— CITY OF PORTLAND
ENVIRONMENTAL SERVICES
1120 SW Fifth Avenue, Room 1000, Portland, Oregon 97204-1912 ▪ Sam Adams, Commissioner ▪ Dean Marriott, Director

TECHNICAL MEMORANDUM

Albina Riverlots: City Basin Information and Source Investigation Approach

TO:	Karen Tarnow, Oregon Department of Environmental Quality (DEQ)
FROM:	Dawn Sanders, City of Portland, Bureau of Environmental Services (BES) DS Linda Scheffler, BES LS
COPIES:	Keith Johnson, DEQ Kristine Koch, U.S. Environmental Protection Agency (EPA) Julia Fowler, P.E., GSI Water Solutions, Inc.
DATE:	December 18, 2008
SUBJECT:	**Portland Harbor Source Control Investigation**

Introduction

Elevated sediment, water, and tissue concentrations of PCBs and other contaminants have been detected on the east bank of the Willamette River between river miles (RMs) 11 and 11.6 (called the Albina Riverlots[1] area in this memorandum). DEQ and the City have been collaborating on source control planning activities and the City agreed to provide information on City conveyance systems located in this area, as described in DEQ's August 13, 2008 letter to the City. In an effort to compile background information and finalize sampling plans, this memorandum addresses the first two activities described in the letter and the others will be addressed in subsequent submittals. These activities are consistent with the City's ongoing source control program described in the August 13, 2003, Intergovernmental Agreement between DEQ and the City.

This memorandum summarizes the available sediment data adjacent to the Albina Riverlots shoreline, describes the City basins and potential sources within each basin, and identifies next steps to prioritize outfall basins for future source tracing activities.

Background

The Lower Willamette Group (LWG) prepared a Site Summary for this area (*Portland Harbor RI/FS, Compilation of Information for Sources between River Miles 11 and 11.6, East Bank of Portland Harbor*, Nov. 2007) to identify potential contaminant pathways and sources. This report was referenced during compilation of information for the area.

[1] Albina River Lots is the legal description of property tax lots on the eastshore of the river between RMs 11 and 11.4

There are numerous potential pathways in the Albina Riverlots area, including bank erosion, overwater activities, stormwater, and groundwater. Nearly the entire shoreline in this reach was filled before the early 1960s and is currently composed of riprap and sea wall revetments. The source of fill material is unknown. Sparse vegetation is present, primarily where the revetments are degraded and the underlying soil (fill material) is exposed.

Cargill and Glacier NW operate docks for loading and offloading of ocean-going ships between RMs 11.3 and 11.5. This frequent and large ship traffic likely resuspends local sediment. Discharge of bilge or ballast water from overwater activities also may represent a contaminant pathway. Little groundwater information is available for this area to understand if this is a significant potential pathway.

There are twelve private outfalls, one State Highway outfall (WR-306), and three City outfalls (OFs 43, 44, and 44A) in the Albina Riverlots area. City Outfall 45 is located just downstream of RM 11. All four City outfalls are addressed in this memorandum.

Sediment Data

Available sediment data adjacent to the Albina Riverlots area has been compiled in Table 1 and the sample locations are shown in Figure 1. The sediment data are a mix of surface, subsurface, sediment trap, and dredge core composite samples. The data are discussed here for the limited purpose of assisting with outfall basin prioritization. Adjacent facilities and structures are referenced below as landmarks, not as determinations of upland sources. The sediment samples adjacent to the Cargill site are all core composites, apparently collected to support dredging plans whereas downstream of this site, samples are a mix of surface, subsurface, and sediment traps. Although the area adjacent to the Cargill site has been dredged since the samples were collected, evaluating these data in the context of downstream samples can help in understanding contaminant patterns and potential sources.

The LWG sampled media other than bedded river sediment and found elevated levels of PCBs. These media included in-river sediment traps, surface water, and fish and invertebrate tissue. These results indicate that an active source(s) of PCBs may be present in this area (e.g., riverbank erosion, bedded sediment erosion, stormwater discharge, overwater activities, and/or upriver releases).

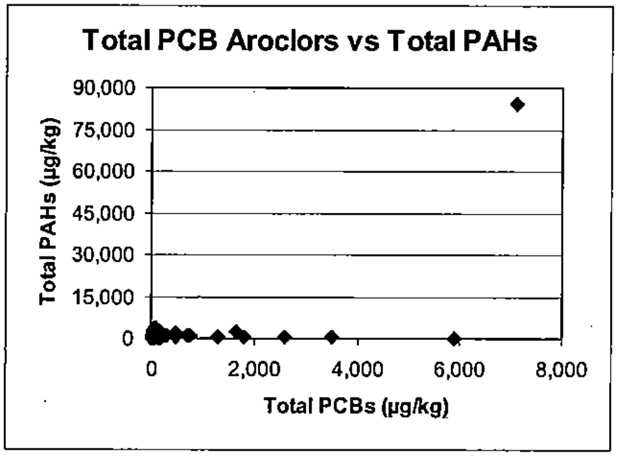
Based on a review of the existing sediment data, polychlorinated byphenyls (PCBs) significantly exceed Portland Harbor screening levels. There are exceedances of other contaminants, such as polycyclic aromatic hydrocarbons (PAHs) and DDTs (and its breakdown products, referred to as DDXs). This discussion focuses on the pattern of PCBs and what the spatial distribution might suggest as far as potential source areas. Since PCB aroclors are analyzed at more locations than PCB congeners, aroclor patterns are discussed first.

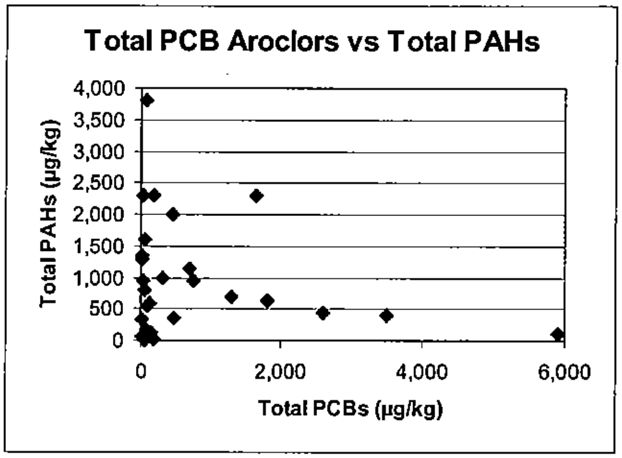
The highest total PCB aroclor concentration detected (7,100 µg/kg) was in a core composite sample (IS-C1) upstream of the Cargill dock and just offshore of outfall WR-343, although other samples adjacent to this site between RMs 11.4 to 11.5 were lower (25 - 710 µg/kg). This high aroclor sample was collected at the upstream edge of the area at about RM 11.5; the next upstream east shore sediment samples are above RM 12.2 (Total aroclors = 134-171 µg/kg and Total congeners = 608-912 µg/kg). Therefore, the presence or concentrations of PCBs between RM 11.5 and RM 12.1 is unknown.

The next highest aroclor concentration was 5,900 µg/kg found in a surface sample (UG02) off the Glacier NW dock at RM 11.3. Concentrations between this sample location and the upstream Cargill site (between RMs 11.3 to 11.4) range from 55 to 3,500 µg/kg. Downstream of the UGO2 sample PCB concentrations ranged from 19 to 480 µg/kg. The lower downstream concentrations may represent migration of sediments from the area between RM 11.3 to RM 11.5, or possibly from an upstream source.

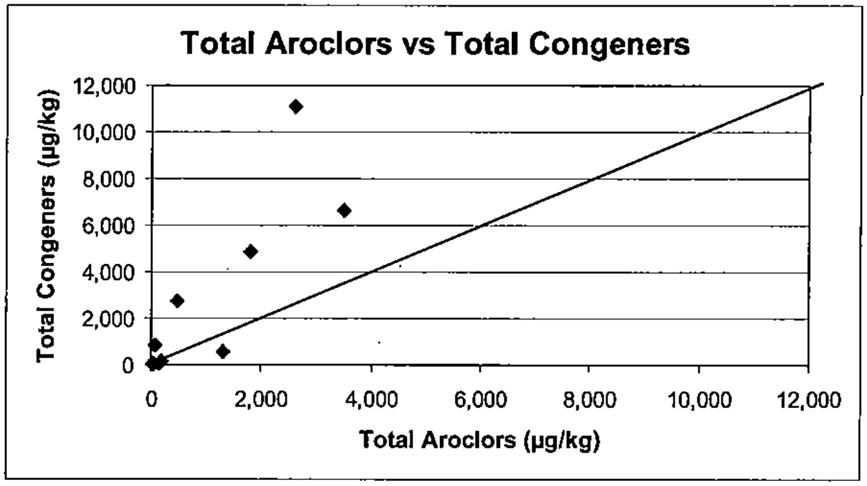
The highest concentrations of PCBs are between RMs 11.3 and 11.5. The heterogeneous spatial distribution does not appear to point to a single source. The resuspension of sediment due to boat traffic may also be confounding any spatial pattern. Dredging could also affect spatial patterns, although dredging records have not been evaluated to determine potential impacts. Below RM 11.3, PCB concentrations tend to taper off.

PAHs are also elevated in a number of sediment samples adjacent to the Cargill site although only one sample was significantly higher than Portland Harbor screening levels. Since PCBs are often associated with oils, concentrations of total PAHs and total aroclors were graphed to evaluate whether the high PCB concentrations are associated with samples that have higher PAHs. The left graph below shows that the highest PCB concentration does appear to be associated with high PAHs but the right graph (same data set with the high PCB excluded) shows that most other samples don't show a correlation between PAHs and PCBs.





The PCB congener data do not reflect the exact same pattern exhibited by the aroclor (i.e, the highest congener samples were not the highest aroclor samples). A graph of the total aroclor vs congener concentrations, for all samples that had data for both, is shown below. This graph shows that at least half of the congener totals were estimated as being much higher than aroclor data. Because congeners were analyzed infrequently and do not appear to reflect the same relative concentration differences between stations, it is difficult to ascertain any spatial patterns.



Various DDX compounds were also elevated at a number of sample locations between RMs 11.2 - 11.3; concentration ranged between 0.3 to 428 μg/kg Total DDX. There are some limitations with the data set that potentially mask spatial patterns. Detection limits were elevated in several samples. Also, samples upstream of RM11.4 did not analyze for the 2-2′ isomers, which was the predominant isomer in some of the higher downstream concentrations.

Based on the available sediment data, sources of PCBs will be the primary focus of source identification in City outfall basins addressed below.

City Basin Physical Descriptions

This section describes areas discharging to the outfalls, including uncertainties related to basin delineation. It also describes any future changes to the basins as a result of the 2011 Eastside CSO tunnel. Figure 2 shows the storm basins associated with each City outfall and the current zoning and major transportation land uses.

OF43

OF43 is a 56-inch CSO outfall. The separated stormwater basin that drains to this outfall is approximately 59 acres and is 100% industrially zoned, most of which is currently zoned light industrial. The delineation of this stormwater basin is uncertain because there was insufficient information to determine how or if the Public School Headquarters located at 401 N Dixon St. (3 tax lots) was connected to the City conveyance system. These tax lots have been included in the basin delineation until further information is available.

The combined basin (not shown on Figure 2) primarily drains residential properties east of the the separated storm basin. The CSO basin has been partially separated by rerouting street inlets to stormwater infiltration sumps and, where possible, disconnecting and rerouting roof downspouts to onsite stormwater disposal systems (BES 1999).

In 2011, the CSO basin and the storm lines draining to the main trunk line on N Wheeler will be diverted to the eastside tunnel. Stormwater discharges from about 26 acres closest to the river will continue to discharge through the outfall. This outfall will continue to be a CSO diversion point during extreme wet weather events.

OF44

OF44 is a 12-inch storm-only outfall that drains an approximate 17-acre area that is all zoned as industrial. Additional information is needed to further refine the basin delineation; three Pacific Power & Light substation properties have been included in the basin but it is uncertain how much of these tax lots drain to the City system. Site investigation conducted under DEQ's Cleanup program is expected to provide additional information to the City to refine this basin delineation.

No change to the basin is planned as part of the 2011 Eastside CSO tunnel.

OF44A

OF44A is a 72-inch CSO outfall with 111 acres of separated stormwater. This outfall was built in 1974 and redirected some flows that formerly discharged to OF45. The lower portion (west of I-5) of Basin 44A is approximately 35 acres and is zoned light industrial and employment. The upper half of the storm basin (east of I-5) is primarily residential (institutional and high-density), with some open space, employment and commercial land uses. This outfall also has diversions of combined flow from primarily single-family residential use, along with a lesser amount of commercial land use (zoned as employment) concentrated along major arterials such as MLK Boulevard.

In 2011, all storm and CSO areas draining to OF 44A will be diverted to the eastside tunnel and no CSO diversions will occur through OF 44A.

OF45

OF45 is a 48-inch stormwater outfall draining an approximate 10-acre basin that is primarily zoned as heavy industrial, with some light industrial zoning. The delineation of this basin is uncertain because the drainage of the UPRR properties are unknown; UPRR recently submitted an Remedial Investigation report for their site but did not address the properties currently assumed to drain to OF45. About 3 acres of UPRR are currently estimated as draining to the outfall. Additionally, the basin acreage includes properties under the ODOT I-405/Fremont Bridge, even though the bridge would intercept stormwater and convey it towards an ODOT outfall (WR-306).

No change to the basin is planned as part of the 2011 Eastside CSO tunnel.

Upland Sources

The LWG Site Summary for this area (LWG, Nov 2007) includes information about potential contaminant sources which is summarized in this document. Other ECSI sites or potential PCB sources not included in the Summary are described in more detail below, when available. Figure 3 shows the locations of the sites described below.

Shoreline Facilities

Potential current and historical PCB sources identified in the LWG Site Summary include:

- Albina Engine and Machine Works: Ship construction and repair are likely historical sources of PCBs in the river, but specific sources or pathways for in-water impacts are obscured due to significant changes in land configuration and land use since the shipbuilding era. The shipyard operated from 1904-1980s. Current shoreline facilities that were part of the historic shipyard include Glacier Northwest and Ross Island Sand & Gravel. The downstream portion of CLD Pacific Grain (aka Cargill Inc) was also occupied by the shipyard.

- CLD Pacific Grain: Grain elevator and terminal operated by various companies since the early 1900s. Site includes a maintenance shop, various onsite hydraulic equipment, and small high voltage substations, all of which could be PCB sources.

OF43

Potential current and historical PCBs sources identified in the LWG Site Summary include:

- Westinghouse: Electrical transformer repair with PCBs in subsurface soils and building interior. Facility operated from 1943 to 1978. The former Westinghouse building was demolished and the site was remediated in 2007. The site is currently used by the City Water Bureau for material storage and parking.
- Tucker Building (ECSI #3036): Various electrical operations have operated at this property, including Northwest Electric Company, Pacific Power & Light, and Pacific Gas & Electric. The site was remediated and received an NFA from DEQ in 2004. The site has been redeveloped as a vehicle ramp to provide access to and from North Interstate Avenue.

Other ECSI sites in the separated storm basin that are not addressed in the Site Summary include:

- Master Chemical Inc (ECSI #1302): According to DEQ website, "The only hazardous substances that have been used at Master Chemical are sodium hydroxide (caustic), sodium hypochlorite solution (bleach), and chlorine gas (which dissipates)." DEQ site files have not been reviewed determine if PCBs were evaluated at the site.

OF44

No site PCB data are available for any sites in Basin 44. The LWG Site Summary identified several current and historical Pacific Power and Light (PP&L) sites as potential sources:

- Block 69 (3-4, 8-9): The same two buildings appear to occupy this site since 1936. According to Polk directories, PP&L operated the Albina Station at 901 N. Loring (Block 69, Lots 3-4) between 1960 and 1970 and the building at 2170 N. Lewis (Block 69, Lots 8-9) was used as a garage by PP&L between 1950 and 1980.
- Block 71: This property has been occupied by transformers since the 1960s. Albina Engine and Machine Works expanded their operations to include this lot for an unspecified amount of time around 1919. This tax lot is currently owned by PP&L.
- Blocks 78 and 79: The earliest information for this block indicates PP&L used this site for their construction department. New buildings were constructed in the 1960s and in 1971.
- Block 80: The earliest information for this block indicates PP&L occupied the site since approximately 1950. The construction department was located here with large warehouse space. Structures were demolished in the late 1960s/early 1970s and a large warehouse that occupies the entire block was built in its place.
- Blocks 81 and 82: Albina Engine and Machine Works expanded their operations to include Blocks 81 and 82 around 1919. Blocks 81 and 82 have been used as a substation since the early

1960s. New buildings were built at north and east ends of Block 81 by 1975. Buildings present on Block 82 in the 1940s aerial photos were removed by the 1960s, but a new building was built along with transformers. A 1975 aerial photo shows a larger array of transformers with the same building in place. These tax lots are currently owned by PP&L.

ECSI sites in the basin that are not addressed in the LWG Site Summary include:

- Valvoline (ECSI # 3215): Historic uses of the site include a residential and livery/feed stable (1889 to 1910), a foundry (1918 to 1923), and Valvoline (1931 - 2001). The City purchased the property in 2002 originally for an on-ramp for N Interstate but the on-ramp was located at the former Tucker Building site instead. Site contaminants included petroleum hydrocarbons, PAHs, metals, and VOCs related to spills around bulk fuel tanks. Some site remediation was conducted by Valvoline but additional remediation was conducted by the City under a PPA with DEQ. DEQ issued an NFA determination for the site in 2003. The site is currently used for storage of for vehicle parking and seasonal storage of deicing solution.
- Vermiculite Northwest (ECSI # 2761): There is little information on this site. According to DEQ's ECSI website:

  "EPA Region 10 has added the site to CERCLIS as part of its nationwide investigation of former WR Grace facilities that handled asbestos-containing vermiculite. DEQ has not been involved in the investigation at this site, but will be tracking EPA's efforts to determine whether the past handling of asbestos-containing vermiculite presents any current threats to human health or the environment."

OF44A

No potential current and historical sources were identified in the LWG's Site Summary within this basin

There is one DEQ Cleanup site within the OF44A storm basin, in the lower industrial portion of the basin.

- Tarr, Inc. (ECSI # 1139): The following information for this site is on DEQ's website :

  "Extensive petroleum and solvent contamination found in soil during decommissioning of UST; 2800 tons of contaminated soil were removed to the St. Johns Landfill. A large volume of contaminated soil was left in place due to risk of damage to installed transfer piping that would have been undermined. The soil left in place, as well as other locations (floor and walls of excavations), were not adequately characterized for solvent contamination. Lab methods used were adequate only for screening of samples for solvents (12/31/92 KPD/SAS). In April 1991, there was an oil spill on a nearby gravel lot that Priestly leased from ODOT to park and store empty oil trucks and tanks. Soil samples contained up to 51 ppm TPH. (1/20/03 AC/SRP) Joined DEQ's Voluntary Cleanup Program and Tarr completed a Phase II investigation in December 2002.

  On-site and off-site soil vapors were identified in 2007. On-site systems were installed in site buildings in 2007. An off-site system of soil gas vapor probes has been installed and the system is [being] expanded in Summer 2008."

Although the upper portion of the basin is primarily residential, there is a Pacific Power & Light substation in this area, located on NE Rodney Ave, between NE Russell St. and NE Knott St. No drainage or other site information is known.

OF45

Potential current and historical PCBs sources identified in the LWG Site Summary include:

- Western Electric: A 1934 map showed the Western Electric Company storage yard encompassed about half of the city block and consisted of a garage, an office, and a shed. On 1924 and 1950 Sanborn maps, Western Electric appears to be part of the Albina Engine and Machine Works yard and possibly supported the operations there. No further historical information was found for this facility. This parcel has been used by Northwest Copper Works, a metal fabrication shop, since 1952 and has had a documented release of acid waste to the storm sewer and river in 1972.

Other ECSI sites in the basin that are not addressed in the LWG Site Summary include:

- UPRR Albina Yard site (ECSI No. 178): Soil and catch basin solids are elevated above JSCS screening levels at the UPRR Albina Yard for metals, PAHs, PCBs, and phthalates (CH2M Hill, Aug. 2008). A stormwater pathway evaluation has been conducted at the site but UPRR has not sampled discharges to the City's Outfall 45 system. Additional work by UPRR is needed to identify drainage to the Outfall 45 storm system from this site.

Inline solids PCB data have already been collected in this basin and reported to DEQ in *Outfall Basin 45 Inline Solids Sampling* (BES, June 2007). The solids data showed low-level total PCB aroclors (23-49 µg/kg) and it was concluded that inline solids in the basin do not appear to be a significant source to the river. The stormwater system was cleaned and stormwater grab samples were collected in winter 2008.

Prioritization Approach

Priorization of outfalls for future source investigation assists both the City and DEQ in allocating resources to areas with the highest potential contaminant loading. The City will conduct stormwater pathway screening to assist with source investigation prioritization and upon reviewing these results with DEQ, assign priorities.

Based on the current available information (sediment contaminant spatial distribution and potential sources within each basin), it appears tentatively that Outfalls 43 and 44 would be the highest priority for source identification, followed by Outfall 44A. The in-river sediment concentrations and inline solids at Outfall 45 indicate that the basin would likely be a lower priority. Data collected in fall 2008/Winter 2009 (see Next Steps below) will be used to reassess these preliminary priorities.

Next Steps

The City will conduct the following tasks to assist DEQ in identifying and controlling sources:

1. The City will undertake two phases of source investigation activities in Basins 43, 44, and 44A. During Phase 1, the City will collect and analyze stormwater grab samples during four storm events in accordance with the Portland Harbor Joint Source Control Strategy [(JSCS);

DEQ/EPA, 2005, as amended 2007]. Additionally, stormwater solids will be collected and analyzed from multiple locations to assist in prioritization. During Phase 2, the City will collect additional inline solids samples from specific areas identified from available site and conveyance system information. Inline solids and stormwater samples have already been collected and analyzed from Basin 45. The Sampling and Analysis Plan (SAP) for the Phase 1 portion of this proposed work is attached. An addendum to the SAP describing Phase 2 work will be prepared and submitted to DEQ by January 15, 2009. A source investigation summary report will be submitted in October 2009 incorporating all source investigation work completed.

2. To address the fourth activity described in DEQ's August 13, 2008 letter, various stormwater conveyance system investigations will be conducted as part of the City's source tracing work, including compilation of line cleaning and maintenance records, dye testing, and and storm line mapping corrections. As conveyance system information is compiled, the City will identify additional line video surveys or cleaning activities that may be needed to support source investigation objectives. The specifics of these investigations will be discussed with DEQ and concurrence will be sought prior to initiation. This information will be provided in relevant reports described in the attached SAP.

3. Additional information on the Tucker and Westinghouse sites, as outlined in DEQ's August 13, 2008 letter to the City, will be provided to DEQ in February 2009.

References

BES (Bureau of Environmental Services, City of Portland). July 1999. *Public Facilities Plan.* Version 1.1.

BES. June 2008. *Outfall Basin 45 Inline Solids Sampling*. TM 45-1.

CH2M Hill. Aug. 2008. *Supplemental Remedial Investigation/Source Control Measures Evaluation Report, Union Pacific Railroad Albina Yard*. Prepared for Union Pacific Railroad.

DEQ. 2008. DEQ Site Summary Full Report - Details for ECSI Site ID 1139, Tarr, Inc. DEQ Environmental Cleanup Site Information Database (ECSI), accessed October 2008. http://www.deq.state.or.us/lq/ECSI/ecsidetail.asp?seqnbr=1139

DEQ. 2008. DEQ Site Summary Full Report - Details for ECSI Site ID 3215, Valvoline. DEQ Environmental Cleanup Site Information Database (ECSI), accessed October 2008. http://www.deq.state.or.us/lq/ECSI/ecsidetail.asp?seqnbr=3215

DEQ/EPA. 2005. Portland Harbor Joint Source Control Strategy, Final, dated December 2005 (updated July 2007).

LWG (Lower Willamette Group). Nov 2007. *Portland Harbor RI/FS, Compilation of Information for Sources between River Miles 11 and 11.6, East Bank of Portland Harbor.*

Tables

Table 1 – *Sediment Sampling Locations in the Albina Riverlots Area*

Figures

Figure 1 – *Sediment Sampling Locations in the Albina Riverlots Area*

Figure 2 – *City Stormwater Basins, Land Use Zoning and Major Transportation in the Albina Riverlots Area*

Figure 3 –*Sites within City Stormwater Basins in the Albina Riverlots Area*

Attachments

Attachment A – *City Source Investigations for Basins 43, 44, and 44A Fall 2008/Winter 2009 Sampling and Analysis Plan*

TABLE

Table 1

Sediment Data Adjacent to the Albina Riverlots Area

Upriver to Downriver

Analyte	Units	T04	IS-C1	T03	T02	T01	C01020304	IS-C2	C779	C779	C779	G779	UG03	UC03	UC03
Sample		WLCCIF01T04T04	WLCT0I98ISC1IS C1	WLCCIF01T03T03	WLCCIF01T02T02	WLCCIF01T01T01	WLCCIF01020304 020304	WLCT0I98ISC2IS C2	LW3-C779-B	LW3-C779-C	LW3-C779-E	LW3-G779	LW3-UG03	LW3-UC03-B	LW3-UC03-C
Study		Cargill Irving Elevator Permit Applications	Sed Char Columbia/Willamette Chan Deep	Cargill Irving Elevator Permit Applications	Cargill Irving Elevator Permit Applications	Cargill Irving Elevator Permit Applications	Cargill Irving Elevator Permit Applications	Sed Char Columbia/Willamette Chan Deep	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment
Depth (cm)		0 - 60	0 - 91	0 - 106	0 - 109	0 - 54	0 - 109	91 - 152	30 - 97	97 - 154	212 - 293	0 - 23	0 - 24	30 - 120	120 - 242
River Mile		11.5	11.5	11.5	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.3	11.3	11.3
Sample Date		6/29/2001	9/15/1998	6/29/2001	6/29/2001	6/29/2001	6/29/2001	9/15/1998	1/9/2008	1/9/2008	1/9/2008	12/5/2007	1/31/2007	2/8/2007	2/8/2007
Analyte	*Units*														
Conventionals															
Ammonia	mg/kg	65	65 UJ	94	112	152	108	100 UJ	--	--	--	17.3	--	--	--
Specific Gravity	NA	--	--	--	--	--	--	--	2.04	1.94 T	2	1.87	1.71	1.75 T	1.58
Sulfide	mg/kg	2.9	58 J	2.1	3	0.9	2.3	2 J	--	--	--	4.3	--	--	--
Total organic carbon	percent	0.72	1.03	0.4	0.82	0.6	0.67	--	0.31	1.43	0.19	0.43	0.73	0.77	1.88
Total solids	percent	71.7	--	70.6	68.6	76.9	72	--	75	77	80.3	79.1	71.4	69.4 T	62.3
Total volatile solids	percent	3.52	--	3.1	3.96	2.68	3.03	--	--	--	--	--	--	--	--
Grainsize															
Medium gravel	percent	--	--	--	--	--	--	--	1.13	24.9	17.6	30.4	29	0.14	0.99
Fine gravel	percent	--	--	--	--	--	--	--	2.97	6.59	8.4	6.07	7.86	0.79	1.04
Very coarse sand	percent	--	--	--	--	--	--	--	4.68	3.97	5.77	6.47	3.49	1.5	0.77
Coarse sand	percent	--	--	--	--	--	--	--	10.4	6.64	10.5	13.2	7.6	6.57	1.24
Medium sand	percent	--	--	--	--	--	--	--	56	38.5	27.6	28.2	21.6	37.2	8.73
Fine sand	percent	--	--	--	--	--	--	--	23.2	15.7	17.7	11.5	18.3	29.1	11
Very fine sand	percent	--	--	--	--	--	--	--	1.19	0.84	2.65	1.81	5.06	12.1	11.3
Fines	percent	23.8 T	--	21.1 T	31 T	12.7 T	21.7 T	--	2.31 T	1.19 T	9.12 T	4.77 T	3.56 T	16.4 T	72.4 T
Coarse silt	percent	--	--	--	--	--	--	--	0.56	0.21	2.56	0.97	1.1	5.45	15
Medium silt	percent	--	--	--	--	--	--	--	0.55	0.21	2.26	1.34	0.64	3.2	16.3
Fine silt	percent	--	--	--	--	--	--	--	0.38	0.31	1.76	0.69	0.31	1.88	14.4
Very fine silt	percent	--	--	--	--	--	--	--	0.31	0.23	1.3	0.71	0.75	1.82	8.84
8-9 Phi clay	percent	--	--	--	--	--	--	--	0.09	0	0.35	0.49	0.28	1.47	5.99
>9 Phi clay	percent	--	--	--	--	--	--	--	0.42	0.23	0.89	0.57	0.48	2.6	11.9
Clay	percent	1	--	0	4.1	0	0	--	--	--	--	--	--	--	--
Silt	percent	22.8	--	21.1	26.9	12.7	21.7	--	--	--	--	--	--	--	--
Sand	percent	58.2	--	72.9	69	86.9	75.5	--	--	--	--	--	--	--	--
Gravel	percent	18	--	6	0	0.4	2.8	--	--	--	--	--	--	--	--
Metals															
Aluminum	mg/kg	--	--	--	--	--	--	--	12400	10000	11200 T	9460	14900	15600 T	26400
Antimony	mg/kg	0.15 U	0.19 UJ	0.08 U	0.09 U	0.12 U	0.11 U	0.26 UJ	0.17 J	0.14 J	0.095 JT	0.37 J	0.39 J	10.1 JT	0.29 J
Arsenic	mg/kg	2.7	1.9 J	2.2	3.1	2.1	2.3	2.1 J	1.16	1.25	1.38 T	1.11	3.25	4.64 T	6.29
Beryllium	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	mg/kg	0.24	0.26 J	0.26	0.32	0.26	0.21	0.26 J	0.047	0.071	0.0545 T	--	--	0.42 T	0.52
Chromium	mg/kg	20.5	19.1 J	16.8	21.8	21.5	20.2	47.8 J	10.8	10.4	12.7 T	0.093	0.23	98 JT	47 J
Chromium hexavalent	mg/kg	--	--	--	--	--	--	--	--	--	--	10	57.7	--	--
Copper	mg/kg	24.4	26.6 UJ	20.5	26.4	20.2	20.2	25.6 UJ	13.8	14	15.1 T	14.1	26.3	48.3 JT	42.1 J
Iron	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	mg/kg	35	29	15.1	14.4	15	15.7	367	2.6	2.21	2.41 T	4.12	27.4	66.7 JT	52.8 J
Manganese	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	mg/kg	0.04	0.07	0.03	0.05	0.03	0.04	0.08	0.024 J	0.024 J	0.074 J	0.019	0.059 J	0.0965 T	0.203
Nickel	mg/kg	19.7	20.1 J	20.2	22.8	22	19.9	25.5 J	14.5	15.5	16.8 T	14.7 J	27	53.7 JT	37.7 J
Selenium	mg/kg	--	--	--	--	--	--	--	--	--	--	--	0.06 U	0.04 JT	0.1 J
Silver	mg/kg	0.144	0.18 J	0.103	0.303	0.219	0.359	0.2 J	0.128	0.076	0.0505 T	0.12	0.085	0.492 T	0.797
Thallium	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	mg/kg	79.3	90.1 J	68.3	72.4	72.7	71.6	115 J	57.1	44.8	44.6 T	47.4	117	170 T	171
Butyltins															
Butyltin ion	ug/kg	1.7	--	0.43 U	1.3 J	1 J	1.3 J	--	--	--	--	--	--	--	--
Dibutyltin ion	ug/kg	6.9	--	0.94 J	6.3	12	7.6	--	--	--	--	--	--	--	--
Tributyltin ion	ug/kg	220	--	13	160	200	210	--	--	--	--	--	--	--	--
Tetrabutyltin	ug/kg	0.61 J	--	0.55 U	0.58 J	1.4	2.2	--	--	--	--	--	--	--	--
PCB Aroclors															
Aroclor 1016	ug/kg	3.4 U	10 U	3.4 U	3.5 U	3.1 U	3.4 U	10 U	1.3 U	1.3 U	1 U	12 U	320 U	13 U	2.8 U
Aroclor 1221	ug/kg	3.4 U	10 U	3.4 U	3.5 U	3.1 U	3.4 U	10 U	1.3 U	1.3 U	1 U	3 U	12 U	13 U	2.8 U
Aroclor 1232	ug/kg	3.4 U	10 U	3.4 U	3.5 U	3.1 U	3.4 U	10 U	1.3 U	1.3 U	1 U	15 U	170 U	13 U	2.8 U
Aroclor 1242	ug/kg	3.4 U	10 U	3.4 U	3.5 U	19 U	24	10 U	1.3 U	1.3 U	1 U	14 U	190 U	650 J	2.8 U
Aroclor 1248	ug/kg	3.4 U	10 U	3.4 U	3.5 U	21 U	3.4 U	10 U	1.3 U	1.3 U	1 U	1.3 U	160 U	600 U	2.8 U
Aroclor 1254	ug/kg	3.4 U	10 U	8.3 J	15 J	35	3.4 U	10 U	62 U	1.3 U	1 U	87	310 J	900 U	96
Aroclor 1260	ug/kg	130	7100	5.1 J	10 J	38	24	710	58 NJ	1.3 U	1 U	100 NJ	450	1000	82
Aroclor 1262	ug/kg	--	--	--	--	--	--	--	1.3 U	1.3 U	1 U	1.3 U	12 U	13 U	2.8 U
Aroclor 1268	ug/kg	--	--	--	--	--	--	--	1.3 U	1.3 U	1 U	1.3 U	12 U	13 U	2.8 U
Total Aroclors	ug/kg	130	7100	13.4	25	73	48	710	58	--	--	187	760	1650	178
PCB Congeners															
PCB001	ug/kg	--	--	--	--	--	--	--	0.00528	0.00498 U	0.00484 U	0.0102	--	--	--
PCB002	ug/kg	--	--	--	--	--	--	--	0.00507 U	0.00498 U	0.00484 U	0.00483 U	--	--	--
PCB003	ug/kg	--	--	--	--	--	--	--	0.00507 U	0.00498 U	0.00484 U	0.00636	--	--	--
PCB004 & 010	ug/kg	--	--	--	--	--	--	--	0.0101 U	0.00996 U	0.00967 U	0.0672	--	--	--
PCB005 & 008	ug/kg	--	--	--	--	--	--	--	0.0138	0.00996 U	0.00967 U	0.033	--	--	--
PCB006	ug/kg	--	--	--	--	--	--	--	0.0101 U	0.00996 U	0.00967 U	0.0169	--	--	--
PCB007 & 009	ug/kg	--	--	--	--	--	--	--	0.0101 U	0.00996 U	0.00967 U	0.00966 U	--	--	--
PCB011	ug/kg	--	--	--	--	--	--	--	0.0101 U	0.00996 U	0.00967 U	0.0135	--	--	--
PCB012 & 013	ug/kg	--	--	--	--	--	--	--	0.0101 U	0.00996 U	0.00967 U	0.00966 U	--	--	--
PCB014	ug/kg	--	--	--	--	--	--	--	0.0101 U	0.00996 U	0.00967 U	0.00966 U	--	--	--
PCB015	ug/kg	--	--	--	--	--	--	--	0.0101 U	0.00996 U	0.00967 U	0.0138	--	--	--
PCB016 & 032	ug/kg	--	--	--	--	--	--	--	0.189	0.00506	0.00484 U	0.689	--	--	--
PCB017	ug/kg	--	--	--	--	--	--	--	0.0778	0.00498 U	0.00484 U	0.293	--	--	--
PCB018	ug/kg	--	--	--	--	--	--	--	0.0674	0.00498 U	0.00484 U	0.367	--	--	--
PCB019	ug/kg	--	--	--	--	--	--	--	0.00916	0.00498 U	0.00484 U	0.201	--	--	--

Analyte	Units	UC03	ST007	ST007	ST007	ST007	GCA11E	G778	UG02	G777	UG01	UC01	G776	SD01	G516	G771	WR-PG-61
Sample		LW3-UC03-D	LW3-ST1007	LW3-ST-2007	LW3-ST3007	LW3-ST4-007	LW3-GCA11E-C00	LW3-G778	LW3-UG02	LW3-G777	LW3-UG01	LW3-UC01-B	LW3-G776	WLCAYH00SD01 SD01S	LW2-G516	LW3-G771	WLCDRD05PG06 161
Study		LWG Round 3 Sediment	LWG Round 3 Sediment Trap	LWG Round 3 Sediment Trap	LWG Round 3 Sediment Trap	LWG Round 3 Sediment Trap	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	UPRR Albina Yard XPA	LWG Round 2 Sediment	LWG Round 3 Sediment	2005 O&M Dredge Sed Char
Depth (cm)		242 - 308					0 - 24	0 - 22	0 - 23	0 - 21	0 - 19	30 - 93	0 - 22	0 - 20	0 - 25	0 - 23	0 - 30
River Mile		11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.2	11.2	11.2	11.2	11	11	10.9	10.8
Sample Date		2/8/2007	1/31/2007	4/30/2007	8/17/2007	11/13/2007	12/6/2007	12/5/2007	1/31/2007	12/5/2007	2/1/2007	2/7/2007	12/5/2007	8/9/2000	9/3/2004	12/6/2007	5/23/2005
Analyte	*Units*																
Conventionals																	
Ammonia	mg/kg	--	--	--	--	--	--	0.26 J	--	0.07 U	--	--	36.5 T	--	--	--	158
Specific Gravity	NA	1.6	1.3	1.31	--	1.28	--	1.87	1.83	2.06	1.65	1.55	1.73	--	1.55	1.52	--
Sulfide	mg/kg	--	--	--	--	--	--	0.5 U	--	0.5 U	--	--	2.4	--	--	--	1.8 J
Total organic carbon	percent	1.69	2.4	2.62	2.66	2.09	0.813 T	0.4	0.36	0.17	1.12	2.03	0.75	1.14	1.1	1.14	1.95
Total solids	percent	63.9	43.4	40.7	33	37.5	64 T	74.8	79.5	84.1	71.3 T	60.4 T	66.2	--	57.9	62	46.2
Total volatile solids	percent	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6.7
Grainsize																	
Medium gravel	percent	0	0.06 T	0	1.1	1.01	47.4 T	11	50.6	43.3	28	1.48	0.84	--	0.15	0.04	0
Fine gravel	percent	0.97	0.577 T	0.3	3.76	0.97	2.85 T	7.79	10.9	13.7	8.61	2.22	0.47	--	1.02	2.57	0.02
Very coarse sand	percent	1.03	0.467 T	0.63	1.17	1.32	1.36 T	6.46	6.8	6.13	7.17	1.9	1.12	--	0.91	2.35	0.12
Coarse sand	percent	0.97	0.753 T	1.48	1.83	4	4.54 T	13.9	11	14.2	10.9	2.29	4.8	--	1.49	3.95	1.48
Medium sand	percent	14	2.59 T	5.01	8.04	19.8	17.3 T	27.4	14	16.8	21.3	5.06	26.5	--	7.54	14.9	1.3
Fine sand	percent	9.51	10.2 T	8.29	12.8	24.3	15.6 T	20.8	4.58	5.92	15.2	16.4	35.3	--	29.8	23.6	26.2
Very fine sand	percent	11.2	17.7 T	8.94	8.97	11.2	4.75 T	6.6	1.22	1.09	4.34	21.9	12.8	--	34.2	19.1	22.7
Fines	percent	65.2 T	67.1 T	75.6 T	74.8 T	42.6 T	6.58 T	6.01 T	3.66 T	1.68 T	4.88 T	48.3 T	14 T	--	25.7 T	24.7 T	52 T
Coarse silt	percent	16.2	24.1 T	14.4	21.4	7.83	1.71 T	1.39	0.92	0.38	1.29	15.2	4.91	--	8.19	12.4	--
Medium silt	percent	18.7	18.5 T	26.1	19.1	12.3	1.54 T	1.33	0.79	0.29	0.93	11.4	3.25	--	5.09	3.99	--
Fine silt	percent	9.7	11.5 T	13.6	13.6	8.3	1.05 T	0.87	0.49	0.24	0.74	6.86	1.79	--	6.66	3.02	--
Very fine silt	percent	8.28	6.72 T	9.71	9.92	7.8	0.857 T	0.83	0.57	0.23	0.66	4.21	2.16	--	2.01	2.28	--
8-9 Phi clay	percent	4.59	3.17 T	5.17	5.54	3.13	0.977 T	0.66	0.31	0.16	0.69	3.97	0.69	--	1.51	1.27	--
>9 Phi clay	percent	7.69	3.14 T	6.58	5.19	3.23	0.45 T	0.93	0.58	0.38	0.57	6.64	1.19	--	2.26	1.76	--
Clay	percent	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5.03
Silt	percent	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	47
Sand	percent	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Gravel	percent	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum	mg/kg	29200	30600 T	38700 T	25700	24800	12800 T	8100	11800	5690	9020	24400	14200	--	25600	15700	26400
Antimony	mg/kg	0.18 J	0.135 JT	0.205 JT	0.19 J	0.31 J	0.635 JT	0.92 J	0.18 J	0.28 J	19.4 J	3.99 J	0.57 J	0.24	0.11 J	0.15 J	0.08 J
Arsenic	mg/kg	5.4	3.78 T	4.45 T	3.04	4.61	2.17 T	1.93	2.06	1.02	3.34 J	5.18	2.15	3.8	3.04 J	3.28	2.87
Beryllium	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	mg/kg	0.35	0.22 T	0.259 JT	0.389	0.47	--	--	--	--	--	0.52	--	0.42	--	--	--
Chromium	mg/kg	34 J	38.1 T	31.4 JT	34.3	38.5	0.17 T	0.163	0.08	0.075	0.17	54.7	0.205	0.2	0.203	0.195	0.231
Chromium hexavalent	mg/kg	--	0.11 J	0.1 UJ	0.2 UJ	0.16 UJ	27.6 T	27.3	29.5	10.9	72.2	--	20.2	23.2	51.8	20.6	24.4
Copper	mg/kg	38.2 J	41.8 T	40.9 T	37.8	51.9	29.6 T	19.5	21.1	11.6	2830	54 J	25.4	28.7	48.7	27.6	29.4 J
Iron	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	mg/kg	25.9 J	11.2 T	16.1 T	24.5	24	25.9 T	28.5	13.5	7.39	25.8	107	179	17.9	15.7	35.1	15.1
Manganese	mg/kg	--	--	--	--	--	467 JT	--	--	--	--	--	--	--	--	--	--
Mercury	mg/kg	0.176	0.079	0.044	0.068	0.102	0.0555 T	0.055	0.093 J	0.019	0.035	0.122	0.037	0.07	0.094	0.094 J	0.054
Nickel	mg/kg	30.4 J	22.3 JT	30.2 T	26.9	33	24 T	16.2 J	16.2	11.9 J	25.3	25.2	19.4 J	22.5	42.1	20.8	22 J
Selenium	mg/kg	0.12	0.19 T	0.2 T	0.13 U	0.16 U	0.19 JT	--	0.06 U	--	0.07 J	0.1	--	1.95 U	0.12	--	0.1 U
Silver	mg/kg	0.721	0.455 T	0.149 T	0.27	0.24	0.1 T	0.17	0.191	0.11	0.463 J	0.585	0.17	0.19	0.154	0.17	0.13
Thallium	mg/kg	--	--	--	--	--	0.057 T	--	--	--	--	--	--	0.06	--	--	--
Zinc	mg/kg	119	100 T	113 T	117	149	110 JT	78.9	66.1	44	103	212	90	90.6	105	103	73.7 J
Butyltins																	
Butyltin ion	ug/kg	--	1.2 J	2.2 J	1.7 J	0.079 U	0.56 J	--	--	--	--	--	--	2	--	--	--
Dibutyltin ion	ug/kg	--	1.4 U	4.4	2.4 J	2.7 J	1.5 J	--	--	--	--	--	--	3	--	--	--
Tributyltin ion	ug/kg	--	0.83 U	1.4 J	4.9	5.8	5.8	--	--	--	--	--	--	12	--	--	--
Tetrabutyltin	ug/kg	--	0.17 U	0.18 U	0.22 U	0.19 U	0.11 U	--	--	--	--	--	--	3 U	--	--	--
PCB Aroclors																	
Aroclor 1016	ug/kg	2.7 U	4 U	4.2 U	64 U	15 U	250 U	13 U	22 U	1.3 U	2.4 U	2.9 U	6.5 U	10 U	1.48 U	1.3 U	2.9 U
Aroclor 1221	ug/kg	2.7 U	4 U	4.2 U	64 U	15 U	13 U	13 U	22 U	1.3 U	2.4 U	2.9 U	6.5 U	20 U	12.4	1.3 U	2.9 U
Aroclor 1232	ug/kg	2.7 U	4 U	4.2 U	64 U	15 U	420 U	13 U	22 U	1.3 U	2.4 U	2.9 U	6.5 U	11 U	2.47 U	1.3 U	2.9 U
Aroclor 1242	ug/kg	2.7 U	4 U	9.5 J	64 U	15 U	390 U	13 U	22 U	1.3 U	2.4 U	2.9 U	6.5 U	10 U	1.5 U	6.4 NJ	2.9 U
Aroclor 1248	ug/kg	2.7 U	4 U	4.2 U	64 U	15 U	13 U	13 U	22 U	1.3 U	2.4 U	2.9 U	6.5 U	10 U	1.93 U	1.3 U	2.9 U
Aroclor 1254	ug/kg	29	97	20 J	64 U	15 U	13 U	13 U	1300 J	3.4	42	190	6.5 U	23	6.85	29	8 J
Aroclor 1260	ug/kg	26	55	41	1800	2600	3500	1300	4600 J	8.7	270 NJ	280 J	480	12	8.88	55	11
Aroclor 1262	ug/kg	2.7 U	4 U	4.2 U	64 U	15 U	13 U	13 U	22 U	1.3 U	2.4 U	2.9 U	6.5 U	--	1.38 U	1.3 U	2.9 U
Aroclor 1268	ug/kg	2.7 U	4 U	4.2 U	64 U	15 U	13 U	13 U	22 U	1.3 U	2.4 U	2.9 U	6.5 U	--	1.18 UJ	2.1 U	2.9 U
Total Aroclors	ug/kg	55	152	70.5	1800	2600	3500	1300	5900	12.1	312	470	480	35	28.13	90.4	19
PCB Congeners																	
PCB001	ug/kg	--	0.00848	0.042	0.173	0.657 JT	0.173	0.0343	--	0.00615	--	--	0.0555	--	0.0106	--	--
PCB002	ug/kg	--	0.00492	0.00669	0.0165	0.0279 JT	0.0692	0.00464 U	--	0.00486 U	--	--	0.0134 J	--	0.00341	--	--
PCB003	ug/kg	--	0.00427	0.0134	0.0527	0.102 JT	0.168	0.006	--	0.00529	--	--	0.0256 J	--	0.00577	--	--
PCB004 & 010	ug/kg	--	0.41	2.03	23.9	67.8 JT	4.63	0.677	--	0.0559	--	--	1.7	--	0.131	--	--
PCB005 & 008	ug/kg	--	0.0355	0.141	0.824	4.22 JT	0.399	0.0563	--	0.014	--	--	0.631	--	0.0689	--	--
PCB006	ug/kg	--	0.011	0.0344	0.268	1.33 JT	0.115	0.0182	--	0.00973 U	--	--	0.165	--	0.0269	--	--
PCB007 & 009	ug/kg	--	0.00542 UJ	0.0172	0.493	0.709 JT	0.0624	0.0097	--	0.00973 U	--	--	0.0655 J	--	0.0081	--	--
PCB011	ug/kg	--	0.0999	0.107	0.334	0.306 JT	0.0541	0.0288	--	0.0143	--	--	0.0775 J	--	0.0845	--	--
PCB012 & 013	ug/kg	--	0.00506 U	0.00947	0.046	0.141 JT	0.0592	0.00928 U	--	0.00973 U	--	--	0.0534 J	--	0.0068	--	--
PCB014	ug/kg	--	0.00506 U	0.005 U	0.0198 U	0.00988 UT	0.0493 U	0.00928 U	--	0.00973 U	--	--	0.0962 U	--	0.00496 U	--	--
PCB015	ug/kg	--	0.0274	0.0741	0.348	0.604 T	0.238	0.0863	--	0.0123	--	--	0.296	--	0.0616	--	--
PCB016 & 032	ug/kg	--	0.184	0.8	19.1	10.6 T	4.42	0.512	--	0.081	--	--	2.73	--	0.144	--	--
PCB017	ug/kg	--	0.326	1.56	20.6	28.8 T	10.1	1.02	--	0.068	--	--	1.46	--	0.423	--	--
PCB018	ug/kg	--	0.11	0.801	6.19	20.1 JT	1.14	0.345	--	0.0307	--	--	0.9	--	0.139	--	--
PCB019	ug/kg	--	1.17	5.63	25.6	195 JT	13.1	3.68	--	0.271	--	--	3.2	--	0.303	--	--

	Location	T04	IS-C1	T03	T02	T01	C01020304	IS-C2	C779	C779	C779	G779	UG03	UC03	UC03	UC03	ST007	ST007	ST007	ST007	GCA11E	G778	UG02	G777	UG01	UC01	G776	SD01	G516	G771	WR-PG-61
	Sample	WLCCIF01T04T04	WLCT0I98ISC1IS C1	WLCCIF01T03T03	WLCCIF01T02T02	WLCCIF01T01T01	WLCCIF01020304 020304	WLCT0I98ISC2IS C2	LW3-C779-B	LW3-C779-C	LW3-C779-E	LW3-G779	LW3-UG03	LW3-UC03-B	LW3-UC03-C	LW3-UC03-D	LW3-ST1007	LW3-ST-2007	LW3-ST3007	LW3-ST4-007	LW3-GCA11E-C00	LW3-G778	LW3-UG02	LW3-G777	LW3-UG01	LW3-UC01-B	LW3-G776	WLCAYH00SD01 SD01S	LW2-G516	LW3-G771	WLCDRD05PG06 161
	Study	Cargill Irving Elevator Permit Applications	Sed Char Columbia/Willamette Chan Deep	Cargill Irving Elevator Permit Applications	Cargill Irving Elevator Permit Applications	Cargill Irving Elevator Permit Applications	Cargill Irving Elevator Permit Applications	Sed Char Columbia/Willamette Chan Deep	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment Trap	LWG Round 3 Sediment Trap	LWG Round 3 Sediment Trap	LWG Round 3 Sediment Trap	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	UPRR Albina Yard XPA	LWG Round 2 Sediment	LWG Round 3 Sediment	2005 O&M Dredge Sed Char
	Depth (cm)	0 - 60	0 - 91	0 - 106	0 - 109	0 - 54	0 - 109	91 - 152	30 - 97	97 - 154	212 - 293	0 - 23	0 - 24	30 - 120	120 - 242	242 - 308					0 - 24	0 - 22	0 - 23	0 - 21	0 - 19	30 - 93	0 - 22	0 - 20	0 - 25	0 - 23	0 - 30
	River Mile	11.5	11.5	11.5	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.2	11.2	11.2	11.2	11	11	10.9	10.8
	Sample Date	6/29/2001	9/15/1998	6/29/2001	6/29/2001	6/29/2001	6/29/2001	9/15/1998	1/9/2008	1/9/2008	1/9/2008	12/5/2007	1/31/2007	2/8/2007	2/8/2007	2/8/2007	1/31/2007	4/30/2007	8/17/2007	11/13/2007	12/6/2007	12/5/2007	1/31/2007	12/5/2007	2/1/2007	2/7/2007	12/5/2007	8/9/2000	9/3/2004	12/6/2007	5/23/2005
PCB020 & 021 & 033	ug/kg	--	--	--	--	--	--	--	0.102	0.00498 U	0.00484 U	0.482	--	--	--	--	0.0601	0.283	4.74	13.2 T	1.42	0.238	--	0.0377	--	--	0.882	--	0.0762	--	--
PCB022	ug/kg	--	--	--	--	--	--	--	0.0312	0.00498 U	0.00484 U	0.0889	--	--	--	--	0.0436	0.107	1.91	2 T	1.86	0.117	--	0.0203	--	--	0.724	--	0.0532	--	--
PCB023	ug/kg	--	--	--	--	--	--	--	0.00507 U	0.00498 U	0.00484 U	0.00483 U	--	--	--	--	0.00253 U	0.0025 U	0.00991 U	0.0122 T	0.0247 U	0.00464 U	--	0.00486 U	--	--	0.0481 U	--	0.00248 U	--	--
PCB024 & 027	ug/kg	--	--	--	--	--	--	--	0.051	0.00498 U	0.00484 U	0.195	--	--	--	--	0.111	0.56	4.28	18.9 JT	2.31	0.459	--	0.0415	--	--	0.37	--	0.0611	--	--
PCB025	ug/kg	--	--	--	--	--	--	--	0.0894	0.00498 U	0.00484 U	0.183	--	--	--	--	0.0205	0.0859	1.15	1.14 T	0.352	0.0786	--	0.0224	--	--	0.675	--	0.0324	--	--
PCB026	ug/kg	--	--	--	--	--	--	--	0.196	0.00498 U	0.00484 U	0.641	--	--	--	--	0.036	0.148	3.36	4.1 JT	0.474	0.146	--	0.045	--	--	0.504	--	0.0409	--	--
PCB028	ug/kg	--	--	--	--	--	--	--	0.0365	0.00498 U	0.00484 U	0.118	--	--	--	--	0.111	0.329	1.91	2.45 T	2.7	0.295	--	0.0465	--	--	8.87	--	0.185	--	--
PCB029	ug/kg	--	--	--	--	--	--	--	0.00507 U	0.00498 U	0.00484 U	0.00483 U	--	--	--	--	0.00253 U	0.0025 U	0.00991 U	0.0335 JT	0.0247 U	0.00464 U	--	0.00486 U	--	--	0.0481 U	--	0.00248 U	--	--
PCB030	ug/kg	--	--	--	--	--	--	--	0.00507 U	0.00498 U	0.00484 U	0.00483 U	--	--	--	--	0.00253 U	0.00711	0.0309	0.171 JT	0.0556	0.00869	--	0.00486 U	--	--	0.0481 U	--	0.00248 U	--	--
PCB031	ug/kg	--	--	--	--	--	--	--	0.0744	0.00498 U	0.00484 U	0.221	--	--	--	--	0.0847	0.273	1.39	3.09 T	1.27	0.267	--	0.0353	--	--	2.56	--	0.134	--	--
PCB034	ug/kg	--	--	--	--	--	--	--	0.00507 U	0.00498 U	0.00484 U	0.00483 U	--	--	--	--	0.00406	0.0123	0.259	0.754 JT	0.227	0.0127	--	0.00486 U	--	--	0.0227 J	--	0.00248 U	--	--
PCB035	ug/kg	--	--	--	--	--	--	--	0.00507 U	0.00498 U	0.00484 U	0.00483 U	--	--	--	--	0.00253 U	0.00461	0.00991 U	0.0565 JT	0.0177 J	0.00464 U	--	0.00486 U	--	--	0.0266 J	--	0.00367	--	--
PCB036	ug/kg	--	--	--	--	--	--	--	0.00507 U	0.00498 U	0.00484 U	0.00483 U	--	--	--	--	0.00253 U	0.0025 U	0.00991 U	0.00494 UT	0.0247 U	0.00464 U	--	0.00486 U	--	--	0.0481 U	--	0.00248 U	--	--
PCB037	ug/kg	--	--	--	--	--	--	--	0.00507 U	0.00498 U	0.00484 U	0.00982	--	--	--	--	0.0216	0.0518	0.217	0.486 JT	0.142	0.0671	--	0.00824	--	--	0.307	--	0.0462	--	--
PCB038	ug/kg	--	--	--	--	--	--	--	0.0352	0.00498 U	0.00484 U	0.0783	--	--	--	--	0.0233	0.0832	0.931	1.5 T	1.69	0.108	--	0.0216	--	--	1.35	--	0.0125	--	--
PCB039	ug/kg	--	--	--	--	--	--	--	0.00507 U	0.00498 U	0.00484 U	0.00483 U	--	--	--	--	0.00253 U	0.0025 U	0.00991 U	0.00494 UT	0.0247 U	0.00464 U	--	0.00486 U	--	--	0.00968 J	--	0.00248 U	--	--
PCB040	ug/kg	--	--	--	--	--	--	--	0.00529	0.00498 U	0.00484 U	0.0172	--	--	--	--	0.0196	0.09	0.00991 U	1.22 JT	0.158	0.128	--	0.00735	--	--	0.113	--	0.0453	--	--
PCB041 & 064 & 071 & 072	ug/kg	--	--	--	--	--	--	--	0.975	0.0171	0.00484 U	2.08	--	--	--	--	0.307	1.45	8.53	17.2 T	9.79	2.15	--	0.254	--	--	10.9	--	0.306	--	--
PCB042 & 059	ug/kg	--	--	--	--	--	--	--	0.143	0.00498 U	0.00484 U	0.366	--	--	--	--	0.0706	0.356	1.15	2.93 T	1.39	0.384	--	0.0555	--	--	3.47	--	0.09	--	--
PCB043 & 049	ug/kg	--	--	--	--	--	--	--	5.49	0.0718	0.00484 U	14.6	--	--	--	--	1.15	4.58	47.7	40.9 T	26.6	6.57	--	1.1	--	--	34.4	--	0.51	--	--
PCB044	ug/kg	--	--	--	--	--	--	--	0.181	0.00498 U	0.00484 U	0.579	--	--	--	--	0.2	1.36	4.75	21.7 T	2.35	1.3	--	0.116	--	--	2.21	--	0.291	--	--
PCB045	ug/kg	--	--	--	--	--	--	--	0.00847	0.00498 U	0.00484 U	0.0145	--	--	--	--	0.0224	0.111	0.2	1.39 T	0.539	0.145	--	0.00817	--	--	0.128	--	0.0503	--	--
PCB046	ug/kg	--	--	--	--	--	--	--	0.0991	0.00498 U	0.00484 U	0.594	--	--	--	--	0.0541	0.275	2.84	6.69 JT	1.05	0.199	--	0.0376	--	--	0.943	--	0.0358	--	--
PCB047	ug/kg	--	--	--	--	--	--	--	1.27	0.0235	0.00484 U	3.06	--	--	--	--	1.33	4.54	28	25.5 T	49	4.69	--	0.888	--	--	54.6	--	0.75	--	--
PCB048 & 075	ug/kg	--	--	--	--	--	--	--	0.042	0.00498 U	0.00484 U	0.108	--	--	--	--	0.0566	0.377	0.00991 U	2.47 T	5.44	0.254	--	0.0226	--	--	2.11	--	0.0592	--	--
PCB050	ug/kg	--	--	--	--	--	--	--	0.0101	0.00498 U	0.00484 U	0.0293	--	--	--	--	0.0549	0.165	0.667	1.43 T	11.3	0.227	--	0.0197	--	--	0.196	--	0.157	--	--
PCB051	ug/kg	--	--	--	--	--	--	--	0.773	0.0123	0.00484 U	2.06	--	--	--	--	0.756	2.33	27.2	18.7 T	37.7	1.78	--	0.363	--	--	10.4	--	0.298	--	--
PCB052 & 069	ug/kg	--	--	--	--	--	--	--	6.68	0.0799	0.00484 U	22.2	--	--	--	--	1.31	8.12	53.8	131 T	21.9	9.57	--	1.42	--	--	8.67	--	0.664	--	--
PCB053	ug/kg	--	--	--	--	--	--	--	2.76	0.0304	0.00484 U	11.6	--	--	--	--	1.12	7.93	69.7	138 T	27.7	4.82	--	0.732	--	--	7.49	--	0.329	--	--
PCB054	ug/kg	--	--	--	--	--	--	--	0.0787	0.00498 U	0.00484 U	0.373	--	--	--	--	0.251	1.02	9.8	17.7 JT	11	1.03	--	0.117	--	--	1.04	--	0.125	--	--
PCB055	ug/kg	--	--	--	--	--	--	--	0.0713	0.00498 U	0.00484 U	0.108	--	--	--	--	0.0134	0.0683	0.341	0.772 T	1.39	0.124	--	0.0392	--	--	0.766	--	0.0104	--	--
PCB056 & 060	ug/kg	--	--	--	--	--	--	--	0.00977	0.00498 U	0.00484 U	0.0243	--	--	--	--	0.0583	0.201	0.699	1.81 T	0.619	0.365	--	0.0173	--	--	0.495	--	0.12	--	--
PCB057	ug/kg	--	--	--	--	--	--	--	0.0555	0.00498 U	0.00484 U	0.101	--	--	--	--	0.00712	0.0325	0.166	0.677 T	1.42	0.054	--	0.0163	--	--	0.102	--	0.00765	--	--
PCB058	ug/kg	--	--	--	--	--	--	--	0.00507 U	0.00498 U	0.00484 U	0.0255	--	--	--	--	0.00579	0.0025 U	0.00991 U	0.0523 JT	1.13	0.00464 U	--	0.00486 U	--	--	0.0239 J	--	0.00648	--	--
PCB061 & 070	ug/kg	--	--	--	--	--	--	--	0.208	0.00622	0.00484 U	0.6	--	--	--	--	0.18	0.969	3.57	10.6 T	3.76	1.12	--	0.0977	--	--	4.82	--	0.284	--	--
PCB062	ug/kg	--	--	--	--	--	--	--	0.00507 U	0.00498 U	0.00484 U	0.00483 U	--	--	--	--	0.00253 U	0.0025 U	0.00991 U	0.00494 UT	0.0247 U	0.00464 U	--	0.00486 U	--	--	0.0481 U	--	0.00248 U	--	--
PCB063	ug/kg	--	--	--	--	--	--	--	0.00507 U	0.00498 U	0.00484 U	0.00641	--	--	--	--	0.00705	0.0178	0.0818	0.176 T	0.771	0.029	--	0.00238 J	--	--	0.751	--	0.00848	--	--
PCB065	ug/kg	--	--	--	--	--	--	--	0.00507 U	0.00498 U	0.00484 U	0.00483 U	--	--	--	--	0.00253 U	0.0025 U	0.00991 U	0.00494 UT	0.0247 U	0.00464 U	--	0.00486 U	--	--	0.0481 U	--	0.00248 U	--	--
PCB066 & 076	ug/kg	--	--	--	--	--	--	--	0.121	0.00498 U	0.00484 U	0.214	--	--	--	--	0.197	0.554	1.43	6.93 T	2.5	0.766	--	0.0841	--	--	18.6	--	0.213	--	--
PCB067	ug/kg	--	--	--	--	--	--	--	0.00944	0.00498 U	0.00484 U	0.0189	--	--	--	--	0.00317	0.115	0.181	1.24 JT	0.0247 U	0.0208	--	0.00739	--	--	0.0331 J	--	0.00643	--	--
PCB068	ug/kg	--	--	--	--	--	--	--	0.0289	0.00498 U	0.00484 U	0.0845	--	--	--	--	0.015	0.045	0.246	0.298 T	1.47	0.141	--	0.0181	--	--	1.97	--	0.0078	--	--
PCB073	ug/kg	--	--	--	--	--	--	--	0.00507 U	0.00498 U	0.00484 U	0.00483 U	--	--	--	--	0.0505	0.184	0.00991 U	4.13 T	4.95	0.365	--	0.0238	--	--	0.69	--	0.0286	--	--
PCB074	ug/kg	--	--	--	--	--	--	--	0.013	0.00498 U	0.00484 U	0.0446	--	--	--	--	0.0505	0.265	0.914	2.39 T	2.26	0.284	--	0.017	--	--	0.927	--	0.0947	--	--
PCB077	ug/kg	--	--	--	--	--	--	--	0.00352 U	0.000839 U	0.000954 U	0.0094 UJ	--	--	--	--	0.0136	0.03	0.0751	0.161 T	0.0247 UJ	0.0527	--	0.00374 U	--	--	0.0687	--	0.0212	--	--
PCB078	ug/kg	--	--	--	--	--	--	--	0.00507 U	0.00498 U	0.00484 U	0.00728	--	--	--	--	0.00253 U	0.0105	0.0489	0.302 T	0.0247 U	0.00464 U	--	0.00486 U	--	--	0.0481 U	--	0.00248 U	--	--
PCB079	ug/kg	--	--	--	--	--	--	--	0.0634	0.00498 U	0.00484 U	0.0911	--	--	--	--	0.00812	0.0828	0.253	0.941 T	0.646	0.0897	--	0.0164	--	--	0.62	--	0.00702	--	--
PCB080	ug/kg	--	--	--	--	--	--	--	0.00507 U	0.00498 U	0.00484 U	0.00538	--	--	--	--	0.00253 U	0.0025 U	0.00991 U	0.00494 UT	0.0247 U	0.00464 U	--	0.00486 U	--	--	0.0481 U	--	0.00248 U	--	--
PCB081	ug/kg	--	--	--	--	--	--	--	0.00187 U	0.000779 U	0.00048 U	0.000585 J	--	--	--	--	0.00214 U	0.00511 UJ	0.0726	0.358 JT	0.0625	0.0106	--	0.00136 U	--	--	0.00842 J	--	0.0012 J	--	--
PCB082	ug/kg	--	--	--	--	--	--	--	0.00767	0.00498 U	0.00484 U	0.011	--	--	--	--	0.0258	0.204	1.19	2.57 JT	0.864	0.186	--	0.0167	--	--	0.492	--	0.0552	--	--
PCB083	ug/kg	--	--	--	--	--	--	--	0.00507 U	0.00498 U	0.00484 U	0.00483 U	--	--	--	--	0.00253 U	0.0025 U	0.00991 U	0.00494 UT	0.0247 U	0.00464 U	--	0.00486 U	--	--	0.0481 U	--	0.00248 U	--	--
PCB084 & 092	ug/kg	--	--	--	--	--	--	--	1.09	0.0183	0.00484 U	3.21	--	--	--	--	0.401	5.38	19.1	79.4 T	30.5	3.57	--	0.552	--	--	15.1	--	0.33	--	--
PCB085 & 116	ug/kg	--	--	--	--	--	--	--	0.015	0.00498 U	0.00484 U	0.0229	--	--	--	--	0.0452	0.397	1.63	3.51 T	1.6	0.365	--	0.0245	--	--	1.47	--	0.0787	--	--
PCB086	ug/kg	--	--	--	--	--	--	--	0.00507 U	0.00498 U	0.00484 U	0.00483 U	--	--	--	--	0.00253 U	0.0641	0.00991 U	0.903 JT	0.187	0.00464 U	--	0.00486 U	--	--	0.0481 U	--	0.00284	--	--
PCB087 & 117 & 125	ug/kg	--	--	--	--	--	--	--	0.0741	0.00498 U	0.00484 U	0.147	--	--	--	--	0.155	2.63	14.5	30.2 T	21	1.16	--	0.159	--	--	9.17	--	0.209	--	--
PCB088 & 091	ug/kg	--	--	--	--	--	--	--	2.01	0.0314	0.00484 U	3.41	--	--	--	--	0.479	2.75	10.3	22.7 T	35.7	3.8	--	1.27	--	--	23.1	--	0.338	--	--
PCB089	ug/kg	--	--	--	--	--	--	--	0.00507 U	0.00498 U	0.00484 U	0.00868	--	--	--	--	0.0051	0.0631	0.0457	0.791 JT	0.239	0.0328	--	0.00495	--	--	0.0481 U	--	0.01	--	--
PCB090 & 101	ug/kg	--	--	--	--	--	--	--	3.72	0.0682	0.00484 U	7.18	--	--	--	--	0.986	25	124	257 T	172	10.3	--	1.45	--	--	72	--	0.834	--	--
PCB093	ug/kg	--	--	--	--	--	--	--	0.00507 U	0.00498 U	0.00484 U	0.00483 U	--	--	--	--	0.00253 U	0.00829	0.00991 U	0.00494 UT	0.0247 U	0.00464 U	--	0.00486 U	--	--	0.0481 U	--	0.00248 U	--	--
PCB094	ug/kg	--	--	--	--	--	--	--	0.0174	0.00498 U	0.00484 U	0.615	--	--	--	--	0.0869	0.588	1.24	21.2 JT	29.1	0.625	--	0.0404	--	--	1.45	--	0.0212	--	--
PCB095 & 098 & 102	ug/kg	--	--	--	--	--	--	--	6.82	0.103	0.00484 U	15.2	--	--	--	--	1.37	20.9	97.4	212 T	106	13.5	--	2.52	--	--	38.9	--	0.988	--	--
PCB096	ug/kg	--	--	--	--	--	--	--	0.294	0.00498 U	0.00484 U	0.553	--	--	--	--	0.102	0.675	2.53	7.4 JT	5.7	0.824	--	0.126	--	--	1.73	--	0.0605	--	--
PCB097	ug/kg	--	--	--	--	--	--	--	0.0669	0.00498 U	0.00484 U	0.105	--	--	--	--	0.0928	1.67	5.71	24.5 T	6.26	0.709	--	0.0706	--	--	3.87	--	0.155	--	--
PCB099	ug/kg	--	--	--	--	--	--	--	2.1	0.0389	0.00484 U	3.82	--	--	--	--	0.363	4.4	10.6	45.2 T	23.8	3.89	--	0.647	--	--	26.3	--	0.337	--	--
PCB100	ug/kg	--	--	--	--	--	--	--	0.462	0.00705	0.00484 U	0.898	--	--	--	--	0.206	0.882	2.87	2.88 T	33.2	0.987	--	0.771	--	--	4.08	--	0.27	--	--
PCB103	ug/kg	--	--	--	--	--	--	--	1.34	0.0171	0.00484 U	2.39	--	--	--	--	0.211	0.814	3.34	5.06 T	36.1	1.28	--	0.384	--	--	2.68	--	0.242	--	--
PCB104	ug/kg	--	--	--	--	--	--	--	0.0551	0.00498 U	0.00484 U	0.164	--	--	--	--	0.0263	0.0924	0.343	0.417 T	4.53	0.0989	--	0.0346	--	--	0.19	--	0.0372	--	--
PCB105	ug/kg	--	--	--	--	--	--	--	0.0513	0.00162 J	0.00141 U	0.0991	--	--	--	--	0.0868	1.11	11.5	19.7 T	7.86	0.703	--	0.0611	--	--	4.08	--	0.165	--	--
PCB106 & 118	ug/kg	--	--	--	--	--	--	--	0.516	0.0105	0.00159 U	0.861	--	--	--	--	0.311	6.72	35.4	82.7 T	38.6	2.79	--	0.293	--	--	43.8	--	0.453	--	--
PCB107 & 109	ug/kg	--	--	--	--	--	--	--	0.123	0.00498 U	0.00484 U	0.303	--	--	--	--	0.0351	0.245	0.837	2.15 T	7.78	0.416	--	0.0958	--	--	7.2	--	0.0459	--	--
PCB108 & 112	ug/kg	--	--	--	--	--	--	--	0.0327	0.00498 U	0.00484 U	0.0997	--	--	--	--	0.0228	0.258	0.648	4.81 JT	2.39	0.22	--	0.0248	--	--	1.95	--	0.0303	--	--
PCB110	ug/kg	--	--	--	--	--	--	--	1.89	0.0362	0.00484 U	4.99	--	--	--	--	0.682	13	63.2	171 T	69.6	7.94	--	1	--	--	47.8	--	0.82	--	--
PCB111 & 115	ug/kg	--	--	--	--	--	--	--	0.0205	0.00498 U	0.00484 U	0.091	--	--	--	--	0.00866	0.0378	0.215	0.388 T	1.53	0.0995	--	0.0109	--	--	0.317	--	0.00971	--	--
PCB113	ug/kg	--	--	--	--	--	--	--	0.107	0.00498 U	0.00484 U	0.321	--	--	--	--	0.0183	0.114	0.00991 U	2.08 T	2.75	0.198	--	0.055	--	--	0.37	--	0.0142	--	--
PCB114	ug/kg	--	--	--	--	--	--	--	0.00143 J	0.0015 U	0.00152 U	0.00342 J	--	--	--	--	0.00449	0.0326	0.205	0.325 T	0.199	0.0264	--	0.00172 J	--	--	0.099	--	0.00945	--	--
PCB119	ug/kg	--	--	--	--	--	--	--	0.714	0.0104	0.00484 U	1.63	--	--	--	--	0.105	0.665	1.56	7.24 T	18.1	1.41	--	0.283	--	--	7.1	--	0.104	--	--
PCB120	ug/kg	--	--	--	--	--	--	--	0.057	0.00498 U	0.00484 U	0.156	--	--	--	--	0.00524	0.157	0.682	1.57 T	2.11	0.114	--	0.0114	--	--	0.887	--	0.00475	--	--
PCB121	ug/kg	--	--	--	--	--	--	--	0.0554	0.00498 U	0.00484 U	0.0939	--	--	--	--	0.0167	0.0025 U	0.00991 U	0.207 T	4.47	0.0759	--	0.0304	--	--	0.313	--	0.0322	--	--
PCB122	ug/kg	--	--	--	--	--	--	--	0.00507 U	0.00498 U	0.00484 U	0.00483 U	--	--	--	--	0.00279	0.0194	0.121	0.351 T	0.0574	0.0202	--	0.00486 U	--	--	0.058 UJ	--	0.00612	--	--
PCB123	ug/kg	--	--	--	--	--	--	--	0.00272 U	0.00255 U	0.00151 U	0.00412 U	--	--	--	--	0.00512	0.0292	0.132	0.317 JT	0.131	0.0272	--	0.00294 J	--	--	0.212	--	0.00784	--	--
PCB124	ug/kg	--	--	--	--	--	--	--	0.00507 U	0.00498 U	0.00484 U	0.186	--	--	--	--	0.0216	0.191	1.24	3.52 T	0.807	0.049	--	0.00506	--	--	0.463	--	0.0214	--	--
PCB126	ug/kg	--	--	--	--	--	--	--	0.00163 J	0.00176 U	0.00191 U	0.00218 J	--	--	--	--	0.00244 J	0.036	0.326	0.745 JT	0.281	0.0207	--	0.00177 J	--	--	0.153	--	0.00393	--	--

	Location	T04	IS-C1	T03	T02	T01	C01020304	IS-C2	C779	C779	C779	G779	UG03	UC03	UC03	UC03	ST007	ST007	ST007	ST007	GCA11E	G778	UG02	G777	UG01	UC01	G776	SD01	G516	G771	WR-PG-61
	Sample	WLCCIF01T04T04	WLCT0I98ISC1IS C1	WLCCIF01T03T03	WLCCIF01T02T02	WLCCIF01T01T01	WLCCIF01020304 020304	WLCT0I98ISC2IS C2	LW3-C779-B	LW3-C779-C	LW3-C779-E	LW3-G779	LW3-UG03	LW3-UC03-B	LW3-UC03-C	LW3-UC03-D	LW3-ST1007	LW3-ST-2007	LW3-ST3007	LW3-ST4-007	LW3-GCA11E-C00	LW3-G778	LW3-UG02	LW3-G777	LW3-UG01	LW3-UC01-B	LW3-G776	WLCAYH00SD01 SD01S	LW2-G516	LW3-G771	WLCDRD05PG06 161
	Study	Cargill Irving Elevator Permit Applications	Sed Char Columbia/Willamette Chan Deep	Cargill Irving Elevator Permit Applications	Cargill Irving Elevator Permit Applications	Cargill Irving Elevator Permit Applications	Cargill Irving Elevator Permit Applications	Sed Char Columbia/Willamette Chan Deep	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment Trap	LWG Round 3 Sediment Trap	LWG Round 3 Sediment Trap	LWG Round 3 Sediment Trap	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	UPRR Albina Yard XPA	LWG Round 2 Sediment	LWG Round 3 Sediment	2005 O&M Dredge Sed Char
	Depth (cm)	0 - 60	0 - 91	0 - 106	0 - 109	0 - 54	0 - 109	91 - 152	30 - 97	97 - 154	212 - 293	0 - 23	0 - 24	30 - 120	120 - 242	242 - 308					0 - 24	0 - 22	0 - 23	0 - 21	0 - 19	30 - 93	0 - 22	0 - 20	0 - 25	0 - 23	0 - 30
	River Mile	11.5	11.5	11.5	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.2	11.2	11.2	11.2	11	11	10.9	10.8
	Sample Date	6/29/2001	9/15/1998	6/29/2001	6/29/2001	6/29/2001	6/29/2001	9/15/1998	1/9/2008	1/9/2008	1/9/2008	12/5/2007	1/31/2007	2/8/2007	2/8/2007	2/8/2007	1/31/2007	4/30/2007	8/17/2007	11/13/2007	12/6/2007	12/5/2007	1/31/2007	12/5/2007	2/1/2007	2/7/2007	12/5/2007	8/9/2000	9/3/2004	12/6/2007	5/23/2005
PCB127	ug/kg	--	--	--	--	--	--	--	0.00507 U	0.00498 U	0.00484 U	0.00483 U	--	--	--	--	0.00253 U	0.0025 U	0.00991 U	0.00494 UT	0.0247 U	0.00464 U	--	0.00486 U	--	--	0.0481 U	--	0.00248 U	--	--
PCB128 & 162	ug/kg	--	--	--	--	--	--	--	0.0775	0.00498 U	0.00484 U	0.101	--	--	--	--	0.0729	2.94	18.3	37.3 T	16.9	0.776	--	0.0758	--	--	13.2	--	0.13	--	--
PCB129	ug/kg	--	--	--	--	--	--	--	0.0178	0.00498 U	0.00484 U	0.0245	--	--	--	--	0.0198	0.875	4.58	12.6 T	3.59	0.332	--	0.0189	--	--	3.01	--	0.0357	--	--
PCB130	ug/kg	--	--	--	--	--	--	--	0.126	0.00498 U	0.00484 U	0.259	--	--	--	--	0.0387	1.62	11.3	24.9 T	11.7	1.46	--	0.0816	--	--	6.84	--	0.0612	--	--
PCB131	ug/kg	--	--	--	--	--	--	--	0.00507 U	0.00498 U	0.00484 U	0.00483 U	--	--	--	--	0.00253 U	0.0025 U	0.00991 U	0.00494 UT	0.0247 U	0.00464 U	--	0.00486 U	--	--	0.0481 U	--	0.00248 U	--	--
PCB132 & 161	ug/kg	--	--	--	--	--	--	--	0.771	0.0163	0.00484 U	1.71	--	--	--	--	0.289	13.5	75.7	193 T	66.4	5.1	--	0.492	--	--	42.3	--	0.361	--	--
PCB133 & 142	ug/kg	--	--	--	--	--	--	--	0.357	0.00702	0.00484 U	1.47	--	--	--	--	0.109	1.06	5.55	18.4 T	38.4	2.27	--	0.19	--	--	3.63	--	0.078	--	--
PCB134 & 143	ug/kg	--	--	--	--	--	--	--	0.169	0.00498 U	0.00484 U	0.42	--	--	--	--	0.0708	2.69	11.8	43.7 T	13.2	0.933	--	0.0925	--	--	8.02	--	0.0647	--	--
PCB135	ug/kg	--	--	--	--	--	--	--	1.21	0.021	0.00484 U	4.12	--	--	--	--	0.289	9.81	54.9	121 T	132	7.99	--	0.563	--	--	28.9	--	0.21	--	--
PCB136	ug/kg	--	--	--	--	--	--	--	1.7	0.0307	0.00484 U	4.27	--	--	--	--	0.441	12.6	65.2	146 T	80.4	6.78	--	1.13	--	--	31.9	--	0.403	--	--
PCB137	ug/kg	--	--	--	--	--	--	--	0.0162	0.00498 U	0.00484 U	0.0266	--	--	--	--	0.0207	0.355	1.77	5.48 T	2.38	0.304	--	0.0337	--	--	2.35	--	0.0325	--	--
PCB138 & 163 & 164	ug/kg	--	--	--	--	--	--	--	2.56	0.0396	0.00484 U	5.03	--	--	--	--	1.14	58.6	311	650 T	495	22.6	--	1.89	--	--	213	--	1.41	--	--
PCB139 & 149	ug/kg	--	--	--	--	--	--	--	5.73	0.0993	0.00484 U	11.7	--	--	--	--	1.39	70.6	346	561 T	466	36	--	3.02	--	--	233	--	1.51	--	--
PCB140	ug/kg	--	--	--	--	--	--	--	0.263	0.00498 U	0.00484 U	0.604	--	--	--	--	0.0208	0.127	0.318	1.16 T	2.46	1.27	--	0.107	--	--	0.843	--	0.0359	--	--
PCB141	ug/kg	--	--	--	--	--	--	--	0.341	0.00498 U	0.00484 U	0.397	--	--	--	--	0.227	17	113	261 T	96.3	3.01	--	0.235	--	--	52.3	--	0.216	--	--
PCB144	ug/kg	--	--	--	--	--	--	--	0.0857	0.00498 U	0.00484 U	0.0917	--	--	--	--	0.06	4.56	25.1	45.6 T	22.4	0.69	--	0.084	--	--	12.7	--	0.0568	--	--
PCB145	ug/kg	--	--	--	--	--	--	--	0.00507 U	0.00498 U	0.00484 U	0.00483 U	--	--	--	--	0.00253 U	0.00601	0.00711 J	0.0343 T	0.0526	0.00464 U	--	0.00486 U	--	--	0.00952 J	--	0.00357	--	--
PCB146 & 165	ug/kg	--	--	--	--	--	--	--	2.13	0.0374	0.00484 U	6.13	--	--	--	--	0.291	8.15	41.1	117 T	159	13.4	--	0.716	--	--	28.7	--	0.328	--	--
PCB147	ug/kg	--	--	--	--	--	--	--	0.305	0.00498 U	0.00484 U	0.881	--	--	--	--	0.203	0.997	2.59	3.93 T	89.9	2.29	--	1.99	--	--	5.93	--	0.345	--	--
PCB148	ug/kg	--	--	--	--	--	--	--	0.191	0.00498 U	0.00484 U	0.541	--	--	--	--	0.044	0.0937	0.201	0.535 T	23.4	0.617	--	0.114	--	--	0.266	--	0.0633	--	--
PCB150	ug/kg	--	--	--	--	--	--	--	0.286	0.00498 U	0.00484 U	0.691	--	--	--	--	0.0461	0.184	0.454	1.26 T	12	1.19	--	0.308	--	--	0.603	--	0.0593	--	--
PCB151	ug/kg	--	--	--	--	--	--	--	1.5	0.0195	0.00484 U	3.38	--	--	--	--	0.591	24.5	144	253 T	284	8.32	--	0.862	--	--	74.5	--	0.429	--	--
PCB152	ug/kg	--	--	--	--	--	--	--	0.00507 U	0.00498 U	0.00484 U	0.0136	--	--	--	--	0.0171	0.146	0.243	1.01 JT	8.92	0.0925	--	0.036	--	--	0.303	--	0.0131	--	--
PCB153	ug/kg	--	--	--	--	--	--	--	5.58	0.094	0.00484 U	11.2	--	--	--	--	1.26	76.9	447	972 T	510	40.8	--	2.51	--	--	258	--	1.83	--	--
PCB154	ug/kg	--	--	--	--	--	--	--	0.982	0.0171	0.00484 U	2.3	--	--	--	--	0.0923	0.459	1.22	3.62 T	12.4	3.88	--	0.602	--	--	2.19	--	0.194	--	--
PCB155	ug/kg	--	--	--	--	--	--	--	0.0145	0.00498 U	0.00484 U	0.0416	--	--	--	--	0.00622	0.0278	0.0342	0.0465 T	1.49	0.0479	--	0.024	--	--	0.0241 J	--	0.00963	--	--
PCB156	ug/kg	--	--	--	--	--	--	--	0.0983	0.00134 J	0.000441 U	0.12	--	--	--	--	0.0543	3.51	22.6	49.7 T	23.6	1.18	--	0.07	--	--	16	--	0.0723	--	--
PCB157	ug/kg	--	--	--	--	--	--	--	0.00674	0.000728 U	0.00051 U	0.00781 UJ	--	--	--	--	0.00919	0.218	1.47	2.13 T	2.06	0.122	--	0.0131	--	--	1.71	--	0.0222	--	--
PCB158 & 160	ug/kg	--	--	--	--	--	--	--	0.136	0.00498 U	0.00484 U	0.155	--	--	--	--	0.0811	5.14	30.8	71.6 T	26.7	1.02	--	0.102	--	--	19.3	--	0.105	--	--
PCB159	ug/kg	--	--	--	--	--	--	--	0.00507 U	0.00498 U	0.00484 U	0.00483 U	--	--	--	--	0.0287	1	7.16	1.06 T	0.0247 U	0.00464 U	--	0.00486 U	--	--	0.0481 U	--	0.0945	--	--
PCB166	ug/kg	--	--	--	--	--	--	--	0.00507 U	0.00498 U	0.00484 U	0.00483 U	--	--	--	--	0.00253 U	0.0173	0.0984	0.201 T	0.114	0.00464 U	--	0.00486 U	--	--	0.182	--	0.00249	--	--
PCB167	ug/kg	--	--	--	--	--	--	--	0.0379	0.000764 U	0.000656 U	0.0485	--	--	--	--	0.0241	1.39	8.29	18.8 T	8.69	0.464	--	0.0353	--	--	5.9	--	0.0342	--	--
PCB168	ug/kg	--	--	--	--	--	--	--	0.0356	0.00498 U	0.00484 U	0.0796	--	--	--	--	0.00493	0.0626	0.00991 U	0.593 T	0.82	0.267	--	0.0504	--	--	0.362	--	0.00865	--	--
PCB169	ug/kg	--	--	--	--	--	--	--	0.0012 U	0.00078 U	0.000677 U	0.000942 U	--	--	--	--	0.000367 U	0.00064 U	0.0347 UJ	0.00973	0.0236 U	0.00326 U	--	0.00267 U	--	--	0.0188 U	--	0.000648 U	--	--
PCB170	ug/kg	--	--	--	--	--	--	--	0.937	0.0118	0.00484 U	1.29	--	--	--	--	0.319	31.5	194	478 T	208	19.9	--	1.32	--	--	95.6	--	0.335	--	--
PCB171	ug/kg	--	--	--	--	--	--	--	0.277	0.00498 U	0.00484 U	0.386	--	--	--	--	0.0927	8.3	47	136 T	43	3.77	--	0.337	--	--	24.3	--	0.127	--	--
PCB172	ug/kg	--	--	--	--	--	--	--	0.161	0.00498 U	0.00484 U	0.277	--	--	--	--	0.0651	5.2	30.5	87.6 T	27	3.07	--	0.217	--	--	14.9	--	0.099	--	--
PCB173	ug/kg	--	--	--	--	--	--	--	0.0214	0.00498 U	0.00484 U	0.0281	--	--	--	--	0.00768	0.707	4.45	12.6 T	3.58	0.295	--	0.0197	--	--	2.3	--	0.00842	--	--
PCB174	ug/kg	--	--	--	--	--	--	--	1.2	0.0159	0.00484 U	1.91	--	--	--	--	0.406	36.7	224	568 T	221	18.5	--	1.06	--	--	112	--	0.464	--	--
PCB175	ug/kg	--	--	--	--	--	--	--	0.0503	0.00498 U	0.00484 U	0.079	--	--	--	--	0.0197	1.74	10.8	28 T	9.98	0.892	--	0.0522	--	--	5.31	--	0.0261	--	--
PCB176	ug/kg	--	--	--	--	--	--	--	0.181	0.00498 U	0.00484 U	0.321	--	--	--	--	0.0516	5.05	32.8	78 T	29.4	2.16	--	0.208	--	--	16	--	0.148	--	--
PCB177	ug/kg	--	--	--	--	--	--	--	1.19	0.0229	0.00484 U	3.18	--	--	--	--	0.397	20.3	126	360 T	140	17.5	--	1.14	--	--	58	--	0.677	--	--
PCB178	ug/kg	--	--	--	--	--	--	--	0.58	0.00948	0.00484 U	1.97	--	--	--	--	0.267	7.43	47	113 T	129	7.54	--	0.652	--	--	21.7	--	0.532	--	--
PCB179	ug/kg	--	--	--	--	--	--	--	1.01	0.0155	0.00484 U	2.57	--	--	--	--	0.334	17.5	112	273 T	177	13.9	--	0.847	--	--	51.8	--	0.537	--	--
PCB180	ug/kg	--	--	--	--	--	--	--	2.46	0.0297	0.00484 U	3.65	--	--	--	--	0.864	83	483	1110 T	569	53.8	--	3.31	--	--	256	--	0.913	--	--
PCB181	ug/kg	--	--	--	--	--	--	--	0.00507 U	0.00498 U	0.00484 U	0.0139	--	--	--	--	0.00253 U	0.206	0.00991 U	0.00494 UT	0.403	0.0651	--	0.0121	--	--	0.365	--	0.00295	--	--
PCB182 & 187	ug/kg	--	--	--	--	--	--	--	2.72	0.0422	0.00484 U	7.2	--	--	--	--	0.935	46.2	291	639 T	556	49.8	--	3.63	--	--	147	--	3.07	--	--
PCB183	ug/kg	--	--	--	--	--	--	--	0.624	0.0094	0.00484 U	0.882	--	--	--	--	0.206	22.5	153	348 T	136	11.4	--	0.832	--	--	70	--	0.244	--	--
PCB184	ug/kg	--	--	--	--	--	--	--	0.00507 U	0.00498 U	0.00484 U	0.0138	--	--	--	--	0.00253 U	0.00924	0.0346	0.131 T	0.226	0.0422	--	0.00726	--	--	0.0298 J	--	0.00717	--	--
PCB185	ug/kg	--	--	--	--	--	--	--	0.109	0.00498 U	0.00484 U	0.157	--	--	--	--	0.0452	4.11	26.2	74.7 T	20	1.41	--	0.0946	--	--	11.7	--	0.0481	--	--
PCB186	ug/kg	--	--	--	--	--	--	--	0.00507 U	0.00498 U	0.00484 U	0.00483 U	--	--	--	--	0.00253 U	0.0025 U	0.00991 U	0.00494 UT	0.0247 U	0.00464 U	--	0.00486 U	--	--	0.0481 U	--	0.00248 U	--	--
PCB188	ug/kg	--	--	--	--	--	--	--	0.0398	0.00498 U	0.00484 U	0.134	--	--	--	--	0.0163	0.0467	0.0859	0.203 T	4.68	0.429	--	0.0979	--	--	0.0873	--	0.0297	--	--
PCB189	ug/kg	--	--	--	--	--	--	--	0.0349	0.000552 U	0.000433 U	0.0602	--	--	--	--	0.0127	1.06	5.63	16.6 T	7.67	1.03	--	0.0772	--	--	3.4	--	0.0142	--	--
PCB190	ug/kg	--	--	--	--	--	--	--	0.22	0.00498 U	0.00484 U	0.287	--	--	--	--	0.0718	6.53	41.6	104 T	42.3	4.43	--	0.418	--	--	21	--	0.0699	--	--
PCB191	ug/kg	--	--	--	--	--	--	--	0.0447	0.00498 U	0.00484 U	0.0648	--	--	--	--	0.0122	1.26	7.38	22.2 T	7.26	0.773	--	0.0697	--	--	4.1	--	0.0141	--	--
PCB192	ug/kg	--	--	--	--	--	--	--	0.00507 U	0.00498 U	0.00484 U	0.00483 U	--	--	--	--	0.00253 U	0.0025 U	0.00991 U	0.00494 UT	0.0247 U	0.00464 U	--	0.00486 U	--	--	0.0481 U	--	0.00248 U	--	--
PCB193	ug/kg	--	--	--	--	--	--	--	0.2	0.00498 U	0.00484 U	0.524	--	--	--	--	0.0662	3.51	21.6	61.2 T	29.1	3.7	--	0.376	--	--	11.2	--	0.202	--	--
PCB194	ug/kg	--	--	--	--	--	--	--	0.655	0.00936	0.00484 U	1.28	--	--	--	--	0.315	18.2	99.6	202 T	146	21.1	--	2.33	--	--	53.8	--	0.676	--	--
PCB195	ug/kg	--	--	--	--	--	--	--	0.283	0.00498 U	0.00484 U	0.51	--	--	--	--	0.131	8.33	44.9	132 T	56.5	7.85	--	0.953	--	--	22.9	--	0.254	--	--
PCB196 & 203	ug/kg	--	--	--	--	--	--	--	0.849	0.0111	0.00484 U	1.51	--	--	--	--	0.337	21.5	111	293 T	204	28.5	--	2.93	--	--	69.5	--	0.747	--	--
PCB197	ug/kg	--	--	--	--	--	--	--	0.0316	0.00498 U	0.00484 U	0.0746	--	--	--	--	0.0136	0.715	4.14	12.6 T	5.71	0.764	--	0.101	--	--	2.03	--	0.0861	--	--
PCB198	ug/kg	--	--	--	--	--	--	--	0.0363	0.00498 U	0.00484 U	0.0622	--	--	--	--	0.0164	1.06	8.06	23.5 T	8.8	1.21	--	0.139	--	--	2.96	--	0.0277	--	--
PCB199	ug/kg	--	--	--	--	--	--	--	0.746	0.0102	0.00484 U	1.67	--	--	--	--	0.311	18.2	91.1	275 T	186	24.9	--	2.63	--	--	58.6	--	1.12	--	--
PCB200	ug/kg	--	--	--	--	--	--	--	0.0913	0.00498 U	0.00484 U	0.17	--	--	--	--	0.0314	2.37	13.8	39.7 T	20.3	2.57	--	0.284	--	--	7.87	--	0.0664	--	--
PCB201	ug/kg	--	--	--	--	--	--	--	0.0878	0.00498 U	0.00484 U	0.228	--	--	--	--	0.0423	2.24	13.9	41 T	17.6	2.25	--	0.281	--	--	6.67	--	0.255	--	--
PCB202	ug/kg	--	--	--	--	--	--	--	0.147	0.00498 U	0.00484 U	0.436	--	--	--	--	0.0815	2.77	14.8	43.8 T	33.9	3.15	--	0.342	--	--	7.63	--	0.312	--	--
PCB204	ug/kg	--	--	--	--	--	--	--	0.00507 U	0.00498 U	0.00484 U	0.00483 U	--	--	--	--	0.00253 U	0.0025 U	0.00653 J	0.0539 T	0.089	0.00464 U	--	0.00486 U	--	--	0.0481 U	--	0.00248 U	--	--
PCB205	ug/kg	--	--	--	--	--	--	--	0.0352	0.00498 U	0.00484 U	0.0678	--	--	--	--	0.0152	0.81	4.43	10.3 T	6.97	1	--	0.134	--	--	2.57	--	0.0329	--	--
PCB206	ug/kg	--	--	--	--	--	--	--	0.14	0.00498 U	0.00484 U	0.347	--	--	--	--	0.112	3.21	16.2	35.3 T	32.6	4.07	--	0.555	--	--	8.94	--	0.381	--	--
PCB207	ug/kg	--	--	--	--	--	--	--	0.0214	0.00498 U	0.00484 U	0.0507	--	--	--	--	0.014	0.388	1.98	4.19 T	4.53	0.567	--	0.0814	--	--	1.32	--	0.0518	--	--
PCB208	ug/kg	--	--	--	--	--	--	--	0.0234	0.00498 U	0.00484 U	0.0552	--	--	--	--	0.0226	0.452	2.26	5.11 T	4.47	0.615	--	0.0802	--	--	1.48	--	0.0649	--	--
PCB209	ug/kg	--	--	--	--	--	--	--	0.0167	0.00498 U	0.00484 U	0.0462	--	--	--	--	0.0611	0.105	0.299	0.559 T	0.525	0.14	--	0.0132	--	--	0.173	--	0.0611	--	--
Total PCB Congeners	ug/kg	--	--	--	--	--	--	--	81.7 JT	1.16 JT	0.00967 UT	197 JT	--	--	--	--	28.7 JT	840 T	4830 JT	11100 JT	6640 JT	577 T	--	57.3 JT	--	--	2750 JT	--	32.2 T	--	--
Dioxin-like PCB congener TCDD toxicity equivalent (ND = 0)	ug/kg	--	--	--	--	--	--	--	0.0001699171 T	0.0000000888 T	--	0.0002281121 T	--	--	--	--	0.000251261 T	0.003823494 T	0.0341241 T	0.07785066 T	0.02962505 T	0.002185028 T	--	0.0001848408 T	--	--	0.016251426 T	--	0.0004052357 T	--	--
Monochlorobiphenyl homologs	ug/kg	--	--	--	--	--	--	--	0.00528 T	0.00498 UT	0.00484 UT	0.0166 T	--	--	--	--	0.0177 T	0.0621 T	0.242 T	0.787 JT	0.41 T	0.0403 T	--	0.0114 T	--	--	0.0945 JT	--	0.0198 T	--	--
Dichlorobiphenyl homologs	ug/kg	--	--	--	--	--	--	--	0.0138 T	0.00996 UT	0.00967 UT	0.144 T	--	--	--	--	0.584 T	2.41 T	26.2 T	75.1 JT	5.56 T	0.876 T	--	0.0965 T	--	--	2.99 JT	--	0.388 T	--	--
Trichlorobiphenyl homologs	ug/kg	--	--	--	--	--	--	--	0.959 T	0.00506 T	0.00484 UT	3.57 T	--	--	--	--	2.31 T	10.7 T	91.7 T	302 JT	41.3 JT	7.35 T	--	0.729 T	--	--	24.6 JT	--	1.65 T	--	--
Tetrachlorobiphenyl homologs	ug/kg	--	--	--	--	--	--	--	19.1 T	0.241 T	0.00484 UT	59 JT	--	--	--	--	7.31 T	35.3 T	262 T	458 JT	227 T	36.7 T	--	5.48 JT	--	--	167 JT	--	4.53 T	--	--
Pentachlorobiphenyl homologs	ug/kg	--	--	--	--	--	--	--	21.6 JT	0.343 JT	0.00484 UT	46.6 JT	--	--	--	--	5.88 JT	89.1 T	411 T	1010 JT	663 T	55.4 T	--	9.95 JT	--	--	315 T	--	5.7 T	--	--
Hexachlorobiphenyl homologs	ug/kg	--	--	--	--	--	--	--	24.7 T	0.383 JT	0.00484 UT	55.8 T	--	--	--	--	6.94 T	319 T	1750 JT	3620 JT	2610 T	163 T	--	15.4 T	--	--	1070 JT	--	8.22 T	--	--

	Location	T04	IS-C1	T03	T02	T01	C01020304	IS-C2	C779	C779	C779	G779	UG03	UC03	UC03	UC03	ST007	ST007	ST007	ST007	GCA11E	G778	UG02	G777	UG01	UC01	G776	SD01	G516	G771	WR-PG-61
	Sample	WLCCIF01T04T04	WLCT0I98ISC1ISC1	WLCCIF01T03T03	WLCCIF01T02T02	WLCCIF01T01T01	WLCCIF01020304020304	WLCT0I98ISC2ISC2	LW3-C779-B	LW3-C779-C	LW3-C779-E	LW3-G779	LW3-UG03	LW3-UC03-B	LW3-UC03-C	LW3-UC03-D	LW3-ST1007	LW3-ST-2007	LW3-ST3007	LW3-ST4-007	LW3-GCA11E-C00	LW3-G778	LW3-UG02	LW3-G777	LW3-UG01	LW3-UC01-B	LW3-G776	WLCAYH00SD01SD01S	LW2-G516	LW3-G771	WLCDRD05PG06161
	Study	Cargill Irving Elevator Permit Applications	Sed Char Columbia/Willamette Chan Deep	Cargill Irving Elevator Permit Applications	Cargill Irving Elevator Permit Applications	Cargill Irving Elevator Permit Applications	Cargill Irving Elevator Permit Applications	Sed Char Columbia/Willamette Chan Deep	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment Trap	LWG Round 3 Sediment Trap	LWG Round 3 Sediment Trap	LWG Round 3 Sediment Trap	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	UPRR Albina Yard XPA	LWG Round 2 Sediment	LWG Round 3 Sediment	2005 O&M Dredge Sed Char
	Depth (cm)	0 - 60	0 - 91	0 - 106	0 - 109	0 - 54	0 - 109	91 - 152	30 - 97	97 - 154	212 - 293	0 - 23	0 - 24	30 - 120	120 - 242	242 - 308					0 - 24	0 - 22	0 - 23	0 - 21	0 - 19	30 - 93	0 - 22	0 - 20	0 - 25	0 - 23	0 - 30
	River Mile	11.5	11.5	11.5	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.2	11.2	11.2	11.2	11	11	10.9	10.8
	Sample Date	6/29/2001	9/15/1998	6/29/2001	6/29/2001	6/29/2001	6/29/2001	9/15/1998	1/9/2008	1/9/2008	1/9/2008	12/5/2007	1/31/2007	2/8/2007	2/8/2007	2/8/2007	1/31/2007	4/30/2007	8/17/2007	11/13/2007	12/6/2007	12/5/2007	1/31/2007	12/5/2007	2/1/2007	2/7/2007	12/5/2007	8/9/2000	9/3/2004	12/6/2007	5/23/2005
Heptachlorobiphenyl homologs	ug/kg	--	--	--	--	--	--	--	12.1 T	0.157 T	0.00484 UT	25 T	--	--	--	--	4.19 T	303 T	1860 T	4510 T	2360 T	214 T	--	14.8 T	--	--	927 JT	--	7.57 T	--	--
Octachlorobiphenyl homologs	ug/kg	--	--	--	--	--	--	--	2.96 T	0.0307 T	0.00484 UT	6.01 T	--	--	--	--	1.29 T	76.2 T	406 JT	1070 T	686 T	93.3 T	--	10.1 T	--	--	235 T	--	3.58 T	--	--
Nonachlorobiphenyl homologs	ug/kg	--	--	--	--	--	--	--	0.185 T	0.00498 UT	0.00484 UT	0.453 T	--	--	--	--	0.149 T	4.05 T	20.4 T	44.6 T	41.6 T	5.25 T	--	0.717 T	--	--	11.7 T	--	0.497 T	--	--
Herbicides																															
2,4,5-T	ug/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	7.4 U	7.9 U	97 U	11 U	--	--	--	--	--	--	--	--	--	--	--
2,4-D	ug/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	9.8 U	9.4 U	120 U	37 U	--	--	--	--	--	--	--	--	--	--	--
2,4-DB	ug/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	22 J	12 U	110 U	19 U	--	--	--	--	--	--	--	--	--	--	--
Dalapon	ug/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	33 U	35 U	430 U	83 U	--	--	--	--	--	--	--	--	--	--	--
Dicamba	ug/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	10 U	11 U	140 U	9.3 U	--	--	--	--	--	--	--	--	--	--	--
Dichloroprop	ug/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	7.2 U	7.7 U	94 U	8 U	--	--	--	--	--	--	--	--	--	--	--
Dinoseb	ug/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	37 U	40 U	--	17 UJ	--	--	--	--	--	--	--	--	--	--	--
MCPA	ug/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6300 U	6700 U	82000 U	1400 U	--	--	--	--	--	--	--	--	--	--	--
MCPP	ug/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5300 U	5700 U	70000 U	670 U	--	--	--	--	--	--	--	--	--	--	--
Silvex	ug/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	58 U	7.7 U	94 U	23 U	--	--	--	--	--	--	--	--	--	--	--
Pesticides																															
2,4'-DDD	ug/kg	--	--	--	--	--	--	--	2 J	0.16 U	0.16 U	5.4 J	10 J	29 J	5.2 NJ	2.2	1.9 U	1.5	24	150	68 J	23	86	0.26	5.3 J	9.2 J	6.4	--	3.28 J	2.1 J	0.33 U
2,4'-DDE	ug/kg	--	--	--	--	--	--	--	0.77 U	0.079 U	0.046 U	2.6 U	0.99 U	13 U	0.68 U	0.67 U	1 U	0.57 U	0.7 U	18 U	14 U	5.4 U	20 U	0.12 U	3.2 U	1 U	1.3 U	--	0.598 U	0.7 U	0.5 U
2,4'-DDT	ug/kg	--	--	--	--	--	--	--	0.94 U	0.061 U	0.061 U	8.8 NJ	13 NJ	70 NJ	3.6 J	1.8	4.1	3 NJ	14 U	91 U	44 UJ	12 U	47 U	0.16 U	10 U	13 NJ	6.1 U	--	1.6 J	3.6 NJ	0.93 J
4,4'-DDD	ug/kg	0.22 U	20 U	0.69 J	0.73 U	0.2 U	1.4 U	2 U	0.14 U	0.073 U	0.073 U	0.31 J	0.43 J	2.4 J	2.6	2.1	0.53 J	0.99 J	0.76 U	0.67 U	0.38 U	0.24 U	1.6 U	0.073 U	1.7 U	7.1	0.53 NJ	--	0.997	0.52	1.6 J
4,4'-DDE	ug/kg	0.92 U	20 U	0.81 J	0.36 U	0.32 U	0.35 U	2 U	0.14 U	0.027 U	0.027 U	0.68 NJ	0.99 U	1 U	5 J	3.2 J	2.8 NJ	1.8	0.92 U	0.9 U	0.2 U	0.15 U	1.3 U	0.027 U	1.4 U	3.8 NJ	0.28 U	--	1.31 J	1.6 NJ	1.8 NJ
4,4'-DDT	ug/kg	2.2 U	20 U	0.92 J	0.68 U	1.1 U	1.3 U	2 U	0.74 U	0.18 U	0.18 U	1.5 U	2.6 U	23 U	3.8 U	1.7 NJ	7.9 U	3 U	120 U	670 U	360 J	120	280 U	0.65 U	8.6 U	110	49 J	--	3.02 U	4.1	1.3 J
Aldrin	ug/kg	0.33 U	2 U	0.34 U	0.34 U	0.31 U	0.66 U	2 U	0.12 U	0.12 U	0.12 U	0.12 U	0.22 U	0.22 U	0.99 U	0.24 U	1 U	0.78 U	0.92 U	0.16 U	0.12 U	0.12 U	1.9 U	0.12 U	2.1 U	0.26 U	0.12 U	--	0.598 UJ	0.24 U	0.4 U
alpha-Endosulfan	ug/kg	--	20 U	--	--	--	--	2 U	0.14 U	0.037 U	0.037 U	0.45 U	4.5 U	1 U	0.28 U	0.27 U	0.4 U	0.69 U	0.52 U	0.65 U	0.61 U	2.4 U	2.2 U	0.037 U	2.4 U	0.29 U	0.19 U	--	0.598 U	0.17 U	1.5 J
alpha-Hexachlorocyclohexane	ug/kg	--	2 U	--	--	--	--	2 U	0.097 U	0.097 U	0.097 U	0.097 U	0.37 U	0.38 U	0.42 U	0.41 U	0.6 U	0.64 U	0.79 U	0.14 U	0.097 U	0.097 U	3.3 U	0.097 U	3.7 U	0.44 U	0.18 U	--	0.598 U	0.097 U	0.33 U
beta-Endosulfan	ug/kg	--	20 U	--	--	--	--	2 U	0.031 U	0.031 U	0.031 U	0.13 U	11 U	2.8 U	1.1	0.34 J	1 U	0.47 U	1.4 U	18 U	4 U	1.9 U	10 U	0.031 U	2.7 U	3.9 J	0.55 U	--	0.598 U	0.53 U	0.2 U
beta-Hexachlorocyclohexane	ug/kg	--	2 U	--	--	--	--	2 U	0.31 U	0.25 U	0.14 U	0.52	4 NJ	6.4	0.49 U	0.47 U	0.7 U	0.88 J	0.91 U	0.57 U	0.46 U	0.14 U	3.8 U	0.14 U	4.2 U	1.6 U	0.14 U	--	0.598 U	0.14 U	1.1 U
Chlordane (cis & trans)	ug/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	9.9 U
cis-Chlordane	ug/kg	0.15 U	20 U	0.16 U	0.16 U	0.41 U	0.15 U	2 U	0.55 J	0.034 U	0.031 U	1.5 J	4.5 U	12 U	0.37 U	0.4 U	0.53 U	0.57 U	0.7 U	0.041 U	2.9 U	0.031 U	4.7 U	0.031 U	3.2 U	1.5 U	0.15 U	--	0.463 J	0.031 U	0.24 U
cis-Nonachlor	ug/kg	--	--	--	--	--	--	--	3.4 U	0.087 U	0.087 U	7.2 U	0.99 U	0.89 U	2.4 U	1.9 NJ	1 U	1.5 U	98 U	460 U	250 U	700 U	300 U	0.94 U	1.2 U	1.4 U	0.42 U	--	0.598 U	3.9 U	0.5 U
delta-Hexachlorocyclohexane	ug/kg	--	2 U	--	--	--	--	2 U	0.34 U	0.11 U	0.11 U	0.93 U	12 U	29 U	0.69 U	0.15 J	0.2 U	0.56 U	1.2 U	3.3 U	8.8 U	0.59 U	3.9 U	0.11 U	0.77 U	1.8 U	0.52 U	--	0.598 UJ	0.11 U	0.35 U
Dieldrin	ug/kg	1.6 UJ	65 UJ	0.44 UJ	0.45 UJ	0.4 UJ	0.48 UJ	2 U	0.14 U	0.03 U	0.03 U	0.047 U	3.6 U	0.42 U	0.47 U	0.46 U	0.67 U	0.72 U	13 U	0.28 U	1.7 U	0.14 U	45 U	0.03 U	4.1 U	0.49 U	0.2 U	--	0.598 U	0.58 J	0.78 U
Endosulfan sulfate	ug/kg	--	20 U	--	--	--	--	2 U	0.058 U	0.058 U	0.058 U	0.058 U	0.43 U	1 U	0.13 U	0.81 U	1 U	0.27 J	7.8 U	0.27 U	0.058 U	0.058 U	1 U	0.058 U	1.1 U	0.14 U	0.15 U	--	0.598 UJ	0.17 U	0.14 U
Endrin	ug/kg	--	20 U	--	--	--	--	2 U	0.9 U	0.071 U	0.071 U	3 U	1.6 U	2.7 J	0.33 U	1.6 U	0.47 U	0.5 U	0.61 U	1.1 U	44 U	0.71 U	2.6 U	0.071 U	2.8 U	0.5 J	4.3 U	--	--	1.1 U	0.71 U
Endrin aldehyde	ug/kg	--	190 UJ	--	--	--	--	15 UJ	0.34 U	0.042 U	0.042 U	0.88 U	0.99 U	1.1 U	1.2 U	0.42 U	1.3 J	0.14 U	12 U	86 U	43 U	12 U	44 U	0.12 U	9.5 U	0.089 U	4.5 U	--	0.598 U	0.57 U	0.18 U
Endrin ketone	ug/kg	--	20 U	--	--	--	--	2 U	0.65 U	0.029 U	0.029 U	1.4 U	15 U	20 U	1.2 U	0.41 U	0.19 U	1.5 U	130 U	140 U	73 U	27 U	96 U	0.12 U	10 U	3.6 U	11 U	--	1.7 NJ	0.89 U	1 U
gamma-Hexachlorocyclohexane	ug/kg	0.34 U	2 U	0.35 U	0.36 U	0.32 U	0.34 U	2 U	0.062 U	0.062 U	0.062 U	0.24 NJ	4.5 NJ	3.4 J	0.96 J	0.49 J	0.35 U	0.99 U	0.46 U	2.5 J	3.1 U	0.2 J	1.9 U	0.062 U	2.1 U	1.5 NJ	0.1 J	--	0.598 U	0.17 U	0.48 U
Heptachlor	ug/kg	0.19 U	2 U	0.2 U	0.2 U	0.18 U	0.19 U	2 U	0.076 U	0.076 U	0.076 U	0.12 J	2.2 U	10 U	0.99 U	0.45 U	1 U	0.84 U	1.3 J	0.27 U	0.22 U	0.19 NJ	1.1 U	0.076 U	1.2 U	1 U	0.15 U	--	0.598 U	0.48 NJ	1 U
Heptachlor epoxide	ug/kg	--	2 U	--	--	--	--	2 U	0.14 U	0.14 J	0.068 U	0.15 U	0.99 U	3.6 U	0.99 U	0.86 J	1 U	0.32 U	0.4 U	6.7 U	7.2 U	0.59 U	10 U	0.068 U	1.9 U	1.3 U	0.42 U	--	0.598 U	0.27 U	1 U
Methoxychlor	ug/kg	--	40 U	--	--	--	--	4 U	0.24 U	0.075 U	0.075 U	0.39 U	0.15 U	7.6 U	0.99 U	0.16 U	1 U	1.3 U	11 U	67 U	30 U	11 U	33 U	0.075 U	4.8 U	1 U	0.15 U	--	3.46 J	0.83 U	0.44 U
Mirex	ug/kg	--	--	--	--	--	--	--	0.12 U	0.12 U	0.12 U	0.12 U	0.15 U	1 U	0.17 U	0.17 U	0.3 U	0.25 U	0.2 U	0.27 U	0.16 J	0.47	1.3 U	0.12 U	1.4 U	0.27 J	0.12 U	--	0.598 U	0.12 U	0.35 U
Oxychlordane	ug/kg	--	--	--	--	--	--	--	0.061 U	0.061 U	0.061 U	0.061 U	0.52 U	0.54 U	0.6 U	0.58 U	0.86 U	0.91 U	0.18 U	0.081 U	0.061 U	0.061 U	10 U	0.2 U	5.2 U	0.62 U	0.061 U	--	0.598 U	0.061 U	0.39 U
Total Chlordanes	ug/kg	0.21 UA	20 UA	0.21 UA	0.22 UA	1.3 UA	0.56 UA	3 UA	0.55 JT	0.055 JT	0.087 UT	1.5 JT	5.1 UT	29 JT	3.7 JT	1.9 JT	1 UT	0.84 JT	98 UT	460 UT	60 JT	700 UT	300 UT	0.24 JT	2.8 JT	8.9 JT	2.1 UT	--	1.51 JT	3.9 UT	0.5 UT
Total Endosulfan	ug/kg	--	20 UT	--	--	--	--	2 UT	0.14 UT	0.058 UT	0.058 UT	0.45 UT	--	--	--	--	1 UT	0.27 JT	7.8 UT	18 UT	4 UT	2.4 UT	--	0.058 UT	--	--	0.55 UT	--	0.598 UJT	0.53 UT	1.5 JT
Toxaphene	ug/kg	--	300 U	--	--	--	--	300 UJ	29 U	6.5 U	3.4 U	79 U	78 U	650 U	99 U	68 U	55 U	60 U	28 U	9700 U	3800 UJ	1300 U	4000 U	14 U	400 U	180 U	440 U	--	74.8 U	120 U	28 U
trans-Chlordane	ug/kg	0.21 U	20 U	0.21 U	0.22 U	1.3 U	0.56 U	3 UJ	0.16 U	0.055 J	0.027 U	0.38 U	5.1 U	29 NJ	3.7 NJ	0.45 U	1 U	0.84 J	3.4 U	14 U	60 NJ	4 U	14 U	0.24 J	2.8 J	8.9 NJ	2.1 U	--	0.798 NJ	0.17 U	0.13 U
trans-Nonachlor	ug/kg	--	--	--	--	--	--	--	0.14 U	0.055 U	0.034 U	0.2 U	0.99 U	1 U	0.49 U	0.2 U	1 U	0.22 U	1.1 U	11 U	0.54 U	10 U	1.2 U	0.2 U	1.3 U	1 U	0.2 U	--	0.248 NJ	0.2 U	0.35 U
Total of 2,4'- and 4,4'-DDT	ug/kg	--	--	--	--	--	--	--	--	--	--	8.8	13	70	3.6	3.5	4.1	3	--	--	360	120	--	--	--	123	49	--	1.6	7.7	2.23
Total of 2,4'- and 4,4'-DDE	ug/kg	--	--	--	--	--	--	--	--	--	--	0.68	--	--	5	3.2	2.8	1.8	--	--	--	--	--	--	--	3.8	--	--	1.31	1.6	1.8
Total of 2,4'- and 4,4'-DDD	ug/kg	--	--	--	--	--	--	--	2	--	--	5.71	10.43	31.4	7.8	4.3	0.53	2.49	24	150	68	23	86	0.26	5.3	16.3	6.93	--	4.277	2.62	1.6
Total of 2,4'- and 4,4'-DDD,-DDE,-DDT	ug/kg	--	--	--	--	--	--	--	2	--	--	15.19	23.43	101.4	16.4	11	7.43	7.29	24	150	428	143	86	0.26	5.3	143.1	55.93	--	7.187	11.92	5.63
Total of 4,4'-DDD, -DDE, -DDT	ug/kg	2.2 UT	20 UT	2.42 T	0.73 UT	1.1 UT	1.4 UT	2 UT	--	--	--	--	0.43 JT	2.4 JT	7.6 JT	7 JT	--	--	--	--	--	--	280 UT	--	8.6 UT	120 JT	--	--	2.31 JT	--	4.7 T
PAHs																															
1-Methylnaphthalene	ug/kg	--	--	--	--	--	--	--	0.31 U	0.33 J	0.31 U	0.57 J	--	--	--	--	--	--	--	--	1.5 J	0.94 J	--	0.31 U	--	--	2.2	--	--	2.3	--
2-Methylnaphthalene	ug/kg	12 J	--	4.3 U	9.8 J	5.1 J	10 J	--	0.47 J	0.41 J	0.39 U	1.1 J	10	49	51	28	1.8 J	2.1 J	7	4.5	2.3	1.2 J	2.5 U	0.39 U	7.9	53	3.5	2 J	3.2	4.2	7.8
Acenaphthene	ug/kg	6.1 J	34	6.7 J	10 J	20	14 J	20 U	0.23 U	0.36 J	0.23 U	0.54 J	9.8	120	69	40	0.9 J	1.5 J	6.5	4.7	3.5	1.3 J	0.75 J	0.33 J	8.9	96	3	15 U	4.9	4.9	1.2 J
Acenaphthylene	ug/kg	13 J	240	25	12 J	2.5 J	8.5 J	20 U	0.24 U	0.24 U	0.24 U	0.38 J	6.3	18	22	23	1.8 J	1.6 J	7	4.5	1.7 J	6.5	1.3 U	1 J	8.6	16	2.4	10 J	8.7	3.3	2.3 J
Anthracene	ug/kg	22 J	2200	48	26	46	23	20 U	0.47 U	0.47 U	0.47 U	1.1 J	20	82	65	37	1.7 J	2.6 J	12	7.5	19	21	2.2 U	1.2 J	15	41	5.2	37 J	43	9.8	7
Benzo(a)anthracene	ug/kg	29 J	6400	120	86	310	50	37	0.48 U	0.48 U	0.48 U	1.8 U	60	140	120	90	8.1	11	36	28	46	67	6.4	5.3	83	110	25	100	220	46	34
Benzo(a)pyrene	ug/kg	40 J	7300	120	110	430	66	61	0.29 J	0.14 U	0.14 U	1.8 U	36	130	120	100	9.3	14	34	33	43	55	7	6.3	45	94	32	40	120	35	25
Benzo(b)fluoranthene	ug/kg	61 J	2900	170	150	580	90	31	0.48 J	0.25 U	0.25 U	2.3 U	110 J	94	120	73	8.7	16	58	44	61	76	6.4	6.6	150 J	96	38	75 J	340	58	34
Benzo(b+k)fluoranthene	ug/kg	79 T	8000 T	222 T	201 T	770 T	116 T	57 T	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	98 T	--	--	58 T
Benzo(e)pyrene	ug/kg	--	--	--	--	--	--	--	--	--	--	1.5 U	--	--	--	--	--	--	--	--	29 J	39	--	4.2	--	--	24	--	--	32	--
Benzo(g,h,i)perylene	ug/kg	36 J	4400	70	100	350	65	270	0.64 U	0.64 U	0.64 U	2	93	80	100	79	7.1	14	38	29	22	36	6.1	5.2	61	75	27	20 J	66	26	19
Benzo(k)fluoranthene	ug/kg	18 J	5100	52	51	190	26	26	0.15 U	0.15 U	0.15 U	0.85 U	--	97	82	74	5.9	6.4	15	15	26	24	4.8	2.2	--	69	11	23	94	17	24
Chrysene	ug/kg	50 J	8100	130	120	400	71	40	0.5 J	0.25 U	0.25 U	2.5 U	190	160	150	110	12	14	49	41	75	66	8.9	6.3	110	150	33	110	340	62	57
Dibenzo(a,h)anthracene	ug/kg	7.9 J	660	23	22	97	14	53	0.28 U	0.28 U	0.28 U	0.49 U	45	16	15	10	1.3 J	2.4 J	5.6	5.5	5.4	8.9	0.82 U	0.98 U	20	13	4.9	5 J	22	5.6	4
Dibenzothiophene	ug/kg	--	--	--	--	--	--	--	0.21 U	0.21 U	0.21 U	0.59 J	--	--	--	--	--	--	--	--	1.7 J	2.7	--	0.29 J	--	--	2.3	--	--	3.7	--
Fluoranthene	ug/kg	71 J	16000	190	160	380	87	98	1.1 J	0.61 U	0.61 U	5.3	110	290	370	250	16	25	120	75	24	130	15	8.6	180	310	54	230 J	500	96	43
Fluorene	ug/kg	9.2 J	190	11 J	13 J	29	18 J	20 U	0.5 U	0.5 U	0.5 U	0.73 J	15	110	61	28	1.3 J	2 J	8.1	5.8	3.9	4.6	1.3 U	0.5 U	12	48	3.2	10 J	20	6.3	3.2
Indeno(1,2,3-cd)pyrene	ug/kg	29 J	4600	82	100	370	60	360	0.24 U	0.16 U	0.16 U	1.5 U	63	77	87	67	6.6	11	34	25	28	42	5.4	5.8	43	64	26	20 J	64	23	19
Naphthalene	ug/kg	20 J	190	5.8 J	21	8.1 J	10 J	20 U	1.1 U	1.3 U	0.85 U	1.6 J	11	89	85	97	5.9	0.66 U	35	10	5.1	2.4	8.6	0.81 J	9	110	13	4 J	4.1 U	15	8.1 U
Perylene	ug/kg	--	--	--	--	--	--	--	--	--	--	3.1	--	--	--	--	--	--	--	--	15	17	--	2.3	--	--	14	--	--	25	--
Phenanthrene	ug/kg	65 J	6800	120	120	240	97	45	1.3 J	0.75 U	0.75 U	5.2	58	420	340	180	9.7	14	69	48	19	59	11	3.3	41	300	28	90 J	99	53	22
Pyrene	ug/kg	99 J	19000	160	170	350	83	110	1.4 J	0.37 U	0.37 U	6.1	110	370	440	350	20	25	110	69	22	99	21	10	190	400	54	170 J	350	83	39
High Molecular Weight PAH	ug/kg	441 JT	74500 T	1120 T	1070 T	3460 T	612 T	1090 T	3.8 JT	0.64 UT	0.64 UT	13 T	820 JA	1500 T	1600 T	1200 T	95 JT	140 JT	500 T	360 T	350 T	600 T	81 T	56 T	880 JA	1400 T	300 T	793 JT	2120 T	450 T	298 T
Low Molecular Weight PAH	ug/kg	147 JT	9650 JA	217 JT	212 JT	351 JT	181 JT	45 JA	1.8 JT	0.77 JT	0.85 UT	11 JT	130 T	890 T	690 T	430 T	23 JT	24 JT	140 T	85 T	55 JT	96 JT	20 JT	6.6 JT	100 T	660 T	58 T	153 JT	179 T	97 T	43.5 JT
Total PAHs	ug/kg	588 JT	84200 JA	1337 JT	1282 JT	3811 JT	793 JT	1140 JA	5.5 JT	0.77 JT	0.85 UT	24 JT	950 JA	2300 T	2300 T	1600 T	120 JT	160 JT	640 T	450 T	410 JT	700 JT	100 JT	63 JT	980 JA	2000 T	360 T	946 JT	2290 T	550 T	341.5 JT
C1-Chrysene	ug/kg	--	--	--	--	--	--	--	--	--	--	2.1	--	--	--	--	--	--	--	--	43	40	--	4.4	--	--	33	--	--	45	--
C1-Dibenzothiophene	ug/kg	--	--	--	--	--	--	--	--	--	--	2.1	--	--	--	--	--	--	--	--	4.9	0.21 U	--	0.21 U	--	--	5.9	--	--	11	--
C1-Fluoranthene/pyrene	ug/kg	--	--	--	--	--	--	--	--	--	--	3.8	--	--	--	--	--	--	--	--	41	120	--	6.7	--	--	74	--	--	59	--
C1-Fluorene	ug/kg	--	--	--	--	--	--	--	--	--	--	1.3 J	--	--	--	--	--	--	--	--	3.9 U	5.4	--	0.7 J	--	--	3	--	--	5.6	--

	Location	T04	IS-C1	T03	T02	T01	C01020304	IS-C2	C779	C779	C779	G779	UG03	UC03	UC03	UC03	ST007	ST007	ST007	ST007	GCA11E	G778	UG02	G777	UG01	UC01	G776	SD01	G516	G771	WR-PG-61
	Sample	WLCCIF01T04T04	WLCT0I98ISC1IS C1	WLCCIF01T03T03	WLCCIF01T02T02	WLCCIF01T01T01	WLCCIF01020304 020304	WLCT0I98ISC2IS C2	LW3-C779-B	LW3-C779-C	LW3-C779-E	LW3-G779	LW3-UG03	LW3-UC03-B	LW3-UC03-C	LW3-UC03-D	LW3-ST1007	LW3-ST-2007	LW3-ST3007	LW3-ST4-007	LW3-GCA11E-C00	LW3-G778	LW3-UG02	LW3-G777	LW3-UG01	LW3-UC01-B	LW3-G776	WLCAYH00SD01 SD01S	LW2-G516	LW3-G771	WLCDRD05PG06 161
	Study	Cargill Irving Elevator Permit Applications	Sed Char Columbia/Willamette Chan Deep	Cargill Irving Elevator Permit Applications	Cargill Irving Elevator Permit Applications	Cargill Irving Elevator Permit Applications	Cargill Irving Elevator Permit Applications	Sed Char Columbia/Willamette Chan Deep	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment Trap	LWG Round 3 Sediment Trap	LWG Round 3 Sediment Trap	LWG Round 3 Sediment Trap	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	UPRR Albina Yard XPA	LWG Round 2 Sediment	LWG Round 3 Sediment	2005 O&M Dredge Sed Char
	Depth (cm)	0 - 60	0 - 91	0 - 106	0 - 109	0 - 54	0 - 109	91 - 152	30 - 97	97 - 154	212 - 293	0 - 23	0 - 24	30 - 120	120 - 242	242 - 308					0 - 24	0 - 22	0 - 23	0 - 21	0 - 19	30 - 93	0 - 22	0 - 20	0 - 25	0 - 23	0 - 30
	River Mile	11.5	11.5	11.5	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.2	11.2	11.2	11.2	11	11	10.9	10.8
	Sample Date	6/29/2001	9/15/1998	6/29/2001	6/29/2001	6/29/2001	6/29/2001	9/15/1998	1/9/2008	1/9/2008	1/9/2008	12/5/2007	1/31/2007	2/8/2007	2/8/2007	2/8/2007	1/31/2007	4/30/2007	8/17/2007	11/13/2007	12/6/2007	12/5/2007	1/31/2007	12/5/2007	2/1/2007	2/7/2007	12/5/2007	8/9/2000	9/3/2004	12/6/2007	5/23/2005
C1-Phenanthrene/anthracene	ug/kg	--	--	--	--	--	--	--	--	--	--	5	--	--	--	--	--	--	--	--	23	37	--	4.3	--	--	20	--	--	39	--
C2-Chrysene	ug/kg	--	--	--	--	--	--	--	--	--	--	2.7	--	--	--	--	--	--	--	--	30	21	--	3.2	--	--	43	--	--	42	--
C2-Dibenzothiophene	ug/kg	--	--	--	--	--	--	--	--	--	--	2.8	--	--	--	--	--	--	--	--	6.2	4	--	0.21 U	--	--	9.9	--	--	17	--
C2-Fluoranthene/pyrene	ug/kg	--	--	--	--	--	--	--	--	--	--	3	--	--	--	--	--	--	--	--	28	43	--	3.9	--	--	38	--	--	36	--
C2-Fluorene	ug/kg	--	--	--	--	--	--	--	--	--	--	2.5	--	--	--	--	--	--	--	--	6.4	5.8	--	0.9 J	--	--	7.8	--	--	15	--
C2-Naphthalene	ug/kg	--	--	--	--	--	--	--	--	--	--	2.1	--	--	--	--	--	--	--	--	7.7	3.2	--	0.54 J	--	--	7.3	--	--	12	--
C2-Phenanthrene/anthracene	ug/kg	--	--	--	--	--	--	--	--	--	--	4.4	--	--	--	--	--	--	--	--	21	26	--	2.6	--	--	25	--	--	38	--
C3-Chrysene	ug/kg	--	--	--	--	--	--	--	--	--	--	0.25 U	--	--	--	--	--	--	--	--	23	20	--	0.25 U	--	--	55	--	--	45	--
C3-Dibenzothiophene	ug/kg	--	--	--	--	--	--	--	--	--	--	2.7	--	--	--	--	--	--	--	--	6.6	3.7	--	0.21 U	--	--	12	--	--	19	--
C3-Fluoranthene/pyrene	ug/kg	--	--	--	--	--	--	--	--	--	--	2.1	--	--	--	--	--	--	--	--	20	19	--	0.61 U	--	--	33	--	--	32	--
C3-Fluorene	ug/kg	--	--	--	--	--	--	--	--	--	--	4.5	--	--	--	--	--	--	--	--	9.4	3.8	--	0.5 U	--	--	11	--	--	20	--
C3-Naphthalene	ug/kg	--	--	--	--	--	--	--	--	--	--	2.5	--	--	--	--	--	--	--	--	9.4	3.5	--	0.52 J	--	--	8.2	--	--	18	--
C3-Phenanthrene/anthracene	ug/kg	--	--	--	--	--	--	--	--	--	--	8.1	--	--	--	--	--	--	--	--	19	130	--	2.8	--	--	140	--	--	37	--
C4-Chrysene	ug/kg	--	--	--	--	--	--	--	--	--	--	0.25 U	--	--	--	--	--	--	--	--	15	14	--	0.25 U	--	--	41	--	--	39	--
C4-Naphthalene	ug/kg	--	--	--	--	--	--	--	--	--	--	3.4	--	--	--	--	--	--	--	--	14	4.4	--	0.37 U	--	--	9	--	--	25	--
C4-Phenanthrene/anthracene	ug/kg	--	--	--	--	--	--	--	--	--	--	2.3	--	--	--	--	--	--	--	--	12	9	--	0.75 U	--	--	17	--	--	20	--
Phthalates																															
Bis(2-ethylhexyl) phthalate	ug/kg	180 UJ	220	180 U	180 U	220 J	180 U	160	7 U	7 U	7 U	14 U	110 J	290	100	20 U	110	290	460	280	79 J	48 U	9 J	16 U	140	310	160 U	100 J	170 UJ	420 U	110
Butylbenzyl phthalate	ug/kg	2 UJ	28	2 U	14 J	1.8 U	2 U	20 U	3.2 U	3.2 U	3.2 U	3.2 U	22 U	20 U	28 U	2.4 U	3.5 U	21	9.7 U	130	3.2 U	3.2 U	1.9 U	3.2 U	2.1 U	2.6 U	16 U	5 J	2.5 UJ	20 J	38
Dibutyl phthalate	ug/kg	8.1 J	20 U	3.7 U	4.8 J	3.4 U	3.6 U	20 U	8.6	8.2	7.9 U	18	3.7 U	180	13	4.1 U	7.3 U	20 U	120 U	28	8.8 J	15	4.6 J	7.9 U	13	9.8 J	40 U	30 U	6.4 J	40 U	10 U
Diethyl phthalate	ug/kg	4.3 UJ	20 U	4.3 U	4.5 U	4 U	4.3 U	20 U	1.6 U	1.3 U	1.3 U	2.2 J	5.7 U	5.1 U	5.7 U	5.5 U	8.1 U	8.3 J	5.6 U	4.5 J	1.3 U	2 J	4.5 U	1.3 U	7.6 U	5.9 U	6.5 U	7 J	5.8 UJ	6.5 U	7.6 U
Dimethyl phthalate	ug/kg	3.6 UJ	20 U	3.7 U	3.8 U	3.4 U	5.4 J	20 U	1 U	1 U	1 U	1 U	2.6 U	2.6 U	2.9 U	2.9 U	4.2 U	2.5 U	3.1 U	1.4 U	1 U	1 U	2.3 U	1 U	2.5 U	3.1 U	5 U	15 U	3 UJ	5 U	3.9 U
Di-n-octyl phthalate	ug/kg	2.3 UJ	20 U	2.3 U	2.4 U	2.2 U	2.3 U	20 U	1.7 U	1.7 U	1.7 U	1.7 U	17 U	1.8 U	2 U	1.9 U	2.8 U	4.2 U	5.2 U	2.3 U	1.7 U	1.7 U	1.6 U	1.7 U	1.7 U	2.1 U	8.5 U	300 U	2 UJ	8.5 U	2.6 U
Phenols																															
2,3,4,5-Tetrachlorophenol	ug/kg	--	--	--	--	--	--	--	0.28 U	0.28 U	0.26 U	0.27 U	0.87 U	0.89 U	1 U	0.98 U	1.5 U	1.6 U	1.9 U	0.56 U	0.33 U	0.28 U	7.8 U	0.25 U	6.7 U	1.1 U	0.32 U	--	4.8 U	0.78 J	0.94 U
2,3,4,6;2,3,5,6-Tetrachlorophenol coelution	ug/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3 U	--	--
2,3,5,6-Tetrachlorophenol	ug/kg	--	--	--	--	--	--	--	0.23 U	0.23 U	0.21 U	0.22 U	0.43 U	0.44 U	0.97 J	8.3 U	0.86 U	1.4 NJ	0.91 U	1 U	0.27 U	0.23 U	81 U	0.2 U	0.42 U	0.51 U	0.26 U	--	--	0.27 U	0.91 U
2,4,5-Trichlorophenol	ug/kg	--	--	--	--	--	--	--	6.6 U	6.5 U	6.1 U	0.69 U	0.78 U	0.79 U	0.89 U	0.87 U	1.3 U	--	1.7 U	1.5 U	0.85 U	0.74 U	7 U	0.64 U	0.77 U	0.92 U	0.83 U	74 U	2.4 U	0.87 U	7.9 U
2,4,6-Trichlorophenol	ug/kg	--	--	--	--	--	--	--	0.15 U	0.15 U	0.14 U	0.14 U	0.55 U	0.56 UJ	0.63 UJ	0.62 UJ	0.9 U	0.96 U	1.2 U	0.3 U	0.18 U	0.15 U	5 U	0.13 U	0.55 U	0.66 U	0.17 U	74 U	3 U	0.18 U	0.55 U
2,4-Dichlorophenol	ug/kg	--	--	--	--	--	--	--	1 U	1 U	1 U	1 U	2.6 U	2.6 U	2.9 U	2.9 U	4.2 U	2.5 U	3.1 U	1.4 U	1 U	1 U	2.3 U	1 U	2.5 U	3.1 U	5 U	150 U	3 UJ	5 U	3.9 U
2,4-Dimethylphenol	ug/kg	22 UJ	6 U	22 UJ	23 UJ	20 UJ	21 UJ	6 U	--	--	--	5.5 UJ	7.8 U	7.9 U	8.9 U	8.7 U	13 U	14 U	17 U	--	--	5.5 UJ	7 U	5.5 UJ	7.7 U	9.2 U	28 UJ	300 U	9 UJ	28 UJ	12 U
2,4-Dinitrophenol	ug/kg	--	--	--	--	--	--	--	17 U	17 U	17 U	17 U	51 U	52 U	58 U	57 U	83 U	42 U	52 U	23 U	17 U	17 U	46 U	17 U	50 U	61 U	85 U	440 U	59 UJ	85 U	78 U
2-Chlorophenol	ug/kg	--	--	--	--	--	--	--	2 U	2 U	2 U	2 U	2.4 U	2.5 U	2.8 U	2.7 U	4 U	5 U	6.1 U	2.7 U	2 U	2 U	2.2 U	2 U	2.4 U	2.9 U	10 U	74 U	2.8 UJ	10 U	3.7 U
2-Methylphenol	ug/kg	3.4 UJ	6 U	3.4 U	3.5 U	3.1 U	3.4 U	6 U	1.5 U	1.5 U	1.5 U	1.5 U	4.8 U	4.9 U	5.5 U	5.4 U	7.9 U	20	4.9 J	2.4 J	1.5 U	1.5 U	4.3 U	1.5 U	4.8 U	5.7 U	7.5 U	300 U	5.6 UJ	7.5 U	7.4 U
2-Nitrophenol	ug/kg	--	--	--	--	--	--	--	1.5 U	1.5 U	1.5 U	1.5 U	3.7 U	3.8 U	4.2 U	4.1 U	6 U	3.7 U	4.6 U	2 U	1.5 U	1.5 U	3.3 U	1.5 U	3.7 U	4.4 U	7.5 U	74 U	4.3 UJ	7.5 U	5.7 U
3- and 4-Methylphenol Coelution	ug/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	300 U	--	--	--
3,4-Dichlorophenol	ug/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.8 U	--	--	--	--	--	--
3,5-Dichlorophenol	ug/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.4 U	--	--	--	--	--	--
4,6-Dinitro-2-methylphenol	ug/kg	--	--	--	--	--	--	--	1.4 U	1.4 U	1.4 U	1.4 U	2.4 U	2.5 U	2.8 U	2.7 U	4 U	3.5 U	4.3 U	1.9 U	1.4 U	1.4 U	2.2 U	1.4 U	2.4 U	2.9 U	7 U	300 U	2.8 UJ	7 U	3.7 U
4-Chloro-3-methylphenol	ug/kg	--	--	--	--	--	--	--	1.4 U	1.4 U	1.4 U	1.4 U	3 U	3.1 U	3.4 U	3.3 U	4.9 U	3.5 U	4.3 U	1.9 U	1.4 U	1.4 U	2.7 U	1.4 U	3 U	3.6 U	7 U	74 U	4.3 J	7 U	4.6 U
4-Methylphenol	ug/kg	16 J	44	17	54	24	50	52	1.5 U	1.5 U	1.5 U	1.5 U	4.1 U	78	81	36	620	2000	81	370	1.5 U	1.5 U	3.7 U	1.5 U	4.1 U	180	7.5 U	--	4.8 UJ	38 J	21
4-Nitrophenol	ug/kg	--	--	--	--	--	--	--	18 U	18 U	18 U	18 U	43 U	44 U	49 U	47 U	70 U	45 U	55 U	24 U	18 U	18 U	38 U	18 U	42 U	51 U	90 U	150 U	49 UJ	90 U	65 U
Pentachlorophenol	ug/kg	3.2 UJ	61 U	3.3 U	16 J	3 U	3.2 U	61 U	0.21 U	0.21 U	0.2 U	0.72 NJ	0.35 J	1.1 J	2.5 J	0.82 J	44	5 J	0.43 U	8.4 U	2.5 NJ	1.4 NJ	1.8 U	0.27 J	1.8 J	1.2 J	0.25 U	440 U	8.7 J	4.1 NJ	1 U
Phenol	ug/kg	27 UJ	20 U	38 UJ	46 U	43 U	44 U	20 U	8.6 U	13 U	2 U	2 U	2.7 U	16 U	18 U	15 U	69	90	42 U	25 J	2.9 J	2 U	2.4 U	2 U	6 U	9.7 U	10 U	10 J	6.3 UJ	10 U	12 U
Dioxins and Furans																															
2,3,7,8-Tetrachlorodibenzo-p-dioxin	pg/g	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.062 U	0.14 U	0.0133 U	0.0161 U	0.0981 U	--	--	--	--	--	--	--	--	--	--
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	pg/g	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.182 U	0.107 U	0.801 J	0.167 U	0.219 J	--	--	--	--	--	--	--	--	--	--
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	pg/g	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.204 U	0.135 U	1.49 J	0.398 U	0.232 U	--	--	--	--	--	--	--	--	--	--
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	pg/g	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.888 J	0.195 U	6.69	2.71 J	1.49 J	--	--	--	--	--	--	--	--	--	--
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	pg/g	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.68 J	0.131 U	3.78 J	1.11 J	0.641 J	--	--	--	--	--	--	--	--	--	--
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	pg/g	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	16.456	5.542 J	137	61.3	20.9	--	--	--	--	--	--	--	--	--	--
2,3,7,8-Tetrachlorodibenzofuran	pg/g	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.635 U	0.158 U	0.863 U	0.0699 U	0.104 U	--	--	--	--	--	--	--	--	--	--
1,2,3,7,8-Pentachlorodibenzofuran	pg/g	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.017 U	0.078 U	0.452 J	0.186 J	0.396 J	--	--	--	--	--	--	--	--	--	--
2,3,4,7,8-Pentachlorodibenzofuran	pg/g	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.017 U	0.087 U	0.734 J	0.247 J	0.43 U	--	--	--	--	--	--	--	--	--	--
1,2,3,4,7,8-Hexachlorodibenzofuran	pg/g	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.269 J	0.078 U	2.38 J	1.37 J	0.688 J	--	--	--	--	--	--	--	--	--	--
1,2,3,6,7,8-Hexachlorodibenzofuran	pg/g	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.17 U	0.089 U	1.24 J	0.437 J	0.565 J	--	--	--	--	--	--	--	--	--	--
1,2,3,7,8,9-Hexachlorodibenzofuran	pg/g	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.046 U	0.099 U	0.115 U	0.0739 U	0.193 U	--	--	--	--	--	--	--	--	--	--
2,3,4,6,7,8-Hexachlorodibenzofuran	pg/g	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.226 U	0.093 U	1.49 J	0.501 J	0.547 J	--	--	--	--	--	--	--	--	--	--
1,2,3,4,6,7,8-Heptachlorodibenzofuran	pg/g	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3.132 J	0.893 J	18.7	6.23	2.75 J	--	--	--	--	--	--	--	--	--	--
1,2,3,4,7,8,9-Heptachlorodibenzofuran	pg/g	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.088 U	0.103 U	1.73 J	1.34 J	0.239 U	--	--	--	--	--	--	--	--	--	--
Dioxin/Furan TCDD toxicity equivalent(ND=0)	pg/g	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.436 JT	0.0775 JT	4.73 JT	1.56 JT	0.92 JT	--	--	--	--	--	--	--	--	--	--
Total TCDD toxicity equivalent(ND=0)	pg/g	--	--	--	--	--	--	--	0.185 JA	0.000404	0.191 UA	0.254 JA	--	--	--	--	0.697 JT	4.1 JT	39.9 JT	81.9 JT	31.7 JT	2.27 A	--	0.194 JA	--	--	17.6 JA	--	0.419 JA	--	--
Dioxin and Furan Homologs																															
Tetrachlorodibenzo-p-dioxin homologs	pg/g	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.696	0.14 U	7.61	0.775 J	0.513 J	--	--	--	--	--	--	--	--	--	--
Pentachlorodibenzo-p-dioxin homologs	pg/g	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.501	0.107 U	2.22 J	0.116 J	1.49 J	--	--	--	--	--	--	--	--	--	--
Hexachlorodibenzo-p-dioxin homologs	pg/g	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	6.085	0.827	35.2	10.5	6.1 J	--	--	--	--	--	--	--	--	--	--
Heptachlorodibenzo-p-dioxin homologs	pg/g	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	37.84	14.067	268	105	37.4	--	--	--	--	--	--	--	--	--	--
Octachlorodibenzo-p-dioxin	pg/g	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	176.667	40.312	1300	549	190 J	--	--	--	--	--	--	--	--	--	--
Tetrachlorodibenzofuran homologs	pg/g	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.018	0.158 U	8.71	1.4	0.637 J	--	--	--	--	--	--	--	--	--	--
Pentachlorodibenzofuran homologs	pg/g	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.654	0.124	17.1	5.32	7.48 J	--	--	--	--	--	--	--	--	--	--
Hexachlorodibenzofuran homologs	pg/g	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.145	0.671	31.4	7.5	8.36	--	--	--	--	--	--	--	--	--	--
Heptachlorodibenzofuran homologs	pg/g	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	10.548	0.893	61.6	24.8	7.97 J	--	--	--	--	--	--	--	--	--	--
Octachlorodibenzofuran	pg/g	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	12.94	3.55 J	91.8	40.1	7.6 J	--	--	--	--	--	--	--	--	--	--
Total PCDD/F	pg/g	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	252 T	60.4 JT	1820 JT	745 JT	268 JT	--	--	--	--	--	--	--	--	--	--
SVOCs																															
1,2,4-Trichlorobenzene	ug/kg	0.86 U	--	0.87 U	0.9 U	0.8 U	0.86 U	--	2.6 U	2.6 U	2.6 U	2.6 U	6.7 J	15	2.5 U	2.4 U	3.5 U	6.4 U	7.9 U	4.4 J	2.6 U	2.6 U	1.9 U	2.6 U	2.1 U	4.2 J	13 U	15 U	2.5 UJ	13 U	3.3 U
1,2-Dichlorobenzene	ug/kg	0.9 U	1 U	0.92 U	0.95 U	0.84 U	0.9 U	1 U	2.9 U	2.9 U	2.9 U	2.9 U	1.9 U	2.1 J	2.1 U	2.1 U	3 U	7.2 U	8.8 U	3.8 U	2.9 U	2.9 U	1.7 U	2.9 U	1.9 U	2.7 J	15 U	15 U	2.2 UJ	15 U	2.9 U
1,3-Dichlorobenzene	ug/kg	0.93 U	1 U	0.95 U	0.98 U	0.87 U	0.93 U	1 U	3 U	3 U	3 U	3 U	2.3 U	9.7 J	2.6 U	2.6 U	3.7 U	7.4 U	9.1 U	4 U	3 U	3 U	2.1 U	3 U	2.3 U	2.7 U	15 U	15 U	2.7 UJ	15 U	3.5 U
1,4-Dichlorobenzene	ug/kg	1.1 U	1 U	1.1 U	1.1 U	0.96 U	1.1 U	1 U	2.9 U	2.9 U	2.9 U	3.6 J	17	130	17	0.3 U	0.44 U	2.9 U	0.31 U	17	5.6 J	4.3 J	0.24 U	2.9 U	0.27 U	8.8 J	15 U	15 U	3.1 UJ	15 U	4.2 U
2,4-Dinitrotoluene	ug/kg	--	--	--	--	--	--	--	1.5 U	1.5 U	1.5 U	1.5 U	4 U	4.1 U	4.5 U	4.4 U	6.5 U	3.7 U	4.6 U	2 U	1.5 U	1.5 U	3.6 U	1.5 U	3.9 U	4.7 U	7.5 U	74 U	4.6 UJ	7.5 U	6.1 U
2,6-Dinitrotoluene	ug/kg	--	--	--	--	--	--	--	2 U	2 U	2 U	2 U	4 U	4.1 U	4.5 U	4.4 U	6.5 U	5 U	6.1 U	2.7 U	2 U	2 U	3.6 U	2 U	3.9 U	4.7 U	10 U	30 U	4.6 UJ	10 U	6.1 U

Location		T04	IS-C1	T03	T02	T01	C01020304	IS-C2	C779	C779	C779	G779	UG03	UC03	UC03	UC03	ST007	ST007	ST007	ST007	GCA11E	G778	UG02	G777	UG01	UC01	G776	SD01	G516	G771	WR-PG-61
Sample		WLCCIF01T04T04	WLCT0I98ISC1IS C1	WLCCIF01T03T03	WLCCIF01T02T02	WLCCIF01T01T01	WLCCIF01020304 020304	WLCT0I98ISC2IS C2	LW3-C779-B	LW3-C779-C	LW3-C779-E	LW3-G779	LW3-UG03	LW3-UC03-B	LW3-UC03-C	LW3-UC03-D	LW3-ST1007	LW3-ST-2007	LW3-ST3007	LW3-ST4-007	LW3-GCA11E-C00	LW3-G778	LW3-UG02	LW3-G777	LW3-UG01	LW3-UC01-B	LW3-G776	WLCAYH00SD01 SD01S	LW2-G516	LW3-G771	WLCDRD05PG06 161
Study		Cargill Irving Elevator Permit Applications	Sed Char Columbia/Willamette Chan Deep	Cargill Irving Elevator Permit Applications	Cargill Irving Elevator Permit Applications	Cargill Irving Elevator Permit Applications	Cargill Irving Elevator Permit Applications	Sed Char Columbia/Willamette Chan Deep	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment Trap	LWG Round 3 Sediment Trap	LWG Round 3 Sediment Trap	LWG Round 3 Sediment Trap	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	UPRR Albina Yard XPA	LWG Round 2 Sediment	LWG Round 3 Sediment	2005 O&M Dredge Sed Char
Depth (cm)		0 - 60	0 - 91	0 - 106	0 - 109	0 - 54	0 - 109	91 - 152	30 - 97	97 - 154	212 - 293	0 - 23	0 - 24	30 - 120	120 - 242	242 - 308					0 - 24	0 - 22	0 - 23	0 - 21	0 - 19	30 - 93	0 - 22	0 - 20	0 - 25	0 - 23	0 - 30
River Mile		11.5	11.5	11.5	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.2	11.2	11.2	11.2	11	11	10.9	10.8
Sample Date		6/29/2001	9/15/1998	6/29/2001	6/29/2001	6/29/2001	6/29/2001	9/15/1998	1/9/2008	1/9/2008	1/9/2008	12/5/2007	1/31/2007	2/8/2007	2/8/2007	2/8/2007	1/31/2007	4/30/2007	8/17/2007	11/13/2007	12/6/2007	12/5/2007	1/31/2007	12/5/2007	2/1/2007	2/7/2007	12/5/2007	8/9/2000	9/3/2004	12/6/2007	5/23/2005
2-Chloronaphthalene	ug/kg	--	--	--	--	--	--	--	1.6 U	1.6 U	1.6 U	1.6 U	5.1 U	5.2 U	5.8 U	5.7 U	8.3 U	4 U	4.9 U	2.1 U	1.6 U	1.6 U	4.6 U	1.6 U	5 U	6.1 U	8 U	15 U	5.9 UJ	8 U	7.8 U
2-Nitroaniline	ug/kg	--	--	--	--	--	--	--	3.2 U	3.2 U	3.2 U	3.2 U	3.8 U	3.9 U	4.4 U	4.3 U	6.3 U	7.9 U	9.7 U	4.2 U	3.2 U	3.2 U	3.4 U	3.2 U	3.8 U	4.6 U	16 U	30 U	4.5 UJ	16 U	5.9 U
3,3'-Dichlorobenzidine	ug/kg	--	--	--	--	--	--	--	3.7 U	3.7 U	3.7 U	3.7 U	52 U	5.4 U	6 U	5.8 U	8.6 U	9.1 U	12 U	4.9 U	--	3.7 U	4.7 U	3.7 U	5.2 U	6.2 U	19 U	100 U	6.1 UJ	19 U	8.1 U
3-Nitroaniline	ug/kg	--	--	--	--	--	--	--	2.5 U	2.5 U	2.5 U	2.5 U	3.7 U	3.8 U	4.2 U	4.1 U	6 U	6.2 U	7.6 U	3.3 U	2.5 U	2.5 U	3.3 U	2.5 U	3.7 U	4.4 U	13 U	300 U	4.3 UJ	13 U	5.7 U
4-Bromophenyl phenyl ether	ug/kg	--	--	--	--	--	--	--	1.6 U	1.6 U	1.6 U	1.6 U	2 U	2.1 U	2.3 U	2.2 U	3.3 U	4 U	4.9 U	2.1 U	1.6 U	1.6 U	1.8 U	1.6 U	2 U	2.4 U	8 U	15 U	2.3 UJ	8 U	3.1 U
4-Chloroaniline	ug/kg	--	--	--	--	--	--	--	1.9 U	1.9 U	1.9 U	1.9 U	3 U	8 J	3.4 U	3.3 U	4.9 U	4.7 U	5.8 U	2.5 U	1.9 U	1.9 U	2.7 U	1.9 U	3 U	3.6 U	9.5 U	74 U	3.5 UJ	9.5 U	4.6 U
4-Chlorophenyl phenyl ether	ug/kg	--	--	--	--	--	--	--	1.4 U	1.4 U	1.4 U	1.4 U	2.9 U	2.9 U	3.3 U	3.2 U	4.7 U	3.5 U	4.3 U	1.9 U	1.4 U	1.4 U	2.6 U	1.4 U	2.8 U	3.4 U	7 U	15 U	3.3 UJ	7 U	4.4 U
4-Nitroaniline	ug/kg	--	--	--	--	--	--	--	1.8 U	1.8 U	1.8 U	1.8 U	4.8 U	4.9 U	5.5 U	5.4 U	7.9 U	4.5 U	5.5 U	2.4 U	1.8 U	1.8 U	4.3 U	1.8 U	4.8 U	5.7 U	9 U	150 U	5.6 UJ	9 U	7.4 U
Acridine	ug/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aniline	ug/kg	--	--	--	--	--	--	--	1.5 U	1.5 U	1.5 U	1.5 U	2.2 U	2.2 U	2.5 U	2.4 U	3.5 U	3.7 U	--	2 U	--	1.5 U	1.9 U	1.5 U	2.1 U	2.6 U	7.5 U	--	2.5 UJ	7.5 U	3.3 U
Azobenzene	ug/kg	--	--	--	--	--	--	--	1.1 U	1.1 U	1.1 U	1.1 U	3.4 U	3.5 U	3.9 U	3.8 U	5.6 U	2.8 U	3.4 U	1.5 U	1.1 UJ	1.1 U	3.1 U	1.1 U	3.4 U	4.1 U	5.5 U	--	4 UJ	5.5 U	5.2 U
Benzoic acid	ug/kg	73 J	100 U	75 J	130 J	82 J	110 J	100 U	96 U	96 U	96 U	96 U	140 UJ	140 U	200 J	170 J	320 J	300 J	--	190 J	96 U	96 U	130 UJ	96 U	140 U	170 U	480 U	60 J	160 UJ	480 U	210 U
Benzyl alcohol	ug/kg	5.2 J	6 U	5.6 J	8.8 J	3.6 U	5.7 J	6 U	2.1 U	2.1 U	2.1 U	2.2 J	5.2 U	43	28	38	8.6 U	5.2 U	28	30	2.3 J	2.1 U	4.7 U	2.1 U	7.7 J	14	11 U	74 U	6.1 UJ	11 U	8.1 U
Bis(2-chloroethoxy) methane	ug/kg	--	--	--	--	--	--	--	1.5 U	1.5 U	1.5 U	1.5 U	1.9 U	1.9 U	2.1 U	2.1 U	3 U	3.7 U	4.6 U	2 U	1.5 U	1.5 U	1.7 U	1.5 U	1.9 U	2.2 U	7.5 U	30 U	2.2 UJ	7.5 U	2.9 U
Bis(2-chloroethyl) ether	ug/kg	--	--	--	--	--	--	--	1.9 U	1.9 U	1.9 U	1.9 U	3.4 U	3.5 U	3.9 U	3.8 U	5.6 U	4.7 U	5.8 U	2.5 U	1.9 U	1.9 U	3.1 U	1.9 U	3.4 U	4.1 U	9.5 U	15 U	4 UJ	9.5 U	5.2 U
Bis(2-chloroisopropyl) ether	ug/kg	--	--	--	--	--	--	--	2.6 U	2.6 U	2.6 U	2.6 U	1.7 U	1.8 U	2 U	1.9 U	2.8 U	6.4 U	7.9 U	3.4 U	2.6 U	2.6 U	1.6 U	2.6 U	1.7 U	2.1 U	13 U	15 U	2 UJ	13 U	2.6 U
Carbazole	ug/kg	--	--	--	--	--	--	--	1.3 U	1.3 U	1.3 U	1.3 U	1.9 U	11	2.1 U	2.1 U	3 U	3.2 U	8.2 J	6.3 J	4.2 J	6 J	1.7 U	1.3 U	9.3 J	13	6.5 U	5 J	17 J	6.5 U	2.9 U
Dibenzofuran	ug/kg	9.4 J	27	4.2 J	8.3 J	12 J	9.2 J	20 U	0.59 U	0.59 U	0.59 U	0.59 U	7.4	19	28	15	1 J	1.5 J	5.6	4	2.3	1.4 J	0.85 J	0.59 U	5.1	24	2.2	3 J	8.2	3.2	1.3 J
Hexachlorobenzene	ug/kg	4.2 U	20 U	4.3 U	4.4 U	4 U	4.2 UJ	20 U	0.071 U	0.068 U	0.068 U	0.13 U	0.12 U	1 U	0.13 U	0.13 U	4.9 U	0.99 U	2.2	10	0.98 UJ	1.2 U	1 U	0.068 U	1.1 U	0.14 U	0.27 J	15 U	4.84	0.17 U	0.44 U
Hexachlorobutadiene	ug/kg	3.9 UJ	20 U	3.9 U	4.1 U	3.6 U	3.9 U	20 U	0.14 U	0.3 U	0.14 U	0.14 U	0.69 U	0.71 U	0.79 U	0.77 U	1.2 U	1.3 U	0.4 U	0.19 U	0.36 U	0.14 U	1.8 U	0.14 U	2 U	0.82 U	0.14 U	15 U	0.598 UJ	0.14 U	0.59 U
Hexachlorocyclopentadiene	ug/kg	--	--	--	--	--	--	--	29 U	29 U	29 U	29 U	22 U	22 U	25 U	24 U	35 U	72 U	--	38 U	29 UJ	29 U	19 U	29 U	21 U	26 U	150 U	300 U	25 UJ	150 U	33 U
Hexachloroethane	ug/kg	3.3 UJ	--	3.3 U	3.4 U	3 U	3.2 U	--	0.16 U	0.16 U	0.16 U	0.16 U	0.23 U	1 U	0.94 U	1 U	1.3 U	0.4 U	0.46 U	0.22 U	0.16 U	0.16 U	2.1 U	0.16 U	2.3 U	0.45 UJ	0.16 U	59 U	0.598 UJ	0.16 U	0.6 U
Isophorone	ug/kg	--	--	--	--	--	--	--	1 U	1 U	1 U	1 U	2.3 U	2.3 U	2.6 U	2.6 U	3.7 U	2.5 U	3.1 U	1.4 U	1 U	1 U	2.1 U	1 U	2.3 U	2.7 U	5 U	15 U	2.7 UJ	5 U	3.5 U
Nitrobenzene	ug/kg	--	--	--	--	--	--	--	2.2 U	2.2 U	2.2 U	2.2 U	2.9 U	2.9 U	3.3 U	3.2 U	4.7 U	5.5 U	6.7 U	2.9 U	2.2 U	2.2 U	2.6 U	2.2 U	2.8 U	3.4 U	11 U	15 U	3.3 UJ	11 U	4.4 U
N-Nitrosodimethylamine	ug/kg	--	--	--	--	--	--	--	6.1 U	6.1 U	6.1 U	6.1 U	8.6 U	8.8 U	9.8 U	9.6 U	15 U	15 U	19 U	8 U	6.1 UJ	6.1 U	7.7 U	6.1 U	8.5 U	11 U	31 U	--	10 UJ	31 U	14 U
N-Nitrosodiphenylamine	ug/kg	3.4 UJ	12 U	3.5 U	3.6 U	3.2 U	3.4 U	12 U	1.6 U	1.6 U	1.6 U	1.6 U	3.1 U	3.2 U	3.6 U	3.5 U	5.1 U	4 U	4.9 U	2.1 U	1.6 U	1.6 U	2.8 U	1.6 U	3.1 U	3.7 U	8 U	15 U	3.6 UJ	8 U	4.8 U
N-Nitrosodipropylamine	ug/kg	--	--	--	--	--	--	--	2.4 U	2.4 U	2.4 U	2.4 U	4.5 U	4.6 U	5.2 U	5.1 U	7.4 U	5.9 U	7.3 U	3.2 U	2.4 U	2.4 U	4.1 U	2.4 U	4.5 U	5.4 U	12 U	15 U	5.3 UJ	12 U	7 U
VOCs																															
1,1,1,2-Tetrachloroethane	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.076 U	0.078 U	0.087 U	0.085 U	0.13 U	0.36 U	0.24 U	0.3 U	--	--	0.068 U	--	0.075 U	0.091 U	--	--	--	--	--
1,1,1-Trichloroethane	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.11 U	0.11 U	0.13 U	0.12 U	0.18 U	0.31 U	0.2 U	0.26 U	--	--	0.096 U	--	0.11 U	0.13 U	--	--	--	--	--
1,1,2,2-Tetrachloroethane	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.17 U	0.18 U	0.2 U	0.19 U	0.28 U	0.52 U	0.34 U	0.43 UJ	--	--	0.16 U	--	0.17 U	0.21 U	--	--	--	--	--
1,1,2-Trichloroethane	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.096 U	0.098 U	0.11 U	0.11 U	0.16 U	0.52 U	0.34 U	0.43 U	--	--	0.086 U	--	0.095 U	0.12 U	--	--	--	--	--
1,1-Dichloroethane	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.086 U	0.088 U	0.098 U	0.096 U	0.15 U	0.32 U	0.21 U	0.27 U	--	--	0.077 U	--	0.085 U	0.11 U	--	--	--	--	--
1,1-Dichloroethene	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.12 U	0.12 U	0.14 U	0.13 U	0.2 U	0.27 U	0.18 U	0.23 U	--	--	0.11 U	--	0.12 U	0.14 U	--	--	--	--	--
1,2,3-Trichloropropane	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.26 U	0.26 U	0.29 U	0.29 U	0.42 U	1.4 U	0.88 U	1.2 UJ	--	--	0.23 U	--	0.25 U	0.31 U	--	--	--	--	--
1,2-Dichloroethane	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.14 U	0.14 U	0.16 U	0.16 U	0.23 U	0.27 U	0.18 U	0.23 U	--	--	0.13 U	--	0.14 U	0.17 U	--	--	--	--	--
1,2-Dichloropropane	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.093 U	0.095 U	0.11 U	0.11 U	0.16 U	0.44 U	0.29 U	0.37 U	--	--	0.084 U	--	0.092 U	0.12 U	--	--	--	--	--
1,4-Dichloro-trans-2-butene	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.47 U	0.48 U	0.53 U	0.52 U	0.77 U	2 U	1.3 U	1.6 UJ	--	--	0.42 U	--	0.46 U	0.56 U	--	--	--	--	--
2-Chloroethyl vinyl ether	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.22 U	0.22 U	0.25 U	0.24 U	0.35 U	1.5 U	0.94 U	--	--	--	0.19 U	--	0.21 U	0.26 U	--	--	--	--	--
Acetone	ug/kg	--	--	--	--	--	--	--	--	--	--	--	8.3 U	28 U	31 U	30 U	14 U	180 U	4500 J	47 J	--	--	7.5 U	--	8.2 U	19 U	--	--	--	--	--
Acrylonitrile	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.58 U	0.59 U	0.66 U	0.65 U	0.95 U	2.2 U	1.4 U	--	--	--	0.52 U	--	0.57 U	0.69 U	--	--	--	--	--
Benzene	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.09 J	0.064 U	0.071 U	0.069 U	0.11 U	0.37 U	0.24 U	0.31 U	--	--	0.056 U	--	0.062 U	0.074 U	--	--	--	--	--
Bromochloromethane	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.14 U	0.15 U	0.16 U	0.16 U	0.23 U	0.85 U	0.55 U	0.71 U	--	--	0.13 U	--	0.14 U	0.17 U	--	--	--	--	--
Bromodichloromethane	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.057 U	0.058 U	0.065 U	0.063 U	0.093 U	0.52 U	0.34 U	0.43 U	--	--	0.051 U	--	0.056 U	0.067 U	--	--	--	--	--
Bromoform	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.17 U	0.18 U	0.2 U	0.19 U	0.28 U	0.89 U	0.58 U	0.75 U	--	--	0.16 U	--	0.17 U	0.21 U	--	--	--	--	--
Bromomethane	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.4 U	0.41 U	0.45 U	0.44 U	0.65 U	2.4 U	1.6 U	2 U	--	--	0.36 U	--	0.39 U	0.47 U	--	--	--	--	--
Carbon disulfide	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.094 U	0.097 U	0.11 U	0.11 U	0.16 U	0.27 U	0.18 U	0.23 U	--	--	0.085 U	--	0.093 U	0.12 U	--	--	--	--	--
Carbon tetrachloride	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.071 U	0.072 U	0.081 U	0.079 U	0.12 U	0.34 U	0.22 U	0.29 U	--	--	0.063 U	--	0.07 U	0.084 U	--	--	--	--	--
Chlorobenzene	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.085 U	1.6	0.097 U	0.094 U	0.14 U	1 U	0.16 U	6.9	--	--	0.076 U	--	0.084 U	0.11 U	--	--	--	--	--
Chlorodibromomethane	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.15 U	0.15 U	0.17 U	0.16 U	0.24 U	0.45 U	0.3 U	0.38 U	--	--	0.13 U	--	0.14 U	0.17 U	--	--	--	--	--
Chloroethane	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.29 U	0.29 U	0.33 U	0.32 U	0.47 U	1.2 U	0.73 U	0.94 U	--	--	0.26 U	--	0.28 U	0.34 U	--	--	--	--	--
Chloroform	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.12 U	0.12 U	0.13 U	0.13 U	0.19 U	0.3 U	0.2 U	0.25 U	--	--	0.1 U	--	0.11 U	0.14 U	--	--	--	--	--
Chloromethane	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.11 U	0.11 U	0.13 U	0.12 U	0.18 U	0.52 U	0.34 U	0.43 U	--	--	0.095 U	--	0.11 U	0.13 U	--	--	--	--	--
cis-1,2-Dichloroethene	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.14 U	0.14 U	0.16 U	0.16 U	0.23 U	0.47 U	0.31 U	0.39 U	--	--	0.13 U	--	0.14 U	0.17 U	--	--	--	--	--
cis-1,3-Dichloropropene	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.087 U	0.089 U	0.1 U	0.098 U	0.15 U	0.27 U	0.17 U	0.22 U	--	--	0.078 U	--	0.086 U	0.11 U	--	--	--	--	--
Dichlorodifluoromethane	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.083 U	0.085 U	0.095 U	0.093 U	0.14 U	0.31 U	0.2 U	0.26 UJ	--	--	0.075 U	--	0.082 U	0.099 U	--	--	--	--	--
Ethylbenzene	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.072 U	0.074 U	0.082 U	0.08 U	0.12 U	1.4 J	0.2 U	0.26 U	--	--	0.065 U	--	0.071 U	0.086 U	--	--	--	--	--
Ethylene dibromide	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.086 U	0.088 U	0.098 U	0.096 U	0.15 U	0.44 U	0.29 U	0.37 U	--	--	0.077 U	--	0.085 U	0.11 U	--	--	--	--	--
Isopropylbenzene	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.12 U	0.13 U	0.14 U	0.14 U	0.2 U	0.24 U	0.16 U	0.2 U	--	--	0.11 U	--	0.12 U	0.15 U	--	--	--	--	--
m,p-Xylene	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.17 U	0.16 U	0.18 U	0.18 U	0.26 U	1.2 J	0.46 U	0.59 U	--	--	0.14 U	--	0.26 U	0.19 U	--	--	--	--	--
Methyl iodide	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.47 U	0.48 U	0.53 U	0.52 U	0.77 U	1.7 U	1.1 U	1.4 U	--	--	0.42 U	--	0.46 U	0.56 U	--	--	--	--	--
Methyl isobutyl ketone	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.71 U	0.72 U	0.81 U	0.79 U	1.2 U	1.1 U	0.67 U	--	--	--	0.63 U	--	0.7 U	0.84 U	--	--	--	--	--
Methyl n-butyl ketone	ug/kg	--	--	--	--	--	--	--	--	--	--	--	5 U	5.1 U	5.7 U	5.5 U	8.1 U	2.8 U	1.8 UJ	--	--	--	4.5 U	--	4.9 U	5.9 U	--	--	--	--	--
Methyl tert-butyl ether	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.1 U	0.11 U	0.12 U	0.12 U	0.17 U	0.3 U	0.2 U	0.25 U	--	--	0.09 U	--	0.099 U	0.12 U	--	--	--	--	--
Methylene bromide	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.099 U	0.11 U	0.12 U	0.11 U	0.17 U	0.71 U	0.46 U	0.59 U	--	--	0.089 U	--	0.098 U	0.12 U	--	--	--	--	--
Methylene chloride	ug/kg	--	--	--	--	--	--	--	--	--	--	--	3.3 U	2.7 U	1.6 U	1.8 U	1 U	18 U	1.9 U	10 U	--	--	1.4 U	--	0.78 U	2.1 U	--	--	--	--	--
Methylethyl ketone	ug/kg	--	--	--	--	--	--	--	--	--	--	--	--	7.7 J	7.7 J	7.4 J	--	46 J	6.1 J	--	--	--	--	--	--	--	--	--	--	--	--
o-Xylene	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.08 U	0.082 U	0.092 U	0.09 U	0.14 U	0.27 U	0.18 U	0.23 U	--	--	0.072 U	--	0.08 U	0.096 U	--	--	--	--	--
Styrene	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.13 U	0.5 U	0.53 U	0.5 U	0.22 U	0.32 U	0.21 U	0.27 U	--	--	0.12 U	--	0.13 U	0.16 U	--	--	--	--	--
Tetrachloroethene	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.12 U	0.13 U	0.14 U	0.14 U	0.2 U	0.36 U	0.24 U	0.3 U	--	--	0.27 J	--	0.12 U	0.15 U	--	--	--	--	--
Toluene	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.12 U	0.11 U	0.12 U	0.11 U	310	13000	0.53 U	800	--	--	0.089 U	--	0.098 U	0.12 U	--	--	--	--	--
trans-1,2-Dichloroethene	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.083 U	0.085 U	0.095 U	0.093 U	0.14 U	0.4 U	0.26 U	0.33 U	--	--	0.075 U	--	0.082 U	0.099 U	--	--	--	--	--
trans-1,3-Dichloropropene	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.092 U	0.094 U	0.11 U	0.11 U	0.15 U	0.44 U	0.29 U	0.37 U	--	--	0.082 U	--	0.091 U	0.11 U	--	--	--	--	--
Trichloroethene	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.12 U	0.12 U	0.14 U	0.13 U	0.19 U	0.33 U	0.22 U	0.28 U	--	--	0.11 U	--	0.12 U	0.14 U	--	--	--	--	--
Trichlorofluoromethane	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.5 U	0.51 U	0.57 U	0.55 U	0.81 U	0.52 U	0.34 U	0.43 U	--	--	0.45 U	--	0.49 U	0.59 U	--	--	--	--	--
Vinyl chloride	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.2 U	0.21 U	0.23 U	0.22 U	0.33 U	0.44 U	0.29 U	0.37 U	--	--	0.18 U	--	0.2 U	0.24 U	--	--	--	--	--
Xylene	ug/kg	--	--	--	--	--	--	--	--	--	--	--	0.17 UT	0.16 UT	0.18 UT	0.18 UT	0.26 UT	1.2 JT	0.46 UT	0.59 UT	--	--	0.14 UT	--	0.26 UT	0.19 UT	--	--	--	--	--
Total Petroleum Hydrocarbons																															
Gasoline Range Hydrocarbons	mg/kg	--	--	--	--	--	--	--	--	--	--	--	1.2 J	22 J	34 J	33 J	8.7 J	12 J	4.8 U	7.5 J	--	--	0.75 U	--	0.82 U	18 J	--	61 U	--	--	2.2 U
Diesel Range Hydrocarbons	mg/kg	--	--	--	--	--	--	--	3.8 J	1.8 J	1.5 U	17 JT	83 J	81 J	200 J	160 J	45 J	120 JT	150 J	130 J	--	16 J	23 J	6.5 U	98 J	330 J	45 J	80	--	94 J	84 J
Residual Range Hydrocarbons	mg/kg	--	--	--	--	--	--	--	12 J	4.1 J	3.6 U	40 JT	470 J	390 J	750 J	600 J	450 J	600 JT	770 J	750 J	--	130 J	140 J	58 J	1500 J	1500 J	160 J	300 J	--	670 J	590 J

	Location	T04	IS-C1	T03	T02	T01	C01020304	IS-C2	C779	C779	C779	G779
	Sample	WLCCIF01T04T04	WLCT0I98ISC1IS C1	WLCCIF01T03T03	WLCCIF01T02T02	WLCCIF01T01T01	WLCCIF01020304 020304	WLCT0I98ISC2IS C2	LW3-C779-B	LW3-C779-C	LW3-C779-E	LW3-G779
	Study	Cargill Irving Elevator Permit Applications	Sed Char Columbia/Willamette Chan Deep	Cargill Irving Elevator Permit Applications	Cargill Irving Elevator Permit Applications	Cargill Irving Elevator Permit Applications	Cargill Irving Elevator Permit Applications	Sed Char Columbia/Willamette Chan Deep	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment
	Depth (cm)	0 - 60	0 - 91	0 - 106	0 - 109	0 - 54	0 - 109	91 - 152	30 - 97	97 - 154	212 - 293	0 - 23
	River Mile	11.5	11.5	11.5	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4
	Sample Date	6/29/2001	9/15/1998	6/29/2001	6/29/2001	6/29/2001	6/29/2001	9/15/1998	1/9/2008	1/9/2008	1/9/2008	12/5/2007
Total Petroleum Hydrocarbons	mg/kg	--	--	--	--	--	--	--	12.4 JA	5.9 JA	3.6 UA	83 JA

	Location	UG03	UC03	UC03	UC03	ST007	ST007	ST007	ST007	GCA11E	G778	UG02
	Sample	LW3-UG03	LW3-UC03-B	LW3-UC03-C	LW3-UC03-D	LW3-ST1007	LW3-ST-2007	LW3-ST3007	LW3-ST4-007	LW3-GCA11E-C00	LW3-G778	LW3-UG02
	Study	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment Trap	LWG Round 3 Sediment Trap	LWG Round 3 Sediment Trap	LWG Round 3 Sediment Trap	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment
	Depth (cm)	0 - 24	30 - 120	120 - 242	242 - 308					0 - 24	0 - 22	0 - 23
	River Mile	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3
	Sample Date	1/31/2007	2/8/2007	2/8/2007	2/8/2007	1/31/2007	4/30/2007	8/17/2007	11/13/2007	12/6/2007	12/5/2007	1/31/2007
Total Petroleum Hydrocarbons	mg/kg	550 JT	490 JT	980 JT	790 JT	500 JT	730 JT	920 JT	888 JT	--	151 JA	160 JT

	Location	G777	UG01	UC01	G776	SD01	G516	G771	WR-PG-61
	Sample	LW3-G777	LW3-UG01	LW3-UC01-B	LW3-G776	WLCAYH00SD01 SD01S	LW2-G516	LW3-G771	WLCDRD05PG06 161
	Study	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	LWG Round 3 Sediment	UPRR Albina Yard XPA	LWG Round 2 Sediment	LWG Round 3 Sediment	2005 O&M Dredge Sed Char
	Depth (cm)	0 - 21	0 - 19	30 - 93	0 - 22	0 - 20	0 - 25	0 - 23	0 - 30
	River Mile	11.2	11.2	11.2	11.2	11	11	10.9	10.8
	Sample Date	12/5/2007	2/1/2007	2/7/2007	12/5/2007	8/9/2000	9/3/2004	12/6/2007	5/23/2005
Total Petroleum Hydrocarbons	mg/kg	33 UA	1600 JT	1800 JT	325 JA	380 JT	--	414 JA	674 JT

Notes:

-- = Not analyzed.

A = Total value based on limited number of analytes.

J = The associated numerical value is an estimated quantity.

NJ = Presumptive evidence of the presence of the material at an estimated quantity.

R = Rejected.

T = The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte). Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods)derived.

U = The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.

UJ = The material was analyzed for, but was not detected. The sample quantitation limit is an estimated quantity.

ug/Kg = Micrograms per kilogram.

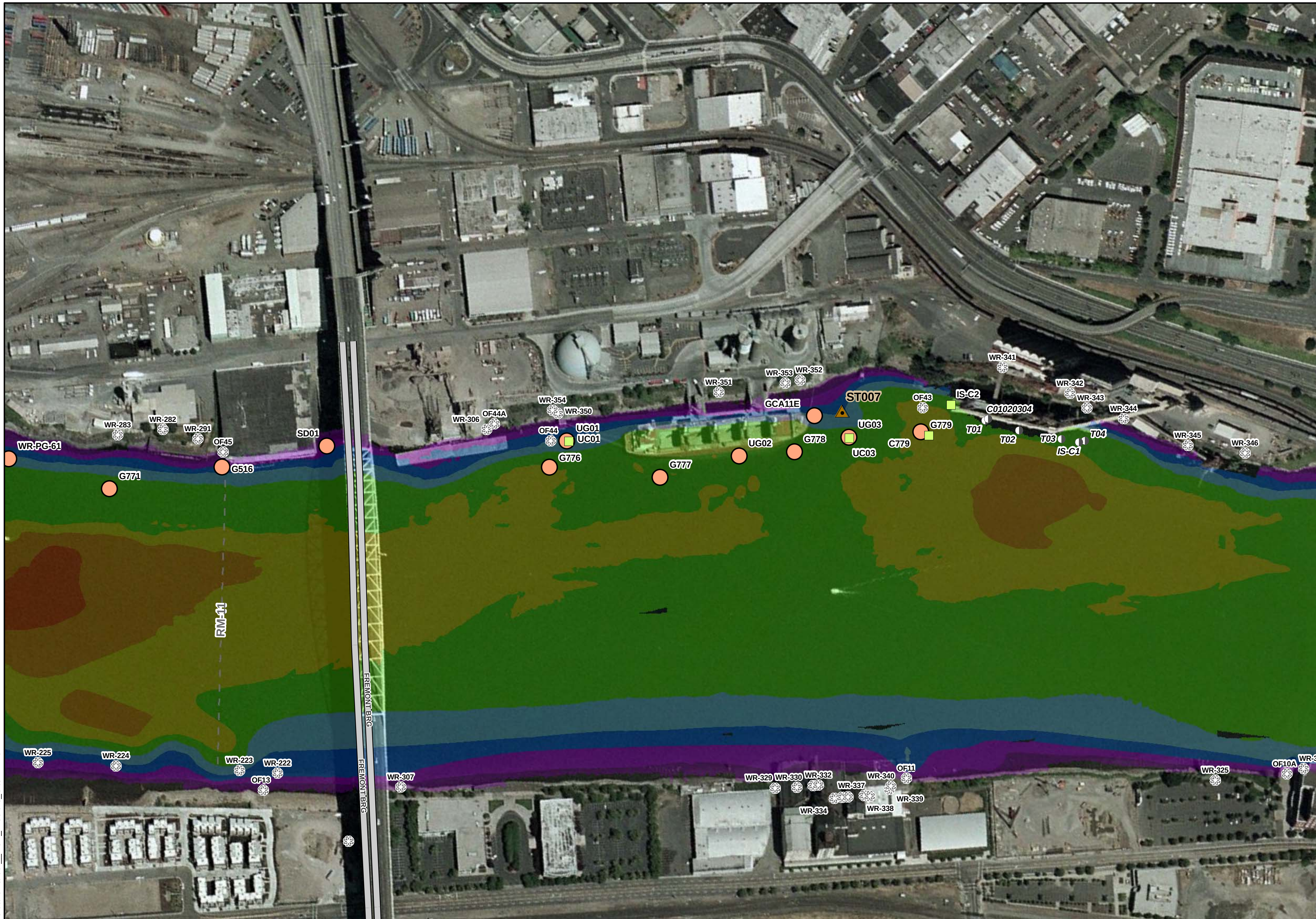
mg/Kg = Milligrams per kilogram.

FIGURES

Sediment Sample Locations
Albina River Lots Area

Figure 1

Portland Harbor
Portland, Oregon



Legend

- Sediment Trap Sample Location
- Surface Locations
- Subsurface Locations
- Dredged Sample Locations
- Outfall
- River Miles (RM)

Bathymetry (NAVD 88)

- 0 to 10
- -10 to 0
- -20 to -10
- -30 to -20
- -40 to -30
- -50 to -40
- -60 to -50
- -70 to -60
- -80 to -70
- -90 to -80

MAP NOTES:
Projection: Oregon State Plane North
Datum: NAD 83
Date: October 24, 2008
1. The locations of all features shown are approximate.
2. This drawing is for infomation purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers and will serve as the official record of this communication.
Data Sources: SCRA Combo database dated July 2, 2008.

1 inch = 325 feet

325 0 325
Feet

GSI Water Solutions, Inc.

GEOENGINEERS

Path: P:\2\2116025\01\GIS\MXD\PortlandHarbor__PCB_Aroclors_SiteID.mxd

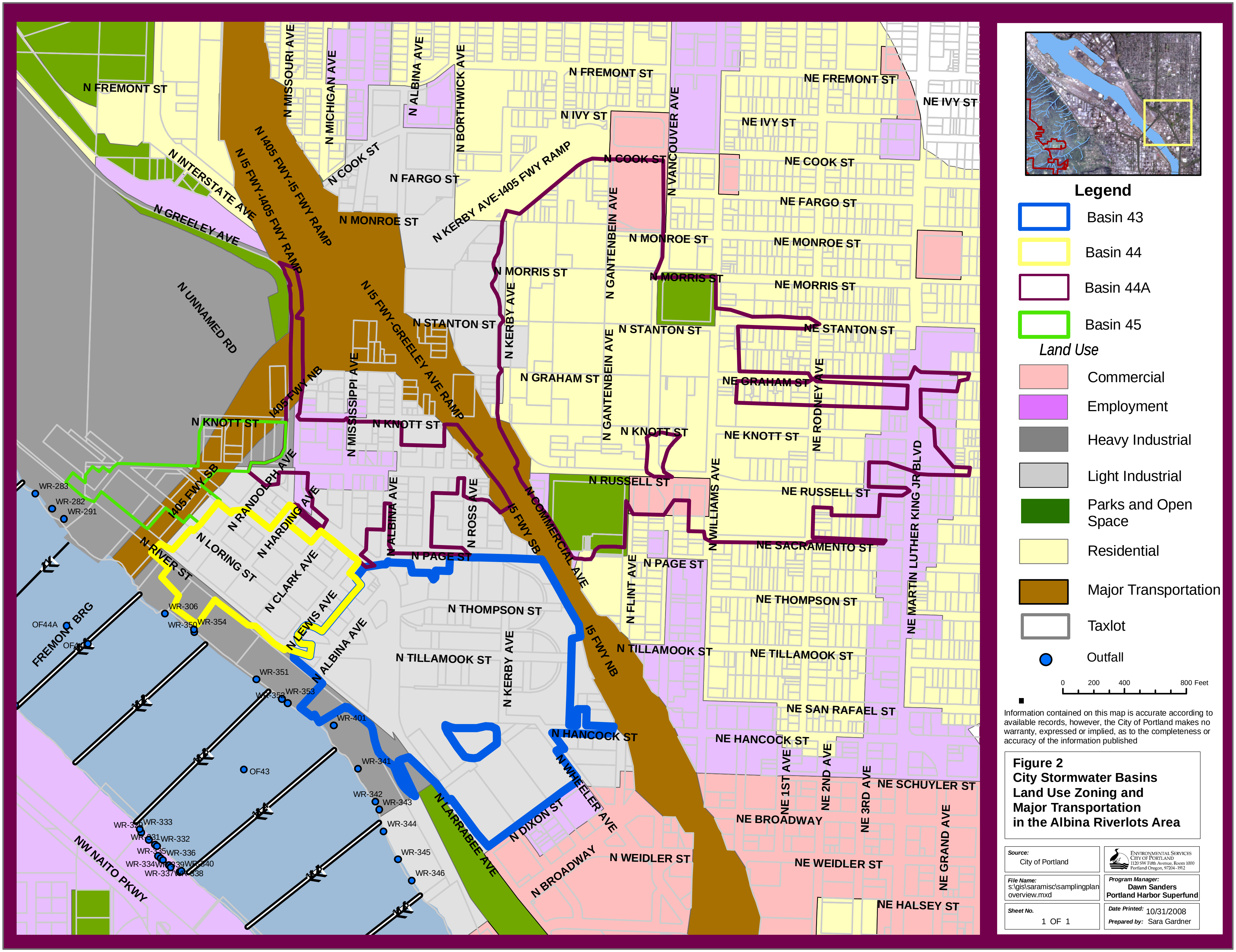
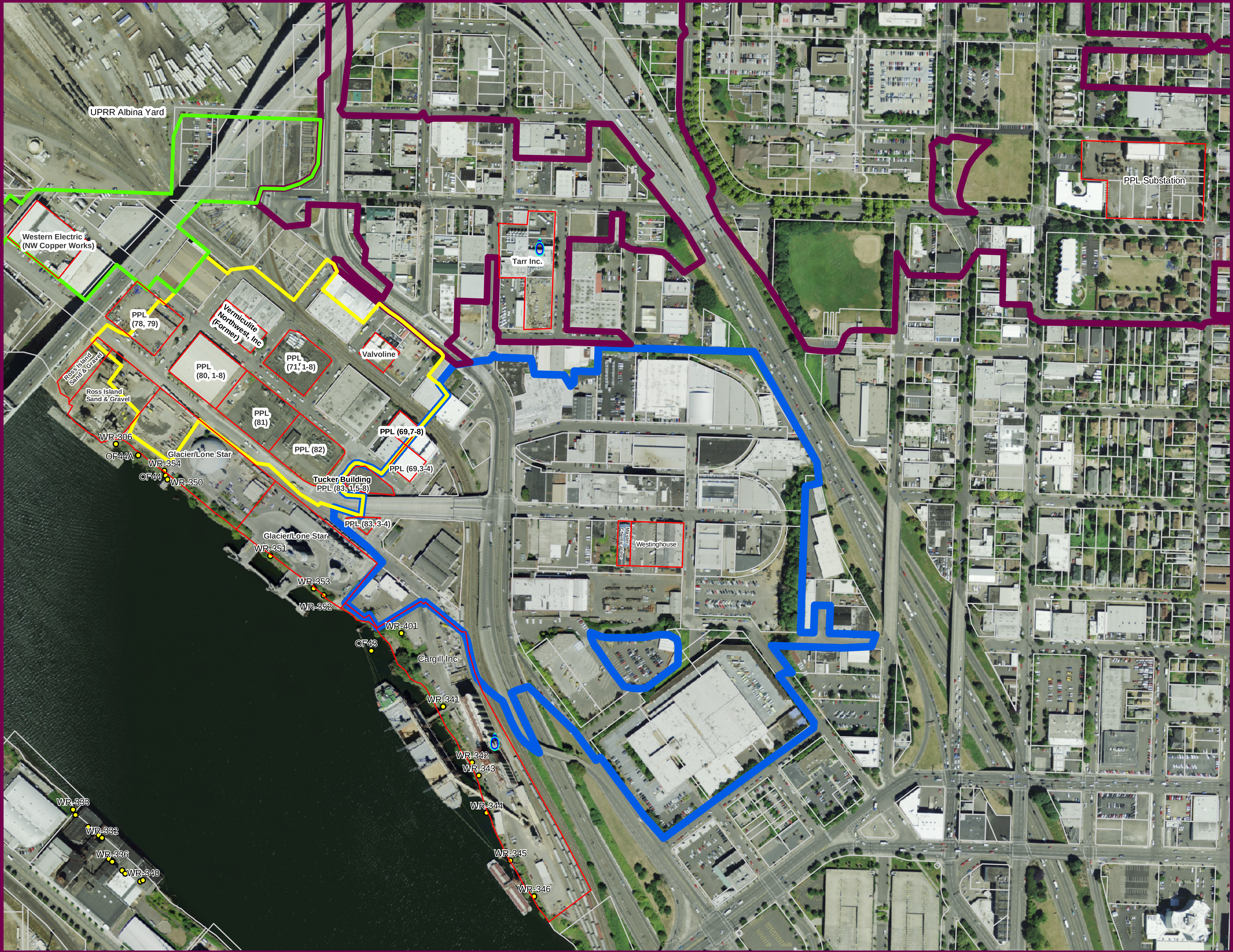
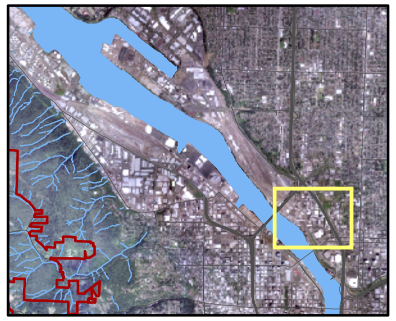


Figure 2
City Stormwater Basins Land Use Zoning and Major Transportation in the Albina Riverlots Area





Legend

- Basin 43
- Basin 44
- Basin 44A
- Basin 45
- Taxlot
- Site
- Outfall
- Industrial Stormwater 1200Z Permit

0 150 300 600 Feet

Information contained on this map is accurate according to available records, however, the City of Portland makes no warranty, expressed or implied, as to the completeness or accuracy of the information published

Figure 3
Sites in the Albina Riverlots Area

Source: City of Portland 2007 aerial	ENVIRONMENTAL SERVICES CITY OF PORTLAND 1120 SW Fifth Avenue, Room 1000 Portland Oregon, 97204-1912
File Name: s:\gis\saramisc\samplingplan aoverview.mxd	Program Manager: Dawn Sanders Portland Harbor Superfund
Sheet No. 1 OF 1	Date Printed: 12/04/2008 Prepared by: Sara Gardner

ATTACHMENT

Attachment A

TECHNICAL MEMORANDUM

City Source Investigations for Basins 43, 44, and 44A Fall 2008/Winter 2009 Sampling and Analysis Plan

December 2008

Background

This technical memorandum presents the project-specific Sampling and Analysis Plan (SAP) for conducting stormwater evaluations at three City outfall basins in the Portland Harbor Study Area during the fall 2008/winter 2009 wet season. In response to Oregon Department of Environmental Quality (DEQ) correspondence dated August 13, 2008, this SAP has been designed to investigate stormwater discharges in Outfall Basins 43, 44, and 44A through the collection and analyses of stormwater grab samples and inline stormwater solids samples. This SAP has been developed in accordance with the amended programmatic Quality Assurance Project Plan (QAPP) and programmatic SAP for the City of Portland Outfalls Project.

Sampling Objective

The purpose of the City sampling at these three outfall basins is to conduct a stormwater pathway screening evaluation in accordance with the *Portland Harbor Joint Source Control Strategy* [(JSCS); DEQ/EPA, 2005, as amended 2007]. DEQ has also requested selected sites that discharge to these conveyance systems to initiate source investigations. All analytical results collected under this SAP will be evaluated in conjunction with available basin data and data from upland sites to assess whether further source tracing is necessary in these basins.

Outfall Basin Selection

Based on the recent evaluation of inriver data in the east shore are between river miles 11 and 11.6, the City is conducting source investigations in three additional City outfall basins (see technical memorandum, Figures 2 and 3). To support outfall remedial investigation objectives, stormwater and stormwater solids data are necessary to evaluate the status of ongoing source tracing activities, to confirm that no significant sources are present and/or to verify that all significant sources have been identified and controlled.

The drainage areas affiliated with Outfalls 43, 44, and 44A are depicted on Figures 1 through 3.

Monitoring Locations

Outfall or manhole monitoring locations for each basin have been identified for stormwater sampling and sediment trap installations. Stormwater samples will not be collected directly from outfalls affiliated with these basins because Outfalls 43 and 44 are submerged during wet weather months and all contributions to Outfall 44A can be sampled at a more accessible manhole location. For some portions of these conveyance systems, low pipe elevations allow for river back up in the system, making certain locations unsuitable for sediment trap deployment. Locations were chosen to: 1) represent as much of the outfall drainage basin areas as possible; and 2) isolate specific basin branches in order to facilitate data evaluation and to expedite source identifications. Basin-specific rationale for monitoring location selections are as follows:

Basin 43: The basin consists of two main branches that connect to the 56-inch-diameter main line: a western branch from areas adjacent to and upstream of N. River Street and an eastern branch from industrial properties in the vicinity of N. Wheeler Place, N. Kerby Avenue, and N. Thompson Street. Due to construction activities affiliated with the East Side Big Pipe CSO project and low elevations of the stormwater main line immediately upstream of the outfall, a manhole location is not available that would represent all basin contributions. Field reconnaissance of manhole locations on these branches also indicates that several manholes are not accessible due to their proximity to the active railroad lines. Several manhole locations in the eastern branch do not allow for sediment trap installation or stormwater sample collection due to offset inverts or surcharge prevention structures. The City selected five accessible locations on the western and eastern branches for stormwater and solids sample collection.

Basin 44: This drainage basin consists of a 12-inch-diameter storm line that discharges to the outfall and three main branches that converge at the intersection of N. River St. and N. Harding Avenue. Some uncertainty exists in this drainage basin as to how properties adjacent to N. River Street discharge to Basin 44. Due to small pipe diameters in this area and the difficulty in isolating sediments from the three main branches that converge upstream of the outfall, sediment traps will be deployed only in the main discharge line. To help evaluate stormwater and solids data collected to represent the entire basin, an additional inline solids sample will be collected from a sedimentation manhole in the upper portion of the basin.

Basin 44A: This basin includes a number of branch lines that drain predominantly smaller properties along and east of N. Interstate Avenue and in the vicinity of N. Russell Avenue. A monitoring location is available on the 72-inch-diameter main line that represents the entire drainage basin.

The proposed monitoring locations for each basin are depicted on Figures 1 through 3 and are summarized in the table below.

Table 1: Selected Sampling Locations for Basins 43, 44, and 44A

Basin	Sampling Location	Description
43	Manhole ABC290	Western branch: stormwater and sediment trap samples to be collected from 16" line in N. River St., downstream of the manhole.
	Manhole ABC539	Eastern branch (N. Kerby contribution): stormwater and sediment trap samples to be collected from the manhole, adjacent to the 27" discharge line at the downstream side of the manhole. This line is at an elevation approximately 3' above the incoming line from N. Kerby, causing solids and stormwater to accumulate in the manhole invert. To ensure samples are representative of suspended stormwater solids and stormwater flows, traps will be mounted on the manhole side walls directly below the discharge line and stormwater samples will be collected from the manhole only if visual observations indicate that stormwater discharge is occurring in the discharge line.
43 (cont.)	Manhole ABC500	Eastern branch (N. Kerby contribution upstream of former Westinghouse site): sediment trap samples to be collected from the 27" incoming line upstream of the manhole.

Basin	Sampling Location	Description
	Manhole ABC499[1]	Eastern branch (N. Kerby contribution upstream of former Westinghouse site): stormwater samples to be collected from the 27″ line downstream of the manhole. Representativeness of location identical to ABC500 as described above – stormwater samples to be collected here due to location of sediment traps at ABC500.
	Manhole ABC552	Eastern branch (N. Wheeler contribution): stormwater and sediment trap samples to be collected from 62″ line downstream of manhole.
44	Manhole ABC352	Stormwater and sediment trap samples to be collected from main 12″ line to outfall, downstream of manhole.
	Manhole AMQ287	Sedimentation manhole in upper portion of basin, on N. Loring St. Inline solids sample to be collected during sediment trap removals. Solids were cleaned from manhole in June 2008.
44A	Manhole ABC311	Located downstream of all known connections to the basin. Stormwater and sediment trap samples to be collected from the 72″ line discharging from this manhole.

Sampling Approach: Phase 1

The objective of Phase 1 sampling is to collect representative stormwater and stormwater solids samples from each outfall basin, as well as from key subbasins, to isolate potential source locations for further investigation in Phase 2. This phase is intended as a complete screening step, employing a combination of stormwater grab sampling, inline sediment traps, and inline solids collection to identify subsequent source investigation priorities.

Stormwater Grab Sampling

For each basin, stormwater grab samples will be collected from the designated monitoring locations during four storm events.[2] Two of the four events at each location will target "first-flush" conditions. Due to the varying complexity and size of these conveyance systems, this will be defined as being within the first three hours of observed runoff to ensure that samples represent contributions from the entire basin and represent stormwater, rather than any observed dry-weather flows.

The JSCS establishes target storm criteria as follows:

- Antecedent dry period of at least 24 hours (as defined by <0.1″ over the previous 24 hours);
- Minimum predicted rainfall volume of >0.2″ per event; and
- Expected duration of storm event of at least 3 hours.

Based on the City's experience with stormwater monitoring in this region, smaller storms or those of shorter duration are less likely to generate runoff that would be representative of entire stormwater basins if the basin area is large. An effort will be made to select storm events that meet target criteria; however, it is likely that a targeted and sampled storm may not meet optimal criteria when the sampling event is completed, or that unpredicted events will occur that do meet the criteria. The criteria will be used as general guidance to determine when forecasted storms should be targeted for sampling for this project. Field crews will use best professional judgment to determine whether samples are representative of first flush conditions

[1] This sampling location was added following the completion of the first storm event.
[2] A total of three storm events will be collected from one location in Basin 43 (Manhole ABC499) as it was added following completion of the first event.

and of discharges from the entire basin. If the City experiences difficulty in completing sample collection within the targeted schedule, the City and DEQ will discuss whether the antecedent dry period requirement may be shortened in an effort to collect a full data set this winter.

Following sample collection, rain gage data, field observations and sample times will be evaluated for each basin to assess sample representativeness prior to submitting samples for laboratory analyses. Field crews will make visual observations, such as noting the flow direction of a floatable object, to ascertain whether observed water at monitoring locations represents stormwater flow or standing water. Where confirmation cannot be made of storm flow conditions, samples will not be collected.

Field crews will attempt to complete stormwater sampling before March 1st, and events will be spaced a minimum of two weeks apart. Not all locations may be sampled during each targeted storm, due to limited field crew and traffic control availability. As Basin 43 has multiple stormwater sampling locations within the basin, all four sampling locations will be sampled for each event to facilitate data comparability and evaluation for this area.

Quality control samples will include a field equipment blank for each sampled event as well as field duplicates at an interval of approximately one duplicate per every ten samples. In addition to general Standard Operating Procedures (SOPs) that will be utilized by field crews during sample collection for equipment preparation, measurement of field parameters, chain-of-custody, and quality control sampling, grab samples will be collected in accordance with SOP 2.02b "Grab Sample Collection with Stainless Steel Beaker." All relevant SOPs are included in the programmatic SAP located in Appendix C of the *Programmatic Source Control Remedial Investigation Work Plan for the City of Portland Outfalls Project*.

Stormwater Solids Sampling

Sediment trap deployment and sampling procedures will be completed in accordance with the programmatic SAP. Stormwater solids will be collected in conformance with Standard Operating Procedure (SOP) 5.01b "Sampling Stormwater Solids Using Inline Sediment Traps."

The traps will be checked periodically to ensure that equipment is intact and to remove accumulated solids if the bottles are at least half full. Based on expected difficulties in capturing sufficient solids to meet all analytical requirements, bottles with smaller accumulations of solids may be removed during periodic checks to ensure that captured solids are not lost during subsequent storm events before the deployment period is complete. Bottles removed during the deployment will be archived in accordance with the SOP. Field documentation of trap installation, site visits, sample collection and processing will be made throughout the project.

One additional inline solids sample will be collected at the conclusion of the sediment trap deployment period from a sedimentation manhole in Basin 44, in accordance with SOP 5.01a "Sampling of Soil and Sediment."

Quality control samples will include a bottle blank, a sample processing equipment rinsate blank, and if sufficient solids volumes are available, field duplicate samples will be generated in the established analytical priority order. In addition to SOP 5.01a and 5.01b, field crews will implement applicable general SOPs for equipment preparation, chain-of-custody and quality control sampling. All relevant SOPs are included in the programmatic SAP.

Sampling Approach: Phase 2

Phase 2 sampling will entail additional stormwater solids sampling to assist with the evaluation of whether contaminants are being discharged from specific sources and/or broader areas. Catch basin solids samples typically represent contributions from overland runoff, while inline solids samples include catch basin and site lateral discharges from a given portion of the conveyance system. Appropriate catch basin and/or inline sampling locations will be selected in areas where available information suggests the potential presence of sources and where adjacent stormwater conveyance systems present a pathway for offsite migration. In areas where several catch basins represent discharges from similar drainage areas, composite samples may be collected to maximize the areas represented by Phase 2 work and to ensure that sufficient solids are available to meet analytical requirements.

In preparation for Phase 2 work, conveyance system cleaning and maintenance records will be evaluated for each basin to determine if information is available that clarifies locations of lateral connections from potential sources and areas of possible inline solids deposits. In areas where existing system data are not adequate, video surveys may be conducted to help identify areas for solids sampling in Phase 2.

Due to the large basin areas under investigation and the number of potential sampling locations, actual sampling locations will be selected based on a detailed review of available site information acquired by the City and DEQ, conveyance system information, analytical data from the first round of stormwater sampling, and field observations in target areas during wet weather conditions. The City will prepare an addendum to this SAP to identify and provide the rationale for proposed Phase 2 locations and analytical scope for DEQ review.

Analytical Approach

All stormwater samples will be analyzed for PCB congeners, pesticides, total metals (As, Cd, Cr, Cu, Pb, Hg, Ni, Ag, Zn), semivolatile organic compounds (SVOCs), and TSS[3]. Measurements of pH, conductivity, and temperature will be made in the field. All solids samples will be analyzed for PCB Aroclors, pesticides, the metals listed above, SVOCs, total organic carbon (TOC), total solids, and grain size. If sufficient solids are available, samples will also be analyzed for PCB congeners.

Proposed methods and laboratory assignments for stormwater analyses are listed in the following table in priority order, to address the unlikely event that sample volume is limited. The collection of a sufficient sample volume in the sediment traps relative to the proposed analyte list is a potential issue at all sample locations. The table also summarizes target laboratory assignments for solids samples -- actual laboratory assignments will be made after sediment trap samples have been processed and a better estimate of collected sample volumes can be made. To ensure that priority will be given to analyses of potential risk drivers, the proposed analyses are listed in priority order.

[3] Pesticides were added to the analytical scope following completion of the first storm event. Pesticide analysis will be included for the remaining three events unless DEQ and City review of collected data indicates that further data collection is not warranted.

Method Reporting Limits (MRLs) for each laboratory, except Pace Analytical Services, are included in the programmatic QAPP for this project. Pace has been proposed for PCB congener analyses of sediment trap solids to shorten turnaround times while maintaining low MRLs. The Pace Analytical MRLs for PCB congener analysis under method 1668A are attached. Laboratories have been selected to achieve MRLs that will allow for a comparison to screening level values listed in the updated Table 3-1 of the Portland Harbor JSCS. Concentrations detected above the method detection limit (MDL) but below the MRL will be reported and considered as estimated values as part of this screening evaluation.

Table 2: Target Analyses, Methods, and Laboratory Assignments

Sample Matrix	Analyte Group	Method	Laboratory
Stormwater	PCB Congeners	EPA 1668A	Pace
	Pesticides	EPA 8081A	CAS/TestAmerica
	Polyaromatic Hydrocarbons (PAHs) and Phthalates (low-level)	EPA 8270C-SIM	TestAmerica
	SVOCs (full scan)	EPA 8270C	CAS
	Total Metals (As,Cd,Cr,Cu,Pb,Hg,Ni,Ag,Zn)	EPA 200.8	WPCL
	TSS	SM 2540D	WPCL
Solids	PCB Aroclors	EPA 8082	WPCL/CAS/TestAmerica
	Pesticides	EPA 8081A	CAS/TestAmerica
	Total Solids	SM2540G	WPCL
	Total Organic Carbon	EPA 9060 MOD	CAS /TestAmerica
	PAHs and Phthalates (low-level)	EPA 8270C-SIM	TestAmerica
	SVOCs (full scan)	EPA 8270C	CAS
	Metals (As,Cd,Cr,Cu,Pb,Hg,Ni,Ag,Zn)	EPA 6010/6020	WPCL
	PCB Congeners	EPA 1668A	Pace
	Grain Size	ASTM D-422/PSEP	ARI

ARI – Analytical Resources, Incorporated
Pace – Pace Analytical Services
CAS – Columbia Analytical Services
WPCL – City of Portland Water Pollution Control Laboratory

Schedule & Reporting

Stormwater sampling commenced following DEQ review of the initial work plan. An effort will be made to complete remaining Phase 1 stormwater sample collection by March 1, 2009, in accordance with this revised work plan. Sediment trap deployment has also been completed. Traps will be deployed for a minimum of three months during the wet weather season, and removed and processed by June 15, 2009.

Phase 2 sample collection and analysis will be conducted during Phase 1 work. The City will initiate further research in Basins 43, 44, and 44A immediately to inform preparation of the Phase 2 addendum to this SAP. The SAP addendum will be submitted to DEQ by January 15, 2009. Phase 2 catch basin and inline solids sample collection will be conducted between January and June 2009.

All data will be compared JSCS screening level values, evaluated and reported to DEQ. During the course of the investigation, quarterly reports will be submitted to DEQ to transmit validated analytical data as it becomes available and to update DEQ on the progress of the basin source investigations. The first report will be prepared and submitted by January 15, 2009. The City will also develop and submit a summary report evaluating Phase 1 and 2 analytical results in the context of basin information, following the completion of Phase 2 work. This report is intended to incorporate information collected by the City and sites within Basins 43, 44, 44A, and 45 to determine priorities for further source investigation in these areas. If Phase 2 work is completed by June 30, 2009, the City will submit this report by October 1, 2009.

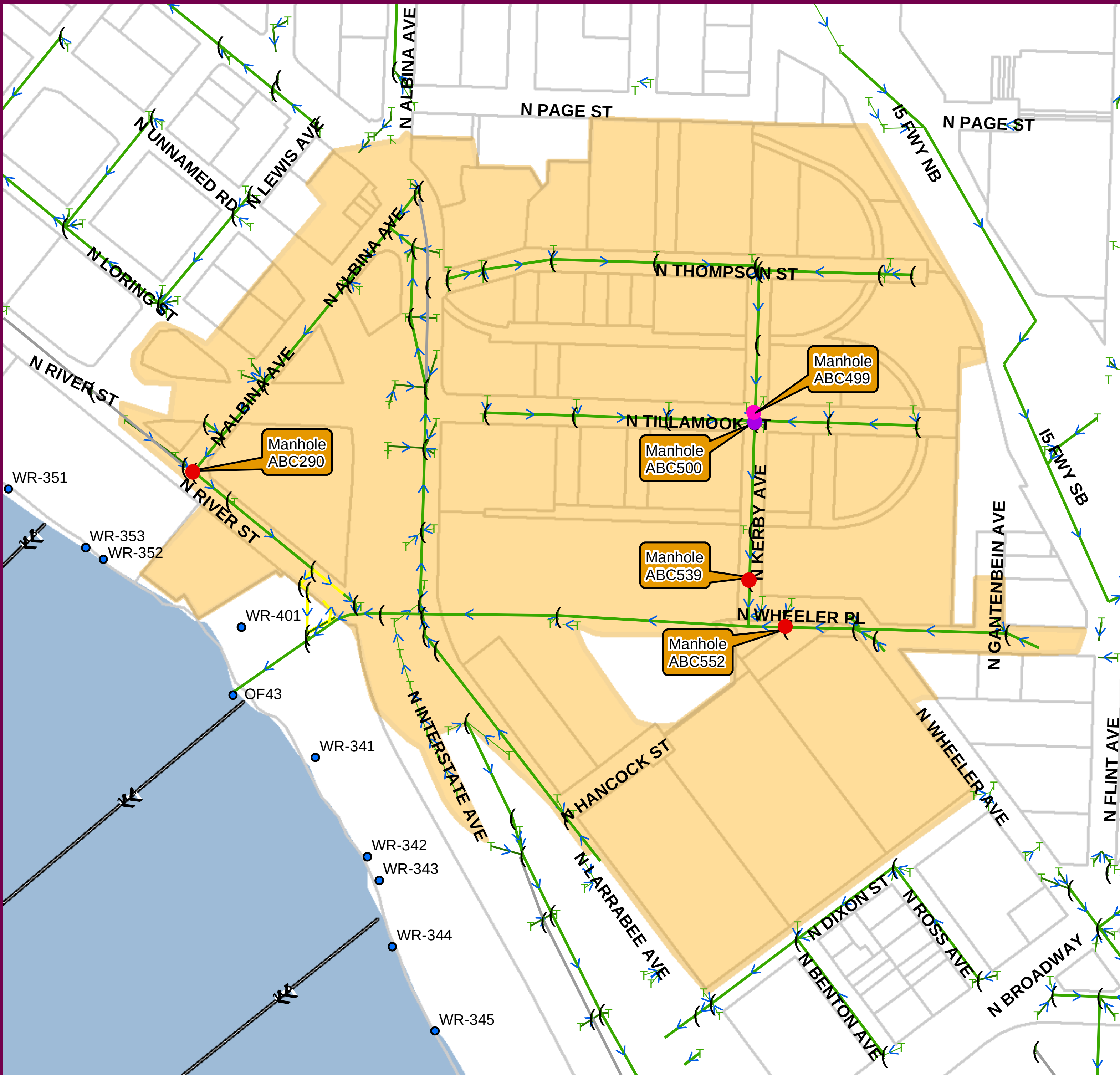
This sampling and reporting schedule is summarized as follows:

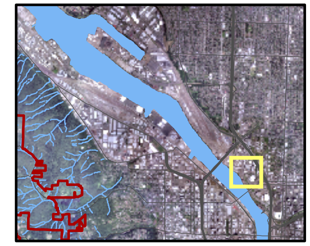
- October 2008: Submitted review draft of *Albina Riverlots: City Basin Information and Source Investigation Approach*. Includes basin background information and Sampling and Analysis Plan (SAP).
- November 2008: Verbal approval from DEQ to commence stormwater sampling and sediment trap equipment deployment. First storm event completed.
- December 2008: Review of DEQ comments and submittal of final *Albina Riverlots: City Basin Information and Source Investigation Approach*.
- January 15, 2009: Submit SAP amendment for Phase 2 source investigation work. Submit first quarterly report of source investigation progress.
- March 2009: Complete Phase 1 stormwater sampling. Remove sediment traps if sufficient volume has been captured.
- April 15, 2009: Submit second quarterly report of source investigation progress.
- June 2009: Complete Phase 1 solids sampling and Phase 2 source investigation work.
- July 15, 2009: Submit third quarterly report of source investigation progress.
- October 2009: Submit source investigation summary report.

Attachments: Figure 1 - Outfall Basin 43 Stormwater and Inline Solids Sampling Locations
Figure 2 - Outfall Basin 44 Stormwater and Inline Solids Sampling Locations
Figure 3 - Outfall Basin 44A Stormwater and Inline Solids Sampling Locations

Pace Analytical Services Method Reporting Limits for Method 1668A, Water and Solids

ATTACHMENTS





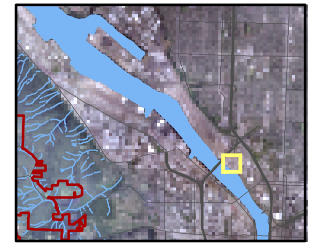
Legend

- Stormwater & Solids Sampling Location
- Solids Sampling Location
- Stormwater Sampling Location
- Storm Pipe
- To Be Constructed Storm Pipe
- Manhole
- To Be Constructed Manhole
- Basin 43
- Taxlot
- Outfall
- River Mile

Information contained on this map is accurate according to available records, however, the City of Portland makes no warranty, expressed or implied, as to the completeness or accuracy of the information published

Figure 1
Outfall Basin 43
Stormwater and Inline Solids Sampling Locations

Source: City of Portland	Environmental Services City of Portland, 1120 SW Fifth Avenue, Room 1000, Portland Oregon, 97204-1912
File Name: s:\gis\saramisc\samplingplan of43basin.mxd	Program Manager: Linda Scheffler Portland Harbor Superfund
Sheet No. 1 OF 1	Date Printed: 10/13/2008 Prepared by: Sara Gardner



Legend

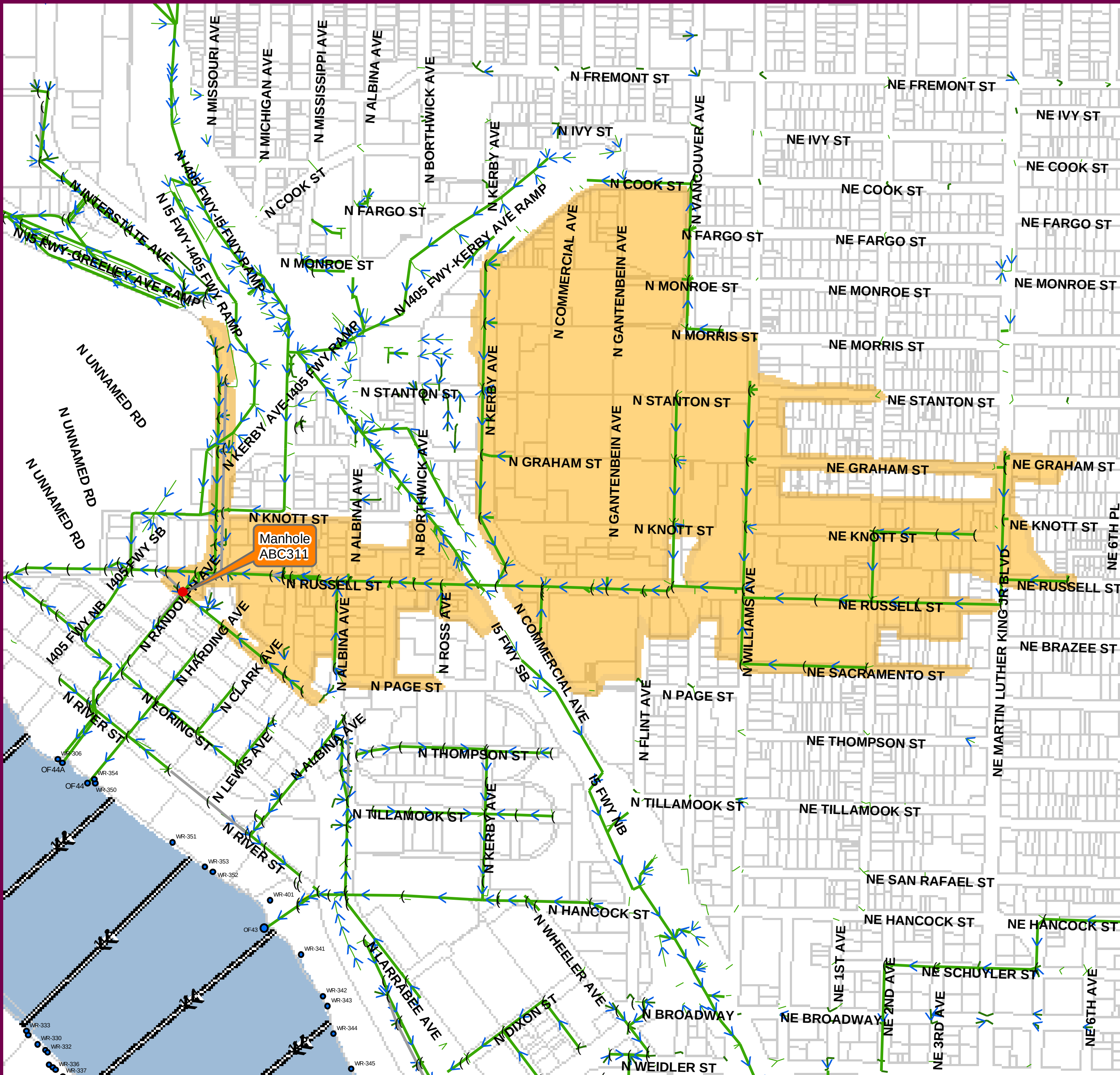
- Stormwater & Solids Sampling Location
- Solids Sampling Location
- Storm Pipe
- Basin 44
- Taxlot
- Outfall
- River Mile

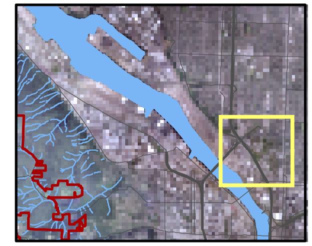
0 50 100 200 Feet

Information contained on this map is accurate according to available records, however, the City of Portland makes no warranty, expressed or implied, as to the completeness or accuracy of the information published

Figure 2
Outfall Basin 44
Stormwater and Inline
Solids Sampling Locations

Source: City of Portland	Environmental Services City of Portland 1120 SW Fifth Avenue, Room 1000 Portland Oregon, 97204-1912
File Name: s:\gis\saramisc\samplingplan of44basin.mxd	*Program Manager:* Linda Scheffler Portland Harbor Superfund
Sheet No. 1 OF 1	*Date Printed:* 10/30/2008 *Prepared by:* Sara Gardner





Legend

- Stormwater & Solids Sampling Location
- Storm Pipe
- Basin 44A
- Taxlot
- Outfall
- River Mile

Information contained on this map is accurate according to available records, however, the City of Portland makes no warranty, expressed or implied, as to the completeness or accuracy of the information published

Figure 3
Outfall Basin 44A Stormwater and Inline Solids Sampling Location

Source: City of Portland	Environmental Services, City of Portland, 1120 SW Fifth Avenue, Room 1000, Portland Oregon, 97204-1912
File Name: s:\gis\saramisc\samplingplan of44abasin.mxd	Program Manager: Linda Scheffler, Portland Harbor Superfund
Sheet No. 1 OF 1	Date Printed: 10/30/2008 Prepared by: Sara Gardner

Pace Analytical

Method Detection Reporting Limits
Method 1668A
Water

nelac

Analyte	Method Detection Limit (ppt)	Reporting Limit (ppt)	LCS Criteria Lower Control Limit (%)	LCS Criteria Upper Control Limits (%)	% RPD Limit
2-Chlorobiphenyl	0.14	0.50	50	150	30
3-Chlorobiphenyl	0.03	0.50	50	150	30
4-Chlorobiphenyl	0.21	0.50	50	150	30
2,2'-Dichlorobiphenyl	0.06	0.50	50	150	30
2,6-Dichlorobiphenyl	0.06	0.50	50	150	30
2,5-Dichlorobiphenyl	0.03	0.50	50	150	30
2,4-Dichlorobiphenyl	0.03	0.50	50	150	30
2,3'-Dichlorobiphenyl	0.03	0.50	50	150	30
2,3-Dichlorobiphenyl	0.03	0.50	50	150	30
2,4'-Dichlorobiphenyl	0.13	0.50	50	150	30
3,5-Dichlorobiphenyl	0.02	0.50	50	150	30
3,3'-Dichlorobiphenyl	0.06	0.50	50	150	30
13/12	0.08	0.50	50	150	30
4,4'-Dichlorobiphenyl	0.16	0.50	50	150	30
2,2',6-Trichlorobiphenyl	0.03	0.50	50	150	30
30/18	0.11	0.50	50	150	30
2,2',4-Trichlorobiphenyl	0.05	0.50	50	150	30
2,3',6-Trichlorobiphenyl	0.04	0.50	50	150	30
2,3,6-Trichlorobiphenyl	0.05	0.50	50	150	30
2,2',3-Trichlorobiphenyl	0.04	0.50	50	150	30
2,4',6-Trichlorobiphenyl	0.04	0.50	50	150	30
2,3',5'-Trichlorobiphenyl	0.03	0.50	50	150	30
2,3,5-Trichlorobiphenyl	0.03	0.50	50	150	30
26/29	0.03	0.50	50	150	30
2,3',4-Trichlorobiphenyl	0.02	0.50	50	150	30
2,4',5-Trichlorobiphenyl	0.04	0.50	50	150	30
28/20	0.04	0.50	50	150	30
21/33	0.03	0.50	50	150	30
2,3,4'-Trichlorobiphenyl	0.02	0.50	50	150	30
3,3',5-Trichlorobiphenyl	0.03	0.50	50	150	30
3,4',5-Trichlorobiphenyl	0.03	0.50	50	150	30
3,4,5-Trichlorobiphenyl	0.04	0.50	50	150	30
3,3',4-Trichlorobiphenyl	0.05	0.50	50	150	30
3,4,4'-Trichlorobiphenyl	0.03	0.50	50	150	30
2,2',6,6'-Tetrachlorobiphenyl	0.02	0.50	50	150	30
50/53	0.17	0.50	50	150	30
45/51	0.14	0.50	50	150	30
2,2',3,6'-Tetrachlorobiphenyl	0.05	0.50	50	150	30
2,2',5,5'-Tetrachlorobiphenyl	0.06	0.50	50	150	30
2,3',5',6-Tetrachlorobiphenyl	0.04	0.50	50	150	30
2,2',3,5-Tetrachlorobiphenyl	0.09	0.50	50	150	30
69/49	0.09	0.50	50	150	30
2,2',4,5-Tetrachlorobiphenyl	0.06	0.50	50	150	30

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Method Detection Reporting Limits
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Analyte	Method Detection Limit (ppt)	Reporting Limit (ppt)	LCS Criteria Lower Control Limit (%)	LCS Criteria Upper Control Limits (%)	% RPD Limit
44/47/65	0.11	0.50	50	150	30
59/62/75	0.10	0.50	50	150	30
2,2',3,4'-Tetrachlorobiphenyl	0.05	0.50	50	150	30
41/40/71	0.17	0.50	50	150	30
2,3,4',6-Tetrachlorobiphenyl	0.03	0.50	50	150	30
2,3',5,5'-Tetrachlorobiphenyl	0.05	0.50	50	150	30
2,3',4,5'-Tetrachlorobiphenyl	0.05	0.50	50	150	30
2,3,3',5-Tetrachlorobiphenyl	0.05	0.50	50	150	30
2,3,3',5'-Tetrachlorobiphenyl	0.05	0.50	50	150	30
2,3',4,5-Tetrachlorobiphenyl	0.03	0.50	50	150	30
2,3,4',5-Tetrachlorobiphenyl	0.05	0.50	50	150	30
61/70/74/76	0.18	0.50	50	150	30
2,3',4,4'-Tetrachlorobiphenyl	0.03	0.50	50	150	30
2,3,3',4-Tetrachlorobiphenyl	0.04	0.50	50	150	30
2,3,3',4'-Tetrachlorobiphenyl	0.05	0.50	50	150	30
2,3,4,4'-Tetrachlorobiphenyl	0.06	0.50	50	150	30
3,3',5,5'-Tetrachlorobiphenyl	0.08	0.50	50	150	30
3,3',4,5'-Tetrachlorobiphenyl	0.07	0.50	50	150	30
3,3',4,5-Tetrachlorobiphenyl	0.08	0.50	50	150	30
3,4,4',5-Tetrachlorobiphenyl	0.03	0.50	50	150	30
3,3',4,4'-Tetrachlorobiphenyl	0.03	0.50	50	150	30
2,2',4,6,6'-Pentachlorobiphenyl	0.05	0.50	50	150	30
2,2',3,6,6'-Pentachlorobiphenyl	0.15	0.50	50	150	30
2,2',4,5',6-Pentachlorobiphenyl	0.08	0.50	50	150	30
2,2',3,5,6'-Pentachlorobiphenyl	0.08	0.50	50	150	30
2,2',3,5',6-Pentachlorobiphenyl	0.06	0.50	50	150	30
100/93/102/98	0.31	0.50	50	150	30
88/91	0.14	0.50	50	150	30
2,2',3,3',6-Pentachlorobiphenyl	0.09	0.50	50	150	30
2,2',3,4,6'-Pentachlorobiphenyl	0.11	0.50	50	150	30
2,3',4,5',6-Pentachlorobiphenyl	0.07	0.50	50	150	30
2,2',3,5,5'-Pentachlorobiphenyl	0.08	0.50	50	150	30
113/90/101	0.17	0.50	50	150	30
2,2',3,3',5-Pentachlorobiphenyl	0.09	0.50	50	150	30
2,2',4,4',5-Pentachlorobiphenyl	0.13	0.50	50	150	30
2,3,3',5,6-Pentachlorobiphenyl	0.07	0.50	50	150	30
108/119/86/97/125/87	0.39	0.50	50	150	30
117/116/85	0.15	0.50	50	150	30
110/115	0.12	0.50	50	150	30
2,2',3,3',4-Pentachlorobiphenyl	0.08	0.50	50	150	30
2,3,3',5,5'-Pentachlorobiphenyl	0.09	0.50	50	150	30
2,3',4,5,5'-Pentachlorobiphenyl	0.10	0.50	50	150	30
107/124	0.10	0.50	50	150	30

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Method Detection Reporting Limits
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Analyte	Method Detection Limit (ppt)	Reporting Limit (ppt)	LCS Criteria Lower Control Limit (%)	LCS Criteria Upper Control Limits (%)	% RPD Limit
2,3,3',4,6-Pentachlorobiphenyl	0.05	0.50	50	150	30
2,3',4,4',5'-Pentachlorobiphenyl	0.07	0.50	50	150	30
2,3,3',4,5-Pentachlorobiphenyl	0.08	0.50	50	150	30
2,3',4,4',5-Pentachlorobiphenyl	0.06	0.50	50	150	30
2,3,3',4',5'-Pentachlorobiphenyl	0.06	0.50	50	150	30
2,3,4,4',5-Pentachlorobiphenyl	0.04	0.50	50	150	30
2,3,3',4,4'-Pentachlorobiphenyl	0.04	0.50	50	150	30
3,3',4,5,5'-Pentachlorobiphenyl	0.06	0.50	50	150	30
3,3',4,4',5-Pentachlorobiphenyl	0.05	0.50	50	150	30
2,2',4,4',6,6'-Hexachlorobiphenyl	0.13	0.50	50	150	30
2,2',3,5,6,6'-Hexachlorobiphenyl	0.07	0.50	50	150	30
2,2',3,4',6,6'-Hexachlorobiphenyl	0.09	0.50	50	150	30
2,2',3,3',6,6'-Hexachlorobiphenyl	0.08	0.50	50	150	30
2,2',3,4,6,6'-Hexachlorobiphenyl	0.08	0.50	50	150	30
2,2',3,4',5,6'-Hexachlorobiphenyl	0.06	0.50	50	150	30
151/135	0.16	0.50	50	150	30
2,2',4,4',5,6'-Hexachlorobiphenyl	0.08	0.50	50	150	30
2,2',3,4,5',6-Hexachlorobiphenyl	0.09	0.50	50	150	30
147/149	0.16	0.50	50	150	30
134/143	0.10	0.50	50	150	30
139/140	0.13	0.50	50	150	30
2,2',3,3',4,6-Hexachlorobiphenyl	0.07	0.50	50	150	30
2,2',3,4,5,6-Hexachlorobiphenyl	0.05	0.50	50	150	30
2,2',3,3',4,6'-Hexachlorobiphenyl	0.07	0.50	50	150	30
2,2',3,3',5,5'-Hexachlorobiphenyl	0.07	0.50	50	150	30
2,3,3',5,5',6-Hexachlorobiphenyl	0.06	0.50	50	150	30
2,2',3,4',5,5'-Hexachlorobiphenyl	0.11	0.50	50	150	30
2,3,3',4,5',6-Hexachlorobiphenyl	0.08	0.50	50	150	30
153/168	0.15	0.50	50	150	30
2,2',3,4,5,5'-Hexachlorobiphenyl	0.08	0.50	50	150	30
2,2',3,3',4,5'-Hexachlorobiphenyl	0.07	0.50	50	150	30
2,2',3,4,4',5-Hexachlorobiphenyl	0.09	0.50	50	150	30
2,3,3',4',5',6-Hexachlorobiphenyl	0.09	0.50	50	150	30
138/163/129	0.22	0.50	50	150	30
2,3,3',4,5,6-Hexachlorobiphenyl	0.12	0.50	50	150	30
2,3,3',4,4',6-Hexachlorobiphenyl	0.06	0.50	50	150	30
128/166	0.13	0.50	50	150	30
2,3,3',4,5,5'-Hexachlorobiphenyl	0.07	0.50	50	150	30
2,3,3',4',5,5'-Hexachlorobiphenyl	0.07	0.50	50	150	30
2,3',4,4',5,5'-Hexachlorobiphenyl	0.08	0.50	50	150	30
156/157	0.21	0.50	50	150	30
3,3',4,4',5,5'-Hexachlorobiphenyl	0.07	0.50	50	150	30
2,2',3,4',5,6,6'-Heptachlorobipheny	0.03	0.50	50	150	30
2,2',3,3',5,6,6'-Heptachlorobipheny	0.09	0.50	50	150	30

Method Detection Reporting Limits
Method 1668A
Water

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Analyte	Method Detection Limit (ppt)	Reporting Limit (ppt)	LCS Criteria Lower Control Limit (%)	LCS Criteria Upper Control Limits (%)	% RPD Limit
2,2',3,4,4',6,6'-Heptachlorobipheny	0.10	0.50	50	150	30
2,2',3,3',4,6,6'-Heptachlorobipheny	0.09	0.50	50	150	30
2,2',3,4,4',5,6'-Heptachlorobipheny	0.09	0.50	50	150	30
2,2',3,4,5,6,6'-Heptachlorobiphenyl	0.11	0.50	50	150	30
2,2',3,3',5,5',6-Heptachlorobiphenyl	0.09	0.50	50	150	30
2,2',3,3',4,5',6-Heptachlorobiphenyl	0.09	0.50	50	150	30
2,2',3,4',5,5',6-Heptachlorobiphenyl	0.11	0.50	50	150	30
183/185	0.12	0.50	50	150	30
2,2',3,3',4,5,6'-Heptachlorobipheny	0.10	0.50	50	150	30
2,2',3,3',4,5',6'-Heptachlorobiphen	0.08	0.50	50	150	30
2,2',3,4,4',5,6-Heptachlorobiphenyl	0.07	0.50	50	150	30
171/173	0.18	0.50	50	150	30
2,2',3,3',4,5,5'-Heptachlorobipheny	0.10	0.50	50	150	30
2,3,3',4,5,5',6-Heptachlorobiphenyl	0.08	0.50	50	150	30
180/193	0.19	0.50	50	150	30
2,3,3',4,4',5',6-Heptachlorobipheny	0.08	0.50	50	150	30
2,2',3,3',4,4',5-Heptachlorobipheny	0.10	0.50	50	150	30
2,3,3',4,4',5,6-Heptachlorobiphenyl	0.08	0.50	50	150	30
2,3,3',4,4',5,5'-Heptachlorobipheny	0.05	0.50	50	150	30
2,2',3,3',5,5',6,6'-Octachlorobiphe	0.07	0.50	50	150	30
2,2',3,3',4,5',6,6'-Octachlorobiphe	0.04	0.50	50	150	30
2,2',3,4,4',5,6,6'-Octachlorobiphen	0.06	0.50	50	150	30
197/200	0.19	0.50	50	150	30
198/199	0.12	0.50	50	150	30
2,2',3,3',4,4',5,6'-Octachlorobiphe	0.07	0.50	50	150	30
2,2',3,4,4',5,5',6-Octachlorobiphen	0.08	0.50	50	150	30
2,2',3,3',4,4',5,6-Octachlorobiphen	0.11	0.50	50	150	30
2,2',3,3',4,4',5,5'-Octachlorobiphe	0.09	0.50	50	150	30
2,3,3',4,4',5,5',6-Octachlorobiphen	0.06	0.50	50	150	30
2,2',3,3',4,5,5',6,6'-Nonachlorobip	0.05	0.50	50	150	30
2,2',3,3',4,4',5,6,6'-Nonachlorobip	0.05	0.50	50	150	30
2,2',3,3',4,4',5,5',6-Nonachlorobip	0.07	0.50	50	150	30
Decachlorobiphenyl	0.11	0.50	50	150	30

ppt = Parts Per Trillion (ng/kg)

Detection limits and reporting limits assume that a 1 liter aliquot of samle is extracted and that 5% of the final extract is injected into the instrument for analysis. Actual detection limits will depend upon the specific levels of chemical interferences that are present in the samples.

Reporting limits are based on the Estimated Minimum Levels described in the method or upon the limit of detection, whichever is higher..

Method Detection Reporting Limits
Method 1668A
Solids

Analyte	Method Detection Limit (ppt)	Reporting Limit (ppt)	LCS Criteria Lower Control Limit (%)	LCS Criteria Upper Control Limits (%)	% RPD Limit
PCB-1	7.6	50	50	150	30
PCB-2	6.0	50	50	150	30
PCB-3	4.5	50	50	150	30
PCB-4	10.0	50	50	150	30
PCB-5	3.8	50	50	150	30
PCB-6	5.3	50	50	150	30
PCB-7	4.5	50	50	150	30
PCB-8	8.1	50	50	150	30
PCB-9	4.0	50	50	150	30
PCB-10	5.9	50	50	150	30
PCB-11	27.0	50	50	150	30
PCB-12/13	13.0	50	50	150	30
PCB-14	4.6	50	50	150	30
PCB-15	4.2	50	50	150	30
PCB-16	10.0	50	50	150	30
PCB-17	8.0	50	50	150	30
PCB-18/30	24.0	50	50	150	30
PCB-19	4.1	50	50	150	30
PCB-20/28	26.0	60	50	150	30
PCB-21/23	20.0	50	50	150	30
PCB-22	9.1	50	50	150	30
PCB-23	3.9	50	50	150	30
PCB-24	4.1	50	50	150	30
PCB-25	4.9	50	50	150	30
PCB-26/29	9.4	50	50	150	30
PCB-27	5.0	50	50	150	30
PCB-31	20.0	50	50	150	30
PCB-32	6.6	50	50	150	30
PCB-34	4.6	50	50	150	30
PCB-35	3.6	50	50	150	30
PCB-36	2.3	50	50	150	30
PCB-37	7.6	50	50	150	30
PCB-38	3.8	50	50	150	30
PCB-39	4.7	50	50	150	30
PCB-40/41/71	26.0	60	50	150	30
PCB-42	7.8	50	50	150	30
PCB-43	8.4	50	50	150	30
PCB-44/47/65	29.0	60	50	150	30
PCB-45/51	17.0	50	50	150	30
PCB-46	7.7	50	50	150	30
PCB-48	9.1	50	50	150	30
PCB-49/69	21.0	50	50	150	30
PCB-50/53	16.0	50	50	150	30

Method Detection Reporting Limits
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Solids

Analyte	Method Detection Limit (pg)	Reporting Limit (pg)	LCS Criteria Lower Control Limit (%)	LCS Criteria Upper Control Limits (%)	% RPD Limit
PCB-52	17.0	50	50	150	30
PCB-54	15.0	50	50	150	30
PCB-55	5.3	50	50	150	30
PCB-56	5.7	50	50	150	30
PCB-57	6.4	50	50	150	30
PCB-58	5.6	50	50	150	30
PCB-59/62/75	33.0	75	50	150	30
PCB-60	6.1	50	50	150	30
PCB-61/70/74/76	22.0	50	50	150	30
PCB-63	4.8	50	50	150	30
PCB-64	10.0	50	50	150	30
PCB-66	9.4	50	50	150	30
PCB-67	4.1	50	50	150	30
PCB-68	6.4	50	50	150	30
PCB-72	4.3	50	50	150	30
PCB-73	11.0	50	50	150	30
PCB-77	4.6	50	50	150	30
PCB-78	6.9	50	50	150	30
PCB-79	7.8	50	50	150	30
PCB-80	4.5	50	50	150	30
PCB-81	7.0	50	50	150	30
PCB-82	12.0	50	50	150	30
PCB-83	12.0	50	50	150	30
PCB-84	11.0	50	50	150	30
PCB-85/116/117	29.0	60	50	150	30
PCB-86/87/97/108/119/125	47.0	100	50	150	30
PCB-88/91	17.0	50	50	150	30
PCB-89	13.0	50	50	150	30
PCB-90/101/113	32.0	75	50	150	30
PCB-92	8.5	50	50	150	30
PCB-93/98/100/102	36.0	75	50	150	30
PCB-94	8.6	50	50	150	30
PCB-95	14.0	50	50	150	30
PCB-96	16.0	50	50	150	30
PCB-99	16.0	50	50	150	30
PCB-103	7.2	50	50	150	30
PCB-104	18.0	50	50	150	30
PCB-105	7.5	50	50	150	30
PCB-106	11.0	50	50	150	30
PCB-107/124	5.1	50	50	150	30
PCB-109	11.0	50	50	150	30
PCB-110/115	18.0	50	50	150	30
PCB-111	7.2	50	50	150	30

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Method Detection Reporting Limits
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Analyte	Method Detection Limit (ppt)	Reporting Limit (ppt)	LCS Criteria Lower Control Limit (%)	LCS Criteria Upper Control Limits (%)	% RPD Limit
PCB-112	11.0	50	50	150	30
PCB-114	6.5	50	50	150	30
PCB-118	5.9	50	50	150	30
PCB-120	12.0	50	50	150	30
PCB-121	9.2	50	50	150	30
PCB-122	6.3	50	50	150	30
PCB-123	10.0	50	50	150	30
PCB-126	6.5	50	50	150	30
PCB-127	6.8	50	50	150	30
PCB-128/166	42.0	100	50	150	30
PCB-129/138/163	21.0	50	50	150	30
PCB-130	7.9	50	50	150	30
PCB-131	9.6	50	50	150	30
PCB-132	9.5	50	50	150	30
PCB-133	8.5	50	50	150	30
PCB-134/143	16.0	50	50	150	30
PCB-135/151	25.0	60	50	150	30
PCB-136	16.0	50	50	150	30
PCB-137	10.0	50	50	150	30
PCB-139/140	17.0	50	50	150	30
PCB-141	21.0	50	50	150	30
PCB-142	5.4	50	50	150	30
PCB-144	9.5	50	50	150	30
PCB-145	13.0	50	50	150	30
PCB-146	8.8	50	50	150	30
PCB-147/149	24.0	50	50	150	30
PCB-148	11.0	50	50	150	30
PCB-150	14.0	50	50	150	30
PCB-152	10.0	50	50	150	30
PCB-153/168	27.0	60	50	150	30
PCB-154	9.9	50	50	150	30
PCB-155	22.0	50	50	150	30
PCB-156/157	17.0	50	50	150	30
PCB-158	12.0	50	50	150	30
PCB-159	13.0	50	50	150	30
PCB-160	14.0	50	50	150	30
PCB-161	14.0	50	50	150	30
PCB-162	15.0	50	50	150	30
PCB-164	19.0	50	50	150	30
PCB-165	10.0	50	50	150	30
PCB-167	9.3	50	50	150	30
PCB-169	9.2	50	50	150	30
PCB-170	3.2	50	50	150	30
PCB-171/173	7.1	50	50	150	30

Method Detection Reporting Limits
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Analyte	Method Detection Limit (ppt)	Reporting Limit (ppt)	LCS Criteria Lower Control Limit (%)	LCS Criteria Upper Control Limits (%)	% RPD Limit
PCB-172	3.4	50	50	150	30
PCB-174	13.0	50	50	150	30
PCB-175	3.5	50	50	150	30
PCB-176	6.3	50	50	150	30
PCB-177	4.7	50	50	150	30
PCB-178	5.6	50	50	150	30
PCB-179	5.3	50	50	150	30
PCB-180/193	7.1	50	50	150	30
PCB-181	5.7	50	50	150	30
PCB-182	5.9	50	50	150	30
PCB-183/185	9.3	50	50	150	30
PCB-184	3.1	50	50	150	30
PCB-186	7.1	50	50	150	30
PCB-187	6.3	50	50	150	30
PCB-188	3.3	50	50	150	30
PCB-189	8.1	50	50	150	30
PCB-190	6.1	50	50	150	30
PCB-191	3.2	50	50	150	30
PCB-192	3.3	50	50	150	30
PCB-194	23.0	50	50	150	30
PCB-195	9.1	50	50	150	30
PCB-196	31.0	75	50	150	30
PCB-197/200	118.0	250	50	150	30
PCB-198/199	20.0	50	50	150	30
PCB-201	7.1	50	50	150	30
PCB-202	12.0	50	50	150	30
PCB-203	11.0	50	50	150	30
PCB-204	6.5	50	50	150	30
PCB-205	14.0	50	50	150	30
PCB-206	5.2	50	50	150	30
PCB-207	7.8	50	50	150	30
PCB-208	8.2	50	50	150	30
PCB-209	21	50	50	150	30