

Annual Construction Stormwater Monitoring Report

Seattle-Tacoma International Airport

For the Period July 1, 2008 through June 30, 2009

October 1, 2009

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Table of Contents

List of Tables	ii
List of Appendices	ii
Section 1: Introduction	1
1.1 Background	1
Section 2: Construction Stormwater Monitoring Requirements	2
2.1 Non-Chemically Treated Discharge Monitoring	3
2.2 Continuous Chemically Treated Discharge Monitoring	3
2.3 Batch Chemically Treated Discharge Monitoring	4
Section 3: Construction Stormwater Summary	5
3.1 Non-Chemically Treated Discharge Monitoring Summary	5
3.1.1 Turbidity	6
3.1.2 pH	6
3.1.3 Total Petroleum Hydrocarbons	6
3.1.4 Flow	6
3.1.5 Arsenic	6
3.2 Continuous Chemical Monitoring Summary	6
3.2.1 Turbidity	7
3.2.2 pH	7
3.2.3 Total Petroleum Hydrocarbons	7
3.2.4 Flow	7
3.2.5 Arsenic	7

List of Tables

Table 1:	Non-Chemically Treated Discharge Monitoring Parameters and Effluent Limitations
Table 2:	Continuous Chemical Discharge Parameters and Effluent Limitations
Table 3:	Summary 0.5-Inch within 24-Hour Monitoring Events
Table 4:	Continuous Chemical Treatment Monitoring Monthly Flow Volumes and Days Processed

List of Appendices

Appendix A:	NPDES Construction Monitoring Outfalls Area Map
Appendix B:	NPDES Construction Stormwater Annual Data Summary Non-Chemically Treated Discharge
Appendix C:	NPDES Construction Stormwater Annual Data Summary Chemically Treated Discharge

Section 1: Construction Stormwater Annual Report

The Port of Seattle (Port) National Pollutant Discharge Elimination System (NPDES) Permit Part III Special Condition S1.F requires an annual summary of construction stormwater monitoring results. The twelve month period is defined as July 1 through June 30. The NPDES permit was reissued and effective April 1, 2009. The reissued permit revised sampling parameters and updated construction stormwater outfall locations. This report provides a summary of the number of projects, active outfalls, and number of construction stormwater events and compliance during this period.

1.1 Background

The Port operates and maintains the Seattle-Tacoma International Airport (STIA). STIA is currently undergoing significant facility upgrades to improve outdated infrastructure and to increase facility and operational capacity to accommodate the increased number of passengers. Construction stormwater discharges into six (6) different receiving waters: Des Moines Creek, Northwest Ponds, Walker Creek, Miller Creek, Gilliam Creek and Lake Reba. A *NPDES Construction Stormwater Outfall Areas Figure* is shown in Appendix A.

Section 2: Construction Stormwater Monitoring Requirements

The Port submits a site-specific construction stormwater monitoring plan prior to construction activities. A monitoring plan is required 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 III, Special Condition S1.C Table 3. The construction monitoring is broken into three categories:

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

Each condition has specific monitoring frequencies and effluent limitations. The Port coordinates with contractors and consultants to ensure all monitoring requirements are met. The Port personnel work with project and construction management teams to identify how a site will be monitored and if treatment is necessary to meet permit requirements.

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. Appendix A *NPDES Construction Stormwater Outfall Areas Figure* 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-A & S2.A.1

2.1 Non-Chemically Treated Discharge Monitoring

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 that 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 RivPlum Model and is no greater than 100 feet downstream or at the nearest accessible point. Table 1 describes the Non-chemically treated discharge monitoring parameters and effluent limitations.

Monitoring Parameter	Effluent Limit
Turbidity ^(a)	5 NTU or 10% increase above background
pH	6.5 to 8.5
Total Petroleum Hydrocarbons	5 mg/L ^(b)
Flow	Report
Arsenic ^{(c) (d)}	Not required

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) TPH shall only be measured and sampled if visible sheen is observed.

(c) Arsenic monitoring is no longer required in 2009 NPDES Permit.

(d) In the 2003 NPDES Permit, Arsenic monitoring was only required for construction stormwater generated in historically undisturbed areas.

2.2 Continuous Chemically Treated Discharge Monitoring

The Port currently utilizes Chitosan Enhanced Sand Filtration (CESF) treatment facilities for continuous chemical stormwater treatment. All CESF treatment facilities were associated with the Third Runway and the Consolidated Rental Car Facility Projects. The Port's NPDES permit specifies continuous chemical treatment monitoring parameters and frequencies. In addition to the NPDES permit, CESF monitoring and treatment is regulated under the CESF Conditional Use Level Designation and Quality Assurance Prevention Plan (QAPP) and General Use Level Designation. The engineering report defines the CESF treatment discharge rates into the receiving water. During this reporting period the Port discharged CESF treated stormwater into Miller, Walker and Gilliam Creeks from four (4) outfalls. The Port is required to sample the CESF discharge for the following parameters:

Table 2: Continuous Chemical Parameters & Effluent Limitations

Monitoring Parameter	Effluent Limit
Turbidity ^(a)	Maximum daily average shall not exceed 5 NTU
pH	6.5 to 8.5
Total Petroleum Hydrocarbons	5 mg/L ^(b)
Flow	Report
Arsenic ^{(c)(d)}	Not required

Footnotes:

(a) The average daily effluent limitation is based on the arithmetic mean of number of samples taken per day from the continuous discharge.

(b) TPH shall only be measured and sampled if visible sheen is observed.

(c) Arsenic monitoring is no longer required in 2009 NPDES Permit.

(d) In the 2003 NPDES Permit, Arsenic monitoring was only required for construction stormwater generated in historically undisturbed areas.

2.3 Batch Chemically Treated Discharge Monitoring

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 Summary

A construction outfall grid was developed in order to determine in advance the location of potential construction stormwater discharges. 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 S1.A.1 Table 1. The *NPDES Construction Monitoring Outfall Areas Map* (Appendix A) provides a reference for outfall locations.

3.1 Non-Chemically Treated Discharge Monitoring Summary

The Port monitored 20 0.5-inch of rain within 24-hour storm events during this period. All of the monitoring results were reported in the monthly DMR. During this period there were up to twelve (12) active construction stormwater outfalls. The Port discharged into Miller Creek, Des Moines Creek, Walker Creek, Lake Reba and Northwest Ponds. 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 2008 – June 2009)	Number 0.5-Inch Stormwater Events
July	No Qualifying Event
August	Three (3)
September	No Qualifying Event
October	One (1)
November	Three (3)
December	One (1)
January	Four (4)
February	No Qualifying Event
March	Three (3)
April	One (1)
May	Four (4)
June	No Qualifying Event

Appendix B provides the instream monitoring data results submitted on the DMR. Please note that Appendix B reflects the maximum and minimum data results if there were multiple 0.5 inch/24-hour storm events during the month. The following is a description of the non-chemically treated discharge monitoring parameters and results. All exceedances noted below or other non-compliance notifications were reported to Ecology on the DMR and/or a 5-day non-compliance notification per Part III, Special Condition S2.E.

Any effluent limit exceedances are noted in Appendix B *NPDES Construction Stormwater Annual Data Summary, Non-Chemically Treated Discharge*.

3.1.1 Turbidity

The Port identified four (4) events during which there was a 5 NTU or greater difference between upstream and downstream values. Two (2) of the exceedances was associated with the severe rain event that began on May 5, 2009. One (1) exceedance was associated with road sanding runoff from a cold weather event. During the other turbidity exceedance, the source was not identified. However, the construction site BMPs were functioning properly and were intact.

3.1.2 pH

There were three (3) pH exceedances during this period. None of the exceedances were associated with Port activity. During two (2) exceedances, the upstream value was below the 6.5 effluent limit. The depressed pH of the creek in these instances is likely related to basin-wide effects of low pH rainwater on the receiving waters. The other exceedance, the outfall pH value was 6.7. Therefore, Port activity did not impact the instream pH measurement.

3.1.3 Total Petroleum Hydrocarbons

During all of the monitoring events the Port did not visually identify a sheen.

3.1.4 Flow

The Port monitored flow during all of the monitoring events. Backwater effects often limit the ability to measure the flow. These occurrences are noted in Appendix B: *NPDES Construction Stormwater Annual Data Summary Non-Chemically Treated Discharge*.

3.1.5 Arsenic

The Port met the Arsenic effluent limit during all monitoring events.

3.2 Continuous Chemical Treatment Monitoring Summary

The CESF systems discharge into Des Moines, Gilliam and Walker Creek. There were two (2) active CESF outfalls discharging into Miller Creek, one (1) into Walker Creek and one (1) outfall into Gilliam Creek. Table 4 describes the number of days processed and the total volumes discharged per CESF outfall.

Table 4 – Continuous Flow Total Days Processed and Monthly Flow Volumes

Month	MILLER CREEK				WALKER CREEK		GILLIAM CREEK	
	Pond M (15FC)		Pond C/D/G (M17C)		Pond F (W24C)		Gilliam CESF (G26C)	
	Days	Volume	Days	Volume	Days	Volume	Days	Volume
July	1	71,302	0	0	0	0	1	0
August	0	0	0	0	0	0	0	0
September	0	0	0	0	0	0	0	0
October	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	0	0
November	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	8	1,317,767
December	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	3	627,002
January	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	11	336,305
February	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	0	0
March	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	9	736,208
April	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	9	425,288
May	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	9	583,829
June	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive	0	0
Annual	1	71,302	0	0	0	0	50	4,085,360

Footnote:

(a) CESF volumes represent treated discharge during controlled release of December 3rd storm event.

Appendix C identifies the continuous flow data results submitted on the DMR. Please note that Appendix C *NPDES Construction Stormwater Annual Data Summary Chemically Treated Discharge* reflects the maximum and minimum data results of the CESF treated stormwater during the month.

The following is a description of the continuous monitoring parameters and results.

3.2.1 Turbidity

The turbidity effluent limit was below the maximum daily average of 5 NTUs during all discharges.

3.2.2 pH

The Port CESF effluent was between 6.5 and 8.5 during all discharges.

3.2.3 Total Petroleum Hydrocarbons

The Port did not visually identify a sheen during any of treatment operations.

3.2.4 Flow

The Port monitored flow during all of the monitoring events. The maximum daily flow and total monthly discharge volume was submitted to Ecology on the DMR.

3.2.5 Arsenic

Arsenic monitoring was only applicable for the outfalls associated with the Third Runway Project. The Port met the arsenic effluent limit during all treatment operations.

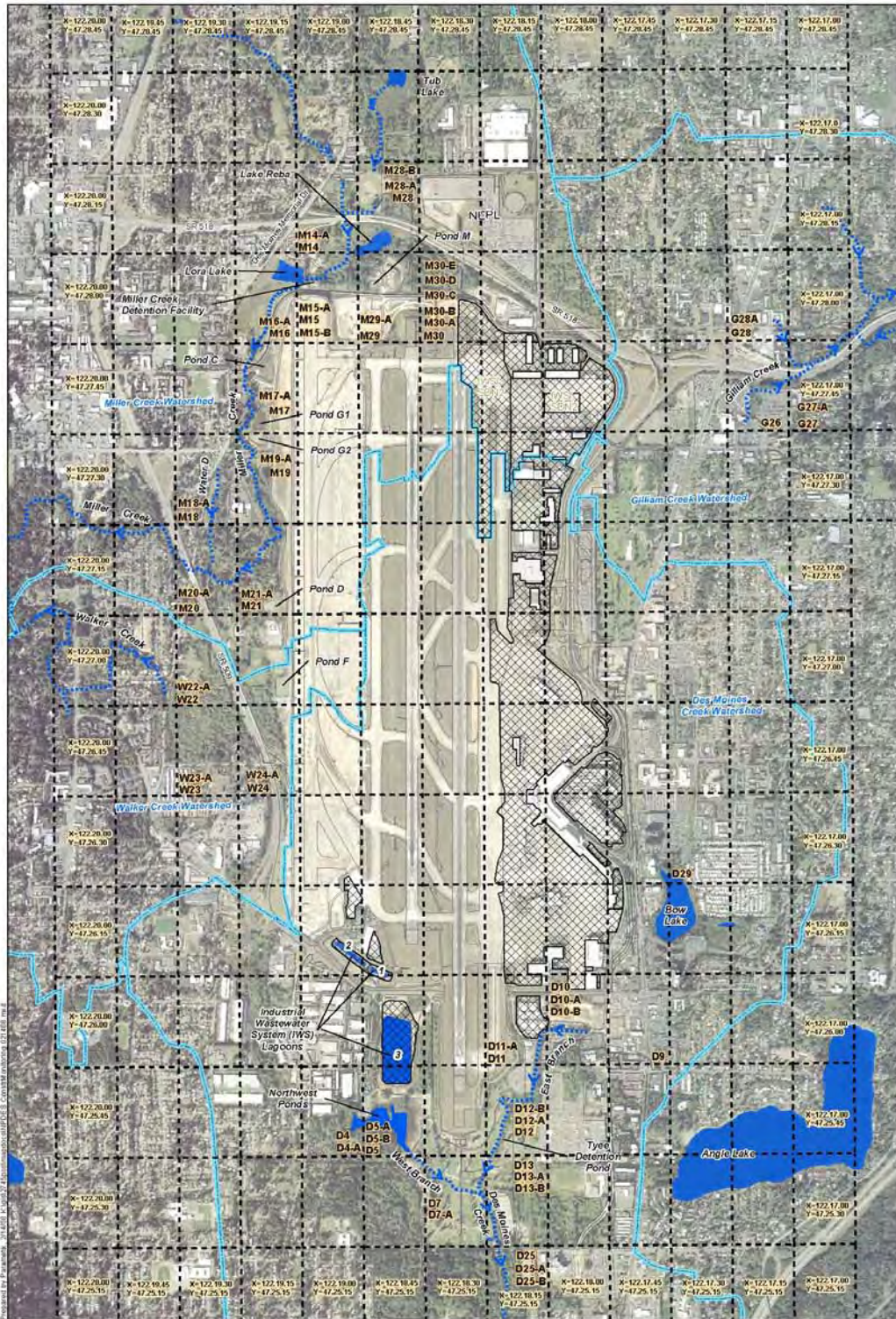
The Port discharged 4,156,663 million gallons of continuous CESF treated construction stormwater during this reporting period. All of the monitoring results were submitted to Ecology on the monthly DMR.

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Appendix A NPDES Construction Monitoring Outfall Areas Map

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Appendix A: NPDES Construction Monitoring Outfalls Area Map



Parametrix



- Stream
- Fresh Water
- ▭ Watershed Boundary
- ▨ IWS Area

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**Appendix B NPDES Construction Stormwater
Annual Data Summary Non-Chemically
Treated Discharge**

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NPDES Construction Stormwater Annual Data Summary: Non-Chemically Treated Discharge

Monthly Maximum Concentrations

July 1, 2008 - June 30, 2009

Parameter	Month	Outfalls																						
		15B/M15F	D10	D11F	D13/D13F	D4F	D5	D5F	D7	D8	G26	L29	M15	M16F	M17	M18	M20	M21	M29	M29A	M30	M30A	MC19	W24
Arsenic (µg/l)	Jul,2008	IA	ND	IA	ND	ND	ND	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	ND	IA	IA
	Aug,2008	IA	N/A (h)	IA	N/A (h)	4	N/A (h)	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	ND	IA	IA
	Sep,2008	IA	ND	IA	ND	ND	ND	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	ND	IA	IA
	Oct,2008	ND	N/A (h)	IA	N/A (h)	1	N/A (h)	IA	IA	IA	IA	IA	IA	IA	ND	IA	IA	IA	IA	IA	IA	N/A (h)	ND	2
	Nov,2008	2	N/A (h)	IA	N/A (h)	2	N/A (h)	IA	IA	IA	IA	IA	IA	IA	ND	IA	< 1	IA	IA	IA	IA	IA	ND	2
	Dec,2008	IA	N/A (h)	IA	N/A (h)	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
	Jan,2009	IA	N/A (h)	IA	N/A (h)	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
	Feb,2009	IA	ND	IA	ND	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
	Mar,2009	ND	N/A (h)	IA	N/A (h)	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
	Apr,2009	ND	NA*	IA	NA*	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
	May,2009	ND	NA*	IA	NA*	IA	NA*	IA	NA*	IA	IA	NA*	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
	Jun, 2009	ND	ND	IA	ND	IA	ND	IA	ND	IA	IA	ND	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	ND
	Flow (mgd)	Jul,2008	IA	ND	IA	ND	ND	ND	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	ND	IA
Aug,2008		IA	0.26	IA	0.04	0.001 (e)	0.26	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	ND	IA	IA
Sep,2008		IA	ND	IA	ND	ND	ND	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	ND	IA	IA
Oct,2008		ND	0.3	IA	0.04	N/A (d)	0.3	IA	IA	IA	IA	IA	IA	IA	ND	IA	0.04	IA	IA	IA	IA	0.3	ND	0.65
Nov,2008		0.02	0.9	IA	0.4	N/A (c)	1.7	IA	IA	IA	IA	IA	IA	IA	ND	IA	1.1	IA	IA	IA	IA	ND	1.7	0.9
Dec,2008		IA	0.86	IA	0.35	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
Jan,2009		IA	1.7	IA	1.1	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
Feb,2009		IA	ND	IA	ND	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
Mar,2009		ND	0.86	IA	0.17	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
Apr,2009		ND	1.3	IA	0.34	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
May,2009		ND	1.1	IA	0.4	IA	1.5	IA	0.4	IA	IA	0.3	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
Jun, 2009		ND	ND	IA	ND	IA	ND	IA	ND	IA	IA	ND	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	ND
Oil and Grease - Total Petroleum Hydrocarbon (mg/l)		Jul,2008	IA	ND	IA	ND	ND	ND	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	ND	IA
	Aug,2008	IA	No Sheen	IA	No Sheen	No Sheen	No Sheen	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	ND	IA	IA
	Sep,2008	IA	ND	IA	ND	ND	ND	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	ND	IA	IA
	Oct,2008	ND	No Sheen	IA	No Sheen	No Sheen	No Sheen	IA	IA	IA	IA	IA	IA	IA	ND	IA	No Sheen	IA	IA	IA	IA	No Sheen	ND	No Sheen
	Nov,2008	No Sheen	No Sheen	IA	No Sheen	No Sheen	No Sheen	IA	IA	IA	IA	IA	IA	IA	ND	IA	No Sheen	IA	IA	IA	IA	ND	No Sheen	No Sheen
	Dec,2008	IA	No Sheen	IA	No Sheen	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
	Jan,2009	IA	No Sheen	IA	No Sheen	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
	Feb,2009	IA	ND	IA	ND	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
	Mar,2009	ND	No Sheen	IA	No Sheen	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
	Apr,2009	ND	No Sheen	IA	No Sheen	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
	May,2009	ND	No Sheen	IA	No Sheen	IA	No Sheen	IA	No Sheen	IA	IA	No Sheen	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
	Jun, 2009	ND	ND	IA	ND	IA	ND	IA	ND	IA	IA	ND	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	ND
	pH (s.u.) ⁽¹⁾	Jul,2008	IA	ND	IA	ND	ND	ND	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	ND	IA
Aug,2008		IA	6.94\7.23	IA	6.98\7.41	7.07\7.25	6.47 (g)\7.03	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	ND	IA	IA
Sep,2008		IA	ND	IA	ND	ND	ND	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	ND	IA	IA
Oct,2008		ND	7.10\7.10	IA	6.81\6.81	7.10\7.10	6.88\6.88	IA	IA	IA	IA	IA	IA	IA	ND	IA	7.41\7.41	IA	IA	IA	IA	7.03\7.03	ND	7.14\7.14
Nov,2008		6.58\6.58	6.60\7.05	IA	6.91\7.07	6.76\6.86	6.51\6.86	IA	IA	IA	IA	IA	IA	IA	ND	IA	6.96\8.05	IA	IA	IA	IA	ND	6.98\7.22	7.00\7.27
Dec,2008		IA	7.85\7.85	IA	7.93\7.93	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
Jan,2009		IA	6.33 (a)\7.02	IA	6.77\7.13	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
Feb,2009		IA	ND	IA	ND	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
Mar,2009		ND	7.74\7.93	IA	7.77\8.24	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
Apr,2009		ND	7.51\7.60	IA	7.63\7.71	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
May,2009		ND	6.74\7.13	IA	6.86\7.16	IA	6.59\6.85	IA	6.59\6.85	IA	IA	6.33 (f)\6.33 (f)	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
Jun, 2009		ND	ND	IA	ND	IA	ND	IA	ND	IA	IA	ND	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	ND
Turbidity Background <=50 ntu (ntu)		Jul,2008	IA	ND	IA	ND	ND	ND	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	ND	IA
	Aug,2008	IA	1.3	IA	0.1	0.4	0.1	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	ND	IA	IA
	Sep,2008	IA	ND	IA	ND	ND	ND	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	ND	IA	IA
	Oct,2008	ND	0	IA	0.3	0	0	IA	IA	IA	IA	IA	IA	IA	ND	IA	0	IA	IA	IA	IA	0	ND	1.8
	Nov,2008	0	1.5	IA	0.3	0	0	IA	IA	IA	IA	IA	IA	IA	ND	IA	0.9	IA	IA	IA	IA	ND	0.2	0
	Dec,2008	IA	0	IA	0.4	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
	Jan,2009	IA	30 (b)	IA	0	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
	Feb,2009	IA	ND	IA	ND	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
	Mar,2009	ND	3.1	IA	11	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
	Apr,2009	ND	3.1	IA	0.3	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
	May,2009	ND	2.8	IA	0.2	IA	8.6	IA	8.6	IA	IA	0	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
	Jun, 2009	ND	ND	IA	ND	IA	ND	IA	ND	IA	IA	ND	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	ND

NPDES Construction Stormwater Annual Data Summary: Non-Chemically Treated Discharge

Monthly Maximum Concentrations

July 1, 2008 - June 30, 2009

Parameter	Month	Outfalls																						
		15B/M15F	D10	D11F	D13/D13F	D4F	D5	D5F	D7	D8	G26	L29	M15	M16F	M17	M18	M20	M21	M29	M29A	M30	M30A	MC19	W24
Turbidity Background >50 ntu (%)	Jul,2008	IA	ND	IA	ND	ND	ND	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	ND	IA	IA
	Aug,2008	IA	NA	IA	NA	NA	NA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	ND	IA	IA
	Sep,2008	IA	ND	IA	ND	ND	ND	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	ND	IA	IA
	Oct,2008	ND	NA	IA	NA	NA	NA	IA	IA	IA	IA	IA	IA	IA	IA	IA	NA	IA	IA	IA	IA	NA	ND	NA
	Nov,2008	NA	NA	IA	NA	NA	NA	IA	IA	IA	IA	IA	IA	IA	ND	IA	NA	IA	IA	IA	IA	ND	NA	NA
	Dec,2008	IA	NA	IA	NA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
	Jan,2009	IA	7	IA	0	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
	Feb,2009	IA	ND	IA	ND	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
	Mar,2009	ND	0	IA	ND	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
	Apr,2009	ND	NA	IA	NA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
	May,2009	ND	NA	IA	NA	IA	NA	IA	NA	IA	IA	NA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA
	Jun, 2009	ND	ND	IA	ND	IA	ND	IA	ND	IA	IA	ND	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	IA	ND

Notes:
 µg/l = micrograms per liter
 mgd = million gallons per day
 mg/l = milligrams per liter
 s.u. = standard units
 ntu = nephelometric turbidity units
 < = non-detect at displayed reporting limit

- (a) Due to the inherent acidic nature of rainfall, the natural pH of the creek was below 6.5 on 1/5/09
 - (b) The elevated turbidity on 1/1/09 was associated with road sanding operations. The Port submitted written notification to Ecology on 1/6/09.
 - (c) Unable to determine flow rate on 11/4/08, 11/7/08, and 11/12/08 events.
 - (d) Unable to determine flow rate on 10/4/08.
 - (e) Unable to determine flow rate due to extremely low flow on 8/21/08 and 8/25/08.
 - (f) Due to the inherent nature of stormwater, the minimum pH was below 6.5 .
 - (g) On 8/20/08, outfall pH measurement was 6.79, therefore Port activity did not contribute to low pH value.
 - (h) Analysis not required, site is not located within a historically undisturbed area.
 - (i) The minimum and maximum monthly pH concentrations are reported.
- *Renewed permit effective date 4/1/09. Arsenic analysis not required.

**Appendix C NPDES Construction Stormwater
Annual Data Summary Chemically Treated
Discharge**

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NPDES Construction Stormwater Annual Data Summary, Chemically Treated Discharge
Monthly Maximum Concentration

July 1, 2008 - June 30, 2009

Parameter	Month	Outfalls								
		15FC	D10C	D4FC	D8B	D8C	G26C	M17C	M19C	W24C
Arsenic (µg/l)	Jul,2008	<250	IA	IA	IA	IA	N/A (a)	ND	IA	ND
	Aug,2008	ND	IA	IA	IA	IA	ND	ND	IA	ND
	Sep,2008	ND	IA	IA	IA	IA	ND	ND	IA	ND
	Oct,2008	IA	IA	IA	IA	IA	ND	IA	IA	IA
	Nov,2008	IA	IA	IA	IA	IA	N/A (a)	IA	IA	IA
	Dec,2008	IA	IA	IA	IA	IA	N/A (a)	IA	IA	IA
	Jan,2009	IA	IA	IA	IA	IA	N/A (a)	IA	IA	IA
	Feb,2009	IA	IA	IA	IA	IA	ND	IA	IA	IA
	Mar,2009	IA	IA	IA	IA	IA	N/A (a)	IA	IA	IA
	Apr,2009*	IA	IA	IA	IA	IA	NA*	IA	IA	IA
	May,2009*	IA	IA	IA	IA	IA	NA*	IA	IA	IA
	Jun, 2009*	IA	IA	IA	IA	IA	ND	IA	IA	IA
Flow (mgd)	Jul,2008	71,302	IA	IA	IA	IA	58,961	ND	IA	ND
	Aug,2008	ND	IA	IA	IA	IA	ND	ND	IA	ND
	Sep,2008	ND	IA	IA	IA	IA	ND	ND	IA	ND
	Oct,2008	IA	IA	IA	IA	IA	ND	IA	IA	IA
	Nov,2008	IA	IA	IA	IA	IA	309,778	IA	IA	IA
	Dec,2008	IA	IA	IA	IA	IA	220,000	IA	IA	IA
	Jan,2009	IA	IA	IA	IA	IA	336,305	IA	IA	IA
	Feb,2009	IA	IA	IA	IA	IA	ND	IA	IA	IA
	Mar,2009	IA	IA	IA	IA	IA	155,763	IA	IA	IA
	Apr,2009	IA	IA	IA	IA	IA	88,003	IA	IA	IA
	May,2009	IA	IA	IA	IA	IA	88,054	IA	IA	IA
	Jun, 2009	IA	IA	IA	IA	IA	ND	IA	IA	IA
Oil and Grease - Total Petroleum Hydrocarbon (mg/l)	Jul,2008	No Sheen	IA	IA	IA	IA	No Sheen	ND	IA	ND
	Aug,2008	ND	IA	IA	IA	IA	ND	ND	IA	ND
	Sep,2008	ND	ND	ND	ND	ND	ND	ND	IA	ND
	Oct,2008	IA	IA	IA	IA	IA	ND	IA	IA	IA
	Nov,2008	IA	IA	IA	IA	IA	No Sheen	IA	IA	IA
	Dec,2008	IA	IA	IA	IA	IA	No Sheen	IA	IA	IA
	Jan,2009	IA	IA	IA	IA	IA	No Sheen	IA	IA	IA
	Feb,2009	IA	IA	IA	IA	IA	ND	IA	IA	IA
	Mar,2009	IA	IA	IA	IA	IA	No Sheen	IA	IA	IA
	Apr,2009	IA	IA	IA	IA	IA	No Sheen	IA	IA	IA
	May,2009	IA	IA	IA	IA	IA	No Sheen	IA	IA	IA
	Jun, 2009	IA	IA	IA	IA	IA	ND	IA	IA	IA
pH (s.u.)^(b)	Jul,2008	7.6\8.1	IA	IA	IA	IA	6.7\7.2	ND	IA	ND
	Aug,2008	ND	IA	IA	IA	IA	ND	ND	IA	ND
	Sep,2008	ND	IA	IA	IA	IA	ND	ND	IA	ND
	Oct,2008	IA	IA	IA	IA	IA	ND	IA	IA	IA
	Nov,2008	IA	IA	IA	IA	IA	6.5\8.5	IA	IA	IA
	Dec,2008	IA	IA	IA	IA	IA	7.4\8.0	IA	IA	IA
	Jan,2009	IA	IA	IA	IA	IA	6.5\8.2	IA	IA	IA
	Feb,2009	IA	IA	IA	IA	IA	ND	IA	IA	IA
	Mar,2009	IA	IA	IA	IA	IA	6.9\8.1	IA	IA	IA
	Apr,2009	IA	IA	IA	IA	IA	6.6\8.0	IA	IA	IA
	May,2009	IA	IA	IA	IA	IA	6.5\8.0	IA	IA	IA
	Jun, 2009	IA	IA	IA	IA	IA	ND	IA	IA	IA
Turbidity (ntu) Maximum Daily Average	Jul,2008	4.8	IA	IA	IA	IA	2.4	ND	IA	ND
	Aug,2008	ND	IA	IA	IA	IA	ND	ND	IA	ND
	Sep,2008	ND	IA	IA	IA	IA	ND	ND	IA	ND
	Oct,2008	IA	IA	IA	IA	IA	ND	IA	IA	IA
	Nov,2008	IA	IA	IA	IA	IA	3.1	IA	IA	IA
	Dec,2008	IA	IA	IA	IA	IA	2.4	IA	IA	IA
	Jan,2009	IA	IA	IA	IA	IA	2.9	IA	IA	IA
	Feb,2009	IA	IA	IA	IA	IA	ND	IA	IA	IA
	Mar,2009	IA	IA	IA	IA	IA	2.3	IA	IA	IA
	Apr,2009	IA	IA	IA	IA	IA	2.2	IA	IA	IA
	May,2009	IA	IA	IA	IA	IA	3.4	IA	IA	IA
	Jun, 2009	IA	IA	IA	IA	IA	ND	IA	IA	IA

Notes:

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 < = non-detect at displayed reporting limit

ND = No Discharge
 NA = Not Applicable
 N/A = Not Analyzed
 NO = Non-Operational Outfall
 IA = Inactive

(a) Analysis not required, site is not located within a historically undisturbed area.
 *Renewed permit effective date 4/1/09. Arsenic analysis not required.
 (b) The minimum and maximum monthly pH concentrations are reported.