Annual Sanitary Sewer Monitoring Report

Seattle-Tacoma International Airport

For the Period July 1, 2020 through June 30, 2021

September 30, 2021

Prepared by

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Port of Seattle

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Section 1: Introduction

The Port of Seattle 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 discharge of the boiler blowdown, cooling tower blowdown, equipment wash rack, and bus maintenance facility bus wash and bus maintenance facility chassis blowdown to the Midway Sewer District.

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

Section 2: Waste Stream Descriptions

2.1 Boiler Blowdown

The Seattle-Tacoma International Airport (STIA) boiler room is located on the bottom level of the Main Terminal, under the airport drives. 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 (psig). 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 (blowdown) from the boiler flows through a common header into a 1000-gallon quench tank. From the quench tank, discharges pass through a flow meter and into the sanitary sewer.

The boiler flow meters were calibrated in August 2021. Output from the flow meter is logged in an Apogee digital data controller (DDC) and held in an internal database. Current preventive maintenance procedures call for recalibrating the meter annually.

Bottom blowdown is conducted as needed based upon operating judgement by opening the block valve for approximately 15-20 seconds.

The boilers are drained annually for maintenance or to remove condensation from inactive boilers.

Table 1 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 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 2021. Flow meter readings are electronically recorded and stored by the same DDC used for the boilers. **Table 1** provides a monthly average and peak flow summary for cooling tower wastewater discharges.

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

	Boilers		Cooling Towers	
Month	**Maximum Daily Flow[a] (c)** (gallons/day)	**Average Daily Flow [b] (c)** (gallons/day)	**Maximum Daily Flow[a]** (gallons/day)	**Average Daily Flow [b]** (gallons/day)
NPDES Effluent Limitation	**15,000**	**1,000**	**250,000**	**18,000**
July	870	530	11,549	4,399
August	3,820	230	10,586	4,683
September	60	9	9,020	3,676
October	1,610	126	9,033	3,976
November	700	86	8,211	3,331
December	1,830	251	81,067	7,738
January	2,290	160	5,776	2,673
February	240	65	6,408	3,316
March	4,200	94	30,239	4,377
April	3,130	180	9,492	3,689
May	10,650	728	9,760	4,168
June	1,970	239	10,308	5,019

Note:

(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. Actual number of discharges is not recorded.

(c) Boiler maintenance drainage volumes are included in quantities for daily average and daily maximum flows.

2.3 Equipment Wash Rack

The permitted location for the wash rack was modified in the most recent revision of the Airport's NPDES permit. It previously was located on the mid-east portion of the airport, west of the Delta Airlines ground service maintenance facility. This wash rack was installed in 2003 for ground service equipment cleaning and pressure washing and is no longer in service.

The Port plans to construct a new Equipment Wash Rack facility at a location yet to be determined. The maximum daily discharge flow is estimated to be 5,000 gpd. The Port will notify Ecology prior to operations.

2.4 Bus Maintenance Facility Bus Wash and Chassis Wash Bay

The Bus Maintenance Facility Bus Wash blowdown is from a drive-through automated bus wash bay. The Bus Maintenance Facility Bus Wash and Chassis Wash Bay facility was activated on May 17, 2012 in support of the 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 wash rack facility.

The Bus Maintenance Facility bus wash and chassis blowdown merges prior to treatment by an oil/water separator. Following treatment, the blowdown discharges to the main sanitary sewer line to Midway Sewer District. The oil and grease, pH, TSS and 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.

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** (S.U.)
Frequency	**Daily**	**Daily**	**Monthly**	**Monthly**	**Monthly**	**Monthly**
Effluent Limit	**17,260**	**4,380**	**100**	**Report**	**Report**	**=>6 & <9**
July	3,501	1,528	3.80	56.0	9.00	6.72
August	3,957	1,607	2.00	8.20	4.00	6.43
September	3,770	1,890	0.30	13.70	5.00	6.62
October	4,615	1,418	0.57	7.20	5.00	6.04
November	5,131	2,272	1.71	12.30	5.00	6.75
December	4,944	1,787	1.78	12.80	11.00	7.23
January	4,473	2,148	2.65	ND	5.00	7.04
February	4,488	686	6.29	57.60	20.00	7.01
March	4,114	1,788	2.89	14.90	8.00	7.00
April	3,815	1,554	1.77	8.80	2.00	7.17
May	3,898	1,790	15.80	95.10	8.00	7.28
June	2,880	1,674	0.83	6.80[c]	6.00	7.71

Notes:

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. Actual number of discharges is not recorded.
c. Lab error, value read on day 7 of incubation.