



Annual Industrial Stormwater Monitoring Report

Seattle-Tacoma International Airport

For the Period July 1, 2024 through June 30, 2025

September 30, 2025

Prepared by

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Port of Seattle

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1.0 INTRODUCTION

The Port of Seattle's (Port) National Pollutant Discharge Elimination System (NPDES) permit WA0024651 is broken down into three sections: Part 1: Industrial Wastewater, Part 2: Industrial Stormwater and Part 3: Construction Stormwater. NPDES Permit Part 2 Special Condition 2S1.G requires an annual summary of industrial stormwater monitoring results. The twelve-month period is defined as July 1, 2024 through June 30, 2025. This report provides a summary of industrial monitoring and permit compliance results for the stormwater drainage system outfalls identified in Part 2 of the NPDES permit during this period.

Outfall sampling results summarized in this report include data previously submitted to Washington State Department of Ecology (ECY) in the NPDES permit Part 2 Discharge Monitoring Reports (DMRs), plus additional stormwater sample data such as quality assurance sampling and samples that were analyzed for additional parameters not required by the Permit. Toxicity monitoring as required by Part 2 of the NPDES permit is discussed but results are found in separate toxicity report submittals to ECY.

The Port met all required sampling collection and reporting requirements in the NPDES permit for the 2024-2025 data collection period. Stormwater samples are collected from eleven (11) outfalls which discharge to five (5) different receiving waters; Lake Reba, Miller Creek, Walker Creek, Northwest Ponds, and Des Moines Creek. A total of forty-one (41) grab and forty-one (41) composite stormwater samples from 12 storm events were collected in the past year with results reported on quarterly DMRs. There were two (2) instances of permit limit exceedances associated with 246 individual constituent analyses from eighty-two (82) collected samples.

This report is organized into four sections following the introduction. Section 2 describes background conditions at the Seattle-Tacoma International Airport including descriptions of each drainage subbasin and outfall sampling location. Section 3 presents all the DMR related grab sample and composite sample analytical data collected during the reporting period and the rainfall totals for the period. Additional monitoring for compliance related reasons is also included. Section 4 provides a summary of the effluent limit compliance and best management practices (BMP) implementation during the monitoring period. A summary and conclusion are provided in Section 5.

2.0 BACKGROUND

2.1 Seattle-Tacoma International Airport Drainage

Located mid-way between the cities of Seattle and Tacoma, Washington, The Seattle-Tacoma International Airport (SEA) was built in the 1940s and is owned and operated by the Port. According to the Port's 2024 Key Facts and Figures, SEA handled 460,062 metric tons of air cargo, and over 52 million passengers. SEA is ranked the eleventh busiest U.S. passenger airports and has a regional impact of more than \$22.5 billion in business revenue, generating more than 174,950 jobs.

Stormwater drainage at SEA is separated into two different collection systems, the Industrial Wastewater System (IWS) and the Storm Drainage System (SDS). The IWS receives stormwater runoff from the ramp and other areas involved with aircraft servicing and maintenance, providing treatment before discharge to Puget Sound through a separate outfall. SEA also has the ability to discharge through an outfall to King County's South Treatment Plant for additional treatment when required. This outfall is regulated by Industrial Wastewater Discharge Permit #7810-05 issued by King County. Approximately 372 acres are diverted to the IWS.

The SDS drains over 1,200 acres. Half of this area is impervious and primarily associated with airport runways, taxiways, parking lots, roads and roof tops. The remainder is pervious which consists of landscaped or fallow open spaces and areas associated with stormwater treatment best management practices (BMPs) such as runway filter strips. About 25 percent of the area drained by the SDS flows to Miller Creek. This drainage area represents about 7 percent of Miller Creek's watershed. Approximately 71 percent of the total SDS area drains to the Northwest Ponds and Des Moines Creek, which represents about 21 percent of the creek's watershed.

2.2 SEA Storm Drainage Subbasins, Activities, and Outfall Descriptions

The Airport's SDS is segregated into separate stormwater subbasins that each drain to individual outfall locations. The NPDES permit lists a total of thirteen (13) outfalls in two categories: Existing & New Outfalls and Subbasins, and Future Outfalls to be activated during future development. As of June 30, 2025, eleven (11) of the thirteen (13) outfalls are active and discharge stormwater related to industrial activity.

SEA stormwater subbasins are categorized according to their dominant activities: landside or airfield. These categories group subbasins together by similar land use and other characteristics. In general, passenger vehicle operations are absent from the airfield drainage subbasins while aircraft operations are absent from the landside subbasins. SDE4/S1 subbasin is an exception in that it includes both airfield and landside activities. Previous reports found that concentrations of total petroleum (TPH), total suspended solids (TSS) and other constituent concentrations were

different for the landside and airfield categories (POS 1996a, 1997a.). **Table 1**, *SEA Subbasin Characteristics*, describes each active subbasin, receiving water, activities within each subbasin, stormwater management BMPs, and total pervious and impervious surface areas. The physical location of the outfalls listed in **Table 1** are shown on **Figure 1** along with additional receiving water monitoring locations used for sublethal toxicity and *in situ* toxicity testing.

2.3 Permit Effluent Limits

The 2021 NPDES permit specifies effluent limits for turbidity, pH, oil and grease, total copper, and total zinc (see **Table 2**). The major changes from the previous permit effluent limits are the removal of lead analysis and an adjusted pH range for outfalls SDN3A, SDW1A, SDW1B, and SDW2. The pH range for these listed outfalls was widened to 6.3-9.0 with concurrent receiving water monitoring after a study showed discharge within this range would not cause a violation of water quality standards in the receiving water. Lead was removed from the sampling effort for this permit based on Port studies that identified lead exceedances as extremely unlikely.

Effluent limits for industrial stormwater became effective several permits ago on December 31, 2007. The site-specific study and subsequent derivation of site-specific water quality based effluent limits for copper and zinc are described in the 2016 NPDES Permit fact sheet. A 25 NTU effluent limit for turbidity was added in the April 1, 2009 permit as a replacement for an earlier TSS benchmark.

The permit specifies effluent limits for ammonia and nitrates/nitrites; however monitoring for these parameters is only required if urea is applied as an anti-icing agent. Urea was not applied in this reporting year and has not been utilized at the Airport since 1996.

Table 1. SEA Subbasins Characteristics

Outfall Name	Receiving Water	General Category	Industrial Activity	Non-Industrial Activity	Pervious Area^b (acres)	Impervious Area^b (acres)	Total Area^{b, c} (acres)
SDE4/S1	Des Moines Creek (East Branch)	Landside	Limited portions of the airfield taxiways.	Public roads, vehicle parking areas, rooftops (terminal, hangar, cargo) and landscaped areas.	41.5	138.1	179.6
SDD-06A	Des Moines Creek (East Branch)	Landside	Loading docks, vehicle maintenance, vehicle washing, equipment parking and maintenance.	Public roads, vehicle parking areas, rooftops (terminal, hangar, cargo) and landscaped areas.	18.2	27.2	45.3
SDN1	Miller Creek via Lake Reba	Landside	Flight service kitchen.	Public roads, building rooftops and vehicle parking.	3.8	14.8	18.6
SDS3/5	NW Ponds and Des Moines Creek West	Airfield	Ground surface deicing/anti-icing, aircraft taxi, takeoff and landings.	Perimeter road, open areas and building rooftops.	206.3	250.6	456.8

Table 1. SEA Subbasins Characteristics

Outfall Name	Receiving Water	General Category	Industrial Activity	Non-Industrial Activity	Pervious Area^b (acres)	Impervious Area^b (acres)	Total Area^{b, c} (acres)
SDS4	NW Ponds and Des Moines Creek West	Airfield	Ground surface deicing/anti-icing, aircraft taxi, takeoff and landings.	Runway infield and open areas.	40.5	25.9	66.3
SDS6/7	NW Ponds and Des Moines Creek West	Airfield	Ground surface deicing/anti-icing, aircraft taxi, takeoff and landings.	Access roads, runway infield and open areas.	63.9	45.7	109.6
SDN2/3/4 ^a	Miller Creek via Lake Reba	Airfield	Ground surface deicing/anti-icing, aircraft taxi, takeoff and landings.	Perimeter road, access road, taxiway infield and open areas.	71.3	44.6	115.9
SDN3A	Miller Creek	Airfield	Ground surface deicing/anti-icing, aircraft taxi, takeoff and landings.	Perimeter road, runway infield and open areas.	23.1	8.1	31.2
SDW1A	Miller Creek	Airfield	Ground surface deicing/anti-icing, aircraft taxi, takeoff and landings.	Perimeter road, runway infield and open areas.	44.1	26.0	70.1

Table 1. SEA Subbasins Characteristics

Outfall Name	Receiving Water	General Category	Industrial Activity	Non-Industrial Activity	Pervious Area^b (acres)	Impervious Area^b (acres)	Total Area^{b, c} (acres)
SDW1B	Miller Creek	Airfield	Ground surface deicing/anti-icing, aircraft taxi, takeoff and landings.	Perimeter road, runway infield and open areas.	59.5	25.0	84.5
SDW2	Walker Creek	Airfield	Ground surface deicing/anti-icing, aircraft taxi, takeoff and landings.	Perimeter road, runway infield and open areas.	30.9	10.8	41.7
Note:					Total Area	584.9	639.3
						1224.1	

a) The SDN2 runoff is pumped to IWS for all flows up to the 6 month /24-hour event. The SDN2 subbasin comprises approximately 46.5 acres, 36.6 of which are impervious. This area is included in acreages reported to the IWS.

b) Subbasin areas as described in the 2020 NPDES permit renewal application. Based on 2018 GIS analysis completed by Aspect consulting predominantly using a 2017 aerial.

c) Stormwater pond areas were not included in total acres. It is anticipated that ongoing changes resulting from planned construction will alter subbasin totals in the future.

Figure 1. Sampling Locations

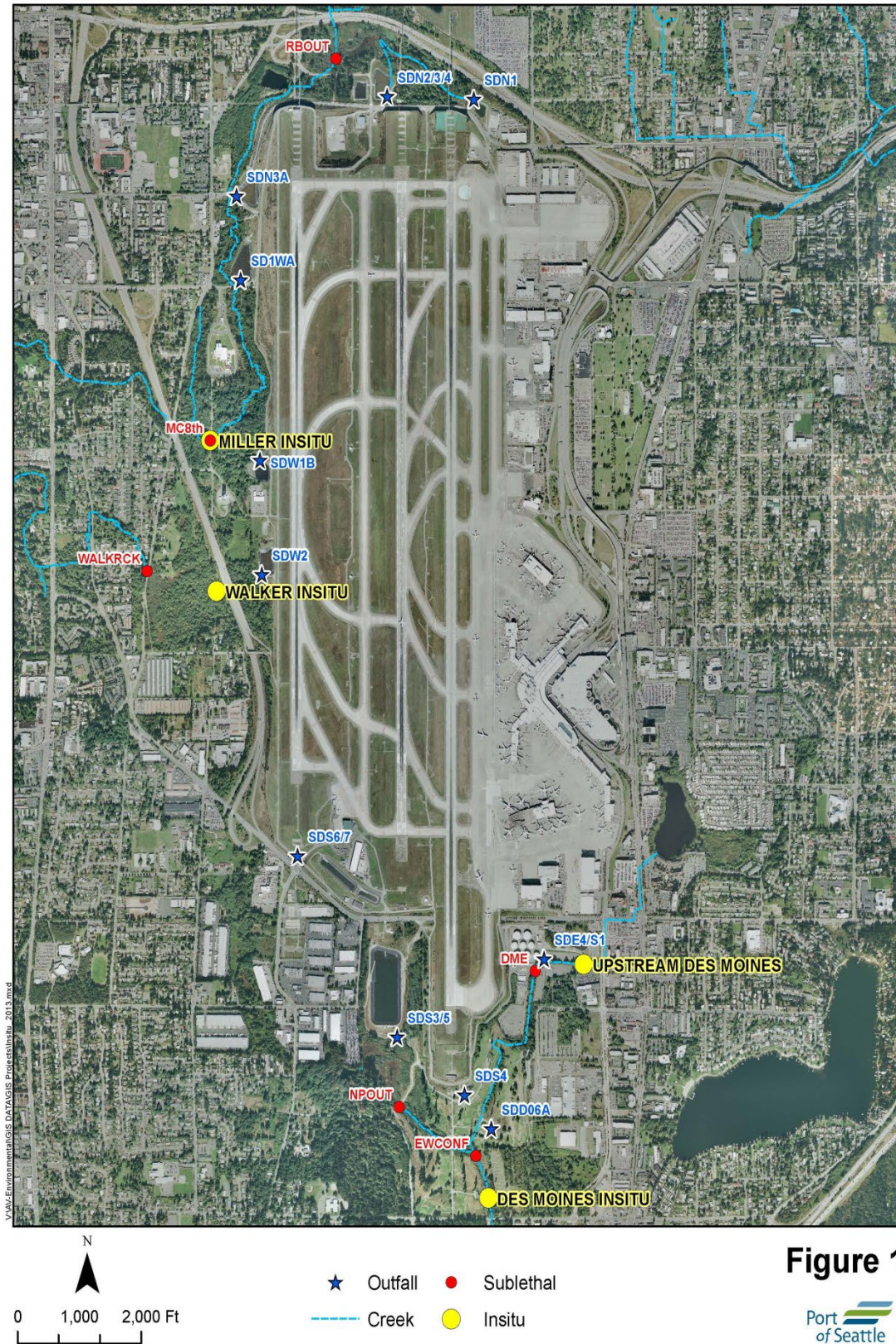


Figure 1

3.0 SAMPLING RESULTS AND DISCUSSION

This section of the Annual Report summarizes the results of SDS outfall monitoring. All data summarized in this section has been reported to ECY on quarterly DMRs and is included in **Appendix A**. Data generated from grab and composite samples are presented and discussed. These types of samples employ different protocols that represent different temporal periods of the particular stormwater discharge event and are therefore evaluated separately. Grab samples represent an instantaneous or short duration sampling period, while composites are collected over the storm event hydrograph to provide an event mean concentration (EMC).

In addition to the DMR data, this report summarizes other data collected at the outfalls listed in Part 2, 2S1 of the NPDES permit. These other data consist of field equipment blank samples, field duplicate samples, and other parameters collected during the monitoring period. These other data are presented in **Appendix B**. Section 3.2 of this report summarizes *in situ* toxicity testing at receiving water sites downstream of SEA outfalls, and Section 3.3 provides a summary of additional monitoring completed for compliance related issues.

3.1 Monitoring of Industrial Stormwater Discharges

3.1.1 Sampling Objectives and Procedures

Sampling protocols and locations have been selected to provide data consistent with the requirements of the NPDES permit and the representativeness criteria set forth in the *Quality Assurance Program Plan for Seattle-Tacoma International Airport Industrial Stormwater Discharge Monitoring Program* (QAPP) (Aspect Consulting, Inc. 2021). The monitoring locations were selected to represent stormwater downstream of the last Best Management Practice (BMP) within each subbasin.

The QAPP describes the criteria for sampling storm events and describes all relevant sampling, programming, and handling necessary to satisfy the monitoring requirements of the permit. **Table 2** lists the current constituents measured or analyzed, methods used, and detection limits. The Port reports results on DMRs from storms and samples that were considered representative according to criteria specified in the QAPP.

The Port uses telemetry-based automatic samplers to collect a grab sample followed by a flow-weighted composite sample during rainstorms of 0.10 inches or greater that are preceded by less than 0.10 inch of rainfall in the previous 24 hours. These rainfall and antecedent sampling conditions are specified in the NPDES permit, Part 2, 2S2.B. Each grab or composite sample is analyzed for the constituents listed in **Table 2** based on sample type as specified in the NPDES permit.

Table 2. Constituents, Methods and Detection Limits

Constituent	Method	Detection limit (MDL)	Sample Type	Effluent Limits
pH	150.1 ⁽¹⁾	0.01 S.U.	Grab	6.5 – 8.5 S.U. ³
Oil & Grease - TPH (by GC)	NWTPH-Dx ⁽²⁾	0.75 mg/l	Grab	15 mg/L – no sheen
Turbidity	180.1 ⁽¹⁾	0.05 NTU	Grab	25 NTUs
Total Recoverable Copper	200.8 ⁽¹⁾	0.5 µg/l	flow-wt comp.	25.6 to 59.2 µg/l
Total Recoverable Zinc	200.8 ⁽¹⁾	4.0 µg/l	flow-wt comp.	71.4 to 117 µg/l

1. Method refers to EPA-600/4-79-020 (U.S. EPA 1983 and updates).

2. Method reports both a motor oil fraction and diesel fraction. TPH-Dx is the sum of these two fractions.

3. Approved limits for pH at stations SDN3A, SDW1A, SDW1B, SDW2 are 6.3 to 9.0 S.U.

3.1.2 Field Quality Control Samples

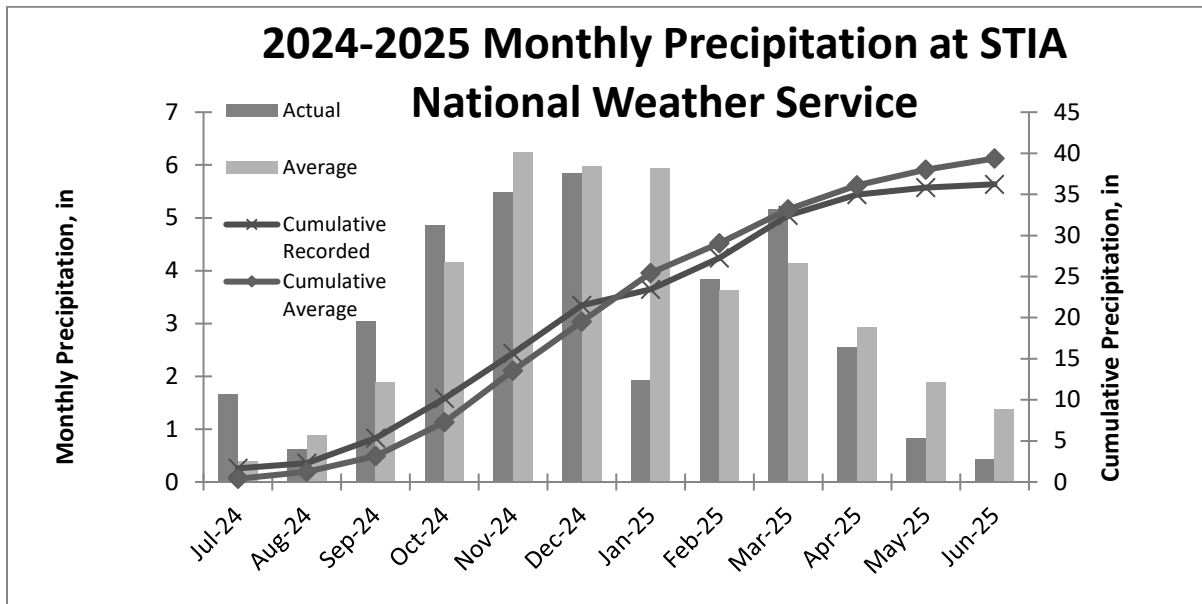
The Port routinely collects field duplicate and equipment blank samples during NPDES sampling events in accordance with the QAPP. **Appendix B** summarizes these results. The results reflect on the efficacy of the Port’s “clean” sampling methods developed for stormwater monitoring relative to metals (POS 1999). Four (4) Field Quality Control samples were collected in the 2024 – 2025 reporting period. There were no anomalies associated with samples collected during these same storm events.

3.1.3 Storm Events and Precipitation

During this reporting period, the Port sampled twelve (12) precipitation events with precipitation ranging from 0.16 to 1.06 inches. Dry weather preceding these sampling events ranged from 16 hours (March 4, 2025) to 18.7 days (August 17, 2024). The tabular sample data in **Appendix A** includes storm event data such as precipitation depth, antecedent precipitation amounts, and length of antecedent dry period.

During the current permit’s annual reporting schedule, 36.23 inches of precipitation fell at SEA; 3.14 inches less than the historical (2002-2025) average of 39.37 inches and 1.06 inches less than the previous monitoring year of 37.29 inches. Monthly precipitation totals were below average for August, November, December, January, April, May, and June. Precipitation totals were above average during the months of July, September, October, February, and March. **(Figure 2).**

Figure 2. Precipitation Summary



3.1.4 Grab Sample Results and Discussion

The following discussion includes results from 41 grab samples collected in the past year. Grab samples are analyzed for pH, TPH, and turbidity per current permit requirements. Tabular results are presented at the end of this section and summary statistics are contained in **Appendix A**.

3.1.4.1 pH

The median pH value from all outfalls was 7.1 Standard Units (S.U.). Sample results fell within the effluent limit range of 6.5 to 8.5 S.U. (6.3-9.0 at SDN3A, SDW1A, SDW1B and SDW2).

The Port has completed projects to retrofit and address depressed pH values in the SDE4/S1 and SDD06A basins during this reporting period. The swale for the SDS1 basin received a forebay of oyster shells and a flow dispersal pipe at the inlet, and the pond at SDD06A had vegetation removed at the pond inlet, oyster shells installed, and a gabion wall of limestone quarry spall installed to increase contact time with the oyster shells.

3.1.4.2 Total Petroleum Hydrocarbons (TPH)

Total Petroleum Hydrocarbons is determined by the ECY method NWTPH-Dx; the summation of the diesel and motor oil range TPH quantified by this method resembles

the concentration of oil & grease. TPH ranged from 0.20 mg/L to 3.54 mg/L. The estimated median TPH concentration at all outfalls was 0.85 mg/L. However, the actual median TPH concentration may have been lower since TPH was only detected in 8 of the 41 samples. All sample results were well below the TPH effluent limit of 15 mg/L.

3.1.4.3 Turbidity

The median turbidity for all outfalls was 4.0 NTU with a range from 0.0 NTU to 16.3 NTU. There were no permit limit exceedances for turbidity at any outfalls during the monitoring period.

Table 3. Grab Sample Data

								pH	Turbidity	TPH-D	TPH-MO	Total TPH	Sheen
Outfall	StormDate	Depth, in.	Dur, hr.	Max Int, in/hr	24hrant, in.	48hrant, in.	Dryant, hr	ph Units	NTU	mg/l	mg/l	mg/L	Visual
SDE4/S1	08/17/2024	0.45	5	0.21	0	0	448	7.0	16.3	1.50	2.04	3.54	No sheen
SDE4/S1	11/10/2024	1.06	28	0.11	0.04	0.07	20	7	3.6	0.102	< 0.200	0.20	No sheen
SDE4/S1	12/07/2024	0.62	24	0.12	0	0.01	46	6.84	0.04	< 0.100	< 0.200	<0.3	No sheen
SDE4/S1	02/19/2025	0.16	6	0.06	0.01	0.22	20	7.1	9.1	0.152	0.303	0.46	No sheen
SDE4/S1	03/04/2025	0.25	11	0.11	0.01	0.02	16	6.6	0.3	< 0.100	< 0.200	<0.3	No sheen
SDE4/S1	04/06/2025	0.88	36	0.19	0	0	83.7	7	6.6	< 0.100	< 0.200	<0.3	No sheen
SDE4/S1	04/20/2025	0.4	14	0.26	0.02	0.03	42	6.8	16.1	0.172	0.603	0.78	No sheen
SDS3/5	08/17/2024	0.45	5	0.21	0	0	448	6.7	4.3	0.234	0.235	0.47	No sheen
SDS3/5	11/12/2024	0.65	33	0.15	0.07	1.06	21	6.8	2.5	< 0.100	< 0.200	<0.3	No sheen
SDS3/5	02/19/2025	0.16	6	0.06	0.01	0.22	20	7.3	2.0	< 0.100	< 0.200	<0.3	No sheen
SDS3/5	04/10/2025	0.31	6	0.18	0	0.17	41	7.3	5.3	< 0.100	< 0.200	<0.3	No sheen
SDS4	08/17/2024	0.45	5	0.21	0	0	448	7.3	2.0	< 0.100	< 0.200	<0.3	No sheen
SDS4	12/07/2024	0.62	24	0.12	0	0.01	46	6.91	1.21	< 0.100	< 0.200	<0.3	No sheen
SDS4	01/30/2025	0.82	25	0.1	0	0	296.75	6.6	0.6	< 0.100	< 0.200	<0.3	No sheen
SDS4	04/06/2025	0.88	36	0.19	0	0	83.7	6.9	5	< 0.100	< 0.200	<0.3	No sheen
SDS6/7	08/17/2024	0.45	5	0.21	0	0	448	7.2	6.9	0.171	< 0.200	0.27	No sheen
SDS6/7	11/10/2024	1.06	28	0.11	0.04	0.07	20	7.5	4.4	< 0.100	< 0.200	<0.3	No sheen
SDS6/7	03/04/2025	0.25	11	0.11	0.01	0.02	16	6.8	1.1	< 0.100	< 0.200	<0.3	No sheen
SDS6/7	04/20/2025	0.4	14	0.26	0.02	0.03	42	7.2	0	< 0.100	< 0.200	<0.3	No sheen
SDN1	11/10/2024	1.06	28	0.11	0.04	0.07	20	6.8	2.3	0.173	0.439	0.61	No sheen
SDN1	02/19/2025	0.16	6	0.06	0.01	0.22	20	6.7	8.1	0.136	0.302	0.44	No sheen
SDN1	04/10/2025	0.31	6	0.18	0	0.17	41	6.9	7.3	< 0.100	< 0.200	<0.3	No sheen
SDW2	11/10/2024	1.06	28	0.11	0.04	0.07	20	7.2	2.9	< 0.100	< 0.200	<0.3	No sheen
SDW2	02/19/2025	0.16	6	0.06	0.01	0.22	20	7.5	1.6	< 0.100	< 0.200	<0.3	No sheen
SDW2	04/06/2025	0.88	36	0.19	0	0	83.7	8.3	4	< 0.100	< 0.200	<0.3	No sheen
SDW1B	11/10/2024	1.06	28	0.11	0.04	0.07	20	7.1	1.4	< 0.100	< 0.200	<0.3	No sheen
SDW1B	02/19/2025	0.16	6	0.06	0.01	0.22	20	7.2	1.1	< 0.100	< 0.200	<0.3	No sheen
SDW1B	04/06/2025	0.88	36	0.19	0	0	83.7	6.7	3.5	< 0.100	< 0.200	<0.3	No sheen
SDW1A	11/10/2024	1.06	28	0.11	0.04	0.07	20	7	3.9	< 0.100	< 0.200	<0.3	No sheen
SDW1A	01/30/2025	0.82	25	0.1	0	0	296.75	6.9	3.1	< 0.100	< 0.200	<0.3	No sheen

								pH	Turbidity	TPH-D	TPH-MO	Total TPH	Sheen
Outfall	StormDate	Depth, in.	Dur, hr.	Max Int, in/hr	24hrant, in.	48hrant, in.	Dryant, hr	ph Units	NTU	mg/l	mg/l	mg/L	Visual
SDW1A	04/20/2025	0.4	14	0.26	0.02	0.03	42	6.6	3.5	< 0.100	< 0.200	<0.3	No sheen
SDN3A	11/10/2024	1.06	28	0.11	0.04	0.07	20	7.2	3.1	< 0.100	< 0.200	<0.3	No sheen
SDN3A	01/30/2025	0.82	25	0.1	0	0	296.75	6.7	3.4	< 0.100	< 0.200	<0.3	No sheen
SDN3A	05/16/2025	0.22	10.17	0.07	0	0.1	36	6.9	4.6	< 0.100	< 0.200	<0.3	No sheen
SDN2/3/4	11/10/2024	1.06	28	0.11	0.04	0.07	20	7.2	1.3	< 0.100	< 0.200	<0.3	No sheen
SDN2/3/4	02/19/2025	0.16	6	0.06	0.01	0.22	20	7.4	3.0	< 0.100	< 0.200	<0.3	No sheen
SDN2/3/4	04/06/2025	0.88	36	0.19	0	0	83.7	7.7	3.9	< 0.100	< 0.200	<0.3	No sheen
SDD06A	08/22/2024	0.84	49	0.08	0	0	48.5	7.0	1.5	< 0.100	< 0.200	<0.3	No sheen
SDD06A	11/10/2024	1.06	28	0.11	0.04	0.07	20	7.3	2.4	< 0.100	< 0.200	<0.3	No sheen
SDD06A	02/19/2025	0.16	6	0.06	0.01	0.22	20	7.2	4.7	< 0.100	< 0.200	<0.3	No sheen
SDD06A	04/06/2025	0.88	36	0.19	0	0	83.7	7.4	4.9	< 0.100	< 0.200	<0.3	No sheen

3.1.5 Composite Sample Results and Discussion

For the 2024-2025 sampling period, the Port collected a total of 41 flow-weighted composite samples. Composite sample results are described separately from grab samples because grab samples represent an isolated segment of the storm event runoff. Composite sample results represent a flow-weighted average value over a longer time period. All composite sample data contained within this report and on the DMRs met the representativeness criteria of the Port's QAPP, which provides samples comparable with EPA methods (U.S. EPA 1992). Tabular results are presented at the end of this section and summary statistics are contained in **Appendix A**.

3.1.5.1 Copper

All data reported below are for total recoverable copper. The median copper concentration for all outfalls was 9.51 µg/L, with individual storm sample concentrations ranging from 1.23 µg/L to 34.6 µg/L. The permit effluent limit for copper at each outfall is variable based on a site-specific study and ranges from 25.6 µg/L to 59.2 µg/L depending on receiving water location. There were two exceedances for copper from the August 17, 2024 storm. The SDE4/S1 sample measured 32.8 ug/L, exceeding the limit of 25.6 ug/L. The sample from SDS3/5 had a copper result of 34.6 ug/L which exceeded the limit of 32.2 ug/L. The August 17th storm was the first Q3 storm sampled and came after an almost 19 day dry period. The storm was also very intense with 0.45 inches of rain falling in five hours and a maximum intensity of 0.21 inches/hour.

3.1.5.2 Zinc

All data reported are for total recoverable zinc. The median zinc concentration at all outfalls was 21.21 µg/L. Zinc concentrations ranged from <6 µg/L (non-detect) to 94.8 µg/L. The permit effluent limit for zinc at each outfall is variable based on a site-specific study and ranges from 71.4 µg/L at SDE4 to 117 µg/L at all other stations. There were no permit limit exceedances for zinc during the monitoring period.

Table 4. Composite Sample Data

Location ID	StormDate	Depth, in.	Dur, hr	Max Int, in/hr	24hrant, in	48hrant, in	Dryant, hr	Copper	Copper	Zinc	Zinc
								Total ug/l	Limit ug/L	Total ug/L	Limit ug/L
SDE4/S1	0817/2024	0.45	5	0.21	0	0	448	32.8	25.6	94.8	117
SDE4/S1	11/10/2024	1.06	28	0.11	0.04	0.07	20	8.66	25.6	45.9	117
SDE4/S1	12/07/2024	0.62	24	0.12	0	0.01	46	11	25.6	50.1	117
SDE4/S1	02/19/2025	0.16	6	0.06	0.01	0.22	20	11.5	25.6	60.8	117
SDE4/S1	03/04/2025	0.25	11	0.11	0.01	0.02	16	10.4	25.6	50.1	117
SDE4/S1	04/06/2025	0.88	36	0.19	0	0	83.7	9.44	25.6	51.7	117
SDE4/S1	04/20/2025	0.4	14	0.26	0.02	0.03	42	12.6	25.6	59.4	117
SDS3/5	0817/2024	0.45	5	0.21	0	0	448	34.6	32.2	24.2	117
SDS3/5	11/12/2024	0.65	33	0.15	0.07	1.06	21	16.9	32.2	10.9	117
SDS3/5	02/19/2025	0.16	6	0.06	0.01	0.22	20	15.4	32.2	22.1	117
SDS3/5	04/10/2025	0.31	6	0.18	0	0.17	41	11.9	32.2	8.17	117
SDS4	0817/2024	0.45	5	0.21	0	0	448	18.2	32.2	<6	71.4
SDS4	12/07/2024	0.62	24	0.12	0	0.01	46	7.46	32.2	6.95	71.4
SDS4	01/30/2025	0.82	25	0.1	0	0	296.75	9.63	32.2	20.5	71.4
SDS4	04/06/2025	0.88	36	0.19	0	0	83.7	8.34	32.2	<6	71.4
SDS6/7	0817/2024	0.45	5	0.21	0	0	448	13.1	32.2	7.43	117
SDS6/7	11/10/2024	1.06	28	0.11	0.04	0.07	20	11.3	32.2	9.26	117
SDS6/7	03/04/2025	0.25	11	0.11	0.01	0.02	16	6.38	32.2	<6	117
SDS6/7	04/20/2025	0.4	14	0.26	0.02	0.03	42	4.83	32.2	<6	117
SDN1	11/10/2024	1.06	28	0.11	0.04	0.07	20	13.8	28.5	74.4	117
SDN1	02/19/2025	0.16	6	0.06	0.01	0.22	20	11.9	28.5	81.4	117
SDN1	04/10/2025	0.31	6	0.18	0	0.17	41	9.39	28.5	54.8	117
SDW2	11/10/2024	1.06	28	0.11	0.04	0.07	20	5.03	47.9	7.11	117
SDW2	02/19/2025	0.16	6	0.06	0.01	0.22	20	3.46	47.9	6.98	117
SDW2	04/06/2025	0.88	36	0.19	0	0	83.7	5.6	47.9	<6	117
SDW1B	11/10/2024	1.06	28	0.11	0.04	0.07	20	8.47	59.2	<6	117
SDW1B	02/19/2025	0.16	6	0.06	0.01	0.22	20	4.54	59.2	<6	117
SDW1B	04/06/2025	0.88	36	0.19	0	0	83.7	5.01	59.2	<6	117
SDW1A	11/10/2024	1.06	28	0.11	0.04	0.07	20	4.95	59.2	8.92	117
SDW1A	01/30/2025	0.82	25	0.1	0	0	296.75	1.41	59.2	<6	117
SDW1A	04/20/2025	0.4	14	0.26	0.02	0.03	42	2.93	59.2	13.3	117
SDN3A	11/10/2024	1.06	28	0.11	0.04	0.07	20	4.18	59.2	<6	117
SDN3A	01/30/2025	0.82	25	0.1	0	0	296.75	2.33	59.2	<6	117
SDN3A	05/16/2025	0.22	10.17	0.07	0	0.1	36	1.23	59.2	<6	117
SDN2/3/4	11/10/2024	1.06	28	0.11	0.04	0.07	20	9.41	28.5	10	117
SDN2/3/4	02/19/2025	0.16	6	0.06	0.01	0.22	20	6.87	28.5	14.9	117
SDN2/3/4	04/06/2025	0.88	36	0.19	0	0	83.7	6.09	28.5	<6	117
SDD06A	08/22/2024	0.84	49	0.08	0	0	48.5	14.8	25.6	12.9	117
SDD06A	11/10/2024	1.06	28	0.11	0.04	0.07	20	5.57	25.6	9.59	117
SDD06A	02/19/2025	0.16	6	0.06	0.01	0.22	20	3.73	25.6	<6	117
SDD06A	04/06/2025	0.88	36	0.19	0	0	83.7	4.75	25.6	11.2	117

3.2 In Situ Toxicity Monitoring

The following sections discuss stormwater monitoring data related to the *in situ* monitoring program that was completed during fall 2024 and spring 2025.

The *in situ* monitoring approach utilizes the early life stage (ELS) salmonid bioassay testing procedure using rainbow trout that can be applied in a laboratory or field (i.e., *in situ*) context. The test encompasses a number of developmental milestones (e.g., hatching, yolk-sac absorption, etc.), and provides a variety of biological endpoints, such as survival and growth, that can be used to assess water quality.

Results from the *in situ* bioassays and supporting analytical data are intended to provide an indication of attainment of receiving water quality standards and associated beneficial uses related to salmonid spawning and rearing. Initial Phase 1 testing conducted previously demonstrated that the Rainbow Trout *in situ* ELS bioassay is an effective instream biological monitoring tool for assessing the potential effects of stormwater discharges on the receiving environment.

The sampling events conducted during this reporting period were completed under the Port's Permit, WA0024651, Part 2. 2S9, and are required to be conducted biannually in the fall and spring, corresponding to the spawning regimes of local salmonid species. Sampling was performed using the revised *Quality Assurance Program Plan: Storm Drainage System Receiving Water In-Situ Toxicity Testing* (Aspect 2021).

For a full discussion on results of the sampling, please refer to *Rainbow Trout Early Life Stages In Situ Monitoring Testing, Fall 2024 and Spring 2025 Testing Events* (Geosyntec, 2025, in production).

3.3 Additional Monitoring

There were no incidents requiring additional monitoring or source tracing during this reporting period. During the winter months, the Port completed several voluntary site walks at the pond control structures and along the receiving waters to confirm systems were operating correctly and there was no evidence of cross connections or pollutants.

4.0 BMP Implementation

As outlined in the Comprehensive Stormwater Management Plan (2000), the Port evaluated, designed and constructed stormwater flow control and treatment BMPs to retrofit the entire airport which were phased in over several years from 2000 to 2006. The purposes of these efforts were to improve flow regimes in the receiving waters and implement BMPs that would allow the Port to meet or exceed stormwater quality treatment standards.

As development and re-development of SEA continues, stormwater requirements are assessed on a project-by-project basis using the Port's Stormwater Management Manual to determine applicable minimum requirements. During the design process, opportunities to implement Low Impact Development technologies are explored.

The Department of Ecology issued a Notice of Violation (NOV) to the Port of Seattle on May 9, 2025. The NOV summarized all non-compliances that have occurred since the beginning of this permit cycle. The Port provided a response to this NOV on June 16, 2025 which included how the Port implemented adaptive management strategies and was able to successfully bring all outfalls back into compliance. The Department of Ecology has indicated that a "No Action" letter will be sent to the Port as the NOV response satisfied their concerns, but that has yet to be received by the submittal of this annual report. The NOV and the Port's response are both available on Ecology's PARIS database.

During this reporting period no new major BMP projects were installed but several BMP improvement projects occurred.

In response to the previously depressed pH results in the SDS1 and SDD06A subbasins, the Port implemented retrofits to the BMPs in these subbasins with the goal of increasing the pH buffering capacity. The SDD06A retrofit of the pond removed existing vegetation and quarry spall around the inlet, replacing it with oyster shells, and added a gabion wall of limestone spalls to increase contact time with the oyster shells. The SDD06A project was completed October 2024. The SDS1 swale was retrofitted to incorporate a forebay of oyster shell media, and the inlet to the swale had a flow dispersion pipe added to spread stormwater across the oyster shell forebay. The SDS1 swale retrofit was completed October 2024. For both projects the ongoing sampling has shown an improvement from the previous conditions. Continued attention will be given to these sites to assess the improved functionality.

The SDN1 basin roadside swale along Air Cargo Road had minor improvements completed to aid the flow of water off the road and into the swale for increased infiltration and natural treatment.

5.0 SUMMARY AND CONCLUSIONS

During the reporting period from July 1, 2024 to June 30, 2025 the Port fulfilled all requirements for outfall monitoring under the current NPDES permit. The Port collected a total of 41 grab samples and 41 composite stormwater samples during 12 storm events. Outfalls were sampled quarterly for rain events that met the minimum rainfall criteria of 0.10 inches or greater that are preceded by less than 0.10 inch of rainfall in the previous 24 hours. There were two (2) instances of permit limit exceedances associated with 82 samples and 246 individual constituent analyses that were tested to meet the monitoring requirements of the NPDES permit.

To address the previous year's low pH non-compliances, the Port completed construction of retrofits to the SDD06A and SDS1 BMPs which will include the addition of limestone spalls and/or oyster shell media to increase the pH buffering capacity of these basins.

The Port has achieved a high level of compliance during this reporting period which is demonstrated by having only two (2) instances of non-compliance, from only one storm event, across the multiple sampling events and hundreds of parameters that are being monitored for industrial stormwater. The Port's robust monitoring, response and adaptive management programs at SEA continue to be effective at mitigating impacts from airport operations on the adjacent receiving waters.

REFERENCES

Aspect Consulting, 2021. Quality Assurance Program Plan: Storm Drainage System Receiving Water In-Situ Toxicity Testing. September 2021

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Cardno TEC, Inc. 2012. Final Report – Stormwater pH Study for Seattle-Tacoma International Airport In Accordance with Agreed Order 8755. October 2012.

CH2MHILL 2008. Comprehensive Receiving Water and Stormwater Runoff Study. Port of Seattle, April 2008.

Nautilus Environmental, LLC. 2008a. Derivation of Site-Specific Water Quality Objectives and Effluent Limits for Copper in Stormwater, June 23, 2008.

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U.S. EPA 1993a. Stormwater discharges potentially addressed by Phase II of the NPDES program. Draft report to Congress. October 1993.

WDOE 2012. Agreed Order Docket No. 8755.

WDOE 2016. National Pollutant Discharge Elimination System permit No. WA0024651, effective January 1, 2016 by Washington Department of Ecology, Olympia, WA.

WDOE 2021. National Pollutant Discharge Elimination System permit No. WA0024651, effective September 1, 2021 by Washington Department of Ecology, Olympia, WA.

APPENDIX A

TABULAR NPDES SAMPLE DATA SUMMARIES and STATISTICS

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Storms Sampled

Storms Sampled

<u>Storm Event Start</u> <u>Date</u>	<u>Storm Event Depth, in.</u>	<u>Storm Event Duration,</u> <u>hr.</u>	<u>Storm Event Maximum</u> <u>Intensity in/hr</u>	<u>Storm Event 24 hr Ant. Depth, in.</u>	<u>Storm Event 48 hr Ant.</u> <u>Depth, in.</u>	<u>Storm Event Dry Ant.</u> <u>Duration, Days</u>
05/16/2025	0.22	10.17	0.07	0	0.1	1.5
04/20/2025	0.4	14	0.26	0.02	0.03	1.8
04/10/2025	0.31	6	0.18	0	0.17	1.7
04/06/2025	0.88	36	0.19	0	0	3.5
03/04/2025	0.25	11	0.11	0.01	0.02	0.7
02/19/2025	0.16	6	0.06	0.01	0.22	0.8
01/30/2025	0.82	25	0.1	0	0	12.4
12/07/2024	0.62	24	0.12	0	0.01	1.9
11/12/2024	0.65	33	0.15	0.07	1.06	0.9
11/10/2024	1.06	28	0.11	0.04	0.07	0.8
08/22/2024	0.84	49	0.08	0	0	2.0
08/17/2024	0.45	5	0.21	0	0	18.7

Combined Sampling Statistics

Combined Grab Statistics

Parameter Name	Units	# Records	Maximum Reported Result	95th Percentile	Median	Minimum Result	Standard Deviation	# Nondetects	% Nondetects
Flow	mgal	41	7.2	2.38	0.20	0.01	1.26	0	0.00
pH	pH Units	41	8.3	7.50	7.00	6.60	0.34	0	0.00
Turbidity	NTU	41	16.3	9.10	3.40	0.00	3.53	0	0.00
Diesel Range Organics	mg/L	41	1.5	0.17	0.05	0.05	0.23	33	80.49
Phc as Motor Oil	mg/L	41	2.04	0.44	0.10	0.10	0.31	35	85.37
Combined Diesel Motor Oil	mg/L	41	3.5	0.61	0.30	0.20	0.51	33	0.80

Combined Composite Sample Statistics

Location Group Name	Parameter Name	Units	# Records	Maximum Reported Result	95th Percentile	Median	Minimum Result	Standard Deviation	# Nondetects	% Nondetects
IndSW Locations	Copper	ug/L	41	34.6	18.2	8.47	1.23	6.985133	0	0.0
IndSW Locations	Zinc	ug/L	41	94.8	74.4	9.26	3	25.386944	14	34.146

Individual Outfall Sampling Statistics

Individual Outfall Grab Statistics

Location ID	Parameter Name	Units	# Records	Maximum Reported Result	95th Percentile	Median	Minimum Result	Standard Deviation	# Nondetects	% Nondetects
SDD06A	pH	pH Units	4	7.4	7.39	7.25	7.00	0.17	0	0.00
SDD06A	Turbidity	NTU	4	4.9	4.87	3.55	1.50	1.69	0	0.00
SDD06A	Diesel Range Organics	mg/L	4	0.05	0.05	0.05	0.05	0.00	4	100.00
SDD06A	Phc as Motor Oil	mg/L	4	0.10	0.10	0.10	0.10	0.00	4	100.00
SDD06A	Combined Diesel Motor Oil	mg/L	4	0.30	0.30	0.30	0.30	0.00	4	100.00
SDE4/S1	pH	ph Units	7	7.1	7.07	7.00	6.60	0.17	0	0.00
SDE4/S1	Turbidity	NTU	7	16.3	16.24	6.60	0.04	6.80	0	0.00
SDE4/S1	Diesel Range Organics	mg/L	7	1.50	1.10	0.10	0.05	0.53	3	42.86
SDE4/S1	Phc as Motor Oil	mg/L	7	2.04	1.61	0.10	0.10	0.71	4	57.14
SDE4/S1	Combined Diesel Motor Oil	mg/L	7	3.54	3.13	0.54	0.20	1.58	3	42.86
SDN1	pH	pH Units	3	6.9	6.89	6.80	6.70	0.10	0	0.00
SDN1	Turbidity	NTU	3	8.1	8.02	7.30	2.30	3.14	0	0.00
SDN1	Diesel Range Organics	mg/L	3	0.17	0.17	0.14	0.05	0.06	1	33.33
SDN1	Phc as Motor Oil	mg/L	3	0.44	0.43	0.30	0.10	0.17	1	33.33
SDN1	Combined Diesel Motor Oil	mg/L	3	0.61	0.59	0.37	0.30	0.15	1	33.33
SDN2/3/4	pH	pH Units	3	7.7	7.67	7.40	7.20	0.25	0	0.00
SDN2/3/4	Turbidity	NTU	3	3.9	3.81	3.00	1.30	1.32	0	0.00
SDN2/3/4	Diesel Range Organics	mg/L	3	0.05	0.05	0.05	0.05	0.00	3	100.00
SDN2/3/4	Phc as Motor Oil	mg/L	3	0.10	0.10	0.10	0.10	0.00	3	100.00
SDN2/3/4	Combined Diesel Motor Oil	mg/L	3	0.61	0.57	0.30	0.30	0.16	3	100.00
SDN3A	pH	pH Units	3	7.2	7.17	6.90	6.70	0.25	0	0.00
SDN3A	Turbidity	NTU	3	4.6	4.48	3.40	3.10	0.79	0	0.00
SDN3A	Diesel Range Organics	mg/L	3	0.05	0.05	0.05	0.05	0.00	3	100.00
SDN3A	Phc as Motor Oil	mg/L	3	0.10	0.10	0.10	0.10	0.00	3	100.00
SDN3A	Combined Diesel Motor Oil	mg/L	3	0.30	0.30	0.30	0.30	0.00	3	100.00
SDS3/5	pH	ph Units	4	7.3	7.30	7.05	6.70	0.32	0	0.00
SDS3/5	Turbidity	NTU	4	5.3	5.15	3.40	2.00	1.54	0	0.00
SDS3/5	Diesel Range Organics	mg/L	4	0.23	0.21	0.05	0.05	0.09	3	75.00
SDS3/5	Phc as Motor Oil	mg/L	4	0.24	0.21	0.10	0.10	0.07	3	75.00
SDS3/5	Combined Diesel Motor Oil	mg/L	4	0.47	0.44	0.30	0.30	0.08	3	75.00
SDS4	pH	pH Units	4	7.3	7.24	6.91	6.60	0.29	0	0.00
SDS4	Turbidity	NTU	4	5	4.55	1.61	0.60	1.95	0	0.00
SDS4	Diesel Range Organics	mg/L	4	0.05	0.05	0.05	0.05	0.00	4	100.00
SDS4	Phc as Motor Oil	mg/L	4	0.10	0.10	0.10	0.10	0.00	4	100.00
SDS4	Combined Diesel Motor Oil	mg/L	4	0.30	0.30	0.30	0.30	0.00	4	100.00
SDS6/7	pH	ph Units	4	7.5	7.46	7.20	6.80	0.29	0	0.00
SDS6/7	Turbidity	NTU	4	6.9	6.53	2.75	0.00	3.15	0	0.00
SDS6/7	Diesel Range Organics	mg/L	4	0.17	0.15	0.05	0.05	0.06	3	75.00
SDS6/7	Phc as Motor Oil	mg/L	4	0.10	0.10	0.10	0.10	0.00	4	100.00
SDS6/7	Combined Diesel Motor Oil	mg/L	4	0.30	0.30	0.30	0.27	0.01	3	75.00
SDW1A	pH	pH Units	3	7	6.99	6.90	6.60	0.21	0	0.00
SDW1A	Turbidity	NTU	3	3.9	3.86	3.50	3.10	0.40	0	0.00
SDW1A	Diesel Range Organics	mg/L	3	0.05	0.05	0.05	0.05	0.00	3	100.00
SDW1A	Phc as Motor Oil	mg/L	3	0.10	0.10	0.10	0.10	0.00	3	100.00
SDW1A	Combined Diesel Motor Oil	mg/L	3	0.30	0.30	0.30	0.30	0.00	3	100.00
SDW1B	pH	pH Units	3	7.2	7.19	7.10	6.70	0.26	0	0.00
SDW1B	Turbidity	NTU	3	3.5	3.29	1.40	1.10	1.31	0	0.00
SDW1B	Diesel Range Organics	mg/L	3	0.05	0.05	0.05	0.05	0.00	3	100.00
SDW1B	Phc as Motor Oil	mg/L	3	0.10	0.10	0.10	0.10	0.00	3	100.00
SDW1B	Combined Diesel Motor Oil	mg/L	3	0.30	0.30	0.30	0.30	0.00	3	100.00
SDW2	pH	pH Units	3	8.3	8.22	7.50	7.20	0.57	0	0.00
SDW2	Turbidity	NTU	3	4	3.89	2.90	1.60	1.20	0	0.00
SDW2	Diesel Range Organics	mg/L	3	0.05	0.05	0.05	0.05	0.00	3	100.00
SDW2	Phc as Motor Oil	mg/L	3	0.10	0.10	0.10	0.10	0.00	3	100.00
SDW2	Combined Diesel Motor Oil	mg/L	3	0.30	0.30	0.30	0.30	0.00	3	100.00

Individual Outfall Composite Statistics

Location ID	Parameter Name	Units	# Records	Maximum Reported Result	95th Percentile	Median	Minimum Result	Standard Deviation	# Nondetects	% Nondetects
SDD06A	Copper	ug/L	4	14.8	13.415499999999996	5.16	3.73	5.114022	0	0.0
SDD06A	Zinc	ug/L	4	12.9	12.645	10.395	3	4.331246	1	25.0
SDE4/S1	Zinc	ug/L	7	94.8	84.59999999999997	51.7	45.9	16.675103	0	0.0
SDE4/S1	Copper	ug/L	7	32.8	26.739999999999984	11.0	8.66	8.490715	0	0.0
SDN1	Copper	ug/L	3	13.8	13.610000000000001	11.9	9.39	2.21202	0	0.0
SDN1	Zinc	ug/L	3	81.4	80.7	74.4	54.8	13.788401	0	0.0
SDN2/3/4	Zinc	ug/L	3	14.9	14.41	10.0	3	5.980803	1	33.333
SDN2/3/4	Copper	ug/L	3	9.41	9.156	6.87	6.09	1.736011	0	0.0
SDN3A	Copper	ug/L	3	4.18	3.9949999999999997	2.33	1.23	1.490805	0	0.0
SDN3A	Zinc	ug/L	3	3	3.0	3.0	3	0.0	3	100.0
SDS3/5	Zinc	ug/L	4	24.2	23.885	16.5	8.17	7.985397	0	0.0
SDS3/5	Copper	ug/L	4	34.6	31.944999999999997	16.15	11.9	10.151847	0	0.0
SDS4	Copper	ug/L	4	18.2	16.914499999999997	8.985	7.46	4.942667	0	0.0
SDS4	Zinc	ug/L	4	20.5	18.4675	4.975	3	8.30315	2	50.0
SDS6/7	Zinc	ug/L	4	9.26	8.9855	5.215	3	3.175084	2	50.0
SDS6/7	Copper	ug/L	4	13.1	12.829999999999998	8.84	4.83	3.929176	0	0.0
SDW1A	Copper	ug/L	3	4.95	4.748	2.93	1.41	1.775875	0	0.0
SDW1A	Zinc	ug/L	3	13.3	12.862	8.92	3	5.169152	1	33.333
SDW1B	Zinc	ug/L	3	3	3.0	3.0	3	0.0	3	100.0
SDW1B	Copper	ug/L	3	8.47	8.124	5.01	4.54	2.146214	0	0.0
SDW2	Copper	ug/L	3	5.6	5.543	5.03	3.46	1.108257	0	0.0
SDW2	Zinc	ug/L	3	7.11	7.097	6.98	3	2.336286	1	33.333

Composite Samples

Part 2 Composite Samples

Column1	Column2	Column3	Column4	Column5	Column6	Column7	Column8	Copper	Copper	Zinc	Zinc
Location ID	StormDate	Depth, in.	Dur, hr	Max Int, in/hr	24hrant, in	48hrant, in	Dryant, hr	Total ug/l	Limit ug/L	Total ug/L	Limit ug/L
SDE4/S1	0817/2024	0.45	5	0.21	0	0	448	32.8	25.6	94.8	117
SDE4/S1	11/10/2024	1.06	28	0.11	0.04	0.07	20	8.66	25.6	45.9	117
SDE4/S1	12/07/2024	0.62	24	0.12	0	0.01	46	11	25.6	50.1	117
SDE4/S1	02/19/2025	0.16	6	0.06	0.01	0.22	20	11.5	25.6	60.8	117
SDE4/S1	03/04/2025	0.25	11	0.11	0.01	0.02	16	10.4	25.6	50.1	117
SDE4/S1	04/06/2025	0.88	36	0.19	0	0	83.7	9.44	25.6	51.7	117
SDE4/S1	04/20/2025	0.4	14	0.26	0.02	0.03	42	12.6	25.6	59.4	117
SDS3/5	0817/2024	0.45	5	0.21	0	0	448	34.6	32.2	24.2	117
SDS3/5	11/12/2024	0.65	33	0.15	0.07	1.06	21	16.9	32.2	10.9	117
SDS3/5	02/19/2025	0.16	6	0.06	0.01	0.22	20	15.4	32.2	22.1	117
SDS3/5	04/10/2025	0.31	6	0.18	0	0.17	41	11.9	32.2	8.17	117
SDS4	0817/2024	0.45	5	0.21	0	0	448	18.2	32.2	<6	71.4
SDS4	12/07/2024	0.62	24	0.12	0	0.01	46	7.46	32.2	6.95	71.4
SDS4	01/30/2025	0.82	25	0.1	0	0	296.75	9.63	32.2	20.5	71.4
SDS4	04/06/2025	0.88	36	0.19	0	0	83.7	8.34	32.2	<6	71.4
SDS6/7	0817/2024	0.45	5	0.21	0	0	448	13.1	32.2	7.43	117
SDS6/7	11/10/2024	1.06	28	0.11	0.04	0.07	20	11.3	32.2	9.26	117
SDS6/7	03/04/2025	0.25	11	0.11	0.01	0.02	16	6.38	32.2	<6	117
SDS6/7	04/20/2025	0.4	14	0.26	0.02	0.03	42	4.83	32.2	<6	117
SDN1	11/10/2024	1.06	28	0.11	0.04	0.07	20	13.8	28.5	74.4	117
SDN1	02/19/2025	0.16	6	0.06	0.01	0.22	20	11.9	28.5	81.4	117
SDN1	04/10/2025	0.31	6	0.18	0	0.17	41	9.39	28.5	54.8	117
SDW2	11/10/2024	1.06	28	0.11	0.04	0.07	20	5.03	47.9	7.11	117
SDW2	02/19/2025	0.16	6	0.06	0.01	0.22	20	3.46	47.9	6.98	117
SDW2	04/06/2025	0.88	36	0.19	0	0	83.7	5.6	47.9	<6	117
SDW1B	11/10/2024	1.06	28	0.11	0.04	0.07	20	8.47	59.2	<6	117
SDW1B	02/19/2025	0.16	6	0.06	0.01	0.22	20	4.54	59.2	<6	117
SDW1B	04/06/2025	0.88	36	0.19	0	0	83.7	5.01	59.2	<6	117
SDW1A	11/10/2024	1.06	28	0.11	0.04	0.07	20	4.95	59.2	8.92	117
SDW1A	01/30/2025	0.82	25	0.1	0	0	296.75	1.41	59.2	<6	117
SDW1A	04/20/2025	0.4	14	0.26	0.02	0.03	42	2.93	59.2	13.3	117
SDN3A	11/10/2024	1.06	28	0.11	0.04	0.07	20	4.18	59.2	<6	117
SDN3A	01/30/2025	0.82	25	0.1	0	0	296.75	2.33	59.2	<6	117
SDN3A	05/16/2025	0.22	10.17	0.07	0	0.1	36	1.23	59.2	<6	117
SDN2/3/4	11/10/2024	1.06	28	0.11	0.04	0.07	20	9.41	28.5	10	117
SDN2/3/4	02/19/2025	0.16	6	0.06	0.01	0.22	20	6.87	28.5	14.9	117
SDN2/3/4	04/06/2025	0.88	36	0.19	0	0	83.7	6.09	28.5	<6	117
SDD06A	08/22/2024	0.84	49	0.08	0	0	48.5	14.8	25.6	12.9	117
SDD06A	11/10/2024	1.06	28	0.11	0.04	0.07	20	5.57	25.6	9.59	117
SDD06A	02/19/2025	0.16	6	0.06	0.01	0.22	20	3.73	25.6	<6	117
SDD06A	04/06/2025	0.88	36	0.19	0	0	83.7	4.75	25.6	11.2	117

Grab Samples

Part 2 Grab Samples

Column1	Column2	Column3	Column4	Column5	Column6	Column7	Column8	pH	Column9	Turbidity	Column10	TPH-D	Column11	TPH-MO	Column12	Total TPH	Sheen	Column13
Outfall	StormDate	Depth, in.	Dur, hr.	Max Int, in/hr	24hrant, in.	48hrant, in.	Dryant, hr	ph Units		NTU		mg/l		mg/l		mg/L	Visual	
SDE4/S1	08/17/2024	0.45	5	0.21	0	0	448	7.0		16.3		1.50		2.04		3.54	No sheen	
SDE4/S1	11/10/2024	1.06	28	0.11	0.04	0.07	20	7		3.6		0.102		< 0.200		0.20	No sheen	
SDE4/S1	12/07/2024	0.62	24	0.12	0	0.01	46	6.8		0.0		< 0.10		< 0.20		<0.3	No sheen	
SDE4/S1	02/19/2025	0.16	6	0.06	0.01	0.22	20	7.1		9.1		0.152		0.303		0.46	No sheen	
SDE4/S1	03/04/2025	0.25	11	0.11	0.01	0.02	16	6.6		0.3		< 0.10		< 0.20		<0.3	No sheen	
SDE4/S1	04/06/2025	0.88	36	0.19	0	0	83.7	7		6.6		< 0.100		< 0.200		<0.3	No sheen	
SDE4/S1	04/20/2025	0.4	14	0.26	0.02	0.03	42	6.8		16.1		0.17		0.60		0.78	No sheen	
SDS3/5	08/17/2024	0.45	5	0.21	0	0	448	6.7		4.3		0.234		0.235		0.47	No sheen	
SDS3/5	11/12/2024	0.65	33	0.15	0.07	1.06	21	6.8		2.5		< 0.10		< 0.20		<0.3	No sheen	
SDS3/5	02/19/2025	0.16	6	0.06	0.01	0.22	20	7.3		2.0		< 0.100		< 0.200		<0.3	No sheen	
SDS3/5	04/10/2025	0.31	6	0.18	0	0.17	41	7.3		5.3		< 0.10		< 0.20		<0.3	No sheen	
SDS4	08/17/2024	0.45	5	0.21	0	0	448	7.3		2.0		< 0.100		< 0.200		<0.3	No sheen	
SDS4	12/07/2024	0.62	24	0.12	0	0.01	46	6.9		1.2		< 0.10		< 0.20		<0.3	No sheen	
SDS4	01/30/2025	0.82	25	0.1	0	0	296.75	6.6		0.6		< 0.100		< 0.200		<0.3	No sheen	
SDS4	04/06/2025	0.88	36	0.19	0	0	83.7	6.9		5.0		< 0.10		< 0.20		<0.3	No sheen	
SDS6/7	08/17/2024	0.45	5	0.21	0	0	448	7.2		6.9		0.171		< 0.200		0.27	No sheen	
SDS6/7	11/10/2024	1.06	28	0.11	0.04	0.07	20	7.5		4.4		< 0.10		< 0.20		<0.3	No sheen	
SDS6/7	03/04/2025	0.25	11	0.11	0.01	0.02	16	6.8		1.1		< 0.100		< 0.200		<0.3	No sheen	
SDS6/7	04/20/2025	0.4	14	0.26	0.02	0.03	42	7.2		0.0		< 0.10		< 0.20		<0.3	No sheen	
SDN1	11/10/2024	1.06	28	0.11	0.04	0.07	20	6.8		2.3		0.173		0.439		0.61	No sheen	
SDN1	02/19/2025	0.16	6	0.06	0.01	0.22	20	6.7		8.1		0.14		0.30		0.44	No sheen	
SDN1	04/10/2025	0.31	6	0.18	0	0.17	41	6.9		7.3		< 0.100		< 0.200		<0.3	No sheen	
SDW2	11/10/2024	1.06	28	0.11	0.04	0.07	20	7.2		2.9		< 0.10		< 0.20		<0.3	No sheen	
SDW2	02/19/2025	0.16	6	0.06	0.01	0.22	20	7.5		1.6		< 0.100		< 0.200		<0.3	No sheen	
SDW2	04/06/2025	0.88	36	0.19	0	0	83.7	8.3		4.0		< 0.10		< 0.20		<0.3	No sheen	
SDW1B	11/10/2024	1.06	28	0.11	0.04	0.07	20	7.1		1.4		< 0.100		< 0.200		<0.3	No sheen	
SDW1B	02/19/2025	0.16	6	0.06	0.01	0.22	20	7.2		1.1		< 0.10		< 0.20		<0.3	No sheen	
SDW1B	04/06/2025	0.88	36	0.19	0	0	83.7	6.7		3.5		< 0.100		< 0.200		<0.3	No sheen	
SDW1A	11/10/2024	1.06	28	0.11	0.04	0.07	20	7.0		3.9		< 0.10		< 0.20		<0.3	No sheen	
SDW1A	01/30/2025	0.82	25	0.1	0	0	296.75	6.9		3.1		< 0.100		< 0.200		<0.3	No sheen	
SDW1A	04/20/2025	0.4	14	0.26	0.02	0.03	42	6.6		3.5		< 0.10		< 0.20		<0.3	No sheen	
SDN3A	11/10/2024	1.06	28	0.11	0.04	0.07	20	7.2		3.1		< 0.100		< 0.200		<0.3	No sheen	
SDN3A	01/30/2025	0.82	25	0.1	0	0	296.75	6.7		3.4		< 0.10		< 0.20		<0.3	No sheen	
SDN3A	05/16/2025	0.22	10.17	0.07	0	0.1	36	6.9		4.6		< 0.100		< 0.200		<0.3	No sheen	
SDN2/3/4	11/10/2024	1.06	28	0.11	0.04	0.07	20	7.2		1.3		< 0.10		< 0.20		<0.3	No sheen	
SDN2/3/4	02/19/2025	0.16	6	0.06	0.01	0.22	20	7.4		3.0		< 0.100		< 0.200		<0.3	No sheen	
SDN2/3/4	04/06/2025	0.88	36	0.19	0	0	83.7	7.7		3.9		< 0.10		< 0.20		<0.3	No sheen	
SDD06A	08/22/2024	0.84	49	0.08	0	0	48.5	7		1.5		< 0.100		< 0.200		<0.3	No sheen	
SDD06A	11/10/2024	1.06	28	0.11	0.04	0.07	20	7.3		2.4		< 0.10		< 0.20		<0.3	No sheen	
SDD06A	02/19/2025	0.16	6	0.06	0.01	0.22	20	7.2		4.7		< 0.100		< 0.200		<0.3	No sheen	
SDD06A	04/06/2025	0.88	36	0.19	0	0	83.7	7.4		4.9		< 0.10		< 0.20		<0.3	No sheen	

APPENDIX B

Quality Control Samples

Outfall	Sample	Depth, in.	Dur, hr	Max Int, in/hr	24hrant, in.	48hrant, in.	Dryant, hr	Event Type	Type	Purpose	Column1	Column2
SDE4/S1	SDE4/S1120824DUPC	0.6200	24.0000	0.1200	0.0000	0.0100	1.9167	Routine Part 2	FD	FIdQC	0.0106	0.0481
SDS4	SDS4120824DUPC	0.6200	24.0000	0.1200	0.0000	0.0100	1.9167	Routine Part 2	FD	FIdQC	< 0.000500	< 0.00600
SDD06A	SDD06A082524DUPC	0.8400	49.0000	0.0800	0.0000	0.0000	2.0208	Routine Part 2	FD	FIdQC	0.0143	0.0127
SDN8	SDN8082624COMP								MB	FIdQC	< 0.000500	< 0.00600

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