

# Annual Sanitary Sewer Monitoring Report

## Seattle-Tacoma International Airport

*For the Period July 1, 2022 through June 30, 2023*

**September 29, 2023**

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## **Section 1: Introduction**

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The Port of Seattle's (Port) NPDES Permit No. WA-0024651, Part 1 Special Condition S2.F requires the Port to submit an annual Sanitary Sewer Report. This report summarizes the discharges of the boiler blowdown, cooling tower blowdown, equipment wash rack, and bus maintenance facility/chassis blowdown to the Midway Sewer District.

Part 1, Special Conditions S1.C and S2.A.2 specifies the monitoring requirements and effluent limitations. The sections below describe the facilities and provide a summary of data collected.

## **Section 2: Waste Stream Descriptions**

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### **2.1 Boiler Blowdown**

The Seattle-Tacoma International Airport (STIA) boiler room is located on the bottom level of the Main Terminal. Four boilers, each with a water capacity of approximately 1,570 gallons, are used to heat the Main Terminal. Makeup water to the boilers is drawn from the City of Seattle water supply to the airport.

The boilers are typically operated at a gauge pressure of 85 pounds per square inch (psi). Each boiler is equipped with a 1.5-inch blowdown line with two manually operated valves. When a valve for any boiler is open, the discharge (boiler blowdown) from the boiler flows through a common header into a 1,000-gallon quench tank. From the quench tank, boiler blowdown passes through a flow meter and into the sanitary sewer.

Current preventive maintenance procedures call for recalibrating the meter annually. The boiler flow meter was calibrated in July 2022 and again in August 2023. Output from the flow meter is logged in an Apogee digital data controller (DDC) and held in an internal database. On May 16, 2023 a panel migration and firmware update were completed on the digital controller used to log flow data. During the datalogger panel migration, the boiler blowdown discharge data was lost from May 6 to May 31, 2023. Port Environmental became aware of this issue during review of data for the May discharge monitoring report. The Port notified the Department of Ecology of this incident via email on June 26, 2023.

Additional boiler blowdown occurs during maintenance as needed based upon operating judgement. Boiler blowdown maintenance procedures include opening the block valve for approximately 15-20 seconds. The boilers are drained annually for maintenance and/or to remove condensation from inactive boilers.

**Table 1** below provides a monthly average and peak flow summary for all boiler blowdown discharges based on flow meter data.

### **2.2 Cooling Tower Blowdown**

The STIA cooling towers are located immediately south of the main parking garage. Two cooling towers were constructed in September 1999, and three additional cooling towers of similar design were constructed in 2002. At least one of the cooling towers is operating year-round, with few shutdowns.

Cooling tower blowdown is currently activated by filter backwashes. Conductivity is monitored to make sure that backwashing is adequate to prevent corrosion or scaling.

The flow meter that measures the volume of cooling tower wastewater discharged to the sanitary sewer was calibrated in July 2022 and again in August 2023. Flow meter readings are electronically recorded and stored by the same DDC used for the boiler blowdown flow data. On May 16, 2023 a panel migration and firmware update were completed on the digital controller used to log the cooling tower blowdown flow data.

**Table 1** below provides a monthly average and peak flow summary for cooling tower wastewater discharges.

**Table 1: STIA Boilers & Cooling Towers Effluent Limitations & Discharge Volumes**

Month	Boilers		Cooling Towers	
	Maximum Daily Flow <sup>(a)(b)</sup> (gallons/day)	Average Daily Flow <sup>(b)(c)</sup> (gallons/day)	Maximum Daily Flow <sup>(a)</sup> (gallons/day)	Average Daily Flow <sup>(c)</sup> (gallons/day)
<b>NPDES Effluent Limitations</b>	<b>15,000</b>	<b>1,000</b>	<b>250,000</b>	<b>18,000</b>
July 2022	1,520	78	6,237	2,816
August	1,630	228	84,127	6,543
September	1,810	176	16,078	6,439
October	180	22	17,918	5,307
November	60	4	47,560	7,069
December	380	31	8,727	3,521
January	30	2	5,512	2,641
February	120	15	6,356	2,912
March	550	94	1,775	882
April	270	31	2,417	872
May	1,040 <sup>d</sup>	270 <sup>d</sup>	2,133	5,597
June 2023	1,670	163	3,242	6,444

Notes:

- (a) Maximum Discharge Flow is the highest daily measured flow for any 24-hour period during a calendar month.
- (b) Boiler maintenance drainage volumes are included in quantities for daily average and daily maximum flows
- (c) Average Daily Flow is calculated as the total discharge during a calendar month divided by the number of calendar days in that month. The actual number of discharges is not recorded.
- (d) On May 16, 2023 a panel migration and firmware update were completed on the digital controller used to log flow data. During the datalogger panel migration flow data was lost from May 6, 2023 to May 31, 2023. Data used to compile maximum and average flows was analyzed from May 1, 2023 to May 5, 2023.

### 2.3 Equipment Wash Rack

The Equipment Wash Rack was installed in 2003 for ground service equipment cleaning and pressure washing. It was previously located west of the Delta airlines ground service maintenance facility but is no longer in service. The permitted location for the Equipment Wash Rack was modified in the current version of the Port's NPDES permit.

The Port plans to construct a new equipment wash facility at a location yet to be determined. The maximum daily discharge flow is expected to be 5,000 gallons per day (gpd). The Port will notify the Washington State Department of Ecology prior to operations.

## **2.4 Bus Maintenance Facility Bus Wash and Chassis Wash Bay**

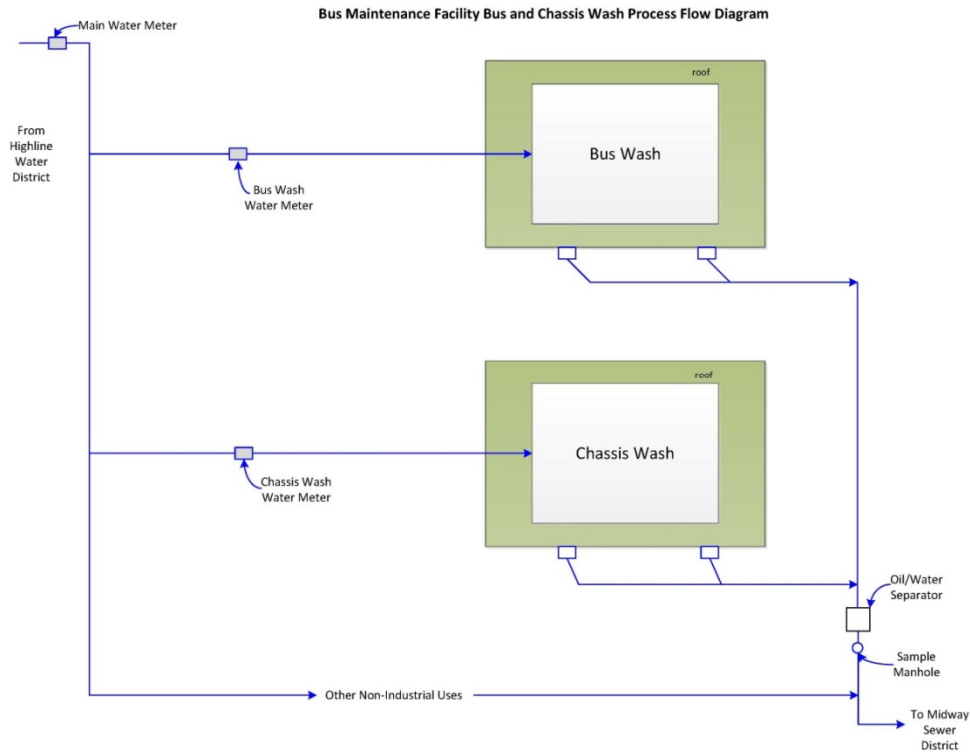
The Bus Maintenance Facility bus wash and chassis wash bay wastewater is comprised of discharge from a drive-through automated bus wash. The Bus Maintenance Facility bus wash and chassis wash bay facility was activated on May 17, 2012, in support of the new comprehensive Rental Car Facility. The Bus Maintenance Facility services the shuttle busses, which transport passengers to and from the airport terminal to the consolidated Rental Car Facility. Other than vehicle washing, no other maintenance activities are performed at the bus wash facility.

The Bus Maintenance Facility bus wash and chassis wash wastewater merges prior to treatment via an oil/water separator. Following treatment, the wastewater discharges to the main sanitary sewer line and into the Midway Sewer District. The oil and grease, pH, Total Suspended Solids (TSS), and Biological Oxygen Demand (BOD) parameters are sampled downstream of the oil/water separator prior to connecting to the main sewer line. Refer to **Table 2** for monthly results.

Flow is calculated at the Bus Maintenance Facility using two flow meters, one located at the chassis wash facility and a second meter is located at the bus wash facility see **Figure 1**. A QA/QC data review on Bus Maintenance Facility flow data revealed the flow meter used to monitor the bus wash facility had stopped reporting data in May 2022 and estimations of flow only included the chassis wash bay discharges from May 2022 to February 2023. A temporary flow meter was installed in February 2023 at the “Sample Manhole” location seen in **Figure 1** to monitor discharges from the Bus Maintenance Facility to the Midway Sewer District while the bus wash flow meter is under repair. The Port notified the Department of Ecology on January 18, 2023, which was several months after the origination of this meter issue. Since the Bus Maintenance Facility and Chassis Wash is a combined outfall, it was not obvious in the data that one meter was not functioning when the flow data was generally a non- zero value. Environmental has implemented an additional check in our data review process to ensure a hidden meter issue such as this could be found much sooner. Additionally, discharge monitoring report data was resubmitted and flagged retroactively for the months of May – December 2022 to reflect the meter issue.



**Figure 1: Bus Maintenance Facility Flow Diagram**



**Table 2: Bus and Chassis Wash Blowdown Summary and Analytical Results**

Month	Flow (a) Max Daily (gal/day)	Flow (b) Avg Daily (gal/day)	Oil & Grease (mg/L)	BOD (mg/L)	TSS (mg/L)	pH (mg/L)
Frequency	Daily	Daily	Monthly	Monthly	Monthly	Monthly
<b>Effluent Limit</b>	<b>17,260</b>	<b>4,380</b>	<b>100</b>	<b>Report</b>	<b>Report</b>	<b>&gt;=6 &amp; &lt;=9</b>
July 2022	>165 °	>24 °	0.57	4.0	11.0	8.08
August	>374 °	>43 °	0.63	3.2	4.0	7.50
September	>307 °	>57 °	1.19	8.8	5.0	7.19
October	>674 °	>60 °	9.22	84.2	14.0	8.42
November	>935 °	>86 °	8.39	78.8	78.0	8.39
December	>696 °	>55 °	0.58	20.2	8.0	7.05
January	>165 °	>37 °	3.63	260	15.0	7.43
February	7,188	2,027	0.94	5.3	7.0	6.65
March	1,434	696	2.15	<12 <sup>d</sup>	5.0	6.65
April	3,424	1,727	4.58	45.4	9.0	7.82
May	8,017	2,669	1.82	11.3	9.0	7.34
June 2023	8,215	2,530	2.04	17.4	8.0	6.73

Notes:

gal/day = gallons per day; mg/L = milligrams per liter

- (a) Maximum Discharge Flow is the highest daily measured flow for any 24-hour period during a calendar month.
- (b) Average Daily Flow is calculated as the total discharge during a calendar month divided by the number of calendar days in that month. The actual number of discharges is not recorded.
- (c) It was discovered during QA/QC review that the flow meter at the Bus Was Facility had stopped reporting data. The flow meter installed at the Chassi Wash facility is operational.
- (d) Method detection limit (for values reported below detection) is used if only a single sample was taken during the monthly reporting period and is presented with a less than (<) sign.