Q102 – Status of Implementation Actions Taken Pursuant to S4.F.3.d

1. Introduction

On July 1, 2024, the Washington State Department of Ecology (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 2025 and defines the priorities for 2026.

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. This SCIP included priorities to be addressed through 2025. SPU submitted a draft of the third SCIP (SCIP3) to Ecology in March 2025, which outlines source control activities and priorities for SPU from January 1, 2026 to December 31, 2031. Ecology approved SCIP3 in the late summer of 2025. Plans and priorities contained within SCIP3 will be implemented in the period of 2026-2031.

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, 2025, known as SCIP3. The updated SCIP expanded upon the 2021-2026 SCIP (2021 SCIP, or "SCIP2") with an updated assessment of source tracing and program effectiveness data along with updated operation and maintenance and capital projects. This SCIP continued the more extensive and thorough program analysis that was contained in SCIP2 and broke out a basin-by-basin discussion to better convey the status of the drainage basins areas to the reader. An analysis of the drainage basin status compared to the updated in-water sampling data was added to support Ecology's Source Control Sufficiency evaluation process as well.

The 2026-2031 SCIP (SCIP3), Appendices and Map Atlas can be viewed at the following website: 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 2025, SPU collected 47 samples of storm drain solids from the City's MS4 within the LDW Source Control Area. No new sediment traps were installed in 2025.

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 be routinely utilized as 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.

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 collected samples from all Effectiveness Monitoring Locations listed in Appendix 13 Tables 1 and 2 in 2025. One sample (17-ST1) was submitted to the laboratory for analysis, but insufficient solids were present in the sediment trap for analysis. Upstream sampling found no accumulated in-system solids for sampling, so no 2025 data are available for this basin. SPU suspects that no materials were present due to frequent drainage infrastructure cleaning, and biweekly street sweeping in that drainage basin. Source tracing data collected from January through December 2025 are provided in Attachment A of this report and will be loaded into EIM by May 31, 2026, in accordance with Appendix 13 requirements. The data available from the laboratory are discussed in Section 3.6 of this report and help inform the 2026 priorities described in Section 5. Due to ongoing third-party laboratory staffing challenges, some sample results collected in the fall of 2025 may not be available in time for inclusion in this report. Complete laboratory data will be provided in the EIM upload conducted in May 2026. Figure 2 illustrates the location of samples collected within the LDW Source Control Area during 2025.

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 were selected for line cleaning based on (i) sampling data that indicated that contaminants were present, (ii) the time period that had lapsed since prior cleaning, or (iii) to support Ecology's Upper Reach and Middle Reach Source Control Sufficiency Evaluation process. In 2025, SPU cleaned approximately 100,863.39 linear feet of pipe and 111 catch basins within portions of the following 9 drainage basins:

- Diagonal Ave S SD
- S Myrtle St SD

- 7th Ave S SD
- S Nevada St SD
- 1st Ave S SD (East)
- 1st Ave S SD (West)
- Georgetown SD
- Highland Park Way SW SD
- S Garden St SD

In addition to the basins listed above, maintenance holes 18 and 52 were cleaned to remove accumulated contaminants in the Diagonal Ave S SD. Both locations had been found to contain elevated PCBs in the past and are cleaned periodically to allow for ongoing source tracing.

In 2023 and 2024, SPU cleaned a large section of the S Norfolk St EOF/SD/CSO storm drainage mainline located outside of the City limits, in collaboration with the Boeing Company, to address PCB contaminants that were identified in samples SPU and Ecology collected in 2021. Subsequent sampling conducted in 2025, including at the maintenance hole where elevated PCBs were discovered indicated that PCB presence within this system has been substantially reduced by the focused cleaning effort, preventing these contaminants from reaching the waterway.

For all line cleaning activities conducted in the LDW Source Control Area, 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, with compliance based on sweeping 95% of the required weeks. S. Myrtle St. was swept by SDOT 82 times covering 52 weeks (100%) in 2025 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 is 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 2025 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 to 2025. The data for catch basin and mainline maintenance hole measurements from 2015 to 2025 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 2024 MS4 Permit requirements. During the drainage system monitoring conducted in 2025, no structures were found to exceed the maintenance threshold that would initiate cleaning.

Table 1: S. Myrtle Street Catch Basin and Maintenance Hole Measurements

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
2015 percent full											
3/27/2015	7%	16%	43%	80%	33%	32%	53%	44%	0%	0%	0%
6/29/2015	8%	17%	40%	2%	36%	32%	55%	41%	0%	0%	0%
9/22/2015	10%	28%	50%	2%	37%	31%	0%	45%	0%	0%	0%
12/29/2015	9%	15%	43%	12%	40%	39%	8%	37%	0%	0%	0%
2017 percent full											
2/22/2017	14%	30%	56%	49%	63%	48%	34%	55%	0%	0%	0%
5/25/2017	16%	30%	0%	5%	5%	45%	41%	0%	0%	0%	0%
8/17/2017	20%	36%	0%	5%	0%	43%	38%	0%	0%	0%	0%
11/22/2017	24%	38%	0%	14%	8%	48%	42%	0%	0%	0%	0%
2018 percent full											
3/12/2018	20%	36%	1%	15%	4%	48%	38%	0%	0%	0%	0%
5/23/2018	23%	37%	3%	21%	5%	28%	41%	-6%	0%	0%	0%
8/29/2018	22%	40%	1%	24%	-1%	46%	33%	-5%	0%	0%	0%
12/7/2018	23%	0%	13%	21%	8%	2%	20%	1%	0%	0%	0%
2019 percent full											
3/1/2019	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%	6%	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%	5%	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%
2024 percent full											
2/26/2024	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
6/17/2024	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
8/28/2024	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
11/20/2024	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2025 percent full											
3/4/2025	0%	0%	0%	0%	2%	2%	2%	0%	0%	0%	0%
5/20/2025	0%	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%
8/25/2025	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
12/9/2025	3%	0%	0%	0%	4%	0%	2%	0%	0%	0%	0%
Times Exceeded Maintenance Threshold (60% full)	0 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	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

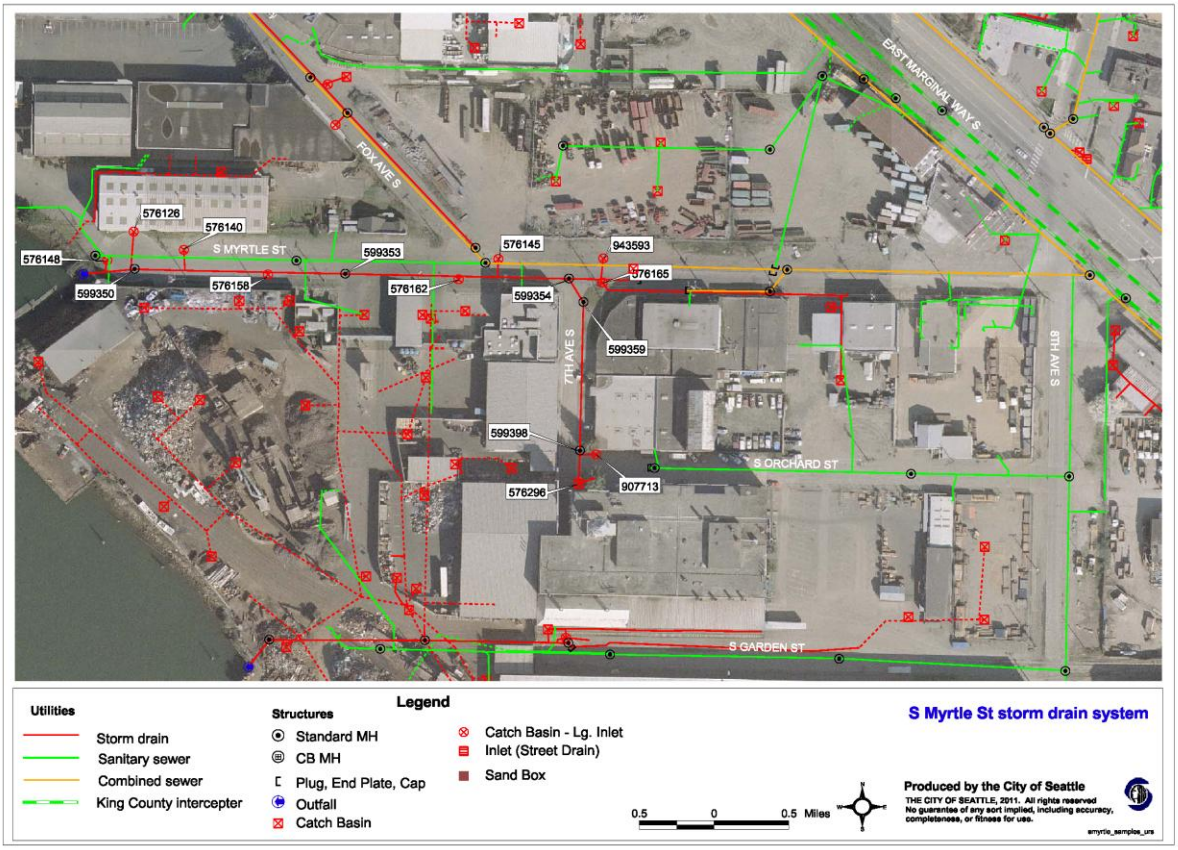

Figure 1: Catch Basin and Maintenance Hole Measuring Locations on S. Myrtle Street

3.5 Structural Controls

A. South Park Water Quality Stormwater Treatment Facility

The South Park Water Quality Facility is one of the stormwater treatment projects included in the approved Integrated Plan to Protect Seattle's Waterways. The purpose of the facility is to treat stormwater runoff from the existing 240-acre 7th Ave S drainage basin, a highly industrial basin in the City's South Park neighborhood, and discharge treated water to the Lower Duwamish Waterway. The South Park Water Quality Facility will work in conjunction with the South Park Pump Station, which completed construction in 2023, that enables the existing stormwater collection system and outfall to function during all tidal conditions in the Lower Duwamish Waterway.

In 2025, SPU engaged with the community to develop and evaluate different site plans for the treatment facility and programming options for the area set aside for community benefit space. Site planning was an iterative process that included multiple opportunities for the community to provide feedback. SPU is in the process of selecting a final site plan. SPU also completed soil and groundwater investigations on the property and is in the process of developing a Remedial Investigation Report. Lastly, the existing tenant, a gypsum recycling business, ceased operations on-site and removed all equipment and materials at the end of 2025.

In 2026, SPU will begin the design phase. SPU also plans to demolish the existing structures on-site and stabilize the site in preparation for future construction. The site cleanup process will continue with development of a feasibility study. The project is currently anticipated to be complete by the consent decree deadline of December 31, 2030.

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 2025, the team continued to implement the Plan and adapted as needed to meet the regulatory targets, which resulted in sweeping 23 routes an average of 34 times. This meant the Program covered 880 road miles[1] in MS4 basins discharging to the Lower Duwamish Waterway.

[1] 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

Appendix 13 of the 2024 Phase I MS4 Permit (and the previous 2019 Permit) requires that each annual report 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 SCIP documents have included box plots displaying the analytical trends in the LDW. The SCIP3 includes 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) through the SCIP2 reporting period (July 1, 2014 through 2024). 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.

Analyzing basin-specific storm solids sample data over time allows for an analysis of trends within the data to help determine source tracing effectiveness and to prioritize geographic efforts. Basin-wide data from effectiveness monitoring samples and other storm solids samples collected in 2025 (see Attachment A) can be compared to data collected during the SCIP 2 phase to update the trend analysis and to set priorities for upcoming years. The comparison of the SCIP2, SCIP1 and pre-SCIP phases are used to guide business inspection activity, determine line cleaning priorities, and to identify data gaps that need to be filled. A more in depth data comparison for samples collected prior to 2025 are included in the SCIP3 report, found here: https://www.seattle.gov/utilities/neighborhood-projects/lower-duwamish-waterway.

Table 2, below, outlines the Effectiveness Monitoring Locations (EMLs) and "sample to fill data gap" LDW source tracing sample locations in storm drain basins that were sampled in 2025. This

table indicates that SPU collected samples from all designated EMLs in 2025; however, some complexities should be noted:

- In the 1st Ave S SD (West) basin, sediment traps long used as the EMLs location were found to be inaccessible due to beavers who have dammed a Washington State Department of Transportation (WSDOT) retention pond. In 2025, samples collected from the inflowing culverts (MH94) were used to provide data for the EMLs while SPU waits for WSDOT to relocate the beavers.
- For the 17th Ave S SD EML location, while a sample was collected in 2025, insufficient solids were available for laboratory analysis. Upstream sampling was attempted to provide a data point for this basin, but insufficient settled solids were available across all other drainage conveyance structures. The lack of settled solids is unsurprising, as this basin is swept every two weeks, and drainage assets are cleaned numerous times throughout the year.

Figure 2 illustrates where samples were collected during 2025. Table 3 lists the arsenic, cPAH, and PCB concentrations in 2025 storm solids samples. Tables 4, 5, and 6 provide an annual numeric value of arsenic, cPAH, and PCB storm solids sample data by basin, since the EML sampling requirements were established[2], respectively.

[2] Appendix 13 requirements were first established with the August 19, 2016, Modification to the Phase I MS4 Permit. As such, EML sampling was required beginning in 2017. See: https://ecology.wa.gov/getattachment/a4baff31-79f8-4b94-9b5b-02cd340c8840/2016phaseI-Appendix13.pdf

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

Storm Drain (SD) Outfall Name	EML in 2025 Permit, Appendix 13?	Designated EML Sample ID	EML SPU Asset #	EML Sample Collected in 2025?	Non-EML Sample Collected in 2025?	Comments
SPU Outfalls						
S Nevada St	No	-	-	-	Yes	SPU collected stormwater samples from three right-of-way catch basins located along the roadway in front of a warehouse owned by the Port of Seattle. PCBs and PAHs have previously been found in this location.
Diagonal Ave S	Yes	ST1	D056-126	Yes	Yes	Additional source tracing samples and sediment traps pulled from targeted locations with a history of PCBs or other contaminants
S River St	Yes	MH211	D071-005	Yes	No	Sediment trap installed in 2022 and sampled in 2023 was found to be impeding flow in piped system. Sediment trap blocked flow in the drainage mainline so was removed in 2023. Grab sampling is used for the EML samples.
S Brighton St	Yes	MH93	D071-018	Yes	No	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. EML location sampled by grab.
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	Yes	Yes	Sediment trap is located in MH near rail line off W Marginal Way SW. Additional upstream sediment traps sampled to support source tracing efforts.
SW Kenny St	Yes	KN-ST1	D063-017	Yes	Yes	Sediment trap in MH just upstream from river, in tidally influenced portion of Mainline. Additional samples collected in roadway just upstream adjacent to Port of Seattle properties.
Highland Park Way SW	Yes	HP-ST6	D070-074	Yes	Yes	Sediment trap HP-ST4 sampled in addition to HP-ST6 to support source tracing efforts within the basin. HP-ST6 submerged at low tide, so grab sample from HP-ST6 location submitted as EML sample. Ecology highlighted this basin as a priority for the Middle Reach Sufficiency.
S Webster St	No	-	-	-	No	S Webster St SD basin was included in Appendix 13 Table 1 as a basin to "sample to fill data gap". "Data gap" sample was collected in 2023. Basin will be incorporated into 7th Ave S SD during South Park Drainage Improvements Phase 2.
7th Ave S	Yes	7TH-ST1	D071-117	Yes	Yes	Other samples collected from sediment traps 7th-ST2 and 7th-ST3 and a grab sample at RCB64.
17th Ave S	Yes	17TH-ST1	D079-110	Yes	No	SPU collected and submitted 17th Ave S SD sediment trap but there were insufficient solids in the trap to run analytically, per the 3rd party lab report. Attempts to collect in-system samples upstream found no accumulated solids due to frequent maintenance and basin-wide street sweeping.
South Ops SD	No	-	-	-	No	South Operations SD was included in Appendix 13 Table 1 as a basin to "sample to fill data gap". SPU sampled inflow chamber of Oil/Water Separator (MH90) in 2024.

Storm Drain (SD) Outfall Name	EML in 2025 Permit, Appendix 13?	Designated EML Sample ID	EML SPU Asset #	EML Sample Collected in 2025?	Non-EML Sample Collected in 2025?	Comments
Non-SPU Outfalls						
Head of Slip 2	No 2019 Permit – Yes[1]	MH38	D063-027	--	Yes	Basin is no longer an EML basin as of the 2024 permit. A grab sample was collected from the prior EML location to continue monitoring basin status.
S Garden St	No 2019 Permit – Yes[1]	GDN-ST1	966485	--	Yes	Basin is no longer an EML basin as of the 2024 permit. Sediment trap installed in 2023. Trap is installed in a MH at the transition from pipe ownership from SPU to Seattle Iron and Metals. No other feasible sample locations.
I-5 SD at Slip 4	Yes	SL4-T6	D071-034	Yes	No	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	-	-	-	No	Basin was included in the "sample to fill data gaps" list of Appendix 13. Data gap sample was collected in 2023.
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. NST-4 supports source control in the lower, private portion of the basin. Additional grabs collected for source tracing.
1st Ave S (east)	Yes	MH86	D071-191	Yes	No	EML grab sample collected at Front/Michigan.
1st Ave S (west)	Yes	1ST-ST3, 1ST-ST2	D0713-183, 905983	Yes, 1st-ST3 and 1st-ST2	Yes	EML in 2025 collected at 1ST-ST3. 1st-ST2 also sampled in 2025. Non-EML samples collected from numerous locations in the upper basin, adjacent to Myers Way S.
S 96th St	No	-	999806	-	Yes	Sample collected upstream of existing sediment trap location (MH223). Sediment trap 96th ST1 which was installed in 2022 has become submerged due to lack of maintenance in the downstream WSDOT system. 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.

Table notes:

- [1] The Head of Slip 2 SD and S Garden St SD were Effectiveness Monitoring Locations in Appendix 13 under the 2019 Phase I MS4 Permit, which expired on July 31, 2024; however, because the City of Seattle only contributes a very small portion of the drainage to the privately-owned outfalls, these were removed as Monitoring Locations in Appendix 13 under the 2024 Phase I MS4 Permit, which became effective on August 1, 2024. These basins remain in this table for the 2025 Annual Report because the data was included in the prior permit and these samples support ongoing source tracing efforts.
- Rows shaded green indicate Effectiveness Monitoring Locations (EMLs) (as defined in Appendix 13 of the 2024 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.
- 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.

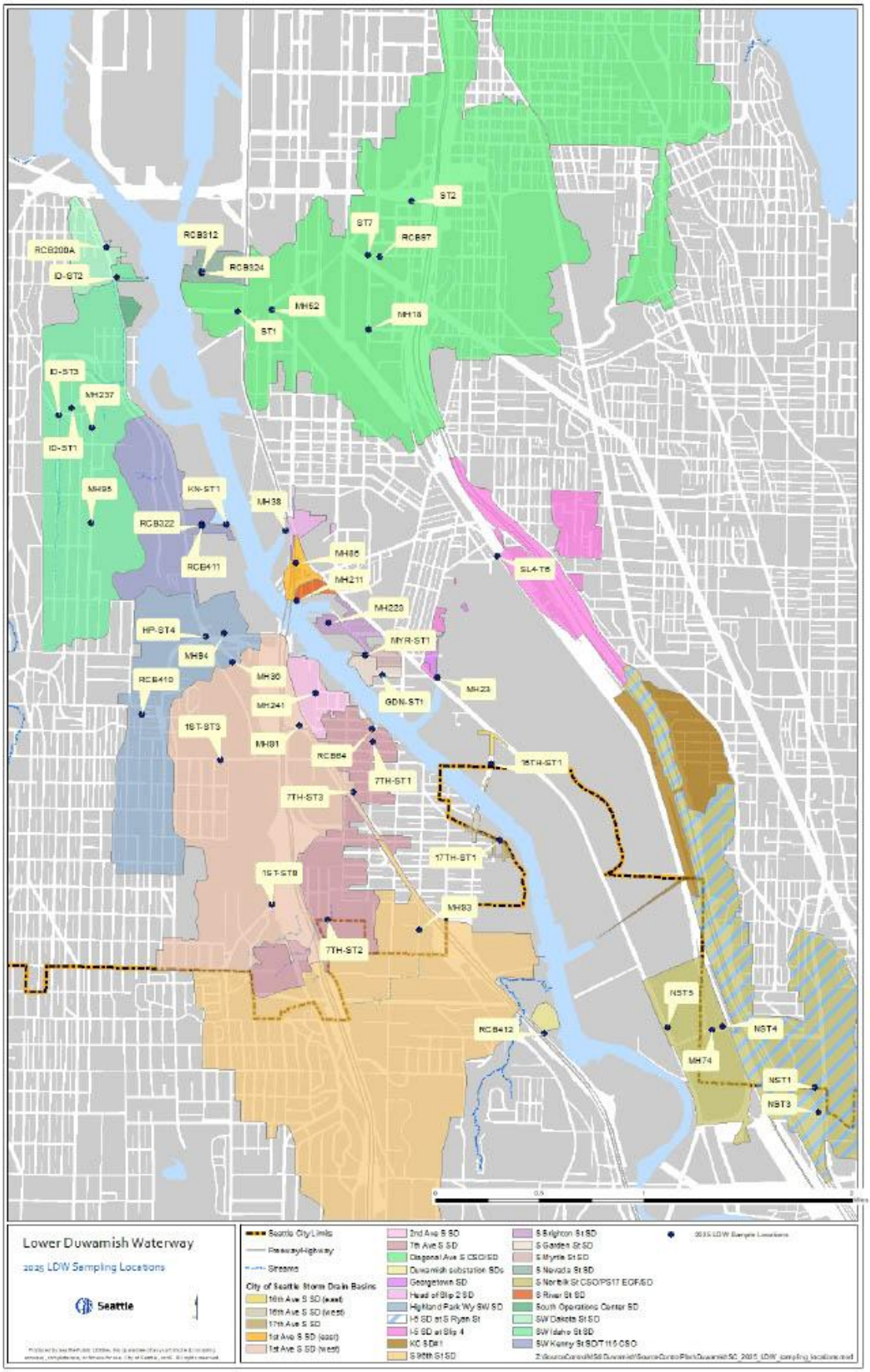

Figure 2: Location of Effectiveness Monitoring Location and Other Source Tracing Samples Collected in 2025

Table 3 – Arsenic, cPAH and PCB Concentrations in Storm Solids Samples Collected in 2025

Storm Drain (SD) Outfall Basin	Sample ID	EML?	Arsenic (mg/kg)	cPAH (ug/kg)	Total PCBs (sum of aroclors, ug/kg)
1st Ave S SD (west)	**1ST-ST3**	**X**	**6.11 U N**	**859.5 U N**	**19.8 U N**
1st Ave S SD (west)	1ST-ST8		11.5 J Y	994.47 Y	329 Y
1st Ave S SD (west)	MH91		9.08 J Y	2,910 U N	93.1 J Y
7th Ave S SD	**7TH-ST1**	**X**	**22.5 Y**	**342.06 J Y**	**104.9 Y**
7th Ave S SD	7TH-ST2		61.3 U N	86.185 Y	19.9 U N
7th Ave S SD	RCB64		9.01 Y	577.94 Y	47.77 Y
7th Ave S SD	7TH-ST3		19.9 Y	337.82 J Y	46.9 U N
S Garden St SD	**GDN-ST1**	**X**	**12.3 J Y**	**924 U N**	**988 Y**
Highland Park Wy SW SD	**HP-ST6/MH94**	**X**	**10.6 Y**	**163.805 U N**	**19.9 U N**
Highland Park Wy SW SD	MH 36		6.59 U N	154.565 J Y	19.4 U N
Highland Park Wy SW SD	RCB410		28.8 U N	274.64 Y	61.2 U N
Highland Park Wy SW SD	HP-ST4		14 U N	412 U N	34.2 Y
SW Idaho St SD	ID-ST1		14 J Y	2713.6 J Y	102.9 J Y
SW Idaho St SD	**ID-ST2**	**X**	**13.3 U N**	**542.32 J Y**	**159.5 Y**
SW Idaho St SD	MH237		10 Y	83.422 Y	19.5 U N
SW Idaho St SD	MH95		14.3 U N	NA	18.8 N
SW Idaho St SD	ID-ST3		13.8 J Y	4600 U N	18.7 Y
SW Kenny St SD	**KN-ST1**	**X**	**46.4 Y**	**300.13 J Y**	**140.5 J Y**
SW Kenny St SD	RCB322		9.72 J Y	86.06 Y	19.3 U N
SW Kenny St SD	RCB411		11.2 J Y	98.26	20.9 U N
S Brighton St SD	**MH223**	**X**	**7.32 J Y**	**77.06 U N**	**17.4 U N**
Georgetown SD	**MH23**	**X**	**9.89 J Y**	**7787.3 J Y**	**320.2 J Y**
1st Ave S SD (east)	**MH86**	**X**	**4.42 J Y**	**72.621 J Y**	**723 J Y**
S Myrtle St SD	**MYR-ST1**	**X**	**12.9 J Y**	**363.73 Y**	**1395 J Y**
S Norfolk St CSO/PS17 EOF/SD	NST1*		11.6 J Y	285.67 J Y	58.2 Y
S Norfolk St CSO/PS17 EOF/SD	MH74		35.7 Y	469.78 J Y	181.4 Y
S Norfolk St CSO/PS17 EOF/SD	NST3*		9.33 U N	858 U N	3.5 U N
S Norfolk St CSO/PS17 EOF/SD	NST4		NA[1]	NA[1]	NA[1]
S Norfolk St CSO/PS17 EOF/SD	**NST5**	**X**	**14.5 Y**	**NA**	**68.3 Y**
SW Dakota St SD	**RCB200A**	**X**	**10 Y, 10.7 J Y**	**192.06 J Y, 3920 U N**	**262.2 J Y, 218.4 J Y**
S River St SD	**MH211**	**X**	**15.8 J Y**	**224.68 J Y**	**84 Y**
I-5 SD at Slip 4	**SL4-T6**	**X**	**11 J Y**	**977 U N**	**53.1 J Y**
Diagonal Ave S CSO/SD	**ST1**	**X**	**15.7 Y**	**382.14 J Y**	**112 J Y**
Diagonal Ave S CSO/SD	ST2		6.71 J Y	865 U N	62.5 J Y
Diagonal Ave S CSO/SD	ST7		8.72 J Y	88.985 J Y	241.6 J Y
Diagonal Ave S CSO/SD	MH18		11.3 Y	25,730 Y	101.1 J Y
Diagonal Ave S CSO/SD	MH52		7.68 J Y	848.32 Y	149.8 J Y

Storm Drain (SD) Outfall Basin	Sample ID	EML?	Arsenic (mg/kg)	cPAH (ug/kg)	Total PCBs (sum of aroclors, ug/kg)
Diagonal Ave S CSO/SD	RCB97		3.91 J Y	568 U N	50.7 Y
S 96th St SD	MH93		36.2 Y	664.7 Y	296.6 Y
Head of Slip 2 SD	**MH38**		10.3 J Y	840.975 U N	18.9 U N
17th Ave S SD[x]	**17TH-ST1**	**X**	**NA**	**NA**	**NA**
W Marginal Pl SW SD	RCB412		8.09 J Y	18.6 U N	236.465 Y
2nd Ave S SD	MH241		12.5 Y	190.05 U N	109.9 J Y
S Nevada St SD	RCB97		5..67 J Y	568 U N	50.7 Y
S Nevada St SD	RCB324		9.24 J Y	611 U N	60.7 J Y
S Nevada St SD	RCB312		17.2 U N	606 U N	37.7 J Y
16th Ave S SD (East)	16TH-ST1		7.88 J Y	258 J Y	193.8 J Y

Table notes:

EML = Effectiveness Monitoring Location

* 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.

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

^^ Samples collected of soil or solids present at the ground surface. These samples are generally excluded from analysis of stormwater settled solids, as they are not present within the drainage system. Samples are collected for source tracing adjacent to drainage systems.

[1]The laboratory lost this sample after it was submitted for analysis. Due to sediment accumulation timelines and recent pipe cleaning, no replacement sample was available for this location.

[x] Sediment trap was pulled and provided to the laboratory, but insufficient solids were present within the trap to run any analysis.

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, arsenic concentrations collected since the effectiveness monitoring requirement was implemented in 2017 have been relatively steady, with only minor fluctuations year over year. No arsenic results exceeded the CSL/2LAET or the SCO/LAET level in any EML samples collected over the sampling period. For basins where arsenic results were relatively low and fluctuations were minor, source tracing activities focused on arsenic is unlikely to be feasible. SPU will continue to collect samples and will respond to substantial increases or upward trends through targeted source tracing.

Table 4: Summary of Basin-Specific Arsenic Concentrations in Effectiveness Monitoring Locations

Outfall	2017	2018	2019	2020	2021	2022	2023	2024	2025
7th Ave S SD	22.8 Y	20 Y	22.8 Y	12.7 Y	-	11.4 U N	23.6 J Y	16.5 Y	22.5 Y
S River St SD	-	14.7 Y	16.9 Y	19.9 Y	-	17.3	3.94 J Y	12 Y	15.8 J Y
SW Idaho St SD	6.99 U N	8.33 Y	9.53 U N	11.3 U N[2]	10.2 Y[2]	7.9 U N	12.3 Y[2]	7.54 J Y	13.3 U N
S Brighton St SD	-	29.6 Y	46 Y	37.2 Y	-	33.4 Y	23 Y	18.7 Y	36.2 Y
S Myrtle St SD	-	17.9 U N	-	20.7 Y	-	13.5 Y	15.7 Y	16.7 Y	12.9 J Y
Diagonal Ave S CSO/SD	12.7 Y	16.1 Y	16.2 Y	19.4 Y	-	11.4 U N	14.6 Y	13.7 Y	15.7Y
17th Ave S SD	-	-	-	-	-	11.4 Y	-	5.15 Y	-
S Garden St SD[3]	-	-	26.5 Y	20 U N	-	17.2 Y	12.1 Y	13.8 Y	12.3 J Y
Georgetown SD	-	7.94 U N	8.36 Y	-	2.94 J Y	7.79 Y	9.08 J Y	7.99 J Y	9.89 J Y
SW Dakota St SD	-	16.5 U N	8.31 Y	18.8 Y	-	8.95 Y	11 J Y	13.3 J Y	10.7 J Y
SW Kenny St SD	9.24 Y	13.8 Y	26.7 Y	-	-	6.16 J Y	23.5 Y	45.2 Y	46.4 Y
Highland Park Way SW	37.4 Y	47.4 Y	55 Y	27 Y	-	18.2 Y	36.9 Y	34.9 Y	10.6 Y
Head of Slip 2 SD[3]	-	14.8 Y	-	-	-	-	4.48 J Y	4.99 J Y	10.3 J Y
I-5 SD at Slip 4	6.86 U N	16.1 Y	12 Y	11.7 Y	-	6.49 U N	7.44 J Y	5.18 J Y	11 J Y
S Norfolk St SD	43.6 U N	35.8 U N[1]	-	-	3.82 J Y	6.91 U N	27.4 Y	5.96 J Y	14.5 Y
1st Ave S (west)	5.9 U N	5.52 U N	6.1 U N	15.2 U N	6.47 J Y	9.73 U N	3.79 J Y	2.88 J Y	6.11 U N
1st Ave S (east)	-	-	-	-	-	-	11.3 J Y	10.3 J Y	4.42 J Y

Table notes:

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

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]Sample data from NST4 trap, as NST5 had insufficient solids for analysis.
[2]ID-ST3 data used as ID-ST2 location was not sampleable.
[3] S Garden St SD and Head of Slip 2 SD were Effectiveness Monitoring Locations during the 2019 Permit term, but not during the 2024 Permit term.

Arsenic levels at the EML locations have generally trended downward in several basins, including the S Norfolk St SD, S Garden St, S Myrtle St SD, S River St SD, Highland Park Way SW SD, and S Brighton St SD. S Garden St SD and S Norfolk St SD saw the largest decreases, surpassing a 50% reduction since EML samples were first collected. As indicated in Table 4, there appears to have been a reduction in arsenic levels in EML samples representing the 1st Ave S (East) SD over the last three years of sampling, decreasing from 11.3 mg/kg in 2023 to 4.42 mg/kg in 2025. However, the limited sample size requires further collection and analysis to accurately characterize arsenic trends in the 1st Ave S (East) SD basin. While the abovementioned basins have seen 20-50% reductions from their highest levels, the arsenic concentrations in these samples are generally fairly low and drawing conclusions based on these single annual samples necessitates some caution. As additional data are generated, apparent trends and conclusions can be better substantiated.

Samples collected in several basins have indicated generally stable arsenic levels, such as the 7th Ave S SD, Georgetown SD, 1st Ave S (West) SD, and the Diagonal Ave S SD. While a linear regression shows slight downward or upward trends with these basins, the variability and scale of the trends do not allow for actionable conclusions. Basins with a general upward trend in arsenic concentrations include the SW Kenny St SD and SW Idaho St SD, with some large annual fluctuations particularly evident in samples from SW Kenny St SD (e.g., from 6.16 to 23.5 then 45.2 mg/kg in 2022, 2023, and 2024, respectively. The elevated arsenic concentration in SW Kenny St SD was also evident in the 2025 sample, suggesting the elevated level may have stabilized. To identify the potential source of this arsenic, right of way catch basins along Port owned property were sampled at the end of 2025. SPU plans to use this data to determine if there is an active arsenic source within this basin.

Many of the basins display a trough in arsenic concentrations around the COVID pandemic, evident in samples collected in 2021 and 2022. For several of the basins, these lower arsenic results coincide with reductions in traffic volume and industrial activities resulting from the pandemic restrictions. While the trends are tenuous and are not universal to all basins, the data suggests that the primary remaining sources of arsenic in many of the basins are from these industrial activities or are somewhat ubiquitous in a highly industrial/commercial land use area rather than from legacy sources or spills. If discrete sources of arsenic are identified, SPU will work to address them through source control actions.

3.6.1.2 PCBs

General observations:

Table 5 (below) illustrates the PCB concentrations from annual EML samples within LDW basins. PCB results within these basins show highly variable results.

Table 5: Summary of Basin-Specific PCB Concentrations in Effectiveness Monitoring Locations

Outfall	2017	2018	2019	2020	2021	2022	2023	2024	2025
7th Ave S SD	209.3 Y	260.4 Y	331.7 Y	137.4 Y	-	182.4 J Y	113 J Y	151.8 Y	104.9 Y
S River St SD	-	145.2 Y	138.6 Y	119.6 J Y	-	124.5 J Y	20 U N	99.6 N	84 Y
SW Idaho St SD	70.2 Y	358.6 Y	186.4 Y	-	99.8 U N	85.8 Y	65.5 Y	213.9 J Y	159.5 Y
S Brighton St SD	-	343.6 Y	196.7 Y	321 Y	-	291 J Y	192.44 J Y	19.9 U N	17.4 U N
S Myrtle St SD	-	2,326 Y	-	1,837 Y	-	4,450 J Y	1,724 J Y	1,611 J Y	1,395 J Y
Diagonal Ave S CSO/SD	408.1 J Y	294.4 Y	194 Y	492.5 Y	171.3 J Y	230.6 J Y	235 J Y	238.2 J Y	112 J Y
17th Ave S SD	-	-	685 Y	603 Y	406 Y[4]	1192 J Y	491.8 Y	1204 Y	-
S Garden St SD[3]	-	-	6730 Y	1386 Y	-	2024 J Y	1112 Y	388 J Y	988 Y
Georgetown SD	-	252.6 Y	229 J Y	-	192.2 Y	287.1 J Y	310.1 J Y	439 Y	320.2 J Y
SW Dakota St SD	-	457.45 J Y	716.34 J Y	572.32 J Y	-	393.82 Y	419.89 J Y	625.78 J Y	192.06 J Y
SW Kenny St SD	96.2 Y	138.4 Y	153 J Y	370.9 Y	-	99.4 Y	132.8 J Y	257 Y	140.5 J Y
Highland Park Way SW	208.6 Y	276.7 Y	163.4 Y	147.3 Y	-	205 Y	99.8 U N	179.1 Y	19.9 U N
Head of Slip 2 SD[3]	-	27.3 Y	-	-	-	-	19.9 N	36 U N	18.9 U N
I-5 SD at Slip 4	99 Y	125.3 Y	281.8 Y	114 Y	-	49.2 Y	99 J Y	19.9 U N	53.1 J Y
S Norfolk St SD	-[5]	180.4 Y	492 Y	73.7 Y	119.9 Y	45.1 Y	331.8 Y	26.6 Y	68.3 Y
1st Ave S (west)	19.1 U N	17.7 U N	19.9 U N	113.1 Y	99.9 U N	19.9 U N	19.4 U N	99.5 U N	19.8 U N
1st Ave S (east)	-	-	-	-	-	-	231.5 J Y	122.4 J Y	723 J Y

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.

[3] S Garden St SD and Head of Slip 2 SD were Effectiveness Monitoring Locations during the 2019 Permit term, but not during the 2024 Permit term.

[4] Data point for 2021 was collected in January 2022 due to lack of solids accumulation in 2021. A second sample was collected in late 2022 for the 2022 data point.

[5]Sample collected did not have a PCB result due to laboratory instrumentation issues.

PCB results from EML basins can be summarized into three general groups:

- Group 1: Basins where PCB levels have been **consistently elevated over time**, even where a general downward trend is present. This group includes the S Garden St SD and S Myrtle St SD.
- Group 2: Basins where a **downward trend is present**, and includes the 7th Ave S SD, S River St SD, S Brighton St SD, Diagonal Ave S SD, S Norfolk St SD, and Highland Park Way SW SD. This group has sporadic elevated results, but trend lines indicate a decrease over the full data set.
- Group 3: Basins with **increasing or "non-trending" results**, where volatility in the sample results indicates an upward or flat trend but concentration spikes suggest a need for ongoing source tracing and source control efforts. Basins within this group are the SW Kenny St SD, Georgetown SD, 1st Ave S (East) SD, and 17th Ave S SD.

To summarize the general PCB results across EML locations and basins, several basins exist with active industrial sources that are likely contributing PCBs to the adjacent drainage system. These basins consistently present source control challenges and will require extensive efforts to address. Similar to the arsenic results, many of the EML results from basins indicated a reduction in total PCB concentrations during the COVID pandemic, further supporting the assertion that industrial sources, or sources tied to business activities, are a primary cause of increased PCB concentrations in the drainage system. With that said, several basins known to contain extensive industrial use and a history of PCB challenges have experienced a downward PCB concentration trend. Because of the nuances associated with the data, a basin-specific analysis is warranted and is covered below. An in-depth review of PCB characteristics and trends across all basins may be found in the SCIP 3 document, which includes data collected prior to 2025.

Basin-specific observations:

Group 1: Basins where PCB results have been **consistently elevated** present a difficult challenge for source control implementation. In these cases, decades of source control inspections and BMP implementation have not had a pronounced effect on controlling this contaminant. In many cases, this is because the source of PCBs is an ongoing industrial activity where many of the traditional tools that SPU utilities cannot be fully implemented. Basins, such as S Myrtle St and S Garden St are particularly difficult for this reason.

- S Myrtle St SD: The S Myrtle St SD has a sediment trap located in the most downstream maintenance hole before the outfall, serving as the EML for this basin. This basin was fully cleaned in 2020 and 2023 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. Heavy industrial activities in the adjacent parcels are suspected of being the primary source of PCBs in this basin, particularly the adjacent metals recycling facility and illegal dumping associated with its customers. While PCB levels have been high in the basin for as long as sampling has been conducted, the highest PCB concentration in the basin was received in

2022 at 4,450 ug/kg, with PCB concentrations trending downward since, but the 2025 result remains elevated at 1,395 ug/kg, still above the CSL of 1,000 ug/kg. To reduce the PCB levels in the system and those potentially reaching the LDW, the City of Seattle implements an intensive approach that includes weekly roadway sweeping and quarterly catch basins inspections and cleanings. More than two decades of business inspections and focused operational actions have been unable to reduce the PCB levels in the EML samples below the CSL or SCO, so the City has determined that additional structural changes may be necessary. The City has been assessing structural options for this basin for several years and is planning to select a solution in 2026 or 2027 to address the PCB loading to the river from City infrastructure. Additional PCB source controls in this small basin will rely on private industrial businesses to limit their contributions.

- 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. A railroad right-of-way at the entrance to S Garden St was repaired by SDOT in 2023, which allowed for more frequent drainage system maintenance and sweeping of the roadway. This repair was a temporary measure, which requires ongoing maintenance to support this increased drainage system maintenance and sweeping. The sediment trap sample collected from the S Garden St SD in 2023, prior to these repairs, contained PCB concentrations of 1112 ug/kg. The trap sample collected in 2024 saw a large reduction in concentration (388 ug/kg), which is believed to be directly connected to the increased sweeping and maintenance. The trap collected in 2025 showed a rebound in PCB concentration, at 988 ug/kg. The fluctuations in PCB results within the basin are expected to be directly tied to industrial activities at the adjacent metal recycler, illicit storage of scrap electronics and metal materials within the roadway, and access challenges associated with the rail spur and heavy equipment parking. 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 and to eliminate the illicit use of the roadway for storage of potentially PCB contaminated materials. SPU owns/operates a single catch basin in the S Garden St SD, with all other inputs coming from private properties along the system, and from Seattle Iron and Metals owned drainage assets. SPU will be cleaning this drainage mainline in 2026 and conducting a CCTV video inspection of the pipe to determine what inputs may be transporting PCB contaminated solids into the pipe. As with S Myrtle St SD, any additional PCB reductions in this small basin will require private industrial businesses to minimize their contributions, which may need to address multiple pollutant pathways including aerial deposition and stormwater inputs.

Group 2: There are several basins where PCB concentrations are **trending downward**, due to PCB source control successes, business inventory changes, or other factors. These basins include the 7th Ave S SD, S River St SD, S Brighton St SD, Diagonal Ave S SD, S Norfolk St SD, and Highland Park Way SW SD. Many of these basins have shown gradual downward PCB trends across EML samples. Others were stable for several years, with a reduction over the last few EML samples. In one case, PCBs were found upstream at an elevated concentration and extensive efforts from SPU, King County, the City of Tukwila, and Department of Ecology were able to reduce the PCBs in a system to substantially lower levels.

- S Norfolk St: PCB concentrations in EML samples collected in 2019 were elevated compared to adjacent storm drainage basins, at 492 ug/kg. SPU was not aware of any sources of PCBs within the basin, and upstream traps used to characterize inputs into the system did not indicate elevated PCB levels. Source tracing and inspections conducted in this basin after the 2019 sampling did not identify a source of PCBs. 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. A sample was collected from a stormwater mainline located outside of the City limits, just south of King County International Airport, and was found to contain high levels of PCBs (2,860 ug/kg). As these PCBs had the potential to impact the LDW and were a potential source of the elevated PCBs found in the EML trap, SPU and Ecology coordinated a line cleaning effort to remove the residual contaminant. Line cleaning began in 2022 and was completed in 2024. This work supported Ecology's Source Control sufficiency evaluation for the LDW Upper Reach. Follow up sampling in the location where the elevated PCBs were found indicated a substantial reduction in PCB concentration (181.4 ug/kg). EML sampling conducted in 2025 indicates a reduction in PCBs at the EML trap, with the PCB concentration being 68.3 ug/kg. As PCBs may accumulate over time, SPU will continue to monitor the PCB source location in addition to our permit-required EML sampling.

Group 3: Finally, there are several basins where PCB concentrations are **trending upwards, or where sporadic PCB increases have been observed on** several occasions. These basins include the SW Kenny St SD, Georgetown SD, 1st Ave S (East) SD, and 17th Ave S SD. The SW Kenny St SD and 1st Ave S (East) SD both show substantial fluctuations in PCB concentrations, with peaks and valleys but either (i) do not contain a sustained increase (SW Kenny), or (ii) do not have enough data to indicate a trend with certainty (1st Ave S (East) SD). Both drainage basins will be targeted for source trace sampling upstream of the EML to determine if discrete PCB sources are present, or if the PCB variance is related to transient sources.

- Georgetown SD: While it was less than half of the LDW CSL/2LAET, the concentration of PCBs in the EML sample collected in this basin peaked in 2024, at 439 ug/kg. This basin underwent line cleaning in 2025 to address cPAH challenges (see Table 6), which should also result in a reduction in PCB concentrations in the system. With very limited potential sources of PCBs in the basin, it is suspected that remnant legacy PCBs were found within the 2024 EML sample, or that an illicit discharge of PCBs occurred in the upper basin and was removed by the 2025 line cleaning activity. Sampling in 2026 will be used to determine if this is the case, or if a more persistent PCB source exists in the basin.

- 17th Ave S: A sample collected from the 17th Ave S sediment trap (17ST-ST1) in October 2022 had a surprisingly elevated total PCB concentration of 1,192 ug/kg, above the LDW CSL. 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. In response to the elevated PCB concentration from 2022, SPU conducted an intensive basin-wide sampling effort in 2023 and 2024 to identify potential sources of these PCBs and screened the basin with the PCB Detection Dog. The City began

sweeping the 17th Ave S SD basin roadways every other week to reduce the solid loading and potential PCB input to the drainage system. Line cleaning was used to remove any accumulated solids from within the system to address legacy sources. PCB concentrations in grab samples collected in January 2023 ranged from about 400 to 600 ug/kg. The 17th-ST1 sediment trap sample in 2023 returned with a PCB concentration of 491.8 ug/kg, a substantial reduction from the prior sample but still exceeding the SCO. The 17th-ST1 sample in 2024 indicated an elevated PCB concentration of 1,204 ug/kg. SPU screened the basin again, during which the samples collected from right-of-way catch basins were found to contain PCB values ranging from 200 ug/kg to 600 ug/kg.

While the sediment trap was pulled in 2025, there were insufficient solids to conduct laboratory analysis. Upstream sampling was attempted, but, due to frequent asset cleaning, insufficient solids were available from within the drainage system to run analysis. Samples collected from the soil on a steep hillside adjacent to a dead tree in 2024 indicated that some PCB contamination was present in this location. SPU and SDOT had the tree removed in 2025, and in early 2026 will be working to address the potentially contaminated soil and control the erosion of these soils to the roadway. Ongoing aggressive BMP implementation and source trace sampling will continue to be used in this basin to identify and control any PCB sources . Due to green stormwater infrastructure (GSI) installations and the extensive sweeping and cleaning activities conducted, very low levels of solids are able to enter this drainage basin's conveyance system. This limits our ability to sample solids from within the system, but also greatly reduces the potential impact on the LDW.

3.6.1.3 cPAHs

General observations:

cPAH concentrations in EML samples indicate that concentrations are highly erratic and present a unique source control challenge. Sampling results fluctuate with such magnitude and without discernable cause that SPU is often forced into a reactive source control approach, rather than a proactive one. Establishing trend lines for cPAHs is not possible in many cases, as the results see-saw over the years. Looking solely at EML results exacerbates this fluctuation. The majority of the EMLs indicate a general increase in cPAH levels over the sample period, with many displaying a recent spike in results. The Georgetown SD, S Myrtle St SD, 7th Ave S SD, I-5 SD at Slip 4, SW Idaho St SD, and 1st Ave S (west) SD all indicate a recent spike in cPAH concentrations. Other basins displayed minor fluctuations of cPAH concentrations but remained near their long-term medians, such as the Diagonal Ave S SD and S Brighton St SD.

Table 6: Summary of Basin-Specific cPAH Concentrations in Effectiveness Monitoring Locations

Outfall	2017	2018	2019	2020	2021	2022	2023	2024	2025
7th Ave S SD	132.79 Y	450.39	327.22 J Y	177.54 J Y	-	300.67 J Y	372.58 Y	621.59 Y	342.06 J Y
S River St SD	-	701.06 Y	1431 Y	787.22 Y	-	718.05 Y	92.34 Y	1581.6 Y	224.68 J Y
SW Idaho St SD	51.123 Y	85.002 Y	239.58 J Y	-	-	30.682 J Y	82.312 J Y	278.41 J Y	542.32 J Y
S Brighton St SD	-	388.18 Y	337.69 J Y	749.39 J Y	-	636.49 Y	1068 Y	75.28 U N	77.06 U N
S Myrtle St SD	-	1068.9 J Y	-	607.64 J Y	-	2855.1 J Y	597.74 J Y	459.43 Y	363.73 Y
Diagonal Ave S CSO/SD	402.365 Y	608.71 Y	720.4 Y	284.61 J Y	538.72 J Y	132.2 Y	365.37 J Y	612.83 Y	382.14 J Y
17th Ave S SD	-	-	-[4]	-[4]	431.82 J Y	-[4]	-[4]	196.155 Y	-[4]
S Garden St SD[3]	-	-	548.92 J Y	326.36 J Y	-	492.95 Y	394.31 J Y	174.72 J Y	924 UN
Georgetown SD	-	2965.3 Y	3815.2 J Y	-	2429.7 Y	6633.5 Y	20539 Y	68382 Y	7787.3 J Y
SW Dakota St SD	-	457.45 J Y	716.34 J Y	572.32 J Y	-	393.82 Y	419.89 J Y	625.78 J Y	192.06 J Y
SW Kenny St SD	308.71 J Y	362.3 Y	455.46 J Y	250.86 J Y	-	207.11 J Y	342.21 Y	596.23 J Y	300.13 J Y
Highland Park Way SW	212.72 Y	384.23 Y	280.77 J Y	290.92 J Y	-	141.49 Y	325.57 Y	402.81 J Y	163.805 U N
Head of Slip 2 SD[3]	-	85.292 Y	-	-	-	-	33.245 Y	109.05 J Y	840.98 U N
I-5 SD at Slip 4	570.62 Y	389.965 Y	580.74 J Y	283.88 J Y	-	200.91 Y	265 Y	883.19 Y	977 U N

S Norfolk St SD	581.28 J Y	424.2 J Y	-[4]	-[4]	117.51 Y	-[4]	148.16 J Y	63.609 Y	-[4]
1st Ave S (west)	410.49 J Y	113.22 J Y	160.78 J Y	237.12 J Y	185.78 J Y	226.98 J Y	108.67 Y	262.95 Y	859.5 U N
1st Ave S (east)	-	-	-	-	-	-	510.8 Y	452.9 Y	72.621 J Y

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.

[3] S Garden St SD and Head of Slip 2 SD were Effectiveness Monitoring Locations during the 2019 Permit term, but not during the 2024 Permit term.

[4]Location sampled but insufficient solids for analysis.

Select Basin Specific cPAH Observations:

- Georgetown SD: A spike in cPAH concentrations within the Georgetown SD in 2024 correlated with line cleaning activities and maintenance on the drainage system. Heavier settled solids were removed from the pipe in 2023, leaving lighter, cPAH-containing particles behind. SPU suspects that the extremely elevated cPAH concentrations present during the 2024 EML sampling may be because of this. Follow up sampling in 2025 found elevated but significantly reduced cPAH concentration in the Georgetown system. SPU plans to continue to sample the Georgetown SD and to conduct source tracing sampling upstream of the EML to identify any ongoing sources of cPAHs within the system.

- S River St SD: This basin has had two known sources of cPAHs which SPU Source Control inspectors have worked to control over the years. The first source was identified in 2016 and was a coal tar paved parking lot at an industrial property. SPU worked with the business to remove the coal tar from the lot surface. EML sampling began after this source was identified and controlled. The second source of cPAHs is the railroad bed with creosote treated timbers that borders the southern and eastern basin boundaries. This rail bed is an ongoing, uncontrollable source of cPAHs to the drainage system. The S River St SD was cleaned under the line cleaning program in 2023 to remove residual contaminants in the system. Similar to other basins with existing sources of cPAHs, once the cleaning was completed, cPAH levels spiked in the follow year's sample, likely due to a removal of the dilution caused by settled heavier materials. EML sampling in 2025 indicates a reduction in cPAH concentrations in the system.

- S Brighton St SD: This basin has shown a significant reduction in cPAH concentrations over the last two years, compared to the data of record. Samples from the basin fluctuated for many years, slowly increasing until 2023, then dropping substantially in the 2024 and 2025 samples. SPU suspects that the reduction in cPAH values within the basin is a result of line cleaning activities conducted in the S Brighton SD during the 2023 season.

- SW Idaho St SD: This basin underwent a steady increase in cPAH values from 2017 to 2019, then a reset after COVID back to the basin low of 30.682 ug/kg. After this reduction, the basin has

seen a steady increase in cPAH concentration, peaking in 2025 at 542.32 ug/kg. As a result of this steady increase, SPU is planning to collect source trace samples in 2026 and 2027, which will be used to guide line cleaning and BMP implementation activities.

- 7th Ave S SD: This basin has exhibited a stable cPAH level, with four samples falling between 300-400 ug/kg. Periodic minor increases and decreases are evident in the sample data, with these fluctuations disconnected from any SPU source control activities within the basin. An EML high value was obtained in 2024 at 621.59 ug/kg. SPU is not aware of any sources or causes for the increase observed in 2024, but notes that the stormwater system was cleaned through the line cleaning program in 2023. As observed in several other basins, line cleaning may remove settled solid material, while leaving behind some of the lighter, finer cPAH containing material within the basin.

- Diagonal Ave S SD: The Diagonal Ave S SD has seen substantial fluctuations in cPAH values collected at the EML. Spikes in concentration were observed in 2018, 2019, and 2024. The spikes in 2019 and 2024 followed line cleaning activities within the lower portion of the drainage basin, in areas adjacent to major railway transloading facilities. In 2025, SPU's EML sample returned to more typical concentrations observed within the basin, but an upstream sample noted a spike in proximity to a State of Washington-owned facility that has an encapsulated coal tar paved parking lot. SPU will conduct a site inspection in 2026 to determine if the lot cap has failed and needs repair.

- S Myrtle St SD: The S Myrtle St SD is a challenging basin located within the Middle Reach of the LDW. The basin has seen sporadic increases and decreases in cPAH concentration over the years but has seen a substantial decrease in cPAH concentration since 2022, dropping from 2855.1 ug/kg to 363.73 ug/kg in 2025. SPU believes that this reduction is connected to increase maintenance and cleaning activities within the basin, including regular sweeping of the right of way and cleaning of the drainage assets.

Additional cPAH observations:

- Smoke and Weather Correlation: cPAHs are a significant component in wildfire smoke, and western Washington has experienced severe smoke events in several fall periods beginning in 2016. Samples collected primarily in the spring and early summer may display cPAH impacts from the prior year's smoke event. Strong smoke seasons in 2017, 2018, and 2022 correlate with cPAH result spikes in 2018, 2019, and 2023. Additionally, the lack of smoke in 2024 correlates with a reduction in cPAH values in 2025 samples. One outlier is present in this correlation, where a strong smoke season in 2020 does not correlate with an increase in cPAH values in 2021. This trough in cPAH values does correlate to the reduction in concentrations observed during the COVID pandemic present in the arsenic and PCB results. These correlations are further supported when winter weather characteristics are overlaid with them.

  The correlation between fall wildfire smoke and spring cPAH levels appears to be heavily impacted by winter rainfall totals. Record rainfall in the winter of 2016-2017 may have flushed

the drainage basins of cPAHs deposited by wildfire smoke from the summer, resulting in lower or stable measured levels despite smoky conditions. Conversely, the dry winters leading into 2023 and 2024 allowed for greater accumulation and concentration of cPAHs. The fact that the Spring 2021 results remained at an all-time low despite record smoke and average rainfall further confirms that localized industrial activity is a primary driver of these contaminants, as the reduction in business activity (during the COVID pandemic) likely outweighed the increase in atmospheric deposition

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 2025 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, 32 facilities were inspected for Code compliance with regard to flow control and treatment system code requirements during 2025.
- **Water Quality Complaints**: Inspectors respond to complaints as they are received through the water quality hotline, webpage, or agency referrals. In 2025, 61 water quality complaints were reported in the LDW Source Control Area that resulted in 6 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 2025, SPU responded to 62 spills within the LDW Source Control Area. The most common spills reported within the LDW are related vehicle collisions,
- **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. Eighteen 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 2026

Based on the information described above and annual prioritization process, the City affirms its previous priorities and intends to take further actions in 2026 as stated below.

5.1 Source Tracing/Sampling

Source tracing priorities for 2026 will largely remain the same as described in the 2021-2026 and 2026-2031 SCIPs. In addition, the City has identified the following priority actions based on recent sampling and business inspections:

- **Facilitate sample data collection in basins where data gaps remain.**
  - SPU will attempt to install a sediment trap within the S Nevada St SD to allow for near end-of-pipe data collection. Construction activities within the basin prevented the installation of a trap in 2025.
  - SPU will continue to collect grab samples from basins where sediment trap installation is not feasible, including within the S River St SD, Georgetown SD, SW Dakota St SD, and within the WSDOT-owned stormwater retention pond within the 1st Ave S SD (west).
  - SPU will work with Seattle City Light to try to collect samples from the Duwamish Substation SDs (#1, #2, #3). Regular cleaning of these assets and limited inflow reduces material accumulation in these basins.
  - Samples will be collected from the North Boeing Field SD if line cleaning and CCTV work identify any active flows within the basin, which is currently believed to be decommissioned.
- **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 Denver Ave S sub-basin and the Georgetown SD to verify that line cleaning has removed elevated concentrations of pollutants of concern.
  - SPU will continue to coordinate with EPA in the 17th Ave SD basin (T-117 upland area), conduct targeted surface dirt sampling in the basin to identify remaining controllable sources of PCBs, and continue street sweeping every other week.
  - Follow up samples will be collected from maintenance hole 18 within the S Snoqualmie Sub-basin of the Diagonal Ave S CSO/SD, which was cleaned in 2025. Upstream source tracing samples will also be collected to identify any source of cPAHs, which were found in the samples collected in 2025. An adjacent coal tar parking lot was addressed through structural modifications (scouring) in 2014 and is a potential source of the reemergent cPAH contamination.
  - S Myrtle St SD remains an ongoing source control challenge due to adjacent industrial activities and contaminated site runoff. SPU and SDOT will conduct a site walk in the first quarter 2026 to determine the feasibility of roadway improvements and potential structural stormwater treatment to limit the pollutant loading in this system.

Figure 3 illustrates the location of the LDW drainage basins (or sub-basins) proposed for source control/tracing sampling in 2026.

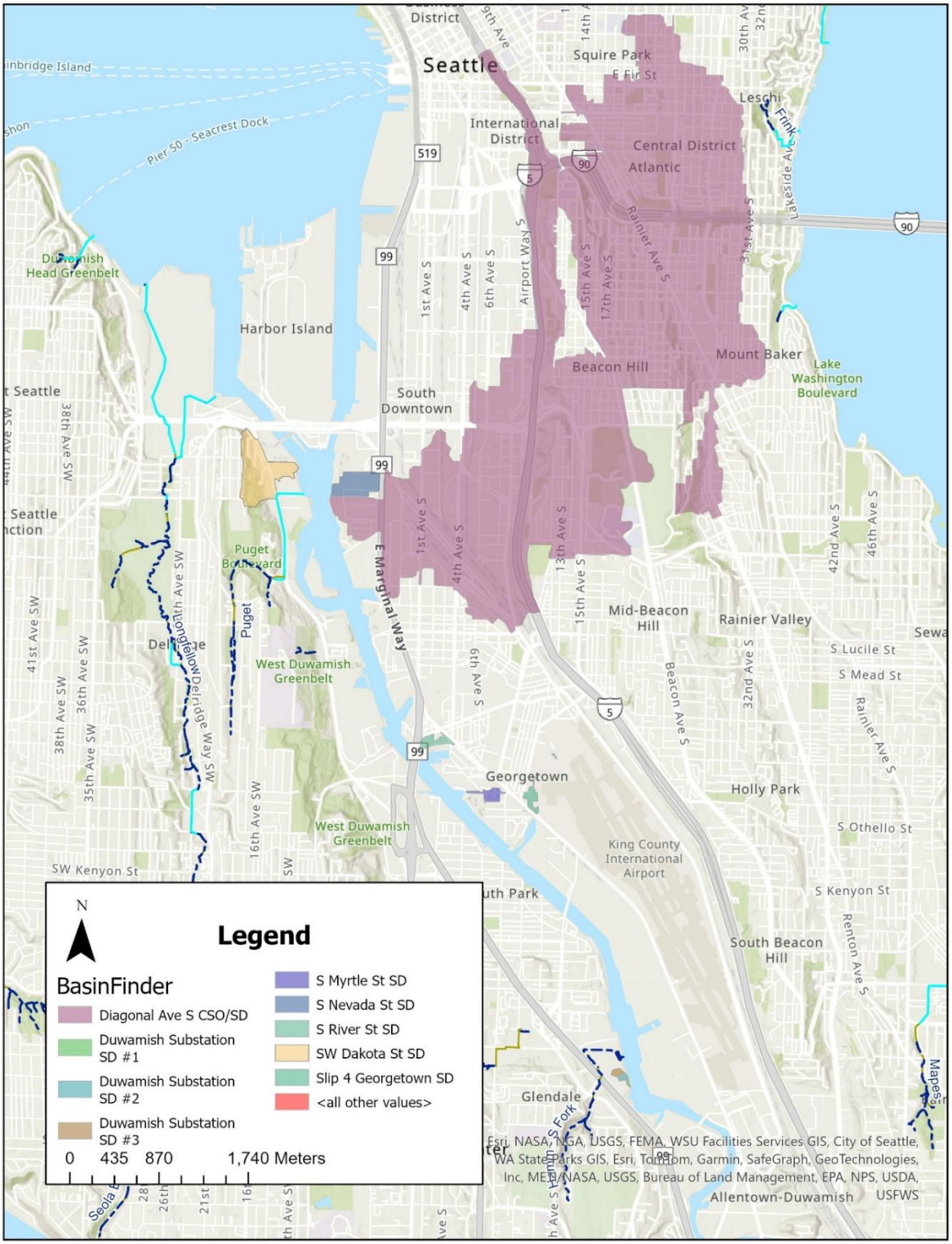

Figure 3: Drainage Basins with Planned Source Tracing Efforts in 2026

5.2 Line Cleaning

SPU continues to utilize a seasonal 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 were cleaned during the SCIP2 phase. Locations listed in the 2026 – 2031 SCIP are outlined below, with narrative text outlining why these basins were selected as a priority. Line cleaning will target the basins below over the next five years. It is expected that additional priority basins will be identified through source tracing and Effectiveness Monitoring sampling and will be addressed as able. Basins targeted for cleaning in the 2026 – 2031 SCIP are:

- **1st Ave S (west) SD** – Portions of the drainage basin was cleaned in 2023, 2024, and 2025, with the majority of the cleaning completed in 2023. In the lowest portion of the basin, between Highway 509 and Highway 599, a section of the basin was found to be impounding water and sediments prior to discharging into a WSDOT-owned engineered wetland. Cleaning was conducted in this portion of the system in 2024 and 2025, but CCTV of the cleaned pipe was unable to be completed due to standing water in the pipe. If WSDOT clears the blockage within their system, SPU can pump the standing water down in this portion in 2026 to verify that the cleaning removed the accumulated sediments, and to better understand the function of a WSDOT-owned weir wall which appears to cause the backwatering. If WSDOT does not clear the obstruction in their system, SPU will be unable to pump down the water within the system to CCTV the system. The request for repairs/maintenance of this system has been made to WSDOT on several occasions.
- North Boeing Field SD **–** This system was verified as decommissioned in 2012, with CCTV video inspection determining that there were no active connections. SPU plans to conduct a CCTV video inspection of this system to verify that no new connections have been made. If connections are found, the system will be cleaned and SPU will work with the owner of the connection to disconnect the new drainage.
- Diagonal Ave S CSO/SD – Substantial portions of this large drainage basin have been cleaned over for the last several line cleaning seasons, with additional work necessary to address contaminants identified through source tracing samples and known legacy contaminant hotspots. SPU plans to complete cleaning the SW Dakota St Sub-basin of this basin in response to elevated PCBs identified through sediment trap sampling. SPU suspects that the PCBs were released from a property in the sub-basin which underwent building renovations in 2024.
- Highland Park Wy SW SD – SPU plans to continue cleaning activities that began in 2025. Cleaning in 2025 was largely conducted in the upper portions of the basin. The lower portions of the basin are more industrial and are more challenging to clean due to tidal influence. Ecology has highlighted this basin as one of interest to their source control staff, and SPU's targeted cleaning is intended to support these source control efforts.

- 2nd Ave S SD – This storm drain is comprised of a mix of SPU owned and/or operated drainage culverts and mainlines, as well as substantial portions of privately-owned drainage assets. The downstream portions of the basin, within the privately owned sections, have an extensive history of contamination presence, and discharge into the RM 2.2 inlet, one of the most contaminated portions of the Lower Duwamish Waterway. While sampling data indicate that contamination is not as extensive in the upper portions of the basin, sediment accumulations in this area are limiting the stormwater conveyance capacity from SPU-owned mainlines on adjacent streets. These accumulations have not been addressed by line cleaning in the past and may contain legacy contaminants from prior industrial activities in the area.
- MH18 and MH52 (Tide Gate Vault, within Diagonal Ave S CSO/SD) – These structures have accumulated elevated concentrations of PCBs and mercury (MH18) and PCBs and cPAHs (MH52). Sources impacting these structures have either not been identified or are not controllable at this time, so cleaning is used to remove contaminants prior to their transport downstream. Both structures were cleaned in 2025 and will be sampled in mid-2026. If elevated levels of contaminants are present in samples collected, the structures will be cleaned to remove the material before it can reach the LDW.
- 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 **bolded** 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 intends to clean at least 4,000 linear feet of storm drain lines in 2026 to comply with Appendix 13 requirements.

5.3 Street Sweeping

In 2026, the Street Sweeping for Water Quality Program will focus on the following key tasks:

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

Attachment A: Effectiveness Monitoring and Other LDW Source Tracing Data Collected From January 2025 Through December 2025