

# Annual Sanitary Sewer Monitoring Report

## Seattle-Tacoma International Airport

*For the Period July 1, 2023 through June 30, 2024*

**September 24, 2024**

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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

### 2.1 Boiler Blowdown

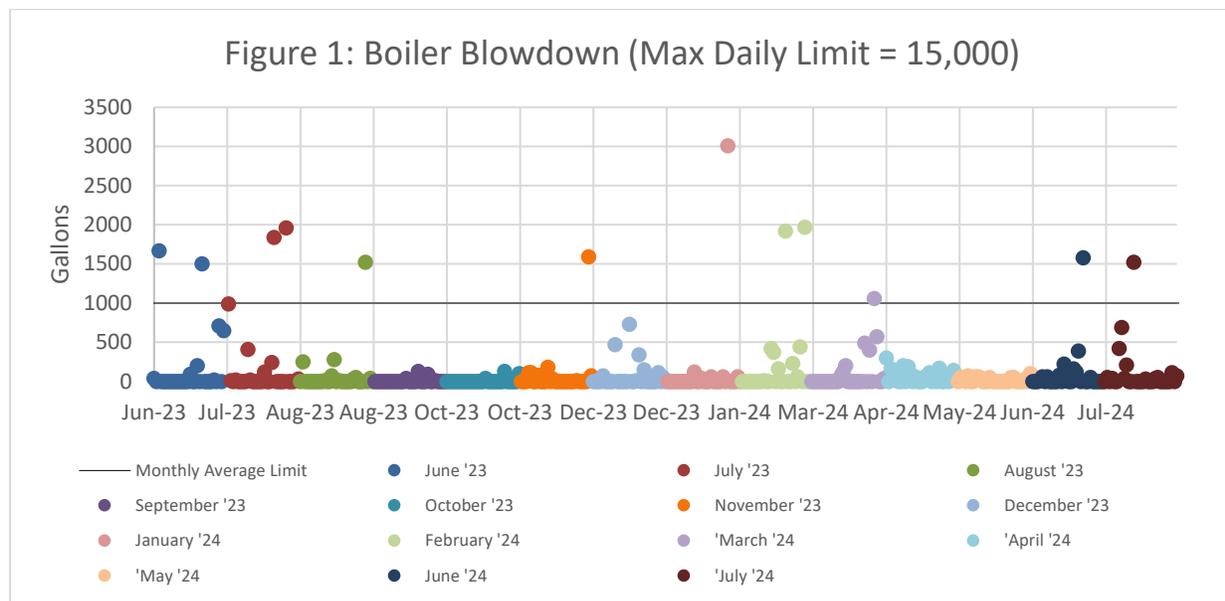
The Seattle-Tacoma International Airport (SEA) boiler room is located on the bottom level of the Main Terminal. Four boilers, each with a water capacity of approximately 1,570 gallons, are used to heat the Main Terminal. Makeup water to the boilers is drawn from the City of Seattle water supply to the 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 August 2023 and again in August 2024. 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 boiler blowdown flow data.

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. **Figure 1** depicts the boiler blowdown discharge for the reporting period.



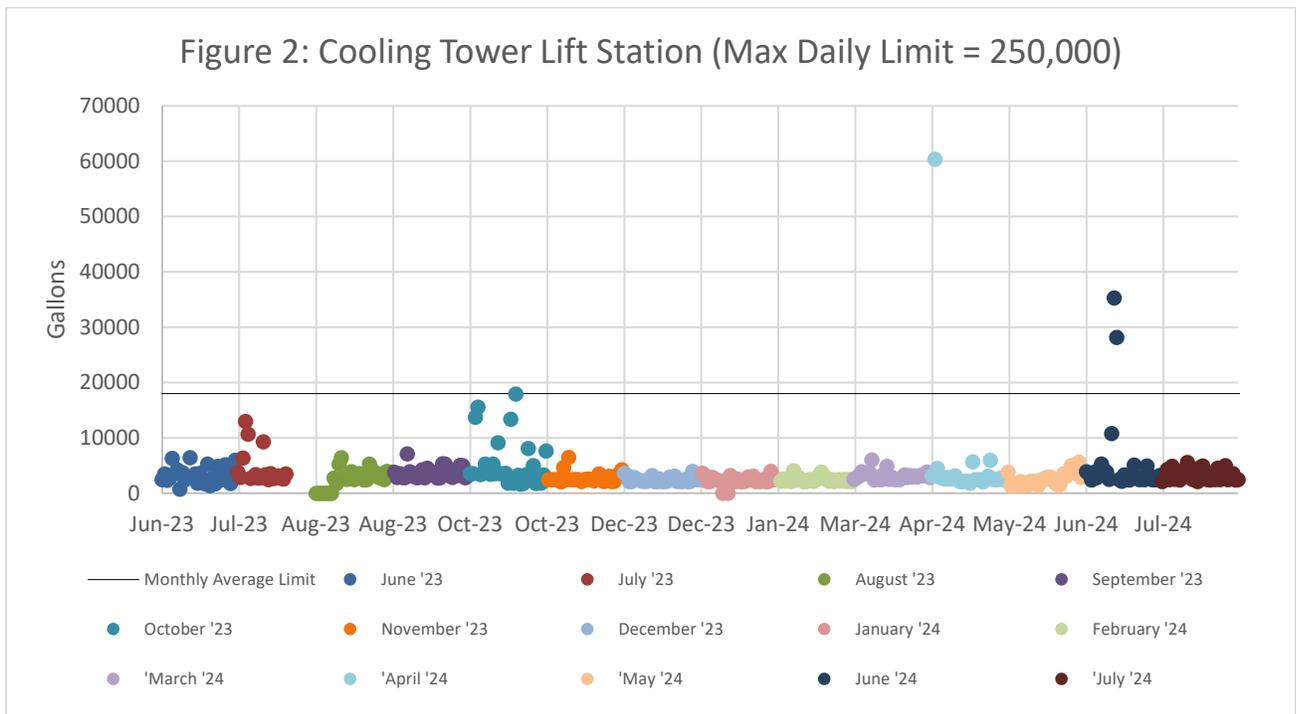
## 2.2 Cooling Tower Blowdown

The SEA 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 August 2023 and again in August 2024. 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. **Figure 2** depicts the cooling tower lift station discharge for the reporting period.



**Table 1: SEA 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 2023	4,880	483	12,968 <sup>d</sup>	2,813 <sup>d</sup>
August	1,520	73	6,438 <sup>d</sup>	2,635 <sup>d</sup>
September	130	9	7,131	3,683
October	130	8.7	17,918	5,307
November	1,590	73	6,493	2,771
December	730	62	3,943 <sup>e</sup>	2,490 <sup>e</sup>
January	3,010	108	3,943	2,334
February	1,970	192	4,061	2,508
March	1,060	95	6,005	3,166
April	300	63	60,382	4,738
May	100	20	5,594	2,605
June 2024	1,580	93	35,300	5,371

## 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) Phase monitor relay went bad on July 21, 2023, causing a loss of power to controller providing false readings. Relay was replaced on August 7, 2023. Notification sent to Ecology.
- (e) Datalogger failed to record cooling tower lift station flow data on December 9 and 11, 2023. Flow was estimated by averaging flows before and after data loss. Notification sent to Ecology.

**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.

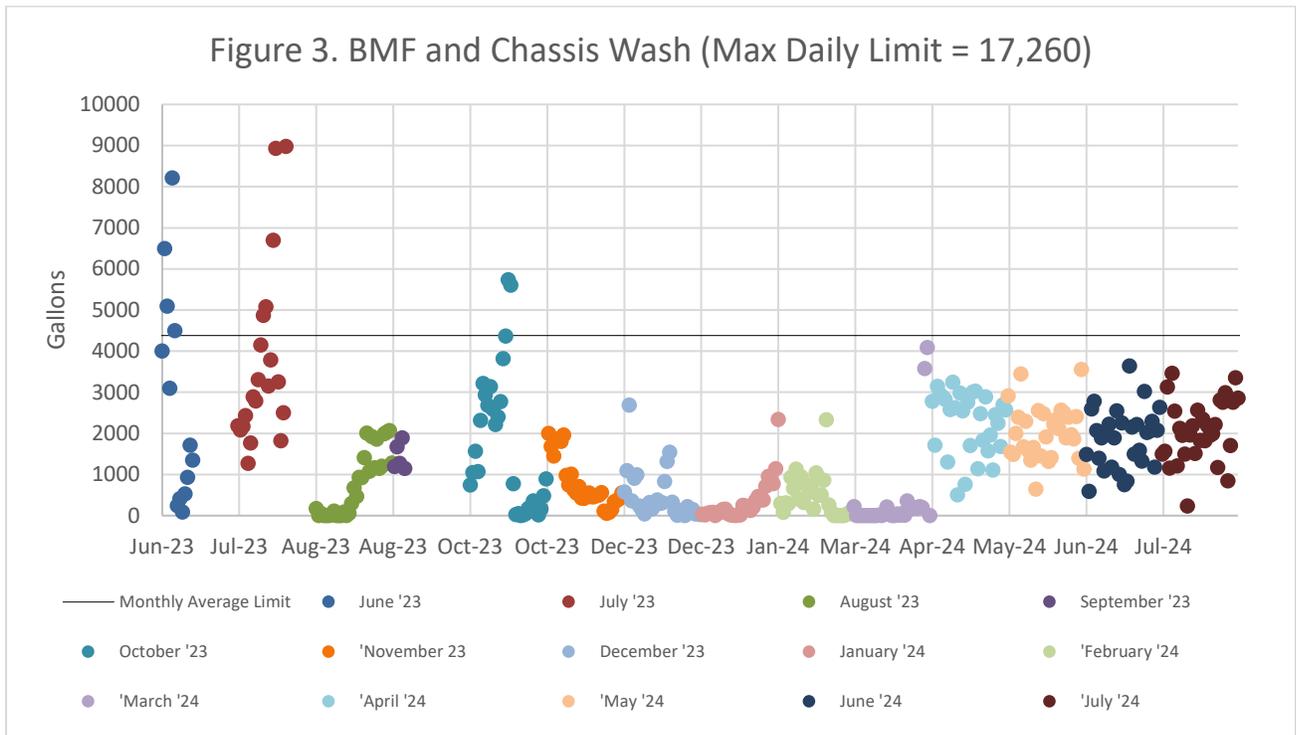
The Port plans to construct a new equipment wash facility at a location yet to be determined. The maximum daily discharge flow is expected to be 5,000 gallons per day (gpd). The Port will notify the Washington State Department of Ecology prior to operations.

**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,

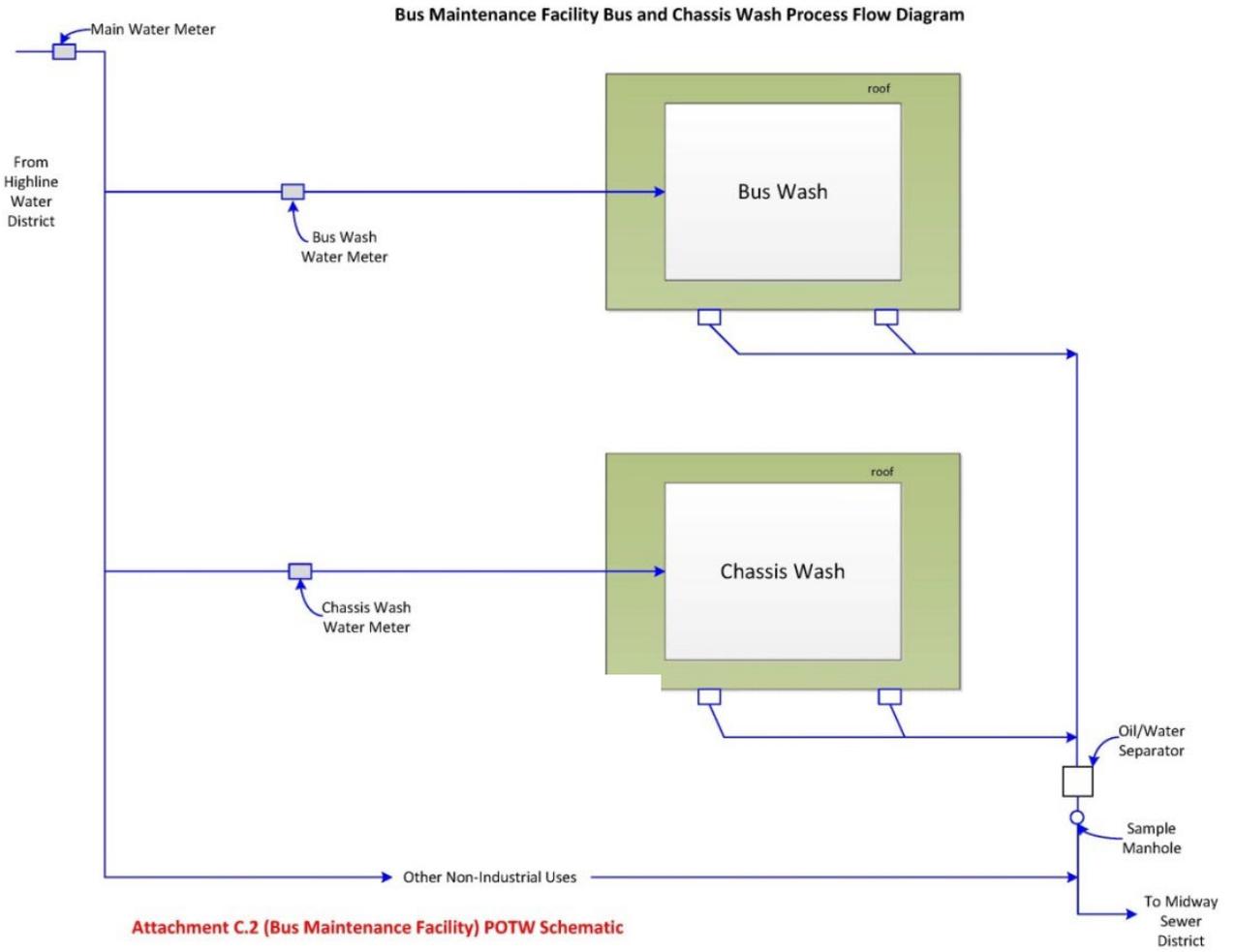
which transport passengers to and from the airport terminal to the consolidated Rental Car Facility. Other than vehicle washing, no other maintenance activities are performed at the bus wash facility.

The Bus Maintenance Facility bus wash and chassis wash bay 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. **Figure 3** depicts the Bus maintenance facility discharge for the reporting period.



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 4**). 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 shown in **Figure 4** to monitor discharges from the Bus Maintenance Facility to the Midway Sewer District while the bus wash flow meter is under repair. Final repairs to the bus wash flow meter were completed on March 22, 2024.

**Figure 4: Bus Maintenance Facility Flow Diagram**



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

Month	Flow <sup>(a)</sup> Max Daily (gal/day)	Flow <sup>(b)</sup> Avg Daily (gal/day)	Oil & Grease (mg/L)	BOD (mg/L)	TSS (mg/L)	pH (mg/L)
Frequency	Daily	Daily	Monthly	Monthly	Monthly	Monthly
Effluent Limit	17,260	4,380	100	Report	Report	>=6 & <=9
July 2023	8,979 <sup>c</sup>	3,705 <sup>c</sup>	2.65	15.2	7.0	6.5
August	2,066 <sup>c</sup>	1,320 <sup>c</sup>	1.81	11.2	5.0	7.2
September	11,728	3,760	2.75	10.0	5.0	7.0
October	5,738	1,660	1.48	5.5	5.0	7.0
November	1,995	785	1.16	9.3	5.0	7.6
December	2,686	443	1.14	8.7	6.0	7.8
January	2,339	330	1.17	< 24.0 <sup>d</sup>	9.0	7.2
February	2,330	456	1.21	9.0	10.0	7.5
March	4,085	315	1.16	9.5	19.0	6.0
April	3,247	2,265	2.57	18.2	10.0	7.2
May	3,553	2,014	1.25	12.3	8.0	7.4
June 2024	3,636	1,876	0.50	4.3	16.0	6.8

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 Wash Facility had a power failure on July 21, 2023, and stopped reporting data through August 14, 2023. The flow meter installed at the Chassi Wash facility is operational. Notification sent to Ecology.
- (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.

**Priority Pollutants**

Priority pollutant sampling was conducted at the Bus Maintenance Facility on May 14, 2024. Results of priority pollutant sampling will be reported to Ecology as part of the permit renewal process.