Fact Sheet for NPDES Permit WA0031682

City of Seattle's Combined Sewer System

Date of Public Notice: 06/27/2025

Permit Effective Date: xx/xx/xxxx

Purpose of this fact sheet

This fact sheet explains and documents the decisions the Department of Ecology (Ecology) made in drafting the proposed National Pollutant Discharge Elimination System (NPDES) permit for the City of Seattle's Combined Sewer System (CSS) and associated Combined Sewer Overflow (CSO) outfalls operated by Seattle Public Utilities (SPU).

This fact sheet complies with Section 173-220-060 of the Washington Administrative Code (WAC), which requires Ecology to prepare a draft permit and accompanying fact sheet for public evaluation before issuing an NPDES permit.

Ecology makes the draft permit and fact sheet available for public review and comment at least thirty (30) days before issuing the final permit. Copies of the fact sheet and draft permit for the City of Seattle's CSS, NPDES permit WA0031682, are available for public review and comment from June 27, 2025 until July 31, 2025. For more details on preparing and filing comments about these documents, please see Appendix A - Public Involvement Information.

SPU staff reviewed the draft permit and fact sheet for factual accuracy prior to the public comment period. Ecology corrected any errors or omissions regarding the facility's location, history, discharges, or receiving waters prior to publishing this draft fact sheet for public notice.

After the public comment period closes, Ecology will summarize substantive comments and provide responses to them. Ecology will include the summary and responses to comments in this fact sheet as Appendix E - Response to Comments, and publish it when issuing the final NPDES permit. Ecology generally will not revise the rest of the fact sheet. The full document will become part of the legal history contained in the facility's permit file.

Summary

SPU owns and operates sewage collection systems designed to carry combined flows of sanitary sewage and stormwater runoff in a common piping system. Overflows may occur at designated outfalls during wet weather events when the volume of sewage and stormwater entering the CSS exceeds the system's capacity. Seattle's CSS includes 82 CSO outfalls that may discharge combined sewage during precipitation events.

WAC Chapter 173-245 and EPA's CSO control policy (59 CFR 18688) require CSS owners to implement measures to control overflows from their CSS. The proposed permit contains specific terms and conditions that provide limited authority for SPU to discharge combined sewage from designated CSO outfalls. Conditions include requirements for monitoring and reporting of overflows and ambient water quality, including sediment quality; as well as implementation of proper collection system operations and maintenance strategies.

TABLE OF CONTENTS

I. Introduction

The Federal Clean Water Act (FCWA, 1972, and later amendments in 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One mechanism for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System (NPDES), administered by the federal Environmental Protection Agency (EPA). The EPA authorized the state of Washington to manage the NPDES permit program in our state. Our state legislature accepted the delegation and assigned the power and duty for conducting NPDES permitting and enforcement to Ecology. The Legislature defined Ecology's authority and obligations for the wastewater discharge permit program in 90.48 RCW (Revised Code of Washington).

The following regulations in the Washington Administrative Code (WAC) apply to domestic wastewater NPDES permits:

- Procedures Ecology follows for issuing NPDES permits (chapter 173-220 WAC)
- Discharge standards for domestic wastewater facilities (chapter 173 221 WAC)
- Water quality criteria for surface waters (chapter 173-201A WAC)
- Water quality criteria for ground waters (chapter 173-200 WAC)
- Whole effluent toxicity testing and limits (chapter 173-205 WAC)
- Sediment management standards (chapter 173-204 WAC)
- Submission of plans and reports for construction of wastewater facilities (chapter 173-240 WAC)

The following additional regulations apply to communities operating collection systems with combined sewer overflows (CSOs):

- Submission of plans and reports for construction and operation of combined sewer overflow reduction facilities (chapter 173-245 WAC)
- US EPA CSO control policy (59 FR 18688 and 33 USC §1342(q))

These rules require any treatment facility owner/operator to obtain an NPDES permit before discharging wastewater to state waters. They also help define the basis for limits on each discharge and for performance requirements imposed by the permit.

Under the NPDES permit program and in response to a complete and accepted permit application, Ecology must prepare a draft permit and accompanying fact sheet and make them available for public review before final issuance. Ecology must also publish an announcement (public notice) telling people where they can read the draft permit, and where to send their comments, during a period of thirty days (WAC 173-220-050). (See *Appendix A-Public Involvement Information* for more detail about the public notice and comment procedures). After the public comment period ends, Ecology may make changes to the draft NPDES permit in response to comment(s). Ecology will summarize the responses to comments and any changes to the permit in Appendix E.

II. Background information

Table 1 - Facility information

Applicant:	
Facility name and address	City of Seattle, Seattle Public Utilities (SPU)
Contact at facility	Melissa Ivancevich Senior Wastewater Policy & Regulatory Advisor 206-496-9933 melissa.ivancevich@seattle.gov
Responsible official	Andrew Lee General Manager/CEO PO Box 34018, Seattle, WA, 98124-5177 206-684-3000 Andrew.lee@seattle.gov
Discharge waterbody name and location (NAD83/WGS84 reference datum)	See Appendix E

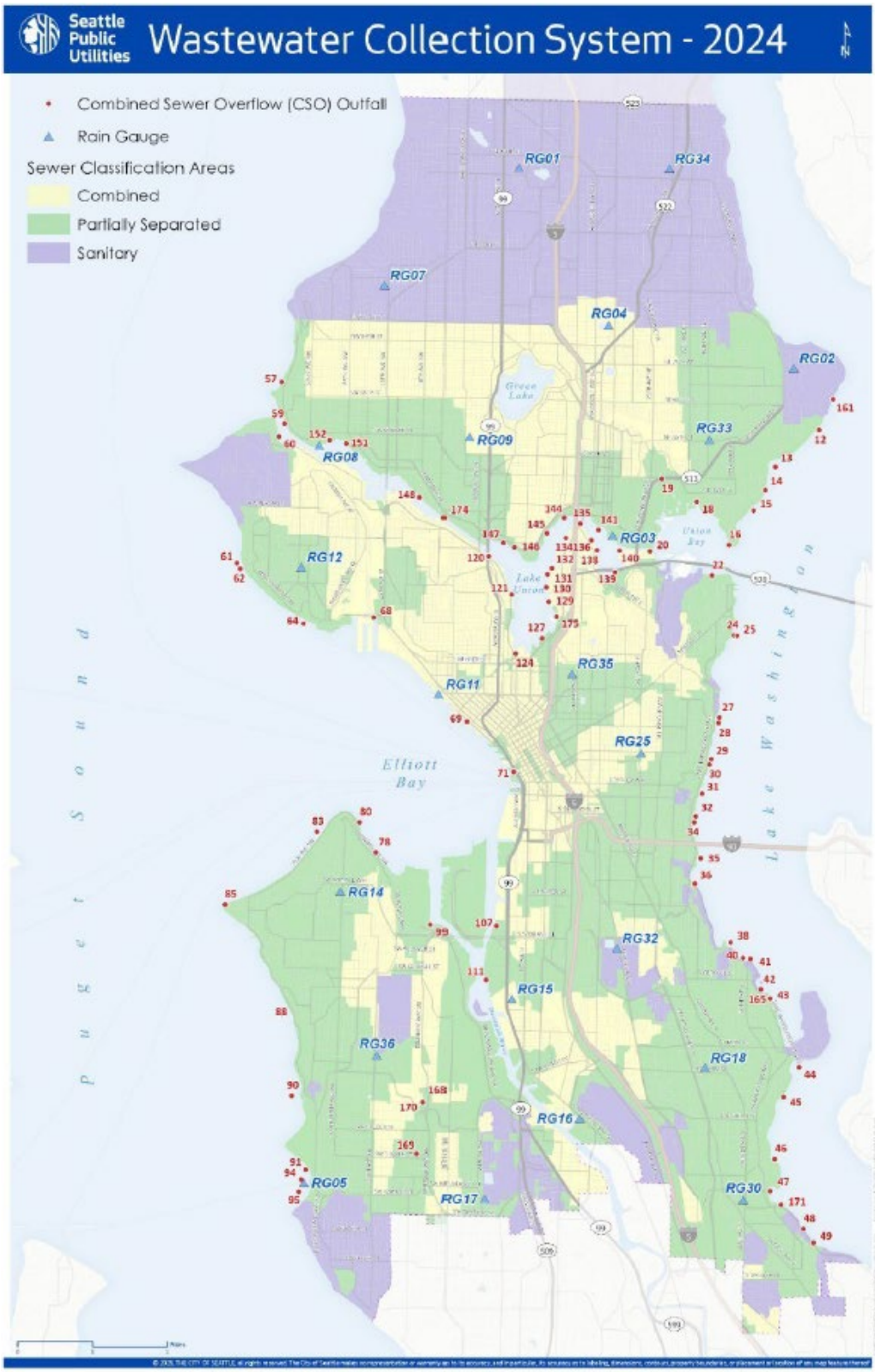
Permit status

Renewal date of previous permit: May 1, 2016 (Modified on September 28, 2017)

Application for permit renewal submittal date: August 31, 2020

Date of Ecology acceptance of application: December 30, 2020

Figure 1 - System and Outfall location map



II.A. Facility description

II.A.1. History

SPU, a department within the City of Seattle (Seattle), owns and operates combined sewage collection systems within the Seattle city limits. Combined sewer systems (CSS) are sewers that are designed to collect rainwater runoff, domestic sewage, and industrial wastewater in the same piping system. Typically, combined sewer systems transport all wastewater to a sewage treatment plant, where it is treated and then discharged to a water body. During heavy rainfall or snowmelt, however, the wastewater volume in a combined sewer system can exceed the capacity of the combined sewer system or treatment plant. For this reason, combined sewer systems are designed to overflow occasionally and discharge excess wastewater directly to nearby streams, rivers, or other water bodies.

Seattle's CSS dates from the 1890s, when cities typically used a common sewer system for sanitary sewage and storm drainage. Current operation and maintenance responsibility for combined sewers within Seattle's city limits depend on the service area size. SPU operates and maintains combined collection systems serving areas of up to 1000 acres in size within the city limits. King County Department of Natural Resources and Park's Wastewater Treatment Division (KC-WTD) operates and maintains sewer trunk lines serving areas greater than 1000 acres. KC-WTD also operates and maintains the wastewater and CSO treatment plants that serve the region. This proposed permit regulates combined sewer systems operated and maintained by SPU. Ecology separately regulates the combined sewer system under KC-WTD's responsibility under NPDES permit # WA0029181 (King County – West Point WWTP).

SPU has made significant progress towards CSO control since the 1980s by implementing several projects involving the maintenance and modification of existing sewer facilities. Additionally, SPU constructed diversion structures and storage facilities. In total, these projects resulted in approximately 75% reduction in volume of discharged combined sewage.

A 2007 field audit by the U.S. Environmental Protection Agency (EPA) concluded that SPU violated state and federal regulations related to CSOs and sanitary sewer overflows. To resolve allegations from this audit, the City of Seattle entered into a consent decree in 2013 with EPA, Ecology, and the U.S. Department of Justice (DOJ) that outlined actions necessary to bring SPU's CSO program into compliance with the Clean Water Act. This consent decree was modified in 2025 to extend the completion date for some of the projects from 2030 to 2037 and commit the city and county to significant increases in wastewater storage and treatment capacity. The consent decree (Civil Action Number 2:13-cv-678) identifies requirements for planning and constructing CSO control projects along with requirements to make necessary collection system improvements to reduce unpermitted overflows.

II.A.2. CSO Program Status

Ecology required municipalities to develop combined sewer overflow (CSO) reduction plans according to requirements in chapter 173-245 WAC. The plans documented how the municipality planned to reduce the discharge frequency of each CSO outfall to a performance standard of no more than one untreated discharge per year, on average. These plans are substantially equivalent to the long-term control plan (LTCP) as defined by EPA's CSO control policy (59 FR 18688).

The following lists the major CSO reduction planning documents completed by SPU since 1980:

- 1980 Facility Plan – This plan represented the City's initial CSO reduction endeavor by proposing and implementing various storage projects.
- 1988 CSO Control Plan – This plan proposed and implemented various sewer separation projects and storage projects.
- 2001 CSO Reduction Plan Amendment – This plan proposed implementing various best management practices (BMPs) to reduce the volume of CSOs before implementing additional storage projects. This plan also reevaluated previously studied areas of Seattle and expanded the evaluation to include previously unstudied areas.
- 2005 CSO Reduction Plan Amendment Update – This plan evaluated impacts of implemented BMPs at a selection of sites identified in the 2001 CSO Reduction Plan Amendment. The plan used the evaluation to revise cost and schedule estimates for implementing BMPs at the remaining sites identified in the 2001 amendment.
- 2010 CSO Reduction Plan Amendment – This plan proposed various CSO reduction projects for all remaining uncontrolled CSO outfalls.
- 2015 Plan to Protect Seattle's Waterways – SPU developed this plan to satisfy requirements of a 2013 Consent Decree that require development and implementation of a long-term control plan. This plan represents the final plan to control all remaining uncontrolled CSO outfalls. This plan also includes an Integrated Approach element that defers completion of six CSO control projects in exchange for implementing of three stormwater only projects that provide greater water quality benefit than the deferred CSO projects.
- 2016 Joint Operations and System Optimization Plan (JOSOP) – This plan formalizes the collaborative efforts/activities of KC-WTD and SPU to ensure compliance, maximize the capture and treatment of flows, and reduce the overall operating costs for ratepayers. The plan has been revised several times since its issuance including in 2019 and, most recently, in February 2022.

- 2020 Plan to Protect Seattle's Waterways Amendment – This plan updated the calculation methodology for assessing control status of outfalls to a 20-year average.

In 2022, SPU began an LTCP Update process. In 2023, SPU also began a Coordinated Optimization Evaluation (COE) effort with King County. The COE will inform SPU's LTCP Update as well as the 2016 JOSOP. The draft LTCP Update is expected to be complete by December 31, 2026 and the JOSOP is expected in by March 1, 2027.

SPU completed several CSO control projects since 2015 including:

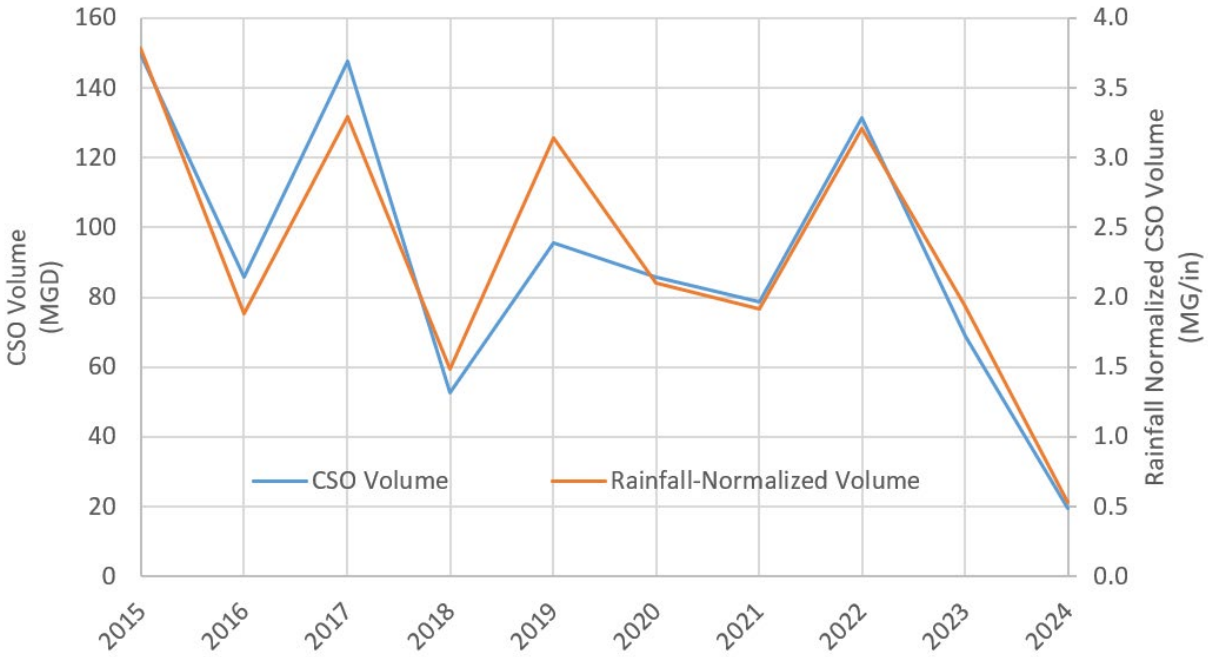
- Construction of 0.5-million-gallons of storage in the Genesee basin intended to control outfalls 40, 41, and 43.
- Construction of a 2.65-million-gallon storage facility at North Henderson intended to control outfalls 44 and 45.
- Removing outfalls 70 and 72 from service by installing approximately 2,000 feet new sewer line
- Installing and upsizing approximately 1,500 feet of sewer and installing 0.25-million-gallons of storage in West Beacon Hill to reduce basement backups and stormwater flooding

In total, these projects and others helped SPU to control seven CSO outfalls bringing their total number of uncontrolled outfalls down to 32 in 2024 from 39 in 2017. SPU is also nearing completion on its largest control project, the Ship Canal Water Quality Project which is designed to control four of their largest remaining uncontrolled outfalls. Finally, SPU has made significant progress on design and land acquisition for their South Park stormwater improvement project.

As shown in Figure 2 below, both the total volume of combined sewage discharged by SPU's outfalls as well as the rainfall-normalized volume[1] has been trending lower from 2015 to 2024. The clear correlation between total CSO volume and rainfall-normalized volume indicates that primary cause of discharges is wet weather and not increased domestic volumes.

[1] Rainfall-normalized volume is calculated by dividing the total volume of combined sewage discharged with in a year by the total rainfall for that same year.

Figure 2 - CSO Volume and Rainfall-Normalized Volume for 2015-2024



II.A.3. Collection system status

SPU's collection system includes gravity sewage pipelines, pump stations, force mains, CSO outfalls, and CSO control facilities. SPU's collection system contains over 1,400 miles of gravity sewers with pipes ranging from 4 to 144 inches in diameter, of which approximately 62 percent are 8-inch collector pipes. The average age of the collection system piping is 75 years. Approximately one-third of the system is combined, one-third partially separated, and one-third fully separated.

SPU set a performance target for itself of no more than four SSOs per 100 miles of sewer per year (based on a two-year moving average). SPU met this performance mark every year since 2013 with the last two years reporting years (2023 and 2024) being significantly lower than the target at 2.3 and 1.8 SSOs per 100 miles of sewer, respectively. SPU relies upon their Capacity, Management, Operations, and Maintenance (CMOM) to achieve this performance target. Further information on the CMOM program is provided in Section II.D.4.

II.A.4. Treatment process

SPU does not own wastewater or CSO satellite treatment plants. All sewage collected by SPU's sewer system transfers to KC-WTD facilities for conveyance and treatment at a regional treatment facility or satellite CSO treatment plant or discharges untreated through one of the CSO outfalls. Wastewater collected by SPU's system is treated at two regional secondary wastewater treatment plants owned and operated by KC-WTD (West Point WWTP and the South WWTP). During storm events, combined sewer flows originating from SPU's system may be

treated at five satellite CSO storage and treatment facilities (Alki, Carkeek, Elliott West, Georgetown, and Henderson/MLK) also owned and operated by KC-WTD. Ultimately, the treated wastewater from these facilities discharge to either Puget Sound, Elliott Bay, or the lower Duwamish River. Ecology authorizes discharges from the KC-WTD facilities under separate NPDES permits.

II.A.5. Solid wastes and residual solids

SPU is responsible for managing all solids removed from their system (e.g. via vacuum truck during cleaning) as well as street sweeping solids collected. According to the planning documents for SPU's *Shape our Water* project, street sweeping results in approximately 320,000 pounds of solids annually which are disposed via landfill.

Solids entrained in SPU's wastewater flows that are conveyed to King County are managed by King County's secondary wastewater treatment plants for treatment. King County's treatment system includes screening solids from the wastewater. The solids are then washed and compacted prior to disposal in a landfill.

II.A.6. Discharge outfalls

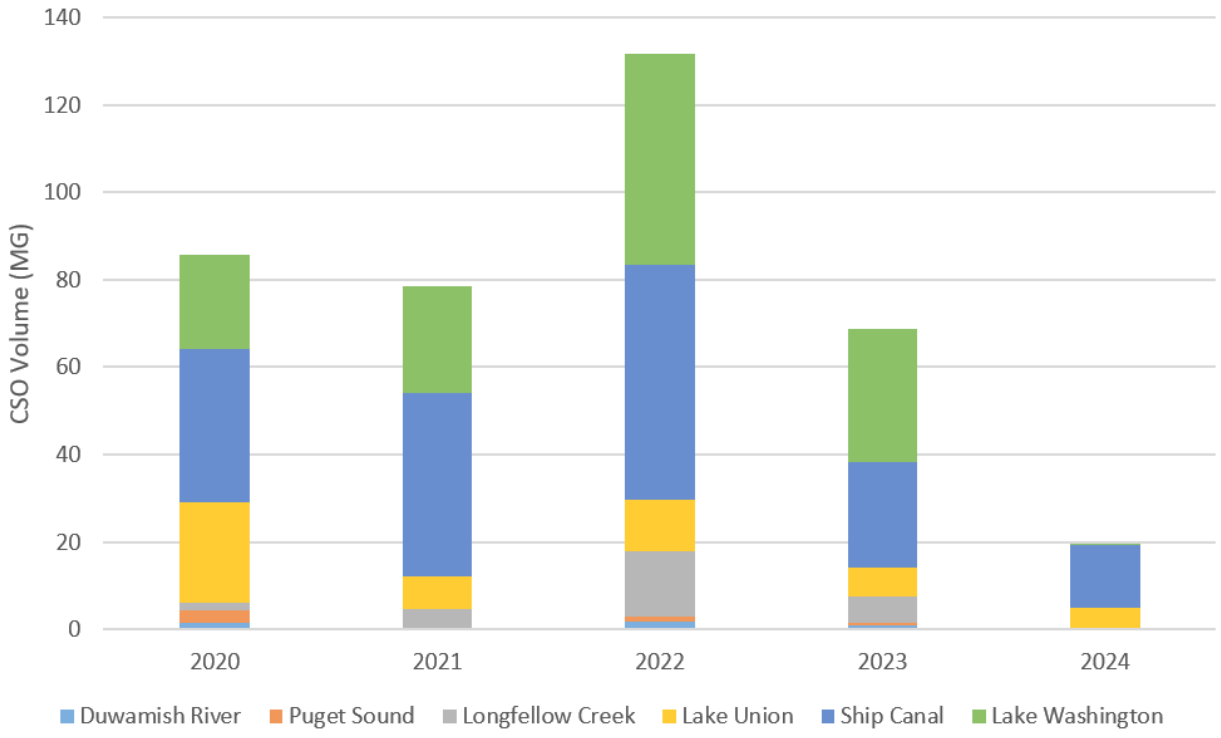
The proposed permit authorizes CSO discharges from 82 individual outfall pipes. Each outfall pipe varies in its configuration in terms of depth and distance from shore. Appendix D lists data about each of the outfalls, including the identification number, the receiving waterbody, and the latitude and longitude of the discharge into the receiving water. Figure 1 shows the location of all active CSO outfalls as mapped in SPU's geographic information system (GIS).

As part of the previous permit, SPU was required to conduct an underwater analysis of five previously uninspected outfalls as well as a desktop evaluation of all CSO outfalls to assess their physical condition and determine the need for rehabilitation. In October 2020, SPU submitted their CSO Outfall Rehabilitation Plan: Program Years 2021-2026 detailing the inspection results and plan for future work. SPU conducted in-water inspections of 18 outfalls and concluded that 10 outfalls required either reinspection or rehabilitation. SPU initiated cleaning and planning activities for several outfalls but encountered longer than anticipated Army Corps of Engineers permitting timelines and were required to change the scope of some outfall work due to Washington Department of Fish and Wildlife determinations. As a result of these unexpected complexities, SPU submitted a revision to their CSO Outfall Rehabilitation Plan in 2022. The 2022 Amended CSO Outfall Rehabilitation Plan, reaffirmed their commitment to cleaning and inspecting eight outfalls as well as repairing/rehabilitating two outfalls but removed reference to specific outfalls to provide greater operational flexibility. The rehabilitation strategy detailed in the amended plan informed the requirements of Condition S8 in the draft permit.

II.B. Description of the receiving waters

The CSO outfalls from SPU's system discharge to six distinct receiving waterbodies. As shown below in Figure 3, the majority of SPU's discharge by volume is to either Lake Washington (including Union Bay) and the Ship Canal (including Salmon Bay). In addition to SPU combined sewer outfalls, there are many nearby point source outfalls include wastewater treatment facilities and direct industrial discharges in the vicinity of SPU's outfalls. Significant nearby non-point sources of pollutants include stormwater runoff, industrial runoff, and maritime uses. There are no drinking water intakes in the vicinity of SPU's outfalls. Sections III.D, III.E, and III.F of this fact sheet describes how Ecology considered receiving waterbody impairments while developing the conditions with the draft permit.

Figure 3 - CSO Volume by Waterbody 2020-24



II.C. Wastewater characterization

The previous permit did not require monitoring of the concentration of pollutants in the CSO discharges for the NPDES application or the monthly discharge monitoring reports. SPU conducted a supplemental CSO characterization study between 2007 and 2010, as required by the permit in effect at that time. The Seattle Combined Sewer Overflow Supplemental Characterization Study (May 2010) revealed the following general characteristics of SPU's system:

- Concentrations of fecal coliform and ammonia nitrogen were higher at sites which tended to overflow frequently.
- Concentrations of ammonia, fecal coliform, total copper, total zinc were lower when compared to a recent King County regional characterization study.
- Concentrations of dissolved copper, dissolved zinc, and bis(2-ethylhexl) phthalate were lower than those from the recent King County study.
- Concentrations of dissolved copper and zinc were consistent across sampling sites.
- Fluoranthene and phenanthrene were identified as specific parameters to test for but were not detected in samples.

II.D. Summary of compliance with previous permit issued March 30, 2016

The previous permit issued on March 30, 2016, and modified on September 28, 2017, conditionally authorized SPU to occasionally discharge untreated combined sewage from its CSS at specific outfall locations. The permit limited CSO discharges to an average of no more than once per year, per controlled outfall (see discussion of "performance standard" in section II.D.1 of this Fact Sheet). In addition, the permit prohibited discharges during dry weather (dry weather overflow or DWO) or at locations other than at designated outfalls. The permit also established requirements for SPU to implement several best management practices (BMPs) intended to minimize pollutants in the untreated CSO discharges, take steps to complete projects necessary to reduce CSOs, as well as monitor discharges and submit reports to Ecology.

The following sections summarizes SPU's compliance with the previous permit requirements. Ecology assesses compliance based on monthly discharge monitoring reports (DMRs), as-needed reports of unauthorized overflows, annual CSO reports, and other written reports.

II.D.1. Compliance with performance standard

Ecology defines control as complying with the performance standard of no more than an average of one untreated discharge per year, per outfall. The previous permit identified 51 of 85 outfalls as "controlled". In their 2024 Annual CSO Report, SPU reported that 50 of their 82 outfalls were controlled.

As comparted to their 2016 Annual CSO Report, in 2024 SPU reported 11 outfalls now controlled (18, 20, 22, 29, 35, 36, 44, 45, 62, 99, and 138), 3 outfalls removed from service (33, 70, and 72) and 6 outfalls that were controlled in 2016 but are now no longer meeting the performance standard (15, 38, 59, 68, 135, and 165). Four of the newly uncontrolled outfalls discharge less than 1.5 times per year on average and a plan for control will be incorporated into SPU's draft revised LTCP which Ecology expects to receive by December 31, 2026. SPU has incorporated Outfall 15, which discharges 2.3 times per year on average, into the joint KC-WTD and SPU University project. Ecology expects to receive a draft control strategy in the form of an engineering report for the University project by December 31, 2029. Finally, Outfall 135 became uncontrolled in 2024 and SPU is still investigating the cause and potential solutions.

In general, SPU has made progress eliminating and controlling outfalls, but significant work remains to complete their ongoing control projects (e.g. the Ship Canal Water Quality Project) and future projects (e.g. University and Montlake).

II.D.2. Compliance with discharge prohibitions

SPU has not consistently complied with the permit conditions related to discharge prohibitions throughout the duration of the permit. Non-compliances associated with discharge prohibitions are group into three categories and shown in Table 23 - Violations below. The majority of the violations are associated with sanitary sewer overflows from maintenance holes, pump stations or other portions of the collections system, or are associated with backups into buildings due to problems in SPU pipes. Since much of SPU's collection system operates as a combined sewer system, the rate of overflows, and thus violations, is influenced by the rainfall in any given year. However, other operational or structural factors often contribute to the reported overflows. SPU's annual reports document the primary causes of overflows as roots and structural failures of gravity lines.

Table 2 - Violations

Year	Dry Weather Overflows	Sanitary Sewer Overflows	Sewer Overflows into Buildings
2016	2	9	21
2017	0	16	20
2018	0	11	9
2019	3	16	22
2020	1	23	65
2021	2	23	28
2022	1	25	23
2023	0	12	18
2024	1	26	12

II.D.3. CSO reduction project compliance

Several interim milestones from SPU's 2015 Long Term Control Plan (LTCP) were included in the previous permit as compliance schedule elements. The following table summarizes SPU's compliance with document submittals required by compliance schedules in the previous permit.

Table 3 - Permit submittals required by S8 of previous permit

Submittal name	Due date	Received date
A. West Ship Canal Tunnel – Outfalls 147, 150, 151, 152, and 174	--	--
West Ship Canal Tunnel Final Engineering Report	12/31/2017	4/11/2017
West Ship Canal Tunnel 90% Draft Plans & Specifications	3/31/2020	5/30/2018
West Ship Canal Tunnel Final Plans & Specifications	12/31/2020	6/19/2019
Completion Notice - Outfall 151		4/25/2019
B. Central Waterfront Storage – Outfall 69	--	--
Central Waterfront Storage Project Draft Engineering Report	6/30/2019	6/26/2019
Central Waterfront Storage Project Final Engineering Report	12/31/2019	12/20/2019
C. Sewer System Improvement Projects	--	--
Scope Of Work for Leschi Sewer System Improvements	3/31/2017	4/6/2017
Completion Notice - Leschi Sewer System Improvements	12/29/2017	4/6/2017
Scope Of Work for North Union Bay Sewer System Improvements	3/30/2018	9/7/2017
Completion Notice - North Union Bay Sewer System Improvements	12/31/2018	9/27/2018
Scope Of Work for Delridge Sewer System Improvements	3/29/2019	5/24/2018
Completion Notice - Outfall 99 Rehabilitation	3/29/2019	12/4/2018
Completion Notice - Delridge Sewer System Improvements	12/31/2019	12/9/2019
Scope Of Work for Montlake Sewer System Improvements	3/31/2020	10/9/2017
Scope Of Work for East Waterway Sewer System Improvements	3/31/2020	9/8/2017
Scope Of Work for Magnolia Sewer System Improvements	3/31/2020	5/23/2017
Scope Of Work for Portage Bay Sewer System Improvements	3/31/2020	10/9/2017
Completion Notice - Montlake Sewer System Improvements	12/31/2020	8/10/2020
Completion Notice - East Waterway Sewer System Improvements	12/31/2020	10/30/2020
Completion Notice - Magnolia Sewer System Improvements	12/31/2020	12/11/2020
Completion Notice - Portage Bay Sewer System Improvements	12/31/2020	12/18/2020
D. Integrated Plan Projects	--	--
Notification of Construction Start - NDS Partnering	7/17/2019	5/9/2019
Completion Notice - Street Sweeping Expansion Post-Construction Monitoring	9/30/2019	3/27/2019
E. Outfall Rehabilitation Projects	--	--
Completion Notice - Outfall 174 Rehabilitation	3/31/2017	4/12/2017
Completion Notice - Outfall 171 Rehabilitation	12/31/2019	12/31/2019
Outfall Rehabilitation Plan and Inventory	10/30/2020	10/16/2020

II.D.4. Compliance with nine minimum controls

The Federal CSO Control Policy requires municipalities with combined sewer systems to implement nine measures that help reduce the number and volume of combined sewage overflows without extensive engineering studies or significant construction costs. The following paragraphs, which are derived from SPU's 2024 CSO Annual Report, describe the City's typical annual efforts taken to comply with each control measure.

1. Provide system operations & maintenance

Each year SPU performs extensive system O&M activities to reduce the frequency and volume of preventable overflows. Routine maintenance activities include sewer inspections, cleaning, and nonemergency point repairs; catch basin inspection, cleaning, and repairs; control structure and storage structure cleaning; valve and flap gate inspection, cleaning, lubricating, and servicing; and pump station electrical, mechanical, and facilities inspection and servicing. 2024 O&M accomplishments are summarized in Table 4 below. Notably, in 2024, SPU inspected approximately 18% of total mainline pipe (by length) and cleaned approximately 17%.

Table 4 - 2024 O&M Accomplishments

Activity	Quantity
Miles of mainline pipes cleaned	241.27
Miles of wastewater mainline pipes CCTV	261.30
Number of pump station inspections	1,749
Number of maintenance holes inspected	85
Number of CSO structures inspections	270
Number of CSO structures cleanings	408
Number of CSO HydroBrake inspections	195
Number of CSO HydroBrake cleanings	19
Linear ft of pipe receiving chemical treatment to inhibit root intrusion	106,299
Number of catch basins inspected	13,146
Number of catch basins cleaned	1,798
Number of catch basin repaired	18
Number of catch basin traps replaced	84

2. Maximize storage of flows

SPU maximizes storage in its collection system through a multi-faceted approach that includes:

- Regular collection system maintenance, so that existing capacity is available during storm events;
- Ongoing monitoring and evaluation of storage use during storms.
- Modification of storage facilities whose existing capacity is not fully utilized;
- Increasing the height of overflow weirs, when doing so increases collection system storage capacity without creating backups; and
- Eliminating excessive inflow and infiltration.

In the past few years, this has included replacement and logic improvements at key sluice gates in Delridge and Portage Bay sewage basins as well as rehabilitation of pumps in Magnolia and Montlake neighborhoods. For Genesee and Windermere basins storage facilities, SPU made logic updates to optimize storage facilities.

3. Control nondomestic sources

Two important programs are implemented to help control nondomestic discharges into the Seattle sewer system: The Fats, Oils, and Grease (FOG) Control Program and the Industrial Pretreatment Program. SPU Wastewater Source Control administers the City's FOG Control Program. The purpose of the Fats, Oils, and Grease Control Program is to reduce the number of FOG-related sanitary sewer overflows by developing and implementing a FOG Control Program Plan. The four basic elements of the FOG Control Plan are:

- Implement the FOG Management Plan;
- Implement the Food Service Establishment (FSE) Inventory Management Plan;
- Update and implement Standardized Operating Procedures (SOPs) and Engagement Plan; and,
- Conduct FOG Inspector Training.

In 2024, the SPU FOG team refined its messaging by gathering feedback from residents and field crews as well as testing new outreach strategies, including digital advertising. SPU engaged with over 2,300 residents at community events, aired two 30-second commercials during the holidays, presented FOG education sessions to community-based organizations, distributed over 5,000 educational flyers, and engaged with 432 shoppers at grocery store shoppers during the holiday season.

The Industrial Pretreatment Program is administered by King County Wastewater Treatment Division - Industrial Wastewater Program (KCIW). SPU supports KCIW's efforts by reviewing pretreatment permits for industrial facilities, monitoring collection system CCTV footage to assess impacts, collaborating with KCIW on unknown-source discharges, referring problematic discharges to KCIW for enforcement or permit modification.

4. Maximize flows to the treatment plant

SPU maximizes flow to the treatment plant by ensuring proper O&M of their system, maximizing storage of flow, and by providing ongoing system performance monitoring and analysis. SPU's Control Center is staffed 24 hours a day and receives real-time Supervisory Control & Data Acquisition (SCADA) information. Control Center staff respond to any CSS facility and pump station alarms that indicate a drop in performance or other problem. In addition, SPU monitors pump station, overflow structure, and outfall flow data as it is collected and uses the data to detect maintenance issues that may be affecting system performance.

In 2023, SPU completed a rehabilitation project at Wastewater Pump Station 38 (West Seattle) and a force main rehabilitation project at Wastewater Pump Station 39 (West Seattle). Each project is expected to decrease the frequency and volume of CSOs and maximize flows to the treatment plant.

5. Prevent dry weather overflows (DWOs)

To help prevent DWOs, each combined sewer system overflow location is configured with an alarm that is triggered if there is a likely overflow condition. The alarm alerts analysts and/or field crews to assess the situation and take corrective action, if possible. In addition, whenever SPU experiences a DWO, SPU investigates to identify the cause and takes action to reduce the possibility of recurrence. There was one DWO in 2024.

To reduce the recurrence of DWOs, SPU:

- Conducts annual refresher training for machinists, which includes tabletop exercises;
- Conducts facility training for operations control center staff;
- Conducts weekly facility performance reviews for CSOs and pump stations;
- Implements early warning level alarms optimization; and,
- Conducts pre-storm inspections and cleaning.

6. Controls solids and floatable material

SPU implements several measures to control floatables, as summarized in the following paragraphs. Catch basins are designed to prevent floatables from entering the system. Specifically, SPUs catch basins are designed to overflow only when the water level in the catch basin is well above the overflow pipe opening. Because floatables remain on the water surface, they are trapped in the catch basins. Catch basins are inspected and cleaned regularly to remove debris and potential floatables. Catch basin inspection, cleaning, and rehabilitation metrics are included in Table 4.

In addition to catch basin design, SPU runs several solid waste and city cleanup programs to prevent and reduce the amount of street litter. In 2024, these programs expanded its efforts to a more comprehensive drain care initiative starting with distributing 2,754 surveys to hot spot neighborhoods to assess resident knowledge and current behaviors. Following this survey, SPU conducted 110 single family home and 47 multifamily properties to provide educational materials.

7. Prevent pollution

SPU has a developed pollution prevention program that has been in place since the early 2000's. The program includes several key elements: source control, public education, street sweeping, and prevention of illegal dumping. The program is authorized by the City of Seattle Stormwater Code and Side Sewer Code. The program implements the following source control actions in the City's combined sewer basins:

- Spill Response
- Water Quality Complaint Investigations
- Business Inspections
- Stormwater Facility Inspections

SPU's public education programs include spring clean, green cleaning, surface water pollution report line, event recycling, and reduce, reuse, and recycle tips. In 2021, SPU relaunched its Adopt-a-Drain program to reinvigorate engagement with pollution prevention.

In 2023, SDOT street sweeping crews swept 10,200 miles in the SPU combined sewer area, removing 1,300 short dry tons of debris. Crews also removed more than 728,104 pounds of debris from public property with 100% of dumping complaints addressed within 10 days.

Finally, the previous permit expanded the pollution prevention requirements in the CSS to include implementation of stormwater BMPs in these basins. SPU revised the City's Stormwater Manual in 2021 and has expanded use of stormwater BMPs including:

- Ensuring properties and business store solid waste properly
- Improving site maintenance at properties where materials may come into contact with stormwater (e.g. covering materials, sweeping, etc.)
- Enforcing mobile and stationary fueling operational standards
- Implementing concrete and asphalt production and application source control measures.

8. Notify the public

SPU, together with Public Health – Seattle & King County (PH-SKC), maintain a sewage overflow notification and posting program for Seattle's CSO outfalls. Signs at each outfall identify the outfall and warn of possible sewage overflows. The signs are printed in multiple languages and include the phone number for the CSO Hotline operated by PH-SKC. SPU coordinates with PH-SCK to post public notifications in areas impacted by SSOs or other prohibited discharges of sewage. PH-SKC also provides a website with detailed information about CSOs, potential public health hazards, and precautions the public may take to protect themselves.

Additionally, KC-WTD hosts a website that provides real-time notification of recent and current CSO overflows from Seattle and King County outfalls. In 2024, SPU and DNRP began coordinating on improvements to the CSO discharge alert system, per the request of Ecology.

9. Monitor CSO effluent for pollutants

The ninth control requires monitoring of CSO outfalls to characterize the quality of the combined sewage discharged during CSO events and to evaluate the effectiveness of CSO controls. SPU monitors each of its CSO outfalls to detect sewage overflows. It also tracks the performance of its flow monitors to ensure consistent, high-quality measurements.

SPU also implements a CSO Post Construction Monitoring Program to verify the effectiveness of controls and to validate that controlled CSOs comply with the state's water quality standards. Since the issuance of the previous permit in 2016, SPU conducted sediment sampling at two outfalls (Outfall 95 and Outfall 44) and water quality observations at three outfalls (Outfalls 95, 44, and 68) as part of its post-construction compliance monitoring. Water quality observations conducted at all three outfalls did not find any evidence of materials or odors indicative of sanitary sewage thus the primary contact recreation use at all sites is not considered impacted.

At Outfall 95, located near Fauntleroy, all in-situ sediment sample had no concentrations of pollutants above the relevant marine sediment management standards (SMS). At Outfall 44, located near Seward Park, all in-situ sediment sample concentrations were below the freshwater CSLs, with the exceptions of total sulfides and silver. Furthermore, the reported concentrations of benzoic acid, phenol, and pentachlorophenol were ambiguous as to whether the concentrations were above the CSLs. At Outfall 68, located on the south end of Interbay, unbeknownst to SPU at the time the Final PCMP was submitted the area around the outfall is within the study/clean-up area for the Port of Seattle. The historical pollution from the nearby Port of Seattle property makes it difficult to assess if CSO sediments from Outfall 68 have the potential to cause or contribute to violations of the SMS.

II.E. State environmental policy act (SEPA) compliance

State law exempts the issuance, reissuance or modification of any wastewater discharge permit from the SEPA process as long as the permit contains conditions that are no less stringent than federal and state rules and regulations (RCW 43.21C.0383). The exemption applies only to existing discharges, not to new discharges.

III. Proposed permit limits

Federal and state regulations require that effluent limits in an NPDES permit must be either technology- or water quality-based.

- Technology-based limits are based upon the treatment methods available to treat specific pollutants. Technology-based limits are set by the EPA and published as a regulation, or Ecology develops the limit on a case-by-case basis (40 CFR 125.3, and chapter 173-220 WAC).
- Water quality-based limits are calculated so that the effluent will comply with the Surface Water Quality Standards (chapter 173-201A WAC), Ground Water Standards (chapter 173-200 WAC), Sediment Quality Standards (chapter 173-204 WAC), or the Federal Water Quality Criteria Applicable to Washington (40 CFR 131.45).
- Ecology must apply the most stringent of these limits to each parameter of concern. These limits are described below.

The limits in this permit reflect information received in the application and from supporting reports (engineering, hydrogeology, etc.). Ecology evaluated the permit application and determined the limits needed to comply with the rules adopted by the state of Washington. Ecology does not develop effluent limits for all reported pollutants. Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and do not have a reasonable potential to cause a water quality violation.

Ecology does not usually develop limits for pollutants not reported in the permit application but may be present in the discharge. The permit does not authorize discharge of the non-reported pollutants. During the permit term, if the facility's effluent discharge conditions may change from those conditions reported in the permit application. The facility must notify Ecology if significant changes occur in any constituent [40 CFR 122.42(a)]. Until Ecology modifies the permit to reflect additional discharge of pollutants, a permitted facility could be violating its permit.

Compliance with this permit constitutes reasonable progress towards complying with WAC 173-245. EPA and Ecology also rely on the provisions within the 2025 modified Consent Decree to ensure SPU continues to make progress toward controlling all of the City's CSO outfalls.

III.A. Technology-based limits for CSOs

Chapter 173-245 WAC and EPA's CSO control policy (59 FR 18688 and 33 USC §1342(q)) identify the required measures for control of overflows from combined sewer systems. The following describes the state and federal CSO control standards that form the technology-based limits for CSO discharges.

III.A.1. Compliance with Performance Standard

Ecology defines the technology-based performance standard for controlled CSOs as achieving a discharge frequency of no more than one discharge per year, on average, for each outfall. Once achieved, Chapter 173-245-015 WAC requires municipalities to maintain compliance with this standard. The proposed permit defines the means of assessing compliance with the standard and identifies adaptive management procedures SPU must take if a previously controlled outfall fails to maintain compliance.

Averaging period and compliance: The proposed permit specifies assessing compliance with the performance standard each year based on a 20-year averaging period. This assessment uses the actual number of discharges monitored during each year following completion of CSO projects along with the number of discharges estimated by a calibrated hydraulic model for the years prior to completing the control project. The proposed permit requires SPU to report the calculated 20-year moving average in an annual report to document compliance with the performance standard.

Adaptive Management: The proposed permit uses an adaptive management process to address potential noncompliance with the CSO performance standard. This process starts with comparing the results of annual calculations of the 20-year moving average number of discharges with the performance standard of no more than one discharge per year. Ecology considers any previously controlled outfall that fails to meet the performance standard for two consecutive years as a potential violation of the standard. If this occurs, the adaptive management process requires SPU to take corrective actions. Acceptable actions may range from verifying monitoring accuracy to developing and constructing new structural control projects. The proposed permit requires the development of a corrective action plan specific to each outfall that requires correction to explain the actions SPU will or has taken to restore compliance. This plan must include the anticipate the scope and schedule for corrective work. The proposed permit also relies on the CSO annual report as the means of documenting the effectiveness of the selected corrective actions.

III.A.2. Nine minimum controls

Municipalities with combined sewer overflow outfalls must implement nine minimum controls as technology-based standards for CSO discharges. The nine minimum controls are largely programmatic policies and practices designed to minimize the impacts untreated CSOs have on human health and the environment.

The nine minimum controls include:

- Use proper operations and maintenance practices within the combined collection system to reduce the magnitude, frequency, and duration of CSOs.

- Implement procedures that maximize storage capacity of the combined collection system.
- Minimize pollution from non-domestic wastewater sources through close management of a pretreatment program.
- Maximize treatable flow to the wastewater treatment plant during wet weather.
- Prevent CSO discharges during dry weather and properly report any dry weather CSO discharges immediately to Ecology.
- Implement procedures to control solid and floatable materials in CSOs.
- Implement and maintain a pollution prevention program designed to keep pollutants from entering the combined sewer system.
- Establish a process to notify the public when and where CSOs occur.
- Monitor CSO outfalls to characterize CSO impacts and the efficacy of CSO controls, including event-based monitoring of all CSO flow quantity, frequency and duration.

III.B. Surface water quality-based limits

The Washington State surface water quality standards (chapter 173-201A WAC) are designed to protect existing water quality and preserve the beneficial uses of Washington's surface waters. Waste discharge permits must include conditions that ensure the discharge will meet the surface water quality standards (WAC 173-201A-510). Water quality-based effluent limits may be based on an individual waste load allocation or on a waste load allocation developed during a basin wide total maximum daily load study (TMDL).

Chapter 173-245 WAC requires that “All CSO sites shall achieve and at least maintain the greatest reasonable reduction, and neither cause violations of applicable water quality standards, nor restrictions to the characteristic uses of the receiving water, nor accumulation of deposits which: (a) Exceed sediment criteria or standards; or (b) have an adverse biological effect.” “The greatest reasonable reduction” means control of each CSO outfall such that an average of no more than one untreated discharge may occur per year (see performance standard described under Section III.A). Ecology includes specific conditions in the proposed permit as well as in the 2025 modified Consent Decree to ensure that SPU continues to make progress towards meeting water quality goals for each CSO outfall in its system.

III.B.1. Numeric criteria for the protection of aquatic life and recreation

Numeric water quality criteria are listed in the water quality standards for surface waters (chapter 173-201A WAC). They specify the maximum levels of pollutants allowed in receiving water to protect aquatic life and recreation in and on the water. Ecology uses numeric criteria along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit.

When surface water quality based limits are more stringent or potentially more stringent than technology-based limits, the discharge must meet the water quality-based limits.

III.B.2. Numeric criteria for the protection of human health

Numeric criteria for the protection of human health are promulgated in Chapter 173-201A WAC and 40 CFR 131.45. These criteria are designed to protect human health from exposure to pollutants linked to cancer and other diseases, based on consuming fish and shellfish and drinking contaminated surface waters. The water quality standards also include radionuclide criteria to protect humans from the effects of radioactive substances.

III.B.3. Narrative criteria

Narrative water quality criteria (e.g., WAC 173-201A-240(1)) limit the toxic, radioactive, or other deleterious material concentrations that the facility may discharge to levels below those which have the potential to:

- Adversely affect designated water uses.
- Cause acute or chronic toxicity to biota.
- Impair aesthetic values.
- Adversely affect human health.

Narrative criteria protect the specific designated uses of all fresh waters (WAC 173-201A-200) and of all marine waters (WAC 173-201A-210) in the state of Washington.

III.B.4. Antidegradation

The purpose of Washington's Antidegradation Policy (WAC 173-201A-300-330) is to:

- Restore and maintain the highest possible quality of the surface waters of Washington.
- Describe situations under which water quality may be lowered from its current condition.
- Apply to human activities that are likely to have an impact on the water quality of surface water.
- Ensure that all human activities likely to contribute to a lowering of water quality, at a minimum, apply all known, available, and reasonable methods of prevention, control, and treatment (AKART).
- Apply three tiers of protection (described below) for surface waters of the state.

  Tier I: ensures existing and designated uses are maintained and protected and applies to all waters and all sources of pollutions.

Tier II: ensures that waters of a higher quality than the criteria assigned are not degraded unless such lowering of water quality is necessary and in the overriding public interest. Tier II applies only to a specific list of polluting activities.

Tier III: prevents the degradation of waters formally listed as "outstanding resource waters," and applies to all sources of pollution.

A facility must prepare a Tier II analysis when all three of the following conditions are met:

- The facility is planning a new or expanded action.
- Ecology regulates or authorizes the action.
- The action has the potential to cause measurable degradation to existing water quality at the edge of a chronic mixing zone.

The facilities covered under this permit must meet Tier I requirements.

- Dischargers must maintain and protect existing and designated uses. Ecology must not allow any degradation that will interfere with, or become injurious to, existing or designated uses, except as provided for in chapter 173-201A WAC.
- For waters that do not meet assigned criteria, or protect existing or designated uses, Ecology will take appropriate and definitive steps to bring the water quality back into compliance with the water quality standards.
- Ecology's analysis described in this section of the fact sheet demonstrates that the proposed permit conditions will protect existing and designated uses of the receiving water.

III.B.5.Mixing zones

A mixing zone is the defined area in the receiving water surrounding the discharge port(s), where wastewater mixes with receiving water. Within mixing zones the pollutant concentrations may exceed water quality numeric standards, so long as the discharge doesn't interfere with designated uses of the receiving water body (for example, recreation, water supply, and aquatic life and wildlife habitat, etc.) The pollutant concentrations outside of the mixing zones must meet water quality numeric standards.

State and federal rules allow mixing zones because the concentrations and effects of most pollutants diminish rapidly after discharge, due to dilution. Ecology defines mixing zone sizes to limit the amount of time any exposure to the end-of-pipe discharge could harm water quality, plants, or fish.

The state's water quality standards allow Ecology to authorize mixing zones for permitted wastewater discharges only if those discharges already receive all known, available, and reasonable methods of prevention, control, and treatment (AKART). Mixing zones typically require compliance with water quality criteria within a specified distance from the point of discharge.

Water quality standards include both aquatic life-based criteria and human health-based criteria. The former are applied at both the acute and chronic mixing zone boundaries; the latter are applied only at the chronic boundary. The concentration of pollutants at the boundaries of any of these mixing zones may not exceed the numerical criteria for that zone.

Each aquatic life acute criterion is based on the assumption that organisms are not exposed to that concentration for more than one hour and more often than one exposure in three years. Each aquatic life chronic criterion is based on the assumption that organisms are not exposed to that concentration for more than four consecutive days and more often than once in three years.

The two types of human health-based water quality criteria distinguish between those pollutants linked to non-cancer effects (non-carcinogenic) and those linked to cancer effects (carcinogenic). The human health-based water quality criteria incorporate several exposure and risk assumptions. These assumptions include:

- A 70-year lifetime of daily exposures.
- An ingestion rate for fish or shellfish measured in kg/day.
- An ingestion rate of two and four tenths (2.4) liters/day for drinking water (increased from two liters/day in the 2016 Water Quality Standards update).
- A one-in-one-million cancer risk for carcinogenic chemicals.

This permit authorizes mixing zones for untreated CSO discharges, as allowed by Washington's surface water quality standards (WAC 173-201A-400(11)). This allowance provides a once per year exemption to the numeric size criteria as well as an exemption to the overlap restriction discussed in WAC 173-201A-400. However, the standards do not allow this mixing zone if doing so would create a condition that has a reasonable potential to cause a loss of sensitive our important habitat, substantially interfere with existing or characteristic uses, result in damage to the ecosystem, or adversely affect public health. The standards also limit this mixing zone allowance to only those CSO outfalls that comply with the requirements for "controlled" outfalls defined in WAC 173-245.

Appendix D of this fact sheet identifies the status of SPU's CSO outfalls. Section IV.A.2 describes the post-construction monitoring SPU must perform to validate discharges from controlled outfalls comply with applicable water quality standards. The conditionally-approved 2015 Post Construction Monitoring Plan for SPU's CSO Controls discusses the mixing zone eligibility for CSO outfalls and describes the proposed monitoring SPU will perform to validate compliance.

III.C. Designated uses and surface water quality criteria

Applicable designated uses and surface water quality criteria are defined in chapter 173-201A WAC. The tables included below summarize the criteria applicable to the receiving waters into which SPU's CSO outfalls discharge and the designated uses for those water bodies.

III.C.1. Freshwater aquatic life uses and associated criteria

Aquatic life uses are designated based on the presence of, or the intent to provide protection for the key uses. All indigenous fish and non-fish aquatic species must be protected in waters of the state in addition to the key species. The aquatic life uses for SPU's receiving waters are identified below.

Core summer salmonoid habitat criteria and designated uses apply to Lake Washington, Union Bay, Portage Bay, Lake Union, Lake Washington Ship Canal, and Salmon Bay up to the Chittenden Locks.

Table 5 - Core summer Salmonid habitat for Lake Washington, Lake Union, and Connected Waterways

Criteria	Value
Temperature – Highest 7-DAD MAX	16°C (60.8°F)
Dissolved oxygen	9.5 mg/L
Turbidity	• 5 NTU over background when the background is 50 NTU or less; or • A 10 percent increase in turbidity when the background turbidity is more than 50 NTU.
Total dissolved gas	Total dissolved gas must not exceed 110 percent of saturation at any point of sample collection.
pH	The pH must measure within the range of 6.5 to 8.5, with a human-caused variation within the above range of less than 0.2 units.

Salmonoid spawning, rearing, and migration criteria and designated uses apply to Longfellow Creek.

Table 6 - Salmonid spawning, rearing, and migration for Longfellow Creek

Criteria	Value
Temperature – Highest 7-DAD MAX	17.5°C (63.5°F)
Dissolved oxygen – Lowest 1-Day minimum	8.0 mg/L
Turbidity	• 5 NTU over background when the background is 50 NTU or less; or • A 10 percent increase in turbidity when the background turbidity is more than 50 NTU.
Total dissolved gas	Total dissolved gas must not exceed 110 percent of saturation at any point of sample collection.
pH	The pH must measure within the range of 6.5 to 8.5 with a human-caused variation within the above range of less than 0.5 units.

Recreational use and criteria
The recreational use for this receiving water is primary contact recreation. *E.coli* organism levels must not exceed a geometric mean value of 100 CFU or MPN per 100 mL, with not more than 10 percent of all samples (or any single sample when less than ten sample points exist) obtained within the averaging period exceeding 320 CFU or MPN per 100 mL.

Water supply uses
The water supply uses are domestic, agricultural, industrial, and stock watering.

Miscellaneous freshwater uses
The miscellaneous freshwater uses are wildlife habitat, harvesting, commerce and navigation, boating, and aesthetics.

III.C.2.Marine water aquatic life uses and associated criteria
SPU's CSO outfalls discharge to various marine waterways with different designated aquatic life use categories. The following describes the applicable aquatic life uses and the associated criteria for each receiving water area. All indigenous fish and non-fish aquatic species must be protected in waters of the state.

Extraordinary quality for Puget Sound

Aquatic life uses: salmonid and other fish migration, rearing, and spawning; clam, oyster, and mussel rearing and spawning; crustaceans and other shellfish (crabs, shrimp, crayfish, scallops, etc.) rearing and spawning.

Table 7 - Extraordinary quality criteria for Central Puget Sound

Criteria	Value
Temperature – Highest 1D MAX	13°C (55.4°F)
Dissolved oxygen – Lowest 1-Day minimum	7.0 mg/L
Turbidity	• 5 NTU over background when the background is 50 NTU or less; or • A 10 percent increase in turbidity when the background turbidity is more than 50 NTU.
pH	pH must be within the range of 7.0 to 8.5 with a human-caused variation within the above range of less than 0.2 units.

Excellent quality for Elliot Bay

Aquatic life uses: salmonid and other fish migration, rearing, and spawning; clam, oyster, and mussel rearing and spawning; crustaceans and other shellfish (crabs, shrimp, crayfish, scallops, etc.) rearing and spawning.

Table 8 - Excellent quality criteria

Criteria	Value
Temperature – Highest 1D MAX	16°C (60.8°F)
Dissolved oxygen – Lowest 1-Day minimum	6.0 mg/L
Turbidity	• 5 NTU over background when the background is 50 NTU or less; or • A 10 percent increase in turbidity when the background turbidity is more than 50 NTU.
pH	pH must be within the range of 7.0 to 8.5 with a human-caused variation within the above range of less than 0.5 units.

Good quality for Duwamish River

The state water quality standards (WAC 173-201A-602) designate the Duwamish River in the vicinity of outfalls 99, 107, and 111 for freshwater aquatic life uses of salmonid rearing, and migration and recreational use of secondary contact recreation. Although the standards assume a freshwater environment for the designated use, the standards also acknowledge that freshwater numeric criteria may not be appropriate in brackish estuaries. The standards include the following allowances in WAC 173-201A-260(3)(e):

> *In brackish waters of estuaries, where different criteria for the same use occurs for fresh and marine waters, the decision to use the fresh water or the marine water criteria must be selected and applied on the basis of vertically averaged daily maximum salinity, referred to below as "salinity." The fresh water criteria must be applied at any point where ninety-five percent of the salinity values are less than or equal to one part per thousand, except that the fresh water criteria for bacteria applies when the salinity is less than ten parts per thousand; and The marine water criteria must apply at all other locations where the salinity values are greater than one part per thousand, except that the marine criteria for bacteria applies when the salinity is ten parts per thousand or greater.*

Salinity levels in the Lower Duwamish Waterway typically exceed ten parts per thousand. Therefore, Ecology applies the marine numeric criteria associated with the freshwater designated uses established in Table 602 of the Water Quality Standards. The following table identifies the numeric criteria that apply to the Duwamish River in the vicinity of outfalls 99, 107, and 111.

Aquatic life uses: salmonid migration and rearing; other fish migration, rearing, and spawning; clam, oyster, and mussel rearing and spawning; crustaceans and other shellfish (crabs, shrimp, crayfish, scallops, etc.) rearing and spawning.

Table 9 - Good quality criteria

Criteria	Value
Temperature – Highest 1D MAX	19°C (66.2°F)
Dissolved oxygen – Lowest 1-Day minimum	5.0 mg/L
Turbidity	• 10 NTU over background when the background is 50 NTU or less; or • A 20 percent increase in turbidity when the background turbidity is more than 50 NTU.
pH	pH must be within the range of 7.0 to 8.5 with a human-caused variation within the above range of less than 0.5 units.

Shellfish harvesting use and criteria
To protect shellfish harvesting, fecal coliform organism levels must not exceed a geometric mean value of 14 colonies/100 mL and not have more than 10 percent of all samples (or any single sample when less than ten sample points exist) obtained for calculating the geometric mean value exceeding 43 colonies/100 mL.

Recreational use and criteria
The recreational use is primary contact recreation. Enterococci organism levels within an averaging period must not exceed a geometric mean of 30 CFR or MPN per 100 mL, with not more than 10 percent of all samples (or any single sample when less than ten sample values exist) obtained within the averaging period exceeding 110 CFU or MPN per 100 mL.

Miscellaneous marine water uses
The miscellaneous marine water uses are wildlife habitat, harvesting, commerce and navigation, boating, and aesthetics.

III.D. Evaluation of surface water quality-based effluent limits for narrative criteria

Ecology must consider the narrative criteria described in WAC 173-201A-260 when it determines permit limits and conditions. Narrative water quality criteria limit the toxic, radioactive, or other deleterious material concentrations that the facility may discharge which have the potential to adversely affect designated uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health.

Ecology considers narrative criteria when it evaluates the characteristics of the wastewater and when it implements all known, available, and reasonable methods of treatment and prevention (AKART) as described above in the technology-based limits section. When Ecology determines if a facility is meeting AKART it considers the pollutants in the wastewater and the adequacy of the treatment to prevent the violation of narrative criteria.

Ecology also considers narrative criteria when deciding to authorize mixing zones for CSO outfalls. As specified in WAC 173-201A-400(4), Ecology may not grant a mixing zone unless the supporting information clearly indicates the mixing zone would not have a reasonable potential to cause a loss of sensitive or important habitat, substantially interfere with the existing or characteristic uses of the water body, result in damage to the ecosystem, or adversely affect public health. As discussed in Section IV.A.2 of this fact sheet, the permit requires Post Construction Compliance Monitoring to verify that controlled CSO outfalls comply with applicable water quality standards, including narrative criteria. Post construction compliance monitoring may include modeling, ambient water quality and sediment monitoring and other efforts necessary to demonstrate that the controlled CSO discharge will not adversely impact sensitive species or interfere with characteristic uses of the receiving water.

III.E. Evaluation of surface water quality-based effluent limits for numeric criteria

Pollutants in an effluent may affect the aquatic environment near the point of discharge (near field) or at a considerable distance from the point of discharge (far field). Toxic pollutants, for example, are near-field pollutants; their adverse effects diminish rapidly with mixing in the receiving water. Conversely, a pollutant such as biological oxygen demand (BOD) is a far-field pollutant whose adverse effect occurs away from the discharge even after dilution has occurred. Thus, the method of calculating surface water quality based effluent limits varies with the point at which the pollutant has its maximum effect.

With technology-based controls (AKART), predicted pollutant concentrations in the discharge exceed water quality criteria. Ecology therefore authorizes a mixing zone in accordance with the geometric configuration, flow restriction, and other restrictions imposed on mixing zones by chapter 173-201A WAC. As allowed by chapter 173-201A-400(11) WAC, Ecology authorizes a mixing zone that is exempt from size constraints for outfalls that meet the performance standard for the frequency of discharge. The mixing zone provides sufficient dilution to ensure CSO discharges that comply with the CSO performance standard will not exceed established numeric water quality criteria. The results of post-construction compliance monitoring provide Ecology with necessary information to verify that each outfall complies with the performance standard and continues to qualify for a mixing zone.

The 2025 modified Consent Decree signed by Seattle, Ecology and the EPA includes a compliance schedule that requires completion of control projects that bring all CSO outfalls into compliance with the state’s performance standard of no more than one untreated discharge per year, on average. Ecology will not establish authorized mixing zones or evaluate the effect of pollutants in the discharge(s) on the aquatic environment until a discharge(s) meets the state standard.

It is not possible with current knowledge and technology to calculate numeric water quality-based effluent limits for CSOs. Ecology may include numeric water quality-based effluent limits in the future permits only after the long-term control plan is in place and after collection of sufficient water quality data. In accordance with 40 CFR 122.44(k), this permit relies on best management practices (BMPs) to control or abate the discharges of pollutants in CSO discharges that may have a reasonable potential to cause or contribute to water quality impairments. These BMPs also help control chemicals of emerging concern, such as 6PPD, for which numeric water quality criteria do not currently exist. This permit requires development and implementation of BMPs as part of the pollution prevention program required by special condition S1.B.7

Ecology may include water quality-based limits in future permits if technology-based limits, such as nine minimum controls, and reductions in CSO discharge volume, fail to reduce pollutant discharges to levels sufficient to protect water quality or if required by an approved waste load allocation developed to restore an impaired water body.

III.F. Evaluation of human health-based water quality criteria

Washington's water quality standards include numeric human health-based criteria for priority pollutants that Ecology must consider when writing NPDES permits. These criteria are based on long-term exposure to the pollutants and generally assume continuous discharge to the environment. Due to the highly intermittent nature of CSO discharges, it is currently infeasible to calculate numeric limits. Therefore, Ecology relies on BMPs described in Section III.F, Evaluation of surface water quality-based effluent limits for numeric criteria, to control pollutants with numeric human health criteria. In addition, Ecology authorizes a mixing zone that is exempt from size constraints for outfalls that meet the performance standard for the frequency of discharge, as allowed by chapter 173-201A-400(11) WAC.

For outfalls that do not currently comply with the performance standard, the 2025 modified Consent Decree signed by Seattle, Ecology and the EPA includes a compliance schedule that requires completion of control projects that bring all CSO outfalls into compliance with the state's performance standard of no more than one untreated discharge per year, on average. Ecology will not establish authorized mixing zones or evaluate the effect of pollutants in the discharge(s) on the aquatic environment until a discharge(s) meets the state standard.

Ecology may include numeric water quality-based limits in future permits if our ability to calculate appropriate limits change. Until such time, Ecology will continue to apply narrative limits to control pollutants with human health-based numeric criteria, as allowed by 40 CFR 122.44(k).

III.G. Sediment quality

The aquatic sediment standards (chapter 173-204 WAC) protect aquatic biota and human health. Under these standards Ecology may require a facility to evaluate the potential for its discharge to cause a violation of sediment standards (WAC 173-204-400). You can obtain additional information about sediments at the Aquatic Lands Cleanup Unit website[2].

The proposed permit includes monitoring sediment chemistry monitoring at representative outfalls as part of SPU's Post Construction Monitoring Plan (Special Condition S6.C). This monitoring is intended to support efforts to minimize the discharge of pollutants to areas with active contaminated sediment by identifying potential sources of pollution.

III.H. Groundwater quality limits

The groundwater quality standards (chapter 173-200 WAC) protect beneficial uses of groundwater. Permits issued by Ecology must not allow violations of those standards (WAC 173-200-100).

[2] https://ecology.wa.gov/Spills-Cleanup/Contamination-cleanup/Sediment-cleanups

SPU does not discharge wastewater to the ground. No permit limits are required to protect groundwater.

III.I. Comparison of limits with the previous permit modified on September 28, 2017

The previous permit applied a suite of narrative requirements for SPU to follow to ensure compliance with technology-based controls for untreated CSOs and to protect water quality. This permit retains the narrative limits. They include:

- Compliance with the state's performance standard for controlled CSOs;
- Take prescribed corrective actions if a controlled CSO does not meet the performance standard (new to this permit);
- Implement and comply with the federal nine minimum controls;
- Implement a post-construction monitoring plan;
- Continue to plan, design, and construct controls at uncontrolled CSO outfalls.

IV. Monitoring requirements

Ecology requires monitoring, recording, and reporting (WAC 173-220-210 and 40 CFR 122.41) to verify that CSO controls are being achieved. This section describes the requirements that apply to SPU.

If SPU uses a contract laboratory to monitor wastewater, it must ensure that the laboratory uses the methods and meets or exceeds the method detection levels required by the permit. The permit describes when facilities may use alternative methods. It also describes what to do in certain situations when the laboratory encounters matrix effects. When a facility uses an alternative method as allowed by the permit, it must report the test method, detection level (DL), and quantitation level (QL) on the discharge monitoring report or in the required report.

IV.A. CSO monitoring

Special Condition S3 of the proposed permit requires SPU to monitor (at a minimum) the volume, duration and precipitation associated with each CSO discharge event at each identified outfall. Special Condition S4 requires reporting results of this monitoring electronically on a monthly basis though Ecology Water Quality Permitting Portal.

IV.B. Post-construction monitoring program

The federal CSO control policy (59 FR 18688) requires post-construction monitoring to verify implemented CSO control strategies comply with water quality standards. Post-construction monitoring applies to any CSO outfall that is controlled to meet the "greatest reasonable reduction" of combined sewer overflows, as defined in chapter 173-245 WAC. Implementation requires development of a monitoring plan and completion of a data report that documents compliance.

SPU developed a revised Post-Construction Monitoring Program (PCMP) in 2015, which was reviewed and conditionally approved by Ecology on August 26, 2015. The currently approved PCMP proposed flow monitoring at all outfalls to demonstrate that each controlled outfall complies with the performance standard of no more than one untreated discharge per year, on average. The plan also proposed conducting ambient water and sediment quality monitoring near certain surrogate outfalls. SPU chose each surrogate outfall to represent the worst-case impacts of discharges from all CSO outfalls in the vicinity of the surrogate outfall. Table 1011 below shows the selected surrogate outfalls and their represented outfalls.

Table 10 - Surrogate outfalls

Surrogate Outfall Number	CSO Basin	Receiving Water	Receiving Water Type
13	Windermere	Lake Washington	Freshwater lake
18	North Union Bay	Lake Washington	Freshwater lake
31	Leschi	Lake Washington	Freshwater lake
44	Henderson	Lake Washington	Freshwater lake
62	Magnolia	Elliott Bay	Marine
68	Magnolia/ Interbay	Elliott Bay	Marine
71	University Street	Elliott Bay	Marine
95	West Seattle	Puget Sound	Marine
99	Delridge	West Waterway of Duwamish River	River
107	East Waterway	East Waterway of Duwamish River	River
147	Fremont	Lake Union	Freshwater lake
152	Ballard	Salmon Bay	Freshwater lake
169	Delridge	Longfellow Creek	Freshwater stream
174	Fremont	Ship Canal	Freshwater lake

Since Ecology's conditional approval in 2015, changes have occurred to the state's water quality standards. In particular, the water quality standards have eliminated the designated use of "secondary contact recreation" and have changed the bacteria indicators used to evaluate water quality for recreational uses. Additionally, the schedule for CSO project completion has changed since 2015 and sampling at one outfall (68) has been significantly delayed due to ongoing sediment clean-up at neighboring properties.

These changes warrant a review and revision of the 2015 plan. While revising the plan to address these topics, SPU must also review the plan to ensure that it adequately addresses the following:

- Account for any changes to Critical Milestones since 2015
- Incorporate new Washington Water Quality Standards (e.g. bacteria indicators for recreational use)
- Provide ongoing periodic visual water quality observations
- Establish a process for selecting new surrogate outfalls if sampling at the identified outfall is not possible or is deemed to no longer be representative.

IV.C. Lab accreditation

Ecology requires that facilities must use a laboratory registered or accredited under the provisions of chapter 173-50 WAC, Accreditation of Environmental Laboratories, to prepare all monitoring data (with the exception of certain parameters).

V. Other permit conditions

V.A. Reporting and record keeping

Ecology based Special Condition S4 on its authority to specify any appropriate reporting and record keeping requirements to prevent and control waste discharges (WAC 173-220-210).

V.A.1. Annual CSO report

SPU must submit annual reports according to the requirements of WAC 173-245-090(1). This report: (a) details the past year's frequency and volume of combined sewage discharge from each CSO site, (b) explains the previous year's CSO reduction accomplishments, and (c) lists the projects planned for the next year. The report must indicate whether a CSO site has increased over the baseline annual condition. If an increase has occurred, the Permittee must propose a project and/or schedule to reduce that site below its baseline conditions.

SPU must also assess in its annual reports and CSO reduction plan amendment whether identified outfalls meet the state standard of one untreated discharge per year per CSO. Assessment may be based on a long-term average which is currently defined as enter appropriate averaging period.

V.A.2. Non-compliance reporting

Special Condition S4.G describes actions SPU must take to report violations of this permit. These actions reporting of unpermitted discharges (SSOs, DWOs, and building backups) and submissions of written follow-up reports.

V.B. Operation and maintenance

The proposed permit contains Special Condition S.5 as authorized under RCW 90.48.110, WAC 173-220-150, chapter 173-230 WAC, and WAC 173-240-080. Ecology included it to ensure proper operation and regular maintenance of equipment, and to ensure that SPU takes adequate safeguards so that it uses constructed facilities to their optimum potential in terms of pollutant capture and subsequent treatment.

Special Condition S.5 requires facility name to review and update as needed an operation and maintenance manual as required by state regulation for the construction of wastewater treatment facilities (WAC 173-240-080). Implementation of the procedures in the operation and maintenance manual ensures the facility's compliance with the terms and limits in the permit.

V.C. CSO reduction plan amendments

The proposed permit requires SPU to submit an amendment of its CSO reduction plan in conjunction with its application for permit renewal. The amendment must include an assessment of the effectiveness of the CSO reduction plan, a re-evaluation of CSO project priorities, and a list of projects to be completed in the next five years. In addition, SPU must identify newly corrected or controlled CSOs that meet the state's one untreated discharge per year (on average) per CSO standard in the CSO reduction plan amendment.

V.D. General conditions

Ecology bases the standardized General Conditions on state and federal law and regulations. They are included in all individual domestic wastewater NPDES permits issued by Ecology.

VI. Permit issuance procedures

VI.A. Permit modifications

Ecology may modify this permit to impose numeric limits, if necessary to comply with water quality standards for surface waters, with sediment quality standards, or with water quality standards for groundwaters, after obtaining new information from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

Ecology may also modify this permit to comply with new or amended state or federal regulations.

VI.B. Proposed permit issuance

This proposed permit includes all statutory requirements for Ecology to authorize a wastewater discharge. The permit includes limits and conditions to protect human health and aquatic life, and the beneficial uses of waters of the state of Washington. Ecology proposes to issue this permit for a term of five years.

VII. References for text and appendices

Ecology. (2011). *Waters Requiring Supplemental Spawning and Incubation Protection for Salmonid Species.* Publication 06-10-038. Retrieved from https://apps.ecology.wa.gov/publications/documents/0610038.pdf

Ecology. (2016). *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria (Publication 95-80).* Retrieved from https://apps.ecology.wa.gov/publications/SummaryPages/9580.html

Ecology. (2018). *Water Quality Program Permit Writer's Manual.* Publication 92-109. Retrieved from https://apps.ecology.wa.gov/publications/summarypages/92109.html

Ecology and Department of Health. (2019). *Reclaimed Water Facilities Manual: The Purple Book.* Retrieved from https://apps.ecology.wa.gov/publications/SummaryPages/1510024.html

Lewis, E. W. (1998). *Program developed for CO2 system calculations.* Retrieved from https://doi.org/10.2172/639712

Metcalf & Eddy, Inc. (1991). *Wastewater engineering : treatment, disposal, and reuse.* New York: McGraw-Hill.

USEPA. (1985). *Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water. Part 2,, EPA/600/6-85/002B.*

USEPA. (1987). *Enhanced Stream Water Quality Models QUAL2E and QUAL2E-UNCAS: Documentation and User Manual, EPA/600/3-87/007.*

USEPA. (1988). *Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling.*

USEPA. (1989). *Ambient Water Quality for Ammonia (Saltwater), EPA 440/5-88-004.*

USEPA. (1991). *Handbook: Sewer System Infrastructure Analysis and Rehabilitation, EPA/625/6-91/030.* Retrieved from https://cfpub.epa.gov/si/si_public_record_report.cfm?Lab=NRMRL&dirEntryId=124654

USEPA. (1991). *Technical Support Document for Water Quality-Based Toxics Control (EPA/505/2-90-001).* Washington, DC. Retrieved from https://www3.epa.gov/npdes/pubs/owm0264.pdf

USEPA Region 10. (2021). *Columbia and Lower Snake Rivers Temperature Total Maximum Daily Load.* Seattle, WA.

Washington State Department of Transportation. (2023). *Standard Specifications for Road, Bridge, and Municipal Construction, M 41-10.* Retrieved from https://www.wsdot.wa.gov/publications/manuals/fulltext/M41-10/SS.pdf

Water Environment Federation, American Society of Civil Engineers. (2020). *Existing Sewer Evaluation and Rehabilitation: Manual of Practice FD 6.*

Water Pollution Control Federation. (1976). *Chlorination of Wastewater.*

Washington State and Ecology website general reference links:

Laws and Regulations[3]
Permit and Wastewater Related Information[4]

[3] http://leg.wa.gov/LawsAndAgencyRules/Pages/default.aspx
[4] https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Water-quality-permits-guidance

Appendix A – Public Involvement Information

Ecology proposes to reissue a permit to SPU. The permit includes wastewater discharge limits and other conditions. This fact sheet describes the facility and Ecology's reasons for requiring permit conditions.

Ecology will place a Public Notice of Draft on June 27, 2025 in the Seattle Times to inform the public and to invite comment on the proposed draft National Pollutant Discharge Elimination System permit and fact sheet.

The notice:

- Tells where copies of the draft Permit and Fact Sheet are available for public evaluation (a local public library, the closest Regional or Field Office, posted on our website).
- Offers to provide the documents in an alternate format to accommodate special needs.
- Urges people to submit their comments, in writing, before the end of the Comment Period
- Tells how to request a public hearing of comments about the proposed NPDES permit.
- Explains the next step(s) in the permitting process.

Frequently Asked Questions about Effective Public Commenting[5]

You may obtain further information from Ecology by telephone, 206-594-0000, or by writing to the address listed below.

Water Quality Permit Coordinator
Department of Ecology
Northwest Region Office
P.O. Box 330316
Shoreline, WA 98133-9716

The primary author of this permit and fact sheet is Sean Wilson, PE.

[5] https://apps.ecology.wa.gov/publications/SummaryPages/0307023.html

Appendix B – Your Right to Appeal

You have a right to appeal this permit to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of the final permit. The appeal process is governed by chapter 43.21B RCW and chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2) (see glossary).

To appeal you must do the following within 30 days of the date of receipt of this permit:

- File your appeal and a copy of this permit with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours as defined in WAC 371-08-305 and -335. "Notice of appeal" is defined in WAC 371-08-340.
- Serve a copy of your appeal and this permit on Ecology on the Department of Ecology mail, in person, or by email (see addresses below).

You must also comply with other applicable requirements in chapter 43.21B RCW and chapter 371-08 WAC.

Filing with the PCHB

For the most current information regarding filing with the PCHB:
visit https://eluho.wa.gov/[6] or call 360-664-9160.

Service on Ecology

Street Address:

Department of Ecology
Attn: Appeals Processing Desk
300 Desmond Drive SE
Lacey, WA 98503

Mailing Address:

Department of Ecology
Attn: Appeals Processing Desk
PO Box 47608
Olympia, WA 98504-7608

E-Mail Address:

ecologyappeals@ecy.wa.gov

[6] https://eluho.wa.gov/

Appendix C – Glossary

1-DMax or 1-day maximum temperature – The highest water temperature reached on any given day. This measure can be obtained using calibrated maximum/minimum thermometers or continuous monitoring probes having sampling intervals of thirty minutes or less.

7-DADMax or 7-day average of the daily maximum temperatures – The arithmetic average of seven consecutive measures of daily maximum temperatures. The 7-DADMax for any individual day is calculated by averaging that day's daily maximum temperature with the daily maximum temperatures of the three days prior and the three days after that date.

Acute toxicity – The lethal effect of a compound on an organism that occurs in a short time period, usually 48 to 96 hours.

AKART – The acronym for "all known, available, and reasonable methods of prevention, control and treatment." AKART is a technology-based approach to limiting pollutants from wastewater discharges, which requires an engineering judgment and an economic judgment. AKART must be applied to all wastes and contaminants prior to entry into waters of the state in accordance with RCW 90.48.010 and RCW 90.48.520, WAC 173-200-030(2)(c)(ii), and WAC 173-216-110(1)(a).

Alternate point of compliance – An alternative location in the groundwater from the point of compliance where compliance with the groundwater standards is measured. It may be established in the groundwater at locations some distance from the discharge source, up to, but not exceeding the property boundary and is determined on a site specific basis following an AKART analysis. An "early warning value" must be used when an alternate point is established. An alternate point of compliance must be determined and approved in accordance with WAC 173-200-060(2).

Ambient water quality – The existing environmental condition of the water in a receiving water body.

Ammonia – Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Annual average design flow (AADF) – average of the daily flow volumes anticipated to occur over a calendar year.

Average monthly (intermittent) discharge limit – The average of the measured values obtained over a calendar months' time taking into account zero discharge days.

Average monthly discharge limit – The average of the measured values obtained over a calendar months' time.

Background water quality – The concentrations of chemical, physical, biological or radiological constituents or other characteristics in or of groundwater at a particular point in time upgradient of an activity that has not been affected by that activity, [WAC 173-200-020(3)]. Background water quality for any parameter is statistically defined as the 95% upper tolerance interval with a 95% confidence based on at least eight hydraulically upgradient water quality samples. The eight samples are collected over a period of at least one year, with no more than one sample collected during any month in a single calendar year.

Best management practices (BMPs) – Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the state. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD_5 – Determining the five-day Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD_5 is used in modeling to measure the reduction of dissolved oxygen in receiving waters after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD_5 is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass – The intentional diversion of waste streams from any portion of a treatment facility.

Categorical pretreatment standards – National pretreatment standards specifying quantities or concentrations of pollutants or pollutant properties, which may be discharged to a POTW by existing or new industrial users in specific industrial subcategories.

Chlorine – A chemical used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Chronic toxicity – The effect of a compound on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Clean water act (CWA) – The federal Water Pollution Control Act enacted by Public Law 92 500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Compliance inspection-without sampling – A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance inspection-with sampling – A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations. In addition it includes as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Ecology may conduct additional sampling.

Composite sample – A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite" (collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots).

Construction activity – Clearing, grading, excavation, and any other activity, which disturbs the surface of the land. Such activities may include road building; construction of residential houses, office buildings, or industrial buildings; and demolition activity.

Continuous monitoring – Uninterrupted, unless otherwise noted in the permit.

Critical condition – The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

Date of receipt – This is defined in RCW 43.21B.001(2) as five business days after the date of mailing; or the date of actual receipt, when the actual receipt date can be proven by a preponderance of the evidence. The recipient's sworn affidavit or declaration indicating the date of receipt, which is unchallenged by the agency, constitutes sufficient evidence of actual receipt. The date of actual receipt, however, may not exceed forty-five days from the date of mailing.

Days (compliance period interval) – When the compliance period is stated in days: (A) exclude the day of the event that triggers the period; (B) count every day, including intermediate Saturdays, Sundays, and legal holidays; and (C) include the last day of the period, but if the last day is a Saturday, Sunday, or legal holiday, the period continues to run until the end of the next day that is not a Saturday, Sunday, or legal holiday.

Detection level – or method detection limit means the minimum concentration of an analyte (substance) that can be reported with 99% confidence that the measured concentration is distinguishable from method blank results as determined by the procedure given in 40 CFR part 136, Appendix B.

Dilution factor (DF) – A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the percent effluent fraction, for example, a dilution factor of 10 means the effluent comprises 10% by volume and the receiving water 90%.

Distribution uniformity – The uniformity of infiltration (or application in the case of sprinkle or trickle irrigation) throughout the field expressed as a percent relating to the average depth infiltrated in the lowest one-quarter of the area to the average depth of water infiltrated.

Early warning value – The concentration of a pollutant set in accordance with WAC 173-200-070 that is a percentage of an enforcement limit. It may be established in the effluent, groundwater, surface water, the vadose zone or within the treatment process. This value acts as a trigger to detect and respond to increasing contaminant concentrations prior to the degradation of a beneficial use.

Enforcement limit – The concentration assigned to a contaminant in the groundwater at the point of compliance for the purpose of regulation, [WAC 173-200-020(11)]. This limit assures that a groundwater criterion will not be exceeded and that background water quality will be protected.

Engineering report – A document that thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report must contain the appropriate information required in WAC 173-240-060 or WAC 173-240-130.

Enterococci – A subgroup of fecal streptococci that includes *S. faecalis*, *S. faecium*, *S. gallinarum*, and *S. avium*. The enterococci are differentiated from other streptococci by their ability to grow in 6.5% sodium chloride, at pH 9.6, and at 10°C and 45°C.

E. coli – A bacterium in the family Enterobacteriaceae named Escherichia coli and is a common inhabitant of the intestinal tract of warm-blooded animals, and its presence in water samples is an indication of fecal pollution and the possible presence of enteric pathogens.

Fecal coliform bacteria – Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab sample – A single sample or measurement taken at a specific time or over as short a period of time as is feasible.

Groundwater – Water in a saturated zone or stratum beneath the surface of land or below a surface water body.

Immediate reporting – Report permit violations immediately without delay of any interval of time from the moment the permittee becomes aware of the violation. Priority should first be given to stopping an active noncompliance.

Industrial user – A discharger of wastewater to the sanitary sewer that is not sanitary wastewater or is not equivalent to sanitary wastewater in character.

Industrial wastewater – Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business; from the development of any natural resource; or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated stormwater and, also, leachate from solid waste facilities.

Interference – A discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

- Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and
- Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to subtitle D of the SWDA), sludge regulations appearing in 40 CFR Part 507, the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

Local limits – Specific prohibitions or limits on pollutants or pollutant parameters developed by a POTW.

Major facility – A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Maximum daily discharge limit – The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Maximum day design flow (MDDF) – The largest volume of flow anticipated to occur during a one-day period, expressed as a daily average.

Maximum month design flow (MMDF) – The largest volume of flow anticipated to occur during a continuous 30-day period, expressed as a daily average.

Maximum week design flow (MWDF) – The largest volume of flow anticipated to occur during a continuous 7-day period, expressed as a daily average.

Method detection limit (MDL) – See Detection level.

Minor facility -- A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Mixing zone – An area that surrounds an effluent discharge within which water quality criteria may be exceeded. The permit specifies the area of the authorized mixing zone that Ecology defines following procedures outlined in state regulations (chapter 173-201A WAC).

National pollutant discharge elimination system (NPDES) – Section 402 of the Clean Water Act, the federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the state of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State are joint NPDES/State permits issued under both state and federal laws.

pH – The pH of a liquid measures its acidity or alkalinity. It is the negative logarithm of the hydrogen ion concentration. A pH of 7 is defined as neutral and large variations above or below this value are considered harmful to most aquatic life.

Pass-through – A discharge which exits the POTW into waters of the State in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation), or which is a cause of a violation of State water quality standards.

Peak hour design flow (PHDF) – The largest volume of flow anticipated to occur during a fone-hour period, expressed as a daily or hourly average.

Peak instantaneous design flow (PIDF) – The maximum anticipated instantaneous flow.

Point of compliance – The location in the groundwater where the enforcement limit must not be exceeded and a facility must comply with the Ground Water Quality Standards. Ecology determines this limit on a site-specific basis. Ecology locates the point of compliance in the groundwater as near and directly downgradient from the pollutant source as technically, hydrogeologically, and geographically feasible, unless it approves an alternative point of compliance.

Potential significant industrial user (PSIU) – A potential significant industrial user is defined as an Industrial User that does not meet the criteria for a Significant Industrial User, but which discharges wastewater meeting one or more of the following criteria:

- Exceeds 0.5 % of treatment plant design capacity criteria and discharges <25,000 gallons per day or;
- Is a member of a group of similar industrial users which, taken together, have the potential to cause pass through or interference at the POTW (e.g. facilities which develop photographic film or paper, and car washes).

Ecology may determine that a discharger initially classified as a potential significant industrial user should be managed as a significant industrial user.

Quantitation level (QL) – also known as Minimum level (ML) – The term ‘‘minimum level’’ refers to either the sample concentration equivalent to the lowest calibration point in a method or a multiple of the method detection limit (DL), whichever is higher. Minimum levels may be obtained in several ways: They may be published in a method; they may be based on the lowest acceptable calibration point used by a laboratory; or they may be calculated by multiplying the DL in a method, or the DL determined by a laboratory, by a factor of 3. For the purposes of NPDES compliance monitoring, EPA considers the following terms to be synonymous: ‘‘quantitation limit,’’ ‘‘reporting limit,’’ and ‘‘minimum level’’.

Reasonable potential – A reasonable potential to cause or contribute to a water quality violation, or loss of sensitive and/or important habitat.

Responsible corporate officer – A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or have gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures (40 CFR 122.22).

Sample Maximum – No sample may exceed this value.

Significant industrial user (SIU) –

- All industrial users subject to Categorical Pretreatment Standards under 40 CFR Chapter I, Subchapter N and 40 CFR 403.6 and;
- Any other industrial user that: discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow-down wastewater); contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority* on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement [in accordance with 40 CFR 403.8(f)(6)].

Upon finding that the industrial user meeting the criteria in the second paragraph has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority* may at any time, on its own initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(f)(6), determine that such industrial user is not a significant industrial user.

*The term "Control Authority" refers to the Washington State Department of Ecology in the case of non-delegated POTWs or to the POTW in the case of delegated POTWs.

Slug discharge – Any discharge of a non-routine, episodic nature, including but not limited to an accidental spill or a non-customary batch discharge to the POTW. This may include any pollutant released at a flow rate that may cause interference or pass through with the POTW or in any way violate the permit conditions or the POTW's regulations and local limits.

Soil scientist – An individual who is registered as a Certified or Registered Professional Soil Scientist or as a Certified Professional Soil Specialist by the American Registry of Certified Professionals in Agronomy, Crops, and Soils or by the National Society of Consulting Scientists or who has the credentials for membership. Minimum requirements for eligibility are: possession of a baccalaureate, masters, or doctorate degree from a U.S. or Canadian institution with a minimum of 30 semester hours or 45 quarter hours professional core courses in agronomy, crops or soils, and have 5, 3, or 1 years, respectively, of professional experience working in the area of agronomy, crops, or soils.

Solid waste – All putrescible and non-putrescible solid and semisolid wastes including, but not limited to, garbage, rubbish, ashes, industrial wastes, swill, sewage sludge, demolition and construction wastes, abandoned vehicles or parts thereof, contaminated soils and contaminated dredged material, and recyclable materials.

Soluble BOD_5 – Determining the soluble fraction of Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of soluble organic material present in an effluent that is utilized by bacteria. Although the soluble BOD_5 test is not specifically described in Standard Methods, filtering the raw sample through at least a 1.2 um filter prior to running the standard BOD_5 test is sufficient to remove the particulate organic fraction.

State waters – Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater – That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a stormwater drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based effluent limit – A permit limit based on the ability of a treatment method to reduce the pollutant.

Total coliform bacteria – A microbiological test, which detects and enumerates the total coliform group of bacteria in water samples.

Total dissolved solids – That portion of total solids in water or wastewater that passes through a specific filter.

Total maximum daily load (TMDL) – A determination of the amount of pollutant that a water body can receive and still meet water quality standards.

Total suspended solids (TSS) – Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Upset – An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limits because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

Water quality-based effluent limit – A limit imposed on the concentration of an effluent parameter to prevent the concentration of that parameter from exceeding its water quality criterion after discharge into receiving waters.

Appendix D — CSO Outfall Information

Outfall No.	Address	Receiving water body	Latitude	Longitude	Control Status
12	NE 60th ST & NE WINDERMERE RD	Lake Washington	47.67108	-122.25295	Controlled
13	WINDERMERE PARK; NE AMBLESIDE RD & NE PENRITH RD	Lake Washington	47.66382	-122.26522	Uncontrolled
14	4218 55TH AVE NE	Lake Washington	47.65925	-122.26799	Controlled
15	NE LAURELCREST LN & 51ST AVE NE	Lake Washington	47.65523	-122.27129	Uncontrolled
16	3005 WEBSTER POINT RD NE	Lake Washington	47.64845	-122.27815	Controlled
18	3901 NE SURBER DR	Union Bay	47.65672	-122.28764	Uncontrolled
19	4501 27TH AVE NE	Union Bay	47.66103	-122.29782	Controlled
20	E SHELBY ST & EAST PARK DR E	Union Bay	47.64696	-122.30074	Controlled
22	2539 39TH AVE E	Union Bay	47.64246	-122.28285	Controlled
24	E LEE ST & 42ND AVE E	Lake Washington	47.63093	-122.27623	Controlled
25	E LEE ST & 42ND AVE E	Lake Washington	47.63087	-122.27533	Controlled
27	1502 LAKE WASHINGTON BLVD	Lake Washington	47.61492	-122.27996	Controlled
28	1500 LAKE WASHINGTON BLVD	Lake Washington	47.61385	-122.28017	Uncontrolled
29	LAKE WASHINGTON BLVD & FULLERTON AVE	Lake Washington	47.60683	-122.28210	Controlled
30	LAKE WASHINGTON BLVD & E JEFFERSON ST	Lake Washington	47.60577	-122.28262	Uncontrolled
31	299 LAKESIDE AVE S	Lake Washington	47.60013	-122.28498	Uncontrolled
32	LAKESIDE AVE S & S DEARBORN ST	Lake Washington	47.59572	-122.28621	Uncontrolled
34	LAKESIDE AVE S & S CHARLES ST	Lake Washington	47.59451	-122.28666	Controlled
35	LAKESIDE AVE S & S MASSACHUSETTS ST	Lake Washington	47.58756	-122.28456	Controlled
36	2310 LAKE WASHINGTON BLVD S	Lake Washington	47.58261	-122.28612	Controlled
38	STANLEY SAYRES PARK; 3808 LAKE WASHINGTON BLVD S	Lake Washington	47.57139	-122.27555	Uncontrolled

Outfall No.	Address	Receiving water body	Latitude	Longitude	Control Status
40	LAKE WASHINGTON BLVD S & 49TH AVE S	Lake Washington	47.56840	-122.27192	Uncontrolled
41	LAKE WASHINGTON BLVD S & 50TH AVE S	Lake Washington	47.56824	-122.26983	Uncontrolled
42	4608 LAKE WASHINGTON BLVD S	Lake Washington	47.56234	-122.26664	Uncontrolled
43	LAKE WASHINGTON BLVD S & S ALASKA ST	Lake Washington	47.56062	-122.26389	Uncontrolled
44	SEWARD PARK; LAKE WASHINGTON BLVD S & S JUNEAU ST	Lake Washington	47.54735	-122.25531	Uncontrolled
45	MARTHA WASHINGTON PARK; 5711 S HOLLY ST	Lake Washington	47.54150	-122.25961	Controlled
46	PRITCHARD ISLAND BEACH PARK; 8314 ISLAND DR S	Lake Washington	47.52946	-122.26177	Controlled
47	BEER SHEVA PARK; SEWARD PARK AVE S & S HENDERSON ST	Lake Washington	47.52329	-122.26287	Uncontrolled
48	9722 RAINIER AVE S	Lake Washington	47.51601	-122.25318	Controlled
49	9861 RAINIER AVE S	Lake Washington	47.51341	-122.25029	Uncontrolled
57	6701 SEAVIEW AVE NW	Puget Sound - Central	47.67843	-122.40693	Controlled
59	5637 SEAVIEW AVE NW	Salmon Bay	47.67029	-122.40590	Uncontrolled
60	W CRAMER ST & 39TH AVE W	Salmon Bay	47.66782	-122.40740	Uncontrolled
61	2599 PERKINS LN W	Elliott Bay	47.64315	-122.41871	Controlled
62	2599 PERKINS LN W	Elliott Bay	47.64200	-122.41774	Controlled
64	1499 32ND AVE W	Elliott Bay	47.63158	-122.39925	Controlled
68	PIER 91 AT 1523 W GARFIELD ST	Elliott Bay	47.63307	-122.37919	Uncontrolled
69	ALASKAN WAY & VINE ST	Elliott Bay	47.61321	-122.35232	Uncontrolled
71	ALASKAN WAY & MADISON ST	Elliott Bay	47.60370	-122.33858	Uncontrolled
78	SEACREST PARK; HARBOR AVE SW & FAIRMOUNT AVE SW	Elliott Bay	47.58752	-122.37723	Controlled
80	DON ARMENI PARK; 112 HARBOR AVE SW	Elliott Bay	47.59327	-122.38206	Controlled
83	ALKI BEACH PARK AT 1501 ALKI AVE SW	Puget Sound - Central	47.59125	-122.39415	Controlled

Outfall No.	Address	Receiving water body	Latitude	Longitude	Control Status
85	3219 POINT PL SW	Puget Sound - Central	47.57676	-122.42008	Controlled
88	5079 BEACH DR SW	Puget Sound - Central	47.55567	-122.40025	Controlled
90	LOWMAN BEACH PARK; 7015 BEACH DR SW	Puget Sound - Central	47.53994	-122.39988	Controlled
91	LINCOLN PARK; 8635 FAUNTLEROY WAY SW	Puget Sound - Central	47.52569	-122.39549	Controlled
94	FAUNTLEROY FERRY TERMINAL; 4829 SW BARTON ST	Puget Sound - Central	47.52372	-122.39673	Controlled
95	9279 FAUNTLEROY WAY SW	Puget Sound - Central	47.52050	-122.39578	Uncontrolled
99	TERMINAL 5 AT 3450 W MARGINAL WAY SW	West Waterway - Duwamish River	47.57367	-122.36120	Controlled
107	3411 E MARGINAL WAY S	East Waterway - Duwamish River	47.57367	-122.34269	Uncontrolled
111	3 S OREGON ST	Duwamish River	47.56314	-122.34531	Uncontrolled
120	2770 WESTLAKE AVE N	Lake Union	47.64541	-122.34706	Controlled
121	2046 WESTLAKE AVE N	Lake Union	47.63811	-122.34026	Controlled
124	LAKE UNION PARK AT 800 WESTLAKE AVE N	Lake Union	47.62663	-122.33868	Controlled
127	1099 FAIRVIEW AVE N	Lake Union	47.62965	-122.33123	Controlled
129	TERRY PETTUS PARK; FAIRVIEW AVE E & E NEWTON ST	Lake Union	47.63681	-122.32950	Controlled
130	LYNN ST PARK; FAIRVIEW AVE E & E LYNN ST	Lake Union	47.63959	-122.33037	Controlled
131	2373 FAIRVIEW AVE E	Lake Union	47.64209	-122.33001	Controlled
132	ROANOKE ST PARK; FAIRVIEW AVE E & E ROANOKE ST	Lake Union	47.64331	-122.32883	Controlled
134	FAIRVIEW AVE E & E ALLISON ST	Lake Union	47.64924	-122.32501	Controlled
135	3315 EASTLAKE AVE E	Lake Union	47.65208	-122.32092	Controlled
136	3100 PORTAGE BAY PL E	Lake Union	47.64885	-122.31769	Controlled
138	1209 E SHELBY ST	Portage Bay	47.64693	-122.31604	Controlled
139	MONTLAKE PLAYFIELD AT 1618 E CALHOUN ST	Portage Bay	47.64268	-122.31077	Uncontrolled

Outfall No.	Address	Receiving water body	Latitude	Longitude	Control Status
140	W MONTLAKE PARK; WEST PARK DR E & E SHELBY ST	Portage Bay	47.64693	-122.30952	Uncontrolled
141	BRYANT SITE PARK AT 1215 NE BOAT ST	Portage Bay	47.65086	-122.31563	Controlled
144	3790 LATONA AVE NE	Lake Union	47.65313	-122.32556	Controlled
145	SUNNYSIDE AVE N BOAT RAMP; 2301 N NORTHLAKE WAY	Lake Union	47.65009	-122.33048	Controlled
146	1430 N NORTHLAKE WAY	Lake Union	47.64722	-122.33962	Controlled
147	N NORTHLAKE WAY & STONE WAY N	Lake Union	47.64801	-122.34285	Uncontrolled
148	4125 9TH AVE NW	Lake Washington - Ship Canal	47.65653	-122.36679	Controlled
151	5301 24TH AVE NW	Salmon Bay Waterway	47.66680	-122.38821	Uncontrolled
152	5301 28TH AVE NW	Salmon Bay Waterway	47.66728	-122.39284	Uncontrolled
161	MAGNUSON PARK AT 6451 65TH AVE NE	Lake Washington	47.67713	-122.24909	Controlled
165	LAKE WASHINGTON BLVD S & S ALASKA ST	Lake Washington	47.56061	-122.26401	Uncontrolled
168	2311 SW MYRTLE ST	Longfellow Creek	47.53920	-122.36241	Uncontrolled
169	LONGFELLOW CREEK; 2450 SW THISTLE ST	Longfellow Creek	47.52916	-122.36380	Uncontrolled
170	2311 SW MYRTLE ST	Longfellow Creek	47.53919	-122.36242	Controlled
171	CHINOOK BEACH PARK AT 9510 RAINIER AVE S	Lake Washington	47.52062	-122.25972	Uncontrolled
174	FREMONT CANAL PARK AT 151 NW CANAL ST	Lake Washington - Ship Canal	47.65276	-122.35980	Uncontrolled
175	FAIRVIEW AVE E & E GARFIELD ST	Lake Union	47.63389	-122.32722	Controlled

	Frequency (# per year)					Duration (hours per year)					Volume (gallons per year)					
Outfall No.	2020	2021	2022	2023	2024	2020	2021	2022	2023	2024	2020	2021	2022	2023	2024	Receiving Water
12	3	0	2	2	0	5.57	0	3.37	13.83	0	73,378	0	9,543	92,967	0	Lake Washington
13	5	4	6	3	1	36.11	25.35	86.98	38.72	1.18	7,707,124	4,068,045	7,979,211	7,452,928	35,009	Lake Washington
14	1	0	0	1	1	1	0	0	0.17	0.08	5,005	0	0	1,777	566	Lake Washington
15	1	2	4	2	1	3.73	24.37	12.83	22.42	0.67	372,636	47,778	284,941	284,807	9,781	Lake Washington
16	1	0	0	1	0	0.33	0	0	0.23	0	575	0	0	605	0	Lake Washington
18	2	2	3	1	0	25.75	4.08	20.83	20.42	0	2,421,116	986,572	3,397,459	4,224,779	0	Union Bay
19	1	0	0	0	0	0.16	0	0	0	0	215	0	0	0	0	Union Bay
20	3	1	2	0	0	30.56	1.33	4.5	0	0	834,150	27,907	142,943	0	0	Union Bay
22	1	0	0	0	0	0.95	0	0	0	0	461	0	0	0	0	Union Bay
24	1	0	2	0	0	2.33	0	13	0	0	540,526	0	100,808	0	0	Lake Washington
25	1	0	2	0	0	2.3	0	12.86	0	0	812,813	0	105,746	0	0	Lake Washington
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Lake Washington
28	4	7	5	4	3	2.52	9.15	5.16	11.06	0.73	55,823	214,831	34,487	33,484	7,637	Lake Washington
29	2	2	4	2	1	3.7	26.86	25.7	22.47	0.37	105,678	199,900	291,733	263,444	1,722	Lake Washington
30	3	2	3	1	0	4.51	26.73	23	17.75	0	89,469	69,534	83,495	95,416	0	Lake Washington
31	6	3	5	2	2	42.16	47.67	56.83	25.83	3.24	864,078	918,527	2,277,912	1,147,385	41,687	Lake Washington
32	3	2	3	2	0	12.63	29.5	32.27	19.07	0	279,919	191,926	286,718	537,581	0	Lake Washington
33	NA	NA	NA	0	NA	NA	NA	NA	0	NA	N/A	N/A	N/A	0	NA	Lake Washington
34	1	1	1	0	0	2.75	1.25	1	0	0	139,256	15,606	4,552	0	0	Lake Washington
35	1	0	0	1	0	0.27	0	0	0.23	0	2,972	0	0	4,787	0	Lake Washington
36	0	0	0	1	0	0	0	0	0.08	0	0	0	0	586	0	Lake Washington
38	1	2	4	1	0	3.75	5.48	34.8	20.87	0	355,975	256,102	1,008,881	616,118	0	Lake Washington
40	2	2	3	1	0	52.97	48.05	53.52	26.03	0	327,145	684,204	1,838,620	983,920	0	Lake Washington
41	2	2	3	1	0	52.97	48.05	53.52	26.03	0	327,145	684,204	1,838,620	983,920	0	Lake Washington
42	1	3	3	1	0	7.4	33.61	32.5	17.33	0	176,049	335,339	347,470	294,165	0	Lake Washington
43	4	3	3	2	0	81.42	96.92	79	35.75	0	785,242	1,018,332	1,475,969	436,608	0	Lake Washington
44	1	3	3	2	0	0.4	90.12	81.23	61.35	0	3,068	5,115,155	8,944,053	3,911,285	0	Lake Washington
45	1	2	2	1	0	2.43	22.63	2.07	0.28	0	113,592	68,754	55,260	15,137	0	Lake Washington
46	2	0	0	1	0	13.15	0	0	1.8	0	220,085	0	0	57,186	0	Lake Washington
47	2	5	8	2	2	8.56	54.61	82.83	32.72	1.4	1,144,837	1,532,159	3,140,221	1,676,388	22,711	Lake Washington
48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Lake Washington
49	4	6	7	2	1	27.19	60.43	107.39	33.23	1.57	2,877,370	5,315,419	8,514,038	4,173,992	18,489	Lake Washington
57	0	0	1	0	0	0	0	2.03	0	0	0	0	307,223	0	0	Puget Sound

	Frequency (# per year)					Duration (hours per year)					Volume (gallons per year)					
Outfall No.	2020	2021	2022	2023	2024	2020	2021	2022	2023	2024	2020	2021	2022	2023	2024	Receiving Water
59	1	0	2	2	0	0.92	0	2.07	0.3	0	119,284	0	40,806	10,713	0	Salmon Bay
60	0	0	1	0	0	0	0	0.07	0	0	0	0	15	0	0	Salmon Bay
61	2	1	3	2	1	1.21	0.17	3.54	0.9	0.17	71,812	2,113	36,680	51,298	7,199	Elliott Bay
62	2	0	1	1	1	0.5	0	0.07	0.17	0.03	8,674	0	133	5,126	41	Elliott Bay
64	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Elliott Bay
68	2	1	2	2	1	8.51	1.43	5.85	11.9	1.27	660,538	24,184	477,574	279,756	171	Elliott Bay
69	2	1	4	2	2	2.12	0.08	5.68	0.4	0.7	717,160	2,345	432,472	55,462	134,683	Elliott Bay
70	0	NA	NA	0	NA	0	NA	NA	0	NA	0	N/A	N/A	0	NA	Elliott Bay
71	1	0	0	0	0	1.4	0	0	0	0	309,386	0	0	0	0	Elliott Bay
72	0	NA	NA	0	NA	0	NA	NA	0	NA	0	N/A	N/A	0	NA	Elliott Bay
78	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Elliott Bay
80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Elliott Bay
83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Puget Sound
85	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Puget Sound
88	1	0	1	0	0	1.03	0	1.95	0	0	1,047,258	0	42,430	0	0	Puget Sound
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Puget Sound
91	0	0	2	0	0	0	0	2.08	0	0	0	0	18	0	0	Puget Sound
94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Puget Sound
95	2	3	3	2	0	3.07	29.99	3.67	0.28	0	28,802	42,394	12,505	3,453	0	Puget Sound
99	2	0	3	1	0	12.02	0	26.55	16.05	0	1,144,773	0	1,087,950	801,303	0	W Waterway - Duwamish River
107	1	1	9	2	0	4.57	1.6	60.56	14.93	0	90,815	14,358	186,131	104,254	0	E Waterway - Duwamish River
111	1	2	4	1	0	4.47	4.91	11.38	15.17	0	292,182	309,788	444,498	138,803	0	Duwamish River
120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Lake Union
121	1	0	0	0	0	0.7	0	0	0	0	0	0	0	0	0	Lake Union
124	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Lake Union
127	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Lake Union
129	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Lake Union
130	1	0	1	1	0	0.92	0	0.2	0.07	0	86,940	0	36,864	9,400	0	Lake Union
131	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Lake Union
132	2	2	1	1	0	1.5	0.34	0.43	0.2	0	441,749	64,169	165,695	45,368	0	Lake Union
134	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Lake Union
135	3	1	1	2	10	2.16	0.42	0.43	12.9	36.57	11,528	5,065	6,225	49,494	2,724	Lake Union
136	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Lake Union

	Frequency (# per year)					Duration (hours per year)					Volume (gallons per year)					
Outfall No.	2020	2021	2022	2023	2024	2020	2021	2022	2023	2024	2020	2021	2022	2023	2024	Receiving Water
138	3	2	4	2	0	28	25.7	10.53	7.6	0	429,730	329,070	634,607	147,266	0	Portage Bay
139	2	3	5	1	0	5.75	6.92	10.92	0.08	0	334,584	265,003	399,154	4,633	0	Portage Bay
140	3	2	6	3	2	8.91	27	32.5	17.5	18.08	267,340	401,757	850,854	561,609	72,978	Portage Bay
141	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Portage Bay
144	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Lake Union
145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Lake Union
146	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Lake Union
147	47	40	42	28	43	358.4	573	372.67	263.78	415.48	21,102,048	6,380,778	9,849,427	5,528,196	4,803,529	Lake Union
148	0	0	2	0	0	0	0	2.87	0	0	0	0	137,907	0	0	Lake Washington Ship Canal
151	21	31	35	14	26	111.01	236.11	272.3	148.42	138.77	2,056,525	1,422,363	2,672,440	1,814,626	1,196,313	Salmon Bay
152	49	41	44	50	53	589.37	733.78	554.73	510.65	642.49	27,157,824	33,277,406	42,006,279	18,725,811	12,310,884	Salmon Bay
161	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Lake Washington
165	1	2	1	2	0	13.42	1.33	1.75	1	0	127,525	1,806	446	5,741	0	Lake Washington
168	2	2	3	1	0	11.84	19.12	52.55	30.27	0	528,881	1,798,523	7,576,097	2,760,242	0	Longfellow Creek
169	2	2	4	1	0	20.7	35.18	66.93	26.1	0	1,253,119	2,416,798	7,159,239	3,439,765	0	Longfellow Creek
170	1	0	0	0	0	1.33	0	0	0	0	13,634	0	0	0	0	Longfellow Creek
171	2	5	8	2	2	8.73	55	83.26	32.83	1.42	844,280	2,673,547	6,115,060	3,223,120	127,088	Lake Washington
174	6	11	7	5	7	53.25	81.46	56.59	39.66	41.33	5,599,153	7,401,924	8,651,075	3,765,160	715,827	Lake Washington
175	1	0	1	1	1	1.55	0	0.4	0.37	0.13	327,474	0	78,276	62,003	229	Lake Union
Total	***224***	***207***	***279***	***166***	***161***	***1,685***	***2,490***	***2,470***	***1,599***	***1,306***	***85,708,718***	***78,583,685***	***131,570,761***	***68,881,868***	***19,509,268***	

Appendix E — Response to Comments

[Ecology will complete this section after the public notice of draft period.]