and beneath the barge-to-land conveyer system.
- Additional information is needed to determine if the discharges from the Pinch Point area are permissible and if these discharges are a potential source of sediment recontamination.

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