Q102a – Status of Implementation Actions Taken Pursuant to S4.F.3.d

1. Introduction

On July 1, 2019, Ecology re-issued the Phase I Municipal Stormwater Permit (Permit), including Appendix 13 – Adaptive Management Requirements. Appendix 13 of the Permit requires adaptive management response plans for discharges from the City of Seattle's (City) municipal separate stormwater system (MS4) to the Lower Duwamish Waterway (LDW). In accordance with Permit condition S4.F.3, the City must comply with each requirement outlined in Appendix 13 and annually submit a report describing the status of implementation and the results of any monitoring, assessment, or evaluation efforts conducted. The following sections describe the actions that the City has taken to implement Appendix 13 requirements during 2023, and defines the priorities for 2024.

2. Background

An S4.F notification was submitted in 2007 to notify Ecology of potential water quality problems that may be related to discharges from the City's MS4 for the LDW. Ecology determined that a report under S4.F.2.a was not necessary, with that determination conditioned on certain City actions. Ecology required the City, beginning with its Phase I Municipal Stormwater Permit Annual Report for 2008, to include a summary of its stormwater management efforts in basins that discharge to the LDW. The City was required to notify Ecology if Seattle's involvement in the federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and associated Source Control Strategy processes changed, or if new information became available regarding phthalate recontamination in the LDW.

An S4.F notification was submitted on December 5, 2013, to notify Ecology of potential sediment quality problems that may be related to discharges from the City's MS4 to the LDW. Ecology accepted the notification (June 4, 2014) as a general notification for all MS4 discharges to the LDW for all LDW sediment chemicals of concern (COCs). The City's draft SCIP (November 2013) fulfilled the City's requirement for submittal under S4.F.3.a of an expanded adaptive management response. The City revised the SCIP, and a final draft of the SCIP was submitted to Ecology on March 31, 2015. In December of 2020, SPU provided Ecology with the second Source Control Implementation Plan (SCIP) for the period 2021 to 2026. SPU began implementing the actions contained in the second SCIP (2021 SCIP or "SCIP2") in January 2021.

3. Appendix 13 - Adaptive Management Reporting Requirements

3.1 Source Control Implementation Plan Update

SPU prepared and submitted an updated SCIP to Ecology on March 31, 2020, known as SCIP2. The updated SCIP expanded upon the 2015-2020 SCIP (2015 SCIP, or "SCIP1") with an updated assessment of source tracing and program effectiveness data along with updated operation and maintenance and capital projects. In addition, the SCIP was reformatted to be more user friendly to Ecology for their Source Control Sufficiency Evaluation for the Lower Duwamish Waterway Superfund Cleanup.

The 2021-2026 SCIP, Appendices and Map Atlas can be viewed at the following web site: https://www.seattle.gov/utilities/neighborhood-projects/lower-duwamish-waterway.

3.2 Source Tracing and Sampling Activities

SPU collects samples of storm drain solids from within the City's MS4 to characterize the quality of material discharged to, and from, the City's drainage system. Samples include 1) grabs from private onsite catch basins and catch basins located in the public right-of-way, 2) grabs from inline maintenance holes in the conveyance system, and 3) inline sediment trap samples. Data generated from these samples are used to identify potential contaminant sources and to prioritize source tracing/control activities. The overall goal is to find and eliminate priority contaminant sources to the MS4 and LDW. In 2023, SPU collected 67 samples of storm drain solids from the City's MS4 within the LDW. No new sediment traps were installed in 2023 to gather those data.

3.3 Effectiveness Monitoring Program

The purpose of the Effectiveness Monitoring Program is to track and evaluate contaminant concentration trends in MS4 discharges and to inform priorities for the implementation of Best Management Practices (BMPs) across the different MS4 drainage basins relevant to the City's LDW Adaptive Management Response. One objective of the Program, as stated in Appendix 13, is to help determine which monitoring locations should become routine and good indicators of contaminant concentrations in storm solids at the outfalls (or near-end-of-pipe locations). The City is required to collect at least one sample per calendar year from each outfall /near-end-of-pipe location, as noted in Tables 1 and 2 of Appendix 13, and in accordance with the 2018 Ecology-approved QAPP.

On May 3, 2023, SPU became aware that there were a small number of missing Effectiveness Monitoring Location (EML) samples between 2016 and 2022. SPU informed Ecology of this non-compliance in a G20 notification dated June 2, 2023. The non-compliance was related to samples that were not collected due to COVID impacts and unintentional oversight/miscommunication, which has since been corrected.

There can sometimes be instances where a sediment trap or catch basin is checked but not enough solids have accumulated since the previous collection to meet the minimum volume requirements for laboratory sample analysis. This could be a result of recent line cleaning actions, low sediment inputs, steep pipes, or other factors. When there are insufficient solids, SPU leaves the sediment trap in place (or does not remove solids in the case of a grab sample), then returns the next year; this aligns with the QAPP and complies with the Appendix 13 Effectiveness Monitoring requirements.

The City attempted to sample all Effectiveness Monitoring Locations listed in Appendix 13 Tables 1 and 2 in 2023. Source tracing data collected from January through December 2023 are provided in Attachment A of this report and will be loaded into EIM by May 31, 2024, in accordance with Appendix 13 requirements. These data are discussed in Section 3.1 of this report and help inform the 2024 priorities described in Section 5. Figure 2 illustrates the location of 2023 samples collected within the LDW Source Control Area.

3.4 Operations & Maintenance

3.4.1 Line Cleaning

Stormwater line cleaning is conducted to remove solids that have accumulated in the MS4 to prevent them from discharging into the LDW and to facilitate source tracing efforts. As stated in Appendix 13, SPU is obligated to clean, on average, 4,000 linear feet each calendar year.

Line cleaning of the drainage basins identified as priorities in the *2021 SCIP (SCIP2)* was completed in 2021 and 2022; these areas included:

- Diagonal Ave S SD - Denver Sub-basin
- Diagonal Ave S SD - Dakota Sub-basin
- Diagonal Ave S SD - Snoqualmie Sub-basin
- Diagonal Ave S SD - Bush Pl Sub-basin
- Georgetown SD
- 7th Ave S SD
- 16th Ave S SD (east)
- S Norfolk St CSO/EOF/SD
- 1st Ave S SD (west)

Additional basins targeted for line cleaning since then were selected based on sampling data indicating that contaminants were present, the time period lapsed since prior cleaning, or to support the Department of Ecology's Upper Reach Source Control Sufficiency Evaluation process. In 2023, SPU cleaned approximately 45,051.92 linear feet of pipe within portions of the following 8 drainage basins:

- Diagonal Ave S SD
- S River St SD
- S Brighton St SD
- S Myrtle St SD
- SW Dakota St SD
- 7th Ave S SD
- S Garden St SD
- S Norfolk St CSO/EOF/SD

In addition, some catch basins and maintenance holes in the 17th Ave S SD basin were cleaned in 2023 to support source control efforts in the neighborhood adjacent to the T-117 habitat restoration area (following an October 2022 PCB sample result of 1192 ug/kg in the sediment trap). Furthermore, while the City does not own the stormwater assets involved, SPU arranged to clean a number of pipe segments in the lower Norfolk drainage basin (west of I-5) to remove any potential residual COCs in the pipe network prior to remedial cleanup actions scheduled to begin in the LDW Upper Reach in Fall 2024. In July 2023, SPU cleaned the pipe segment that connects Prologis-Emerald Gateway to the King County International Airport (KCIA). The segment from that junction to East Marginal Way, including the 42" pipe underneath Boeing Military Delivery Center, was cleaned by SPU in October 2023.

Water generated during line cleaning operations was treated and discharged to the sanitary sewer under a discharge authorization with King County. Solids were dewatered and transported to Waste Management's reload facility in Seattle for eventual disposal.

3.4.2 S. Myrtle Street Basin Actions

a. *Weekly Sweeping*

Appendix 13 requires weekly sweeping of S. Myrtle Street from 8th Ave S west to the street end. S. Myrtle St. was swept by SDOT 52 times (100%) in 2023 as part the Street Sweeping for Water Quality Program (SS4WQ). In 2022, the City created a written street sweeping protocol designed to be implemented weekly, where a contractor will be hired to sweep S Myrtle St in the event that SDOT staff are unavailable to do so, including formal correspondence to verify sweeping completion. The City followed that protocol in 2023 and continues to implement its street sweeping program to maintain compliance with Appendix 13.

b. and c. Catch Basin and Maintenance Hole Quarterly Inspections

SPU conducted quarterly inspections of catch basins and mainline maintenance holes from 2011 – 2023. The data for catch basin and mainline maintenance hole measurements from 2011 to 2023 are provided in Table 1. Measurement locations are shown in Figure 1. Data from 2011 to 2017 were reviewed as part of the evaluation of existing operation and maintenance work for catch basin and flow control/water quality facilities in the MS4 basins that discharge to the LDW, to determine if programmatic strategies could be implemented to assist with Source Control. The evaluation determined that the catch basins on S. Myrtle Street accumulate solids or require maintenance at a rate similar to those in the rest of the LDW MS4 basins. However, per Ecology's direction, SPU will continue quarterly inspections of catch basins and mainline maintenance holes in accordance with 2019 MS4 Permit requirements. During the drainage system monitoring conducted in 2023, no structures were found to exceed the maintenance threshold that would initiate cleaning.

Table 1: S. Myrtle Street Catch Basin and Maintenance Hole Measurements (2011-2023)

EQNUM	576148	576126	576140	576158	576162	576145	576165	943593	599350	599353	599354
Location	S Myrtle St cul-de-sac, west	S Myrtle St cul-de-sac, north	north side S Myrtle St, west of SIM	south side S Myrtle St, west of SIM	south side S Myrtle St, east of SIM	S Myrtle St and Fox Ave S	south side S Myrtle St at 7th Ave S	north side S Myrtle St, east of SIM	S Myrtle St cul-de-sac	S Myrtle St at SIM	S Myrtle St at 7th Ave S
Type	CBL	CBL	CBL	CBL	CBL	CBL	CBL	CBL	MH	MH	MH
Outlet pipe size	8"	8"	8"	8"	8"	8"	8"	8"			
Casting Width	1'-4"	1'-4"	NA	1'-4"	1'-4"	1'-4"	1'-4"	1'-8"	NA	NA	NA
Casting Length	2'-7"	2'-7"	NA	2'-7"	2'-7"	2'-7"	2'-7"	2'-0"	NA	NA	NA
Structure Depth (ft)	6.45	7.9	NA	7.22	6.4	6.61	5.76	6.2	7.45	7.35	5.76
Sump Depth (ft)	3	2.4	2.6	2.4	2.9	2.9	2.5	2.3	NA	NA	NA
2011 percent full											
04/21/11	0%	0%	4%	0%	13%	3%	48%	11%	0%	0%	0%
07/14/11	0%	0%	3%	8%	29%	13%	1%	21%	0%	0%	0%
2012 percent full											
01/05/12	0%	1%	10%	11%	50%	13%	19%	27%	0%	0%	0%
06/22/12	1%	19%	11%	16%	57%	11%	41%	20%	0%	0%	0%
10/11/12	1%	9%	16%	27%	62%	14%	45%	27%	0%	0%	0%
2013 percent full											
02/11/13	9%	22%	22%	38%	69%	14%	53%	28%	0%	0%	0%
05/01/13	12%	24%	23%	48%	3%	23%	52%	33%	0%	0%	0%
10/28/13	2%	2%	29%	50%	8%	28%	49%	34%	0%	0%	0%
12/23/13	4%	5%	31%	58%	9%	17%	51%	29%	0%	0%	0%
2014 percent full											
03/14/14	4%	13%	30%	68%	19%	38%	49%	26%	0%	0%	0%
06/23/14	5%	15%	38%	73%	21%	27%	55%	37%	0%	0%	0%
09/29/14	6%	13%	42%	72%	22%	29%	55%	36%	0%	0%	0%
12/29/14	6%	15%	43%	81%	30%	28%	50%	36%	0%	0%	0%
2015 percent full											
03/27/15	7%	16%	43%	80%	33%	32%	53%	44%	0%	0%	0%
06/29/15	8%	17%	40%	2%	36%	32%	55%	41%	0%	0%	0%
09/22/15	10%	28%	50%	2%	37%	31%	0%	45%	0%	0%	0%
12/29/15	9%	15%	43%	12%	40%	39%	8%	37%	0%	0%	0%
2017 percent full											
02/22/17	14%	30%	56%	49%	63%	48%	34%	55%	0%	0%	0%
05/25/17	16%	30%	0%	5%	5%	45%	41%	0%	0%	0%	0%
08/17/17	20%	36%	0%	5%	0%	43%	38%	0%	0%	0%	0%
11/22/17	24%	38%	0%	14%	8%	48%	42%	0%	0%	0%	0%
2018 percent full											
03/12/18	20%	36%	1%	15%	4%	48%	38%	0%	0%	0%	0%
05/23/18	23%	37%	3%	21%	5%	28%	41%	-6%	0%	0%	0%
08/29/18	22%	40%	1%	24%	-1%	46%	33%	-5%	0%	0%	0%
12/07/18	23%	0%	13%	21%	8%	2%	20%	1%	0%	0%	0%
2019 percent full											
03/01/19	21%	0%	3%	22%	13%	-3%	39%	-7%	0%	0%	0%
5/22/2019	22%	0%	5%	29%	6%	-1%	33%	-6%	0%	0%	0%
8/29/2019	1%	-6%	5%	29%	11%	-1%	38%	-8%	0%	0%	0%
12/4/2019	23%	2%	0%	29%	3%	7%	42%	-7%	0%	0%	0%
2020 percent full											
2/26/2020	0%	-11%	3%	33%	14%	4%	-4%	-18%	0%	0%	0%
5/27/2020	0%	-3%	8%	36%	18%	7%	-5%	-1%	0%	0%	0%
8/26/2020	0%	-5%	6%	38%	14%	14%	-3%	-8%	0%	0%	0%
11/25/2020	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2021 percent full											
2/26/2021	1%	6%	2%	9%	5%	6%	3%	-4%	0%	0%	0%
5/26/2021	2%	-18%	-3%	4%	4%	5%	2%	-7%	0%	0%	0%
8/25/2021	0%	0%	-8%	1%	8%	5%	1%	-7%	0%	0%	0%
12/2/2021	0%	8%	-9%	0%	8%	5%	2%	-4%	0%	0%	0%
2022 percent full											
2/23/2022	1%	-20%	-7%	5%	16%	9%	3%	-5%	0%	0%	0%
6/21/2022	4%	0%	-4%	7%	17%	7%	10%	-2%	0%	0%	0%
8/24/2022	4%	4%	4%	7%	19%	7%	15%	4%	0%	0%	0%
11/28/2022	5%	7%	5%	7%	8%	4%	4%	5%	0%	0%	0%
2023 percent full											
2/22/2023	7%	8%	6%	13%	23%	5%	8%	7%	0%	0%	0%
5/24/2023	11%	10%	5%	15%	24%	6%	10%	9%	0%	0%	0%
7/19/2023	12%	11%	5%	15%	26%	7%	14%	11%	0%	0%	0%
11/1/2023	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Times Exceeded Maintenance Threshold (60% full)	0 in 6 years	0 in 6 years	0 in 6 years	1 in 6 years	3 in 6 years	0 in 6 years	0 in 6 years	0 in 6 years	0 in 6 years	0 in 6 years	0 in 6 years

Percentage full is a measure of the sediment volume within the catch basin. Catch basins exceeding 30% full, or with visible contaminants, will be cleaned. Negative values occur where measurements of the bottom are more than the average depth of the structure. Structure bottoms are not flat.

Type: CBL = Catch Basin, MH=Maintenance Hole

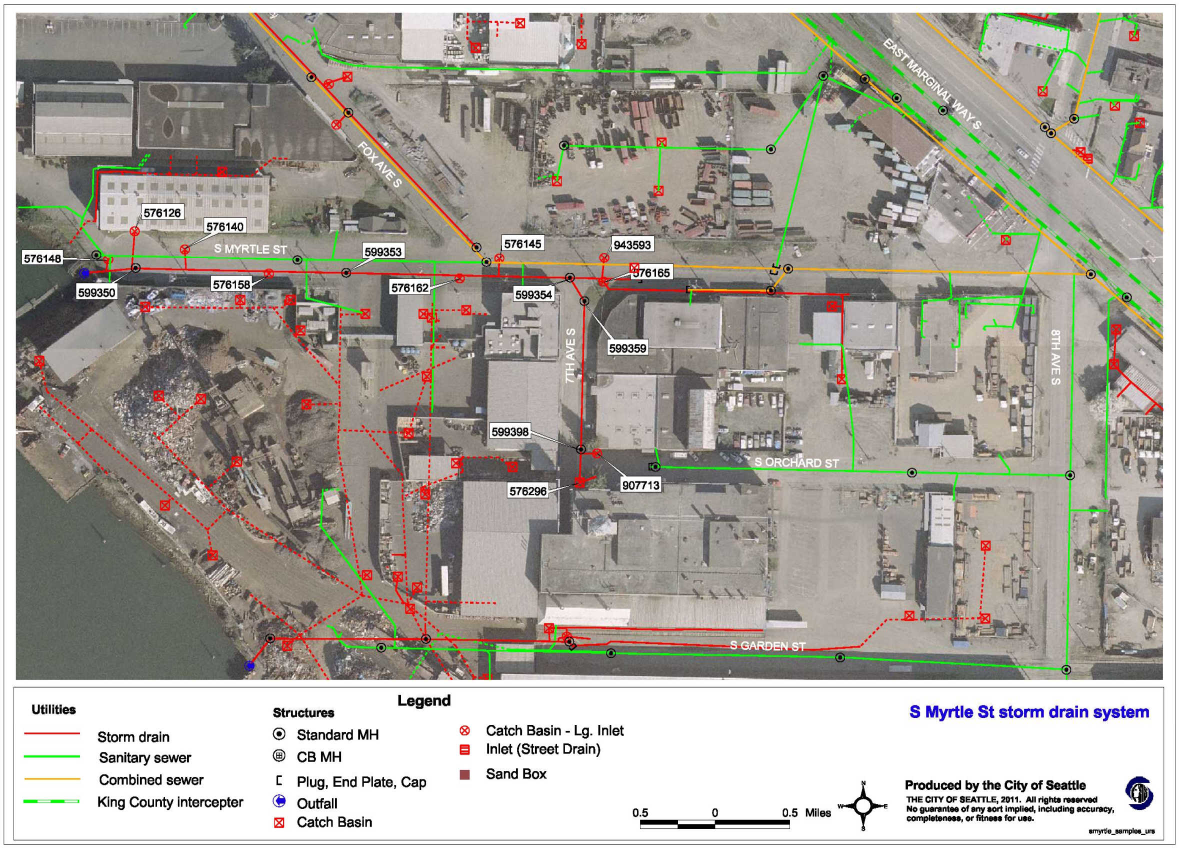

Figure 1: Catch Basin and Maintenance Hole Measuring Locations on S. Myrtle Street

3.5 Structural Controls

A. South Park Water Quality Stormwater Treatment Facility

The South Park Water Quality Facility is one of the projects included in SPU's Plan to Protect Seattle's Waterways (known as the Integrated Plan, hereby Plan) approved by Ecology and EPA in 2015 as part of the City's Long-Term CSO Control Plan. It will treat runoff from the 230-acre 7th Ave S drainage system. SPU originally intended to build the water quality facility in conjunction with the South Park Pump Station on the 636/640 S Riverside Dr site. Unfortunately, SPU was unable to acquire the needed adjacent street end vacation to allow both the pump station and the water quality facility to be constructed at this location. SPU decided to construct the pump station on the two properties on S Riverside Dr.

SPU anticipates acquiring property for the water quality facility in 2024. SPU has three consultant teams to support the site cleanup, water quality facility, and community investment aspects of the project. In 2023, Ecology approved the project's remedial investigation/feasibility study work plan for remedial investigations on the identified property for purchase. Remedial investigations have been on hold and are expected to occur during 2024. Continued analysis and selection of a preferred treatment technology for the water quality facility is anticipated to be completed in 2024.

B. Street Sweeping Expansion – Arterials

This program has expanded the City's arterial street sweeping program, per commitments in the City's 2015 Integrated Plan. The team began implementing the Plan in 2016.

During 2023, the team continued to implement the Plan and adapted as needed to meet the regulatory targets, which resulted in sweeping 22 routes over 81 lane-miles[1] an average of 39 times. This meant the Program covered 1,380 road miles[2] in MS4 basins discharging to the Lower Duwamish Waterway.

In 2024, the program will focus on the following key tasks:

- Continue sweeping arterial routes.
- Use overtime as available to alleviate the current difficulty maintaining a night crew of six.
- As part of a Stormwater Action Monitoring (SAM) Effectiveness Study, develop a City-wide monitoring program focused on 6PPD-q street sweeping source reductions.

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[1] Lane-mile is the length of a route, which typically covers two sides of the street.

[2] Road-miles is the term included in the Integrated Plan and means the total miles swept divided by two for each side of the street.

3.6 Annual Prioritization

According to Appendix 13 of the 2019 Phase I MS4 Permit, with each annual report the City must provide an assessment of priorities (planned actions and target locations) for the following calendar year. The purpose of the annual prioritization update is to affirm previous priorities and/or identify and justify changed priorities. Data from Effectiveness Monitoring (to satisfy Appendix 13 requirements) together with other LDW source tracing sampling (near-end-of-pipe and in-basin samples that support implementation of the current LDW SCIP) inform the annual prioritization. Specifically, these data guide source control efforts such as business inspections, source tracing sampling and targeted source control investigations, and line cleaning activities.

Environmental samples collected in accordance with Appendix 13 and the current SCIP are analyzed for numerous pollutants, including metals (arsenic, copper, lead, mercury, zinc), total polychlorinated biphenyls (PCBs), semi-volatile organic compounds (SVOCs) including phthalate esters and polycyclic aromatic hydrocarbons (PAHs), and total petroleum hydrocarbons (see parameter list on page 1 of Appendix 13). However, three parameters (arsenic, PCBs, and carcinogenic PAHs [cPAH]) are the primary focus of SPU's LDW Source Control efforts, due to their environmental persistence, traceability, and their classification as COC risk drivers in the LDW Superfund cleanup.

3.6.1 Data Review

This Section describes and summarizes the storm solids samples collected to satisfy the requirements of Appendix 13 as well as other source control samples that support SCIP implementation.

Seattle's SCIP2 included box plots comparing the concentration of various parameters in storm solids samples collected in the LDW stormwater drainage areas during the pre-SCIP period (2003 through June 30, 2014) to the SCIP1 reporting period (July 1, 2014 through Fall of 2020). The box plots provide a useful way to compare chemical concentrations *spatially* between basins, helping to identify basins that might require further source control efforts. Box plots comparing storm solids concentrations across the LDW drainage basins will be updated at the end of the SCIP2 period and provided in the next SCIP (SCIP3). Section 3.6.3 of this report briefly summarizes the spatial comparisons; more detailed analysis will be provided in the SCIP3 documentation.

Analyzing basin-specific storm solids sample data over different time periods helps understand if *temporal trends* are present or emerging. Basin-wide data from effectiveness monitoring samples and other storm solids samples collected in 2023 (see Attachment A) form part of the SCIP2 dataset (July 1, 2020 through Dec 31, 2023). These data are compared to samples collected during the SCIP1 reporting period (up to June 2020). Results of this comparison are used to guide business inspection activity, determine line cleaning priorities, and to identify data gaps that need to be filled.

Table 2, below, outlines the Effectiveness Monitoring Locations (EMLs) and other LDW source tracing sample locations in storm drain basins that were sampled in 2023. This table indicates that samples were obtained from all designated EMLs in 2023, except for the SW Idaho St SD basin where the sediment trap at the typical EML washed away (samples from two other sediment traps in the basin – ID-ST1 and ID-ST3 - were used in lieu of ID-ST2).

Figure 2 illustrates where samples were collected during 2023. Table 3 lists the arsenic, cPAH, and PCB concentrations in 2023 storm solids samples. Tables 4, 5, and 6 summarize arsenic, cPAH, and PCB storm solids sample data, respectively, by basin collected during the SCIP1 period, and compares these to data collected during the SCIP2 period thus far.

Table 2 – Summary of Effectiveness Monitoring Locations and Other LDW Source Tracing Sample Locations

Storm Drain (SD) Outfall Name	Effectiveness Monitoring Location (EML) Information				Other LDW Sample Locations	Comments
	EML in 2019 Permit, Appendix 13?	Designated EML Sample ID	SPU Asset #	EML Sample Collected in 2023?	Non-EML Sample Collected in 2023?	
SPU-Owned Outfalls						
S Nevada St*	No	-	-	-	No	Grab samples collected in 2020/2021 were from ODS locations (private catch basins outside the City's drainage system). S Nevada St SD is neither an EML nor "sample to fill data gap" location in Appendix 13 Table 1. However, due to some elevated cPAH and PCB concentrations in SCIP1 period samples, more source tracing work is necessary and, as such, this basin is included in this table and the other data tables in this report.
Diagonal Ave S	Yes	ST1	D056-126	Yes	Yes	Many additional source tracing samples were collected throughout the basin.
S River St	Yes	RVR-ST1	D071-005	Yes	Yes	Sediment trap installed in 2022
S Brighton St	Yes	MH101	D071-018	Yes	Yes	EML is one of three maintenance holes, depending on which has sampleable sediment. Sediment trap not feasible due to small pipe diameter.
S Myrtle St	Yes	MYR-ST1	D071-144	Yes	No	EML called "MH100" prior to sediment trap installation.
Georgetown	Yes	MH23	D071-048	Yes	No	Sediment trap not feasible due to HDPE pipe material.
SW Dakota St	Yes	RCB200A	D056-047	Yes	No	Near end-of-pipe location impounds water at a depth that makes safe trap deployment impossible. Grab sample is collected at EML.
SW Idaho St	Yes	ID-ST2	D056-054	No – see comment field	Yes	Per the Ecology-approved QAPP, the sediment trap at EML was attempted to be retrieved during 2023; however, it was determined to have been lost due to corrosion of the mounting bracket so the City was unable to collect/analyze a sample from the EML location at ID-ST2 in 2023. Samples were collected upstream at ID-ST1 and ID-ST3 to support source tracing.
SW Kenny St	Yes	KN-ST1	D063-017	Yes	No	A shipping container had be positioned over access to the sediment trap. To support accessibility, the EML trap was replaced in 2022.
Highland Park Way SW	Yes	HP-ST6	D070-074	Yes	Yes	
S Webster St	No	-	-	-	Yes	S Webster St SD basin was included in Appendix 13 Table 1 as a basin to "sample to fill data gap". A single catch basin in S Riverside Dr is connected to this outfall and a grab sample (RCB298) was collected there in 2023.
7th Ave S	Yes	7TH-ST1	D071-117	Yes	Yes	Other samples collected from sediment traps ST-2 and ST3.
17th Ave S	Yes	17TH-ST1	D079-110	Yes	Yes	Multiple MH and RCB samples collected in 2023 for PCBs due to source tracing investigation.

Storm Drain (SD) Outfall Name	Effectiveness Monitoring Location (EML) Information				Other LDW Sample Locations	Comments
	EML in 2019 Permit, Appendix 13?	Designated EML Sample ID	SPU Asset #	EML Sample Collected in 2023?	Non-EML Sample Collected in 2023?	
Non-SPU-Owned Outfalls						
Head of Slip 2	Yes	MH38	D063-027	Yes	No	EML was a grab sample.
S Garden St	Yes	GDN-ST1	966485	Yes	No	In-line sediment trap installed in 2023. Location previously called CB349.
I-5 SD at Slip 4	Yes	SL4-T6	D071-034	Yes	Yes	In-line sediment trap and grab sample collected from same location in WSDOT line.
16th Ave S (east)	No	-	-	-	Yes	Sediment trap 16TH-ST1
KCIA #1	No	-	-	-	Yes	KCIA #1 SD basin was included in Appendix 13 Table 2 as a basin to "sample to fill data gap". 2023 sample was incorrectly labeled as an ODS sample (ODS82) but is actually a MH sample and included as part of the datasets used in Tables 3, 4, 5 and 6.
S Norfolk St	Yes	NST5	D304-040	Yes	Yes	NST-1 and NST-3 are located within the City's MS4 to the east of I-5. Under typical flows this discharges to the WSDOT-owned "I-5 at Ryan St SD" outfall; however, during high flows this area is diverted to the S Norfolk St SD system.
1st Ave S (east)	Yes	MH86	D071-191	Yes	Yes	EML grab sample collected at Front/Michigan.
1st Ave S (west)	Yes	1ST-ST3, 1ST-ST2	D0713-183, 905983	Yes, 905983	Yes	EML is either 1ST-ST3 or 1ST ST-ST2, both in pond north of the South Transfer Station. Non-EML samples collected from MH216 and sediment trap 1ST-ST8 (located in upper basin).
S 96th St	No	-	999806	-	Yes	Sample collected at sediment trap 96th ST1 (metals and PCBs only), which was installed in 2022. Less than 10% of the drainage area is served by City-owned storm drains; the remaining area is within unincorporated King County and the outfall is King County-owned.

Notes:

- Rows shaded green indicate Effectiveness Monitoring Locations (EMLs) (as defined in Appendix 13 of the 2019 Phase I MS4 Permit) in drainage basins that discharge to the LDW via SPU-owned outfalls. Rows shaded orange indicate EMLs in drainage basins that discharge to the LDW via outfalls that are not SPU-owned.
- "North Boeing Field" SD basin is excluded from this table because, as stated in footnote "c" of Appendix 13 Table 1, there are no longer active City connections to this system.
- While Duwamish substation SD #1, SD #2 and SD #3 are listed in Appendix 13 Table 1, they are not EML nor "sample to fill data gap" locations and are thus excluded from this table.
- "Herrings House" SD basin was included in Appendix 13 Table 1 as a basin to "sample to fill data gaps". The City now refers to this basin as the "South Operations Center SD" basin. The City has been working to replace the drainage infrastructure in this small (6 acre) basin and, as such, sampling to fill the data gap has been deferred in recent years. The City intends to collect a grab sample in this basin in 2024, before the 2019 Permit expires.
- While the I-5 SD at S Ryan St basin is listed in Appendix 13 Table 2, it is not an EML nor "sample to fill data gap" location and is thus excluded from this table.
- The W Marginal Pl SW basin is listed in Appendix 13 Table 2, however, it is not an EML nor "sample to fill data gap" location, the outfall is Tukwila-owned, and the drainage basin is within the City of Tukwila; thus it is excluded from this table.
- The 2ND Ave S SD basin is listed in Appendix 13 Table 2, however, it is not an EML nor "sample to fill data gap" location, the outfall is privately-owned, and the drainage basin has very little City MS4 contribution; thus it is excluded from this table. A grab sample was collected in the basin in 2020 and 2022; these data are reflected in Tables 3, 4, and 5 of this report.

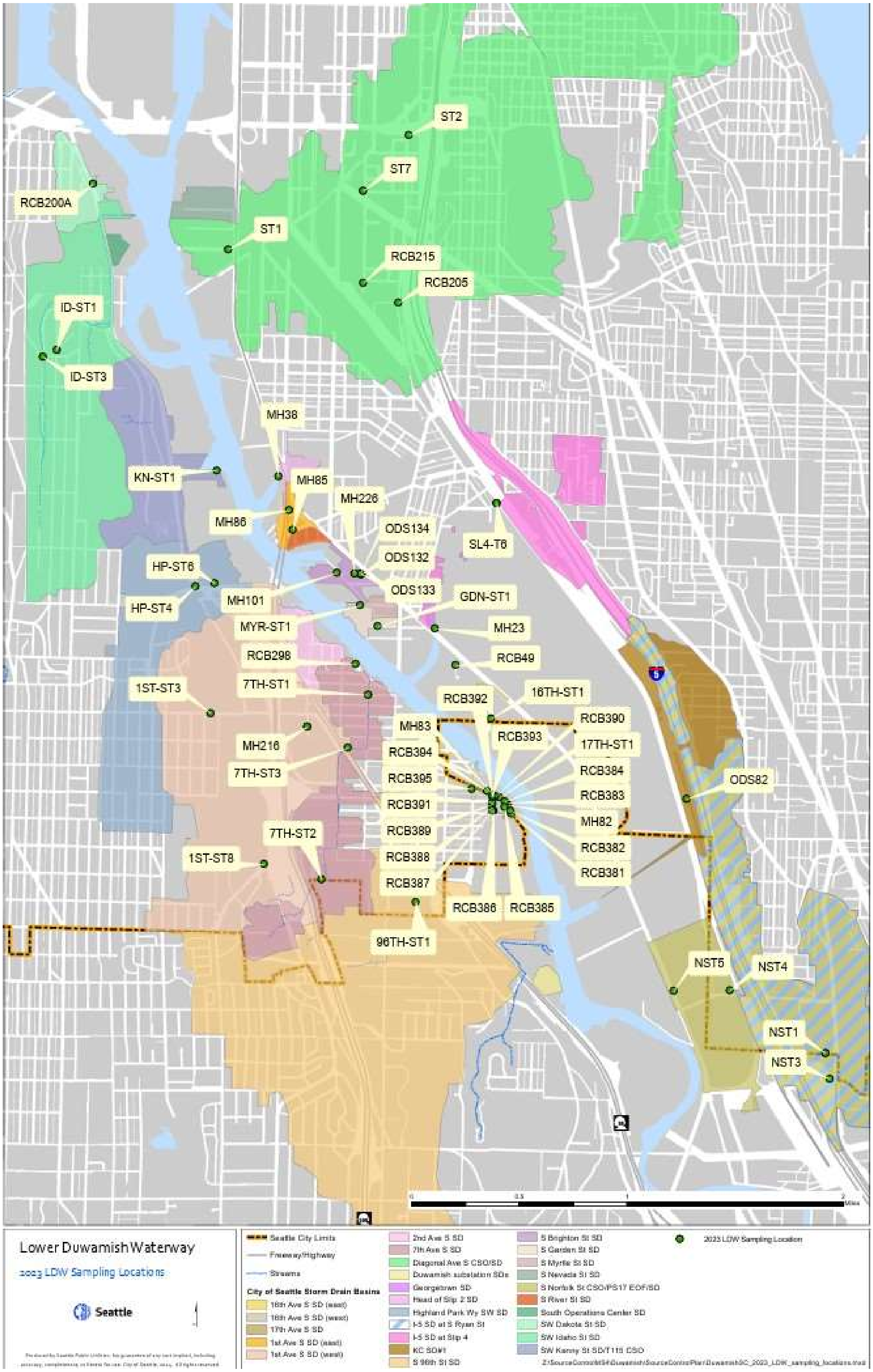

Figure 2: Location of Effectiveness Monitoring Location and Other Source Tracing Samples Collected in 2023

Table 3 – Arsenic, cPAH and PCB Concentrations in Storm Solids Samples Collected in 2023

Storm Drain (SD) Outfall Basin	Sample ID	EML?	Arsenic (mg/kg)	cPAH (ug/kg)	Total PCBs (sum of aroclors, ug/kg)
16th Ave S SD (east)	16TH-ST1		7.96 J Y	465.975 Y	220.8 J Y
1st Ave S SD (west)	**1ST-ST3**	**X**	**3.79 J Y**	**108.67 Y**	**19.4 U N**
1st Ave S SD (west)	1ST-ST8		9.67 J Y	515.15 Y	916 J Y
1st Ave S SD (west)	MH216		2.66 J Y	180.003 J Y	24.2 Y
1st Ave S SD (west)	MH216		2.82 J Y	180.095 U N	19.9 U N
7th Ave S SD	**7TH-ST1**	**X**	**23.6 J Y**	**372.58 Y**	**113 J Y**
7th Ave S SD	**7TH-ST1**	**X**	**11.4 Y**	**250.05 J Y**	**99.3 Y**
7th Ave S SD	7TH-ST2		6.33 J Y	19.43 J Y	20 U N
7th Ave S SD	7TH-ST3		28.4 Y	204.14 Y	53.9 J Y
S Garden St SD	**GDN-ST1**	**X**	**12.1 Y**	**394.31 J Y**	**1112 Y**
Highland Park Wy SW SD	**HP-ST6**	**X**	**36.9 Y**	**325.57 Y**	**99.8 U N**
Highland Park Wy SW SD	HP-ST4		5.19 J Y	127.77 J Y	20 U N
SW Idaho St SD	**ID-ST1**	**X***	**12.7 J Y**	**2688.2 J Y**	**89.6 Y**
SW Idaho St SD	ID-ST3		12.3 Y	82.312 J Y	65.5 Y
SW Kenny St SD	**KN-ST1**	**X**	**23.5 Y**	**342.21 Y**	**132.8 J Y**
S Brighton St SD	**MH101**	**X**	**23 Y**	**1068 Y**	**192.4 J Y**
S Brighton St SD	MH226		5.36 J Y	285.93 J Y	46.3 Y
Georgetown SD	**MH23**	**X**	**9.08 J Y**	**20539 Y**	**310.1 J Y**
1st Ave S SD (east)	**MH86**	**X**	**11.3 J Y**	**510.8 Y**	**231.5 J Y**
1st Ave S SD (east)	MH264		5.67 J Y	61.835 J Y	99.4 U N
1st Ave S SD (east)	RCB396		5.49 J Y	43.135 J Y	99.6 U N
1st Ave S SD (east)	RCB397		6.66 J Y	284.8 J Y	99.4 U N
S Myrtle St SD	**MYR-ST1**	**X**	**15.7 Y**	**597.74 J Y**	**1724 J Y**
S Norfolk St CSO/PS17 EOF/SD	NST1**		10 J Y	592.49 Y	170.6 J Y
S Norfolk St CSO/PS17 EOF/SD	NST1-G**		9.19 J Y	694.7 Y	188.2 J Y
S Norfolk St CSO/PS17 EOF/SD	NST3**		7.09 J Y	420.73 J Y	46.7 Y
S Norfolk St CSO/PS17 EOF/SD	NST4		NA	NA	133 U N
S Norfolk St CSO/PS17 EOF/SD	**NST5**	**X**	**27.4 Y**	**148.16 Y**	**331.8 Y**
SW Dakota St SD	**RCB200A**	**X**	**11 J Y**	**419.89 J Y**	**190.5 J Y**
S River St SD	**RVR-ST1**	**X**	**3.94 J Y**	**92.34 Y**	**20 U N**
S River St SD	**RVR-ST1-G**	**X**	**3.67 J Y**	**17.892 J Y**	**19.9 U N**
I-5 SD at Slip 4	**SL4-T6**	**X**	**7.44 J Y**	**265 Y**	**99 J Y**
I-5 SD at Slip 4	**SL4-T6-G**	**X**	**11.4 Y**	**NC**	**19.7 U N**
Diagonal Ave S CSO/SD	RCB205		3.15 J Y	23.325 J Y	19.9 U N
Diagonal Ave S CSO/SD	RCB215		5.2 J Y	39.74 J Y	19.8 U N
Diagonal Ave S CSO/SD	**ST1**	**X**	**14.6 Y**	**365.37 J Y**	**235 J Y**
Diagonal Ave S CSO/SD	ST2		6.95 J Y	220.99 J Y	219.9 Y
Diagonal Ave S CSO/SD	ST7		6.54 J Y	912.83 Y	1740 J Y
Diagonal Ave S CSO/SD	ST7		11.1 Y	190.01 Y	147.3 Y

Storm Drain (SD) Outfall Basin	Sample ID	EML?	Arsenic (mg/kg)	cPAH (ug/kg)	Total PCBs (sum of aroclors, ug/kg)
S 96th St SD	96TH-ST1		92.6 Y	NA	80.3 Y
Head of Slip 2 SD^	**MH38**	**X**	**4.48 J Y**	**33.245 Y**	**19.9 N**
KCIA SD#1^	ODS82***		54.4 Y	921.01 Y	157.6 J Y
S Webster St SD^	RCB298		3.7 J Y	2957.9 Y	99.9 U N
16th Ave S SD (west)^^	RCB395		4.4 J Y	196.24 J Y	98.6 J Y
17th Ave S SD	**17TH-ST1**	**X**	**NA**	**NA**	**491.8 Y**
17th Ave S SD	RCB381				50.2 J Y
17th Ave S SD	RCB382				19.8 U N
17th Ave S SD	RCB383				28.3 U N
17th Ave S SD	RCB384				20 U N
17th Ave S SD	RCB385				74.8 N
17th Ave S SD	RCB386				28.8 J Y
17th Ave S SD	RCB387				397 Y
17th Ave S SD	RCB388				60.9 J Y
17th Ave S SD	RCB389				317 J Y
17th Ave S SD	RCB390				632 J Y
17th Ave S SD	RCB391				604 Y
17th Ave S SD	RCB392				42.3 U N
17th Ave S SD	RCB393				207 U N
17th Ave S SD	RCB394				342 U N
17th Ave S SD	MH82				19.7 U N
17th Ave S SD	MH83				120 U N

Notes:

EML = Effectiveness Monitoring Location

* EML location was ID-ST2 however the trap was lost in 2023. Sample location ID-ST1 is located upstream of where ID-ST2 was positioned, but downstream of ID-ST3.

** NST-1 and NST-3 are located within the City's MS4 to the east of I-5. Under typical flows this discharges to the WSDOT-owned I-5 at Ryan St SD outfall; however, during high flows this area is diverted to the S Norfolk St SD system.

*** Sample was mislabeled as being collected outside SPU's drainage system (i.e., a private catch basin); grab sample was collected from an SPU maintenance hole (MH).

NA indicates that the sample was not analyzed for the constituent (typically due to small sample volume and prioritizing PCB analysis).

NC indicates that the cPAH concentration could not be calculated due to how the lab reported data.

^ Basin was included in the 2019 Phase I MS4 Permit Appendix 13 Table 1 as a basin to "sample to fill data gap".

^^ Basin is not included in 2019 Phase I MS4 Permit Appendix 13 Tables 1 or 2 as Effectiveness Monitoring Locations or as "Sample to Fill Data Gap" locations. However, this was identified in the SCIP2 as a basin to sample to fill data gaps. As such, a sample was collected in 2023; these data will be uploaded to EIM by 2/31/2024 and included in Attachment A for completeness.

Lab analytical codes: Y = Detected; N = Not detected; U = not detected at the level noted ; J = estimated concentration.

3.6.1.1 Arsenic

Table 4 illustrates that, for most drainage basins sampled, *median* arsenic concentrations collected during the SCIP2 period thus far (July 1, 2020, through December 31, 2023) are **similar** to those from samples collected during the SCIP1 period.

Table 4: Summary of Basin-Specific Arsenic Concentrations in Effectiveness Monitoring Location (EML) and Other LDW Source Tracing Samples Collected in the SCIP1 and SCIP2 Sampling Periods

Outfall	Results from 2012-2020 samples[1]				Results from 2020 - 2023 samples[2]			
	Median concentration (mg/kg dw)	n	Min concentration (mg/kg dw)	Max concentration (mg/kg dw)	Median concentration (mg/kg dw)	n	Min concentration (mg/kg dw)	Max concentration (mg/kg dw)
7th Ave S SD	**11.6**	**28**	**5.97**	**30.1**	**11.4**	**16**	**5.26**	**28.4**
S River St SD	**12.35**	**10**	**7**	**22**	**3.94**	**3**	**3.67**	**17.3**
SW Idaho St SD	**10.5**	**14**	**6**	**23.9**	**11.3**	**7**	**7.9**	**17.4**
S Brighton St SD	**37.8**	**2**	**29.6**	**46**	**28.2**	**4**	**5.36**	**37.2**
S Myrtle St SD	**17.9**	**3**	**13.1**	**20**	**15.3**	**10**	**7.29**	**31.9**
Diagonal Ave S CSO/SD	**10.1**	**80**	**3.78**	**452**	**7.35**	**23**	**3.15**	**37.1**
17th Ave S SD	**16.8**	**6**	**9.74**	**29.8**	**9.63**	**2**	**7.86**	**11.4**
S Garden St SD	**20**	**1**	**20**	**20**	**14.65**	**2**	**12.1**	**17.2**
Georgetown SD	**8.15**	**2**	**7.94**	**8.36**	**7.79**	**3**	**2.94**	**9.08**
SW Dakota St SD	**12.41**	**2**	**8.31**	**16.5**	**14.9**	**4**	**8.95**	**19.5**
SW Kenny St SD	**17.5**	**8**	**9.24**	**58**	**21.7**	**6**	**6.16**	**30.7**
Highland Park Way SW	**14.5**	**23**	**3.7**	**55**	**17.75**	**6**	**5.19**	**36.9**
Head of Slip 2 SD	**14.8**	**1**	**14.8**	**14.8**	**4.48**	**1**	**4.48**	**4.48**
I-5 SD at Slip 4	**11.5**	**10**	**6.86**	**17**	**7.44**	**5**	**2.43**	**11.7**
S Norfolk St SD	**10**	**67**	**6**	**95.4**	**9.19**	**17**	**3.31**	**27.4**
1st Ave S (west)	**10**	**37**	**5.52**	**20**	**9.67**	**11**	**2.66**	**18.5**
1st Ave S (east)	**7**	**3**	**7**	**22.6**	**6.16**	**4**	**5.49**	**11.3**
S Nevada St SD	11.8	10	8.8	29.6	-	0	-	-
16th Ave S SD (east)	13.8	1	13.8	13.8	7.61	2	7.26	7.96
2nd Ave S SD	8	3	5.3	10	14.57	2	8.64	20.5
KCIA #1	8.27	1	8.27	8.27	54.4	1	54.4	54.4
S 96th St SD	17	17	4.9	40	92.6	1	92.6	92.6
S Webster St SD	8	1	8	8	3.7	1	3.7	3.7

n=Number of Samples (excludes ODS samples)

SCO = sediment cleanup objective; CSL = cleanup screening level; LAET = lowest apparent effects threshold; 2LAET = second lowest apparent effects threshold

Bold rows indicate that the basin contains an Effectiveness Monitoring Location (EML).

Orange-shaded concentrations indicate a value greater than the LDW CSL/2LAET (93 mg/kg).

Green-shaded concentrations indicate a value greater than the LDW SCO/LAET (57 mg/kg).

[1] July 1, 2012-June 30, 2020
[2] July 1, 2020 – Dec 31, 2023

Basins with substantial **reductions** in the *maximum* arsenic concentration between SCIP2 and SCIP1 periods include Diagonal Ave S, S Norfolk St, 17th Ave S, SW Kenny St, and Highland Park Way SW. The *maximum* concentration of arsenic in storm solids collected from a few drainage basins has **increased slightly** (by about 11 mg/kg or less) in between the SCIP2 and SCIP1 sample periods (S Myrtle, Georgetown, SW Dakota and 2nd Ave S SD basins); however, the *median* arsenic concentration for the SCIP2 period did not change substantially compared to the SCIP1 period for those basins. During 2023, none of the effectiveness monitoring location samples exceeded the sediment cleanup objective (SCO) for arsenic (57 mg/kg).

Arsenic concentrations in storm solids collected in the S 96th St and KCIA #3 SD basins in 2023 were **elevated** (92.6 and 54.4 mg/kg, respectively), and substantially higher than the median and maximum concentrations for samples collected in those basins during the SCIP1 period. The sample collected from S 96th St was the only 2023 storm solids sample that exceeded the SCO for arsenic; it was also close to exceeding the cleanup screening level (CSL) of 93 mg/kg. The S 96th St and KCIA #3 SD basins both include a large drainage area with contributions from other entities. Only 83 acres of the 1050-acre S 96th St SD basin is served by Seattle-owned storm drains, with the rest in unincorporated King County. Similarly, 86 acres of the 192-acre KCIA #1 SD basin is served by Seattle-owned storm drains, while the remainder drains I-5 (WSDOT) right-of-way and King County International Airport property. The 2023 arsenic data from these two basins warrants further investigation and SPU intends to coordinate with WSDOT and King County, as applicable, on those efforts.

3.6.1.2 PCBs

General observations:

Table 5 (below) illustrates that, based on *median* and *maximum* PCB concentrations in storm solids samples, many of the drainage basins exceeding the PCB cleanup screening level of 1000 ug/kg (light orange shading) during the SCIP1 period also exceed the PCB CSL (1000 ug/kg) during the SCIP2 period thus far. At the same time, fewer basins in the SCIP2 sample period had *maximum* PCB concentrations that exceeded 300 ug/kg (green shading) than in the SCIP1 period. In other words, the few basins with very high PCBs in the past continue to have elevated PCB concentrations (above the 1000 ug/kg source tracing threshold), but, in general, PCB concentrations in storm solids are decreasing across the LDW Source Control area.

Table 5: Summary of Basin-Specific PCB Concentrations in Effectiveness Monitoring Location and Other LDW Source Tracing Samples Collected in the SCIP1 and SCIP2 Sampling Periods

Outfall	Results from 2012-2020 samples[1]				Results from 2020 - 2023 samples[2]			
	Median concentration (ug/kg dw)	n	Min concentration (ug/kg dw)	Max concentration (ug/kg dw)	Median concentration (ug/kg dw)	n	Min concentration (ug/kg dw)	Max concentration (ug/kg dw)
7th Ave S SD	**96.35**	**34**	**9.3**	**866**	**74.95**	**16**	**19.7**	**251.6**
S River St SD	**116.8**	**10**	**53**	**200**	**20**	**3**	**19.9**	**124.5**
SW Idaho St SD	**39.5**	**16**	**17**	**384**	**85.8**	**7**	**27.3**	**219.2**
S Brighton St SD	**343.6**	**3**	**197.6**	**562**	**241.7**	**4**	**46.3**	**321**
S Myrtle St SD	**2,326**	**5**	**1,144**	**2,895**	**1528**	**6**	**506.4**	**4,450**
Diagonal Ave S CSO/SD	**194**	**73**	**11**	**46,060**	**180.9**	**32**	**19.8**	**9,300**
17th Ave S SD	**143.1**	**7**	**63.3**	**685**	**138.1**	**21**	**19.7**	**1,192**
S Garden St SD	**4,058**	**2**	**1386**	**6730**	**1,568**	**2**	**1,112**	**2,024**
Georgetown SD	**240.8**	**2**	**229**	**256.6**	**287.1**	**3**	**192.2**	**310.1**
SW Dakota St SD	**228.9**	**2**	**198.1**	**259.7**	**217.76**	**4**	**178.8**	**359**
SW Kenny St SD	**140.7**	**8**	**83**	**710**	**107.93**	**6**	**24.6**	**370.9**
Highland Park Way S	**175**	**23**	**13**	**700**	**78.49**	**6**	**20**	**205**
Head of Slip 2 SD	**27.3**	**1**	**27.3**	**27.3**	**19.9**	**1**	**19.9**	**19.9**
I-5 SD at Slip 4	**125.3**	**9**	**19**	**760**	**46.47**	**5**	**19.7**	**114**
S Norfolk St SD	**100**	**44**	**17**	**866**	**81.65**	**22**	**19.8**	**2860**
1st Ave S (West)	**93.5**	**37**	**16**	**1950**	**78.27**	**12**	**19.4**	**1020**
1st Ave S (East)	**109**	**3**	**54**	**328.5**	**122.86**	**4**	**99.4**	**231.5**
S Nevada St SD	470	9	19.5	1602	-	0	-	-
16th Ave S SD (East)	462.8	1	462.8	462.8	244.1	2	220.8	267.4
2nd Ave S SD	115	3	96	288	327.51	2	309.3	346.8
KCIA #1	33	1	33	33	157.6	1	157.6	157.6
S 96th St SD	30	17	17	130	80.3	1	80.3	80.3
S Webster St SD	75	1	75	75	99.9	1	99.9	99.9

n=Number of Samples (excludes ODS samples); [1] July 1, 2012-June 30, 2020, [2] July 1, 2020 – Dec 31, 2023

Bold rows indicate that the basin contains an Effectiveness Monitoring Location (EML).

Orange-shaded concentrations indicate a value greater than the LDW CSL/2LAET (1000 ug/kg).

Green-shaded concentrations indicate a value greater than 300 ug/kg and less than 1000 ug/kg. While 300 ug/kg is not a regulatory threshold for PCBs, SPU's experience working on source tracing in the LDW area suggests that it's common/typical to see up to about 300 ug/kg in storm solids in a highly urbanized and industrial area without an identifiable PCB source (i.e., associated with diffuse sources like air deposition). As such, it is used as an informal threshold in this table to indicate areas with present, but low levels of, PCBs.

Median PCB concentrations in all EML basins, except for SW Idaho and 1st Ave S (east), are **lower** in the SCIP2 sample dataset than the SCIP1 dataset.

The *median* PCB concentrations in the SCIP2 dataset for SW Idaho and 1st Ave S (east) increased slightly, compared to the SCIP1 dataset; however, the *median* and *maximum* PCB concentrations in those basins since 2020 are still fairly low, all less than 300 ug/kg, which does not suggest the presence of a distinct PCB source.

All four EML drainage basins with a *maximum* PCB concentration above the CSL during the SCIP1 period (S Myrtle St, Diagonal Ave S, S Garden St, and 1st Ave S (west)) also **exceeded** the CSL of 1000 ug/kg during the SCIP2 period thus far. However, PCB concentrations in storm solids collected in the 1st Ave S (west) SD basin appear to be declining, and the sediment trap sample collected from that basin's EML in 2023 (1ST-ST3) was non-detect for PCBs.

Sample results for the SCIP 2 period provide useful but skewed data due to targeted source trace sampling to identify PCB sources in a few basins, compared to a limited number of samples collected in other LDW basins. The majority of samples taken in the LDW, and city-wide, in 2021 were taken to support PCB tracing conducted by the University of Washington Conservation Canines olfactory tracing testing (associated with SPU's PCB Detection Dog grant from Ecology). Many samples collected in 2022 and 2023 continued acting on these suspected sources or were part of other focused PCB investigations, described in more detail below.

Basin-specific observations:

Although the median PCB concentration of storm solids collected in the **17th Ave S** and **S Norfolk St SD** basins since 2020 is low (137.1 and 81.65 ug/kg, respectively), the *maximum* PCB concentrations in storm solids samples collected in these basins during the SCIP2 period exceed the CSL.

- <u>17th Ave S:</u> A sample collected from the 17th Ave S sediment trap (17ST-ST1) in October 2022 had a surprisingly elevated total PCB concentration of 1192 ug/kg. The City conducted substantial drainage and street remediation actions (improvements and replacements) in this drainage area as part of the upland component of the T-117 Early Action Area cleanup, overseen by EPA. After learning of the 1192 ug/kg PCB concentration at 17TH-ST1, the City initiated targeted sampling and other source control actions to identify potential sources of PCBs. The City collected samples from a number of right-of-way catch basins during 2023 and utilized the PCB Detection Dog. PCB concentrations in those January 2023 grab samples ranged from about 400 to 600 ug/kg. The City also arranged to sweep of some of the roadways every other week.
- <u>S Norfolk St:</u> In 2022, SPU assisted Ecology with an area-defined storm solids sampling effort to identify potential PCBs sources downstream of Seattle's MS4 in the S Norfolk St CSO/EOF/SD basin. The investigation indicated the need to clean some sections of pipe (outside of Seattle's MS4, west of I-5) to remove accumulated contaminants that may be a source of PCBs to the river at the Norfolk outfall. Cleaning began in 2022 and will be completed in 2024. As part of this work, in 2023 SPU cleaned the pipe segment underneath S. Norfolk St where the storm

solids grab sample was found to contain an elevated PCB concentration (2860 ug/kg). This work supported Ecology's Source Control sufficiency evaluation for the LDW Upper Reach.

During the SCIP1 period, **S Myrtle St** and **S Garden St** were the only basins where the *minimum* storm solids PCB concentration exceeded to CSL. This is also the case during the SCIP2 period thus far. However, the *median* PCB concentration in storm solids samples collected from those basins has **decreased** substantially since 2020; *median* PCB concentrations in samples collected in the S Myrtle SD and S Garden St basins have decreased from 2326 ug/kg (SCIP1) to 1528 ug/kg (SCIP2) and from 4058 ug/kg (SCIP1) to 1568 ug/kg (SCIP2), respectively. While the PCB concentrations in these basins has declined, PCB concentrations in storm solids samples are still elevated despite rigorous source control actions in the S Myrtle basin.

- S Myrtle St: The S Myrtle St SD has a sediment trap located in the most downstream maintenance hole before the outfall, providing a regular data point for this basin. This basin was fully cleaned in 2020 to address PCB concentrations in the pipe to help prevent impacts to the river while source control efforts continue to eliminate the PCB contribution to the S Myrtle St SD. The sample with the maximum PCB concentration in this basin during the SCIP2 phase was collected in a sediment trap pulled in the fall of 2022 (4450 ug/kg), despite weekly sweeping and quarterly catch basin cleanings. Catch basin grab samples collected in 2022 indicated lower (1,837 ug/kg) but still elevated PCB concentrations. In response, SPU cleaned the S Myrtle St SD again in August 2023, including a thorough cleaning of ledges within the maintenance holes in the basin that appear to accumulate fine sediments. The 2023 sediment trap sample, collected in May and prior to line cleaning, had a PCB concentration of 1724 ug/kg. The City will continue to attempt to collect sediment trap samples from MYR-ST1 annually and meet all other adaptive management response requirements detailed in Appendix 13.
- S Garden St: As noted in Table 2, the S Garden SD basin outfall is owned by a private entity (Seattle Iron and Metals) and the City has experienced challenges accessing S Garden Street due to the storage of large trucks in the right-of-way. SPU is continuing to work with SDOT to determine how the City could more effectively access 8th Ave S and S Garden St to remove street solids.

Historically, source tracing data have indicated the presence of elevated PCB concentrations in a number of **Diagonal Ave S SD sub-basins**. The City has deployed multiple sediment traps and collected grab samples over the last two decades to trace sources of PCBs, often following up on where the detection dog detected PCBs or where SPU inspectors suspected potential PCB sources. As a result of this focused approach, the dataset contains some very high concentrations in a subset of samples. Despite this, the PCB concentrations in storm solids collected from the Diagonal Ave S EML (sediment trap ST1) between 2021 and 2023 ranged from non-detect to 235 ug/kg.

SPU has continued to target portions of the Diagonal Ave S SD in 2023 to continue to remove potentially contaminated sediments before they can impact the river.

- S Snoqualmie and Denver Ave sub-basins: SPU installed three additional traps in the S Snoqualmie sub-basin in 2018 to assist in tracing elevated levels of PCBs found in the maintenance hole located on S Snoqualmie St at 6th Ave S. At this point, these traps have not indicated the source of the PCBs in the area. SPU continues to conduct post cleanup sampling of the S Denver St PCB spill drainage sub-basin and the S Snoqualmie St PCB location to determine that PCBs in these known problem areas remain low.

- S Dakota sub-basin: In May 2022, the PCB concentration in solids collected in sediment trap ST7, located in the downstream end of the S Dakota sub-basin (at 6th Ave S), was 522 ug/kg. In May 2023, the PCB concentration at the same location was found to be 1740 ug/kg. After receiving that sample result, SPU initiated a focused source tracing investigation. Storm solids samples were collected in the City's MS4 east of I-5, which were found to be non-detect for PCBs. Other samples were collected along S Dakota St between 6th Ave S and I-5. At the time this report was prepared, the PCB results from the S Dakota St grab samples had not been validated, but SPU's initial review of the unvalidated data suggests that there may be sources of PCBs on the exterior of buildings on the street that could be contributing to the elevated PCB concentrations in storm solids samples collected at ST7. SPU will continue to pursue PCB source tracing and control in this sub-basin in 2024 (see Section 5).

Table 5 indicates a slight increase in *median* concentrations of PCBs in the **SW Idaho St SD,** rising from 39.5 ug/kg in the SCIP1 phase to 85.8 ug/kg in the SCIP2 dataset thus far. SPU believes this increase is tied to the characteristics of the samples collected in the SCIP2 phase, as animals damaged several sediment trap bottles in the upper basin, skewing the data to rely more heavily on the industrial samples near the outfall. Source control and source tracing efforts targeting the sources of PCBs in this basin continue to address these industrial sources.

The **1st Ave S (west) SD** basin is large, and discharges to the Duwamish River through a WSDOT-owned outfall. The EML samples have been collected from sediment traps (1ST-ST2 and 1ST-ST3) located in the lower half of the basin. In 2020 and 2021, PCB concentrations at 1ST-ST2 were around 100 ug/kg, while PCBs were not detected in the 2022 or 2023 samples collected from 1ST-ST3. SPU installed a sediment trap (1ST-ST8) in the upper basin in 2021. PCB concentrations in samples collected in 2022 and 2023 were found to be 1020 ug/kg and 916 ug/kg, respectively. These data initiated a PCB source tracing investigation in the latter part of 2023 which will continue into 2024 (see Section 5).

In summary, 2023 storm solids sample data and the SCIP2 dataset indicate that (1) PCB concentrations remain elevated in the S Myrtle St, S Garden St and Diagonal Ave S SB basins, (2) work should attempt to identify potential PCB sources in the S Dakota sub-basin and 1st Ave S (west – upper portion) SD basin, and (3) PCB concentrations in most of the LDW SD basins are fairly low and relatively stable.

3.6.1.3 cPAHs

General observations:

Table 6 indicates that, as with storm solids samples collected during the SCIP1 phase, *median* cPAH concentrations in most LDW basins sampled during the SCIP2 period thus far exceed the CSL of 100 ug/kg. Data also clearly show that there are several basins where the *maximum* cPAH concentration among SCIP2 samples is substantially lower than the maximum concentration in samples collected during SCIP1, such as 7th Ave S, S River, I-5 at Slip 4 and 1st Ave S (west) SD basins.

Table 6: Summary of Basin-Specific cPAH Concentrations in Effectiveness Monitoring Location (EML) and Other LDW Source Tracing Samples Collected in the SCIP1 and SCIP2 Sampling Periods

Outfall	Results from 2012-2020 samples[1]				Results from 2020-2023 samples[2]			
	Median cPAH (ug/ TEQ/kg)	n	Min cPAH (ug/TEQ/kg)	Max cPAH (ug/TEQ/kg)	Median cPAH (ug/ TEQ/kg)	n	Min cPAH (ug/TEQ/kg)	Max cPAH (ug/TEQ/kg)
7th Ave S SD	**222.74**	**26**	**17.2**	**1828**	**155.15**	**16**	**18.095**	**453.63**
S River St SD	**625.83**	**10**	**201.2**	**1602**	**92.34**	**3**	**17.89**	**718.05**
SW Idaho St SD	**112.34**	**22**	**17.2**	**1406**	**164.11**	**7**	**30.68**	**2688.2**
S Brighton St SD	**337.69**	**5**	**16.16**	**756.5**	**617.78**	**4**	**285.93**	**1068**
S Myrtle St SD	**778**	**3**	**578.77**	**1068.9**	**863.95**	**6**	**464.73**	**2855.1**
Diagonal Ave S CSO/SD	**335.56**	**68**	**15.02**	**3622.8**	**254.8**	**25**	**23.325**	**12,194.4**
17th Ave S SD	**335.02**	**6**	**312.12**	**867**	**288.78**	**2**	**145.73**	**431.82**
S Garden St SD	**437.64**	**2**	**326.36**	**548.92**	**443.63**	**2**	**394.31**	**492.95**
Georgetown SD	**3390.25**	**2**	**2965.3**	**3815.2**	**6633.5**	**3**	**2429.7**	**20,539**
SW Dakota St SD	**586.9**	**2**	**457.45**	**716.34**	**444.49**	**4**	**393.82**	**572.32**
SW Kenny St SD	**408.88**	**8**	**191.3**	**849.2**	**228.985**	**6**	**122.1**	**342.21**
Highland Park Way S	**263.86**	**23**	**28.12**	**717.53**	**154.97**	**6**	**86.31**	**325.57**
Head of Slip 2 SD	**85.29**	**1**	**85.29**	**85.29**	**33.25**	**1**	**33.25**	**33.25**
I-5 SD at Slip 4	**570.62**	**9**	**25.62**	**970**	**169.66**	**3**	**85.62**	**283.88**
Norfolk CSO/EOF/SD	**466.4**	**63**	**15.49**	**49,324**	**377.54**	**17**	**93.9**	**13,355**
1st Ave S (West)	**349.63**	**36**	**52.36**	**2790**	**259.41**	**11**	**108.67**	**652.5**
1st Ave S (East)	**388.5**	**3**	**263.5**	**601.44**	**140.35**	**4**	**43.14**	**510.8**
S Nevada St SD	1771.9	9	82.33	42,327	-	-	-	-
16th Ave S SD (East)	840.2	1	840.2	840.2	428.26	2	390.55	465.975
2nd Ave S SD	216.3	3	184	381.5	333.535	2	313.29	353.78
KCIA #1	540.42	1	540.42	540.82	921.01	1	921.01	921.01
S 96th St SD	172	17	16.5	1089.7	-	-	-	-
S Webster St SD	7983	1	7983	7983	2957.9	1	2957.9	2957.9

n = number of samples (excludes ODS samples)

Bold rows indicate that the basin contains an Effectiveness Monitoring Location (EML).

Orange-shaded concentrations indicate a value greater than 1000 ug/kg. While 1000 ug/kg is not a regulatory threshold for cPAHs (the CSO/2LAET is 100 ug/kg), it is being used in this table to differentiate those SD basins with highly elevated cPAHs.

[1] July 1, 2012-June 30, 2020

[2] July 1, 2020 – Dec 31, 2023

Median cPAH concentrations have declined in the **7th Ave S SD, S Norfolk CSO/EOF/SD, SW Kenny St SD** and Highland Park Way S SD with sufficient sample quantities to identify a downward trend. Additional declines in the **S River St SD, 17th Ave S SD, 16th Ave S SD (East), and I-5 at Slip 4 SD** basins rely on three or fewer SCIP2 data points and should therefore not be relied upon to identify trends yet. *Median* and *maximum* cPAH concentrations have increased in the SCIP2 sample period compared with the SCIP1 period in the **SW Idaho St SD, S Brighton St SD, S Myrtle St SD, and Georgetown SD basins**. Source tracing and/or line cleaning activities are utilized to address the potential increasing values.

Basin-specific observations:

For the SCIP 1 dataset, SPU conducted a focused investigation in the **S Norfolk St SD basin** to identify source(s) of PAHs, which involved intensive inspections and sampling. Based on those efforts, a number of PAH sources have been identified and controlled in this system; however, data suggested that additional potential sources of cPAH in source control samples may have still existed. Targeted sampling conducted in the fall of 2021 bracketed elevated cPAH contamination to a section of pipe located along S Norfolk St at the border with the City of Tukwila. This pipe conveys SPU's S Norfolk St CSO/EOF/SD flows, but samples collected upstream at the terminus of the City of Seattle MS4 indicate the cPAH contaminants were not coming from the SPU system. SPU will continue to assist Ecology and the City of Tukwila to trace the cPAH source and began cleaning this section of drainage mainline to remove accumulated contaminants in 2022. Cleaning will be completed in 2024.

Five of the seven sediment trap samples collected in the **SW Idaho St SD** basin between 2020 and 2023 were found to be less than 100 ug/kg. The remaining two samples were collected from ID-ST1 in 2022 and 2023 and reported a cPAH concentration of 1001 and 2688 ug/kg, respectively. SPU will continue to use business inspections and review 2024 data to determine if there are potential sources of cPAHs in this basin that require control.

The **S Myrtle St SD** has a sediment trap that provides reliable and consistent data for cPAH analysis, and a low profile sediment trap was installed in **S Garden St SD** in 2022. Line cleaning occurred in these basins, as well as **S Brighton St SD**, in 2023 *after* the sediment traps were pulled; as such, SPU will consider future cPAH-specific source tracing actions for these basins once the 2024 samples have been collected and analyzed. Furthermore, additional samples will be taken in the S Myrtle St SD after modifications to the Seattle Iron and Metals facility come online, as required by their settlement with Puget Soundkeeper Alliance.

Median cPAH concentrations values in the **Diagonal Ave S CSO/SD** have decreased slightly between SCIP periods. The *maximum* cPAH value in the SCIP2 period (12,194 ug/kg in February 2022) is an outlier for the dataset; the second highest cPAH sample from this basin in the SCIP2 period had a result of 1,502.4 ug/kg. The outlier sample was collected from a maintenance hole adjacent to a railroad property where a tide gate impounds fine particulates coming from the railroad and trucking facility. Railroad ties have been shown to be sources of cPAHs. This location was cleaned through line cleaning in 2022, after the outlier sample was collected, and was cleaned again during the 2023 season. Cleaning will continue until the source can be controlled through other means.

SPU cleaned the **S Nevada St SD** basin conveyance system in 2020 after elevated cPAH concentrations were found in the SCIP1 period storm solids samples. Since then, unfavorable tide conditions, pipe size, and challenges in obtaining new low-profile sediments traps has limited SPU's ability to install a sediment trap in this basin. In 2024, SPU intends to (1) attempt to collect solids from this drainage basin to determine cPAH concentrations remain elevated following the 2020 line cleaning effort and (2) determine whether this basin is best suited to a sediment trap or grab sampling going forward (see Section 5).

The storm solids sample with the highest cPAH concentration in the **Georgetown SD** basin was collected from a maintenance hole in June 2023 (20,539 ug/kg). The City had previously identified roofing material on a building in this basin that contained PAHs, and in 2023 were working on a project to re-coat the roof to prevent leaching of PAHs to the surrounding impervious surface and MS4 drainage system. The re-coating project was wrapping up when the sample was collected and the elevated cPAH concentration may be related to the project. However, the drainage system was cleaned in 2023 after the project was completed. Once available, SPU will review the 2024 cPAH data for this basin closely and determine if further source control actions are necessary.

4. Citywide Programs that Support Source Control Efforts in the LDW

In addition to the specific LDW adaptive management elements, SPU conducts other citywide programs that support these efforts. While not required by Appendix 13, the following is a summary of the 2023 LDW accomplishments in these citywide programs:

- **Stormwater Facility Inspections**: While inspecting a business for source control BMPs, the flow control and/or treatment facility is also inspected. Within the LDW Source Control Area, 72 facilities were inspected for Code compliance with regard to flow control and treatment system code requirements during 2023.
- **Water Quality Complaints**: Inspectors respond to complaints as they are received through the water quality hotline, webpage, or agency referrals. In 2023, 65 water quality complaints were reported in the LDW Source Control Area that resulted in 3 business inspections. When a complaint is reported at a business, a full business inspection is completed.
- **Spill Response**: Spills are dispatched through the SPU Operations Response Center to on-call Spill Responders as they are received. In 2023, SPU responded to 55 spills within the LDW Source Control Area. SPU continues to collect an annual sample (when sufficient solids exist) downstream of the location of a completed cleanup from a major PCB spill on Denver Ave S in 2019, as described below.

Denver Ave S PCB Spill

In June 2019, an SPU inspector discovered a PCB spill from an unknown source in the right-of-way along Denver Ave S between 1st Ave S and 2nd Ave S. Sampling confirmed that surface soil along the north/west shoulder of Denver Ave S contained up to 40,300 mg/kg dw PCBs and solids in storm drain inlet on Denver Ave S contained 6,970 mg/kg dw PCBs. The affected soil was determined to encompass an area of about 38 feet by 530 feet with PCB concentrations ranging from 0.1 to 14 mg/kg in the top 0 to 6 inches of soil. PCBs in the storm drain downstream of the inlet where soil initially entered the drainage system ranged from about 4 to 69.4 mg/kg dw PCBs. Both Ecology and EPA were notified.

In July and August 2019, SPU and SDOT conducted a cleanup under the Toxics Substance Control Act that was approved by EPA Region 10. Approximately 981 tons of non-regulated PCB-contaminated soil and 40 tons of regulated PCB-contaminated soil/storm drain solids were removed from the site and approximately 1,500 feet of pipe and associated structures (e.g., inlets, catch basins, maintenance holes, and vaults) on Denver Ave S were jetted and cleaned. Non-regulated waste was disposed at the Columbia Ridge Landfill and regulated waste was disposed at the Chemical Waste Management Landfill, both located in Arlington, Oregon. SDOT backfilled and paved the road shoulder after contaminated soil was removed. Soil samples collected at the bottom of the excavation prior to backfill contained <0.05 to 0.086 mg/kg dw PCBs. SPU received approval from the EPA TSCA program that the upland cleanup and line cleaning of the Denver Ave S SD were complete.

During 2020, SPU conducted in-water sampling of sediments in the vicinity of the Diagonal CSO/SD outfall to determine if PCBs from the Denver Ave S spill impacted the sediments in the LDW. Sampling results from this effort indicated that there was no measurable impact to the sediments in the LDW off-shore of the Diagonal CSO/SD outfall. EPA TSCA reviewed the report on the in-water sampling then approved and considered this task complete. Post cleanup reports were submitted to the EPA in Q1 of 2021, and EPA signed off on cleanup completion in Q3 2021.

Ongoing post completion sampling is occurring, when possible, to verify that all PCBs associated with this incident have been removed from the drainage infrastructure. Regular MS4 cleaning will continue to be conducted in the drainage system along Denver Ave S until post-cleanup sampling indicates that no residual PCBs exist in the system in this location. The most recent storm solids sample was collected in the Denver Ave sub-basin in 2022. The stormwater infrastructure in the sub-basin was cleaned in 2022 and the vault at Denver Ave S/Colorado Ave S was cleaned in 2023.

- **Education and Outreach**: SPU funds the Green Business Program, a conservation service for Seattle businesses, which provides free spill kits, assistance in developing a spill plan, and site-specific technical assistance. Thirteen businesses in the LDW MS4 basins received spill kits, either stemming from a business inspection or through targeted outreach. Surveys of spill kit recipients statistically indicate that businesses which participate in this program show an improved understanding of stormwater pollution prevention.

5. Priorities for 2024

Based on the information described above and annual prioritization process, the City affirms its previous priorities and intends to take further actions in 2024 as stated below.

5.1 Source Tracing/Sampling

Source tracing priorities for 2024 will largely remain the same as described in the 2021-2026 SCIP. In addition, the City has identified the following 2024 priority actions, based on recent sampling and business inspections:

- **Collect grab samples in lieu of, or prior to, sediment trap installations.**
  - SPU will attempt to collect grab samples in the S Nevada SD basin in 2024 to verify sediment accumulation rates and identify if elevated cPAH and PCB concentrations have persisted since cleaning occurred in 2020. If the results suggest that an in-line sediment trap would be beneficial in this basin, SPU will install a low-profile in-line sediment trap later in 2024 (assuming favorable tides and delivery of new traps from the fabricator).
  - In 2023, SPU learned that it is not possible to install a sediment trap in the SW Dakota SD basin. As such, SPU will attempt to collect a grab sample in this basin in 2024.
  - SPU will attempt to collect a near end-of-pipe grab sample in the South Operations Center SD basin to fill this data gap (Appendix 13 Table 1).
- **Conduct targeted sampling and/or investigations in locations with (i) persistent priority pollutants or (ii) increasing concentrations.**
  - Samples will be collected (if possible) in the S Myrtle St SD basin, S Nevada St SD basin (see grab sample verification noted above), and Denver Ave S sub-basin to verify that line cleaning has removed elevated concentrations of pollutants of concern.
  - Elevated PCB concentrations were found in sediment trap samples collected in the S Dakota sub-basin in 2023 (1740 ug/kg at ST-7, at S Dakota St/6th Ave S) and in the upper portion of the 1st Ave S (west) SD basin in 2023 and 2022 (916 ug/kg and 1020 ug/kg, respectively, at 1ST -ST8). SPU will conduct a focused source tracing investigation in these two areas in 2024 with the goal of identifying a source, or sources, of PCBs that could have caused the elevated sample results.
  - During 2024, SPU will continue to coordinate with EPA in the 17th Ave SD basin (T-117 upland area), conduct targeted sampling in the basin to identify remaining controllable sources of PCBs, and continue street sweeping every other week.

Figure 3 illustrates the location of the LDW drainage basins (or sub-basins) proposed for source control/tracing sampling in 2024.

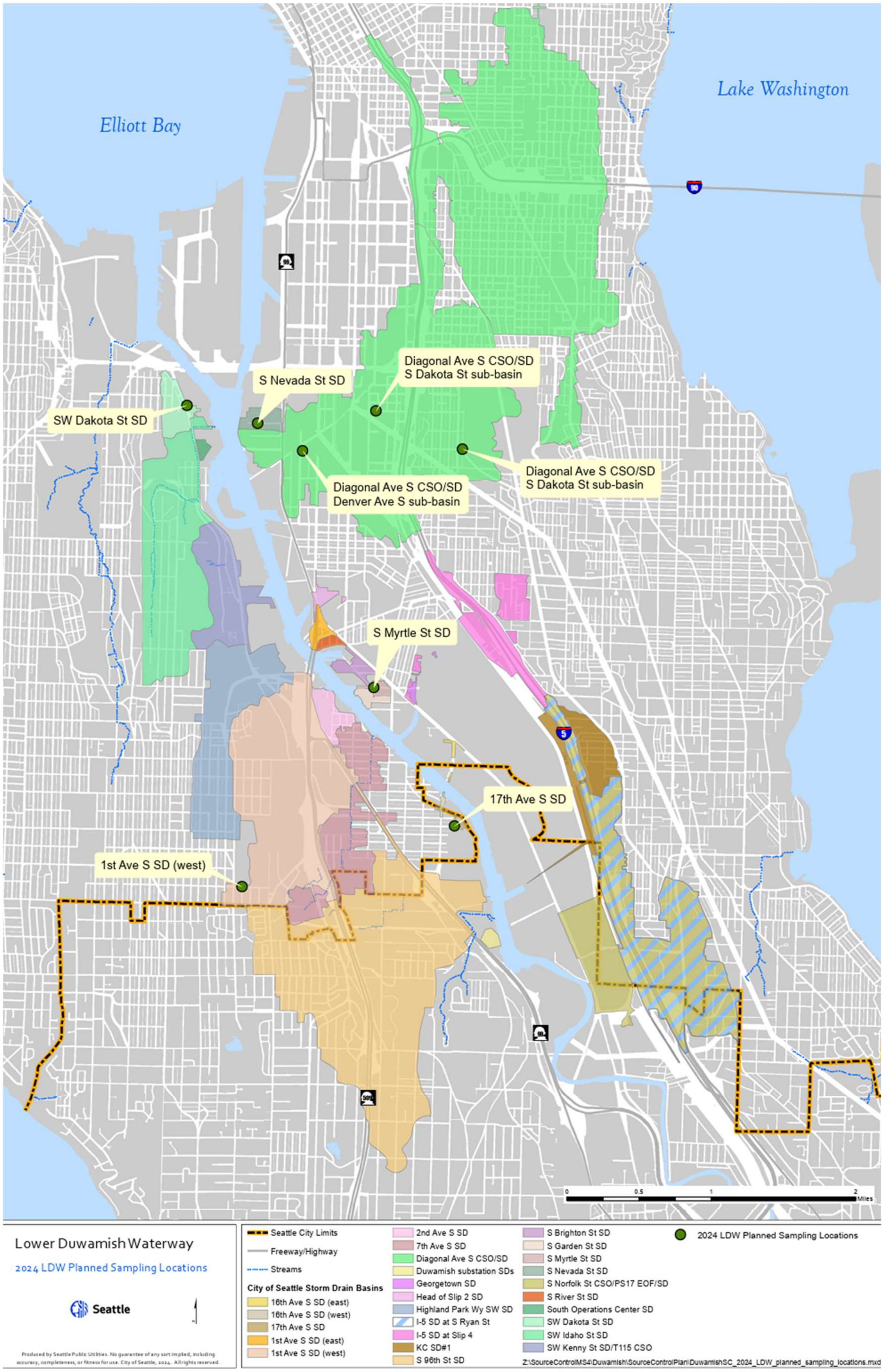

Figure 3: Drainage Basins with Planned Source Tracing Efforts in 2024

5.2 Line Cleaning

For several years, SPU utilized the 636/640 S Riverside Dr site for the temporary decant facility for line cleaning. This site is no longer available due to construction of the South Park Pump Station. SPU has established a temporary decant facility at 4700 Myers Way S. This temporary site will continue to be used until a permanent decant facility can be established for this work.

MTCA grant funding for line cleaning ran out in 2017. SPU has continued to fund line cleaning efforts using funds provided through standard budgetary allocation. As a result, line cleaning scope will vary as dictated by available funds.

All drainage areas targeted for line cleaning in the 2021-2026 SCIP have been cleaned. Line cleaning in 2024 will focus on locations where sampling indicates persistent concentrations of contaminants of concern, or where special circumstances prevented cleaning in 2023, including:

- **S Norfolk St CSO/EOF/SD –** Outside of the City's jurisdiction but cleaned to support Ecology's LDW Upper Reach Source Control Sufficiency Evaluation. Only the East Marginal Way and KCIA segments of pipe remain to be cleaned; these are scheduled for Spring 2024.
- **1st Ave S (west) SD** – While most of this drainage system was cleaned in 2023, a few portions of pipe near the City's South Transfer Station were unable to be cleaned and will therefore be prioritized in 2024.
- **S Myrtle St SD** – To remove solids with consistently elevated PCB concentrations.
- **Others TBD for Maintenance Purposes** – Cleaning will occur as resources allow, dependent on accumulation levels/rates, where removing solids will help maintain proper drainage flows and remove lower concentrations of contaminants.

Note: Drainage basins or pipe segments underlined above are particularly complicated to clean due to pipe diameter, tide conditions, etc. and will therefore be much more expensive and time intensive to clean. SPU believes that cleaning those segments will use a substantial portion of the 2024 line cleaning resources.

SPU intends to clean at least 4,000 linear feet of storm drain lines in 2024 to comply with Appendix 13 requirements.

5.3 SCIP3 Preparations

Seattle's third SCIP (SCIP3) will cover the 2027-2032 time period and build upon the 2021-2026 SCIP (SCIP2). SCIP3 will provide an updated assessment of source tracing and program effectiveness data, identify planned operations, maintenance, and capital projects to address Duwamish source control needs. SPU intends to begin drafting the SCIP3 documentation in 2024/2025 to provide sufficient time for Ecology's review prior to 2027.

Attachment A: Effectiveness Monitoring and Other LDW Source Tracing Data Collected From January 2023 Through December 2023

			Location	16TH-ST1			17TH-ST1			1ST-ST3			1ST-ST8	
			Sample Date	31 May 2023			24 May 2023			29 Mar 2023			26 Jun 202	
			Sample Name	16TH-ST1-053123			17TH-ST1-052423			1ST-ST3-032923			1ST-ST8-062	
			Drainage Type	SD			SD			SD			SD	
			Sample Method	SedTrap			SedTrap			SedTrap			SedTrap	
			Location Type	Inline			Inline w/Active SPU Sed Trap			Inline w/Active SPU Sed Trap			Inline w/Active SPU	
			Project	Lower Duwamish Waterway			Lower Duwamish Waterway			Lower Duwamish Waterway			Lower Duwamish W	
			Outfall	16th Ave S SD (east)			17th Ave S SD			1st Ave S SD (west)			1st Ave S SD (	
Analyte	Unit	SQS/LAET	CSL/2LAET	Result	Qualifier	Detected	Result	Qualifier	Detected	Result	Qualifier	Detected	Result	Qualifier
1,2,4-Trichlorobenzene	ug/kg	31	51	99.5	U	N				59.7	U	N	99.8	U
1,2-Dichlorobenzene	ug/kg	35	50	99.5	U	N				59.7	U	N	99.8	U
1,3-Dichlorobenzene	ug/kg			99.5	U	N				59.7	U	N	99.8	U
1,4-Dichlorobenzene	ug/kg	110	110	99.5	U	N				59.7	U	N	99.8	U
1-Methylnaphthalene	ug/kg			99.5	U	N				59.7	U	N	99.8	U
2,2'-Oxybis(1-chloropropane)	ug/kg			99.5	U	N				59.7	U	N	99.8	U
2,4,5-Trichlorophenol	ug/kg			498	U	N				298	U	N	499	U
2,4,6-Trichlorophenol	ug/kg			498	U	N				298	U	N	499	UJ
2,4-Dichlorophenol	ug/kg			498	U	N				298	U	N	499	U
2,4-Dimethylphenol	ug/kg	29	29	498	U	N				97.6	J	Y	499	U
2,4-Dinitrophenol	ug/kg			995	U	N				597	U	N	2000	U
2,4-Dinitrotoluene	ug/kg			498	U	N				298	U	N	499	U
2,6-Dinitrotoluene	ug/kg			498	U	N				298	U	N	499	U
2-Chloronaphthalene	ug/kg			99.5	U	N				59.7	U	N	99.8	U
2-Chlorophenol	ug/kg			99.5	U	N				59.7	U	N	99.8	U
2-Methylnaphthalene	ug/kg	670	670	50.1	J	Y				59.7	U	N	56.6	J
2-Methylphenol	ug/kg	63	63	99.5	U	N				161		Y	99.8	UJ
2-Nitroaniline	ug/kg			498	U	N				298	U	N	499	U
2-Nitrophenol	ug/kg			99.5	U	N				59.7	U	N	99.8	U
3,3`-Dichlorobenzidine	ug/kg			498	U	N				298	U	N	499	UJ
3-Nitroaniline	ug/kg			498	U	N				298	U	N	499	U
4,6-Dinitro-2-Methylphenol	ug/kg			995	U	N				597	U	N	998	U
4-Bromophenyl phenyl ether	ug/kg			99.5	U	N				59.7	U	N	99.8	U
4-Chloro-3-Methylphenol	ug/kg			498	U	N				298	U	N	499	U
4-Chloroaniline	ug/kg			498	U	N				298	U	N	499	UJ
4-Chlorophenyl Phenylether	ug/kg			249	U	N				149	U	N	250	U
4-Methylphenol	ug/kg	670	670	514		Y				782		Y	894	J
4-Nitroaniline	ug/kg			498	U	N				298	U	N	499	U
4-Nitrophenol	ug/kg			498	U	N				298	U	N	499	U
Acenaphthene	ug/kg	500	500	99.5	U	N				59.7	U	N	99.8	U
Acenaphthylene	ug/kg	1300	1300	99.5	U	N				59.7	U	N	99.8	U
Anthracene	ug/kg	960	960	66.6	J	Y				59.7	U	N	42.6	J
Aroclor 1016	ug/kg			19.9	UJ	N	20	U	N	19.4	U	N	19.9	UJ
Aroclor 1221	ug/kg			19.9	UJ	N	20	U	N	19.4	U	N	19.9	UJ
Aroclor 1232	ug/kg			19.9	UJ	N	20	U	N	19.4	U	N	19.9	UJ
Aroclor 1242	ug/kg			19.9	UJ	N	20	U	N	19.4	U	N	19.9	UJ
Aroclor 1248	ug/kg			66.5	J	Y	20	U	N	19.4	U	N	150	J
Aroclor 1254	ug/kg			72.7	J	Y	52.8		Y	19.4	U	N	271	J
Aroclor 1260	ug/kg			81.6	J	Y	439		Y	19.4	U	N	495	J
Arsenic	mg/kg	57	93	7.96	J	Y				3.79	J	Y	9.67	J
Benzo(A)anthracene	ug/kg	1300	1600	158		Y				120		Y	256	
Benzo(A)pyrene	ug/kg	1600	1600	311		Y				59.7	U	N	347	
Benzo(G,H,I)perylene	ug/kg	670	720	103		Y				89.9	J	Y	339	
Benzofluoranthenes, Total	ug/kg	3200	3600	1090		Y				453		Y	970	
Benzoic acid	ug/kg	650	650	872	J	Y				4860		Y	264	J
Benzyl alcohol	ug/kg	57	73	1390		Y				896		Y	151	
bis(2-Chloroethoxy) methane	ug/kg			99.5	U	N				59.7	U	N	99.8	U
Bis-(2-chloroethyl) ether	ug/kg			249	U	N				149	U	N	250	U
Bis(2-ethylhexyl)phthalate	ug/kg	1300	1900	3150	J	Y				544		Y	7270	
Butylbenzylphthalate	ug/kg	63	900	391		Y				59.7	U	N	180	
Carbazole	ug/kg			106		Y				59.7	U	N	73	J
Chrysene	ug/kg	1400	2800	530		Y				224		Y	479	
Coarse Sand	%									8.5		Y	4.9	
Copper	mg/kg	390	390	240		Y				32.7		Y	98.1	
cPAH	ug/kg		100	465.975		Y				108.67		Y	515.15	
Dibenzo(A,H)anthracene	ug/kg	230	230	99.5	U	N				59.7	U	N	99.8	U
Dibenzofuran	ug/kg	540	540	99.5	U	N				59.7	U	N	99.8	U
Diesel Range (Silica and Acid Cleaned)	mg/kg	2000	2000							160		Y	1330	
Diesel Range Hydrocarbons	mg/kg	2000	2000											
Diethylphthalate	ug/kg	200	1200	249	U	N				149	U	N	250	U
Dimethylphthalate	ug/kg	71	160	185		Y				59.7	U	N	56.2	J
Di-N-Butylphthalate	ug/kg	1400	1400	132		Y				59.7	U	N	111	
Di-N-Octylphthalate	ug/kg	6200	6200	99.5	UJ	N				59.7	U	N	347	
Fine Gravel	%									0.5		Y	0.1	
Fine Sand	%									17.3		Y	10	
Fluoranthene	ug/kg	1700	2500	228		Y				327		Y	995	
Fluorene	ug/kg	540	540	99.5	U	N				59.7	U	N	99.8	U
Hexachlorobenzene	ug/kg	22	70	99.5	U	N				59.7	U	N	99.8	U
Hexachlorobutadiene	ug/kg	11	120	99.5	U	N				59.7	U	N	99.8	U
Hexachlorocyclopentadiene	ug/kg			498	U	N				298	U	N	499	U
Hexachloroethane	ug/kg			99.5	U	N				59.7	U	N	99.8	U
HPAH	ug/kg	12000	17000	2798		Y				1583.3	J	Y	4794	
Indeno(1,2,3-Cd)pyrene	ug/kg	600	690	99.5	U	N				73.4		Y	208	
Isophorone	ug/kg			99.5	U	N				59.7	U	N	99.8	U
Lead	mg/kg	450	530	107		Y				6.44		Y	90.5	
LPAH	ug/kg	5200	5200	511.7	J	Y				199	J	Y	579.2	J
Medium Sand	%									31.4		Y	12.4	
Mercury	mg/kg	0.41	0.59	0.207		Y				0.0312		Y	0.155	
Motor Oil (Silica and Acid Cleaned)	mg/kg	2000	2000							1000		Y	6760	
Motor Oil Range	mg/kg	2000	2000											
Naphthalene	ug/kg	2100	2100	73.1	J	Y				34	J	Y	91.6	J
Nitrobenzene	ug/kg			99.5	U	N				59.7	U	N	99.8	U
N-Nitroso-Di-N-Propylamine	ug/kg			99.5	U	N				59.7	U	N	99.8	U
N-Nitrosodiphenylamine	ug/kg	28	40	106		Y				59.7	UJ	N	54.3	J
Pentachlorophenol	ug/kg	360	690	498	U	N				298	U	N	499	U
Phenanthrene	ug/kg	1500	1500	372		Y				165		Y	445	
Phenol	ug/kg	420	1200	157		Y				3000		Y	176	
Polychlorinated Biphenyls	ug/kg	130	1000	220.8	J	Y	491.8		Y	19.4	U	N	916	J
Pyrene	ug/kg	2600	3300	378		Y				296		Y	1200	
Solids, Total	%			34.2		Y	23.65		Y	67.12		Y	41.54	
Total Organic Carbon	%			22.9		Y				8.61	J	Y	14.8	
Very Coarse Sand	%									6.1		Y	1.7	
Very Fine Sand	%									16.6		Y	13.4	
Zinc	mg/kg	410	960	1290		Y				258		Y	641	

Lab analytical codes: Y = Detected; N = Not detected; U = not detected at the level noted ; J = estimated concentration.

			Location		7TH-ST1			7TH-ST1			7TH-ST2			
			Sample Date	3	14 Jun 2023			14 Jun 2023			05 Apr 2023			
			Sample Name	623	7TH-ST1-061423			7TH-ST1-061423-G			7TH-ST2-040523			7T
			Drainage Type		SD			SD			SD			
			Sample Method		SedTrap			SedTrap			SedTrap			
			Location Type	Sed Trap	Inline w/Active SPU Sed Trap			Inline w/Active SPU Sed Trap			Inline w/Active SPU Sed Trap			Inline w
			Project	Waterway	Lower Duwamish Waterway			Lower Duwamish Waterway			Lower Duwamish Waterway			Lower I
			Outfall	west)	7th Ave S SD			7th Ave S SD			7th Ave S SD			
Analyte	Unit	SQS/LAET	CSL/2LAET	Detected	Result	Qualifier	Detected	Result	Qualifier	Detected	Result	Qualifier	Detected	Result
1,2,4-Trichlorobenzene	ug/kg	31	51	N	20	U	N	20	U	N	20	U	N	46
1,2-Dichlorobenzene	ug/kg	35	50	N	20	U	N	20	U	N	20	U	N	46
1,3-Dichlorobenzene	ug/kg			N	20	U	N	20	U	N	20	U	N	46
1,4-Dichlorobenzene	ug/kg	110	110	N	20	U	N	20	U	N	20	U	N	46
1-Methylnaphthalene	ug/kg			N	14.7	J	Y	12.5	J	Y	20	U	N	14.7
2,2'-Oxybis(1-chloropropane)	ug/kg			N	20	U	N	20	U	N	20	U	N	46
2,4,5-Trichlorophenol	ug/kg			N	99.9	U	N	99.9	U	N	100	U	N	230
2,4,6-Trichlorophenol	ug/kg			N	99.9	U	N	99.9	U	N	100	U	N	230
2,4-Dichlorophenol	ug/kg			N	99.9	U	N	99.9	U	N	100	U	N	230
2,4-Dimethylphenol	ug/kg	29	29	N	99.9	U	N	99.9	U	N	100	U	N	230
2,4-Dinitrophenol	ug/kg			N	200	U	N	200	U	N	200	U	N	460
2,4-Dinitrotoluene	ug/kg			N	99.9	U	N	99.9	U	N	100	U	N	230
2,6-Dinitrotoluene	ug/kg			N	99.9	U	N	99.9	U	N	100	U	N	230
2-Chloronaphthalene	ug/kg			N	20	U	N	20	U	N	20	U	N	46
2-Chlorophenol	ug/kg			N	20	U	N	20	U	N	20	U	N	46
2-Methylnaphthalene	ug/kg	670	670	Y	30.8		Y	23.2		Y	20	U	N	30.5
2-Methylphenol	ug/kg	63	63	N	20	UJ	N	20	UJ	N	20	U	N	46
2-Nitroaniline	ug/kg			N	99.9	U	N	99.9	U	N	100	U	N	230
2-Nitrophenol	ug/kg			N	20	U	N	20	U	N	20	U	N	46
3,3`-Dichlorobenzidine	ug/kg			N	99.9	U	N	99.9	U	N	100	U	N	230
3-Nitroaniline	ug/kg			N	99.9	U	N	99.9	U	N	100	U	N	230
4,6-Dinitro-2-Methylphenol	ug/kg			N	200	U	N	200	U	N	200	U	N	460
4-Bromophenyl phenyl ether	ug/kg			N	20	U	N	20	U	N	20	U	N	46
4-Chloro-3-Methylphenol	ug/kg			N	99.9	U	N	99.9	U	N	100	U	N	230
4-Chloroaniline	ug/kg			N	99.9	U	N	99.9	U	N	100	U	N	230
4-Chlorophenyl Phenylether	ug/kg			N	50	U	N	50	U	N	50	U	N	115
4-Methylphenol	ug/kg	670	670	Y	205	J	Y	216	J	Y	30.3		Y	103
4-Nitroaniline	ug/kg			N	99.9	U	N	99.9	U	N	100	U	N	230
4-Nitrophenol	ug/kg			N	99.9	U	N	99.9	U	N	100	U	N	230
Acenaphthene	ug/kg	500	500	N	19.7	J	Y	12.3	J	Y	20	U	N	46
Acenaphthylene	ug/kg	1300	1300	N	20	U	N	20	U	N	20	U	N	46
Anthracene	ug/kg	960	960	Y	20	U	N	28		Y	20	U	N	46
Aroclor 1016	ug/kg			N	19.9	UJ	N	19.9	U	N	20	U	N	30.7
Aroclor 1221	ug/kg			N	19.9	UJ	N	19.9	U	N	20	U	N	30.7
Aroclor 1232	ug/kg			N	19.9	UJ	N	19.9	U	N	20	U	N	30.7
Aroclor 1242	ug/kg			N	19.9	UJ	N	19.9	U	N	20	U	N	30.7
Aroclor 1248	ug/kg			Y	25.6	J	Y	22.1		Y	20	U	N	30.7
Aroclor 1254	ug/kg			Y	43.1	J	Y	36.7		Y	20	U	N	53.9
Aroclor 1260	ug/kg			Y	44.3	J	Y	40.5		Y	20	U	N	30.7
Arsenic	mg/kg	57	93	Y	23.6	J	Y	11.4		Y	6.33	J	Y	28.4
Benzo(A)anthracene	ug/kg	1300	1600	Y	176		Y	113		Y	6.9	J	Y	122
Benzo(A)pyrene	ug/kg	1600	1600	Y	274		Y	182		Y	9.5	J	Y	173
Benzo(G,H,I)perylene	ug/kg	670	720	Y	107		Y	76.2		Y	20	UJ	N	80.8
Benzofluoranthenes, Total	ug/kg	3200	3600	Y	587		Y	424		Y	40.7		Y	92
Benzoic acid	ug/kg	650	650	Y	557	J	Y	129	J	Y	779		Y	1150
Benzyl alcohol	ug/kg	57	73	Y	503		Y	147		Y	1910		Y	1220
bis(2-Chloroethoxy) methane	ug/kg			N	20	U	N	20	U	N	20	U	N	46
Bis-(2-chloroethyl) ether	ug/kg			N	50	U	N	50	U	N	50	U	N	115
Bis(2-ethylhexyl)phthalate	ug/kg	1300	1900	Y	5400		Y	1910		Y	50	U	N	115
Butylbenzylphthalate	ug/kg	63	900	Y	20	U	N	76.3		Y	20	U	N	105
Carbazole	ug/kg			Y	20	U	N	21		Y	20	U	N	46
Chrysene	ug/kg	1400	2800	Y	387		Y	235		Y	17	J	Y	284
Coarse Sand	%			Y	4.3		Y	14.1		Y	19.2		Y	2.8
Copper	mg/kg	390	390	Y	127		Y	74		Y	14.8		Y	116
cPAH	ug/kg		100	Y	372.58		Y	250.05	J	Y	19.43	J	Y	204.14
Dibenzo(A,H)anthracene	ug/kg	230	230	N	27.7		Y	17.4	J	Y	20	U	N	46
Dibenzofuran	ug/kg	540	540	N	18	J	Y	20	U	N	20	U	N	46
Diesel Range (Silica and Acid Cleaned)	mg/kg	2000	2000	Y	677		Y	323		Y	19.5		Y	487
Diesel Range Hydrocarbons	mg/kg	2000	2000											
Diethylphthalate	ug/kg	200	1200	N	50	U	N	30.8	J	Y	50	U	N	115
Dimethylphthalate	ug/kg	71	160	Y	34.2		Y	34.5		Y	20	U	N	36.8
Di-N-Butylphthalate	ug/kg	1400	1400	Y	20	U	N	38.2		Y	20	U	N	41.9
Di-N-Octylphthalate	ug/kg	6200	6200	Y	20	U	N	20	U	N	20	U	N	46
Fine Gravel	%			Y	0.7		Y	0.7		Y	0.3		Y	0.1
Fine Sand	%			Y	8.2		Y	8.8		Y	13.8		Y	4.6
Fluoranthene	ug/kg	1700	2500	Y	343		Y	192		Y	12.9	J	Y	345
Fluorene	ug/kg	540	540	N	31.7		Y	16.4	J	Y	20	U	N	46
Hexachlorobenzene	ug/kg	22	70	N	20	U	N	20	U	N	20	U	N	46
Hexachlorobutadiene	ug/kg	11	120	N	20	U	N	20	U	N	20	U	N	46
Hexachlorocyclopentadiene	ug/kg			N	99.9	U	N	99.9	U	N	100	U	N	230
Hexachloroethane	ug/kg			N	20	U	N	20	U	N	20	U	N	46
HPAH	ug/kg	12000	17000	Y	2367		Y	1497	J	Y	102.1	J	Y	1430.8
Indeno(1,2,3-Cd)pyrene	ug/kg	600	690	Y	73.3		Y	50.4		Y	20	U	N	46
Isophorone	ug/kg			N	20	U	N	20	U	N	20	U	N	46
Lead	mg/kg	450	530	Y	59.5		Y	44.2		Y	6.46		Y	69.5
LPAH	ug/kg	5200	5200	Y	399.9	J	Y	242.7	J	Y	19.1	J	Y	214.5
Medium Sand	%			Y	10		Y	28.1		Y	41		Y	4.6
Mercury	mg/kg	0.41	0.59	Y	0.134		Y	0.0619		Y	0.019	J	Y	0.163
Motor Oil (Silica and Acid Cleaned)	mg/kg	2000	2000	Y	3230		Y	1720		Y	109		Y	3010
Motor Oil Range	mg/kg	2000	2000											
Naphthalene	ug/kg	2100	2100	Y	44.5		Y	45		Y	8.4	J	Y	54.5
Nitrobenzene	ug/kg			N	20	U	N	20	U	N	20	U	N	46
N-Nitroso-Di-N-Propylamine	ug/kg			N	20	U	N	20	U	N	8.5	J	Y	46
N-Nitrosodiphenylamine	ug/kg	28	40	Y	20	UJ	N	11.5	J	Y	20	UJ	N	46
Pentachlorophenol	ug/kg	360	690	N	99.9	U	N	99.9	U	N	100	U	N	230
Phenanthrene	ug/kg	1500	1500	Y	284		Y	131		Y	10.7	J	Y	160
Phenol	ug/kg	420	1200	Y	84.4	J	Y	20		N	20	U	N	173
Polychlorinated Biphenyls	ug/kg	130	1000	Y	113	J	Y	99.3		Y	20	U	N	53.9
Pyrene	ug/kg	2600	3300	Y	392		Y	207		Y	15.1	J	Y	426
Solids, Total	%			Y	39.29		Y	52.92		Y	55		Y	21.24
Total Organic Carbon	%			Y	9.46		Y	4.76		Y	2.98	J	Y	
Very Coarse Sand	%			Y	1.7		Y	8.3		Y	6		Y	0.1
Very Fine Sand	%			Y	8.7		Y	4.7		Y	9.2		Y	11.1
Zinc	mg/kg	410	960	Y	848		Y	363		Y	92.9		Y	625

Lab analytical codes: Y = Detected; N = Not detected; U = not detected at the level noted ; J = estimated concentration.

			Location	7TH-ST3		96TH-ST1			GDN-ST1			HP-ST4		
			Sample Date	05 Apr 2023		09 Aug 2023			24 May 2023			03 May 2023		
			Sample Name	TH-ST3-040523		96TH-ST1-080923			GDN-ST1-052423			HP-ST4-050323		
			Drainage Type	SD		SD			SD			SD		
			Sample Method	SedTrap		SedTrap			SedTrap			SedTrap		
			Location Type	/Active SPU Sed Trap		Inline			Inline			Inline w/Active SPU Sed Trap		
			Project	Duwamish Waterway		Lower Duwamish Waterway			Lower Duwamish Waterway			Lower Duwamish Waterway		
			Outfall	7th Ave S SD		S 96th St SD			S Garden St SD			Highland Park Wy SW SD		
Analyte	Unit	SQS/LAET	CSL/2LAET	Qualifier	Detected	Result	Qualifier	Detected	Result	Qualifier	Detected	Result	Qualifier	Detected
1,2,4-Trichlorobenzene	ug/kg	31	51	U	N				200	U	N	20	U	N
1,2-Dichlorobenzene	ug/kg	35	50	U	N				200	U	N	2.4	J	Y
1,3-Dichlorobenzene	ug/kg			U	N				200	U	N	20	U	N
1,4-Dichlorobenzene	ug/kg	110	110	U	N				200	U	N	20	U	N
1-Methylnaphthalene	ug/kg			J	Y				200	U	N	14.9	J	Y
2,2'-Oxybis(1-chloropropane)	ug/kg			U	N				200	U	N	20	U	N
2,4,5-Trichlorophenol	ug/kg			U	N							99.8	U	N
2,4,6-Trichlorophenol	ug/kg			U	N							99.8	U	N
2,4-Dichlorophenol	ug/kg			U	N							99.8	U	N
2,4-Dimethylphenol	ug/kg	29	29	U	N							99.8	U	N
2,4-Dinitrophenol	ug/kg			U	N							200	U	N
2,4-Dinitrotoluene	ug/kg			U	N				998	U	N	99.8	U	N
2,6-Dinitrotoluene	ug/kg			U	N				998	U	N	99.8	U	N
2-Chloronaphthalene	ug/kg			U	N				200	U	N	20	U	N
2-Chlorophenol	ug/kg			U	N							20	U	N
2-Methylnaphthalene	ug/kg	670	670	J	Y				57.2	J	Y	22.7		Y
2-Methylphenol	ug/kg	63	63	U	N							35.9		Y
2-Nitroaniline	ug/kg			U	N				998	U	N	99.8	U	N
2-Nitrophenol	ug/kg			U	N							20	U	N
3,3`-Dichlorobenzidine	ug/kg			U	N							99.8	U	N
3-Nitroaniline	ug/kg			U	N				998	U	N	99.8	U	N
4,6-Dinitro-2-Methylphenol	ug/kg			U	N							200	U	N
4-Bromophenyl phenyl ether	ug/kg			U	N				200	U	N	20	U	N
4-Chloro-3-Methylphenol	ug/kg			U	N							99.8	U	N
4-Chloroaniline	ug/kg			U	N							99.8	U	N
4-Chlorophenyl Phenylether	ug/kg			U	N				499	U	N	49.9	U	N
4-Methylphenol	ug/kg	670	670		Y							565		Y
4-Nitroaniline	ug/kg			U	N				998	U	N	99.8	U	N
4-Nitrophenol	ug/kg			U	N							99.8	U	N
Acenaphthene	ug/kg	500	500	U	N				200	U	N	9.2	J	Y
Acenaphthylene	ug/kg	1300	1300	U	N				200	U	N	20	U	N
Anthracene	ug/kg	960	960	U	N				200	U	N	13.6	J	Y
Aroclor 1016	ug/kg			UJ	N	29.8	U	N	100	U	N	20	U	N
Aroclor 1221	ug/kg			UJ	N	29.8	U	N	100	U	N	20	U	N
Aroclor 1232	ug/kg			UJ	N	29.8	U	N	100	U	N	20	U	N
Aroclor 1242	ug/kg			UJ	N	29.8	U	N	100	U	N	20	U	N
Aroclor 1248	ug/kg			UJ	N	29.8	U	N	323		Y	20	U	N
Aroclor 1254	ug/kg			J	Y	47.5		Y	259		Y	20	U	N
Aroclor 1260	ug/kg			UJ	N	32.8		Y	530		Y	20	U	N
Arsenic	mg/kg	57	93		Y	92.6		Y	12.1		Y	5.19	J	Y
Benzo(A)anthracene	ug/kg	1300	1600		Y				224		Y	38.1		Y
Benzo(A)pyrene	ug/kg	1600	1600		Y				246		Y	88.5		Y
Benzo(G,H,I)perylene	ug/kg	670	720	J	Y				286		Y	50.1		Y
Benzofluoranthenes, Total	ug/kg	3200	3600	U	N				646		Y	284		Y
Benzoic acid	ug/kg	650	650		Y							480		Y
Benzyl alcohol	ug/kg	57	73		Y				200	U	N	20	U	N
bis(2-Chloroethoxy) methane	ug/kg			U	N				200	U	N	20	U	N
Bis-(2-chloroethyl) ether	ug/kg			U	N				499	U	N	49.9	U	N
Bis(2-ethylhexyl)phthalate	ug/kg	1300	1900	U	N				3080		Y	1500		Y
Butylbenzylphthalate	ug/kg	63	900		Y				408		Y	20	U	N
Carbazole	ug/kg			U	N				200	U	N	25.7		Y
Chrysene	ug/kg	1400	2800		Y				601		Y	118		Y
Coarse Sand	%				Y							23.4		Y
Copper	mg/kg	390	390		Y	165		Y	446		Y	50.7	J	Y
cPAH	ug/kg		100		Y				394.31	J	Y	127.77	J	Y
Dibenzo(A,H)anthracene	ug/kg	230	230	U	N				200	U	N	20	U	N
Dibenzofuran	ug/kg	540	540	U	N				200	U	N	20	U	N
Diesel Range (Silica and Acid Cleaned)	mg/kg	2000	2000		Y							300		Y
Diesel Range Hydrocarbons	mg/kg	2000	2000											
Diethylphthalate	ug/kg	200	1200	U	N				499	U	N	49.9	U	N
Dimethylphthalate	ug/kg	71	160	J	Y				57.5	J	Y	20	U	N
Di-N-Butylphthalate	ug/kg	1400	1400	J	Y				93.1	J	Y	20	U	N
Di-N-Octylphthalate	ug/kg	6200	6200	U	N				200	UJ	N	70.2		Y
Fine Gravel	%			U	N							3.2		Y
Fine Sand	%				Y							5.6		Y
Fluoranthene	ug/kg	1700	2500		Y				690		Y	130		Y
Fluorene	ug/kg	540	540	U	N				200	U	N	20	U	N
Hexachlorobenzene	ug/kg	22	70	U	N				200	U	N	20	U	N
Hexachlorobutadiene	ug/kg	11	120	U	N				200	U	N	20	U	N
Hexachlorocyclopentadiene	ug/kg			U	N				998	U	N	99.8	U	N
Hexachloroethane	ug/kg			U	N				200	U	N	20	U	N
HPAH	ug/kg	12000	17000	J	Y				3654	J	Y	949.5	J	Y
Indeno(1,2,3-Cd)pyrene	ug/kg	600	690	U	N				153	J	Y	18.8	J	Y
Isophorone	ug/kg			U	N				200	U	N	20	U	N
Lead	mg/kg	450	530		Y	82.4		Y	346		Y	52.2		Y
LPAH	ug/kg	5200	5200		Y				351.7	J	Y	153.2	J	Y
Medium Sand	%				Y							20.8		Y
Mercury	mg/kg	0.41	0.59		Y	0.166		Y	0.729		Y	0.0716		Y
Motor Oil (Silica and Acid Cleaned)	mg/kg	2000	2000		Y							1870		Y
Motor Oil Range	mg/kg	2000	2000											
Naphthalene	ug/kg	2100	2100		Y				49.7	J	Y	31.1		Y
Nitrobenzene	ug/kg			U	N				200	U	N	20	U	N
N-Nitroso-Di-N-Propylamine	ug/kg			U	N				200	U	N	20	U	N
N-Nitrosodiphenylamine	ug/kg	28	40	UJ	N				200	UJ	N	16.5	J	Y
Pentachlorophenol	ug/kg	360	690	U	N							99.8	U	N
Phenanthrene	ug/kg	1500	1500		Y				302		Y	99.3		Y
Phenol	ug/kg	420	1200		Y							20	U	N
Polychlorinated Biphenyls	ug/kg	130	1000	J	Y	80.3		Y	1112		Y	20	U	N
Pyrene	ug/kg	2600	3300		Y				808		Y	222		Y
Solids, Total	%				Y	22.11		Y	44.8		Y	45.99		Y
Total Organic Carbon	%					9.58		Y	10.1		Y	6.54	J	Y
Very Coarse Sand	%			U	N							22.7		Y
Very Fine Sand	%				Y							5.4		Y
Zinc	mg/kg	410	960		Y	899		Y	2040		Y	295	J	Y

Lab analytical codes: Y = Detected; N = Not detected; U = not detected at the level noted ; J = estimated concentration.

			Location	HP-ST6			ID-ST1			ID-ST3			KN-ST1	
			Sample Date	03 May 2023			08 Mar 2023			08 Mar 2023			03 May 20	
			Sample Name	HP-ST6-050323			ID-ST1-030823			ID-ST3-030823			KN-ST1-050	
			Drainage Type	SD			SD			SD			SD	
			Sample Method	SedTrap			SedTrap			SedTrap			SedTrap	
			Location Type	Inline w/Active SPU Sed Trap			Inline w/Active SPU Sed Trap			Inline w/Active SPU Sed Trap			Inline w/Active SPU	
			Project	Lower Duwamish Waterway			Lower Duwamish Waterway			Lower Duwamish Waterway			Lower Duwamish	
			Outfall	Highland Park Wy SW SD			SW Idaho St SD			SW Idaho St SD			SW Kenny St SD/	
Analyte	Unit	SQS/LAET	CSL/2LAET	Result	Qualifier	Detected	Result	Qualifier	Detected	Result	Qualifier	Detected	Result	Qualifier
1,2,4-Trichlorobenzene	ug/kg	31	51	20	U	N	162	U	N	99.9	U	N	20	U
1,2-Dichlorobenzene	ug/kg	35	50	20	U	N	162	U	N	99.9	U	N	20	U
1,3-Dichlorobenzene	ug/kg			20	U	N	162	U	N	99.9	U	N	20	U
1,4-Dichlorobenzene	ug/kg	110	110	7	J	Y	162	U	N	99.9	U	N	20	U
1-Methylnaphthalene	ug/kg			66.6		Y	47.2	J	Y	99.9	U	N	11.3	J
2,2'-Oxybis(1-chloropropane)	ug/kg			20	U	N	162	U	N	99.9	U	N	20	U
2,4,5-Trichlorophenol	ug/kg			99.8	U	N	809	U	N	500	U	N	99.9	U
2,4,6-Trichlorophenol	ug/kg			99.8	U	N	809	U	N	500	U	N	99.9	U
2,4-Dichlorophenol	ug/kg			99.8	U	N	809	U	N	500	U	N	99.9	U
2,4-Dimethylphenol	ug/kg	29	29	99.8	U	N	809	U	N	500	U	N	99.9	U
2,4-Dinitrophenol	ug/kg			200	U	N	1620	U	N	999	U	N	200	U
2,4-Dinitrotoluene	ug/kg			99.8	U	N	809	U	N	500	U	N	99.9	U
2,6-Dinitrotoluene	ug/kg			99.8	U	N	809	U	N	500	U	N	99.9	U
2-Chloronaphthalene	ug/kg			20	U	N	162	U	N	99.9	U	N	20	U
2-Chlorophenol	ug/kg			20	U	N	162	U	N	99.9	U	N	20	U
2-Methylnaphthalene	ug/kg	670	670	83.7		Y	42.6	J	Y	99.9	U	N	17.7	J
2-Methylphenol	ug/kg	63	63	8	J	Y	162	U	N	99.9	U	N	7.6	J
2-Nitroaniline	ug/kg			99.8	U	N	809	U	N	500	U	N	99.9	U
2-Nitrophenol	ug/kg			20	U	N	162	U	N	99.9	U	N	20	U
3,3`-Dichlorobenzidine	ug/kg			99.8	U	N	809	U	N	500	U	N	99.9	U
3-Nitroaniline	ug/kg			99.8	U	N	809	U	N	500	U	N	99.9	U
4,6-Dinitro-2-Methylphenol	ug/kg			200	U	N	1620	U	N	999	U	N	200	U
4-Bromophenyl phenyl ether	ug/kg			20	U	N	162	U	N	99.9	U	N	20	U
4-Chloro-3-Methylphenol	ug/kg			99.8	U	N	809	U	N	500	U	N	99.9	U
4-Chloroaniline	ug/kg			99.8	U	N	809	U	N	500	U	N	99.9	U
4-Chlorophenyl Phenylether	ug/kg			49.9	U	N	404	U	N	250	U	N	49.9	U
4-Methylphenol	ug/kg	670	670	56.1		Y	720		Y	38.1	J	Y	49.1	
4-Nitroaniline	ug/kg			99.8	U	N	809	U	N	500	U	N	99.9	U
4-Nitrophenol	ug/kg			99.8	U	N	809	U	N	500	U	N	99.9	U
Acenaphthene	ug/kg	500	500	123		Y	190		Y	99.9	U	N	11.5	J
Acenaphthylene	ug/kg	1300	1300	22.2		Y	162	U	N	99.9	U	N	20	U
Anthracene	ug/kg	960	960	132		Y	297		Y	99.9	U	N	53.5	
Aroclor 1016	ug/kg			99.8	U	N	20	U	N	20	U	N	20	UJ
Aroclor 1221	ug/kg			99.8	U	N	20	U	N	20	U	N	20	UJ
Aroclor 1232	ug/kg			99.8	U	N	20	U	N	20	U	N	20	UJ
Aroclor 1242	ug/kg			99.8	U	N	20	U	N	20	U	N	20	UJ
Aroclor 1248	ug/kg			99.8	U	N	20	U	N	20	U	N	39.9	J
Aroclor 1254	ug/kg			99.8	U	N	54.2		Y	42.9		Y	48.4	J
Aroclor 1260	ug/kg			99.8	U	N	35.4		Y	22.6		Y	44.5	J
Arsenic	mg/kg	57	93	36.9		Y	12.7	J	Y	12.3		Y	23.5	
Benzo(A)anthracene	ug/kg	1300	1600	229		Y	1440		Y	30.6	J	Y	158	
Benzo(A)pyrene	ug/kg	1600	1600	228		Y	1820		Y	39.3	J	Y	222	
Benzo(G,H,I)perylene	ug/kg	670	720	111		Y	537		Y	99.9	U	N	137	
Benzofluoranthenes, Total	ug/kg	3200	3600	605		Y	5870		Y	143	J	Y	831	
Benzoic acid	ug/kg	650	650	200	U	N	700	J	Y	1580		Y	294	
Benzyl alcohol	ug/kg	57	73	413		Y	2190		Y	5110		Y	413	
bis(2-Chloroethoxy) methane	ug/kg			20	U	N	162	U	N	99.9	U	N	20	U
Bis-(2-chloroethyl) ether	ug/kg			49.9	U	N	404	U	N	250	U	N	49.9	U
Bis(2-ethylhexyl)phthalate	ug/kg	1300	1900	2260		Y	1910		Y	342		Y	1970	
Butylbenzylphthalate	ug/kg	63	900	515		Y	440		Y	75.1	J	Y	121	
Carbazole	ug/kg			90.2		Y	483		Y	99.9	U	N	42.1	
Chrysene	ug/kg	1400	2800	418		Y	2330		Y	67.7	J	Y	412	
Coarse Sand	%			5.2		Y							2.6	
Copper	mg/kg	390	390	140	J	Y	147		Y	38.7		Y	96.8	J
cPAH	ug/kg		100	325.57		Y	2688.2	J	Y	82.312	J	Y	342.21	
Dibenzo(A,H)anthracene	ug/kg	230	230	20	U	N	158	J	Y	99.9	U	N	20.5	
Dibenzofuran	ug/kg	540	540	62.6		Y	162	U	N	99.9	U	N	22.2	
Diesel Range (Silica and Acid Cleaned)	mg/kg	2000	2000	1220		Y	602		Y	57.8		Y	404	
Diesel Range Hydrocarbons	mg/kg	2000	2000											
Diethylphthalate	ug/kg	200	1200	49.9	U	N	404	U	N	250	U	N	49.9	U
Dimethylphthalate	ug/kg	71	160	155		Y	162	U	N	99.9	U	N	28.8	
Di-N-Butylphthalate	ug/kg	1400	1400	20	U	N	125	J	Y	295		Y	37.8	
Di-N-Octylphthalate	ug/kg	6200	6200	20	U	N	98.2	J	Y	27.3	J	Y	123	
Fine Gravel	%			0.5		Y							0.2	
Fine Sand	%			5		Y							7.2	
Fluoranthene	ug/kg	1700	2500	821		Y	3410		Y	72.7	J	Y	511	
Fluorene	ug/kg	540	540	95.2		Y	122	J	Y	99.9	U	N	15.9	J
Hexachlorobenzene	ug/kg	22	70	20	U	N	162	U	N	99.9	U	N	20	U
Hexachlorobutadiene	ug/kg	11	120	20	U	N	162	U	N	99.9	U	N	20	U
Hexachlorocyclopentadiene	ug/kg			99.8	U	N	809	U	N	500	U	N	99.9	U
Hexachloroethane	ug/kg			20	U	N	162	U	N	99.9	U	N	20	U
HPAH	ug/kg	12000	17000	3581.9		Y	19522	J	Y	433.8	J	Y	3168.4	
Indeno(1,2,3-Cd)pyrene	ug/kg	600	690	59.9		Y	507		Y	99.9	U	N	89.9	
Isophorone	ug/kg			20	U	N	162	U	N	99.9	U	N	20	U
Lead	mg/kg	450	530	326		Y	63		Y	45.6		Y	56.2	
LPAH	ug/kg	5200	5200	858.4		Y	3545	J	Y	49.6	J	Y	309.3	J
Medium Sand	%			6		Y							7.4	
Mercury	mg/kg	0.41	0.59	0.18		Y	0.233		Y	0.112		Y	0.202	
Motor Oil (Silica and Acid Cleaned)	mg/kg	2000	2000	2680		Y	4000		Y	363		Y	2260	
Motor Oil Range	mg/kg	2000	2000											
Naphthalene	ug/kg	2100	2100	178		Y	96	J	Y	99.9	U	N	39.4	
Nitrobenzene	ug/kg			20	U	N	162	U	N	99.9	U	N	20	U
N-Nitroso-Di-N-Propylamine	ug/kg			20	U	N	162	U	N	99.9	U	N	20	U
N-Nitrosodiphenylamine	ug/kg	28	40	20	U	N	162	U	N	99.9	U	N	25.1	
Pentachlorophenol	ug/kg	360	690	99.8	U	N	809	U	N	500	U	N	99.9	U
Phenanthrene	ug/kg	1500	1500	308		Y	2840		Y	49.6	J	Y	189	
Phenol	ug/kg	420	1200	20	U	N	162	U	N	102		Y	146	
Polychlorinated Biphenyls	ug/kg	130	1000	99.8	U	N	89.6		Y	65.5		Y	132.8	J
Pyrene	ug/kg	2600	3300	1110		Y	3450		Y	80.5	J	Y	787	
Solids, Total	%			37.3		Y	31.11		Y	51.3		Y	41.28	
Total Organic Carbon	%			8.92	J	Y	19.2	J	Y	8.09	J	Y	9.38	J
Very Coarse Sand	%			3.5		Y							1.7	
Very Fine Sand	%			6.8		Y							7.8	
Zinc	mg/kg	410	960	865	J	Y	1210		Y	392		Y	499	J

Lab analytical codes: Y = Detected; N = Not detected; U = not detected at the level noted ; J = estimated concentration.

Location					MH101			MH216			MH216			
Sample Date				23	06 Sep 2023			06 Jun 2023			06 Jun 2023			
Sample Name				323	MKJ-090623-5			MKJ-060623-2			MKJ-060623-3			
Drainage Type					SD			SD			SD			
Sample Method					Grab-Manual			Grab-Manual			Grab-Manual			
Location Type				l Sed Trap	Inline			Inline			Inline			
Project				Waterway	Lower Duwamish Waterway			Lower Duwamish Waterway			Lower Duwamish Waterway			Lower
Outfall				115 CSO	S Brighton St SD			1st Ave S SD (west)			1st Ave S SD (west)			S
Analyte	Unit	SQS/LAET	CSL/2LAET	Detected	Result	Qualifier	Detected	Result	Qualifier	Detected	Result	Qualifier	Detected	Result
1,2,4-Trichlorobenzene	ug/kg	31	51	N	100	U	N	199	U	N	199	U	N	20
1,2-Dichlorobenzene	ug/kg	35	50	N	100	U	N	199	U	N	199	U	N	20
1,3-Dichlorobenzene	ug/kg			N	100	U	N	199	U	N	199	U	N	20
1,4-Dichlorobenzene	ug/kg	110	110	N	100	U	N	199	U	N	199	U	N	20
1-Methylnaphthalene	ug/kg			Y	44	J	Y	199	U	N	199	U	N	8.9
2,2'-Oxybis(1-chloropropane)	ug/kg			N	100	U	N	199	U	N	199	U	N	20
2,4,5-Trichlorophenol	ug/kg			N	500	U	N	997	U	N	995	U	N	99.8
2,4,6-Trichlorophenol	ug/kg			N	500	U	N	997	UJ	N	995	UJ	N	99.8
2,4-Dichlorophenol	ug/kg			N	500	U	N	997	U	N	995	U	N	99.8
2,4-Dimethylphenol	ug/kg	29	29	N	500	U	N	997	U	N	995	U	N	99.8
2,4-Dinitrophenol	ug/kg			N	2000	U	N	1990	U	N	1990	U	N	200
2,4-Dinitrotoluene	ug/kg			N	500	U	N	997	U	N	995	U	N	99.8
2,6-Dinitrotoluene	ug/kg			N	500	U	N	997	U	N	995	U	N	99.8
2-Chloronaphthalene	ug/kg			N	100	U	N	199	U	N	199	U	N	20
2-Chlorophenol	ug/kg			N	100	U	N	199	UJ	N	199	UJ	N	20
2-Methylnaphthalene	ug/kg	670	670	Y	86.5	J	Y	199	U	N	199	U	N	17.1
2-Methylphenol	ug/kg	63	63	Y	100	U	N	199	UJ	N	199	UJ	N	20
2-Nitroaniline	ug/kg			N	500	U	N	997	U	N	995	U	N	99.8
2-Nitrophenol	ug/kg			N	100	U	N	199	U	N	199	U	N	20
3,3`-Dichlorobenzidine	ug/kg			N	500	U	N	997	UJ	N	995	UJ	N	99.8
3-Nitroaniline	ug/kg			N	500	U	N	997	UJ	N	995	UJ	N	99.8
4,6-Dinitro-2-Methylphenol	ug/kg			N	1000	U	N	1990	U	N	1990	U	N	200
4-Bromophenyl phenyl ether	ug/kg			N	100	U	N	199	U	N	199	U	N	20
4-Chloro-3-Methylphenol	ug/kg			N	500	U	N	997	U	N	995	U	N	99.8
4-Chloroaniline	ug/kg			N	500	U	N	997	UJ	N	995	UJ	N	99.8
4-Chlorophenyl Phenylether	ug/kg			N	250	U	N	498	U	N	498	U	N	49.9
4-Methylphenol	ug/kg	670	670	Y	100	U	N	199	UJ	N	199	UJ	N	20
4-Nitroaniline	ug/kg			N	500	U	N	997	U	N	995	U	N	99.8
4-Nitrophenol	ug/kg			N	500	U	N	997	U	N	995	U	N	99.8
Acenaphthene	ug/kg	500	500	Y	44.9	J	Y	199	U	N	199	U	N	6.1
Acenaphthylene	ug/kg	1300	1300	N	61.5	J	Y	199	U	N	199	U	N	12.4
Anthracene	ug/kg	960	960	Y	169		Y	199	UJ	N	199	UJ	N	28.3
Aroclor 1016	ug/kg			N	20	UJ	N	20	U	N	19.9	U	N	19.9
Aroclor 1221	ug/kg			N	20	UJ	N	20	U	N	19.9	U	N	19.9
Aroclor 1232	ug/kg			N	20	UJ	N	20	U	N	19.9	U	N	19.9
Aroclor 1242	ug/kg			N	20	UJ	N	20	U	N	19.9	U	N	19.9
Aroclor 1248	ug/kg			Y	54.9	J	Y	20	U	N	19.9	U	N	21.6
Aroclor 1254	ug/kg			Y	52.1	J	Y	24.2		Y	19.9	U	N	24.7
Aroclor 1260	ug/kg			Y	85.4	J	Y	20	U	N	19.9	U	N	19.9
Arsenic	mg/kg	57	93	Y	23		Y	2.66	J	Y	2.82	J	Y	5.36
Benzo(A)anthracene	ug/kg	1300	1600	Y	672		Y	199	U	N	199	U	N	190
Benzo(A)pyrene	ug/kg	1600	1600	Y	765		Y	199	U	N	199	U	N	205
Benzo(G,H,I)perylene	ug/kg	670	720	Y	651	J	Y	199	U	N	199	U	N	208
Benzofluoranthenes, Total	ug/kg	3200	3600	Y	1350		Y	399	U	N	398	U	N	356
Benzoic acid	ug/kg	650	650	Y	836	J	Y	1990	U	N	1990	U	N	82.4
Benzyl alcohol	ug/kg	57	73	Y	100	U	N	199	U	N	221		Y	20
bis(2-Chloroethoxy) methane	ug/kg			N	100	U	N	199	U	N	199	U	N	20
Bis-(2-chloroethyl) ether	ug/kg			N	250	U	N	498	U	N	498	U	N	49.9
Bis(2-ethylhexyl)phthalate	ug/kg	1300	1900	Y	2720		Y	619		Y	260	J	Y	292
Butylbenzylphthalate	ug/kg	63	900	Y	328		Y	199	U	N	199	U	N	103
Carbazole	ug/kg			Y	100	U	N	199	U	N	199	U	N	17.5
Chrysene	ug/kg	1400	2800	Y	1220		Y	85.3	J	Y	199	U	N	307
Coarse Sand	%			Y	12.7		Y	17.2		Y	19.1		Y	
Copper	mg/kg	390	390	Y	131	J	Y	47.8		Y	41.7		Y	239
cPAH	ug/kg		100	Y	1068		Y	180.003	J	Y	180.095	U	N	285.93
Dibenzo(A,H)anthracene	ug/kg	230	230	Y	137		Y	199	U	N	199	U	N	26.4
Dibenzofuran	ug/kg	540	540	Y	100	U	N	199	U	N	199	U	N	20
Diesel Range (Silica and Acid Cleaned)	mg/kg	2000	2000	Y	661		Y	80.3		Y	82.7		Y	211
Diesel Range Hydrocarbons	mg/kg	2000	2000											
Diethylphthalate	ug/kg	200	1200	N	250	U	N	498	U	N	498	U	N	49.9
Dimethylphthalate	ug/kg	71	160	Y	88.8	J	Y	199	U	N	199	U	N	17
Di-N-Butylphthalate	ug/kg	1400	1400	Y	100	U	N	72.9	J	Y	199	U	N	17.7
Di-N-Octylphthalate	ug/kg	6200	6200	Y	100	U	N	199	U	N	199	U	N	20
Fine Gravel	%			Y	2.1		Y	3.9		Y	3.7		Y	
Fine Sand	%			Y	14.3		Y	3.2		Y	2.4		Y	
Fluoranthene	ug/kg	1700	2500	Y	1960		Y	85.6	J	Y	199	U	N	442
Fluorene	ug/kg	540	540	Y	100	U	N	199	U	N	199	U	N	20
Hexachlorobenzene	ug/kg	22	70	N	100	U	N	199	U	N	199	U	N	20
Hexachlorobutadiene	ug/kg	11	120	N	100	U	N	199	U	N	199	U	N	20
Hexachlorocyclopentadiene	ug/kg			N	500	U	N	997	U	N	995	U	N	99.8
Hexachloroethane	ug/kg			N	100	U	N	199	U	N	199	U	N	20
HPAH	ug/kg	12000	17000	Y	8863	J	Y	251.5	J	Y	398	U	N	2422.4
Indeno(1,2,3-Cd)pyrene	ug/kg	600	690	Y	338		Y	199	U	N	199	U	N	127
Isophorone	ug/kg			N	100	U	N	199	U	N	199	U	N	20
Lead	mg/kg	450	530	Y	109	J	Y	45.4		Y	29.4		Y	40
LPAH	ug/kg	5200	5200	Y	1116.4	J	Y	176	J	Y	199	U	N	255.3
Medium Sand	%			Y	19.3		Y	11.3		Y	12.4		Y	
Mercury	mg/kg	0.41	0.59	Y	0.0794		Y	0.0705		Y	0.0251	J	Y	0.304
Motor Oil (Silica and Acid Cleaned)	mg/kg	2000	2000	Y	3580		Y	824		Y	796		Y	2160
Motor Oil Range	mg/kg	2000	2000											
Naphthalene	ug/kg	2100	2100	Y	443		Y	199	U	N	199	U	N	31.5
Nitrobenzene	ug/kg			N	100	U	N	199	U	N	199	U	N	20
N-Nitroso-Di-N-Propylamine	ug/kg			N	100	U	N	199	U	N	199	U	N	20
N-Nitrosodiphenylamine	ug/kg	28	40	Y	100	U	N	199	UJ	N	199	UJ	N	10.2
Pentachlorophenol	ug/kg	360	690	N	500	U	N	997	U	N	995	U	N	99.8
Phenanthrene	ug/kg	1500	1500	Y	398		Y	176	J	Y	199	U	N	177
Phenol	ug/kg	420	1200	Y	98.1	J	Y	199	U	N	199	U	N	137
Polychlorinated Biphenyls	ug/kg	130	1000	Y	192.4	J	Y	24.2		Y	19.9	U	N	46.3
Pyrene	ug/kg	2600	3300	Y	1770		Y	80.6	J	Y	199	U	N	561
Solids, Total	%			Y	31.9		Y	77.66		Y	79.1		Y	41.36
Total Organic Carbon	%			Y	16.3		Y	1.07	J	Y	0.95	J	Y	2.92
Very Coarse Sand	%			Y	7.8		Y	25.3		Y	27.2		Y	
Very Fine Sand	%			Y	7		Y	1.8		Y	0.9		Y	
Zinc	mg/kg	410	960	Y	687	J	Y	199		Y	157		Y	355

Lab analytical codes: Y = Detected; N = Not detected; U = not detected at the level noted ; J = estimated concentration.

Location				MH226		MH23			MH264			MH38		
Sample Date				06 Sep 2023		06 Jun 2023			17 Oct 2023			06 Sep 2023		
Sample Name				MKJ-090623-4		MKJ-060623-5			MKJ-101723-1			MKJ-090623-1		
Drainage Type				SD		SD			SD			SD		
Sample Method				Grab-Manual		Grab-Manual			Grab-Manual			Grab-Manual		
Location Type				Inline		Inline			Inline			Inline		
Project				Duwamish Waterway		Lower Duwamish Waterway			Lower Duwamish Waterway			Lower Duwamish Waterway		
Outfall				Brighton St SD		Georgetown SD			1st Ave S SD (east)			Head of Slip 2 SD		
Analyte	Unit	SQS/LAET	CSL/2LAET	Qualifier	Detected	Result	Qualifier	Detected	Result	Qualifier	Detected	Result	Qualifier	Detected
1,2,4-Trichlorobenzene	ug/kg	31	51	UJ	N	200	U	N	19.9	UJ	N	20	U	N
1,2-Dichlorobenzene	ug/kg	35	50	UJ	N	200	U	N	19.9	UJ	N	23.9		Y
1,3-Dichlorobenzene	ug/kg			UJ	N	200	U	N	19.9	UJ	N	6.3	J	Y
1,4-Dichlorobenzene	ug/kg	110	110	UJ	N	200	U	N	19.9	UJ	N	11.2	J	Y
1-Methylnaphthalene	ug/kg			J	Y	294		Y	19.9	UJ	N	5.3	J	Y
2,2'-Oxybis(1-chloropropane)	ug/kg			UJ	N	200	U	N	19.9	UJ	N	20	U	N
2,4,5-Trichlorophenol	ug/kg			UJ	N	1000	U	N	99.4	UJ	N	99.8	U	N
2,4,6-Trichlorophenol	ug/kg			UJ	N	1000	UJ	N	99.4	UJ	N	99.8	U	N
2,4-Dichlorophenol	ug/kg			UJ	N	1000	U	N	99.4	UJ	N	99.8	U	N
2,4-Dimethylphenol	ug/kg	29	29	UJ	N	1000	U	N	99.4	UJ	N	99.8	U	N
2,4-Dinitrophenol	ug/kg			UJ	N	2000	U	N	199	UJ	N	399	U	N
2,4-Dinitrotoluene	ug/kg			UJ	N	1000	U	N	99.4	UJ	N	99.8	U	N
2,6-Dinitrotoluene	ug/kg			UJ	N	1000	U	N	99.4	UJ	N	99.8	U	N
2-Chloronaphthalene	ug/kg			UJ	N	200	U	N	19.9	UJ	N	20	U	N
2-Chlorophenol	ug/kg			UJ	N	200	UJ	N	19.9	UJ	N	20	U	N
2-Methylnaphthalene	ug/kg	670	670	J	Y	337		Y	19.9	UJ	N	9.5	J	Y
2-Methylphenol	ug/kg	63	63	UJ	N	200	UJ	N	19.9	UJ	N	20	U	N
2-Nitroaniline	ug/kg			UJ	N	1000	U	N	99.4	UJ	N	99.8	U	N
2-Nitrophenol	ug/kg			UJ	N	200	U	N	19.9	UJ	N	20	U	N
3,3`-Dichlorobenzidine	ug/kg			UJ	N	1000	UJ	N	99.4	UJ	N	99.8	U	N
3-Nitroaniline	ug/kg			UJ	N	1000	UJ	N	99.4	UJ	N	99.8	U	N
4,6-Dinitro-2-Methylphenol	ug/kg			UJ	N	2000	U	N	199	UJ	N	200	U	N
4-Bromophenyl phenyl ether	ug/kg			UJ	N	200	U	N	19.9	UJ	N	20	U	N
4-Chloro-3-Methylphenol	ug/kg			UJ	N	1000	U	N	99.4	UJ	N	99.8	U	N
4-Chloroaniline	ug/kg			UJ	N	1000	UJ	N	99.4	UJ	N	99.8	U	N
4-Chlorophenyl Phenylether	ug/kg			UJ	N	500	U	N	49.7	UJ	N	49.9	U	N
4-Methylphenol	ug/kg	670	670	UJ	N	293	J	Y	19.9	UJ	N	20	U	N
4-Nitroaniline	ug/kg			UJ	N	1000	U	N	99.4	UJ	N	99.8	U	N
4-Nitrophenol	ug/kg			UJ	N	1000	U	N	99.4	UJ	N	99.8	U	N
Acenaphthene	ug/kg	500	500	J	Y	1000		Y	19.9	UJ	N	20	U	N
Acenaphthylene	ug/kg	1300	1300	J	Y	241		Y	19.9	UJ	N	20	U	N
Anthracene	ug/kg	960	960	J	Y	3800	J	Y	19.9	UJ	N	20	U	N
Aroclor 1016	ug/kg			U	N	19.9	UJ	N	99.4	U	N	19.9	UJ	N
Aroclor 1221	ug/kg			U	N	19.9	UJ	N	99.4	U	N	19.9	UJ	N
Aroclor 1232	ug/kg			U	N	19.9	UJ	N	99.4	U	N	19.9	UJ	N
Aroclor 1242	ug/kg			U	N	19.9	UJ	N	99.4	U	N	19.9	UJ	N
Aroclor 1248	ug/kg				Y	78.1	J	Y	99.4	U	N	19.9	UJ	N
Aroclor 1254	ug/kg				Y	124	J	Y	99.4	U	N	19.9	UJ	N
Aroclor 1260	ug/kg			U	N	108	J	Y	99.4	U	N	19.9	UJ	N
Arsenic	mg/kg	57	93	J	Y	9.08	J	Y	5.67	J	Y	4.48	J	Y
Benzo(A)anthracene	ug/kg	1300	1600	J	Y	12600		Y	59.6	J	Y	25.3		Y
Benzo(A)pyrene	ug/kg	1600	1600	J	Y	15100		Y	41.1	J	Y	21.2		Y
Benzo(G,H,I)perylene	ug/kg	670	720	J	Y	4740		Y	36.5	J	Y	28.5	J	Y
Benzofluoranthenes, Total	ug/kg	3200	3600	J	Y	28000		Y	83.8	J	Y	40.7		Y
Benzoic acid	ug/kg	650	650	J	Y	1280	J	Y	199	UJ	N	94.9	J	Y
Benzyl alcohol	ug/kg	57	73	UJ	N	2640		Y	19.9	UJ	N	20	U	N
bis(2-Chloroethoxy) methane	ug/kg			UJ	N	200	U	N	19.9	UJ	N	20	U	N
Bis-(2-chloroethyl) ether	ug/kg			UJ	N	500	U	N	49.7	UJ	N	49.9	U	N
Bis(2-ethylhexyl)phthalate	ug/kg	1300	1900	J	Y	9090		Y	415		Y	200		Y
Butylbenzylphthalate	ug/kg	63	900	J	Y	494		Y	19.8	J	Y	20	U	N
Carbazole	ug/kg			J	Y	3440		Y	19.9	UJ	N	20	U	N
Chrysene	ug/kg	1400	2800	J	Y	14100		Y	47.5	J	Y	44.5		Y
Coarse Sand	%					8.2		Y	12.6		Y	24.7		Y
Copper	mg/kg	390	390	J	Y	241		Y	65.3		Y	32.9	J	Y
cPAH	ug/kg		100	J	Y	20539		Y	61.835	J	Y	33.245		Y
Dibenzo(A,H)anthracene	ug/kg	230	230	J	Y	1840		Y	19.9	UJ	N	20	U	N
Dibenzofuran	ug/kg	540	540	UJ	N	418		Y	19.9	UJ	N	20	U	N
Diesel Range (Silica and Acid Cleaned)	mg/kg	2000	2000		Y	713		Y	57.6	J	Y	177		Y
Diesel Range Hydrocarbons	mg/kg	2000	2000											
Diethylphthalate	ug/kg	200	1200	UJ	N	500	U	N	49.7	UJ	N	49.9	U	N
Dimethylphthalate	ug/kg	71	160	J	Y	98	J	Y	19.9	UJ	N	20	U	N
Di-N-Butylphthalate	ug/kg	1400	1400	J	Y	274		Y	19.9	UJ	N	20	U	N
Di-N-Octylphthalate	ug/kg	6200	6200	UJ	N	228		Y	19.9	UJ	N	20	U	N
Fine Gravel	%					0.8		Y	4		Y	3.7		Y
Fine Sand	%					6.7		Y	8.4		Y	2		Y
Fluoranthene	ug/kg	1700	2500	J	Y	29900		Y	45.2	J	Y	62.5		Y
Fluorene	ug/kg	540	540	UJ	N	1140		Y	19.9	UJ	N	20	U	N
Hexachlorobenzene	ug/kg	22	70	UJ	N	200	U	N	19.9	UJ	N	20	U	N
Hexachlorobutadiene	ug/kg	11	120	UJ	N	200	U	N	19.9	UJ	N	20	U	N
Hexachlorocyclopentadiene	ug/kg			UJ	N	1000	U	N	99.4	UJ	N	99.8	U	N
Hexachloroethane	ug/kg			UJ	N	200	U	N	19.9	UJ	N	20	U	N
HPAH	ug/kg	12000	17000	J	Y	135500		Y	333.1	J	Y	303.6	J	Y
Indeno(1,2,3-Cd)pyrene	ug/kg	600	690	J	Y	5020		Y	19.4	J	Y	20	U	N
Isophorone	ug/kg			UJ	N	200	U	N	19.9	UJ	N	20	U	N
Lead	mg/kg	450	530	J	Y	141		Y	20.1	J	Y	12.7	J	Y
LPAH	ug/kg	5200	5200	J	Y	23852	J	Y	25.2	J	Y	38.6	J	Y
Medium Sand	%					7.9		Y	26.1		Y	17.1		Y
Mercury	mg/kg	0.41	0.59		Y	0.232		Y	0.0222	J	Y	0.0127	J	Y
Motor Oil (Silica and Acid Cleaned)	mg/kg	2000	2000		Y	5240		Y	489	J	Y	500		Y
Motor Oil Range	mg/kg	2000	2000											
Naphthalene	ug/kg	2100	2100	J	Y	371		Y	5.7	J	Y	10.8	J	Y
Nitrobenzene	ug/kg			UJ	N	200	U	N	19.9	UJ	N	20	U	N
N-Nitroso-Di-N-Propylamine	ug/kg			UJ	N	200	U	N	19.9	UJ	N	20	U	N
N-Nitrosodiphenylamine	ug/kg	28	40	J	Y	200	UJ	N	19.9	UJ	N	20	U	N
Pentachlorophenol	ug/kg	360	690	UJ	N	1000	U	N	99.4	UJ	N	99.8	U	N
Phenanthrene	ug/kg	1500	1500	J	Y	17300		Y	19.5	J	Y	27.8		Y
Phenol	ug/kg	420	1200	J	Y	180	J	Y	9.4	J	Y	20	U	N
Polychlorinated Biphenyls	ug/kg	130	1000		Y	310.1	J	Y	99.4	U	N	19.9		N
Pyrene	ug/kg	2600	3300	J	Y	24200		Y	19.9	UJ	N	80.9		Y
Solids, Total	%				Y	37.63		Y	80.64		Y	76.23		Y
Total Organic Carbon	%				Y	21.3	J	Y	0.76	J	Y	0.43		Y
Very Coarse Sand	%					8.7		Y	7.8		Y	14.7		Y
Very Fine Sand	%					11.7		Y	2.1		Y	0.5		Y
Zinc	mg/kg	410	960	J	Y	1180		Y	366	J	Y	111	J	Y

Lab analytical codes: Y = Detected; N = Not detected; U = not detected at the level noted ; J = estimated concentration.

			Location	MH82			MH83			MH85			MH86	
			Sample Date	31 Jan 2023			31 Jan 2023			05 Jul 2023			05 Jul 202	
			Sample Name	HZ-013123-3			HZ-013123-15			CCO-070523-1			CCO-07052	
			Drainage Type	SD			SD			CS			SD	
			Sample Method	Grab-Manual			Grab-Manual			Grab-Manual			Grab-Manu	
			Location Type	Inline			Inline			Inline			Inline	
			Project	Lower Duwamish Waterway			Lower Duwamish Waterway			Westpoint Treatment Plant			Lower Duwamish \	
			Outfall	17th Ave S SD			17th Ave S SD			Westpoint Treatment Plant			1st Ave S SD (	
Analyte	Unit	SQS/LAET	CSL/2LAET	Result	Qualifier	Detected	Result	Qualifier	Detected	Result	Qualifier	Detected	Result	Qualifier
1,2,4-Trichlorobenzene	ug/kg	31	51							19.9	U	N	99.8	U
1,2-Dichlorobenzene	ug/kg	35	50							19.9	U	N	99.8	U
1,3-Dichlorobenzene	ug/kg									19.9	U	N	99.8	U
1,4-Dichlorobenzene	ug/kg	110	110							8	J	Y	99.8	U
1-Methylnaphthalene	ug/kg									10	J	Y	53.3	J
2,2'-Oxybis(1-chloropropane)	ug/kg									19.9	U	N	99.8	U
2,4,5-Trichlorophenol	ug/kg									99.3	U	N	499	U
2,4,6-Trichlorophenol	ug/kg									99.3	U	N	499	U
2,4-Dichlorophenol	ug/kg									99.3	U	N	499	U
2,4-Dimethylphenol	ug/kg	29	29							99.3	U	N	499	U
2,4-Dinitrophenol	ug/kg									397	U	N	2000	U
2,4-Dinitrotoluene	ug/kg									99.3	U	N	499	U
2,6-Dinitrotoluene	ug/kg									99.3	U	N	499	U
2-Chloronaphthalene	ug/kg									19.9	U	N	99.8	U
2-Chlorophenol	ug/kg									19.9	U	N	99.8	U
2-Methylnaphthalene	ug/kg	670	670							14.1	J	Y	97.4	J
2-Methylphenol	ug/kg	63	63							19.9	U	N	99.8	U
2-Nitroaniline	ug/kg									99.3	U	N	499	U
2-Nitrophenol	ug/kg									19.9	U	N	99.8	U
3,3`-Dichlorobenzidine	ug/kg									99.3	U	N	499	U
3-Nitroaniline	ug/kg									99.3	U	N	499	U
4,6-Dinitro-2-Methylphenol	ug/kg									199	U	N	998	U
4-Bromophenyl phenyl ether	ug/kg									19.9	U	N	99.8	U
4-Chloro-3-Methylphenol	ug/kg									99.3	U	N	499	U
4-Chloroaniline	ug/kg									99.3	U	N	499	U
4-Chlorophenyl Phenylether	ug/kg									49.6	U	N	250	U
4-Methylphenol	ug/kg	670	670							448		Y	847	
4-Nitroaniline	ug/kg									99.3	U	N	499	U
4-Nitrophenol	ug/kg									99.3	U	N	499	U
Acenaphthene	ug/kg	500	500							15.1	J	Y	99.8	U
Acenaphthylene	ug/kg	1300	1300							19.9	U	N	54.7	J
Anthracene	ug/kg	960	960							26		Y	82.2	J
Aroclor 1016	ug/kg			19.7	U	N	120	U	N	100	U	N	99.8	U
Aroclor 1221	ug/kg			19.7	U	N	120	U	N	100	U	N	99.8	U
Aroclor 1232	ug/kg			19.7	U	N	120	U	N	100	U	N	99.8	U
Aroclor 1242	ug/kg			19.7	U	N	120	U	N	1090		Y	99.8	U
Aroclor 1248	ug/kg			19.7	U	N	120	U	N	100	U	N	58.9	J
Aroclor 1254	ug/kg			19.7	U	N	120	U	N	364		Y	96.3	J
Aroclor 1260	ug/kg			19.7	U	N	120	U	N	226		Y	76.3	J
Arsenic	mg/kg	57	93							5.32	J	Y	11.3	J
Benzo(A)anthracene	ug/kg	1300	1600							89.2		Y	254	
Benzo(A)pyrene	ug/kg	1600	1600							126		Y	357	
Benzo(G,H,I)perylene	ug/kg	670	720							134		Y	520	
Benzofluoranthenes, Total	ug/kg	3200	3600							265		Y	861	
Benzoic acid	ug/kg	650	650							185	J	Y	998	U
Benzyl alcohol	ug/kg	57	73							60		Y	82.7	J
bis(2-Chloroethoxy) methane	ug/kg									19.9	U	N	99.8	U
Bis-(2-chloroethyl) ether	ug/kg									49.6	U	N	250	U
Bis(2-ethylhexyl)phthalate	ug/kg	1300	1900							1760		Y	9410	
Butylbenzylphthalate	ug/kg	63	900							271		Y	441	
Carbazole	ug/kg									19.9	U	N	57.9	J
Chrysene	ug/kg	1400	2800							174		Y	584	
Coarse Sand	%									20.6		Y	4.4	
Copper	mg/kg	390	390							89.1	J	Y	252	J
cPAH	ug/kg		100							177.76		Y	510.8	
Dibenzo(A,H)anthracene	ug/kg	230	230							21		Y	99.8	U
Dibenzofuran	ug/kg	540	540							19.9	U	N	99.8	U
Diesel Range (Silica and Acid Cleaned)	mg/kg	2000	2000											
Diesel Range Hydrocarbons	mg/kg	2000	2000							906		Y	1460	
Diethylphthalate	ug/kg	200	1200							49.6	U	N	250	U
Dimethylphthalate	ug/kg	71	160							54.5		Y	88	J
Di-N-Butylphthalate	ug/kg	1400	1400							55.9		Y	78.7	J
Di-N-Octylphthalate	ug/kg	6200	6200							49.8		Y	538	
Fine Gravel	%									2.1		Y	0.9	
Fine Sand	%									4.6		Y	5.5	
Fluoranthene	ug/kg	1700	2500							458		Y	1210	
Fluorene	ug/kg	540	540							17.3	J	Y	87.9	J
Hexachlorobenzene	ug/kg	22	70							19.9	U	N	99.8	U
Hexachlorobutadiene	ug/kg	11	120							19.9	U	N	99.8	U
Hexachlorocyclopentadiene	ug/kg									99.3	U	N	499	U
Hexachloroethane	ug/kg									19.9	U	N	99.8	U
HPAH	ug/kg	12000	17000							1750.2		Y	5821	
Indeno(1,2,3-Cd)pyrene	ug/kg	600	690							62		Y	165	
Isophorone	ug/kg									19.9	U	N	99.8	U
Lead	mg/kg	450	530							919	J	Y	121	J
LPAH	ug/kg	5200	5200							220.9	J	Y	1050.8	J
Medium Sand	%									29.1		Y	6.7	
Mercury	mg/kg	0.41	0.59							0.277		Y	0.161	
Motor Oil (Silica and Acid Cleaned)	mg/kg	2000	2000											
Motor Oil Range	mg/kg	2000	2000							2900		Y	9930	
Naphthalene	ug/kg	2100	2100							22.5		Y	239	
Nitrobenzene	ug/kg									19.9	U	N	99.8	U
N-Nitroso-Di-N-Propylamine	ug/kg									19.9	U	N	99.8	U
N-Nitrosodiphenylamine	ug/kg	28	40							14.1	J	Y	121	J
Pentachlorophenol	ug/kg	360	690							99.3	U	N	499	U
Phenanthrene	ug/kg	1500	1500							140		Y	587	
Phenol	ug/kg	420	1200							73.5		Y	957	
Polychlorinated Biphenyls	ug/kg	130	1000	19.7	U	N	120	U	N	1680		Y	231.5	J
Pyrene	ug/kg	2600	3300							421		Y	1870	
Solids, Total	%									57.65		Y	45.13	
Total Organic Carbon	%									2.52		Y	11.8	J
Very Coarse Sand	%									6.3		Y	3.6	
Very Fine Sand	%									2.1		Y	6.9	
Zinc	mg/kg	410	960							354	J	Y	1480	J

Lab analytical codes: Y = Detected; N = Not detected; U = not detected at the level noted ; J = estimated concentration.

			Location		MYR-ST1			NST1			NST1			
			Sample Date	3	10 May 2023			10 May 2023			10 May 2023			
			Sample Name	3-2	MYR-ST1-051023			NST1-051023			NST1-051023-G			
			Drainage Type		SD			SD			SD			
			Sample Method	al	SedTrap			SedTrap			SedTrap			
			Location Type		Inline w/Active SPU Sed Trap			Inline w/Active SPU Sed Trap			Inline w/Active SPU Sed Trap			Inline w
			Project	Waterway	Lower Duwamish Waterway			Lower Duwamish Waterway			Lower Duwamish Waterway			Lower
			Outfall	east)	S Myrtle St SD			S Norfolk St CSO/PS17 EOF/SD			S Norfolk St CSO/PS17 EOF/SD			S Norfol
Analyte	Unit	SQS/LAET	CSL/2LAET	Detected	Result	Qualifier	Detected	Result	Qualifier	Detected	Result	Qualifier	Detected	Result
1,2,4-Trichlorobenzene	ug/kg	31	51	N	100	U	N	100	U	N	99.9	U	N	20
1,2-Dichlorobenzene	ug/kg	35	50	N	15.2	J	Y	100	U	N	99.9	U	N	20
1,3-Dichlorobenzene	ug/kg			N	100	U	N	100	U	N	99.9	U	N	20
1,4-Dichlorobenzene	ug/kg	110	110	N	53	J	Y	100	U	N	99.9	U	N	20
1-Methylnaphthalene	ug/kg			Y	129		Y	29.8	J	Y	33.8	J	Y	9.4
2,2'-Oxybis(1-chloropropane)	ug/kg			N	100	U	N	100	U	N	99.9	U	N	20
2,4,5-Trichlorophenol	ug/kg			N	500	U	N	500	U	N	499	U	N	99.9
2,4,6-Trichlorophenol	ug/kg			N	500	U	N	500	U	N	499	U	N	99.9
2,4-Dichlorophenol	ug/kg			N	500	U	N	500	U	N	499	U	N	99.9
2,4-Dimethylphenol	ug/kg	29	29	N	500	U	N	500	U	N	499	U	N	99.9
2,4-Dinitrophenol	ug/kg			N	1000	U	N	1000	U	N	999	U	N	400
2,4-Dinitrotoluene	ug/kg			N	500	U	N	500	U	N	499	U	N	99.9
2,6-Dinitrotoluene	ug/kg			N	500	U	N	500	U	N	499	U	N	99.9
2-Chloronaphthalene	ug/kg			N	100	U	N	100	U	N	99.9	U	N	20
2-Chlorophenol	ug/kg			N	100	U	N	100	U	N	99.9	U	N	20
2-Methylnaphthalene	ug/kg	670	670	Y	243		Y	44.2	J	Y	52.7	J	Y	23.1
2-Methylphenol	ug/kg	63	63	N	35.1	J	Y	100	UJ	N	99.9	UJ	N	7.3
2-Nitroaniline	ug/kg			N	500	U	N	500	U	N	499	U	N	99.9
2-Nitrophenol	ug/kg			N	100	U	N	100	U	N	99.9	U	N	20
3,3`-Dichlorobenzidine	ug/kg			N										99.9
3-Nitroaniline	ug/kg			N	500	U	N	500	U	N	499	U	N	99.9
4,6-Dinitro-2-Methylphenol	ug/kg			N	1000	U	N	1000	U	N	999	U	N	200
4-Bromophenyl phenyl ether	ug/kg			N	100	U	N	100	U	N	99.9	U	N	20
4-Chloro-3-Methylphenol	ug/kg			N	500	U	N	500	U	N	499	U	N	99.9
4-Chloroaniline	ug/kg			N	500	U	N	500	U	N	499	U	N	99.9
4-Chlorophenyl Phenylether	ug/kg			N	250	U	N	250	U	N	250	U	N	49.9
4-Methylphenol	ug/kg	670	670	Y	186		Y	284		Y	41	J	Y	391
4-Nitroaniline	ug/kg			N	500	U	N	500	U	N	499	U	N	99.9
4-Nitrophenol	ug/kg			N	500	U	N	500	U	N	499	U	N	99.9
Acenaphthene	ug/kg	500	500	N	55.3	J	Y	42.4	J	Y	68.9	J	Y	7.8
Acenaphthylene	ug/kg	1300	1300	Y	39.1	J	Y	100	U	N	99.9	U	N	18.8
Anthracene	ug/kg	960	960	Y	106		Y	64.7	J	Y	101		Y	27.7
Aroclor 1016	ug/kg			N	20	UJ	N	19.9	UJ	N	19.9	UJ	N	20
Aroclor 1221	ug/kg			N	20	UJ	N	19.9	UJ	N	19.9	UJ	N	20
Aroclor 1232	ug/kg			N	20	UJ	N	19.9	UJ	N	19.9	UJ	N	20
Aroclor 1242	ug/kg			N	20	UJ	N	19.9	UJ	N	19.9	UJ	N	20
Aroclor 1248	ug/kg			Y	958	J	Y	47.1	J	Y	53.1	J	Y	20
Aroclor 1254	ug/kg			Y	570	J	Y	87.7	J	Y	68.3	J	Y	46.7
Aroclor 1260	ug/kg			Y	196	J	Y	35.8	J	Y	66.8	J	Y	20
Arsenic	mg/kg	57	93	Y	15.7		Y	10	J	Y	9.19	J	Y	7.09
Benzo(A)anthracene	ug/kg	1300	1600	Y	396		Y	265		Y	328		Y	158
Benzo(A)pyrene	ug/kg	1600	1600	Y	434		Y	406		Y	506		Y	288
Benzo(G,H,I)perylene	ug/kg	670	720	Y	163		Y	301		Y	324		Y	445
Benzofluoranthenes, Total	ug/kg	3200	3600	Y	841		Y	1130		Y	1070		Y	665
Benzoic acid	ug/kg	650	650	N	1310		Y	917	J	Y	999	U	N	661
Benzyl alcohol	ug/kg	57	73	Y	100	U	N	294		Y	159		Y	316
bis(2-Chloroethoxy) methane	ug/kg			N	100	U	N	100	U	N	99.9	U	N	20
Bis-(2-chloroethyl) ether	ug/kg			N	250	U	N	250	U	N	250	U	N	49.9
Bis(2-ethylhexyl)phthalate	ug/kg	1300	1900	Y	21100		Y				3780		Y	1690
Butylbenzylphthalate	ug/kg	63	900	Y	1450		Y	231		Y	123		Y	20
Carbazole	ug/kg			Y	100	U	N	114		Y	99.9	U	N	45.8
Chrysene	ug/kg	1400	2800	Y	1050		Y	629		Y	782		Y	359
Coarse Sand	%			Y				4.5		Y	0.7		Y	
Copper	mg/kg	390	390	Y	1020		Y	182		Y	139		Y	111
cPAH	ug/kg		100	Y	597.74	J	Y	592.49		Y	694.7		Y	420.73
Dibenzo(A,H)anthracene	ug/kg	230	230	N	100	U	N	100	U	N	99.9	U	N	64.6
Dibenzofuran	ug/kg	540	540	N	86.5	J	Y	100	U	N	99.9	U	N	20
Diesel Range (Silica and Acid Cleaned)	mg/kg	2000	2000		4390		Y	1480		Y	1530		Y	237
Diesel Range Hydrocarbons	mg/kg	2000	2000	Y										
Diethylphthalate	ug/kg	200	1200	N	100	J	Y	250	U	N	250	U	N	42
Dimethylphthalate	ug/kg	71	160	Y	1530		Y	64.8	J	Y	99.9	U	N	72
Di-N-Butylphthalate	ug/kg	1400	1400	Y	624		Y	133		Y	77.6	J	Y	164
Di-N-Octylphthalate	ug/kg	6200	6200	Y	1500	J	Y	2870	J	Y	605	J	Y	20
Fine Gravel	%			Y				0.2		Y	0.2		Y	
Fine Sand	%			Y				3.1		Y	1.7		Y	
Fluoranthene	ug/kg	1700	2500	Y	601		Y	468		Y	564		Y	860
Fluorene	ug/kg	540	540	Y	76.5	J	Y	100	U	N	99.9	U	N	20
Hexachlorobenzene	ug/kg	22	70	N	100	U	N	100	U	N	99.9	U	N	20
Hexachlorobutadiene	ug/kg	11	120	N	100	U	N	100	U	N	99.9	U	N	20
Hexachlorocyclopentadiene	ug/kg			N	1000	U	N	1000	U	N	999	U	N	99.9
Hexachloroethane	ug/kg			N	100	U	N	100	U	N	99.9	U	N	22.8
HPAH	ug/kg	12000	17000	Y	4690.4	J	Y	3983		Y	4507		Y	3880.6
Indeno(1,2,3-Cd)pyrene	ug/kg	600	690	Y	95.4	J	Y	207		Y	211		Y	210
Isophorone	ug/kg			N	100	U	N	100	U	N	99.9	U	N	20
Lead	mg/kg	450	530	Y	672		Y	60.7		Y	78.7		Y	51.5
LPAH	ug/kg	5200	5200	Y	1545.9	J	Y	603.2	J	Y	674	J	Y	313.8
Medium Sand	%			Y				4.2		Y	1.4		Y	
Mercury	mg/kg	0.41	0.59	Y	0.889		Y	0.118		Y	0.121		Y	0.0718
Motor Oil (Silica and Acid Cleaned)	mg/kg	2000	2000		26000		Y	6640		Y	6380		Y	2640
Motor Oil Range	mg/kg	2000	2000	Y										
Naphthalene	ug/kg	2100	2100	Y	561		Y	70.1	J	Y	70.1	J	Y	44.5
Nitrobenzene	ug/kg			N	100	U	N	100	U	N	99.9	U	N	20
N-Nitroso-Di-N-Propylamine	ug/kg			N	100	U	N	100	U	N	99.9	U	N	20
N-Nitrosodiphenylamine	ug/kg	28	40	Y	100	UJ	N	100	UJ	N	99.9	UJ	N	20
Pentachlorophenol	ug/kg	360	690	N	500	U	N	500	U	N	499	U	N	99.9
Phenanthrene	ug/kg	1500	1500	Y	708		Y	426		Y	434		Y	215
Phenol	ug/kg	420	1200	Y	692		Y	157		Y	99.9	U	N	81.1
Polychlorinated Biphenyls	ug/kg	130	1000	Y	1724	J	Y	170.6	J	Y	188.2	J	Y	46.7
Pyrene	ug/kg	2600	3300	Y	1110		Y	577		Y	722		Y	831
Solids, Total	%			Y	33.59		Y	41.23		Y	46.2		Y	51.66
Total Organic Carbon	%			Y	22.3	J	Y	13.3	J	Y	9.97	J	Y	11.1
Very Coarse Sand	%			Y				3.2		Y	0.6		Y	
Very Fine Sand	%			Y				7.5		Y	6.4		Y	
Zinc	mg/kg	410	960	Y	3960		Y	821		Y	709		Y	473

Lab analytical codes: Y = Detected; N = Not detected; U = not detected at the level noted ; J = estimated concentration.

			Location	NST3		NST4			NST5			ODS132		
			Sample Date	09 Aug 2023		12 Jul 2023			12 Apr 2023			20 Jul 2023		
			Sample Name	NST3-080923		NST4-071223			NST5-041223			MKJ-072023-1		
			Drainage Type	SD		SD			SD			SD		
			Sample Method	SedTrap		SedTrap			SedTrap			Grab-Manual		
			Location Type	/Active SPU Sed Trap		Inline w/Active SPU Sed Trap			Inline w/Active SPU Sed Trap			ODS		
			Project	Duwamish Waterway		Lower Duwamish Waterway			Lower Duwamish Waterway			Lower Duwamish Waterway		
			Outfall	k St CSO/PS17 EOF/SD		S Norfolk St CSO/PS17 EOF/SD			S Norfolk St CSO/PS17 EOF/SD			S Brighton St SD		
Analyte	Unit	SQS/LAET	CSL/2LAET	Qualifier	Detected	Result	Qualifier	Detected	Result	Qualifier	Detected	Result	Qualifier	Detected
1,2,4-Trichlorobenzene	ug/kg	31	51	U	N				5.1	J	Y			
1,2-Dichlorobenzene	ug/kg	35	50	U	N				5.5	J	Y			
1,3-Dichlorobenzene	ug/kg			U	N				20	U	N			
1,4-Dichlorobenzene	ug/kg	110	110	U	N				11.6	J	Y			
1-Methylnaphthalene	ug/kg			J	Y				78		Y			
2,2'-Oxybis(1-chloropropane)	ug/kg			U	N				20	U	N			
2,4,5-Trichlorophenol	ug/kg			U	N				99.9	U	N			
2,4,6-Trichlorophenol	ug/kg			U	N				99.9	U	N			
2,4-Dichlorophenol	ug/kg			U	N				99.9	U	N			
2,4-Dimethylphenol	ug/kg	29	29	U	N				99.9	U	N			
2,4-Dinitrophenol	ug/kg			U	N				200	U	N			
2,4-Dinitrotoluene	ug/kg			U	N				99.9	U	N			
2,6-Dinitrotoluene	ug/kg			U	N				99.9	U	N			
2-Chloronaphthalene	ug/kg			U	N				20	U	N			
2-Chlorophenol	ug/kg			U	N				20	U	N			
2-Methylnaphthalene	ug/kg	670	670		Y				87.3		Y			
2-Methylphenol	ug/kg	63	63	J	Y				16.5	J	Y			
2-Nitroaniline	ug/kg			U	N				99.9	U	N			
2-Nitrophenol	ug/kg			U	N				20	U	N			
3,3`-Dichlorobenzidine	ug/kg			U	N				99.9	U	N			
3-Nitroaniline	ug/kg			U	N				99.9	U	N			
4,6-Dinitro-2-Methylphenol	ug/kg			U	N				200	U	N			
4-Bromophenyl phenyl ether	ug/kg			U	N				20	U	N			
4-Chloro-3-Methylphenol	ug/kg			U	N				99.9	U	N			
4-Chloroaniline	ug/kg			U	N				99.9	U	N			
4-Chlorophenyl Phenylether	ug/kg			U	N				49.9	U	N			
4-Methylphenol	ug/kg	670	670	J	Y				53.7		Y			
4-Nitroaniline	ug/kg			U	N				99.9	U	N			
4-Nitrophenol	ug/kg			U	N				99.9	U	N			
Acenaphthene	ug/kg	500	500	J	Y				27.6		Y			
Acenaphthylene	ug/kg	1300	1300	J	Y				17.6	J	Y			
Anthracene	ug/kg	960	960		Y				43		Y			
Aroclor 1016	ug/kg			U	N	133	U	N	20	U	N	1960	U	N
Aroclor 1221	ug/kg			U	N	133	U	N	20	U	N	1960	U	N
Aroclor 1232	ug/kg			U	N	133	U	N	20	U	N	1960	U	N
Aroclor 1242	ug/kg			U	N	133	U	N	20	U	N	1960	U	N
Aroclor 1248	ug/kg			U	N	133	U	N	50.5		Y	7850		Y
Aroclor 1254	ug/kg				Y	133	U	N	72.3		Y	14800		Y
Aroclor 1260	ug/kg			U	N	133	U	N	209		Y	1960	U	N
Arsenic	mg/kg	57	93	J	Y				27.4		Y			
Benzo(A)anthracene	ug/kg	1300	1600		Y				65.3		Y			
Benzo(A)pyrene	ug/kg	1600	1600		Y				95.1		Y			
Benzo(G,H,I)perylene	ug/kg	670	720	J	Y				55.7	J	Y			
Benzofluoranthenes, Total	ug/kg	3200	3600		Y				361		Y			
Benzoic acid	ug/kg	650	650	J	Y				883		Y			
Benzyl alcohol	ug/kg	57	73		Y				238		Y			
bis(2-Chloroethoxy) methane	ug/kg			U	N				20	U	N			
Bis-(2-chloroethyl) ether	ug/kg			U	N				49.9	U	N			
Bis(2-ethylhexyl)phthalate	ug/kg	1300	1900		Y				382		Y			
Butylbenzylphthalate	ug/kg	63	900	U	N				93.4		Y			
Carbazole	ug/kg				Y				37.7		Y			
Chrysene	ug/kg	1400	2800		Y				161		Y			
Coarse Sand	%													
Copper	mg/kg	390	390		Y				55.9		Y			
cPAH	ug/kg		100	J	Y				148.16 148.16	J J	Y Y			
Dibenzo(A,H)anthracene	ug/kg	230	230	J	Y				20	U	N			
Dibenzofuran	ug/kg	540	540	U	N				46		Y			
Diesel Range (Silica and Acid Cleaned)	mg/kg	2000	2000		Y				303		Y			
Diesel Range Hydrocarbons	mg/kg	2000	2000											
Diethylphthalate	ug/kg	200	1200	J	Y				49.9	U	N			
Dimethylphthalate	ug/kg	71	160		Y				76.9		Y			
Di-N-Butylphthalate	ug/kg	1400	1400		Y				22.8		Y			
Di-N-Octylphthalate	ug/kg	6200	6200	UJ	N				68.9		Y			
Fine Gravel	%													
Fine Sand	%													
Fluoranthene	ug/kg	1700	2500		Y				149		Y			
Fluorene	ug/kg	540	540	U	N				43.7		Y			
Hexachlorobenzene	ug/kg	22	70	U	N				20	U	N			
Hexachlorobutadiene	ug/kg	11	120	U	N				20	U	N			
Hexachlorocyclopentadiene	ug/kg			U	N				99.9	U	N			
Hexachloroethane	ug/kg				Y				20	U	N			
HPAH	ug/kg	12000	17000	J	Y				1111.3	J	Y			
Indeno(1,2,3-Cd)pyrene	ug/kg	600	690	J	Y				48.2	J	Y			
Isophorone	ug/kg			U	N				20	U	N			
Lead	mg/kg	450	530		Y				107		Y			
LPAH	ug/kg	5200	5200	J	Y				469.9	J	Y			
Medium Sand	%													
Mercury	mg/kg	0.41	0.59		Y				0.125		Y			
Motor Oil (Silica and Acid Cleaned)	mg/kg	2000	2000		Y				827		Y			
Motor Oil Range	mg/kg	2000	2000											
Naphthalene	ug/kg	2100	2100		Y				125		Y			
Nitrobenzene	ug/kg			U	N				20	U	N			
N-Nitroso-Di-N-Propylamine	ug/kg			U	N				20	U	N			
N-Nitrosodiphenylamine	ug/kg	28	40	UJ	N				20	U	N			
Pentachlorophenol	ug/kg	360	690	U	N				99.9	U	N			
Phenanthrene	ug/kg	1500	1500		Y				213		Y			
Phenol	ug/kg	420	1200		Y				198		Y			
Polychlorinated Biphenyls	ug/kg	130	1000		Y	133	U	N	331.8		Y	22650		Y
Pyrene	ug/kg	2600	3300		Y				176		Y			
Solids, Total	%				Y	14.89		Y	56.83		Y			
Total Organic Carbon	%				Y				3.75	J	Y			
Very Coarse Sand	%													
Very Fine Sand	%													
Zinc	mg/kg	410	960		Y				835		Y			

Lab analytical codes: Y = Detected; N = Not detected; U = not detected at the level noted ; J = estimated concentration.

			Location	ODS133			ODS134			ODS82			RCB200A	
			Sample Date	20 Jul 2023			20 Jul 2023			05 Jul 2023			06 Jun 202	
			Sample Name	MKJ-072023-2			MKJ-072023-3			CCO-070523-5			MKJ-06062	
			Drainage Type	SD			SD			SD			SD	
			Sample Method	Grab-Manual			Grab-Manual			Grab-Manual			Grab-Manu	
			Location Type	ODS			ODS			Inline			Inline	
			Project	Lower Duwamish Waterway			Lower Duwamish Waterway			Lower Duwamish Waterway			Lower Duwamish W	
			Outfall	S Brighton St SD			S Brighton St SD			KCIA SD#1			SW Dakota St S	
Analyte	Unit	SQS/LAET	CSL/2LAET	Result	Qualifier	Detected	Result	Qualifier	Detected	Result	Qualifier	Detected	Result	Qualifier
1,2,4-Trichlorobenzene	ug/kg	31	51							52.4	U	N	200	U
1,2-Dichlorobenzene	ug/kg	35	50							52.4	U	N	200	U
1,3-Dichlorobenzene	ug/kg									52.4	U	N	200	U
1,4-Dichlorobenzene	ug/kg	110	110							52.4	U	N	200	U
1-Methylnaphthalene	ug/kg									46.2	J	Y	200	U
2,2'-Oxybis(1-chloropropane)	ug/kg									52.4	U	N	200	U
2,4,5-Trichlorophenol	ug/kg									262	U	N	998	U
2,4,6-Trichlorophenol	ug/kg									262	U	N	998	UJ
2,4-Dichlorophenol	ug/kg									262	U	N	998	U
2,4-Dimethylphenol	ug/kg	29	29							262	U	N	998	U
2,4-Dinitrophenol	ug/kg									1050	U	N	2000	U
2,4-Dinitrotoluene	ug/kg									262	U	N	998	U
2,6-Dinitrotoluene	ug/kg									262	U	N	998	U
2-Chloronaphthalene	ug/kg									52.4	U	N	200	U
2-Chlorophenol	ug/kg									52.4	U	N	200	UJ
2-Methylnaphthalene	ug/kg	670	670							77.3		Y	200	U
2-Methylphenol	ug/kg	63	63							52.4	U	N	200	UJ
2-Nitroaniline	ug/kg									262	U	N	998	U
2-Nitrophenol	ug/kg									52.4	U	N	200	U
3,3`-Dichlorobenzidine	ug/kg									262	U	N	998	UJ
3-Nitroaniline	ug/kg									262	U	N	998	UJ
4,6-Dinitro-2-Methylphenol	ug/kg									524	U	N	2000	U
4-Bromophenyl phenyl ether	ug/kg									52.4	U	N	200	U
4-Chloro-3-Methylphenol	ug/kg									262	U	N	998	U
4-Chloroaniline	ug/kg									262	U	N	998	UJ
4-Chlorophenyl Phenylether	ug/kg									131	U	N	499	U
4-Methylphenol	ug/kg	670	670							42.2	J	Y	200	UJ
4-Nitroaniline	ug/kg									262	U	N	998	U
4-Nitrophenol	ug/kg									262	U	N	998	U
Acenaphthene	ug/kg	500	500							42.7	J	Y	200	U
Acenaphthylene	ug/kg	1300	1300							52.4	U	N	200	U
Anthracene	ug/kg	960	960							50.3	J	Y	200	UJ
Aroclor 1016	ug/kg			19.9	U	N	20	U	N	131	U	N	19.9	UJ
Aroclor 1221	ug/kg			19.9	U	N	20	U	N	131	U	N	19.9	UJ
Aroclor 1232	ug/kg			19.9	U	N	20	U	N	131	U	N	19.9	UJ
Aroclor 1242	ug/kg			19.9	U	N	20	U	N	131	U	N	19.9	UJ
Aroclor 1248	ug/kg			54.7		Y	28.5		Y	131	U	N	69.7	J
Aroclor 1254	ug/kg			132		Y	62.5		Y	75.1	J	Y	61.9	J
Aroclor 1260	ug/kg			79.6		Y	44.4		Y	82.5	J	Y	58.9	J
Arsenic	mg/kg	57	93							54.4		Y	11	J
Benzo(A)anthracene	ug/kg	1300	1600							430		Y	255	
Benzo(A)pyrene	ug/kg	1600	1600							651		Y	252	
Benzo(G,H,I)perylene	ug/kg	670	720							388		Y	381	
Benzofluoranthenes, Total	ug/kg	3200	3600							1460		Y	800	
Benzoic acid	ug/kg	650	650							2940		Y	2000	U
Benzyl alcohol	ug/kg	57	73							2350		Y	263	
bis(2-Chloroethoxy) methane	ug/kg									52.4	U	N	200	U
Bis-(2-chloroethyl) ether	ug/kg									131	U	N	499	U
Bis(2-ethylhexyl)phthalate	ug/kg	1300	1900							718		Y	9590	
Butylbenzylphthalate	ug/kg	63	900							42.1	J	Y	210	
Carbazole	ug/kg									64.3		Y	71.8	J
Chrysene	ug/kg	1400	2800							631		Y	569	
Coarse Sand	%									4.1		Y		
Copper	mg/kg	390	390							76.5	J	Y	254	
cPAH	ug/kg		100							921.01		Y	419.89	J
Dibenzo(A,H)anthracene	ug/kg	230	230							103		Y	200	U
Dibenzofuran	ug/kg	540	540							44	J	Y	200	U
Diesel Range (Silica and Acid Cleaned)	mg/kg	2000	2000										1050	
Diesel Range Hydrocarbons	mg/kg	2000	2000							79.3		Y		
Diethylphthalate	ug/kg	200	1200							131	U	N	499	U
Dimethylphthalate	ug/kg	71	160							52.4	U	N	131	J
Di-N-Butylphthalate	ug/kg	1400	1400							24.8	J	Y	200	U
Di-N-Octylphthalate	ug/kg	6200	6200							52.4	U	N	200	U
Fine Gravel	%									0.2		Y		
Fine Sand	%									8.5		Y		
Fluoranthene	ug/kg	1700	2500							906		Y	557	
Fluorene	ug/kg	540	540							38.4	J	Y	200	U
Hexachlorobenzene	ug/kg	22	70							52.4	U	N	200	U
Hexachlorobutadiene	ug/kg	11	120							52.4	U	N	200	U
Hexachlorocyclopentadiene	ug/kg									262	U	N	998	U
Hexachloroethane	ug/kg									52.4	U	N	200	U
HPAH	ug/kg	12000	17000							5764		Y	3654	J
Indeno(1,2,3-Cd)pyrene	ug/kg	600	690							335		Y	167	J
Isophorone	ug/kg									52.4	U	N	200	U
Lead	mg/kg	450	530							304	J	Y	141	
LPAH	ug/kg	5200	5200							490.4	J	Y	434.9	J
Medium Sand	%									13.8		Y		
Mercury	mg/kg	0.41	0.59							0.0984	J	Y	0.26	
Motor Oil (Silica and Acid Cleaned)	mg/kg	2000	2000										6970	
Motor Oil Range	mg/kg	2000	2000							856		Y		
Naphthalene	ug/kg	2100	2100							114		Y	75.9	J
Nitrobenzene	ug/kg									52.4	U	N	200	U
N-Nitroso-Di-N-Propylamine	ug/kg									52.4	U	N	200	U
N-Nitrosodiphenylamine	ug/kg	28	40							52.4	UJ	N	64.4	J
Pentachlorophenol	ug/kg	360	690							262	U	N	998	U
Phenanthrene	ug/kg	1500	1500							245		Y	359	
Phenol	ug/kg	420	1200							73.9		Y	113	J
Polychlorinated Biphenyls	ug/kg	130	1000	266.3		Y	135.4		Y	157.6	J	Y	190.5	J
Pyrene	ug/kg	2600	3300							860		Y	673	
Solids, Total	%									18.63		Y	37.63	
Total Organic Carbon	%									23.1		Y	14.4	J
Very Coarse Sand	%									2.9		Y		
Very Fine Sand	%									12		Y		
Zinc	mg/kg	410	960							742	J	Y	1580	

Lab analytical codes: Y = Detected; N = Not detected; U = not detected at the level noted ; J = estimated concentration.

			Location		RCB205			RCB215			RCB298			
			Sample Date	3	06 Sep 2023			06 Sep 2023			05 Jul 2023			
			Sample Name	3-1	MKJ-090623-3			MKJ-090623-2			CCO-070523-4			
			Drainage Type		SD			SD			SD			
			Sample Method	al	Grab-Manual			Grab-Manual			Grab-Manual			
			Location Type		RCB			RCB			RCB			
			Project	Waterway	Lower Duwamish Waterway			Lower Duwamish Waterway			Lower Duwamish Waterway			Lower
			Outfall	D/Ditch	Diagonal Ave S CSO/SD			Diagonal Ave S CSO/SD			S Webster St SD			
Analyte	Unit	SQS/LAET	CSL/2LAET	Detected	Result	Qualifier	Detected	Result	Qualifier	Detected	Result	Qualifier	Detected	Result
1,2,4-Trichlorobenzene	ug/kg	31	51	N	20	U	N	20	U	N	99.9	U	N	
1,2-Dichlorobenzene	ug/kg	35	50	N	20	U	N	20	U	N	99.9	U	N	
1,3-Dichlorobenzene	ug/kg			N	20	U	N	20	U	N	99.9	U	N	
1,4-Dichlorobenzene	ug/kg	110	110	N	20	U	N	20	U	N	99.9	U	N	
1-Methylnaphthalene	ug/kg			N	5.3	J	Y	7.8	J	Y	39.6	J	Y	
2,2'-Oxybis(1-chloropropane)	ug/kg			N	20	U	N	20	U	N	99.9	U	N	
2,4,5-Trichlorophenol	ug/kg			N	100	U	N	100	U	N	499	U	N	
2,4,6-Trichlorophenol	ug/kg			N	100	U	N	100	U	N	499	U	N	
2,4-Dichlorophenol	ug/kg			N	100	U	N	100	U	N	499	U	N	
2,4-Dimethylphenol	ug/kg	29	29	N	100	U	N	100	U	N	499	U	N	
2,4-Dinitrophenol	ug/kg			N	400	U	N	400	U	N	2000	U	N	
2,4-Dinitrotoluene	ug/kg			N	100	U	N	100	U	N	499	U	N	
2,6-Dinitrotoluene	ug/kg			N	100	U	N	100	U	N	499	U	N	
2-Chloronaphthalene	ug/kg			N	20	U	N	20	U	N	99.9	U	N	
2-Chlorophenol	ug/kg			N	20	U	N	20	U	N	99.9	U	N	
2-Methylnaphthalene	ug/kg	670	670	N	9.2	J	Y	13.3	J	Y	70.5	J	Y	
2-Methylphenol	ug/kg	63	63	N	30.6		Y	20	U	N	99.9	U	N	
2-Nitroaniline	ug/kg			N	100	U	N	100	U	N	499	U	N	
2-Nitrophenol	ug/kg			N	20	U	N	20	U	N	99.9	U	N	
3,3`-Dichlorobenzidine	ug/kg			N	100	U	N	100	U	N	499	U	N	
3-Nitroaniline	ug/kg			N	100	U	N	100	U	N	499	U	N	
4,6-Dinitro-2-Methylphenol	ug/kg			N	200	U	N	200	U	N	999	U	N	
4-Bromophenyl phenyl ether	ug/kg			N	20	U	N	20	U	N	99.9	U	N	
4-Chloro-3-Methylphenol	ug/kg			N	100	U	N	100	U	N	499	U	N	
4-Chloroaniline	ug/kg			N	100	U	N	100	U	N	499	U	N	
4-Chlorophenyl Phenylether	ug/kg			N	50	U	N	50	U	N	250	U	N	
4-Methylphenol	ug/kg	670	670	N	106		Y	20	U	N	2440		Y	
4-Nitroaniline	ug/kg			N	100	U	N	100	U	N	499	U	N	
4-Nitrophenol	ug/kg			N	100	U	N	100	U	N	499	U	N	
Acenaphthene	ug/kg	500	500	N	20	U	N	20	U	N	306		Y	
Acenaphthylene	ug/kg	1300	1300	N	20	U	N	20	U	N	99.9	U	N	
Anthracene	ug/kg	960	960	N	20	U	N	20	U	N	583		Y	
Aroclor 1016	ug/kg			N	19.9	U	N	19.8	U	N	99.9	U	N	35.9
Aroclor 1221	ug/kg			N	19.9	U	N	19.8	U	N	99.9	U	N	35.9
Aroclor 1232	ug/kg			N	19.9	U	N	19.8	U	N	99.9	U	N	35.9
Aroclor 1242	ug/kg			N	19.9	U	N	19.8	U	N	99.9	U	N	35.9
Aroclor 1248	ug/kg			Y	19.9	U	N	19.8	U	N	99.9	U	N	35.9
Aroclor 1254	ug/kg			Y	19.9	U	N	19.8	U	N	99.9	U	N	35.9
Aroclor 1260	ug/kg			Y	19.9	U	N	19.8	U	N	99.9	U	N	50.2
Arsenic	mg/kg	57	93	Y	3.15	J	Y	5.2	J	Y	3.7	J	Y	
Benzo(A)anthracene	ug/kg	1300	1600	Y	10.2	J	Y	13.3	J	Y	2070		Y	
Benzo(A)pyrene	ug/kg	1600	1600	Y	13.7	J	Y	28		Y	2120		Y	
Benzo(G,H,I)perylene	ug/kg	670	720	Y	19.5	J	Y	46.4	J	Y	865		Y	
Benzofluoranthenes, Total	ug/kg	3200	3600	Y	32.3	J	Y	40.9		Y	4290		Y	
Benzoic acid	ug/kg	650	650	N	148	J	Y	175	J	Y	999	U	N	
Benzyl alcohol	ug/kg	57	73	Y	20	U	N	20	U	N	91.2	J	Y	
bis(2-Chloroethoxy) methane	ug/kg			N	20	U	N	20	U	N	99.9	U	N	
Bis-(2-chloroethyl) ether	ug/kg			N	50	U	N	50	U	N	250	U	N	
Bis(2-ethylhexyl)phthalate	ug/kg	1300	1900	Y	376		Y	142		Y	1740		Y	
Butylbenzylphthalate	ug/kg	63	900	Y	14.5	J	Y	44.8		Y	228		Y	
Carbazole	ug/kg			Y	20	U	N	20	U	N	599		Y	
Chrysene	ug/kg	1400	2800	Y	37.5		Y	55		Y	2550		Y	
Coarse Sand	%				1		Y	12.8		Y	15.1		Y	
Copper	mg/kg	390	390	Y	45.7	J	Y	48.6	J	Y	51.9	J	Y	
cPAH	ug/kg		100	Y	23.325	J	Y	39.74	J	Y	2957.9		Y	
Dibenzo(A,H)anthracene	ug/kg	230	230	N	20	U	N	20	U	N	242		Y	
Dibenzofuran	ug/kg	540	540	N	20	U	N	20	U	N	242		Y	
Diesel Range (Silica and Acid Cleaned)	mg/kg	2000	2000	Y	59.4		Y	45.3		Y				
Diesel Range Hydrocarbons	mg/kg	2000	2000								307		Y	
Diethylphthalate	ug/kg	200	1200	N	50	U	N	50	U	N	250	U	N	
Dimethylphthalate	ug/kg	71	160	Y	20	U	N	20	U	N	99.9	U	N	
Di-N-Butylphthalate	ug/kg	1400	1400	N	10.1	J	Y	20	U	N	99.9	U	N	
Di-N-Octylphthalate	ug/kg	6200	6200	N	20	U	N	20	U	N	56.4	J	Y	
Fine Gravel	%				0.1		Y	6.7		Y	2		Y	
Fine Sand	%				7.2		Y	4.7		Y	5.6		Y	
Fluoranthene	ug/kg	1700	2500	Y	46.5		Y	35.1		Y	6600		Y	
Fluorene	ug/kg	540	540	N	20	U	N	20	U	N	547		Y	
Hexachlorobenzene	ug/kg	22	70	N	20	U	N	20	U	N	99.9	U	N	
Hexachlorobutadiene	ug/kg	11	120	N	20	U	N	20	U	N	99.9	U	N	
Hexachlorocyclopentadiene	ug/kg			N	100	U	N	100	U	N	499	U	N	
Hexachloroethane	ug/kg			N	20	U	N	20	U	N	99.9	U	N	
HPAH	ug/kg	12000	17000	Y	204.3	J	Y	300.8	J	Y	24733		Y	
Indeno(1,2,3-Cd)pyrene	ug/kg	600	690	Y	20	U	N	17.7	J	Y	796		Y	
Isophorone	ug/kg			N	20	U	N	20	U	N	99.9	U	N	
Lead	mg/kg	450	530	Y	9.22	J	Y	27.5	J	Y	17.8	J	Y	
LPAH	ug/kg	5200	5200	Y	71.5		Y	48.9		Y	5516.8	J	Y	
Medium Sand	%				2.6		Y	19.3		Y	16.4		Y	
Mercury	mg/kg	0.41	0.59	Y	0.0599		Y	0.0288	U	N	0.011	J	Y	
Motor Oil (Silica and Acid Cleaned)	mg/kg	2000	2000	Y	325		Y	535		Y				
Motor Oil Range	mg/kg	2000	2000								1890		Y	
Naphthalene	ug/kg	2100	2100	Y	37.8		Y	21.3		Y	50.8	J	Y	
Nitrobenzene	ug/kg			N	20	U	N	20	U	N	99.9	U	N	
N-Nitroso-Di-N-Propylamine	ug/kg			N	20	U	N	20	U	N	99.9	U	N	
N-Nitrosodiphenylamine	ug/kg	28	40	Y	20	U	N	20	U	N	99.9	UJ	N	
Pentachlorophenol	ug/kg	360	690	N	100	U	N	100	U	N	499	U	N	
Phenanthrene	ug/kg	1500	1500	Y	33.7		Y	27.6		Y	4030		Y	
Phenol	ug/kg	420	1200	Y	9.7	J	Y	5.8	J	Y	110		Y	
Polychlorinated Biphenyls	ug/kg	130	1000	Y	19.9	U	N	19.8	U	N	99.9	U	N	50.2
Pyrene	ug/kg	2600	3300	Y	44.6		Y	64.4		Y	5200		Y	
Solids, Total	%			Y	62.42		Y	80.51		Y	73.22		Y	
Total Organic Carbon	%			Y	0.47		Y	0.99		Y	2.28		Y	
Very Coarse Sand	%				0.6		Y	13.3		Y	14.9		Y	
Very Fine Sand	%				6.7		Y	1.5		Y	3.7		Y	
Zinc	mg/kg	410	960	Y	86	J	Y	306	J	Y	159	J	Y	

Lab analytical codes: Y = Detected; N = Not detected; U = not detected at the level noted ; J = estimated concentration.

			Location	RCB381		RCB382			RCB383			RCB384		
			Sample Date	31 Jan 2023		31 Jan 2023			31 Jan 2023			31 Jan 2023		
			Sample Name	HZ-013123-1		HZ-013123-2			HZ-013123-4			HZ-013123-5		
			Drainage Type	SD		SD			SD			SD		
			Sample Method	Grab-Manual		Grab-Manual			Grab-Manual			Grab-Manual		
			Location Type	RCB		RCB			RCB			RCB		
			Project	Duwamish Waterway		Lower Duwamish Waterway			Lower Duwamish Waterway			Lower Duwamish Waterway		
			Outfall	17th Ave S SD		17th Ave S SD			17th Ave S SD			17th Ave S SD		
Analyte	Unit	SQS/LAET	CSL/2LAET	Qualifier	Detected	Result	Qualifier	Detected	Result	Qualifier	Detected	Result	Qualifier	Detected
1,2,4-Trichlorobenzene	ug/kg	*31*	51											
1,2-Dichlorobenzene	ug/kg	*35*	50											
1,3-Dichlorobenzene	ug/kg													
1,4-Dichlorobenzene	ug/kg	*110*	110											
1-Methylnaphthalene	ug/kg													
2,2'-Oxybis(1-chloropropane)	ug/kg													
2,4,5-Trichlorophenol	ug/kg													
2,4,6-Trichlorophenol	ug/kg													
2,4-Dichlorophenol	ug/kg													
2,4-Dimethylphenol	ug/kg	*29*	29											
2,4-Dinitrophenol	ug/kg													
2,4-Dinitrotoluene	ug/kg													
2,6-Dinitrotoluene	ug/kg													
2-Chloronaphthalene	ug/kg													
2-Chlorophenol	ug/kg													
2-Methylnaphthalene	ug/kg	670	670											
2-Methylphenol	ug/kg	*63*	63											
2-Nitroaniline	ug/kg													
2-Nitrophenol	ug/kg													
3,3`-Dichlorobenzidine	ug/kg													
3-Nitroaniline	ug/kg													
4,6-Dinitro-2-Methylphenol	ug/kg													
4-Bromophenyl phenyl ether	ug/kg													
4-Chloro-3-Methylphenol	ug/kg													
4-Chloroaniline	ug/kg													
4-Chlorophenyl Phenylether	ug/kg													
4-Methylphenol	ug/kg	*670*	670											
4-Nitroaniline	ug/kg													
4-Nitrophenol	ug/kg													
Acenaphthene	ug/kg	*500*	500											
Acenaphthylene	ug/kg	1300	1300											
Anthracene	ug/kg	*960*	960											
Aroclor 1016	ug/kg			UJ	N	19.8	U	N	28.3	U	N	20	U	N
Aroclor 1221	ug/kg			UJ	N	19.8	U	N	28.3	U	N	20	U	N
Aroclor 1232	ug/kg			UJ	N	19.8	U	N	28.3	U	N	20	U	N
Aroclor 1242	ug/kg			UJ	N	19.8	U	N	28.3	U	N	20	U	N
Aroclor 1248	ug/kg			UJ	N	19.8	U	N	28.3	U	N	20	U	N
Aroclor 1254	ug/kg			UJ	N	19.8	U	N	28.3	U	N	20	U	N
Aroclor 1260	ug/kg			J	Y	19.8	U	N	28.3	U	N	20	U	N
Arsenic	mg/kg	*57*	93											
Benzo(A)anthracene	ug/kg	*1300*	1600											
Benzo(A)pyrene	ug/kg	*1600*	1600											
Benzo(G,H,I)perylene	ug/kg	*670*	720											
Benzofluoranthenes, Total	ug/kg	*3200*	3600											
Benzoic acid	ug/kg	*650*	650											
Benzyl alcohol	ug/kg	*57*	73											
bis(2-Chloroethoxy) methane	ug/kg													
Bis-(2-chloroethyl) ether	ug/kg													
Bis(2-ethylhexyl)phthalate	ug/kg	*1300*	1900											
Butylbenzylphthalate	ug/kg	*63*	900											
Carbazole	ug/kg													
Chrysene	ug/kg	*1400*	2800											
Coarse Sand	%													
Copper	mg/kg	*390*	390											
cPAH	ug/kg		100											
Dibenzo(A,H)anthracene	ug/kg	*230*	230											
Dibenzofuran	ug/kg	540	540											
Diesel Range (Silica and Acid Cleaned)	mg/kg	*2000*	2000											
Diesel Range Hydrocarbons	mg/kg	2000	2000											
Diethylphthalate	ug/kg	*200*	1200											
Dimethylphthalate	ug/kg	*71*	160											
Di-N-Butylphthalate	ug/kg	1400	1400											
Di-N-Octylphthalate	ug/kg	6200	6200											
Fine Gravel	%													
Fine Sand	%													
Fluoranthene	ug/kg	*1700*	2500											
Fluorene	ug/kg	*540*	540											
Hexachlorobenzene	ug/kg	*22*	70											
Hexachlorobutadiene	ug/kg	*11*	120											
Hexachlorocyclopentadiene	ug/kg													
Hexachloroethane	ug/kg													
HPAH	ug/kg	*12000*	17000											
Indeno(1,2,3-Cd)pyrene	ug/kg	*600*	690											
Isophorone	ug/kg													
Lead	mg/kg	*450*	530											
LPAH	ug/kg	*5200*	5200											
Medium Sand	%													
Mercury	mg/kg	*0.41*	0.59											
Motor Oil (Silica and Acid Cleaned)	mg/kg	*2000*	2000											
Motor Oil Range	mg/kg	*2000*	2000											
Naphthalene	ug/kg	2100	2100											
Nitrobenzene	ug/kg													
N-Nitroso-Di-N-Propylamine	ug/kg													
N-Nitrosodiphenylamine	ug/kg	*28*	40											
Pentachlorophenol	ug/kg	*360*	690											
Phenanthrene	ug/kg	*1500*	1500											
Phenol	ug/kg	*420*	1200											
Polychlorinated Biphenyls	ug/kg	*130*	1000	J	Y	19.8	U	N	28.3	U	N	20	U	N
Pyrene	ug/kg	*2600*	3300											
Solids, Total	%													
Total Organic Carbon	%													
Very Coarse Sand	%													
Very Fine Sand	%													
Zinc	mg/kg	*410*	960											

Lab analytical codes: Y = Detected; N = Not detected; U = not detected at the level noted ; J = estimated concentration.

			Location	RCB385			RCB386			RCB387			RCB388	
			Sample Date	31 Jan 2023			31 Jan 2023			31 Jan 2023			31 Jan 20	
			Sample Name	HZ-013123-6			HZ-013123-8			HZ-013123-9			HZ-013123	
			Drainage Type	SD			SD			SD			SD	
			Sample Method	Grab-Manual			Grab-Manual			Grab-Manual			Grab-Manu	
			Location Type	RCB			RCB			RCB			RCB	
			Project	Lower Duwamish Waterway			Lower Duwamish Waterway			Lower Duwamish Waterway			Lower Duwamish	
			Outfall	17th Ave S SD			17th Ave S SD			17th Ave S SD			17th Ave S	
Analyte	Unit	SQS/LAET	CSL/2LAET	Result	Qualifier	Detected	Result	Qualifier	Detected	Result	Qualifier	Detected	Result	Qualifier
1,2,4-Trichlorobenzene	ug/kg	*31*	51											
1,2-Dichlorobenzene	ug/kg	*35*	50											
1,3-Dichlorobenzene	ug/kg													
1,4-Dichlorobenzene	ug/kg	*110*	110											
1-Methylnaphthalene	ug/kg													
2,2'-Oxybis(1-chloropropane)	ug/kg													
2,4,5-Trichlorophenol	ug/kg													
2,4,6-Trichlorophenol	ug/kg													
2,4-Dichlorophenol	ug/kg													
2,4-Dimethylphenol	ug/kg	*29*	29											
2,4-Dinitrophenol	ug/kg													
2,4-Dinitrotoluene	ug/kg													
2,6-Dinitrotoluene	ug/kg													
2-Chloronaphthalene	ug/kg													
2-Chlorophenol	ug/kg													
2-Methylnaphthalene	ug/kg	670	670											
2-Methylphenol	ug/kg	*63*	63											
2-Nitroaniline	ug/kg													
2-Nitrophenol	ug/kg													
3,3`-Dichlorobenzidine	ug/kg													
3-Nitroaniline	ug/kg													
4,6-Dinitro-2-Methylphenol	ug/kg													
4-Bromophenyl phenyl ether	ug/kg													
4-Chloro-3-Methylphenol	ug/kg													
4-Chloroaniline	ug/kg													
4-Chlorophenyl Phenylether	ug/kg													
4-Methylphenol	ug/kg	*670*	670											
4-Nitroaniline	ug/kg													
4-Nitrophenol	ug/kg													
Acenaphthene	ug/kg	*500*	500											
Acenaphthylene	ug/kg	1300	1300											
Anthracene	ug/kg	*960*	960											
Aroclor 1016	ug/kg			74.8	UJ	N	19.9	UJ	N	89.6	U	N	19.6	UJ
Aroclor 1221	ug/kg			74.8	UJ	N	19.9	UJ	N	89.6	U	N	19.6	UJ
Aroclor 1232	ug/kg			74.8	UJ	N	19.9	UJ	N	89.6	U	N	19.6	UJ
Aroclor 1242	ug/kg			74.8	UJ	N	19.9	UJ	N	89.6	U	N	19.6	UJ
Aroclor 1248	ug/kg			74.8	UJ	N	19.9	UJ	N	89.6	U	N	19.6	UJ
Aroclor 1254	ug/kg			74.8	UJ	N	19.9	UJ	N	89.6	U	N	19.6	UJ
Aroclor 1260	ug/kg			74.8	UJ	N	28.8	J	Y	397		Y	60.9	J
Arsenic	mg/kg	*57*	93											
Benzo(A)anthracene	ug/kg	*1300*	1600											
Benzo(A)pyrene	ug/kg	*1600*	1600											
Benzo(G,H,I)perylene	ug/kg	*670*	720											
Benzofluoranthenes, Total	ug/kg	*3200*	3600											
Benzoic acid	ug/kg	*650*	650											
Benzyl alcohol	ug/kg	*57*	73											
bis(2-Chloroethoxy) methane	ug/kg													
Bis-(2-chloroethyl) ether	ug/kg													
Bis(2-ethylhexyl)phthalate	ug/kg	*1300*	1900											
Butylbenzylphthalate	ug/kg	*63*	900											
Carbazole	ug/kg													
Chrysene	ug/kg	*1400*	2800											
Coarse Sand	%													
Copper	mg/kg	*390*	390											
cPAH	ug/kg		100											
Dibenzo(A,H)anthracene	ug/kg	*230*	230											
Dibenzofuran	ug/kg	540	540											
Diesel Range (Silica and Acid Cleaned)	mg/kg	*2000*	2000											
Diesel Range Hydrocarbons	mg/kg	2000	2000											
Diethylphthalate	ug/kg	*200*	1200											
Dimethylphthalate	ug/kg	*71*	160											
Di-N-Butylphthalate	ug/kg	1400	1400											
Di-N-Octylphthalate	ug/kg	6200	6200											
Fine Gravel	%													
Fine Sand	%													
Fluoranthene	ug/kg	*1700*	2500											
Fluorene	ug/kg	*540*	540											
Hexachlorobenzene	ug/kg	*22*	70											
Hexachlorobutadiene	ug/kg	*11*	120											
Hexachlorocyclopentadiene	ug/kg													
Hexachloroethane	ug/kg													
HPAH	ug/kg	*12000*	17000											
Indeno(1,2,3-Cd)pyrene	ug/kg	*600*	690											
Isophorone	ug/kg													
Lead	mg/kg	*450*	530											
LPAH	ug/kg	*5200*	5200											
Medium Sand	%													
Mercury	mg/kg	*0.41*	0.59											
Motor Oil (Silica and Acid Cleaned)	mg/kg	*2000*	2000											
Motor Oil Range	mg/kg	*2000*	2000											
Naphthalene	ug/kg	2100	2100											
Nitrobenzene	ug/kg													
N-Nitroso-Di-N-Propylamine	ug/kg													
N-Nitrosodiphenylamine	ug/kg	*28*	40											
Pentachlorophenol	ug/kg	*360*	690											
Phenanthrene	ug/kg	*1500*	1500											
Phenol	ug/kg	*420*	1200											
Polychlorinated Biphenyls	ug/kg	*130*	1000	74.8		N	28.8	J	Y	*397*		*Y*	60.9	J
Pyrene	ug/kg	*2600*	3300											
Solids, Total	%													
Total Organic Carbon	%													
Very Coarse Sand	%													
Very Fine Sand	%													
Zinc	mg/kg	*410*	960											

Lab analytical codes: Y = Detected; N = Not detected; U = not detected at the level noted ; J = estimated concentration.

			Location		RCB389			RCB390			RCB391			
			Sample Date	23	31 Jan 2023			31 Jan 2023			14 Feb 2023			
			Sample Name	-10	HZ-013123-11			HZ-013123-16			MKJ-021423-12			
			Drainage Type		SD			SD			SD			
			Sample Method	ual	Grab-Manual			Grab-Manual			Grab-Manual			
			Location Type		RCB			RCB			RCB			
			Project	Waterway	Lower Duwamish Waterway			Lower Duwamish Waterway			Lower Duwamish Waterway			Lower
			Outfall	SD	17th Ave S SD			17th Ave S SD			17th Ave S SD			
Analyte	Unit	SQS/LAET	CSL/2LAET	Detected	Result	Qualifier	Detected	Result	Qualifier	Detected	Result	Qualifier	Detected	Result
1,2,4-Trichlorobenzene	ug/kg	*31*	51											
1,2-Dichlorobenzene	ug/kg	*35*	50											
1,3-Dichlorobenzene	ug/kg													
1,4-Dichlorobenzene	ug/kg	*110*	110											
1-Methylnaphthalene	ug/kg													
2,2'-Oxybis(1-chloropropane)	ug/kg													
2,4,5-Trichlorophenol	ug/kg													
2,4,6-Trichlorophenol	ug/kg													
2,4-Dichlorophenol	ug/kg													
2,4-Dimethylphenol	ug/kg	*29*	29											
2,4-Dinitrophenol	ug/kg													
2,4-Dinitrotoluene	ug/kg													
2,6-Dinitrotoluene	ug/kg													
2-Chloronaphthalene	ug/kg													
2-Chlorophenol	ug/kg													
2-Methylnaphthalene	ug/kg	670	670											
2-Methylphenol	ug/kg	*63*	63											
2-Nitroaniline	ug/kg													
2-Nitrophenol	ug/kg													
3,3`-Dichlorobenzidine	ug/kg													
3-Nitroaniline	ug/kg													
4,6-Dinitro-2-Methylphenol	ug/kg													
4-Bromophenyl phenyl ether	ug/kg													
4-Chloro-3-Methylphenol	ug/kg													
4-Chloroaniline	ug/kg													
4-Chlorophenyl Phenylether	ug/kg													
4-Methylphenol	ug/kg	*670*	670											
4-Nitroaniline	ug/kg													
4-Nitrophenol	ug/kg													
Acenaphthene	ug/kg	*500*	500											
Acenaphthylene	ug/kg	1300	1300											
Anthracene	ug/kg	*960*	960											
Aroclor 1016	ug/kg			N	57.3	UJ	N	51.6	UJ	N	202	U	N	42.3
Aroclor 1221	ug/kg			N	57.3	UJ	N	51.6	UJ	N	202	U	N	42.3
Aroclor 1232	ug/kg			N	57.3	UJ	N	51.6	UJ	N	202	U	N	42.3
Aroclor 1242	ug/kg			N	57.3	UJ	N	51.6	UJ	N	202	U	N	42.3
Aroclor 1248	ug/kg			N	57.3	UJ	N	51.6	UJ	N	202	U	N	42.3
Aroclor 1254	ug/kg			N	127	J	Y	51.6	UJ	N	251		Y	42.3
Aroclor 1260	ug/kg			Y	190	J	Y	632	J	Y	353		Y	42.3
Arsenic	mg/kg	*57*	93											
Benzo(A)anthracene	ug/kg	*1300*	1600											
Benzo(A)pyrene	ug/kg	*1600*	1600											
Benzo(G,H,I)perylene	ug/kg	*670*	720											
Benzofluoranthenes, Total	ug/kg	*3200*	3600											
Benzoic acid	ug/kg	*650*	650											
Benzyl alcohol	ug/kg	*57*	73											
bis(2-Chloroethoxy) methane	ug/kg													
Bis-(2-chloroethyl) ether	ug/kg													
Bis(2-ethylhexyl)phthalate	ug/kg	*1300*	1900											
Butylbenzylphthalate	ug/kg	*63*	900											
Carbazole	ug/kg													
Chrysene	ug/kg	*1400*	2800											
Coarse Sand	%													
Copper	mg/kg	*390*	390											
cPAH	ug/kg		100											
Dibenzo(A,H)anthracene	ug/kg	*230*	230											
Dibenzofuran	ug/kg	540	540											
Diesel Range (Silica and Acid Cleaned)	mg/kg	*2000*	2000											
Diesel Range Hydrocarbons	mg/kg	2000	2000											
Diethylphthalate	ug/kg	*200*	1200											
Dimethylphthalate	ug/kg	*71*	160											
Di-N-Butylphthalate	ug/kg	1400	1400											
Di-N-Octylphthalate	ug/kg	6200	6200											
Fine Gravel	%													
Fine Sand	%													
Fluoranthene	ug/kg	*1700*	2500											
Fluorene	ug/kg	*540*	540											
Hexachlorobenzene	ug/kg	*22*	70											
Hexachlorobutadiene	ug/kg	*11*	120											
Hexachlorocyclopentadiene	ug/kg													
Hexachloroethane	ug/kg													
HPAH	ug/kg	*12000*	17000											
Indeno(1,2,3-Cd)pyrene	ug/kg	*600*	690											
Isophorone	ug/kg													
Lead	mg/kg	*450*	530											
LPAH	ug/kg	*5200*	5200											
Medium Sand	%													
Mercury	mg/kg	*0.41*	0.59											
Motor Oil (Silica and Acid Cleaned)	mg/kg	*2000*	2000											
Motor Oil Range	mg/kg	*2000*	2000											
Naphthalene	ug/kg	2100	2100											
Nitrobenzene	ug/kg													
N-Nitroso-Di-N-Propylamine	ug/kg													
N-Nitrosodiphenylamine	ug/kg	*28*	40											
Pentachlorophenol	ug/kg	*360*	690											
Phenanthrene	ug/kg	*1500*	1500											
Phenol	ug/kg	*420*	1200											
Polychlorinated Biphenyls	ug/kg	*130*	1000	Y	*317*	*J*	*Y*	*632*	*J*	*Y*	*604*		*Y*	42.3
Pyrene	ug/kg	*2600*	3300											
Solids, Total	%													
Total Organic Carbon	%													
Very Coarse Sand	%													
Very Fine Sand	%													
Zinc	mg/kg	*410*	960											

Lab analytical codes: Y = Detected; N = Not detected; U = not detected at the level noted ; J = estimated concentration.

			Location	RCB392		RCB393			RCB394			RCB395		
			Sample Date	14 Feb 2023		14 Feb 2023			14 Feb 2023			06 Jun 2023		
			Sample Name	MKJ-021423-13		MKJ-021423-14			MKJ-021423-18			MKJ-060623-4		
			Drainage Type	SD		SD			SD			SD		
			Sample Method	Grab-Manual		Grab-Manual			Grab-Manual			Grab-Manual		
			Location Type	RCB		RCB			RCB			RCB		
			Project	Duwamish Waterway		Lower Duwamish Waterway			Lower Duwamish Waterway			Lower Duwamish Waterway		
			Outfall	17th Ave S SD		17th Ave S SD			17th Ave S SD			16th Ave S SD (west)		
Analyte	Unit	SQS/LAET	CSL/2LAET	Qualifier	Detected	Result	Qualifier	Detected	Result	Qualifier	Detected	Result	Qualifier	Detected
1,2,4-Trichlorobenzene	ug/kg	*31*	51									*199*	*U*	*N*
1,2-Dichlorobenzene	ug/kg	*35*	50									*199*	*U*	*N*
1,3-Dichlorobenzene	ug/kg											199	U	N
1,4-Dichlorobenzene	ug/kg	*110*	110									*199*	*U*	*N*
1-Methylnaphthalene	ug/kg											199	U	N
2,2'-Oxybis(1-chloropropane)	ug/kg											199	U	N
2,4,5-Trichlorophenol	ug/kg											996	U	N
2,4,6-Trichlorophenol	ug/kg											996	UJ	N
2,4-Dichlorophenol	ug/kg											996	U	N
2,4-Dimethylphenol	ug/kg	*29*	29									*996*	*U*	*N*
2,4-Dinitrophenol	ug/kg											1990	U	N
2,4-Dinitrotoluene	ug/kg											996	U	N
2,6-Dinitrotoluene	ug/kg											996	U	N
2-Chloronaphthalene	ug/kg											199	U	N
2-Chlorophenol	ug/kg											199	UJ	N
2-Methylnaphthalene	ug/kg	670	670									48.2	J	Y
2-Methylphenol	ug/kg	*63*	63									*199*	*UJ*	*N*
2-Nitroaniline	ug/kg											996	U	N
2-Nitrophenol	ug/kg											199	U	N
3,3`-Dichlorobenzidine	ug/kg											996	UJ	N
3-Nitroaniline	ug/kg											996	UJ	N
4,6-Dinitro-2-Methylphenol	ug/kg											1990	U	N
4-Bromophenyl phenyl ether	ug/kg											199	U	N
4-Chloro-3-Methylphenol	ug/kg											996	U	N
4-Chloroaniline	ug/kg											996	UJ	N
4-Chlorophenyl Phenylether	ug/kg											498	U	N
4-Methylphenol	ug/kg	*670*	670									*735*	*J*	*Y*
4-Nitroaniline	ug/kg											996	U	N
4-Nitrophenol	ug/kg											996	U	N
Acenaphthene	ug/kg	*500*	500									199	U	N
Acenaphthylene	ug/kg	1300	1300									199	U	N
Anthracene	ug/kg	*960*	960									199	UJ	N
Aroclor 1016	ug/kg			U	N	207	U	N	342	U	N	19.6	UJ	N
Aroclor 1221	ug/kg			U	N	207	U	N	342	U	N	19.6	UJ	N
Aroclor 1232	ug/kg			U	N	207	U	N	342	U	N	19.6	UJ	N
Aroclor 1242	ug/kg			U	N	207	U	N	342	U	N	19.6	UJ	N
Aroclor 1248	ug/kg			U	N	207	U	N	342	U	N	33.4	J	Y
Aroclor 1254	ug/kg			U	N	207	U	N	342	U	N	37.5	J	Y
Aroclor 1260	ug/kg			U	N	207	U	N	342	U	N	27.7	J	Y
Arsenic	mg/kg	*57*	93									4.4	J	Y
Benzo(A)anthracene	ug/kg	*1300*	1600									98.6	J	Y
Benzo(A)pyrene	ug/kg	*1600*	1600									95.1	J	Y
Benzo(G,H,I)perylene	ug/kg	*670*	720									205		Y
Benzofluoranthenes, Total	ug/kg	*3200*	3600									392	J	Y
Benzoic acid	ug/kg	*650*	650									*1990*	*U*	*N*
Benzyl alcohol	ug/kg	*57*	73									*199*	*U*	*N*
bis(2-Chloroethoxy) methane	ug/kg											199	U	N
Bis-(2-chloroethyl) ether	ug/kg											498	U	N
Bis(2-ethylhexyl)phthalate	ug/kg	*1300*	1900									*3940*		*Y*
Butylbenzylphthalate	ug/kg	*63*	900									*268*		*Y*
Carbazole	ug/kg											52.6	J	Y
Chrysene	ug/kg	*1400*	2800									233		Y
Coarse Sand	%											15		Y
Copper	mg/kg	*390*	390									267		Y
cPAH	ug/kg		100									196.24	J	Y
Dibenzo(A,H)anthracene	ug/kg	*230*	230									199	U	N
Dibenzofuran	ug/kg	540	540									199	U	N
Diesel Range (Silica and Acid Cleaned)	mg/kg	*2000*	2000									534		Y
Diesel Range Hydrocarbons	mg/kg	2000	2000											
Diethylphthalate	ug/kg	*200*	1200									*498*	*U*	*N*
Dimethylphthalate	ug/kg	*71*	160									*134*	*J*	*Y*
Di-N-Butylphthalate	ug/kg	1400	1400									90.2	J	Y
Di-N-Octylphthalate	ug/kg	6200	6200									199	U	N
Fine Gravel	%											0.7		Y
Fine Sand	%											9.3		Y
Fluoranthene	ug/kg	*1700*	2500									310		Y
Fluorene	ug/kg	*540*	540									199	U	N
Hexachlorobenzene	ug/kg	*22*	70									*199*	*U*	*N*
Hexachlorobutadiene	ug/kg	*11*	120									*199*	*U*	*N*
Hexachlorocyclopentadiene	ug/kg											996	U	N
Hexachloroethane	ug/kg											199	U	N
HPAH	ug/kg	*12000*	17000									1778.7	J	Y
Indeno(1,2,3-Cd)pyrene	ug/kg	*600*	690									199	U	N
Isophorone	ug/kg											199	U	N
Lead	mg/kg	*450*	530									49.6		Y
LPAH	ug/kg	*5200*	5200									329.5	J	Y
Medium Sand	%											28		Y
Mercury	mg/kg	*0.41*	0.59									0.0882		Y
Motor Oil (Silica and Acid Cleaned)	mg/kg	*2000*	2000									*3560*		*Y*
Motor Oil Range	mg/kg	*2000*	2000											
Naphthalene	ug/kg	2100	2100									59.5	J	Y
Nitrobenzene	ug/kg											199	U	N
N-Nitroso-Di-N-Propylamine	ug/kg											199	U	N
N-Nitrosodiphenylamine	ug/kg	*28*	40									*199*	*UJ*	*N*
Pentachlorophenol	ug/kg	*360*	690									*996*	*U*	*N*
Phenanthrene	ug/kg	*1500*	1500									270		Y
Phenol	ug/kg	*420*	1200									56.8	J	Y
Polychlorinated Biphenyls	ug/kg	*130*	1000	U	N	*207*	*U*	*N*	*342*	*U*	*N*	98.6	J	Y
Pyrene	ug/kg	*2600*	3300									445		Y
Solids, Total	%											69.26		Y
Total Organic Carbon	%											8.33	J	Y
Very Coarse Sand	%											6.5		Y
Very Fine Sand	%											7.5		Y
Zinc	mg/kg	*410*	960									*588*		*Y*

Lab analytical codes: Y = Detected; N = Not detected; U = not detected at the level noted ; J = estimated concentration.

			Location	RCB396			RCB397			RCB49			RVR-ST1	
			Sample Date	17 Oct 2023			17 Oct 2023			06 Jun 2023			14 Jun 20	
			Sample Name	MKJ-101723-2			MKJ-101723-4			MKJ-060623-6			RVR-ST1-06	
			Drainage Type	SD			SD			CS			SD	
			Sample Method	Grab-Manual			Grab-Manual			Grab-Manual			SedTrap	
			Location Type	RCB			RCB			RCB			Inline	
			Project	Lower Duwamish Waterway			Lower Duwamish Waterway			Lower Duwamish Waterway			Lower Duwamish	
			Outfall	1st Ave S SD (east)			1st Ave S SD (east)			Combined Sewer East			S River St	
Analyte	Unit	SQS/LAET	CSL/2LAET	Result	Qualifier	Detected	Result	Qualifier	Detected	Result	Qualifier	Detected	Result	Qualifier
1,2,4-Trichlorobenzene	ug/kg	31	51	20	UJ	N	20	UJ	N	199	U	N	19.9	U
1,2-Dichlorobenzene	ug/kg	35	50	20	UJ	N	20	UJ	N	199	U	N	19.9	U
1,3-Dichlorobenzene	ug/kg			20	UJ	N	20	UJ	N	199	U	N	19.9	U
1,4-Dichlorobenzene	ug/kg	110	110	20	UJ	N	20	UJ	N	199	U	N	19.9	U
1-Methylnaphthalene	ug/kg			45.5	J	Y	16.7	J	Y	199	U	N	19.9	U
2,2'-Oxybis(1-chloropropane)	ug/kg			20	UJ	N	20	UJ	N	199	U	N	19.9	U
2,4,5-Trichlorophenol	ug/kg			99.8	UJ	N	99.8	UJ	N	994	U	N	99.5	U
2,4,6-Trichlorophenol	ug/kg			99.8	UJ	N	99.8	UJ	N	994	UJ	N	99.5	U
2,4-Dichlorophenol	ug/kg			99.8	UJ	N	99.8	UJ	N	994	U	N	99.5	U
2,4-Dimethylphenol	ug/kg	29	29	99.8	UJ	N	99.8	UJ	N	994	U	N	99.5	U
2,4-Dinitrophenol	ug/kg			200	UJ	N	200	UJ	N	1990	U	N	199	U
2,4-Dinitrotoluene	ug/kg			99.8	UJ	N	99.8	UJ	N	994	U	N	99.5	U
2,6-Dinitrotoluene	ug/kg			99.8	UJ	N	99.8	UJ	N	994	U	N	99.5	U
2-Chloronaphthalene	ug/kg			20	UJ	N	20	UJ	N	199	U	N	19.9	U
2-Chlorophenol	ug/kg			20	UJ	N	20	UJ	N	199	UJ	N	19.9	U
2-Methylnaphthalene	ug/kg	670	670	82.2	J	Y	26.1	J	Y	199	U	N	19.9	U
2-Methylphenol	ug/kg	63	63	20	UJ	N	20	UJ	N	199	UJ	N	19.9	UJ
2-Nitroaniline	ug/kg			99.8	UJ	N	99.8	UJ	N	994	U	N	99.5	U
2-Nitrophenol	ug/kg			20	UJ	N	20	UJ	N	199	U	N	19.9	U
3,3`-Dichlorobenzidine	ug/kg			99.8	UJ	N	99.8	UJ	N	994	UJ	N	99.5	U
3-Nitroaniline	ug/kg			99.8	UJ	N	99.8	UJ	N	994	UJ	N	99.5	U
4,6-Dinitro-2-Methylphenol	ug/kg			200	UJ	N	200	UJ	N	1990	U	N	199	U
4-Bromophenyl phenyl ether	ug/kg			20	UJ	N	20	UJ	N	199	U	N	19.9	U
4-Chloro-3-Methylphenol	ug/kg			99.8	UJ	N	99.8	UJ	N	994	U	N	99.5	U
4-Chloroaniline	ug/kg			99.8	UJ	N	99.8	UJ	N	994	UJ	N	99.5	U
4-Chlorophenyl Phenylether	ug/kg			49.9	UJ	N	49.9	UJ	N	497	U	N	49.7	U
4-Methylphenol	ug/kg	670	670	165	J	Y	20	UJ	N	199	UJ	N	19.9	UJ
4-Nitroaniline	ug/kg			99.8	UJ	N	99.8	UJ	N	994	U	N	99.5	U
4-Nitrophenol	ug/kg			99.8	UJ	N	99.8	UJ	N	994	U	N	99.5	U
Acenaphthene	ug/kg	500	500	14	J	Y	28.5	J	Y	199	U	N	5.2	J
Acenaphthylene	ug/kg	1300	1300	20	UJ	N	11.5	J	Y	199	U	N	19.9	U
Anthracene	ug/kg	960	960	44.8	J	Y	68.6	J	Y	199	UJ	N	7.8	J
Aroclor 1016	ug/kg			99.6	U	N	99.4	U	N	19.6	U	N	20	U
Aroclor 1221	ug/kg			99.6	U	N	99.4	U	N	19.6	U	N	20	U
Aroclor 1232	ug/kg			99.6	U	N	99.4	U	N	19.6	U	N	20	U
Aroclor 1242	ug/kg			99.6	U	N	99.4	U	N	19.6	U	N	20	U
Aroclor 1248	ug/kg			99.6	U	N	99.4	U	N	19.6	U	N	20	U
Aroclor 1254	ug/kg			99.6	U	N	99.4	U	N	19.6	U	N	20	U
Aroclor 1260	ug/kg			99.6	U	N	99.4	U	N	19.6	U	N	20	U
Arsenic	mg/kg	57	93	5.49	J	Y	6.66	J	Y	3.35	J	Y	3.94	J
Benzo(A)anthracene	ug/kg	1300	1600	135	J	Y	164	J	Y	108	J	Y	57.1	
Benzo(A)pyrene	ug/kg	1600	1600	20	UJ	N	210	J	Y	113	J	Y	61.9	
Benzo(G,H,I)perylene	ug/kg	670	720	243	J	Y	214	J	Y	220		Y	55.9	
Benzofluoranthenes, Total	ug/kg	3200	3600	39.9	UJ	N	398	J	Y	278	J	Y	153	
Benzoic acid	ug/kg	650	650	282	J	Y	50.4	J	Y	1990	U	N	47.2	J
Benzyl alcohol	ug/kg	57	73	39.6	J	Y	20	UJ	N	199	U	N	40.7	
bis(2-Chloroethoxy) methane	ug/kg			20	UJ	N	20	UJ	N	199	U	N	19.9	U
Bis-(2-chloroethyl) ether	ug/kg			49.9	UJ	N	49.9	UJ	N	497	U	N	49.7	U
Bis(2-ethylhexyl)phthalate	ug/kg	1300	1900	4950	J	Y	1480	J	Y	300		Y	623	
Butylbenzylphthalate	ug/kg	63	900	207	J	Y	271	J	Y	199	U	N	19.9	U
Carbazole	ug/kg			29.8	J	Y	30.1	J	Y	199	U	N	10.5	J
Chrysene	ug/kg	1400	2800	461	J	Y	448	J	Y	249		Y	109	
Coarse Sand	%			11.2		Y	6.4		Y	10.2		Y	43.7	
Copper	mg/kg	390	390	64.6		Y	88.4		Y	46.8		Y	13.5	
cPAH	ug/kg		100	43.135	J	Y	284.8	J	Y	203.84	J	Y	92.34	
Dibenzo(A,H)anthracene	ug/kg	230	230	20	UJ	N	32.8	J	Y	199	U	N	19.9	U
Dibenzofuran	ug/kg	540	540	20	UJ	N	30.9	J	Y	199	U	N	19.9	U
Diesel Range (Silica and Acid Cleaned)	mg/kg	2000	2000	516	J	Y	305	J	Y	182		Y	99.4	
Diesel Range Hydrocarbons	mg/kg	2000	2000											
Diethylphthalate	ug/kg	200	1200	49.9	UJ	N	49.9	UJ	N	497	U	N	49.7	U
Dimethylphthalate	ug/kg	71	160	20	UJ	N	20	UJ	N	199	U	N	24.2	
Di-N-Butylphthalate	ug/kg	1400	1400	83.3	J	Y	20	UJ	N	199	U	N	5.8	J
Di-N-Octylphthalate	ug/kg	6200	6200	20	UJ	N	20	UJ	N	199	U	N	19.9	U
Fine Gravel	%			0.9		Y	2.9		Y	4.9		Y	0.1	U
Fine Sand	%			5.5		Y	14.1		Y	3.4		Y	8.7	
Fluoranthene	ug/kg	1700	2500	1080	J	Y	1260	J	Y	201		Y	182	
Fluorene	ug/kg	540	540	40.8	J	Y	42.8	J	Y	199	U	N	19.9	U
Hexachlorobenzene	ug/kg	22	70	20	UJ	N	20	UJ	N	199	U	N	19.9	U
Hexachlorobutadiene	ug/kg	11	120	20	UJ	N	20	UJ	N	199	U	N	19.9	U
Hexachlorocyclopentadiene	ug/kg			99.8	UJ	N	99.8	UJ	N	994	U	N	99.5	U
Hexachloroethane	ug/kg			20	UJ	N	20	UJ	N	199	U	N	19.9	U
HPAH	ug/kg	12000	17000	3589.3	J	Y	3956.8	J	Y	1391	J	Y	818.5	
Indeno(1,2,3-Cd)pyrene	ug/kg	600	690	90.3	J	Y	20	UJ	N	199	U	N	43.6	
Isophorone	ug/kg			20	UJ	N	20	UJ	N	199	U	N	19.9	U
Lead	mg/kg	450	530	30.9	J	Y	16.8	J	Y	22.2		Y	3.64	
LPAH	ug/kg	5200	5200	531.7	J	Y	691.5	J	Y	199	U	N	100.1	J
Medium Sand	%			15.1		Y	11.8		Y	12.5		Y	42.3	
Mercury	mg/kg	0.41	0.59	0.0245	J	Y	0.0456	J	Y	0.053		Y	0.025	U
Motor Oil (Silica and Acid Cleaned)	mg/kg	2000	2000	3610	J	Y	2840	J	Y	1270		Y	475	
Motor Oil Range	mg/kg	2000	2000											
Naphthalene	ug/kg	2100	2100	92.1	J	Y	31.1	J	Y	199	U	N	5.7	J
Nitrobenzene	ug/kg			20	UJ	N	20	UJ	N	199	U	N	19.9	U
N-Nitroso-Di-N-Propylamine	ug/kg			20	UJ	N	20	UJ	N	199	U	N	19.9	U
N-Nitrosodiphenylamine	ug/kg	28	40	50.5	J	Y	20	UJ	N	199	UJ	N	19.9	UJ
Pentachlorophenol	ug/kg	360	690	99.8	UJ	N	99.8	UJ	N	994	U	N	99.5	U
Phenanthrene	ug/kg	1500	1500	340	J	Y	509	J	Y	199	U	N	61.5	
Phenol	ug/kg	420	1200	32.3	J	Y	18.6	J	Y	199	U	N	19.9	U
Polychlorinated Biphenyls	ug/kg	130	1000	99.6	U	N	99.4	U	N	19.6	U	N	20	U
Pyrene	ug/kg	2600	3300	1580	J	Y	1230	J	Y	222		Y	156	
Solids, Total	%			43.09		Y	72.35		Y	75.21		Y	71.9	
Total Organic Carbon	%			9.77	J	Y	3.98	J	Y	5.19	J	Y	0.44	J
Very Coarse Sand	%			12.6		Y	5.4		Y	10.4		Y	1	
Very Fine Sand	%			5.4		Y	11.3		Y	4.7		Y	3.1	
Zinc	mg/kg	410	960	446	J	Y	310	J	Y	127		Y	56.4	

Lab analytical codes: Y = Detected; N = Not detected; U = not detected at the level noted ; J = estimated concentration.

			Location		RVR-ST1			SL4-T6			SL4-T6			
			Sample Date	23	14 Jun 2023			12 Apr 2023			12 Apr 2023			
			Sample Name	1423	RVR-ST1-061423-G			SL4-T6-041223			SL4-T6-041223-G			
			Drainage Type		SD			SD			SD			
			Sample Method		SedTrap			SedTrap			SedTrap			
			Location Type		Inline			Inline w/Active SPU Sed Trap			Inline w/Active SPU Sed Trap			Inline w
			Project	Waterway	Lower Duwamish Waterway			Lower Duwamish Waterway			Lower Duwamish Waterway			Lower
			Outfall	SD	S River St SD			I-5 SD at Slip 4			I-5 SD at Slip 4			Diag
Analyte	Unit	SQS/LAET	CSL/2LAET	Detected	Result	Qualifier	Detected	Result	Qualifier	Detected	Result	Qualifier	Detected	Result
1,2,4-Trichlorobenzene	ug/kg	31	51	N	20	U	N	99.8	U	N	99.5	U	N	99.8
1,2-Dichlorobenzene	ug/kg	35	50	N	20	U	N	99.8	U	N	99.5	U	N	99.8
1,3-Dichlorobenzene	ug/kg			N	20	U	N	99.8	U	N	99.5	U	N	99.8
1,4-Dichlorobenzene	ug/kg	110	110	N	20	U	N	99.8	U	N	99.5	U	N	99.8
1-Methylnaphthalene	ug/kg			N	20	U	N	43.2	J	Y	80.5	J	Y	99.8
2,2'-Oxybis(1-chloropropane)	ug/kg			N	20	U	N	99.8	U	N	99.5	U	N	99.8
2,4,5-Trichlorophenol	ug/kg			N	99.9	U	N	499	U	N	498	U	N	499
2,4,6-Trichlorophenol	ug/kg			N	99.9	U	N	499	U	N	498	U	N	499
2,4-Dichlorophenol	ug/kg			N	99.9	U	N	499	U	N	498	U	N	499
2,4-Dimethylphenol	ug/kg	29	29	N	99.9	U	N	499	U	N	498	U	N	499
2,4-Dinitrophenol	ug/kg			N	200	U	N	998	U	N	995	U	N	998
2,4-Dinitrotoluene	ug/kg			N	99.9	U	N	499	U	N	498	U	N	499
2,6-Dinitrotoluene	ug/kg			N	99.9	U	N	499	U	N	125	J	Y	499
2-Chloronaphthalene	ug/kg			N	20	U	N	99.8	U	N	99.5	U	N	99.8
2-Chlorophenol	ug/kg			N	20	U	N	99.8	U	N	99.5	U	N	99.8
2-Methylnaphthalene	ug/kg	670	670	N	20	U	N	67.6	J	Y	116		Y	35.7
2-Methylphenol	ug/kg	63	63	N	20	UJ	N	99.8	U	N	99.5	U	N	99.8
2-Nitroaniline	ug/kg			N	99.9	U	N	499	U	N	498	U	N	499
2-Nitrophenol	ug/kg			N	20	U	N	99.8	U	N	99.5	U	N	99.8
3,3`-Dichlorobenzidine	ug/kg			N	99.9	U	N	499	U	N	498	U	N	499
3-Nitroaniline	ug/kg			N	99.9	U	N	499	U	N	498	U	N	499
4,6-Dinitro-2-Methylphenol	ug/kg			N	200	U	N	998	U	N	995	U	N	998
4-Bromophenyl phenyl ether	ug/kg			N	20	U	N	99.8	U	N	99.5	U	N	99.8
4-Chloro-3-Methylphenol	ug/kg			N	99.9	U	N	499	U	N	498	U	N	499
4-Chloroaniline	ug/kg			N	99.9	U	N	499	U	N	498	U	N	499
4-Chlorophenyl Phenylether	ug/kg			N	50	U	N	249	U	N	249	U	N	250
4-Methylphenol	ug/kg	670	670	N	20	UJ	N	213		Y	468		Y	310
4-Nitroaniline	ug/kg			N	99.9	U	N	499	U	N	498	U	N	499
4-Nitrophenol	ug/kg			N	99.9	U	N	499	U	N	498	U	N	499
Acenaphthene	ug/kg	500	500	Y	20	U	N	99.8	U	N	99.5	U	N	99.8
Acenaphthylene	ug/kg	1300	1300	N	20	U	N	99.8	U	N	99.5	U	N	99.8
Anthracene	ug/kg	960	960	Y	20	U	N	50.8	J	Y	99.5	U	N	52.4
Aroclor 1016	ug/kg			N	19.9	U	N	19.9	U	N	19.7	U	N	37.5
Aroclor 1221	ug/kg			N	19.9	U	N	19.9	U	N	19.7	U	N	37.5
Aroclor 1232	ug/kg			N	19.9	U	N	19.9	U	N	19.7	U	N	37.5
Aroclor 1242	ug/kg			N	19.9	U	N	19.9	U	N	19.7	U	N	37.5
Aroclor 1248	ug/kg			N	19.9	U	N	38.2		Y	19.7	U	N	66.8
Aroclor 1254	ug/kg			N	19.9	U	N	35.7		Y	19.7	U	N	94.2
Aroclor 1260	ug/kg			N	19.9	U	N	25.1	J	Y	19.7	U	N	74
Arsenic	mg/kg	57	93	Y	3.67	J	Y	7.44	J	Y	11.4		Y	14.6
Benzo(A)anthracene	ug/kg	1300	1600	Y	20	U	N	139		Y	111		Y	209
Benzo(A)pyrene	ug/kg	1600	1600	Y	9.8	J	Y	170		Y	175		Y	261
Benzo(G,H,I)perylene	ug/kg	670	720	Y	14.4	J	Y	78.5	J	Y	162		Y	148
Benzofluoranthenes, Total	ug/kg	3200	3600	Y	40	U	N	536		Y	587		Y	501
Benzoic acid	ug/kg	650	650	Y	200	U	N	1720		Y	1120		Y	998
Benzyl alcohol	ug/kg	57	73	Y	17.4	J	Y	474		Y	167		Y	99.8
bis(2-Chloroethoxy) methane	ug/kg			N	20	U	N	99.8	U	N	99.5	U	N	99.8
Bis-(2-chloroethyl) ether	ug/kg			N	50	U	N	249	U	N	249	U	N	250
Bis(2-ethylhexyl)phthalate	ug/kg	1300	1900	Y	108		Y	2800		Y	5200		Y	4910
Butylbenzylphthalate	ug/kg	63	900	N	20	U	N	173		Y	99.5	U	N	260
Carbazole	ug/kg			Y	20	U	N	77.2	J	Y	48.7	J	Y	40.1
Chrysene	ug/kg	1400	2800	Y	9.2	J	Y	255		Y	281		Y	373
Coarse Sand	%			Y	35.8		Y							3.7
Copper	mg/kg	390	390	Y	8.98		Y	134		Y	99.5	J	Y	148
cPAH	ug/kg		100	Y	17.892	J	Y	265 265		Y Y	272.485		Y	365.37
Dibenzo(A,H)anthracene	ug/kg	230	230	N	20	U	N	99.8	U	N	99.5	U	N	99.8
Dibenzofuran	ug/kg	540	540	N	20	U	N	99.8	U	N	99.5	U	N	99.8
Diesel Range (Silica and Acid Cleaned)	mg/kg	2000	2000	Y	6.72	U	N	316		Y	52.9		Y	617
Diesel Range Hydrocarbons	mg/kg	2000	2000											
Diethylphthalate	ug/kg	200	1200	N	50	U	N	249	U	N	249	U	N	250
Dimethylphthalate	ug/kg	71	160	Y	7.3	J	Y	1160		Y	77.5	J	Y	1860
Di-N-Butylphthalate	ug/kg	1400	1400	Y	20	U	N	87.4	J	Y	176		Y	69.4
Di-N-Octylphthalate	ug/kg	6200	6200	N	20	U	N	469		Y	99.5	U	N	99.8
Fine Gravel	%			N	0.1	U	N							0.2
Fine Sand	%			Y	6.8		Y							13.3
Fluoranthene	ug/kg	1700	2500	Y	11.9	J	Y	311		Y	289		Y	642
Fluorene	ug/kg	540	540	N	20	U	N	99.8	U	N	99.5	U	N	99.8
Hexachlorobenzene	ug/kg	22	70	N	20	U	N	99.8	U	N	99.5	U	N	99.8
Hexachlorobutadiene	ug/kg	11	120	N	20	U	N	99.8	U	N	99.5	U	N	99.8
Hexachlorocyclopentadiene	ug/kg			N	99.9	U	N	499	U	N	498	U	N	499
Hexachloroethane	ug/kg			N	20	U	N	99.8	U	N	99.5	U	N	99.8
HPAH	ug/kg	12000	17000	Y	57.2	J	Y	1864.5	J	Y	1998		Y	2946.8
Indeno(1,2,3-Cd)pyrene	ug/kg	600	690	Y	20	U	N	99.8	UJ	N	99.5	U	N	96.8
Isophorone	ug/kg			N	20	U	N	99.8	U	N	99.5	U	N	99.8
Lead	mg/kg	450	530	Y	1.42	J	Y	56.3		Y	483	J	Y	69.3
LPAH	ug/kg	5200	5200	Y	60	U	N	428.7	J	Y	319.5	J	Y	378.4
Medium Sand	%			Y	47		Y							17.7
Mercury	mg/kg	0.41	0.59	N	0.0248	U	N	0.042		Y	0.0155	J	Y	0.609
Motor Oil (Silica and Acid Cleaned)	mg/kg	2000	2000	Y	28.9		Y	2610		Y	490		Y	3910
Motor Oil Range	mg/kg	2000	2000											
Naphthalene	ug/kg	2100	2100	Y	20	U	N	88.9	J	Y	76.5	J	Y	42
Nitrobenzene	ug/kg			N	20	U	N	99.8	U	N	99.5	U	N	99.8
N-Nitroso-Di-N-Propylamine	ug/kg			N	20	U	N	99.8	U	N	99.5	U	N	99.8
N-Nitrosodiphenylamine	ug/kg	28	40	N	20	UJ	N	99.8	UJ	N	99.5	U	N	99.8
Pentachlorophenol	ug/kg	360	690	N	99.9	U	N	499	U	N	498	U	N	499
Phenanthrene	ug/kg	1500	1500	Y	20	U	N	289		Y	243		Y	284
Phenol	ug/kg	420	1200	N	20	U	N	281		Y	256		Y	87.2
Polychlorinated Biphenyls	ug/kg	130	1000	N	19.9	U	N	99	J	Y	19.7	U	N	235
Pyrene	ug/kg	2600	3300	Y	11.9	J	Y	375		Y	393		Y	716
Solids, Total	%			Y	71.83		Y	64.18		Y	79.93		Y	40.29
Total Organic Carbon	%			Y	0.26		Y	6.33	J	Y	0.35	J	Y	11.3
Very Coarse Sand	%			Y	0.4		Y							2.3
Very Fine Sand	%			Y	2		Y							8.7
Zinc	mg/kg	410	960	Y	35.5		Y	571		Y	188	J	Y	591

Lab analytical codes: Y = Detected; N = Not detected; U = not detected at the level noted ; J = estimated concentration.

Location				ST1		ST2			ST7			ST7		
Sample Date				02 Aug 2023		09 Aug 2023			31 May 2023			31 May 2023		
Sample Name				ST1-080223		ST2-080923			ST7-053123			ST7-053123-G		
Drainage Type				SD		SD			SD			SD		
Sample Method				SedTrap		SedTrap			SedTrap			SedTrap		
Location Type				/Active SPU Sed Trap		Inline w/Active SPU Sed Trap			Inline w/Active SPU Sed Trap			Inline w/Active SPU Sed Trap		
Project				Duwamish Waterway		Lower Duwamish Waterway			Lower Duwamish Waterway			Lower Duwamish Waterway		
Outfall				onal Ave S CSO/SD		Diagonal Ave S CSO/SD			Diagonal Ave S CSO/SD			Diagonal Ave S CSO/SD		
Analyte	Unit	SQS/LAET	CSL/2LAET	Qualifier	Detected	Result	Qualifier	Detected	Result	Qualifier	Detected	Result	Qualifier	Detected
1,2,4-Trichlorobenzene	ug/kg	31	51	U	N	20	U	N	355		Y	19.9	U	N
1,2-Dichlorobenzene	ug/kg	35	50	U	N	20	U	N	99.9	U	N	19.9	U	N
1,3-Dichlorobenzene	ug/kg			U	N	20	U	N	99.9	U	N	19.9	U	N
1,4-Dichlorobenzene	ug/kg	110	110	U	N	20	U	N	99.9	U	N	19.9	U	N
1-Methylnaphthalene	ug/kg			U	N	41.6		Y	61.3	J	Y	5.5	J	Y
2,2'-Oxybis(1-chloropropane)	ug/kg			U	N	20	U	N	99.9	U	N	19.9	U	N
2,4,5-Trichlorophenol	ug/kg			U	N	99.8	U	N	500	U	N	99.6	U	N
2,4,6-Trichlorophenol	ug/kg			U	N	99.8	U	N	500	U	N	99.6	U	N
2,4-Dichlorophenol	ug/kg			U	N	99.8	U	N	500	U	N	99.6	U	N
2,4-Dimethylphenol	ug/kg	29	29	U	N	99.8	U	N	500	U	N	99.6	U	N
2,4-Dinitrophenol	ug/kg			U	N	399	U	N	999	U	N	199	U	N
2,4-Dinitrotoluene	ug/kg			U	N	99.8	U	N	500	U	N	99.6	U	N
2,6-Dinitrotoluene	ug/kg			U	N	99.8	U	N	500	U	N	99.6	U	N
2-Chloronaphthalene	ug/kg			U	N	20	U	N	99.9	U	N	19.9	U	N
2-Chlorophenol	ug/kg			U	N	20	U	N	99.9	U	N	19.9	U	N
2-Methylnaphthalene	ug/kg	670	670	J	Y	80.8		Y	60.2	J	Y	7.3	J	Y
2-Methylphenol	ug/kg	63	63	UJ	N	20	U	N	99.9	U	N	19.9	U	N
2-Nitroaniline	ug/kg			U	N	99.8	U	N	500	U	N	99.6	U	N
2-Nitrophenol	ug/kg			U	N	20	U	N	99.9	U	N	19.9	U	N
3,3`-Dichlorobenzidine	ug/kg			U	N	99.8	U	N	500	U	N	99.6	U	N
3-Nitroaniline	ug/kg			U	N	99.8	U	N	500	U	N	99.6	U	N
4,6-Dinitro-2-Methylphenol	ug/kg			U	N	200	U	N	999	U	N	199	U	N
4-Bromophenyl phenyl ether	ug/kg			U	N	20	U	N	99.9	U	N	19.9	U	N
4-Chloro-3-Methylphenol	ug/kg			U	N	99.8	U	N	500	U	N	99.6	U	N
4-Chloroaniline	ug/kg			U	N	99.8	U	N	500	U	N	99.6	U	N
4-Chlorophenyl Phenylether	ug/kg			U	N	49.9	U	N	250	U	N	49.8	U	N
4-Methylphenol	ug/kg	670	670	J	Y	410	J	Y	115		Y	19.9	U	N
4-Nitroaniline	ug/kg			U	N	99.8	U	N	500	U	N	99.6	U	N
4-Nitrophenol	ug/kg			U	N	99.8	U	N	500	U	N	99.6	U	N
Acenaphthene	ug/kg	500	500	U	N	21.2		Y	237		Y	8.1	J	Y
Acenaphthylene	ug/kg	1300	1300	U	N	16.6	J	Y	99.9	U	N	19.9	U	N
Anthracene	ug/kg	960	960	J	Y	33.4		Y	613		Y	21.4		Y
Aroclor 1016	ug/kg			UJ	N	19.9	U	N	19.8	UJ	N	19.7	U	N
Aroclor 1221	ug/kg			UJ	N	19.9	U	N	19.8	UJ	N	19.7	U	N
Aroclor 1232	ug/kg			UJ	N	19.9	U	N	19.8	UJ	N	19.7	U	N
Aroclor 1242	ug/kg			UJ	N	19.9	U	N	19.8	UJ	N	19.7	U	N
Aroclor 1248	ug/kg			J	Y	92.1		Y	165	J	Y	39.6		Y
Aroclor 1254	ug/kg			J	Y	98.4		Y	674	J	Y	68.5		Y
Aroclor 1260	ug/kg			J	Y	29.4		Y	901	J	Y	39.2		Y
Arsenic	mg/kg	57	93		Y	6.95	J	Y	6.54	J	Y	11.1		Y
Benzo(A)anthracene	ug/kg	1300	1600		Y	120		Y	625		Y	93.9		Y
Benzo(A)pyrene	ug/kg	1600	1600	J	Y	155		Y	653		Y	138		Y
Benzo(G,H,I)perylene	ug/kg	670	720		Y	204	J	Y	184		Y	32.2		Y
Benzofluoranthenes, Total	ug/kg	3200	3600		Y	344		Y	1520		Y	341		Y
Benzoic acid	ug/kg	650	650	U	N	1290	J	Y	612	J	Y	256	J	Y
Benzyl alcohol	ug/kg	57	73	U	N	132		Y	876		Y	19.9	U	N
bis(2-Chloroethoxy) methane	ug/kg			U	N	20	U	N	99.9	U	N	19.9	U	N
Bis-(2-chloroethyl) ether	ug/kg			U	N	49.9	U	N	250	U	N	49.8	U	N
Bis(2-ethylhexyl)phthalate	ug/kg	1300	1900		Y	1810		Y	8330	J	Y	4500	J	Y
Butylbenzylphthalate	ug/kg	63	900		Y	618		Y	703		Y	276		Y
Carbazole	ug/kg			J	Y	37.2		Y	360		Y	46.5		Y
Chrysene	ug/kg	1400	2800		Y	232		Y	995		Y	181		Y
Coarse Sand	%				Y				21.7		Y	11.7		Y
Copper	mg/kg	390	390		Y	348		Y	113		Y	93		Y
cPAH	ug/kg		100	J	Y	220.99	J	Y	912.83		Y	190.01		Y
Dibenzo(A,H)anthracene	ug/kg	230	230	U	N	23.4	J	Y	99.9	U	N	19.9	U	N
Dibenzofuran	ug/kg	540	540	U	N	25.9		Y	134		Y	19.9	U	N
Diesel Range (Silica and Acid Cleaned)	mg/kg	2000	2000		Y	311		Y				295		Y
Diesel Range Hydrocarbons	mg/kg	2000	2000											
Diethylphthalate	ug/kg	200	1200	U	N	49.9	U	N	250	U	N	49.8	U	N
Dimethylphthalate	ug/kg	71	160	J	Y	11600		Y	1540		Y	657		Y
Di-N-Butylphthalate	ug/kg	1400	1400	J	Y	98.6		Y	168		Y	22.8		Y
Di-N-Octylphthalate	ug/kg	6200	6200	U	N	62.1	J	Y	1050	J	Y	574	J	Y
Fine Gravel	%				Y				1.4		Y	1.9		Y
Fine Sand	%				Y				11.5		Y	4.5		Y
Fluoranthene	ug/kg	1700	2500		Y	588		Y	1050		Y	151		Y
Fluorene	ug/kg	540	540	U	N	42.2		Y	307		Y	19.9	U	N
Hexachlorobenzene	ug/kg	22	70	U	N	20	U	N	99.9	U	N	19.9	U	N
Hexachlorobutadiene	ug/kg	11	120	U	N	20	U	N	99.9	U	N	19.9	U	N
Hexachlorocyclopentadiene	ug/kg			U	N	99.8	U	N	500	U	N	99.6	U	N
Hexachloroethane	ug/kg			U	N	20	U	N	99.9	U	N	19.9	U	N
HPAH	ug/kg	12000	17000	J	Y	2397.5	J	Y	6153		Y	1113.4		Y
Indeno(1,2,3-Cd)pyrene	ug/kg	600	690	J	Y	79.1	J	Y	154		Y	27.3		Y
Isophorone	ug/kg			U	N	20	U	N	99.9	U	N	19.9	U	N
Lead	mg/kg	450	530		Y	60.8		Y	65.4		Y	157		Y
LPAH	ug/kg	5200	5200	J	Y	475	J	Y	3069.1	J	Y	188.5	J	Y
Medium Sand	%				Y				27.4		Y	20		Y
Mercury	mg/kg	0.41	0.59		Y	0.102		Y	0.0893		Y	0.0848		Y
Motor Oil (Silica and Acid Cleaned)	mg/kg	2000	2000		Y	1870		Y				1500		Y
Motor Oil Range	mg/kg	2000	2000											
Naphthalene	ug/kg	2100	2100	J	Y	87.6		Y	82.1	J	Y	8	J	Y
Nitrobenzene	ug/kg			U	N	20	U	N	99.9	U	N	19.9	U	N
N-Nitroso-Di-N-Propylamine	ug/kg			U	N	20	U	N	99.9	U	N	19.9	U	N
N-Nitrosodiphenylamine	ug/kg	28	40	UJ	N	20	UJ	N	99.9	U	N	6.7	J	Y
Pentachlorophenol	ug/kg	360	690	U	N	99.8	U	N	500	U	N	99.6	U	N
Phenanthrene	ug/kg	1500	1500		Y	274		Y	1830		Y	151		Y
Phenol	ug/kg	420	1200	J	Y	95.3		Y	1210		Y	43.3		Y
Polychlorinated Biphenyls	ug/kg	130	1000	J	Y	219.9		Y	1740	J	Y	147.3		Y
Pyrene	ug/kg	2600	3300		Y	652		Y	972		Y	149		Y
Solids, Total	%				Y	59.17		Y	56.26		Y	74.46		Y
Total Organic Carbon	%				Y	6.93		Y	13.3		Y	1.39		Y
Very Coarse Sand	%				Y				10.9		Y	6.1		Y
Very Fine Sand	%				Y				6.8		Y	1.4		Y
Zinc	mg/kg	410	960		Y	437		Y	388		Y	382		Y

Lab analytical codes: Y = Detected; N = Not detected; U = not detected at the level noted ; J = estimated concentration.