

Annual Construction Stormwater Monitoring Report

Seattle-Tacoma International Airport

For the Period July 1, 2017 through June 30, 2018

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Table of Contents

List of Tables.....	i
List of Figures	i
Section 1: Introduction	1
1.1 Background.....	1
Section 2: Construction Stormwater Monitoring Requirements.....	2
2.1 Non-Chemically Treated Discharge Monitoring	5
2.2 Continuous Chemically Treated Discharge Monitoring	5
2.3 Batch Chemically Treated Discharge Monitoring	6
Section 3: Construction Stormwater Summary.....	7
3.1 Non-Chemically Treated Discharge Monitoring Summary	7
3.1.1 Turbidity.....	8
3.1.2 pH	8
3.1.3 Total Petroleum Hydrocarbons	8
3.1.4 Flow	8
3.2 Continuous Chemically Treated Discharge Monitoring Summary.....	11
3.1.1 Turbidity.....	11
3.1.2 pH	11
3.1.3 Total Petroleum Hydrocarbons	11
3.1.4 Flow	11
3.3 Batch Chemically Treated Discharge Monitoring Summary.....	12

List of Tables

- Table 1: Project Summary and Treatment Type Utilized
- Table 2: Non-Chemically Treated Discharge Monitoring Parameters and Effluent Limitations
- Table 3: Summary 0.5-Inch within 24-Hour Monitoring Events
- Table 4: Non-Chemically Treated Discharge Data Results
- Table 5: Chemically Treated Discharge Data Results

List of Figures

- Figure 1: Construction Stormwater Outfalls Map

Section 1: Construction Stormwater Annual Report

The Port of Seattle (Port) National Pollutant Discharge Elimination System (NPDES) permit is broken down into three sections: Part 1: Industrial Wastewater, Part 2: Industrial Stormwater and Part 3: Construction Stormwater. NPDES Permit Part 1 Special Condition S2.F requires an annual summary of construction stormwater monitoring results. The twelve month period is defined as July 1 through June 30. This report provides a summary of the number of projects, active outfalls, number of construction stormwater events and permit compliance results during this period.

1.1 Background

The Port operates and maintains the Seattle-Tacoma International Airport (STIA). STIA routinely undergoes facility upgrades to improve outdated infrastructure and to increase facility and operational capacity to accommodate the increased number of passengers and meet other needs of the airline industry. Many of these upgrades involve ground disturbing activities requiring construction stormwater runoff monitoring in accordance with Part 3 Special Condition S1. The monitoring results summarized in this report document permit compliance.

Section 2: Construction Stormwater Monitoring Requirements

The Port develops and submits a site-specific construction stormwater monitoring plan prior to construction activities for any project that disturbs one (1) or more acres. The monitoring plan provides a brief project description, identifies construction stormwater outfalls, stormwater treatment processes (if applicable), reporting requirements and non-compliance notification contacts and procedures. Monitoring continues until a site stabilization notification is submitted to Ecology.

Construction stormwater monitoring is defined under Part 3, Special Condition 3S2 is broken into three categories:

- Non-Chemically Treated Discharge Monitoring
- Continuous Chemical Treatment Monitoring
- Batch Treatment Monitoring.

Port personnel work with project and construction management teams to identify the appropriate form of treatment for each site and how the site will be monitored to meet permit requirements. Each category of treatment has specific monitoring frequencies and effluent limitations. Table 1 provides a summary of active construction projects in the reporting period and the form of treatment used at each.

A construction outfall grid was developed in order to determine the location of potential construction stormwater discharges so that they would be identified in the Airport's NPDES permit. These locations discharge into the six (6) receiving waters surrounding STIA. These grids or boxes reflect the associated authorized outfalls referenced in Part III, Special Condition 3S1.A Table III. The *NPDES Construction Monitoring Outfall Areas Map* (Figure 1) provides a reference for outfall locations.

The Port has the potential to utilize 62 construction outfalls identified in the NPDES permit. Each outfall can have a non-chemical construction stormwater discharge, batch-treated chemical stormwater discharge and/or a continuous flow chemical treated stormwater discharge. Figure 1 *NPDES Construction Monitoring Outfall Areas Map* shows all of the potential construction stormwater outfalls at STIA.

The Port and Ecology track each outfall under three (3) possible operating conditions:

- Non-operational
- Inactive
- Active.

A *non-operational* outfall has never been activated as a construction stormwater outfall during the current permit cycle. An *inactive* outfall has previously been active but during a particular month(s) there was no construction activity discharging to that outfall. An *active* outfall receives stormwater from a construction site with ground disturbing activity. The Port provides an outfall summary to Ecology along with the monthly Discharge Monitoring Report (DMR) submittal to track operating outfall status. The DMRs summarize the monitoring results from all active outfalls.

The Port may also discharge construction stormwater to the Industrial Waste Treatment Plant (IWTP). All stormwater sent to the IWTP is treated and discharged per NPDES permit Part I, Special Conditions S1.A Table 1-1 & S2.A.1 Table S2-1.

Figure 1. Construction Stormwater Outfall Map

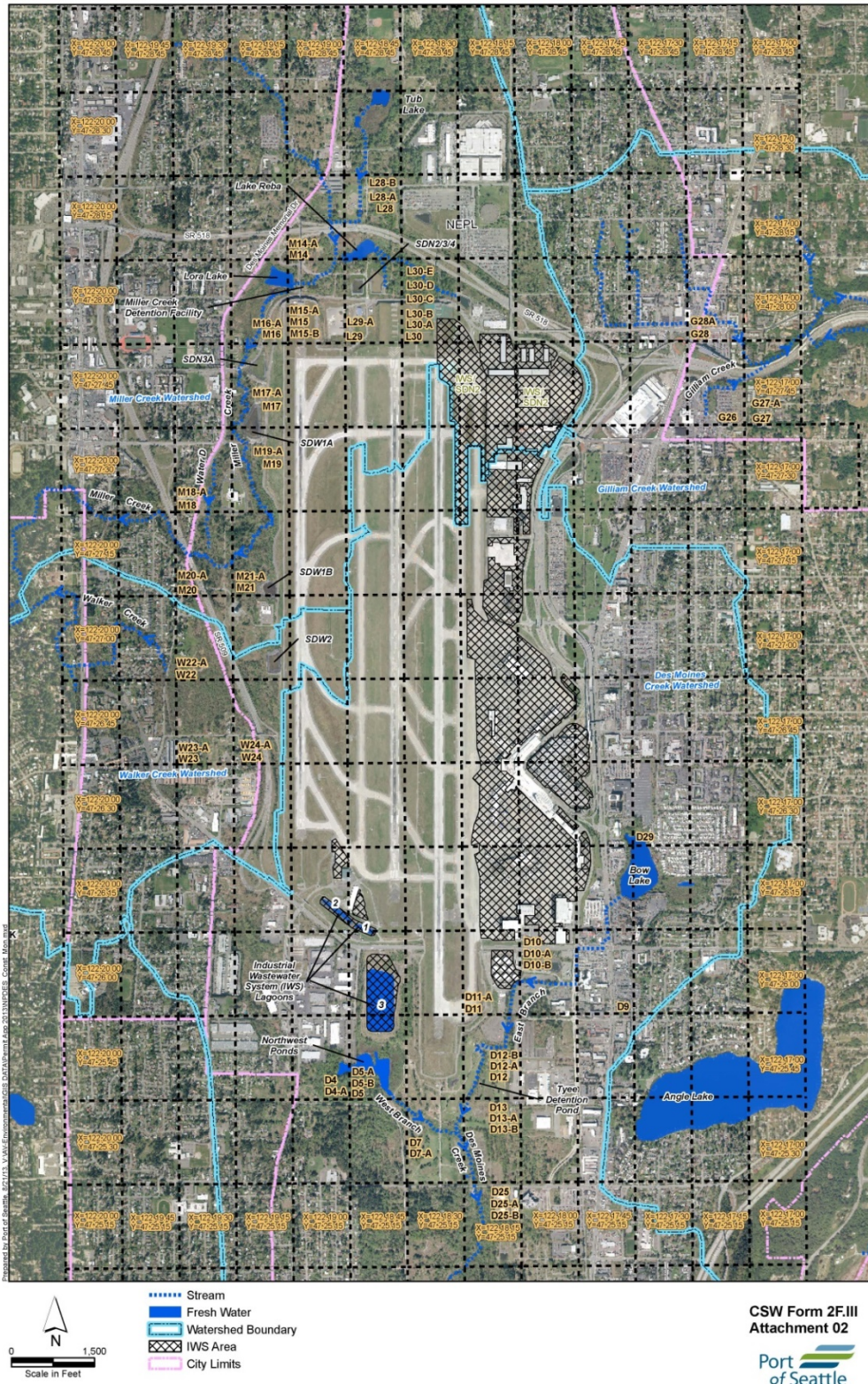


Table 1. Project Summary and Treatment Type Utilized

Project	July	August	September	October	November	December	January	February	March	April	May	June
Logistics Site	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem
International Arrivals Facility	Non-Chem	Non-Chem	Non-Chem	Non-Chem Chem	Non-Chem Chem	Non-Chem Chem	Non-Chem Chem	Non-Chem Chem	Non-Chem Chem	Non-Chem Chem	Non-Chem Chem	Non-Chem Chem
North Satellite Renovation Project	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem
Tyee Conversion to Pollinator Habitat	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem
Flight Corridor Safety Program Phase 1	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Inactive	Inactive	Inactive
Alternative Utility Facility	Inactive	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem	Non-Chem
Concourse D Hardstand Holdroom	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	Non-Chem	Non-Chem	Non-Chem
2018 Taxiway Improvement	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	Non-Chem	Non-Chem	Non-Chem

Non-Chem: Non-Chemically Treated Discharge
 Chem: Flow Through Electrocoagulation

2.1 Non-Chemically Treated Discharge Monitoring

Non-chemically treated discharge monitoring is triggered when conventional erosion and sediment control BMPs are utilized to meet water quality standards.

A non-chemically treated discharge monitoring event is triggered when the airport receives 0.5 inches or greater of rain in a 24-hour period. The 24-hour period is defined as being from 8:00am to 8:00am to ensure safety of field samplers and if necessary allows for Best Management Practice (BMP) adjustments or repairs to be completed that working day. The Port NPDES permit requires non-chemical treatment discharges be monitored upstream and downstream of the outfall. The upstream monitoring location is approximately five (5) feet upstream of the discharge and the downstream monitoring location is determined by Ecology's RivPlum Model and is no greater than 100 feet downstream or at the nearest accessible point. Table 2 summarizes the Non-chemically treated discharge monitoring parameters and effluent limitations.

Table 2. Non-Chemically Treated Monitoring Parameters & Effluent Limits

Monitoring Parameter	Effluent Limit
Turbidity ^(a)	5 NTU or 10% increase above background
pH	6.5 to 8.5 ^(b)
Total Petroleum Hydrocarbons	5 mg/L ^(c)
Flow	Report

Footnotes:

- (a) Background turbidity 50 NTU or less then the turbidity in the receiving water shall not exceed 5 NTU above background. Background turbidity is greater than 50 NTU cannot have 10% increase in turbidity.
- (b) With human caused variation must be within .2 units.
- (c) TPH shall only be measured and sampled if visible sheen is observed.

2.2 Continuous Chemically Treated Discharge Monitoring

Continuous or batch chemical treatment is used to treat runoff in those cases where site specific conditions may limit the ability of traditional erosion and sediment control BMPs to meet water quality standards in the receiving water. Ecology defines chemical treatment methods and requirements in BMP C250, *Western Washington Stormwater Management Manual, Volume II*. The Port's NPDES permit specifies monitoring parameters and frequencies in addition to Ecology's General Use Level Designation requirements.

The International Arrivals Facility Project utilized an Electrocoagulation Treatment system which discharged to the D10C - Des Moines Creek #10C outfall beginning in October 2017. The Port's NPDES permit specifies monitoring parameters and frequencies.

2.3 Batch Chemically Treated Discharge Monitoring

Batch treatment is also utilized when traditional BMPs may not be adequate. The chemical treatment methods and requirements are also defined in BMP C250, *Western Washington Stormwater Management Manual, Volume II*.

The Port did not perform any batch treatment during this reporting period. The Port's NPDES permit specifies monitoring parameters and frequencies. If the Port uses batch treatment for future construction stormwater projects it will be identified in the site-specific monitoring plan and reported to Ecology on the monthly DMR.

Section 3: Construction Stormwater Monitoring Results Summary

This section summarizes the construction stormwater monitoring events and results. All data summarized in this section has been reported to Ecology on monthly DMRs and is included in Appendix B.

3.1 Non-Chemically Treated Discharge Monitoring Summary

The Port monitored twenty- four (24) 0.5-inch of rain within 24-hour storm events during this period. All of the monitoring results were reported in the monthly DMRs. During this period there were up to seven (7) active construction stormwater outfalls. The Port discharged into Des Moines Creek, Northwest Ponds, Miller Creek and Lake Reba. Table 3 provides a monthly summary of the number of 0.5-inch/24-hour stormwater events.

Table 3. Summary 0.5-Inch within 24-Hour Monitoring Events

Month (July 2017 – June 2018)	Number 0.5-Inch Stormwater Events
July	0
August	0
September	0
October	3
November	6
December	3
January	6
February	1
March	1
April	4
May	0
June	0

Table 4 *Non-Chemically Treated Discharge Data Results* provides the instream monitoring data results submitted on the DMR. Please note that Table 4 reflects the maximum and minimum data results if there were multiple 0.5 inch/24-hour storm events during the month.

The non-chemical construction monitoring occurs in the receiving water which results in many outside sources comingling with construction discharges in the receiving water. The Port performs site inspections to ensure BMPs are working effectively and unanticipated discharges are not occurring from the project site.

3.1.1 Turbidity

All construction discharges were below 5 NTUs above background. There were no exceedances during this reporting period.

3.1.2 pH

All construction discharges were within 6.5 to 8.5 pH range. The monitoring is collected upstream and downstream of the discharge.

3.1.3 Total Petroleum Hydrocarbons

The Port did not visually identify a sheen during any of the monitoring events.

3.1.4 Flow

The Port monitored flow during all of the monitoring events.

Table 4. Non-Chemically Treated Discharge Data Results

Parameter	Month	Outfalls								
		D10	D10A	D12	D13	D5	L29	L30	M20A	
Flow (mgd)	Jul-17	ND	Inactive	Inactive	ND	ND	Inactive	ND	ND	
	Aug-17	ND	ND	ND	ND	ND	Inactive	ND	ND	
	Sep-17	ND	ND	ND	ND	ND	Inactive	ND	ND	
	Oct-17	1.935	ND	0.301	0.215	2.365	Inactive	0.516	<0.086	
	Nov-17	ND	ND	ND	ND	ND	Inactive	ND	ND	
	Dec-17	1.935	ND	0.645	0.516	6.45	Inactive	1.075	0.129	
	Jan-18	1.505	ND	0.387	0.215	3.87	Inactive	0.946	0.086	
	Feb-18	0.301	ND	0.215	<0.086	1.935	Inactive	0.086	0.086	
	Mar-18	0.731	ND	0.129	0.172	1.29	Inactive	0.172	<0.086	
	Apr-18	1.935	ND	0.645	0.344	ND	0.731	Inactive	Inactive	
	May-18	ND	ND	ND	ND	ND	ND	Inactive	Inactive	
	Jun-18	ND	ND	ND	ND	ND	ND	Inactive	Inactive	
	Oil and Grease Total Petroleum Hydrocarbon (mg/L)	Jul-17	ND	Inactive	ND	ND	ND	Inactive	ND	ND
		Aug-17	ND	ND	ND	ND	ND	Inactive	ND	ND
Sep-17		ND	ND	ND	ND	ND	Inactive	ND	ND	
Oct-17		No Sheen	ND	No Sheen	No Sheen	No Sheen	Inactive	No Sheen	No Sheen	
Nov-17		ND	ND	ND	ND	ND	Inactive	ND	ND	
Dec-17		No Sheen	ND	No Sheen	No Sheen	No Sheen	Inactive	No Sheen	No Sheen	
Jan-18		No Sheen	ND	No Sheen	No Sheen	No Sheen	Inactive	No Sheen	No Sheen	
Feb-18		No Sheen	ND	No Sheen	No Sheen	No Sheen	Inactive	No Sheen	No Sheen	
Mar-18		No Sheen	ND	No Sheen	No Sheen	No Sheen	Inactive	No Sheen	No Sheen	
Apr-18		No Sheen	ND	No Sheen	No Sheen	ND	No Sheen	Inactive	Inactive	
May-18		ND	ND	ND	ND	ND	ND	Inactive	Inactive	
Jun-18		ND	ND	ND	ND	ND	ND	Inactive	Inactive	
pH [min \ max] (s.u.)		Jul-17	ND	Inactive	Inactive	ND	ND	Inactive	ND	ND
		Aug-17	ND	ND	ND	ND	ND	Inactive	ND	ND
	Sep-17	ND	ND	ND	ND	ND	Inactive	ND	ND	
	Oct-17	6.88\ 7.15	ND	6.88\ 7.15	7.17\ 7.26	7.03\ 7.17	Inactive	6.92\ 7.14	7.07\ 7.22	
	Nov-17	ND	ND	ND	ND	ND	Inactive	ND	ND	
	Dec-17	6.88\ 7.05	ND	6.88\ 7.05	6.91\ 7.05	6.76\ 6.95	Inactive	6.87\ 6.98	6.95\ 7.07	
	Jan-18	6.89\ 7.14	ND	6.89\ 7.14	6.91\ 7.16	6.78\ 7.10	Inactive	6.89\ 7.17	6.94\ 7.13	
	Feb-18	7.12\ 7.12	ND	7.12\ 7.12	7.13\ 7.13	6.90\ 6.90	Inactive	6.89\ 6.89	7.00\ 7.00	
	Mar-18	7.18\ 7.18	ND	7.18\ 7.18	7.09\ 7.09	6.85\ 6.85	Inactive	7.06\ 7.06	7.26\ 7.26	
	Apr-18	6.80\ 8.13	ND	6.80\ 8.13	6.72\ 6.85	ND	6.61\ 6.94	Inactive	Inactive	
	May-18	ND	ND	ND	ND	ND	ND	Inactive	Inactive	
	Jun-18	ND	ND	ND	ND	ND	ND	Inactive	Inactive	
	Turbidity Background <=50 NTU (NTU)	Jul-17	ND	Inactive	ND	ND	ND	Inactive	ND	ND
		Aug-17	ND	ND	ND	ND	ND	Inactive	ND	ND
Sep-17		ND	ND	ND	ND	ND	Inactive	ND	ND	
Oct-17		1.3	ND	2.2	2.9	0	Inactive	0	0	
Nov-17		ND	ND	ND	ND	ND	Inactive	ND	ND	
Dec-17		0.8	ND	0	2	0.8	Inactive	1.2	0.1	
Jan-18		5	ND	0.3	0.3	1	Inactive	0.7	1.7	
Feb-18		0.7	ND	0	0	0	Inactive	0	0	
Mar-18		4.3	ND	0.9	0	0	Inactive	0	0	
Apr-18		4	ND	2.3	0.2	ND	0.5	Inactive	Inactive	
May-18		ND	ND	ND	ND	ND	ND	Inactive	Inactive	
Jun-18		ND	ND	ND	ND	ND	ND	Inactive	Inactive	
Turbidity Background >50 NTU (%)		Jul-17	ND	Inactive	ND	ND	ND	Inactive	ND	ND
		Aug-17	ND	ND	ND	ND	ND	Inactive	ND	ND
	Sep-17	ND	ND	ND	ND	ND	Inactive	ND	ND	
	Oct-17	NA	ND	NA	NA	NA	Inactive	NA	NA	
	Nov-17	ND	ND	ND	ND	ND	Inactive	ND	ND	
	Dec-17	NA	ND	NA	NA	NA	Inactive	NA	NA	
	Jan-18	NA	ND	NA	NA	NA	Inactive	NA	NA	
	Feb-18	NA	ND	NA	NA	NA	Inactive	NA	NA	
	Mar-18	NA	ND	NA	NA	NA	Inactive	NA	NA	
	Apr-18	NA	ND	NA	NA	ND	NA	Inactive	Inactive	
	May-18	ND	ND	ND	ND	ND	ND	Inactive	Inactive	
	Jun-18	ND	ND	ND	ND	ND	ND	Inactive	Inactive	

Notes:

mgd = million gallons per day; mg/l = milligrams per liter; s.u. = standard units; ntu = nephelometric turbidity units; ND = No Discharge; NA = Not Applicable

3.2 Continuous Chemical Treatment Monitoring Summary

The International Arrivals Facility project operated an electrocoagulation continuous flow system during this reporting period. The treatment system discharges to Des Moines Creek via the D10-C – Des Moines Creek #10 Chemical Outfall. The system began operation in October 2017 and there was no discharge in May and June 2018.

Month (2017-2018)	Gallons Treated	Operating Days	Turbidity (NTUs)	pH (s.u.) min/max
July	Inactive	0	Inactive	Inactive
August	Inactive	0	Inactive	Inactive
September	Inactive	0	Inactive	Inactive
October	45,100	2	1.22	7.57/8.2
November	173,600	8	2.2	6.93/8.36
December	137,800	5	0.76	6.96/8.15
January	377,100	17	2.89	7.18/8.04
February	71,000	7	2.41	7.42/8.39
March	26,400	4	2.49	7.40/7.94
April	160,900	8	2.89	7.0/8.1
May	No Discharge	0	No Discharge	No Discharge
June	No Discharge	0	No Discharge	No Discharge

3.2.1 Turbidity

All construction discharges were below 5 NTUs maximum daily average. There were no exceedances during this reporting period.

3.2.2 pH

All construction discharges were within 6.5 to 8.5 pH range. The monitoring is collected upstream and downstream of the discharge.

3.2.3 Total Petroleum Hydrocarbons

The Port did not visually identify a sheen during any of the monitoring events. There were less than four visual sheen samples collected on 8 of the 51 operating days. On these days less than four samples were collected due to operating periods of less than two hours.

3.2.4 Flow

The Port monitored flow during all of the monitoring events.

3.3 Batch Chemical Treatment Monitoring Summary

The Port did not perform any batch treatment during this reporting period. The Port's NPDES permit specifies monitoring parameters and frequencies. If the Port uses batch treatment for future construction stormwater projects it will be identified in the site-specific monitoring plan and reported to Ecology on the monthly DMR.