



# **Annual Sanitary Sewer Monitoring Report**

## **Seattle-Tacoma International Airport**

*For the Period July 1, 2014 through June 30, 2015*

**September 25, 2015**

Prepared by

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Port of Seattle



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## **Section 1: Introduction**

The Port of Seattle NPDES Permit No. WA-002465-1, Part I Special Condition S2.G requires the Port to submit an annual Sanitary Sewer Report. This report summarizes the discharge of the boiler blowdown, cooling tower blowdown, rental carwash, and equipment washrack, bus maintenance facility bus wash and bus maintenance facility chassis blowdown to the Midway Sewer District.

Part I, Special Conditions S1 and S2 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 July 2015. 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. Each boiler was removed from service for maintenance during the Summer 2014.

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 July 2015. Flow meter readings are electronically recorded and stored by the same DDC used for the boilers. Cooling tower maintenance is scheduled on a biannual basis and was performed in 2014. Table 1 provides a monthly average and peak flow summary for boiler and cooling tower wastewater discharges.

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

Month	Boilers		Cooling Towers	
	Maximum Daily Flow <sup>(a) (c)</sup> (gallons/day)	Average Daily Flow <sup>(b) (c)</sup> (gallons/day)	Maximum Daily Flow <sup>(a)</sup> (gallons/day)	Average Daily Flow <sup>(b)</sup> (gallons/day)
<b>NPDES Effluent Limitation</b>	<b>15,000</b>	<b>1,000</b>	<b>250,000</b>	<b>18,000</b>
July	1650	95	5426	3615
August	220	26	5379	3165
September	140	19	5897	2977
October	660	112	5863	3006
November	290	52	5091	2836
December	770	41	8589	2107
January	770	71	3526	2016
February	120	14	3405	1979
March	2120	87	4681	1880
April	1610	136	5224	2552
May	220	28	8348	4459
June	180	52	6478	3383

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 Rental Carwash Blowdown

The rental carwash facility discontinued operations of May 17, 2012 due to the opening of the offsite Comprehensive Rental Car Facility. This outfall is non-operational and no future discharges are anticipated.

### 2.4 Equipment Washrack

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 Washrack 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.

### 2.5 Bus Maintenance Facility Bus Wash and Chassis 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 facility.

The Bus Maintenance Facility Bus Wash blowdown is from a drive-through automated bus wash bay.

The Bus Maintenance Facility bus wash and chassis blowdown is combined. The volume reported is the approximate total volume discharge from each facility. The bus wash rack and chassis wash bay blowdowns are treated by an oil/water separator prior to discharging 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.

At the Bus Maintenance Facility, the water flow meters used to measure usage and related data acquisition did not function correctly. As of the third quarter 2015, the necessary modifications and adjustments have been made to allow this equipment to be utilized. The commissioning phase is now underway.



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

Month	Bus Wash		Chassis Wash		Combined Bus and Chassis Wash <sup>d</sup>			
	Flow <sup>(a)</sup> Max Daily (gal/day)	Flow <sup>(b)</sup> Avg Daily (gal/day)	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 (S.U.)
	Frequency	Daily	Daily	Daily	Daily	Monthly	Monthly	Monthly
<b>Effluent Limit</b>	<b>15,300</b>	<b>3,280</b>	<b>1,960</b>	<b>1,100</b>	<b>100</b>	<b>Report</b>	<b>Report</b>	<b>=&gt;6 &amp; &lt;9</b>
July	1222 <sup>c</sup>	1222 <sup>c</sup>	9 <sup>c</sup>	9 <sup>c</sup>	2.97	17.2	14.0	7.02
August	498	107	235	50	12.4	23.3	21.8	7.91
September	303 <sup>d</sup>	131 <sup>d</sup>	143 <sup>d</sup>	62 <sup>d</sup>	1.06	10.4	8.3	6.60
October	218	72	103	34	3.2	17.4	18.1	7.08
November	888	148	418	70	7.6	30.2	8.8	7.32
December	1435	664	675	312	2.2	10.8	5.4	7.12
January	470	120	470	120	2.03	6.5	8.4	7.31
February	2413	516	1136	243	1.0	5.2	6.4	7.02
March	8327	1935	3919 <sup>e</sup>	911 <sup>e</sup>	1.73	8.7	9.1	6.88
April	1792	563	844	265	2.05	10.0	8.3	7.12
May	277	68	15	2	1.45	8.2	5.0	7.11
June	128 <sup>c</sup>	128 <sup>c</sup>	16	0.5	6.0	53.7	10.5	7.08

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. The flow meters malfunctioned and recordings did not match up to water usage. The average daily water usage was reported.
- d. The bus maintenance flow meter results were erratic over multiple days. These readings are not representative of actual discharges and were not used to calculate blowdown.
- e. The chassis and bus wash combined daily volume discharged on 3/24 & 3/25 was 12,246 gallons and 6,455 gallons. This is less than the combined maximum permitted discharge of 17,260 gallons.