Intergovernmental Agreement for Remedial Investigation and Source Control Measures

DEQ No. LQVC-NWR-03-10

Outfall Basin 19 Stormwater Investigation

Technical Memorandum No. OF 19-3
City of Portland Outfall Project
ECSI No. 2425

September 2012

PREPARED BY

ENVIRONMENTAL SERVICES
CITY OF PORTLAND
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CITY OF PORTLAND
ENVIRONMENTAL SERVICES
1120 SW Fifth Avenue, Room 1000, Portland, Oregon 97204 ▪ Dan Saltzman, Commissioner ▪ Dean Marriott, Director

TECHNICAL MEMORANDUM No. OF19-3

Outfall Basin 19 Stormwater Investigation

TO: Alex Liverman, Oregon Department of Environmental Quality (DEQ)

FROM: Linda Scheffler, City of Portland, Bureau of Environmental Services (BES)

COPIES: Richard Muza, U.S. Environmental Protection Agency (EPA)
Julia Fowler, GSI Water Solutions, Inc.

DATE: September 20, 2012

SUBJECT: **Portland Harbor Source Investigation**

Introduction

This technical memorandum presents the results of the City of Portland (City) stormwater investigation conducted between December 2009 and February 2011 in Outfall Basin 19. Pesticides had been detected at low concentrations in a stormwater sample collected from the Basin 19 monitoring location in February 2009. Previous Basin 19 stormwater monitoring samples were not analyzed for pesticides[1] so the City collected additional pesticides data for Basin 19 stormwater to determine whether major upland sources of pesticides are present in the outfall basin (BES, 2010a). The December 2009 to February 2011 sampling results indicate that pesticides concentrations in Outfall 19 stormwater discharges are low and confirm that further source tracing for pesticides is not warranted.

This investigation is part of the City's ongoing Remedial Investigation associated with the Portland Harbor City of Portland Outfalls Project being conducted pursuant to the August 13, 2003, Intergovernmental Agreement between DEQ and the City. Data collected under this investigation support ongoing DEQ and City efforts to identify, characterize and control discharges to the Basin 19 municipal storm system.

Background

Basin Physical System and Setting

Outfall 19 drains approximately 486 acres; 70 percent of this acreage is Forest Park and the remaining is zoned industrial. The Outfall Basin 19 stormwater conveyance system and basin boundary are shown on Figure 1. The system has two main branches, both of which convey runoff from Forest Park, State and local roads, and industrial properties:

[1] The samples were collected as part of the City's routine monitoring of Basin 19 discharges to the Willamette River under a DEQ-issued National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Discharge Permit.

- *Western branch* —includes a storm line along NW Front Avenue, a line along NW St. Helens Road, and connecting lines.
- *Eastern branch*—includes storm lines along NW Kittridge Avenue, NW Yeon Avenue, NW St. Helens Road and NW Express Avenue.

These two branches converge at the intersection of NW Front and NW Kittridge Avenues (see manhole AAP918 on Figure 1). From this manhole, the storm main runs northeastward to the outfall, which discharges to the west side of the Willamette River at river mile 8.2. There are no connections between the manhole and the river.

The basin includes 17 facilities that are listed in the DEQ Environmental Cleanup Site Information (ECSI) database (see Figure 1).

Previous Investigations

Stormwater Solids

Several stormwater solids source investigations that included pesticides analyses have been conducted in Basin 19:

- 2003: City basin-wide inline solids investigation (BES, 2010b)
- 2006: City targeted inline solids investigation adjacent to former PGE-Forest Park property (ECSI #2406) and Brazil & Co. site (ECSI #1026) (BES, 2007a)
- 2007: Lower Willamette Group (LWG) sediment trap sample collection (Anchor and Integral, 2008)

Results from these investigations are evaluated in the *City of Portland Outfall Basin 19 Source Investigation Update Report* (BES, 2010b). With regard to pesticides, evaluation of the solids data indicated the presence of locally elevated concentrations of pesticides in solids in the upper portion of the eastern branch (primarily in abandoned lines), but no specific sources were identified.

Stormwater

Stormwater discharges from the City's stormwater outfall system are authorized and regulated under MS4 Discharge Permit #101314, issued jointly to the City and the Port of Portland. The City NPDES program began routine stormwater monitoring in Basin 19 in 1995 to generate a long-term effectiveness measure of the City's Industrial Stormwater Program (BES, 2011). The Outfall 19 MS4 stormwater monitoring data are reported to DEQ in the City's Annual Compliance Reports.[2] Additional data historically collected from this location to meet Portland Harbor source investigation objectives were evaluated in the City's *Stormwater Evaluation Report* (BES, 2010a).

A Basin 19 stormwater sample collected in February 2009 was analyzed for pesticides. Although the detected concentrations of pesticides were low in this sample (see Table 1), the City decided to collect additional pesticides data to confirm that source tracing was not warranted (BES, 2010a).

[2] Annual Compliance Reports for the City MS4 program can be accessed at: http://www.portlandonline.com/bes/index.cfm?c=50289&.

Stormwater Sample Collection and Analysis

The City MS4 program collected flow-weighted composite stormwater samples during four storm events between December 2009 and February 2011. In addition to the routine suite of analyses conducted for the MS4 permit, the City also analyzed these stormwater samples for pesticides to meet the objectives of this investigation. Field activities and pesticides results for these samples are summarized below.

Field Activities

Sampling Location and Procedures

The Basin 19 stormwater samples were collected at manhole AAP918, in the 42-inch outlet pipe (see Figure 1). Because there are no connections downstream of this manhole, this sampling point is representative of whole-basin discharges from Outfall 19. Automatic sampling equipment was installed at the monitoring location prior to each sampling event and programmed in accordance with the City's Amended Programmatic Sampling and Analysis Plan (BES, 2007b). Field notes recorded during stormwater sampling activities are included in Attachment A.

Storm Events Sampled

To meet the MS4 monitoring objectives, the Basin 19 stormwater sampling targeted storm events meeting specific criteria, which included an antecedent dry period of at least 6 hours, and a minimum predicted rainfall volume of greater than 0.2 inches in a 12-hour period. The storm events are described below based on sampling crew field notes, automated flow monitoring data, and hourly rainfall data from the Yeon rain gage,[3] located at 3395 NW. Yeon St., approximately 1.25 miles from the Basin 19 sampling location. Storm event hydrographs are presented in Figures 2 through 5. In accordance with standard practice, all rain gage data are recorded in Pacific Standard Time (PST). Therefore, all sample times in the following descriptions are given in PST.

<u>December 14 – 15, 2009</u>

Less than 0.1 inch of rainfall was recorded at the Yeon rain gage in the 16 days preceding this event. The minimum forecasted rainfall for December 14 was 0.91 inches. Rainfall began between 3:00 p.m. and 4:00 p.m. on December 14 and continued for more than 24 hours. The composite sample represents the time period between 5:23 p.m. on December 14 and 4:54 a.m. on December 15. Approximately 0.89 inches of rain had been recorded by the time the last aliquot was collected. The event hydrograph in Figure 2 presents the timing of the individual sample aliquots relative to flow and precipitation.

<u>February 23 – 24, 2010</u>

Less than 0.1 inch of rainfall was recorded at the Yeon gage during the 7 days preceding this event. The minimum forecasted rainfall for February 23 was 0.37 inches. Rainfall began between 11:00 a.m. and 12:00 p.m. on February 23, became intermittent after 3:00 a.m. on February 24, and ceased between 6:00 and 7:00 a.m. on February 24. The composite sample represents the time

[3] The Yeon rain gage is Station No. 121 of the City of Portland HYDRA Rainfall Network. Rain gage data obtained from USGS, Oregon Water Science Center (http://or.water.usgs.gov/non-usgs/bes/).

period between 12:41 p.m. on February 23 and 10:35 a.m. on February 24 (see event hydrograph in Figure 3). Approximately 0.51 inches of rain had been recorded by the time the last aliquot was collected.

October 23 – 24, 2010

Less than 0.1 inch of rainfall was recorded at the Yeon rain gage during the 12 days preceding this event. The minimum forecasted rainfall for this event was 1.27 inches. Steady rainfall began between 4:00 and 5:00 p.m. on October 23 and continued until between 2:00 and 3:00 a.m. on October 24, after which rainfall continued intermittently through the evening of October 24, with the heaviest rainfall occurring between approximately 4:00 and 8:00 p.m. on October 24. The composite sample represents the time period between 6:34 p.m. on October 23 and 10:26 p.m. on October 24 (see Figure 4). By the time the last aliquot was collected, a total of approximately 1.90 inches of rainfall had been recorded at the Yeon rain gage for this storm.

February 12, 2011

Less than 0.1 inches of rainfall were recorded at the Yeon rain gage during the 4 days that preceded this event. The minimum forecasted rainfall for this event was 0.58 inches. Rainfall began between 5:00 and 6:00 p.m. and ceased between 9:00 and 10:00 p.m. on February 12. The composite sample represents the time period between 6:04 and 10:34 p.m. on February 12 (see Figure 5). By the time the last aliquot was collected, a total of approximately 0.48 inches of rainfall had been recorded at the Yeon rain gage for this storm.

Based on these sampling conditions, the December 2009 – February 2011 storm events met the targeted storm criteria and the sampling objectives. The associated stormwater samples are considered to be representative of discharges from Outfall 19 during a variety of storm conditions.

Summary of Results

The composite stormwater samples were submitted for laboratory analysis of pesticides and other constituents. One or more pesticides were detected in each sample. Table 1 summarizes the pesticide results for the Basin 19 stormwater samples and includes Portland Harbor Joint Source Control Strategy (JSCS; DEQ/EPA, 2005) screening level values (SLVs) for reference. The laboratory reports and data review memoranda are included in Attachment B.

Data Evaluation

Approximately one-third of the pesticides analyzed were not detected in any of the samples. Of the pesticides detected, the majority of detected values are estimated concentrations, which have a higher level of uncertainty affiliated with the result.[4] Most detected pesticides were observed in only one or two of the five sampling events and are below or within an order-of-magnitude of the Ecological JSCS SLVs (see Table 1). These findings don't indicate that major current pesticides sources are present in the basin.

To supplement the evaluation of pesticides in basin stormwater, the City also reviewed pesticides results for stormwater solids samples collected in the basin. Historically pesticides were detected

[4] For the five sampling events, 13 of 20 detected concentrations were qualified as estimated concentrations. Results were flagged as estimated if the detected value was less than the Method Reporting Limit but greater or equal to the Method Detection Limit, or if the Relative Percent Difference between results from the primary and verification columns varied by more than 40%.

in solids samples collected from manhole AAP918 (BES, 2010b).[5] A sediment trap sample collected by the LWG in 2007 and an inline solids sample collected by the City in 2003 (from the incoming N. Kittridge line) had Total DDx concentrations of 6.3 and 36.7 µg/Kg respectively. These low concentrations reflect the presence of minor upland sources of pesticides in the basin. Several DEQ Cleanup sites discharging to Basin 19 detected pesticides at low concentrations during the course of their site stormwater pathway evaluations. These sites include Anderson Brothers (ECSI #970), Chevron USA Asphalt Refinery (ECSI #1281), and Anderson Portland Properties (ECSI #5529) (see Figure 1). DEQ has issued Source Control Decisions for the Anderson Brothers (DEQ, 2009) and Chevron USA Asphalt Refinery (DEQ, 2010) sites; a decision is pending for the remaining site.

Conclusions and Next Steps

The Basin 19 stormwater data do not indicate the presence of major current pesticide sources in the basin. This finding is consistent with previous conclusions based on the evaluation of Basin 19 stormwater solids data, which indicated pesticide concentrations in stormwater solids currently being discharged to the City conveyance system are low (BES, 2010b). In addition, under DEQ Cleanup authority, two identified sources of pesticides have been investigated and controlled, and a source control decision is pending at a remaining site. Based on these findings, the City concludes that source tracing is not warranted for pesticides in Basin 19.

References

Anchor and Integral. 2008. Portland Harbor RI/FS Round 3A and 3B Stormwater Data Report. Prepared for the Lower Willamette Group by Anchor Environmental, L.L.C. and Integral Consulting Inc. September 2008.

BES. 2007a. Stormwater System Investigation, PGE – Forest Park Property (ECSI No. 2406). Prepared by the City of Portland, Bureau of Environmental Services. May 18, 2007.

BES. 2007b. Amended Programmatic Sampling and Analysis Plan, City of Portland Outfalls Remedial Investigation/Source Control Measures Project. Prepared by the City of Portland, Bureau of Environmental Services, Portland Harbor Program. August 2007.

BES. 2010a. Stormwater Evaluation Report, City of Portland Outfall Project, ECSI No. 2425. Prepared by the City of Portland, Bureau of Environmental Services, Portland Harbor Program. February 2010.

BES. 2010b. Source Investigation Update Report, City of Portland Outfall Basin 19, City of Portland Outfall Project, ECSI No. 2425. Prepared by the City of Portland, Bureau of Environmental Services. June 2010.

BES. 2011. Basin 19 Stormwater Quality Trend Analyses, Effectiveness of City Stormwater Source Control Efforts. Prepared by the City of Portland, Bureau of Environmental Services. February 1, 2011.

[5] A statement made in Section 5.3 of the *Source Investigation Update Report, City of Portland Outfall Basin 19* (June 2010) has been determined to be in error. The report stated that DDx had only been detected in lines that were subsequently abandoned. Total DDx was also detected at a concentration of 36.7 µg/Kg in the 42" Kittridge line discharging to manhole AAP918.

DEQ. 2009. Former Anderson Brothers Site – ECSI#970, Source Control Decision. Prepared by the Oregon Department of Environmental Quality. November 13, 2009.

DEQ. 2010. Chevron Asphalt Plant Site – ECSI #1281, Source Control Decision. Prepared by the Oregon Department of Environmental Quality. July 8, 2010.

DEQ/EPA. 2005. Portland Harbor Joint Source Control Strategy, Final, dated December 2005 (updated July 2007).

Table

Figures

Attachments

Table 1
Basin 19 Stormwater - Pesticide Results

			Manhole AAP918 Outgoing 42" Line					JSCS Stormwater SLVs[1]		
			2/23/2009[2]	12/14/2009	2/23/2010	10/24/2010	2/12/2011			
Class	**Analyte**	**Units**	FO095243	FO096364	FO105260	FO106021	W11B114-01	Human Health Fish Consumption[3]	Human Health Ingestion[4]	Ecological[5]
Pesticides (EPA 8081A)										
	4,4'-DDE	µg/L	0.0091 U	0.0027 U	0.0030 U	0.0028 J	0.0054 U	0.00031	0.28	0.011
	4,4'-DDD	µg/L	0.014 J	0.0042 U	0.0099	0.0050 U	0.0049 U	0.00022	0.2	--
	4,4'-DDT	µg/L	0.023 U	0.084 J	0.070 J	0.012 U	0.015 U	0.00022	0.2	0.001
	Estimated Total DDx[6]	µg/L	0.014 J	0.084 J	0.080 J	0.0028 J	0.015 U	--	0.2	--
	Aldrin	µg/L	0.0037 J	0.0027 U	0.0010 U	0.0053 U	0.0010 J	0.00005	0.004	--
	alpha-BHC (α-BHC)	µg/L	0.0052 U	0.0037	0.0013 J	0.005 U	0.0012 U	0.0049	0.011	2.2
	beta-BHC (β-BHC)	µg/L	0.0052 U	0.0027 U	0.0010 U	0.005 U	0.0019 U	0.017	0.037	--
	delta-BHC (δ-BHC)	µg/L	0.0052 U	0.0027 U	0.0010 U	0.005 U	0.0068 J	--	0.037	--
	gamma-BHC (γ-BHC, Lindane)	µg/L	0.0052 U	0.0027 U	0.0010 U	0.005 U	0.0016 U	1.8	0.052	0.08
	alpha-Chlordane[7]	µg/L	0.0077	0.0027 U	0.0010 U	0.005 U	0.0030 U	--	--	--
	beta-Chlordane[7]	µg/L	0.027 J	0.0027 U	0.0010 U	0.005 U	0.00086 U	--	--	--
	Total Chlordane[8]	µg/L	0.0347 J	0.0027 U	0.0010 U	0.005 U	0.0030 U	0.00081	0.19	0.0043
	Dieldrin	µg/L	0.0052 U	0.032 U	0.0060 U	0.005 U	0.0023 U	0.000054	0.0042	0.056
	Endosulfan I	µg/L	0.0052 U	0.0027 U	0.0031 J	0.005 U	0.0011 U	89	220	0.051
	Endosulfan II	µg/L	0.0052 U	0.0033 U	0.0013 U	0.005 U	0.0017 U	89	220	0.051
	Endosulfan Sulfate	µg/L	0.0097	0.0085 U	0.0010 U	0.005 U	0.0016 U	89	--	--
	Endrin	µg/L	0.0052 U	0.0027 U	0.0014 U	0.005 U	0.014 J	0.06	2	0.036
	Endrin Aldehyde	µg/L	0.0052 U	0.0031 U	0.0019 U	0.0048 J	0.0055 U	0.3	--	--
	Endrin Ketone	µg/L	0.0052 U	0.0027 U	0.0010 U	0.005 U	0.0016 U	--	--	--
	Heptachlor	µg/L	0.0061	0.0038 U	0.0010 U	0.0083	0.0050 J	0.000079	0.015	0.0038
	Heptachlor Epoxide	µg/L	0.0052 U	0.0027 U	0.0010 U	0.005 U	0.0033 U	0.000039	0.0074	0.0038
	Methoxychlor	µg/L	0.017	0.0027 U	0.0010 U	0.005 U	0.0049 U	--	40	0.03
	Toxaphene	µg/L	0.65 U	0.51 U	0.35 U	0.27 U	0.44 U	0.00028	0.061	0.0002

Notes:

U = The analyte was not detected above the reported sample quantification limit.

J = The result is an estimated concentration. The value is less than the MRL but greater than or equal to the MDL, or, for some organochlorine pesticides, the RPD between results from the primary and verification columns varied by more than 40 percent.

-- No JSCS screening level available

µg/L = micrograms per liter

[1] JSCS SLVs = Portland Harbor Joint Source Control Strategy Screening Level Values (DEQ/EPA Final December 2005, Amended July 2007).

[2] Data collected during this sampling event were presented and evaluated in the City's, Stormwater Evaluation Report (BES, 2010a)

[3] The SLVs for chemicals in water taken up by fish for human consumption represent EPA's NRWQC values. If no NRWQC values are available, then DEQ's AWQC values are listed for the constituent.

[4] The SLVs for chemicals in water for human ingestion represent the most conservative value between EPA's MCLs and Region 9 PRGs.

[5] The SLVs for chemicals in water for ecological exposure represent EPA's NRWQC values. If no NRWQC values are available, then DEQ's AWQC values are listed for the constituent. If no AWQC values are available, then Oak Ridge National Laboratory Tier II SCV Technology Benchmark values are listed for the constituent.

[6] Estimated Total DDx is the sum of DDE, DDD, and DDT.

[7] Alpha-Chlordane also is known as cis-Chlordane. Beta-Chlordane also is known as trans-Chlordane and gamma-Chlordane.

[8] Total Chlordane is the sum of alpha- and beta-Chlordane.

= Shaded values have been selected by DEQ for initial upland source control screening evaluations.

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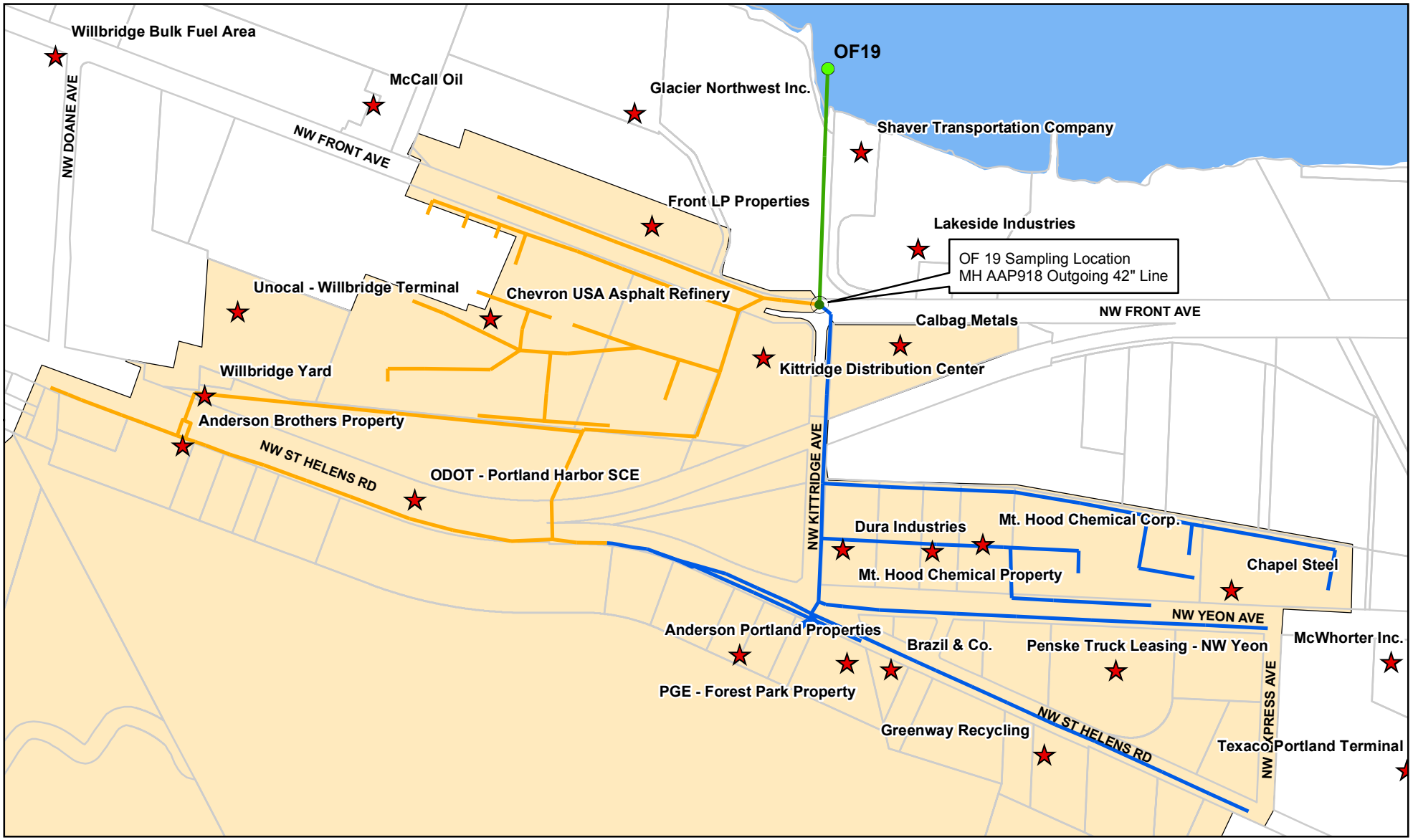

FIGURE 1
Outfall Basin 19
Drainage Basin Overview

Disclaimer:
Information contained on this map is accurate according to available records, however the City of Portland makes no warranty, expressed or implied, as to the completeness or accuracy of the information published.

Prepared By:
GSI, September 13, 2012
005_SC\RI\OF_Basin_19

Source:
City of Portland BES

ENVIRONMENTAL SERVICES
CITY OF PORTLAND
1120 SW Fifth Avenue, Room 1000
Portland Oregon, 97204-1912

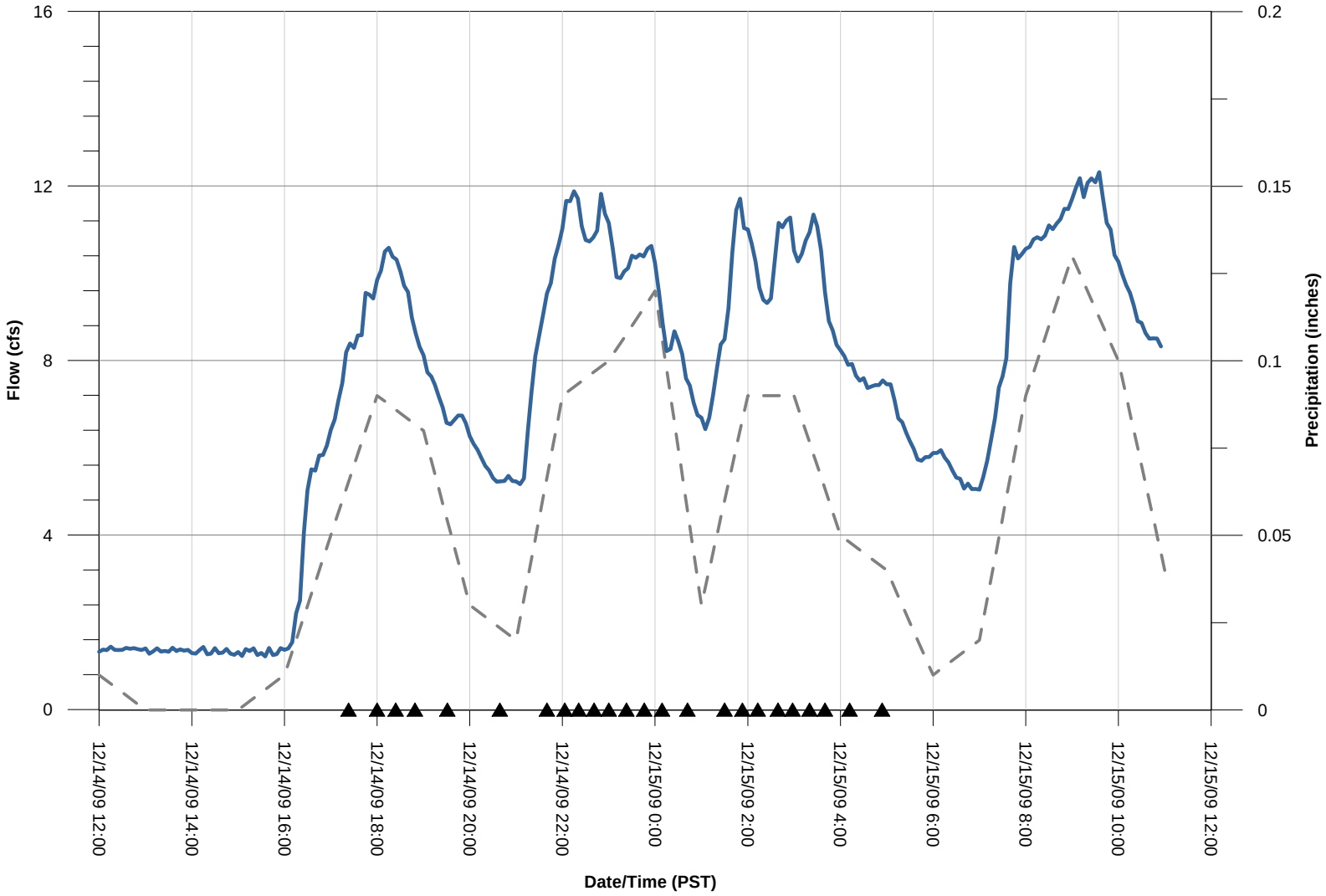

Figure 2
Basin 19 Stormwater Hydrograph
December 14-15, 2009
Sampling Event

Sample Date	Duration (hours)[1]	Antecedent Dry Period [2]	Minimum Forecasted Rainfall Total (inches)[3]
12/14 – 12/15/2009	11.5	16 days	0.91

(1) Duration of composite sampling.
(2) Cumulative rainfall during this time less than 0.10 inches.
(3) Minimum forecasted rainfall data provided by Extended Range Forecasting, Inc.

Note:
cfs = cubic feet per second
PST = Pacific Standard Time

Precipitation data are for the Yeon rain gage (Station No. 121 of the City of Portland HYDRA Rainfall Network); data obtained from USGS, Oregon Water Science Center (http://or.water.usgs.gov/non-usgs/bes/).

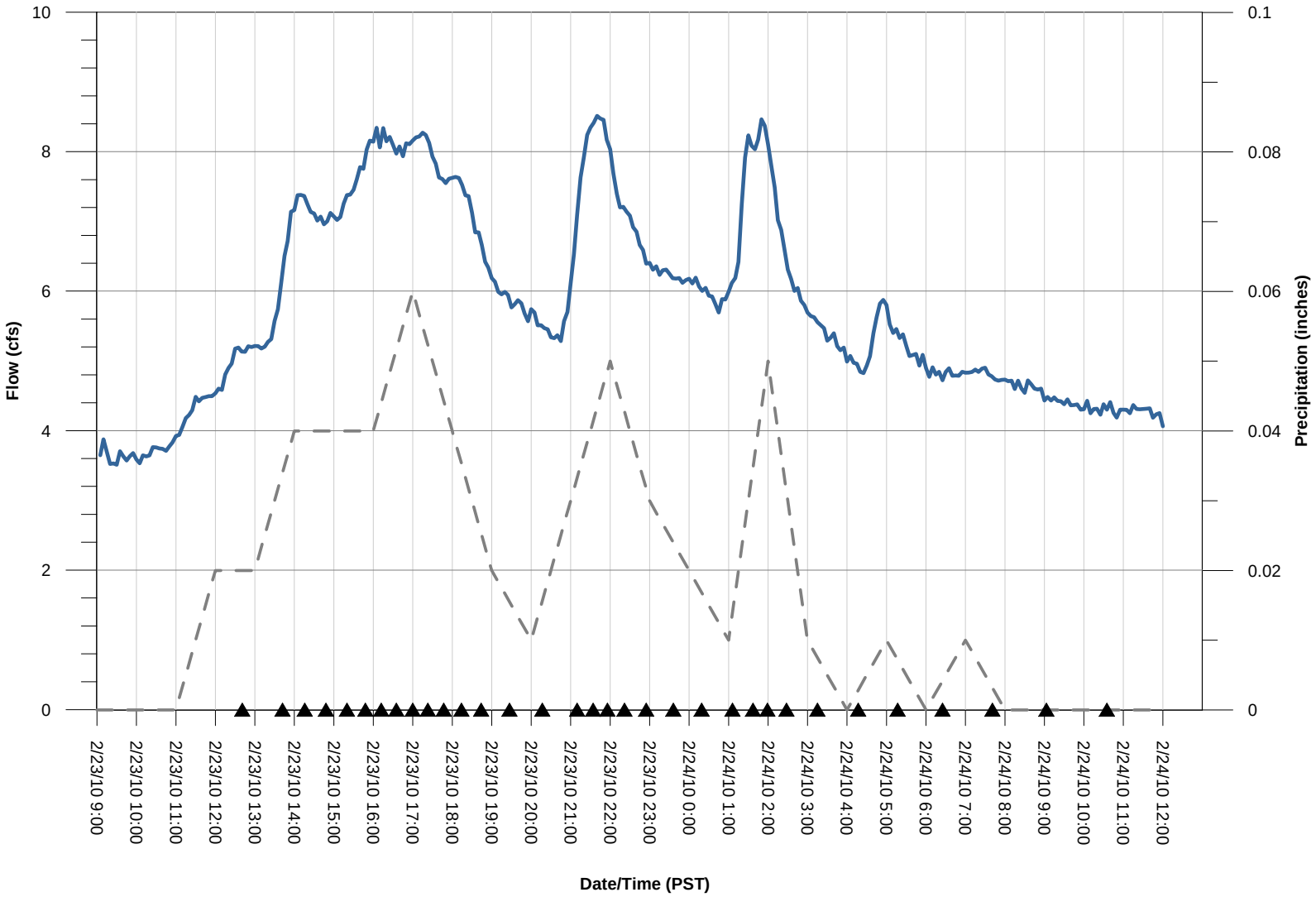

Figure 3
Basin 19 Stormwater Hydrograph
February 23-24, 2010
Sampling Event

Sample Date	Duration (hours)[1]	Antecedent Dry Period [2]	Minimum Forecasted Rainfall Total (inches)[3]
2/23 – 2/24/2010	22	7 days	0.37

(1) Duration of composite sampling.
(2) Cumulative rainfall during this time less than 0.10 inches.
(3) Minimum forecasted rainfall data provided by Extended Range Forecasting, Inc.

Note:
cfs = cubic feet per second
PST = Pacific Standard Time

Precipitation data are for the Yeon rain gage (Station No. 121 of the City of Portland HYDRA Rainfall Network); data obtained from USGS, Oregon Water Science Center (http://or.water.usgs.gov/non-usgs/bes/).

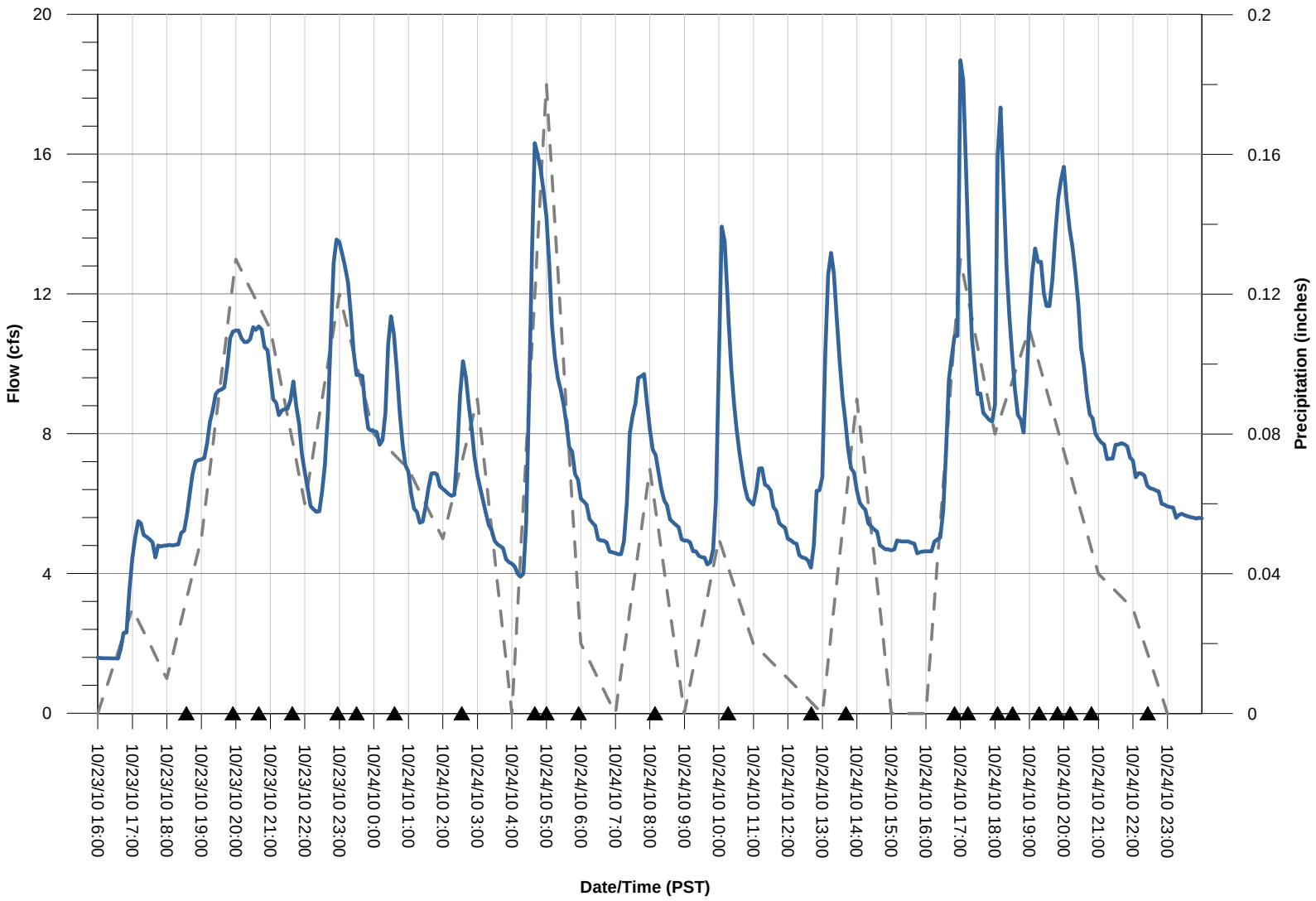

Figure 4
Basin 19 Stormwater Hydrograph
October 23-24, 2010
Sampling Event

Sample Date	Duration (hours)[1]	Antecedent Dry Period [2]	Minimum Forecasted Rainfall Total (inches)[3]
10/23 – 10/24/2010	28	12 days	1.27

(1) Duration of composite sampling.
(2) Cumulative rainfall during this time less than 0.10 inches.
(3) Minimum forecasted rainfall data provided by Extended Range Forecasting, Inc.

Note:
cfs = cubic feet per second
PST = Pacific Standard Time

Precipitation data are for the Yeon rain gage (Station No. 121 of the City of Portland HYDRA Rainfall Network); data obtained from USGS, Oregon Water Science Center (http://or.water.usgs.gov/non-usgs/bes/).

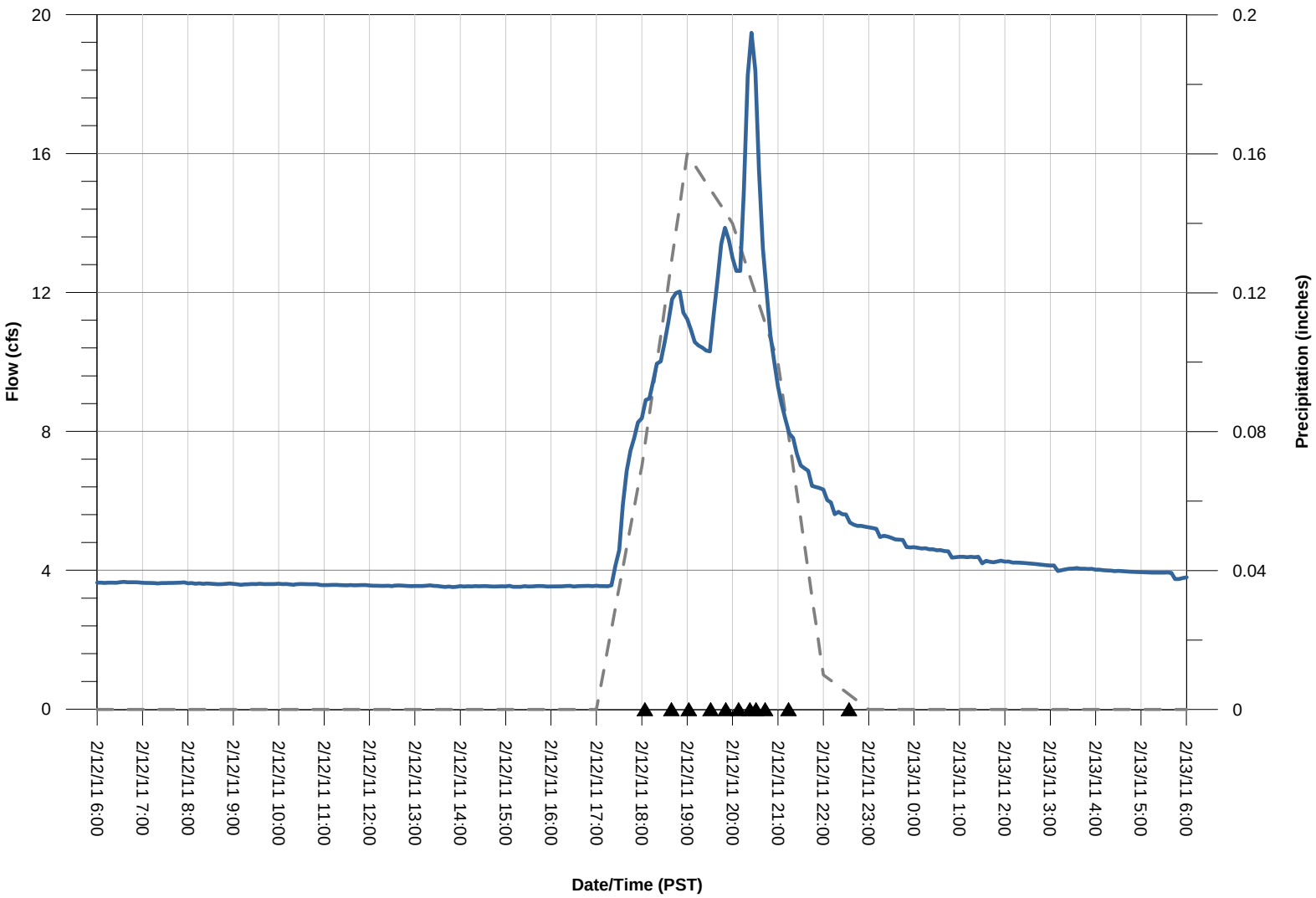

Figure 5
Basin 19 Stormwater Hydrograph
February 12, 2011 Sampling Event

Flow
Composite Aliquot
Precipitation

Sample Date	Duration (hours)[1]	Antecedent Dry Period [2]	Minimum Forecasted Rainfall Total (inches)[3]
2/12/2011	4.5	4 days	0.58

(1) Duration of composite sampling.
(2) Cumulative rainfall during this time less than 0.10 inches.
(3) Minimum forecasted rainfall data provided by Extended Range Forecasting, Inc.

Note:
cfs = cubic feet per second
PST = Pacific Standard Time

Precipitation data are for the Yeon rain gage (Station No. 121 of the City of Portland HYDRA Rainfall Network); data obtained from USGS, Oregon Water Science Center (http://or.water.usgs.gov/non-usgs/bes/).

Attachment A
Field Notes

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December 2009 Event

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COMPOSITE BOTTLE DATA SHEET

City of Portland - Environmental Services
Field Operations

Fiscal Year and Event No. FY09-10 Event 2.1

Project NPDES Stormwtr W/O/EM **Site** OF19 - NW Kittridge & Front **Project No.** 4010.001

Setup: Date 12/14/09 Arrival Time (PST) 1030 Personnel JJM, JXB

First Check: Date 12/15/09 Arrival Time (PST) 0505 Personnel JJM, JXB

Second Check: Date 12/15/09 Arrival Time (PST) 1111 Personnel JJM, JXB

Third Check: Date _____ Arrival Time (PST) _____ Personnel _____

Aliquot Data

Swap	Bottle No.	Aliquot No.	Date	Time (PST)	Missed? Codes
	1	1	12/14/09	1724	
		2		1801	
		3		1825	
	2	4		1850	
		5		1932	
		6		2040	
	3	7		2141	
		8		2204	
		9		2222	
	4	10		2242	
		11		2301	
		12		2324	
	5	13		2347	
		14	12/15/09	0010	
		15		0043	
	6	16		0131	
		17		0154	
		18		0214	
	7	19		0240	
		20		0259	
		21		0321	
	8	22		0341	
		23		0413	
		24		0455	

Bottle Data

Bottle No.	Sample characteristics (turbidity, volume., etc.)	Missed aliquots, comments
1	1800mL, very turbid	
2	" , turbid	
3	" , turbid	
4	" , less turbid	
5	" , less turbid	
6	" , "	
7	" , "	
8	" , less turbid	

Notes Turbidity decreases from bottle 1 to bottle 8.

Composite Notes: Churn splitter used? ☑ Decon'd Teflon churn splitter.

City of Portland
Environmental Services

DAILY FIELD REPORT

Page _____ of _____

Project NPDES Stormwtr WQ ; FM
Location OF19 - NW Kittridge ; Front
Subject FY09-10 Event 2.1

Project No. 4010.001
Date 12/14/09, 12/15/09
By JJM, JXB

1030 Arrive at OF19 to setup for anticipated 1.0" storm event forecasted for later today into tomorrow.

Initial meter level reading was ~1.5" w/ a manual level measurement of ~1.8" upon arrival. Scrubbed sensor - removed deposited solids from sensor. Removed sensor from pipe. Submerged X-ducer reading level high ~0.5" once taken out of base flow. Cleaned X-ducer & re-installed. Performed level adjust. Meter level reading was ~1.7". Zeroed level (0.00"). Meter level reading still erratic. Performed bucket test & recalibrated sensor. Meter & manual level measurements in agreement. Level reading ~1.4-1.5" w/ a flow of 1.0 fps @ base flow conditions.

1128 - Began decon of sampler tubing (soapy, tap, acetone, methanol, DI, nitric & UPDI rinses). Equipped sampler w/ an 8x glass bottle set (Stormwater composite bottles decon'd w/ acetone & methanol).

1158 - Departure level measurement was 1.5". Set low-level set point at 2.0". Meter & sampler running upon departure. Trigger volume per aliquout (cubic feet) set for 8321. Left NPDES OF19 site.

12/15/09

0505 Arrive @ OF19 after ~0.63" of rain as of 00:00 according to ADS™ Hydra Yeon Raingage. Meter says last aliquot (3 of 3) in bottle 8 collected at 0455.
Entrant retrieved all 8 full bottles, recorded trigger times. Replaced bottles w/ 9-16. Restarted program, currently running

0521 Collected grabs.

Attachments 0525 Departed site.

City of Portland
Environmental Services

DAILY FIELD REPORT

Project NPDES Stormwtr WQ/FM
Location OF19 - NW Killingsworth & Front
Subject FY09-10 Event 2.1

Project No. 4010.001
Date 12/15/09
By JJM, JXB

1050 Return to OF19. Approximately 1.3" of rain since setup. 0.24" since earlier this morning. JM 0900 Raingage has not recently updated. Unloaded meter. Hydrograph elevated, rain continues.

Hydrograph show a steep decline in flow around 0500 this morning. Raingage reported 0.03" of rain from 0500-0900. Total rainfall from setup on 12/14/09 - 12/15/09 @ 0500 was 0.56" which yielded 8 full 1800mL composite bottles. Storm event considered a success and will be ended @ 0500 on 12/15/09. Bottles 9-12 discarded.

1111 Departed site.

Attachments

City of Portland
Environmental Services
Field Operations

Trigger Volume Calculation Worksheet

(for a basin of known area)

Project Name: NPDES Stormwater Mon **Project #:** 4010.001 **Storm Event Da** 12/15/2009

Monitoring Site	Forecasted Rainfall Amount (inches)	Forecasted Rainfall Amount (feet)	Basin Size (acres)	Basin Size (square feet)	Basin Rainfall Volume (cubic feet)	Estimated Runoff Coefficient	Anticipated Runoff Volume (cubic feet)	Number of Sample Bottles in Sampler Configuration	Number of Aliquots per Bottle	Trigger Volume per Aliquot (cubic feet)
OF-19	0.35	0.0292	486	21170160	617463	0.2	123493	8	3	5146
OF-19	0.6	0.0500	486	21170160	1058508	0.2	211702	8	3	8821

City of Portland
Environmental Services

FLOW MONITORING DATA SHEET

Data file transferred to s:\ ☐
Data imported into Profile ☐
Notes transferred to database ____
Data file review ____

Project NPDESWQ: FM **Site** BF19 - NW 12th Bridge; Front **Project No.** 4010.001
Personnel JTM, TKB **Time** 1114 **Date** 12/15/09
Activities ☐ Installation ☐ Removal ☑ Upload ☐ Check ☑ Other Event 2.1
Device ☐ MMI ☐ Isco ☑ Sigma ☐ ADS ☐ Sampler ____ ☐ Other ____
Serial No. FEY **Entry Made** ☐ no ☑ yes ☐ n/a **Node No.** ____

INSTALLATION/PROGRAMMING

Sensor type(s) and S/N(s) ____
Band/sensor location ____
Channel dimensions ____ **Channel material** ____ **Monitoring interval** ____
Channel geometry ____ **Install method** ☐ band ☐ bolted ☐ both ☐ other ____

MAINTENANCE/UPLOADS

Uploaded? ☑ **Desiccant:** ☐ Changed (Type ____) ☐ O.K. **Depart. Batt.:** No. ____ Voltage ____
File name 12151057.FEY **Laptop** blue panasonic **DTU cell number** ____

Arrival Meter Measurements	Arrival Manual	Depart. Meter Measurements	Depart. Manual
Meter time ____	Time (PST) ____	Meter time ____	Time (PST) ____
Level ____	Level ____	Level ____	Level ____
Velocity ____	Velocity ____	Velocity ____	Velocity ____
Flow ____		Flow ____	

Notes: On site to upload meter following successful completion of Event 2.1 which was determined complete at 0500 on 12/15/09. Corresponding rain gages confirm brief lull in rain, also apparent in hydrograph.

Meter appears to have paced sampler successfully.

Next time:

Data file review notes:

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February 2010 Event

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COMPOSITE BOTTLE DATA SHEET

City of Portland - Environmental Services
Field Operations

Fiscal Year and Event No. FY09-10

Project NPDES **Site** OF 19 **Project No.** 4010.001

Setup: Date 2/23/10 Arrival Time (PST) 0930 Personnel JM, ASA

First Check: Date 2/23/10 Arrival Time (PST) 1957 Personnel JM, PTB

Second Check: Date 2/24/10 Arrival Time (PST) 1204 Personnel MJS, MAW

Third Check: Date _____ Arrival Time (PST) _____ Personnel _____

Aliquot Data

Swap	Bottle No.	Aliquot No.	Date	Time (PST)	Missed? Codes
	1	1	2/23/10	1242	
		2		1343	
		3		1417	
	2	4		1449	
		5		1521	
		6		1549	
	3	7		1613	
		8		1636	
		9		1701	
	4	10		1724	
		11		1748	
		12		1815	
	5	13	2/23/10	1845	
		14		1920	
		15		2018	
	6	16		2111	
		17		2135	
		18		2157	
	7	19		2223	
		20		2256	
		21		2337	
	8	22		0020	
		23	2-24-10	0107	
	9	24		0138	

Bottle Data

Bottle No.	Sample characteristics (turbidity, volume., etc.)	Missed aliquots, comments
1	very turbid	3 aliquots
2		
3		
4		
5	Moderately turbid	2 of 3 collected (3rd aliquot in bottle 6)
6		3 aliquots
7		
8		

Notes 2/23/10 2002 Moved Bottle 6 into position 1

Composite Notes: Churn splitter used? ☑ total volume collected = 33 triggers × 600 ml = 19.8L which is too much for 14L churn, so will process in two batches, taking half of each resulting in a total volume of 9.9L. Bottles 1-6 = retain 5.4L Bottles 7-11 = retain 4.5L

COMPOSITE BOTTLE DATA SHEET

City of Portland - Environmental Services
Field Operations

Fiscal Year and Event No. FY09-10 Event 3

Project NPDES Stormwater **Site** BMP OF 19 **Project No.** 4010.001

_____ Check: Date _____ Arrival Time (PST) _____ Personnel _____

_____ Check: Date _____ Arrival Time (PST) _____ Personnel _____

_____ Check: Date _____ Arrival Time (PST) _____ Personnel _____

Aliquot Data

Swap	Bottle No.	Aliquot No.	Date	Time (PST)	Missed? Codes	Swap	Bottle No.	Aliquot No.	Date	Time (PST)	Missed? Codes
	9	25	2-24-10	0200				37			
		26		0229				38			
		27		0316				39			
	10	28		0418				40			
		29		0518				41			
		30		0626				42			
	11	31		0747				43			
		32		0904				44			
	12	33	↓	1036				45			
		34						46			
		35						47			
		36						48			

Bottle Data

Bottle No.	Sample characteristics (turbidity, volume., etc.)	Missed aliquots, comments
9	moderately turbid	3 aliquots
10	slightly turbid	↓
11	↓	
12		1 trigger
13		
14		
15		
16		

Notes _____

Composite Notes: Churn splitter used? ❑ _____

City of Portland
Environmental Services

DAILY FIELD REPORT

Page 1 of

Project NPDES Stormwater WQ/FM
Location NW Kittridge & Front
Subject OF 19 daily notes

Project No. 4010.001
Date 2/23/10
By AJA JJM

0815 Depart WPCL for OF 19 NPDES Storm sampling
Set target for 0.35" rainfall.
0830 Arrive at OF19 to Decon Sampler tubing and set flow meter and Sampler up. Very light rain falling
0915 Decon/sampler set up, meter programming Complete Trigger volume = 5146 cf
Low Level set point = 4.25" Very light Sprinkling of rain still falling.
Departed level = 3.6" Velocity = 1.5 f/s

1957 Arrive OF19 for bottle swap and grab samples
2002 Collected grab samples and parameters. Pulled Bottle 5 with only 12 aliquots collected. Moved Bottle 6 into Position 1 and restarted program.
2025 Left site for SYSV.

2/24/10 1210 on-site @ OF-19 to retrieve samples, collect flow data and sample information and remove equipment. left tubing and level/velocity sensor in place.

Attachments

City of Portland
Environmental Services
Field Operations

Trigger Volume Calculation Worksheet

(for a basin of known area)

Project Name: NPDES Stormwater Mon **Project #:** 4010.001 **Storm Event Da** 2_23-25_10

Monitoring Site	Forecasted Rainfall Amount (inches)	Forecasted Rainfall Amount (feet)	Basin Size (acres)	Basin Size (square feet)	Basin Rainfall Volume (cubic feet)	Estimated Runoff Coefficient	Anticipated Runoff Volume (cubic feet)	Number of Sample Bottles in Sampler Configuration	Number of Aliquots per Bottle	Trigger Volume per Aliquot (cubic feet)
OF-19	0.35	0.0292	486	21170160	617463	0.2	123493	8	3	5146

City of Portland
Environmental Services

FLOW MONITORING DATA SHEET

Data file transferred to s:\ ☐
Data imported into Profile ☐
Data file review _____
Notes transferred to database _____

Project NPDES **Site** NW RITTENDOE & Front (OF-19) **Project No.** 4010.001

Personnel MAW, MJS **Date** 2-24-10 **Arrival Clock Time** 12 0~~0~~

Activities ☐ Installation ☒ Removal ☒ Upload ☐ Check ☐ Other _____

Device ☐ MMI ☐ Isco ☐ Sigma ☐ Telog ☐ Sampler _____ ☐ Other _____

Serial No. FEY **Entry Made** ☐ no ☒ yes ☐ n/a

INSTALLATION/PROGRAMMING **Node No.** _____

Sensor type(s) and S/N(s) _____

Band/sensor location _____

Channel dimensions _____ **Channel material** _____ **Monitoring interval** _____

Channel geometry _____ **Install method** ☐ band ☐ bolted ☐ both ☐ other _____

☒ **Meter Time in Agreement with PST (+/-3min)** ☐ **Adjustment Made (describe below)**

☒ **Uploaded?** **Desiccant:** ☐ Changed (Type _____) ☐ O.K. **Depart. Batt.:** No. _____ Voltage _____

File name 02241204.FEY **Laptop** Yellow **DTU cell number** _____

Meter Measurements	Actual	Depart. Meter Measurements	Depart. Actual
Meter time (PST) 1204		Meter time (PST) _____	
Level 4.1	Level _____	Level _____	Level _____
Velocity 1.7	Velocity _____	Velocity _____	Velocity _____
Flow _____		Flow _____	

Notes:

On site for upload and removal and collection of storm Samples.

File reflects storm activity.

Next time:

Data file review notes:

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October 2010 Event

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COMPOSITE BOTTLE DATA SHEET

City of Portland - Environmental Services
Field Operations

Fiscal Year and Event No. FY10-11 Event 1.1

Project NPDES Stormwater WQ/FM **Site** OF19 - NW Kittridge & NW Front **Project No.** 4010.001

Setup: Date 10/22/10 Arrival Time (PST) 0934 Personnel PTB, MJS

First Check: Date 10/24/10 Arrival Time (PST) 0920 Personnel PTB, JJM

Second Check: Date 10/25/10 Arrival Time (PST) 1154 Personnel JJM, AJA

Third Check: Date _____ Arrival Time (PST) _____ Personnel _____

Aliquot Data

Swap	Bottle No.	Aliquot No.	Date	Time (PST)	Missed? Codes
	1	1	10/23	1833	
		2		1954	
		3		2039	
	2	4		2137	
		5		2256	
		6		2329	
	3	7	10/24	0035	
		8		0132	
		9		0439	
	4	10		0454	
		11		0555	
S		12		0803	
	5	13	10/24	1015	
		14		1240	
		15		1340	
	6	16		1699	
		17		1712	
		18		1804	
	7	19		1830	
		20		1926	
		21		1948	
	8	22		2010	
		23		2047	
		24		2225	

Bottle Data

Bottle No.	Sample characteristics (turbidity, volume., etc.)	Missed aliquots, comments
1		
2		
3		
4		
5		
6		
7		
8		

Notes _____

Composite Notes: Churn splitter used? ☐ _____

COMPOSITE BOTTLE DATA SHEET

City of Portland - Environmental Services
Field Operations

Fiscal Year and Event No. FY 10-11 Event 1.1

Project NPDES Stormwater WQ **Site** OF19 **Project No.** 4010.001

2nd Check: Date 10/25/10 Arrival Time (PST) 11:54 Personnel JJM, AJA

_____ Check: Date _____ Arrival Time (PST) _____ Personnel _____

_____ Check: Date _____ Arrival Time (PST) _____ Personnel _____

Aliquot Data

Swap	Bottle No.	Aliquot No.	Date	Time (PST)	Missed? Codes	Swap	Bottle No.	Aliquot No.	Date	Time (PST)	Missed? Codes
	9	25	10/25	0143				37			
		26		0425				38			
		27		0606				39			
	10	28		1100	Not submitted			40			
		29						41			
		30						42			
		31						43			
		32						44			
		33						45			
		34						46			
		35						47			
		36						48			

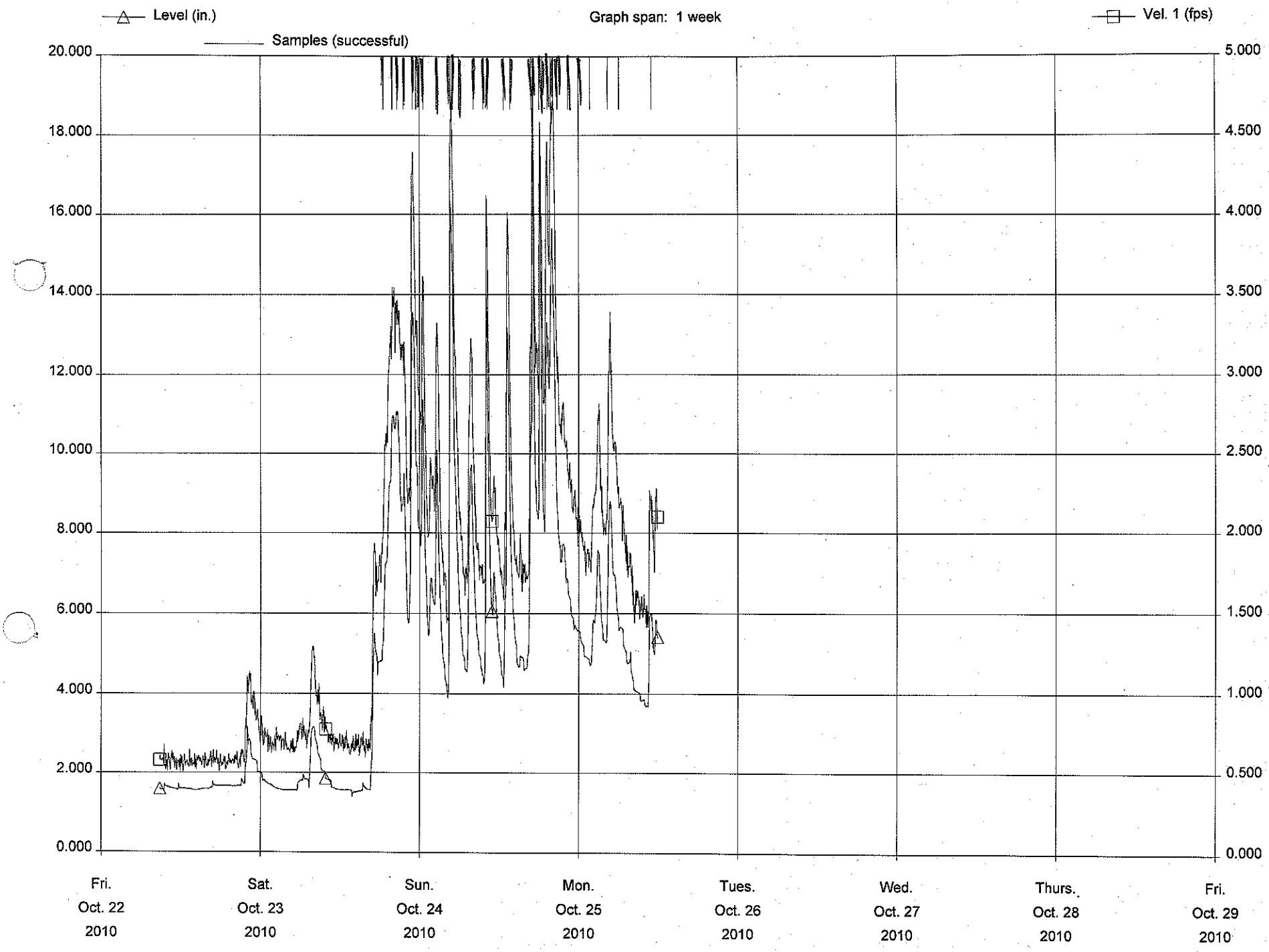
Bottle Data

Bottle No.	Sample characteristics (turbidity, volume., etc.)	Missed aliquots, comments
9		
10		
11		
12		
13		
14		
15		
16		

Notes _____

Composite Notes: Churn splitter used? ☐ bottles 9-10 not include in final composite.

Site Id: 00000000 File name: 10251156.D8T



City of Portland
Environmental Services
Field Operations

Trigger Volume Calculation Worksheet

(for a basin of known area)

Project Name: NPDES Stormwater Mon **Project #:** 4010.001 **Storm Event D:** 10_23-24_10

Monitoring Site	Forecasted Rainfall Amount (inches)	Forecasted Rainfall Amount (feet)	Basin Size (acres)	Basin Size (square feet)	Basin Rainfall Volume (cubic feet)	Estimated Runoff Coefficient	Anticipated Runoff Volume (cubic feet)	Number of Sample Bottles in Sampler Configuration	Number of Aliquots per Bottle	Trigger Volume per Aliquot (cubic feet)
OF-19	1.25	0.1042	486	21170160	2205225	0.2	441045	8	3	18377

City of Portland
Environmental Services

DAILY FIELD REPORT

Page 1 of 4

Project NPDES
Location OF19, S45U, M1
Subject Set-up

Project No. 4010.011
Date 10/21/10
By JJM, PTB

0930 PST: Arrive on-site OF19. Set up for beginning of FY10-11 storm season. This first storm will be set for 0.25in. Installed new sensor (~~oil filled~~ non submerged) & New meter.

1217 PST: Arrive on-site S45U. Set-up for beginning of FY10-11 storm season. This first storm will be set for 0.25in.

1235 (PST) Cleaned subreducer level/velocity sensor. Calibrated level, meter in agreement w/ manual. Checked sampler volume, ok!

1245 (PST) Programmed trigger volume as 2470 cf based on anticipated 0.25" storm event.

1250 (PST) Decontaminated w/ soapy, tap, nitric, DI, acetone (10%), DI, methanol.

1320 Departed Site

1359 Arrive @ M1 to install meter & sampler for FY10-11 NPDES sampling. Sensor still in place from last season. Set for 0.25in storm.

Attachments

City of Portland
Environmental Services

DAILY FIELD REPORT

Project NPDES
Location OF 19, S45U, M1
Subject Reset for bigger storm

Project No. 4010.011
Date 10/22/10
By MJS, PTB

0934 Arrive on-site OF19 to check meter times and re-set for bigger storm to come in on Sunday/Saturday night. Rain we had last night was not enough to blow dry period or call a storm. So we are changing the trigger volume for a 1.25 in storm and a delayed start for 1400 ↑ to → on sat 10/23/10 avoid any antecedent rain.

1031 Arrive on-site S45U to change ~~trigger~~ volume to 1.25 in storm and delay start on sampler.

1112 Arrive on-site M1 to change trigger volume to 1.25 in. storm and delay start on sampler.

Attachments

City of Portland
Environmental Services

DAILY FIELD REPORT

Project NPDES Stormwtr WQ: FM
Location SASV, OF19, M1
Subject FY 10-11 Event 1.1

Project No. 4010.001
Date 10/24/10
By JTM, PTB

0825 PST Arrive @ SASV after ~1.6" of rain since yesterday delayed start (10/23/10 @ 1400).
Meter/sampler performed well. Sampler bottle 6 of 3
0825 Collected grabs.
Swapped in bottles 9-11 glass 12-14 plastic.
Uploaded meter. Flow still elevated. Meter paced sampler perfectly.
0840 Restarted program. Departed site.
0920 Arrive @ OF 19 after ~1.6" of rain since yesterday delayed start (10/23/10 @ 1400).
Sampler collected 4 complete bottles, currently still running.
Collected grab samples
Uploaded meter 10240929.DST
0940 Departed site.

1024 Arrive @ M1. Currently running. Approximately ~1.5" of rain since 10/23/10 @ 1400.
Sampler LCD bottle 1 complete.
Reduced trigger volume in half, from 7088 cf to 3544 cf as meter appears to be pacing slowly due to trigger volume being high. Low level setpoint also reduced from ~~0.5~~ JTM 1.0" to 0.5"
Replaced bottle 1 w/ bottle 9. Restarted program
1024 collected grabs
Review of data file shows negative velocity, possibly due to leafy, woody debris impacting sensor.

Attachments

City of Portland
Environmental Services

DAILY FIELD REPORT

Project NPDES Stormwater WQ: FM
Location S45U, MI, OF19
Subject FY 10-11 Event 1.1
All time in PST

Project No. 4010.001
Date 10/25/2010
By JJM, AJA

1004 PST	Arrive @ S45U after ~ 2.1" of rain since setup. Sampler LCD "disabled". Meter level 3.2", lower than 4.5" setpoint enable.
1006	Sampler filled additional 4 bottles. Uploaded meter 10251008.FEP. Recorded trigger times. This event was a success @ S45U
1030	Departed site
1053	Arrive @ MI after ~ 2.1" of rain since setup. Sampler LCD "disabled." Meter level currently 0.3". Uploaded meter 10251056.FEV Replaced bottles w/ capped plastic. Removed batteries.
1111	Departed Site.
1154	Arrive @ OF19 after ~ 2.1" of rain. Uploaded meter 10251156.DBT Sampler filled an additional 5 + 1/3 bottles since swap yesterday. Replaced bottles. Removed batteries
1223	Departed site.
MI	At WPCL. Review of data indicates that erratic velocity at MI corrupted flow data and triggering of sampler. Sensor to be replaced. The bottles collected here will be discarded.
OF19	Storm will consist of bottles 1-9 (10/23/10 @ 1833 to ~~10/25/10~~ 10/24/10 @ 2225)
S45U	Storm will consist of all aliquots collected, bottles 1-10 (10/23/10 ~~@~~ at 1917 to 10/25/10 @ 0718)

Attachments

February 2011 Event

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COMPOSITE BOTTLE DATA SHEET

City of Portland - Environmental Services
Field Operations

Fiscal Year and Event No. 10/11 Event 2.1

Project NPDES **Site** OF19 **Project No.**

Setup: Date 2/11/11 Arrival Time (PST) ~~1329~~ JXB 1325 Personnel ~~JXB~~ IJM/AJA

First Check: Date 2/13/11 Arrival Time (PST) 1014 Personnel ~~JXB~~ JXB/JJM

~~Second Check~~ Submitted Date 2/14/11 Arrival Time (PST) 1037 Personnel WM/CJK

Third Check: Date _____ Arrival Time (PST) _____ Personnel _____

Aliquot Data

Swap	Bottle No.	Aliquot No.	Date	Time (PST)	Missed?	Codes	Swap	Bottle No.	Aliquot No.	Date	Time (PST)	Missed?	Codes
	1	1	2/12/11	1802	None	None			13				
		2		1837					14				
		3		1900					15				
	2	4		1929					16				
		5		1949					17				
		6		2006					18				
	3	7		2021					19				
		8		2029					20				
		9		2041					21				
	4	10		2112					22				
		11	2/12/11	2232	None	None			23				
		12							24				

Bottle Data

Bottle No.	Sample characteristics (turbidity, volume., etc.)	Missed aliquots, comments
1	Turbid, full ē a strong petro, odor & oily sheen	None
2	Turbid, full ē " "	None
3	Turbid, full ē " "	None
4	Turbid, 2/3 full ē " "	Storm subsided no missed aliquots
5		
6		
7		
8		

Notes _____

Composite Notes: Churn splitter used? ☑ Composited all 4 bottles in Teflon decontaminated churn splitter and then filled analyte ~~spec~~ specific bottles directly from churn.

City of Portland
Environmental Services
Field Operations

Trigger Volume Calculation Worksheet

(for a basin of known area)

Project Name: NPDES Stormwater Mon **Project #:** 4010.001 **Storm Event Da** 2_12-13_11

Monitoring Site	Forecasted Rainfall Amount (inches)	Forecasted Rainfall Amount (feet)	Basin Size (acres)	Basin Size (square feet)	Basin Rainfall Volume (cubic feet)	Estimated Runoff Coefficient	Anticipated Runoff Volume (cubic feet)	Number of Sample Bottles in Sampler Configuration	Number of Aliquots per Bottle	Trigger Volume per Aliquot (cubic feet)
OF-19	0.75	0.0625	486	21170160	1323135	0.2	264627	8	3	11026

City of Portland
Environmental Services

DAILY FIELD REPORT

Page 1 of

Project NPDES Comp Samples
Location OF19
Subject OF19 NPDES Set up Notes

Project No. N/A
Date 2/11/11
By AJA JJM

1325 Arrive to set up for NPDES composite Storm sample at OF19. Storm is predicted to come in at 1000 on 2/12/11, the expected amount is 0.75".

Changed desiccants on flow meter.

Arrival Measurements @: manual
1335 meter 3.6" 3.9"
1.25 f/s 1.2
1.0 cfs
Level not quite matching, so adjusted up 0.3" to 3.9"

1407 Level currently reading 3.9", low level setpoint enable programmed as 4.5" Trigger/pacing programmed as 1102 cf based on a forecasted "0.75" storm event tomorrow 2/12/2011.

Attachments

City of Portland
Environmental Services

DAILY FIELD REPORT

Page 1 of 1

Project NPDES Comp Nokes
Project No. —
Location OF19
Date 2/13/11
Subject OF19 NPDES Storm Check Notes
By JXB/JJM

1014- Arrive on-site at OF19 to check sampler pacing after recent storm event of ~0.50" of rain. Current level upon arrival was at 3.9". Meter/Sampler has taken 3.5 bottles worth of storm sample. JJM makes entry to check sample bottles & to conduct a bottle swap for projected storm tonight after ~1600. Removed filled sample bottles from 2/12 storm event (3 2/3 bottles) & capped Program was disabled upon arrival & departure

Tubing was not pinched & sensor was free of debris & seds. upon departure ~~approval~~ (JXB) Replaced sampler battery. Meter reading accurate baseflow conditions

Meter readings on Departure:

1036 2/13/11 4.0" 0.72 cfs 1.5 fps 12.7 volts

Attachments

City of Portland
Environmental Services

DAILY FIELD REPORT

Page 1 of 1

Project NPDES Stormwater WQ/FM
Location S45U - SE 45th / Umatilla, OF19-NW
Subject Event 2.1 grab sampling

Project No. N/A
Date 2/14/2011
By TJM, CTK

1328 On site to collect grab samples, field parameters in order to complete FY10-11 sampling activities. Composite samples collected on 2/12/11, submitted this morning. Cleared grab sampling activities for today w/ A. Wheeling.

1330 Rain has been intermittent this morning, yet ample curb runoff. Flow meter level is 3.2" which is not quite elevated, but since rain has been persistent previous 72 hours totaling approximately 1.0", we will collect grabs.

1335 pH = 6.5 conductivity = 151.9 µS/cm temp = 11.5°C
Collected OG, ecoli & parameters.

1340 Removed batteries, shut down sampler/meter.

1440 currently not raining, been raining today. Dumper in last 30min.

1450 pH = 7.0 Conductivity = 138.4 µS/cm temp = 9.9°C
Collected OG, e.coli & parameters @ [redacted] CSO Outfall 19

1455 Removed batteries, shut down sampler/meter

1528 Submitted samples to WPCL

Attachments

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Attachment B
Laboratory Results and QA/QC Review
(on CD only)

December 2009 Event

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GSI Water Solutions, Inc.
55 SW Yamhill Street, Suite 400 Portland, OR 97204
P: 503.239.8799 F: 503.239.8940
info@gsiwatersolutions.com www.gsiwatersolutions.com

Laboratory Data QA/QC Review
MS4 Stormwater Data Evaluation
City Outfall Basin 19

To: File

From: Andrew Davidson, GSI Water Solutions, Inc.

Date: October 24, 2011

This memorandum presents a quality assurance/quality control (QA/QC) review of the laboratory data generated from a source control investigation sampling event conducted by the City of Portland (City) at Outfall Basin 19 on December 14 and 15, 2009. Two stormwater samples (FO096359 and FO096364) were collected and submitted for analyses.

The laboratory analyses for these source control program samples were completed by the City's Bureau of Environmental Services (BES) Water Pollution Control Laboratory (WPCL) and subcontracted laboratories. The following laboratories conducted the analyses listed:

- BES WPCL
    - E. Coli – COLILERT QT
    - Total Oil & Grease – EPA 1664
    - Ammonia Nitrogen – EPA 350.1
    - Nitrate –Nitrogen – EPA 300.0
    - Orthophosphate Phosphorus – EPA 365.1
    - Total Dissolved Solids (TDS) – SM 2540C
    - Total Phosphorus – EPA 365.4
    - Total Solids (TS) – SM 2540 B
    - Total Suspended Solids (TSS) – SM 2540 D
    - Total Hardness – SM 2340 B CALC
    - Metals (Dissolved) – EPA 200.8
    - Metals (Total) – EPA 200.8

- Columbia Analytical Services (CAS)
    - Organochlorine Pesticides – EPA 8081A
    - Semi-Volatile Organic Compounds (SVOCs) – EPA 8270C
- Pace Analytical Services (Pace)
    - Polychlorinated Biphenyls (PCB) Congeners – EPA 1668A
- Test America (TA)
    - Polynuclear Aromatic Hydrocarbons (PAHs) & Phthalates – EPA 8270M-SIM

The WPCL laboratory report and the subcontracted laboratory reports for all analyses associated with this sampling event are attached.

For the purpose of this pesticide source control investigation, the following QA/QC review was limited to review of the analytical data generated from analysis of organochlorine pesticides for field sample FO096364. The QA/QC review of the analytical data is based on the available documentation provided by WPCL and CAS, and consisted of reviewing the following elements for each laboratory report, if applicable and/or available:

- Chain-of-custody – for completeness and continuous custody
- Analysis conducted within holding times
- Chemicals of interest detected in method blanks
- Internal standard recoveries within accuracy control limits
- Surrogate recoveries within laboratory control limits
- Matrix spike and matrix spike duplicate (MS/MSD) sample results within laboratory control limits
- Laboratory control and duplicate laboratory control (LC/DLC) sample recoveries within laboratory control limits
- Relative percent differences (RPDs) for laboratory duplicate samples within laboratory control limits.

The results of the QA/QC review of the laboratory reports are presented below.

Chain-of-Custody

The chain-of-custody forms showed continuous custody of the samples. The chain-of-custody procedures appear to have been adequate indicating that sample integrity was maintained throughout the sample collection and delivery process.

Analysis Holding Times

Samples were extracted and analyzed within the recommended holding times for the pesticide analysis.

Method Blanks

A method blank was processed during the laboratory analysis of organochlorine pesticides. Detection limits were elevated for 4,4'-DDE, 4,4'-DDD, and Toxaphene. The chromatogram indicated the presence of non-target background components, which were apparently introduced as laboratory artifacts. No analytes were detected in the method blank.

Surrogate Recoveries

Surrogate recoveries were analyzed during the analysis of pesticides. All surrogate recoveries were within laboratory acceptance limits.

Matrix Spike/Matrix Spike Duplicates

An MS sample was processed during the laboratory analysis of organochlorine pesticides. One analyte, beta-BHC, was recovered slightly above laboratory control limits. Additionally, MS recoveries for 4,4'-DDE and 4,4'-DDD are not applicable because the chromatogram indicates non-target matrix components contributed to the reported concentrations. However, beta-BHC, 4,4'-DDE, and 4,4'-DDD were recovered within laboratory control limits in the LC/DLC samples indicating that the pesticide analysis was in control; thus, the data is not qualified further.

Laboratory Control/Duplicate Laboratory Control Samples

LC and DLC samples were processed during the laboratory analysis of pesticides. All analyte recoveries for LC/DLC samples processed during the pesticide analysis are within laboratory control limits; RPDs for toxaphene (pesticide analysis) and 3,3'-dichlorobenzidine (SVOC analysis) are slightly above laboratory control limits.

Other

CAS reports that results from the primary and verification columns varied by more than 40 % for 4,4'-DDT in field sample, FO096364. The higher of the two values was reported because no evidence of matrix interference was observed, and the value is flagged as an estimate ("J" flag). Additionally, CAS reports that the primary evaluation criteria were exceeded for Methoxychlor in the Initial and Continuing Calibration Verification (ICV and CCV). ICV results were reported from the acceptable column and the data quality was not affected. In lieu of the CCV exceedance, the alternative evaluation specified in the EPA method was performed using the average percent recovery of all analytes in the verification standard. The standard met the alternative evaluation criteria.

Water Pollution Control Laboratory
6543 N. Burlington Ave.
Portland, Oregon 97203-4552
(503) 823-5696

City of Portland Chain-of-Custody

Bureau of Environmental Services

Date: 12/15/09
Page: 1 of 1
Collected By: JJM, JXB

Project Name: NPDES STORMWTR MON
File Number: 4010.001 **Matrix:** STORMWTR

☑ Sample Time recorded in current local time

Aliquots collected from 12/14/09 @ 1724 to 12/15/09 @ 0455

Requested Analyses

WPCL Sample I.D.	Location	Point Code	Sample Date	Sample Time	Sample Type	General: TS	TDS	TSS	Hardness			Metals: Total Metals (Ag, As, Cd, Cr, Cu, Pb, Zn)	Dissolved Metals (Ag, As, Cd, Cr, Cu, Pb, Zn)	Nutrients: Ammonia-nitrogen	Nitrate-nitrogen	Orthophosphate phosphorus	Total Phosphorus		Outside: SVOCs, low-level (CAS)	PAHs + Phthalates (TA)	PCB 209 Congeners (Pace)						
FO096364	4900 NW KITTRIDGE AVE (OF19)	OF19	12/14/09	1724	C	●	●	●	●			●	●	●	●	●	●		●	●	●						
2																											
3																											
4																											
5																											
6																											
7																											
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9																											
10																											

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.	Relinquished By: 4.
Signature: [signature] Time: 1559	Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Andrew Arnsberg Date: 12-15-09	Printed Name: Date:	Printed Name: Date:	Printed Name: Date:
Received By: 1.	**Received By:** 2.	**Received By:** 3.	**Received By:** 4.
Signature: Time:	Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Date:	Printed Name: Date:	Printed Name: Date:	Printed Name: Date:

City of Portland
Water Pollution Control Laboratory
6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656

LABORATORY ANALYSIS REPORT

Sample ID: **FO096359** **Sample Collected:** 12/15/2009 05:21 **Sample Received:** 12/15/09 **Sample Status:** **COMPLETE AND VALIDATED**

Proj./Company Name: NPDES STORMWTR WQ & FLOW MON
Address/Location: 4900 NW KITTRIDGE AVE (OF19)
MANHOLE GRAB
Sample Point Code: OF19
Sample Type: GRAB
Sample Matrix: STORMWTR
Comments:

Report Page: Page 1 of 1
System ID: AN12037
EID File # : 4010.001
LocCode: NPDESSTM
Collected By: JJM/JXB

Test Parameter	Result	Units	MRL	Method	Analysis Date
FIELD					
CONDUCTIVITY (FIELD)	63	µmhos/cm	1	SM 2510 B	12/15/09
pH (FIELD)	6.7	pH Units	0.1	SM 4500-H B	12/15/09
TEMPERATURE	5.4	Deg. C	0.1	SM 2550 B	12/15/09
MICROBIOLOGY					
E. COLI	880	MPN/100 ml	10	COLILERT QT	12/16/09
GENERAL					
OIL & GREASE, TOTAL	<5	mg/L	5	EPA 1664	12/29/09

End of Report for Sample ID: FO096359

Report Date: 03/17/10 **Validated By: Signature on File**

City of Portland
Water Pollution Control Laboratory
6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656

LABORATORY ANALYSIS REPORT

Sample ID: **FO096364** **Sample Collected:** 12/14/2009 17:24 **Sample Received:** 12/15/09 **Sample Status:** **COMPLETE AND VALIDATED**

Proj./Company Name: NPDES STORMWTR WQ & FLOW MON
Address/Location: 4900 NW KITTRIDGE AVE (OF19) MANHOLE COMPOSITE
Sample Point Code: OF19
Sample Type: COMPOSITE
Sample Matrix: STORMWTR

System ID: AN12041
EID File # : 4010.001
LocCode: NPDESSTM
Collected By: JJM

Comments:
QA/QC: For pesticide results flagged as estimates, results from the primary and verification columns varied by more than 40%.
For PCB congener analysis, low recoveries for the lightest congener surrogates indicate that results for the mono- and dichlorinated congeners could be low estimates.

Test Parameter	Result	Units	MRL	Method	Analysis Date
GENERAL					
AMMONIA-NITROGEN	0.17	mg/L	0.02	EPA 350.1	12/22/09
NITRATE-NITROGEN	0.50	mg/L	0.10	EPA 300.0	12/16/09
o-PHOSPHATE-PHOSPHORUS, DISS	0.029	mg/L	0.02	EPA 365.1	12/16/09
TOTAL DISSOLVED SOLIDS @180C	36	mg/L	5	SM 2540 C	12/18/09
TOTAL PHOSPHORUS	0.17	mg/L	0.03	EPA 365.4	12/23/09
TOTAL SOLIDS	44	mg/L	2	SM 2540 B	12/17/09
TOTAL SUSPENDED SOLIDS	33	mg/L	2	SM 2540 D	12/17/09
METALS					
HARDNESS, TOTAL	21.5	mg CaCO3/L	0.5	SM 2340 B CALC	12/16/09
METALS BY ICP-MS (DISSOLVED) - 7					
ARSENIC, DISSOLVED	0.68	µg/L	0.1	EPA 200.8	12/16/09
CADMIUM, DISSOLVED	<0.10	µg/L	0.1	EPA 200.8	12/16/09
CHROMIUM, DISSOLVED	<0.40	µg/L	0.4	EPA 200.8	12/16/09
COPPER, DISSOLVED	3.17	µg/L	0.2	EPA 200.8	12/16/09
LEAD, DISSOLVED	0.39	µg/L	0.1	EPA 200.8	12/16/09
SILVER, DISSOLVED	<0.10	µg/L	0.1	EPA 200.8	12/16/09
ZINC, DISSOLVED	51.6	µg/L	0.5	EPA 200.8	12/16/09
METALS BY ICP-MS (TOTAL) - 7					
ARSENIC	1.57	µg/L	0.1	EPA 200.8	12/17/09
CADMIUM	0.15	µg/L	0.1	EPA 200.8	12/17/09
CHROMIUM	2.31	µg/L	0.4	EPA 200.8	12/17/09
COPPER	11.3	µg/L	0.2	EPA 200.8	12/17/09
LEAD	9.02	µg/L	0.1	EPA 200.8	12/17/09
SILVER	<0.10	µg/L	0.1	EPA 200.8	12/17/09
ZINC	94.0	µg/L	0.5	EPA 200.8	12/17/09
OUTSIDE ANALYSIS					
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	<4.2	ng/L	4.2	EPA 8081	12/20/09
4,4'-DDE	<2.7	ng/L	2.7	EPA 8081	12/20/09
4,4'-DDT	EST 84	ng/L	2.7	EPA 8081	12/20/09
Aldrin	<2.7	ng/L	2.7	EPA 8081	12/20/09
Alpha-BHC	3.7	ng/L	2.7	EPA 8081	12/20/09
Alpha-Chlordane	<2.7	ng/L	2.7	EPA 8081	12/20/09

Report Date: 03/17/10 **Validated By: Signature on File**

City of Portland
Water Pollution Control Laboratory
6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656

LABORATORY ANALYSIS REPORT

Sample ID: FO096364 **Sample Collected:** 12/14/2009 17:24 **Sample Received:** 12/15/09 **Sample Status:** COMPLETE AND VALIDATED

Proj./Company Name: NPDES STORMWTR WQ & FLOW MON
Address/Location: 4900 NW KITTRIDGE AVE (OF19)
MANHOLE COMPOSITE
Sample Point Code: OF19
Sample Type: COMPOSITE
Sample Matrix: STORMWTR

System ID: AN12041
EID File # : 4010.001
LocCode: NPDESSTM
Collected By: JJM

Comments:
QA/QC: For pesticide results flagged as estimates, results from the primary and verification columns varied by more than 40%.
For PCB congener analysis, low recoveries for the lightest congener surrogates indicate that results for the mono- and dichlorinated congeners could be low estimates.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Beta-BHC	<2.7	ng/L	2.7	EPA 8081	12/20/09
Delta-BHC	<2.7	ng/L	2.7	EPA 8081	12/20/09
Dieldrin	<32	ng/L	32	EPA 8081	12/20/09
Endosulfan I	<2.7	ng/L	2.7	EPA 8081	12/20/09
Endosulfan II	<3.3	ng/L	3.3	EPA 8081	12/20/09
Endosulfan Sulfate	<8.5	ng/L	8.5	EPA 8081	12/20/09
Endrin	<2.7	ng/L	2.7	EPA 8081	12/20/09
Endrin Aldehyde	<3.1	ng/L	3.1	EPA 8081	12/20/09
Endrin Ketone	<2.7	ng/L	2.7	EPA 8081	12/20/09
Gamma-BHC(Lindane)	<2.7	ng/L	2.7	EPA 8081	12/20/09
Gamma-Chlordane	<2.7	ng/L	2.7	EPA 8081	12/20/09
Heptachlor	<3.8	ng/L	3.8	EPA 8081	12/20/09
Heptachlor Epoxide	<2.7	ng/L	2.7	EPA 8081	12/20/09
Methoxychlor	<2.7	ng/L	2.7	EPA 8081	12/20/09
Toxaphene	<510	ng/L	510	EPA 8081	12/20/09
POLYCHLORINATED BIPHENYL CONGENERS -PACE					
Refer to Contract Report	Completed	ng/L		EPA 1668 MOD	01/11/10
POLYNUCLEAR AROMATICS & PHTHALATES - TA					
Acenaphthene	<0.0211	µg/L	0.0211	EPA 8270M-SIM	12/18/09
Acenaphthylene	<0.0211	µg/L	0.0211	EPA 8270M-SIM	12/18/09
Anthracene	0.0263	µg/L	0.0211	EPA 8270M-SIM	12/18/09
Benzo(a)anthracene	0.0482	µg/L	0.0105	EPA 8270M-SIM	12/18/09
Benzo(a)pyrene	0.0422	µg/L	0.0105	EPA 8270M-SIM	12/18/09
Benzo(b)fluoranthene	0.0494	µg/L	0.0105	EPA 8270M-SIM	12/18/09
Benzo(ghi)perylene	0.0653	µg/L	0.0211	EPA 8270M-SIM	12/18/09
Benzo(k)fluoranthene	0.0349	µg/L	0.0105	EPA 8270M-SIM	12/18/09
Bis(2-ethylhexyl) phthalate	2.79	µg/L	1.05	EPA 8270M-SIM	12/18/09
Butyl benzyl phthalate	1.50	µg/L	1.05	EPA 8270M-SIM	12/18/09
Chrysene	0.0891	µg/L	0.0105	EPA 8270M-SIM	12/18/09
Dibenzo(a,h)anthracene	<0.0105	µg/L	0.0105	EPA 8270M-SIM	12/18/09
Diethyl phthalate	<1.05	µg/L	1.05	EPA 8270M-SIM	12/18/09
Dimethyl phthalate	<1.05	µg/L	1.05	EPA 8270M-SIM	12/18/09
Di-n-butyl phthalate	<1.05	µg/L	1.05	EPA 8270M-SIM	12/18/09
Di-n-octyl phthalate	<1.05	µg/L	1.05	EPA 8270M-SIM	12/18/09
Fluoranthene	0.146	µg/L	0.0211	EPA 8270M-SIM	12/18/09

Report Date: 03/17/10 **Validated By: Signature on File**

City of Portland
Water Pollution Control Laboratory
6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656

LABORATORY ANALYSIS REPORT

Sample ID: **FO096364** **Sample Collected:** 12/14/2009 17:24 **Sample Received:** 12/15/09 **Sample Status:** **COMPLETE AND VALIDATED**

Proj./Company Name: NPDES STORMWTR WQ & FLOW MON
Address/Location: 4900 NW KITTRIDGE AVE (OF19) MANHOLE COMPOSITE
Sample Point Code: OF19
Sample Type: COMPOSITE
Sample Matrix: STORMWTR

System ID: AN12041
EID File # : 4010.001
LocCode: NPDESSTM
Collected By: JJM

Comments:
QA/QC: For pesticide results flagged as estimates, results from the primary and verification columns varied by more than 40%.
For PCB congener analysis, low recoveries for the lightest congener surrogates indicate that results for the mono- and dichlorinated congeners could be low estimates.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Fluorene	0.0237	µg/L	0.0211	EPA 8270M-SIM	12/18/09
Indeno(1,2,3-cd)pyrene	0.0370	µg/L	0.0105	EPA 8270M-SIM	12/18/09
Naphthalene	0.0379	µg/L	0.0211	EPA 8270M-SIM	12/18/09
Phenanthrene	0.100	µg/L	0.0211	EPA 8270M-SIM	12/18/09
Pyrene	0.161	µg/L	0.0211	EPA 8270M-SIM	12/18/09
SEMI-VOLATILE ORGANICS - CAS					
1,2,4-Trichlorobenzene	<0.20	µg/L	0.20	EPA 8270	12/18/09
1,2-Dichlorobenzene	<0.20	µg/L	0.20	EPA 8270	12/18/09
1,3-Dichlorobenzene	<0.20	µg/L	0.20	EPA 8270	12/18/09
1,4-Dichlorobenzene	<0.20	µg/L	0.20	EPA 8270	12/18/09
2,4,5-Trichlorophenol	<0.50	µg/L	0.50	EPA 8270	12/18/09
2,4,6-Trichlorophenol	<0.50	µg/L	0.50	EPA 8270	12/18/09
2,4-Dichlorophenol	<0.50	µg/L	0.50	EPA 8270	12/18/09
2,4-Dimethylphenol	<4.0	µg/L	4.0	EPA 8270	12/18/09
2,4-Dinitrophenol	<4.0	µg/L	4.0	EPA 8270	12/18/09
2,4-Dinitrotoluene	<0.20	µg/L	0.20	EPA 8270	12/18/09
2,6-Dinitrotoluene	<0.20	µg/L	0.20	EPA 8270	12/18/09
2-Chloronaphthalene	<0.20	µg/L	0.20	EPA 8270	12/18/09
2-Chlorophenol	<0.50	µg/L	0.50	EPA 8270	12/18/09
2-Methylnaphthalene	<0.20	µg/L	0.20	EPA 8270	12/18/09
2-Methylphenol	<0.50	µg/L	0.50	EPA 8270	12/18/09
2-Nitroaniline	<0.20	µg/L	0.20	EPA 8270	12/18/09
2-Nitrophenol	<0.50	µg/L	0.50	EPA 8270	12/18/09
3,3'-Dichlorobenzidine	<2.0	µg/L	2.0	EPA 8270	12/18/09
3-Nitroaniline	<0.99	µg/L	0.99	EPA 8270	12/18/09
4,6-Dinitro-2-methylphenol	<2.0	µg/L	2.0	EPA 8270	12/18/09
4-Bromophenylphenyl ether	<0.20	µg/L	0.20	EPA 8270	12/18/09
4-Chloro-3-methylphenol	<0.50	µg/L	0.50	EPA 8270	12/18/09
4-Chloroaniline	<0.20	µg/L	0.20	EPA 8270	12/18/09
4-Chlorophenylphenyl ether	<0.20	µg/L	0.20	EPA 8270	12/18/09
4-Methylphenol	<0.50	µg/L	0.50	EPA 8270	12/18/09
4-Nitroaniline	<0.99	µg/L	0.99	EPA 8270	12/18/09
4-Nitrophenol	<2.0	µg/L	2.0	EPA 8270	12/18/09
Acenaphthene	<0.20	µg/L	0.20	EPA 8270	12/18/09
Acenaphthylene	<0.20	µg/L	0.20	EPA 8270	12/18/09

Report Date: 03/17/10 **Validated By: Signature on File**

City of Portland
Water Pollution Control Laboratory
6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656

LABORATORY ANALYSIS REPORT

Sample ID: **FO096364** **Sample Collected:** 12/14/2009 17:24 **Sample Received:** 12/15/09 **Sample Status:** **COMPLETE AND VALIDATED**

Proj./Company Name: NPDES STORMWTR WQ & FLOW MON
Address/Location: 4900 NW KITTRIDGE AVE (OF19) MANHOLE COMPOSITE
Sample Point Code: OF19
Sample Type: COMPOSITE
Sample Matrix: STORMWTR

System ID: AN12041
EID File # : 4010.001
LocCode: NPDESSTM
Collected By: JJM

Comments:
QA/QC: For pesticide results flagged as estimates, results from the primary and verification columns varied by more than 40%.
For PCB congener analysis, low recoveries for the lightest congener surrogates indicate that results for the mono- and dichlorinated congeners could be low estimates.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Anthracene	<0.20	µg/L	0.20	EPA 8270	12/18/09
Benzo(a)anthracene	<0.20	µg/L	0.20	EPA 8270	12/18/09
Benzo(a)pyrene	<0.20	µg/L	0.20	EPA 8270	12/18/09
Benzo(b)fluoranthene	<0.20	µg/L	0.20	EPA 8270	12/18/09
Benzo(g,h,i)perylene	<0.20	µg/L	0.20	EPA 8270	12/18/09
Benzo(k)fluoranthene	<0.20	µg/L	0.20	EPA 8270	12/18/09
Benzoic acid	<5.0	µg/L	5.0	EPA 8270	12/18/09
Benzyl alcohol	1.2	µg/L	5.0	EPA 8270	12/18/09
Bis(2-chloroethoxy) methane	<0.20	µg/L	0.20	EPA 8270	12/18/09
Bis(2-chloroethyl) ether	<0.20	µg/L	0.20	EPA 8270	12/18/09
Bis(2-chloroisopropyl) ether	<0.20	µg/L	0.20	EPA 8270	12/18/09
Bis(2-ethylhexyl) phthalate	1.6	µg/L	0.99	EPA 8270	12/18/09
Butyl benzyl phthalate	0.96	µg/L	0.20	EPA 8270	12/18/09
Chrysene	<0.20	µg/L	0.20	EPA 8270	12/18/09
Dibenzo(a,h)anthracene	<0.20	µg/L	0.20	EPA 8270	12/18/09
Dibenzofuran	<0.20	µg/L	0.20	EPA 8270	12/18/09
Diethyl phthalate	<0.20	µg/L	0.20	EPA 8270	12/18/09
Dimethyl phthalate	0.85	µg/L	0.20	EPA 8270	12/18/09
Di-n-butyl phthalate	0.24	µg/L	0.20	EPA 8270	12/18/09
Di-n-octyl phthalate	<0.20	µg/L	0.20	EPA 8270	12/18/09
Fluoranthene	<0.20	µg/L	0.20	EPA 8270	12/18/09
Fluorene	<0.20	µg/L	0.20	EPA 8270	12/18/09
Hexachlorobenzene	<0.20	µg/L	0.20	EPA 8270	12/18/09
Hexachlorobutadiene	<0.20	µg/L	0.20	EPA 8270	12/18/09
Hexachlorocyclopentadiene	<0.99	µg/L	0.99	EPA 8270	12/18/09
Hexachloroethane	<0.20	µg/L	0.20	EPA 8270	12/18/09
Indeno(1,2,3-cd)pyrene	<0.20	µg/L	0.20	EPA 8270	12/18/09
Isophorone	<0.20	µg/L	0.20	EPA 8270	12/18/09
Naphthalene	<0.20	µg/L	0.20	EPA 8270	12/18/09
Nitrobenzene	<0.20	µg/L	0.20	EPA 8270	12/18/09
N-Nitrosodi-n-propylamine	<0.20	µg/L	0.20	EPA 8270	12/18/09
N-Nitrosodiphenylamine	<0.20	µg/L	0.20	EPA 8270	12/18/09
Pentachlorophenol	<0.99	µg/L	0.99	EPA 8270	12/18/09
Phenanthrene	<0.20	µg/L	0.20	EPA 8270	12/18/09
Phenol	0.52	µg/L	0.50	EPA 8270	12/18/09
Pyrene	<0.20	µg/L	0.20	EPA 8270	12/18/09

Report Date: 03/17/10 **Validated By: Signature on File**

City of Portland
Water Pollution Control Laboratory
6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656

LABORATORY ANALYSIS REPORT

Sample ID:	**FO096364**	**Sample Collected:**	12/14/2009 17:24	**Sample Status:**	**COMPLETE AND VALIDATED**
		Sample Received:	12/15/09		

Proj./Company Name:	NPDES STORMWTR WQ & FLOW MON	**Report Page:**	Page 5 of 5
Address/Location:	4900 NW KITTRIDGE AVE (OF19) MANHOLE COMPOSITE	**System ID:**	AN12041
Sample Point Code:	OF19	**EID File # :**	4010.001
Sample Type:	COMPOSITE	**LocCode:**	NPDESSTM
Sample Matrix:	STORMWTR	**Collected By:**	JJM

Comments:
QA/QC: For pesticide results flagged as estimates, results from the primary and verification columns varied by more than 40%.
For PCB congener analysis, low recoveries for the lightest congener surrogates indicate that results for the mono- and dichlorinated congeners could be low estimates.

Test Parameter	Result	Units	MRL	Method	Analysis Date

End of Report for Sample ID: FO096364

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

ORELAP#: OR100021

January 09, 2010

Jennifer Shackelford
City of Portland Water Pollution Laboratory
6543 N. Burlington Ave.
Portland, OR 97203

RE: NPDES

Enclosed are the results of analyses for samples received by the laboratory on 12/16/09 16:00. The following list is a summary of the Work Orders contained in this report, generated on 01/09/10 16:05.

If you have any questions concerning this report, please feel free to contact me.

Work Order	Project	ProjectNumber
PSL0567	NPDES	36238

TestAmerica Portland

Howard Holmes, Project Manager

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

City of Portland Water Pollution Laboratory	Project Name:	**NPDES**	
6543 N. Burlington Ave.	Project Number:	36238	Report Created:
Portland, OR 97203	Project Manager:	Jennifer Shackelford	01/09/10 16:05

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FO096364	PSL0567-01	Water	12/14/09 17:24	12/16/09 16:00
FO096366	PSL0567-02	Water	12/14/09 17:46	12/16/09 16:00

TestAmerica Portland

Howard Holmes, Project Manager

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THE LEADER IN ENVIRONMENTAL TESTING

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

City of Portland Water Pollution Laboratory	Project Name:	**NPDES**	
6543 N. Burlington Ave.	Project Number:	36238	Report Created:
Portland, OR 97203	Project Manager:	Jennifer Shackelford	01/09/10 16:05

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSL0567-01 (FO096364)			Water			Sampled: 12/14/09 17:24				
Bis(2-ethylhexyl)phthalate	EPA 8270m	**2.79**	-----	1.05	ug/l	1x	9120627	12/18/09 16:15	12/23/09 19:18	
Butyl benzyl phthalate	"	**1.50**	-----	1.05	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	-----	1.05	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	-----	1.05	"	"	"	"	"	
Diethyl phthalate	"	ND	-----	1.05	"	"	"	"	"	
Dimethyl phthalate	"	ND	-----	1.05	"	"	"	"	"	
Acenaphthene	"	ND	-----	0.0211	"	"	"	"	01/05/10 02:30	
Acenaphthylene	"	ND	-----	0.0211	"	"	"	"	"	
Anthracene	"	**0.0263**	-----	0.0211	"	"	"	"	"	
Benzo (a) anthracene	"	**0.0482**	-----	0.0105	"	"	"	"	"	
Benzo (a) pyrene	"	**0.0422**	-----	0.0105	"	"	"	"	12/23/09 19:34	
Benzo (b) fluoranthene	"	**0.0494**	-----	0.0105	"	"	"	"	"	
Benzo (ghi) perylene	"	**0.0653**	-----	0.0211	"	"	"	"	"	
Benzo (k) fluoranthene	"	**0.0349**	-----	0.0105	"	"	"	"	"	
Chrysene	"	**0.0891**	-----	0.0105	"	"	"	"	01/05/10 02:30	
Dibenzo (a,h) anthracene	"	ND	-----	0.0105	"	"	"	"	12/23/09 19:34	
Fluoranthene	"	**0.146**	-----	0.0211	"	"	"	"	01/05/10 02:30	
Fluorene	"	**0.0237**	-----	0.0211	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	**0.0370**	-----	0.0105	"	"	"	"	12/23/09 19:34	
Naphthalene	"	**0.0379**	-----	0.0211	"	"	"	"	01/05/10 02:30	
Phenanthrene	"	**0.100**	-----	0.0211	"	"	"	"	"	
Pyrene	"	**0.161**	-----	0.0211	"	"	"	"	"	
Surrogate(s): Fluorene-d10			*91.9%*			*25 - 125 %*				*"*
Pyrene-d10			*96.8%*			*23 - 150 %*				*"*
Benzo (a) pyrene-d12			*87.5%*			*10 - 125 %*				*12/23/09 19:34*
PSL0567-02 (FO096366)			Water			Sampled: 12/14/09 17:46				
Bis(2-ethylhexyl)phthalate	EPA 8270m	ND	-----	0.952	ug/l	1x	9120627	12/18/09 16:15	12/23/09 16:57	
Butyl benzyl phthalate	"	**2.24**	-----	0.952	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	-----	0.952	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	-----	0.952	"	"	"	"	"	
Diethyl phthalate	"	ND	-----	0.952	"	"	"	"	"	
Dimethyl phthalate	"	ND	-----	0.952	"	"	"	"	"	
Acenaphthene	"	ND	-----	0.0190	"	"	"	"	01/05/10 03:04	
Acenaphthylene	"	ND	-----	0.0190	"	"	"	"	"	
Anthracene	"	ND	-----	0.0190	"	"	"	"	"	

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BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

City of Portland Water Pollution Laboratory	Project Name:	**NPDES**	
6543 N. Burlington Ave.	Project Number:	36238	Report Created:
Portland, OR 97203	Project Manager:	Jennifer Shackelford	01/09/10 16:05

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSL0567-02 (FO096366)			Water			Sampled: 12/14/09 17:46				
Benzo (a) anthracene	EPA 8270m	**0.0145**	-----	0.00952	ug/l	1x	9120627	12/18/09 16:15	01/05/10 03:04	
Benzo (a) pyrene	"	**0.0107**	-----	0.00952	"	"	"	"	12/24/09 04:13	
Benzo (b) fluoranthene	"	**0.00989**	-----	0.00952	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	-----	0.0190	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	-----	0.00952	"	"	"	"	"	
Chrysene	"	**0.0267**	-----	0.00952	"	"	"	"	01/05/10 03:04	
Dibenzo (a,h) anthracene	"	ND	-----	0.00952	"	"	"	"	12/24/09 04:13	
Fluoranthene	"	**0.0418**	-----	0.0190	"	"	"	"	01/05/10 03:04	
Fluorene	"	ND	-----	0.0190	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	**0.00970**	-----	0.00952	"	"	"	"	12/24/09 04:13	
Naphthalene	"	**0.0529**	-----	0.0190	"	"	"	"	01/05/10 03:04	
Phenanthrene	"	**0.0668**	-----	0.0190	"	"	"	"	"	
Pyrene	"	**0.0596**	-----	0.0190	"	"	"	"	"	
Surrogate(s): *Fluorene-d10*				*90.7%*		*25 - 125 %*			*"*	
Pyrene-d10				*89.9%*		*23 - 150 %*			*"*	
Benzo (a) pyrene-d12				*78.2%*		*10 - 125 %*			*12/24/09 04:13*	

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City of Portland Water Pollution Laboratory	Project Name:	**NPDES**	
6543 N. Burlington Ave.	Project Number:	36238	Report Created:
Portland, OR 97203	Project Manager:	Jennifer Shackelford	01/09/10 16:05

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 9120627 **Water Preparation Method: 3520B Liq-Liq**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (9120627-BLK1)									**Extracted: 12/18/09 16:15**					
Bis(2-ethylhexyl)phthalate	EPA 8270m	ND	---	1.00	ug/l	1x	--	--	--	--	--	--	12/23/09 11:18	
Butyl benzyl phthalate	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
Di-n-butyl phthalate	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
Di-n-octyl phthalate	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
Diethyl phthalate	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
Dimethyl phthalate	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
Acenaphthene	"	ND	---	0.0200	"	"	--	--	--	--	--	--	12/23/09 17:39	
Acenaphthylene	"	ND	---	0.0200	"	"	--	--	--	--	--	--	"	
Anthracene	"	ND	---	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (a) anthracene	"	ND	---	0.0100	"	"	--	--	--	--	--	--	"	
Benzo (a) pyrene	"	ND	---	0.0100	"	"	--	--	--	--	--	--	"	
Benzo (b) fluoranthene	"	ND	---	0.0100	"	"	--	--	--	--	--	--	"	
Benzo (ghi) perylene	"	ND	---	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (k) fluoranthene	"	ND	---	0.0100	"	"	--	--	--	--	--	--	"	
Chrysene	"	ND	---	0.0100	"	"	--	--	--	--	--	--	"	
Dibenzo (a,h) anthracene	"	ND	---	0.0100	"	"	--	--	--	--	--	--	"	
Fluoranthene	"	ND	---	0.0200	"	"	--	--	--	--	--	--	"	
Fluorene	"	ND	---	0.0200	"	"	--	--	--	--	--	--	"	
Indeno (1,2,3-cd) pyrene	"	ND	---	0.0100	"	"	--	--	--	--	--	--	"	
Naphthalene	"	ND	---	0.0200	"	"	--	--	--	--	--	--	"	
Phenanthrene	"	ND	---	0.0200	"	"	--	--	--	--	--	--	"	
Pyrene	"	ND	---	0.0200	"	"	--	--	--	--	--	--	"	
Surrogate(s): Fluorene-d10		*Recovery: 79.5%*			*Limits: 25-125%*								*12/23/09 17:39*	
Pyrene-d10		*88.3%*			*23-150%*								*"*	
Benzo (a) pyrene-d12		*84.4%*			*10-125%*								*"*	
LCS (9120627-BS1)									**Extracted: 12/18/09 16:15**					
Bis(2-ethylhexyl)phthalate	EPA 8270m	4.79	---	1.00	ug/l	1x	--	4.00	120%	(20-150)	--	--	12/23/09 13:34	
Butyl benzyl phthalate	"	4.68	---	1.00	"	"	--	"	117%	"	--	--	"	
Di-n-butyl phthalate	"	4.54	---	1.00	"	"	--	"	113%	"	--	--	"	
Di-n-octyl phthalate	"	4.10	---	1.00	"	"	--	"	102%	"	--	--	"	
Diethyl phthalate	"	4.16	---	1.00	"	"	--	"	104%	"	--	--	"	
Dimethyl phthalate	"	4.01	---	1.00	"	"	--	"	100%	"	--	--	"	
Acenaphthene	"	2.41	---	0.0400	"	2x	--	2.50	96.3%	(35-120)	--	--	01/04/10 20:33	
Acenaphthylene	"	2.74	---	0.0400	"	"	--	"	110%	(34-116)	--	--	"	
Anthracene	"	2.75	---	0.0400	"	"	--	"	110%	(24-119)	--	--	"	
Benzo (a) anthracene	"	3.21	---	0.0200	"	"	--	"	128%	(36-128)	--	--	"	
Benzo (a) pyrene	"	2.62	---	0.0200	"	"	--	"	105%	(17-128)	--	--	12/23/09 20:31	
Benzo (b) fluoranthene	"	2.25	---	0.0200	"	"	--	"	89.9%	(37-131)	--	--	"	

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6543 N. Burlington Ave.	Project Number:	36238	Report Created:
Portland, OR 97203	Project Manager:	Jennifer Shackelford	01/09/10 16:05

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 9120627 **Water Preparation Method: 3520B Liq-Liq**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
LCS (9120627-BS1)													**Extracted: 12/18/09 16:15**	
Benzo (ghi) perylene	EPA 8270m	2.88	---	0.0400	ug/l	2x	--	2.50	115%	(26-126)	--	--	12/23/09 20:31	
Benzo (k) fluoranthene	"	2.20	---	0.0200	"	"	--	"	87.8%	(18-145)	--	--	"	
Chrysene	"	2.74	---	0.0200	"	"	--	"	109%	(16-137)	--	--	01/04/10 20:33	
Dibenzo (a,h) anthracene	"	2.94	---	0.0200	"	"	--	"	118%	(20-141)	--	--	12/23/09 20:31	
Fluoranthene	"	3.01	---	0.0400	"	"	--	"	120%	(31-125)	--	--	01/04/10 20:33	
Fluorene	"	2.72	---	0.0400	"	"	--	"	109%	(27-124)	--	--	"	
Indeno (1,2,3-cd) pyrene	"	2.96	---	0.0200	"	"	--	"	118%	(30-135)	--	--	12/23/09 20:31	
Naphthalene	"	2.54	---	0.0400	"	"	--	"	101%	(30-113)	--	--	01/04/10 20:33	
Phenanthrene	"	2.54	---	0.0400	"	"	--	"	102%	(34-126)	--	--	"	
Pyrene	"	2.73	---	0.0400	"	"	--	"	109%	(21-141)	--	--	"	
Surrogate(s): Fluorene-d10		*Recovery: 98.5%*			*Limits: 25-125%*								*01/04/10 20:33*	
Pyrene-d10		*105%*			*23-150%*								*"*	
Benzo (a) pyrene-d12		*91.2%*			*10-125%*								*12/23/09 20:31*	
Matrix Spike (9120627-MS1)					**QC Source: PSL0517-01**								**Extracted: 12/18/09 16:15**	
Bis(2-ethylhexyl)phthalate	EPA 8270m	4.78	---	0.971	ug/l	1x	ND	3.88	123%	(10-150)	--	--	12/23/09 14:08	
Butyl benzyl phthalate	"	4.63	---	0.971	"	"	ND	"	119%	"	--	--	"	
Di-n-butyl phthalate	"	4.53	---	0.971	"	"	ND	"	117%	"	--	--	"	
Di-n-octyl phthalate	"	4.00	---	0.971	"	"	ND	"	103%	"	--	--	"	
Diethyl phthalate	"	3.88	---	0.971	"	"	ND	"	99.8%	"	--	--	"	
Dimethyl phthalate	"	3.65	---	0.971	"	"	ND	"	93.9%	"	--	--	"	
Acenaphthene	"	2.29	---	0.0388	"	2x	ND	2.43	94.3%	(35-120)	--	--	01/04/10 21:12	
Acenaphthylene	"	2.66	---	0.0388	"	"	ND	"	110%	(34-116)	--	--	"	
Anthracene	"	2.65	---	0.0388	"	"	ND	"	109%	(24-119)	--	--	"	
Benzo (a) anthracene	"	3.08	---	0.0194	"	"	ND	"	127%	(22-129)	--	--	"	
Benzo (a) pyrene	"	2.54	---	0.0194	"	"	ND	"	105%	(4-112)	--	--	12/23/09 21:00	
Benzo (b) fluoranthene	"	2.16	---	0.0194	"	"	ND	"	89.0%	(0-136)	--	--	"	
Benzo (ghi) perylene	"	2.72	---	0.0388	"	"	ND	"	112%	(0-126)	--	--	"	
Benzo (k) fluoranthene	"	2.14	---	0.0194	"	"	ND	"	88.4%	(0-145)	--	--	"	
Chrysene	"	2.61	---	0.0194	"	"	ND	"	108%	(7-137)	--	--	01/04/10 21:12	
Dibenzo (a,h) anthracene	"	2.68	---	0.0194	"	"	ND	"	110%	(0-141)	--	--	12/23/09 21:00	
Fluoranthene	"	2.90	---	0.0388	"	"	ND	"	120%	(30-125)	--	--	01/04/10 21:12	
Fluorene	"	2.62	---	0.0388	"	"	ND	"	108%	(27-124)	--	--	"	
Indeno (1,2,3-cd) pyrene	"	2.79	---	0.0194	"	"	ND	"	115%	(0-135)	--	--	12/23/09 21:00	
Naphthalene	"	2.44	---	0.0388	"	"	0.0387	"	99.0%	(30-126)	--	--	01/04/10 21:12	
Phenanthrene	"	2.47	---	0.0388	"	"	0.0535	"	99.5%	(34-126)	--	--	"	
Pyrene	"	2.59	---	0.0388	"	"	ND	"	107%	(14-168)	--	--	"	
Surrogate(s): Fluorene-d10		*Recovery: 96.4%*			*Limits: 25-125%*								*01/04/10 21:12*	
Pyrene-d10		*102%*			*23-150%*								*"*	

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6543 N. Burlington Ave.	Project Number:	36238	Report Created:
Portland, OR 97203	Project Manager:	Jennifer Shackelford	01/09/10 16:05

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 9120627 **Water Preparation Method: 3520B Liq-Liq**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Matrix Spike (9120627-MS1)					**QC Source: PSL0517-01**				**Extracted: 12/18/09 16:15**					
Surrogate(s): Benzo (a) pyrene-d12		*Recovery: 90.5%*			*Limits: 10-125%*								*12/23/09 21:00*	
Matrix Spike Dup (9120627-MSD1)					**QC Source: PSL0517-01**				**Extracted: 12/18/09 16:15**					
Bis(2-ethylhexyl)phthalate	EPA 8270m	4.74	---	0.971	ug/l	1x	ND	3.88	122%	(10-150)	0.679%	(50)	12/23/09 14:42	
Butyl benzyl phthalate	"	4.80	---	0.971	"	"	ND	"	124%	"	3.65%	"	"	
Di-n-butyl phthalate	"	4.44	---	0.971	"	"	ND	"	114%	"	1.94%	"	"	
Di-n-octyl phthalate	"	4.05	---	0.971	"	"	ND	"	104%	"	1.14%	"	"	
Diethyl phthalate	"	3.87	---	0.971	"	"	ND	"	99.7%	"	0.0947%	"	"	
Dimethyl phthalate	"	3.62	---	0.971	"	"	ND	"	93.3%	"	0.637%	"	"	
Acenaphthene	"	2.30	---	0.0388	"	2x	ND	2.43	94.7%	(35-120)	0.475%	(45)	01/04/10 21:51	
Acenaphthylene	"	2.66	---	0.0388	"	"	ND	"	110%	(34-116)	0.0234%	"	"	
Anthracene	"	2.66	---	0.0388	"	"	ND	"	110%	(24-119)	0.337%	"	"	
Benzo (a) anthracene	"	3.08	---	0.0194	"	"	ND	"	127%	(22-129)	0.162%	"	"	
Benzo (a) pyrene	"	2.51	---	0.0194	"	"	ND	"	104%	(4-112)	0.957%	"	12/23/09 21:29	
Benzo (b) fluoranthene	"	2.04	---	0.0194	"	"	ND	"	84.0%	(0-136)	5.80%	"	"	
Benzo (ghi) perylene	"	2.67	---	0.0388	"	"	ND	"	110%	(0-126)	1.87%	"	"	
Benzo (k) fluoranthene	"	2.00	---	0.0194	"	"	ND	"	82.3%	(0-145)	7.07%	"	"	
Chrysene	"	2.61	---	0.0194	"	"	ND	"	108%	(7-137)	0.0966%	"	01/04/10 21:51	
Dibenzo (a,h) anthracene	"	2.57	---	0.0194	"	"	ND	"	106%	(0-141)	4.27%	"	12/23/09 21:29	
Fluoranthene	"	2.86	---	0.0388	"	"	ND	"	118%	(30-125)	1.57%	"	01/04/10 21:51	
Fluorene	"	2.63	---	0.0388	"	"	ND	"	108%	(27-124)	0.345%	"	"	
Indeno (1,2,3-cd) pyrene	"	2.72	---	0.0194	"	"	ND	"	112%	(0-135)	2.50%	"	12/23/09 21:29	
Naphthalene	"	2.47	---	0.0388	"	"	0.0387	"	100%	(30-126)	1.36%	"	01/04/10 21:51	
Phenanthrene	"	2.45	---	0.0388	"	"	0.0535	"	98.8%	(34-126)	0.697%	"	"	
Pyrene	"	2.59	---	0.0388	"	"	ND	"	107%	(14-168)	0.0831%	"	"	
Surrogate(s): Fluorene-d10		*Recovery: 96.8%*			*Limits: 25-125%*								*01/04/10 21:51*	
Pyrene-d10		*102%*			*23-150%*								*"*	
Benzo (a) pyrene-d12		*90.4%*			*10-125%*								*12/23/09 21:29*	

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City of Portland Water Pollution Laboratory	Project Name:	**NPDES**	
6543 N. Burlington Ave.	Project Number:	36238	Report Created:
Portland, OR 97203	Project Manager:	Jennifer Shackelford	01/09/10 16:05

Notes and Definitions

Report Specific Notes:

None

Laboratory Reporting Conventions:

DET	-	Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.
ND	-	Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).
NR/NA	-	Not Reported / Not Available
dry	-	Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight.
wet	-	Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported on a Wet Weight Basis.
RPD	-	RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries).
MRL	-	METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.
MDL*	-	METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated Results.
Dil	-	Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
Reporting Limits	-	Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.
Electronic Signature	-	Electronic Signature added in accordance with TestAmerica's *Electronic Reporting and Electronic Signatures Policy.* Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica Portland

Howard Holmes, Project Manager

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244 425-420-9200 FAX 420-9210
11922 E. First Ave, Spokane, WA 99206-5302 509-924-9200 FAX 924-9290
9405 SW Nimbus Ave,Beaverton, OR 97008-7145 503-906-9200 FAX 906-9210
2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119 907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #: PSL05567

CLIENT: City of Portland

REPORT TO: Jennifer Shackelford

ADDRESS:

PHONE: FAX:

INVOICE TO: Charles Lytle

P.O. NUMBER: 36238

PROJECT NAME: NPDES Stormwater MON

PROJECT NUMBER:

SAMPLED BY:

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: [10] STD. [7] [5] [4] [3] [2] [1] [<1]

Petroleum Hydrocarbon Analyses: [5] STD. [4] [3] [2] [1] [<1]

[OTHER] Specify:

* Turnaround Requests less than standard may incur Rush Charges.

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	PRESERVATIVE: -HCl	REQUESTED ANALYSES: PAH + Phthalates	REQUESTED ANALYSES: PCB aroclors + congeners	MATRIX (W, S, O)	# OF CONT.	LOCATION/ COMMENTS	TA WO ID
1	F09163164	12/14/9 1724		X	X	W	3		
2	F09163166	12/14/9 1746		X		W	2		
3									
4									
5									
6									
7									
8									
9									
10									

RELEASED BY: Jennifer Shackelford		DATE: 12/16/09	RECEIVED BY: Bob Fee		DATE: 12/16/9
PRINT NAME: Jennifer Shackelford	FIRM: City of Portland	TIME: 13:00	PRINT NAME: Bob F	FIRM: TAP	TIME: 13:00
RELEASED BY: Bob Fee		DATE: 12/16/9	RECEIVED BY: Kristin Hoffman		DATE: 12/16/09
PRINT NAME: Bob F	FIRM: TAP	TIME: 16:00	PRINT NAME:	FIRM: TAP	TIME: 16:00

ADDITIONAL REMARKS:

Please send to PACE

TEMP: 5.2

PAGE OF

TAL-1000(0408)

1.5
0.9
0.3

TestAmerica Portland

Sample Receiving Checklist

Work Order #: PSL05567 Date/Time Received: 12/16/09 1600

Client Name and Project: City of Portland

Time Zone:

☐EDT/EST ☐CDT/CST ☐MDT/MST ☒PDT/PST ☐AK ☐OTHER

Unpacking Checks:

Cooler #(s): 1 1 1 1

Temperatures: 5.2 1.5 0.9 0.3

Digi #1 ☐ Digi #2 ☐ IR Gun ☒ (☐Plastic ☒Glass)

Temperature out of Range:

__Not enough or No Ice
__Ice Melted
__W/in 4 Hrs of collection
__Other:_____

Initials: JM

N/A	Yes	No	
☑	☐	☐	1. If ESI client, were temp blanks received? If no, document on NOD.
☑	☐	☐	2. Cooler Seals intact? (N/A if hand delivered) if no, document on NOD.
	☑	☐	3. Chain of Custody present? If no, document on NOD.
	☑	☐	4. Bottles received intact? If no, document on NOD.
	☑	☐	5. Sample is not multiphasic? If no, document on NOD.
	☑	☐	6. Proper Container and preservatives used? If no, document on NOD.
☑	☐	☐	7. pH of all samples checked and meet requirements? If no, document on NOD.
☑	☐	☐	8. Cyanide samples checked for sulfides and meet requirements? If no, notify PM.
☑	☐	☐	9. HF Dilution required?
	☑	☐	10. Sufficient volume provided for all analysis? If no, document on NOD and consult PM before proceeding.
	☑	☐	11. Did chain of custody agree with samples received? If no, document on NOD.
	☑	☐	12. Is the "Sampled by" section of the COC completed?
☑	☐	☐	13. Were VOA/Oil Syringe samples without headspace?
☑	☐	☐	14. Were VOA vials preserved? ☐HCl ☐Sodium Thiosulfate ☐Ascorbic Acid
	☐	☑	15. Did samples require preservation with sodium thiosulfate?
☑	☐	☐	16. If yes to #14, was the residual chlorine test negative? If no, document on NOD.
☑	☐	☐	17. Are dissolved/field filtered metals bottles sediment-free? If no, document on NOD.
☑	☐	☐	18. Is sufficient volume provided for client requested MS/MSD or matrix duplicates? If no, document on NOD and contact PM before proceeding.
☑	☐	☐	19. Are analyses with short holding times received in hold?
	☑	☐	20. Was Standard Turn Around (TAT) requested?
	☑	☐	21. Receipt date(s) < 48 hours past the collection date(s)? If no, notify PM.

TestAmerica Portland

Sample Receiving Checklist

Work Order #: PSL0567

Login Checks:

Initials:

N/A	Yes	No	
	☑	☐	22. Sufficient volume provided for all analysis? If no, document on NOD & contact PM.
☑	☐	☐	23. Sufficient volume provided for client requested MS/MSD or matrix duplicates? If no, document on NOD and contact PM.
	☑	☐	24. Did the chain of custody include "received by" and "relinquished by" signatures, dates and times?
☐	☑	☐	25. Were special log in instructions read and followed?
	☑	☐	26. Were tests logged checked against the COC?
☑	☐	☐	27. Were rush notices printed and delivered?
☑	☐	☐	28. Were short hold notices printed and delivered?
☐	☑	☐	29. Were subcontract COCs printed?
☑	☐	☐	30. Was HF dilution logged?

Labeling and Storage Checks:

Initials:

N/A	Yes	No	
☐	☑	☐	31. Were the subcontracted samples/containers put in Sx fridge?
☑	☐	☐	32. Were sample bottles and COC double checked for dissolved/filtered metals?
	☑	☐	33. Did the sample ID, Date, and Time from label match what was logged?
☑	☐	☐	34. Were Foreign sample stickers affixed to each container and containers stored in foreign fridge?
☑	☐	☐	35. Were HF stickers affixed to each container, and containers stored in Sx fridge?
☑	☐	☐	36. Was an NOD for created for noted discrepancies and placed in folder?

Document any problems or discrepancies and the actions taken to resolve them on a Notice of Discrepancy form (NOD).

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244 425-420-9200 FAX 420-9210
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Work Order #: PSL05567

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SAMPLED BY:

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Petroleum Hydrocarbon Analyses: [5] STD. [4] [3] [2] [1] [<1]

[OTHER] Specify:

* Turnaround Requests less than standard may incur Rush Charges.

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	PRESERVATIVE: -HCl	REQUESTED ANALYSES: PAH + Phthalates	REQUESTED ANALYSES: PCB aroclors + congeners	MATRIX (W, S, O)	# OF CONT.	LOCATION/ COMMENTS	TA WO ID
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2	F09163166	12/14/9 1746		X		W	2		
3									
4									
5									
6									
7									
8									
9									
10									

RELEASED BY: Jennifer Shackelford		DATE: 12/16/09	RECEIVED BY: Bob Fee		DATE: 12/16/9
PRINT NAME: Jennifer Shackelford	FIRM: City of Portland	TIME: 13:00	PRINT NAME: Bob F	FIRM: TAP	TIME: 13:00
RELEASED BY: Bob Fee		DATE: 12/16/9	RECEIVED BY: Kristin Hoffman		DATE: 12/16/09
PRINT NAME: Bob F	FIRM: TAP	TIME: 16:00	PRINT NAME:	FIRM: TAP	TIME: 16:00

ADDITIONAL REMARKS:

Please send to PACE

TEMP: 5.2

PAGE OF

TAL-1000(0408)

1.5
0.9
0.3

TestAmerica Portland

Sample Receiving Checklist

Work Order #: PSL05567 Date/Time Received: 12/16/09 1600

Client Name and Project: City of Portland

Time Zone:

☐EDT/EST ☐CDT/CST ☐MDT/MST ☒PDT/PST ☐AK ☐OTHER

Unpacking Checks:

Cooler #(s): 1 1 1 1

Temperatures: 5.2 1.5 0.9 0.3

Digi #1 ☐ Digi #2 ☐ IR Gun ☒ (☐Plastic ☒Glass)

Temperature out of Range:

__Not enough or No Ice
__Ice Melted
__W/in 4 Hrs of collection
__Other:_____

Initials: JM

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TestAmerica Portland

Sample Receiving Checklist

Work Order #: PSL0567

Login Checks:

Initials:

N/A	Yes	No	
	☑	☐	22. Sufficient volume provided for all analysis? If no, document on NOD & contact PM.
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Initials:

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Document any problems or discrepancies and the actions taken to resolve them on a Notice of Discrepancy form (NOD).

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

www.pacelabs.com

Report Prepared for:

Howard Holmes
Test America-Portland
9405 SW Nimbus Avenue
Beaverton OR 97008

REPORT OF LABORATORY ANALYSIS FOR PCBs

Report Information:

Pace Project #: 10119171
Sample Receipt Date: 12/18/2009
Client Project #: PSL0567
Client Sub PO #: N/A
State Cert #: MN200001-005

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PCB Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Scott Unze, your Pace Project Manager.

This report has been reviewed by:

January 28, 2010

Scott Unze, Project Manager
(612) 607-6383
(612) 607-6444 (fax)
scott.unze@pacelabs.com

Report Prepared Date:
January 28, 2010

Report of Laboratory Analysis

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

DISCUSSION

This report presents the results from the analyses performed on one sample submitted by a representative of Test America Portland. The sample was analyzed for the presence or absence of polychlorinated biphenyl (PCB) congeners using USEPA Method 1668A. Reporting limits were set to approximately 0.25-0.75 parts-per-trillion and were adjusted for the amount of the sample extracted.

The isotopically-labeled PCB internal standards in the sample extract were recovered at 0-104%. The smaller PCB congeners were poorly recovered. Results for congeners 1 and 2 were not determined and results for the remaining mono and di chlorinated congeners should be considered estimated. Since the quantification of the native PCB congeners was based on isotope dilution and internal standard methodology, the data were automatically corrected for variation in recovery and accurate values were obtained.

In some cases, interferences affected the determination of PCB congeners. The affected congeners were flagged "I" where the isotope ratios were found to be outside of the target range for this method.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to be free of PCB congeners at the reporting limits.

Laboratory spike samples were also prepared with the sample batch using clean water that had been fortified with native standard materials. The results show that the spiked native compounds were generally recovered at 78-120%, with relative percent differences (RPDs) generally from 0.0-25.4%. Congener #1 was not recovered in the laboratory spikes. These results indicate generally high levels of accuracy and precision for these samples. Matrix spikes were not prepared with the sample batch.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
Alabama	40770	Montana	92
Alaska	MN00064	Nebraska	
Arizona	AZ0014	Nevada	MN00064_2000
Arkansas	88-0680	New Jersey (NE	MN002
California	01155CA	New Mexico	MN00064
Colorado	MN00064	New York (NEL	11647
Connecticut	PH-0256	North Carolina	27700
EPA Region 5	WD-15J	North Dakota	R-036
EPA Region 8	8TMS-Q	Ohio	4150
Florida (NELAP	E87605	Ohio VAP	CL101
Georgia (DNR)	959	Oklahoma	D9922
Guam	09-019r	Oregon (ELAP)	MN200001-005
Hawaii	SLD	Oregon (OREL	MN200001-005
Idaho	MN00064	Pennsylvania	68-00563
Illinois	200012	Saipan	MP0003
Indiana		South Carolina	74003001
Indiana	C-MN-01	Tennesee	2818
Iowa	368	Tennessee	02818
Kansas	E-10167	Texas	T104704192-08
Kentucky	90062	Utah (NELAP)	PAM
Louisiana	LA0900016	Virginia	00251
Maine	2007029	Washington	C755
Maryland	322	West Virginia	9952C
Michigan	9909	Wisconsin	999407970
Minnesota	027-053-137	Wyoming	8TMS-Q
Mississippi	MN00064		

REPORT OF LABORATORY ANALYSIS

Appendix A

Sample Management

SUBCONTRACT ORDER
TestAmerica Portland

PSL0567

1149
10119171

SENDING LABORATORY:

TestAmerica Portland
9405 SW Nimbus Ave.
Beaverton, OR 97008
Phone: (503) 906-9200
Fax: (503) 906-9210
Project Manager: Howard Holmes

RECEIVING LABORATORY:

Pace Analytical Services, Inc - Minneapolis
1700 Elm Street Suite 200
Minneapolis, MN 55414
Phone :(612) 607-1700
Fax: (612) 607-6444
Project Location: OR - OREGON
Receipt Temperature: _____ °C Ice: Y / N

Run MS/MSD when extra volume is submitted.
15 Day TAT Email results to Jennifer & Aaron.
MDL report
needs Excel EDD

Standard TAT is requested unless specific due date is requested. => Due Date: _____ Initials: _____

Analysis	Units	Expires	Comments
Sample ID: PSL0567-01 (FO096364 - Water)		Sampled: **12/14/09 17:24**	001
1668 Coplanar PCBs - SUB	ug/l	06/12/10 17:24	
Containers Supplied:			
1L Amber - Unpres. (C)			

T=2.0

Released By 12/17/09 Date/Time

Received By 12/18/09 0952 Date/Time

Released By Date/Time

Received By Date/Time

SUBCONTRACT ORDER
TestAmerica Portland

PSL0567

SENDING LABORATORY:	RECEIVING LABORATORY:
TestAmerica Portland	Pace Analytical Services, Inc - Minneapolis
9405 SW Nimbus Ave.	1700 Elm Street Suite 200
Beaverton, OR 97008	Minneapolis, MN 55414
Phone: (503) 906-9200	Phone :(612) 607-1700
Fax: (503) 906-9210	Fax: (612) 607-6444
Project Manager: Howard Holmes	Project Location: OR - OREGON
	Receipt Temperature:_____°C Ice: Y / N

Run MS/MSD when extra volume is submitted.
15 Day TAT Email results to Jennifer & Aaron.
MDL report
needs Excel EDD

Standard TAT is requested unless specific due date is requested. => Due Date: 1/08/10 **Initials:** HZ

Analysis	Units	Expires	Comments
Sample ID: PSL0567-01 (FO096364 - Water)		Sampled: 12/14/09 17:24	
1668 Coplanar PCBs - SUB	ug/l	06/12/10 17:24	
Containers Supplied:			
1L Amber - Unpres. (C)			

CofP would like the 209 list

Thanks
H

Released By	Date/Time	Received By	Date/Time
Released By	Date/Time	Received By	Date/Time

Sample Condition Upon Receipt

Pace Analytical

Client Name: TA **Project #** 10119171

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 4170 7524 8277

Optional: Proj. Due Date: Proj. Name:

Custody Seal on Cooler/Box Present: ☒ yes ☐ no Seals Intact: ☒ yes ☐ no

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other _____ Temp Blank: Yes ☒ No ☐

Thermometer Used 80344042 or 179425 **Type of Ice:** (Wet) Blue None ☐ Samples on ice, cooling process has begun

Cooler Temperature 2.0 **Biological Tissue is Frozen:** Yes No

Temp should be above freezing to 6°C

Date and initials of person examining contents: JLC 12/18/09

Comments:

Chain of Custody Present:	☒Yes	☐No	☐N/A
Chain of Custody Filled Out:	☒Yes	☐No	☐N/A
Chain of Custody Relinquished:	☒Yes	☐No	☐N/A
Sampler Name & Signature on COC:	☐Yes	☒No	☐N/A
Samples Arrived within Hold Time:	☒Yes	☐No	☐N/A
Short Hold Time Analysis (<72hr):	☐Yes	☒No	☐N/A
Rush Turn Around Time Requested:	☐Yes	☒No	☐N/A
Sufficient Volume:	☒Yes	☐No	☐N/A
Correct Containers Used:	☒Yes	☐No	☐N/A
-Pace Containers Used:	☐Yes	☒No	☐N/A
Containers Intact:	☒Yes	☐No	☐N/A
Filtered volume received for Dissolved tests	☐Yes	☐No	☒N/A
Sample Labels match COC:	☒Yes	☐No	☐N/A
-Includes date/time/ID/Analysis Matrix: Water			
All containers needing acid/base preservation have been checked. Noncompliance are noted in 13.	☐Yes	☐No	☒N/A
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes	☐No	☒N/A
Exceptions: VOA,Coliform, TOC, Oil and Grease, WI-DRO (water)	☐Yes	☒No	
Samples checked for dechlorination:	☐Yes	☐No	☒N/A
Headspace in VOA Vials (>6mm):	☐Yes	☐No	☒N/A
Trip Blank Present:	☐Yes	☐No	☒N/A
Trip Blank Custody Seals Present	☐Yes	☐No	☒N/A
Pace Trip Blank Lot # (if purchased):			

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13. ☐ HNO3 ☐ H2SO4 ☐ NaOH ☐ HCl
Samp #

Initial when completed	Lot # of added preservative

14.
15.
16.

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ **Date:** 12/18/09

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DENR.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Reporting Flags

A = Reporting Limit based on signal to noise

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interference present

J = Estimated value

Nn = Value obtained from additional analysis

P = PCDE Interference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = See Discussion

Appendix B

Sample Analysis Summary

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America-Portland

Client's Sample ID	PSL0567-01;FO09364		
Lab Sample ID	10119171001		
Filename	P100119A_08		
Injected By	SMT		
Total Amount Extracted	959 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	12/14/2009 17:24
ICAL ID	P100119A03	Received	12/18/2009 09:52
CCal Filename(s)	P100119A_02	Extracted	01/11/2010 09:00
Method Blank ID	BLANK-23318	Analyzed	01/19/2010 21:03

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery	
Labeled Analytes							
13C-2-MoCB	1	---	---	2.0	ND	---	
13C-4-MoCB	3	12.020	2.04	2.0	0.155	9	IR
13C-2,2'-DiCB	4	12.415	1.47	2.0	0.122	6	R
13C-4,4'-DiCB	15	20.418	1.65	2.0	0.907	45	
13C-2,2',6-TrCB	19	16.740	1.10	2.0	0.536	27	
13C-3,4,4'-TrCB	37	28.672	1.16	2.0	1.93	96	
13C-2,2',6,6'-TeCB	54	20.708	0.82	2.0	0.823	41	
13C-3,4,4',5-TeCB	81	35.932	0.83	2.0	1.92	96	
13C-3,3',4,4'-TeCB	77	36.519	0.81	2.0	1.86	93	
13C-2,2',4,6,6'-PeCB	104	27.263	1.56	2.0	1.14	57	
13C-2,3,3',4,4'-PeCB	105	40.107	1.48	2.0	2.01	100	
13C-2,3,4,4',5-PeCB	114	39.453	1.52	2.0	2.05	103	
13C-2,3',4,4',5-PeCB	118	38.916	1.60	2.0	2.05	102	
13C-2,3',4,4',5'-PeCB	123	38.564	1.59	2.0	2.00	100	
13C-3,3',4,4',5-PeCB	126	43.276	1.63	2.0	2.09	104	
13C-2,2',4,4',6,6'-HxCB	155	33.484	1.24	2.0	1.38	69	
13C-HxCB (156/157)	156/157	46.327	1.24	4.0	3.93	98	
13C-2,3',4,4',5,5'-HxCB	167	45.137	1.24	2.0	1.96	98	
13C-3,3',4,4',5,5'-HxCB	169	49.614	1.26	2.0	1.97	99	
13C-2,2',3,4',5,6,6'-HpCB	188	39.403	1.16	2.0	1.48	74	
13C-2,3,3',4,4',5,5'-HpCB	189	52.176	1.04	2.0	1.98	99	
13C-2,2',3,3',5,5',6,6'-OcCB	202	44.835	0.81	2.0	1.59	80	
13C-2,3,3',4,4',5,5',6-OcCB	205	55.000	0.89	2.0	1.79	90	
13C-2,2',3,3',4,4',5,5',6-NoCB	206	57.284	0.83	2.0	1.63	81	
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	51.637	0.84	2.0	1.59	80	
13C--DeCB	209	59.676	0.76	2.0	1.60	80	
Cleanup Standards							
13C-2,4,4'-TrCB	28	24.078	1.09	2.0	1.69	84	
13C-2,3,3',5,5'-PeCB	111	36.569	1.57	2.0	1.74	87	
13C-2,2',3,3',5,5',6-HpCB	178	42.538	0.94	2.0	1.55	77	
Recovery Standards							
13C-2,5-DiCB	9	15.242	1.66	2.0	NA	NA	
13C-2,2',5,5'-TeCB	52	26.224	0.89	2.0	NA	NA	
13C-2,2',4,5,5'-PeCB	101	33.702	1.51	2.0	NA	NA	
13C-2,2',3,4,4',5'-HxCB	138	42.069	1.20	2.0	NA	NA	
13C-2,2',3,3',4,4',5,5'-OcCB	194	54.439	1.00	2.0	NA	NA	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1668A Polychlorobiphenyl
Sample Analysis Results

Client Sample ID PSL0567-01;FO09364
Lab Sample ID 10119171001
Filename P100119A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.261
2		---	---	ND	---	0.261
3		---	---	ND	---	0.261
4		---	---	ND	---	0.261
5		---	---	ND	---	0.261
6		---	---	ND	---	0.261
7		---	---	ND	---	0.261
8		---	---	ND	---	0.261
9		---	---	ND	---	0.261
10		---	---	ND	---	0.261
11		---	---	ND	---	1.56
12	12/13	---	---	ND	---	0.521
13	12/13	---	---	ND	---	0.521
14		---	---	ND	---	0.261
15		---	---	ND	---	0.261
16		---	---	ND	---	0.261
17		---	---	ND	---	0.261
18	18/30	---	---	ND	---	0.521
19		---	---	ND	---	0.261
20	20/28	---	---	ND	---	0.521
21	21/33	---	---	ND	---	0.521
22		---	---	ND	---	0.261
23		---	---	ND	---	0.261
24		---	---	ND	---	0.261
25		---	---	ND	---	0.261
26	26/29	---	---	ND	---	0.521
27		---	---	ND	---	0.261
28	20/28	---	---	ND	---	0.521
29	26/29	---	---	ND	---	0.521
30	18/30	---	---	ND	---	0.521
31		23.759	1.19	0.280	---	0.261
32		---	---	ND	---	0.261
33	21/33	---	---	ND	---	0.521
34		---	---	ND	---	0.261
35		---	---	ND	---	0.261
36		---	---	ND	---	0.261
37		---	---	ND	---	0.261
38		---	---	ND	---	0.261
39		---	---	ND	---	0.261
40	40/41/71	---	---	ND	---	1.56
41	40/41/71	---	---	ND	---	1.56
42		---	---	ND	---	0.521
43	43/73	---	---	ND	---	1.04
44	44/47/65	---	---	ND	---	1.56
45	45/51	---	---	ND	---	1.04
46		---	---	ND	---	0.521
47	44/47/65	---	---	ND	---	1.56
48		---	---	ND	---	0.521

Conc = Concentration
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Tel: 612-607-1700
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Method 1668A Polychlorobiphenyl
Sample Analysis Results

Client Sample ID PSL0567-01;FO09364
Lab Sample ID 10119171001
Filename P100119A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69	---	---	ND	---	1.04
50	50/53	---	---	ND	---	1.04
51	45/51	---	---	ND	---	1.04
52		26.258	0.78	0.809	---	0.521
53	50/53	---	---	ND	---	1.04
54		---	---	ND	---	0.521
55		---	---	ND	---	0.521
56		---	---	ND	---	0.521
57		---	---	ND	---	0.521
58		---	---	ND	---	0.521
59	59/62/75	---	---	ND	---	1.56
60		---	---	ND	---	0.521
61	61/70/74/76	---	---	ND	---	2.09
62	59/62/75	---	---	ND	---	1.56
63		---	---	ND	---	0.521
64		---	---	ND	---	0.521
65	44/47/65	---	---	ND	---	1.56
66		---	---	ND	---	0.521
67		---	---	ND	---	0.521
68		---	---	ND	---	0.521
69	49/69	---	---	ND	---	1.04
70	61/70/74/76	---	---	ND	---	2.09
71	40/41/71	---	---	ND	---	1.56
72		---	---	ND	---	0.521
73	43/73	---	---	ND	---	1.04
74	61/70/74/76	---	---	ND	---	2.09
75	59/62/75	---	---	ND	---	1.56
76	61/70/74/76	---	---	ND	---	2.09
77		---	---	ND	---	0.521
78		---	---	ND	---	0.521
79		---	---	ND	---	0.521
80		---	---	ND	---	0.521
81		---	---	ND	---	0.521
82		---	---	ND	---	0.521
83		---	---	ND	---	0.521
84		---	---	ND	---	0.521
85	85/116/117	---	---	ND	---	1.56
86	86/87/97/108/119/125	---	---	ND	---	3.13
87	86/87/97/108/119/125	---	---	ND	---	3.13
88	88/91	---	---	ND	---	1.04
89		---	---	ND	---	0.521
90	90/101/113	---	---	ND	---	1.56
91	88/91	---	---	ND	---	1.04
92		---	---	ND	---	0.521
93	93/98/100/102	---	---	ND	---	2.09
94		---	---	ND	---	0.521
95		30.600	1.63	0.952	---	0.521
96		---	---	ND	---	0.521

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Method 1668A Polychlorobiphenyl
Sample Analysis Results

Client Sample ID PSL0567-01;FO09364
Lab Sample ID 10119171001
Filename P100119A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
97	86/87/97/108/119/125	---	---	ND	---	3.13
98	93/98/100/102	---	---	ND	---	2.09
99		---	---	ND	---	0.521
100	93/98/100/102	---	---	ND	---	2.09
101	90/101/113	---	---	ND	---	1.56
102	93/98/100/102	---	---	ND	---	2.09
103		---	---	ND	---	0.521
104		---	---	ND	---	0.521
105		---	---	ND	---	0.521
106		---	---	ND	---	0.521
107	107/124	---	---	ND	---	1.04
108	86/87/97/108/119/125	---	---	ND	---	3.13
109		---	---	ND	---	0.521
110	110/115	35.815	1.64	1.58	---	1.04
111		---	---	ND	---	0.521
112		---	---	ND	---	0.521
113	90/101/113	---	---	ND	---	1.56
114		---	---	ND	---	0.521
115	110/115	35.815	1.64	(1.58)	---	1.04
116	85/116/117	---	---	ND	---	1.56
117	85/116/117	---	---	ND	---	1.56
118		38.933	1.44	1.25	---	0.521
119	86/87/97/108/119/125	---	---	ND	---	3.13
120		---	---	ND	---	0.521
121		---	---	ND	---	0.521
122		---	---	ND	---	0.521
123		---	---	ND	---	0.521
124	107/124	---	---	ND	---	1.04
125	86/87/97/108/119/125	---	---	ND	---	3.13
126		---	---	ND	---	0.521
127		---	---	ND	---	0.521
128	128/166	---	---	ND	---	1.04
129	129/138/163	42.119	1.41	1.63	---	1.56
130		---	---	ND	---	0.521
131		---	---	ND	---	0.521
132		39.017	1.15	0.561	---	0.521
133		---	---	ND	---	0.521
134	134/143	---	---	ND	---	1.04
135	135/151	---	---	ND	---	1.04
136		---	---	ND	---	0.521
137		---	---	ND	---	0.521
138	129/138/163	42.119	1.41	(1.63)	---	1.56
139	139/140	---	---	ND	---	1.04
140	139/140	---	---	ND	---	1.04
141		---	---	ND	---	0.521
142		---	---	ND	---	0.521
143	134/143	---	---	ND	---	1.04
144		---	---	ND	---	0.521

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Method 1668A Polychlorobiphenyl
Sample Analysis Results

Client Sample ID PSL0567-01;FO09364
Lab Sample ID 10119171001
Filename P100119A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
145		---	---	ND	---	0.521
146		---	---	ND	---	0.521
147	147/149	37.726	1.43	1.11	---	1.04
148		---	---	ND	---	0.521
149	147/149	37.726	1.43	(1.11)	---	1.04
150		---	---	ND	---	0.521
151	135/151	---	---	ND	---	1.04
152		---	---	ND	---	0.521
153	153/168	40.845	1.10	1.18	---	1.04
154		---	---	ND	---	0.521
155		---	---	ND	---	0.521
156	156/157	---	---	ND	---	1.04
157	156/157	---	---	ND	---	1.04
158		---	---	ND	---	0.521
159		---	---	ND	---	0.521
160		---	---	ND	---	0.521
161		---	---	ND	---	0.521
162		---	---	ND	---	0.521
163	129/138/163	42.119	1.41	(1.63)	---	1.56
164		---	---	ND	---	0.521
165		---	---	ND	---	0.521
166	128/166	---	---	ND	---	1.04
167		---	---	ND	---	0.521
168	153/168	40.845	1.10	(1.18)	---	1.04
169		---	---	ND	---	0.521
170		---	---	ND	---	0.521
171	171/173	---	---	ND	---	1.04
172		---	---	ND	---	0.521
173	171/173	---	---	ND	---	1.04
174		---	---	ND	---	0.521
175		---	---	ND	---	0.521
176		---	---	ND	---	0.521
177		---	---	ND	---	0.521
178		---	---	ND	---	0.521
179		---	---	ND	---	0.521
180	180/193	---	---	ND	---	1.04
181		---	---	ND	---	0.521
182		---	---	ND	---	0.521
183	183/185	---	---	ND	---	1.04
184		---	---	ND	---	0.521
185	183/185	---	---	ND	---	1.04
186		---	---	ND	---	0.521
187		---	---	ND	---	0.521
188		---	---	ND	---	0.521
189		---	---	ND	---	0.521
190		---	---	ND	---	0.521
191		---	---	ND	---	0.521
192		---	---	ND	---	0.521

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Method 1668A Polychlorobiphenyl
Sample Analysis Results

Client Sample ID	PSL0567-01;FO09364
Lab Sample ID	10119171001
Filename	P100119A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193	---	---	ND	---	1.04
194		---	---	ND	---	0.782
195		---	---	ND	---	0.782
196		---	---	ND	---	0.782
197	197/200	---	---	ND	---	1.56
198	198/199	---	---	ND	---	1.56
199	198/199	---	---	ND	---	1.56
200	197/200	---	---	ND	---	1.56
201		---	---	ND	---	0.782
202		---	---	ND	---	0.782
203		---	---	ND	---	0.782
204		---	---	ND	---	0.782
205		---	---	ND	---	0.782
206		---	---	ND	---	0.782
207		---	---	ND	---	0.782
208		---	---	ND	---	0.782
209		---	---	ND	---	0.782

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Method 1668A Polychlorobiphenyl
Sample Analysis Results

Client Sample ID	PSL0567-01;FO09364
Lab Sample ID	10119171001
Filename	P100119A_08

Congener Group	Concentration ng/L
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	ND
Total Trichloro Biphenyls	0.280
Total Tetrachloro Biphenyls	0.809
Total Pentachloro Biphenyls	3.78
Total Hexachloro Biphenyls	4.48
Total Heptachloro Biphenyls	ND
Total Octachloro Biphenyls	ND
Total Nonachloro Biphenyls	ND
Decachloro Biphenyls	ND
Total PCBs	9.35

ND = Not Detected

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyl
Blank Analysis Results

Lab Sample ID	BLANK-23318		
Filename	P100119A_07		
Injected By	SMT	Matrix	Water
Total Amount Extracted	897 mL	Extracted	01/11/2010 09:00
ICAL ID	P100119A03	Analyzed	01/19/2010 19:58
CCal Filename(s)	P100119A_02	Dilution	NA

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery	
Labeled Analytes							
13C-2-MoCB	1	8.701	0.75	2.0	0.0303	3	IR
13C-4-MoCB	3	12.032	1.40	2.0	0.0866	6	IR
13C-2,2'-DiCB	4	12.391	2.36	2.0	0.0494	3	IR
13C-4,4'-DiCB	15	20.442	1.73	2.0	0.668	33	
13C-2,2',6-TrCB	19	16.764	1.10	2.0	0.273	14	R
13C-3,4,4'-TrCB	37	28.672	1.05	2.0	1.60	80	
13C-2,2',6,6'-TeCB	54	20.758	0.77	2.0	0.574	29	
13C-3,4,4',5-TeCB	81	35.949	0.75	2.0	1.71	86	
13C-3,3',4,4'-TeCB	77	36.535	0.78	2.0	1.73	87	
13C-2,2',4,6,6'-PeCB	104	27.263	1.75	2.0	0.901	45	
13C-2,3,3',4,4'-PeCB	105	40.123	1.67	2.0	1.88	94	
13C-2,3,4,4',5-PeCB	114	39.470	1.70	2.0	1.83	92	
13C-2,3',4,4',5-PeCB	118	38.933	1.67	2.0	1.79	90	
13C-2,3',4,4',5'-PeCB	123	38.598	1.70	2.0	1.78	89	
13C-3,3',4,4',5-PeCB	126	43.276	1.64	2.0	1.87	94	
13C-2,2',4,4',6,6'-HxCB	155	33.484	1.38	2.0	1.24	62	
13C-HxCB (156/157)	156/157	46.294	1.25	4.0	4.14	103	
13C-2,3',4,4',5,5'-HxCB	167	45.137	1.34	2.0	2.04	102	
13C-3,3',4,4',5,5'-HxCB	169	49.613	1.27	2.0	1.98	99	
13C-2,2',3,4',5,6,6'-HpCB	188	39.419	1.02	2.0	1.44	72	
13C-2,3,3',4,4',5,5'-HpCB	189	52.176	1.09	2.0	1.92	96	
13C-2,2',3,3',5,5',6,6'-OcCB	202	44.868	0.95	2.0	1.64	82	
13C-2,3,3',4,4',5,5',6-OcCB	205	55.042	0.93	2.0	1.71	85	
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13C-2,2',3,3',4,5,5',6,6'-NoCB	208	51.615	0.82	2.0	1.58	79	
13C--DeCB	209	59.590	0.71	2.0	1.48	74	
Cleanup Standards							
13C-2,4,4'-TrCB	28	24.095	1.10	2.0	1.54	77	
13C-2,3,3',5,5'-PeCB	111	36.569	1.62	2.0	1.59	79	
13C-2,2',3,3',5,5',6-HpCB	178	42.538	1.07	2.0	1.81	90	
Recovery Standards							
13C-2,5-DiCB	9	15.242	1.67	2.0	NA	NA	
13C-2,2',5,5'-TeCB	52	26.241	0.87	2.0	NA	NA	
13C-2,2',4,5,5'-PeCB	101	33.719	1.59	2.0	NA	NA	
13C-2,2',3,4,4',5'-HxCB	138	42.085	1.30	2.0	NA	NA	
13C-2,2',3,3',4,4',5,5'-OcCB	194	54.417	0.96	2.0	NA	NA	

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
RT = Retention Time
I = Interference
ng's = Nanograms

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1668A Polychlorobiphenyl
Blank Analysis Results

Lab Sample ID BLANK-23318
Filename P100119A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.279
2		---	---	ND	---	0.279
3		---	---	ND	---	0.279
4		---	---	ND	---	0.279
5		---	---	ND	---	0.279
6		---	---	ND	---	0.279
7		---	---	ND	---	0.279
8		---	---	ND	---	0.279
9		---	---	ND	---	0.279
10		---	---	ND	---	0.279
11		---	---	ND	---	1.67
12	12/13	---	---	ND	---	0.557
13	12/13	---	---	ND	---	0.557
14		---	---	ND	---	0.279
15		---	---	ND	---	0.279
16		---	---	ND	---	0.279
17		---	---	ND	---	0.279
18	18/30	---	---	ND	---	0.557
19		---	---	ND	---	0.279
20	20/28	---	---	ND	---	0.557
21	21/33	---	---	ND	---	0.557
22		---	---	ND	---	0.279
23		---	---	ND	---	0.279
24		---	---	ND	---	0.279
25		---	---	ND	---	0.279
26	26/29	---	---	ND	---	0.557
27		---	---	ND	---	0.279
28	20/28	---	---	ND	---	0.557
29	26/29	---	---	ND	---	0.557
30	18/30	---	---	ND	---	0.557
31		---	---	ND	---	0.279
32		---	---	ND	---	0.279
33	21/33	---	---	ND	---	0.557
34		---	---	ND	---	0.279
35		---	---	ND	---	0.279
36		---	---	ND	---	0.279
37		---	---	ND	---	0.279
38		---	---	ND	---	0.279
39		---	---	ND	---	0.279
40	40/41/71	---	---	ND	---	1.67
41	40/41/71	---	---	ND	---	1.67
42		---	---	ND	---	0.557
43	43/73	---	---	ND	---	1.11
44	44/47/65	---	---	ND	---	1.67
45	45/51	---	---	ND	---	1.11

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
RT = Retention Time
I = Interference

REPORT OF LABORATORY ANALYSIS

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1700 Elm Street - Suite 200
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Method 1668A Polychlorobiphenyl
Blank Analysis Results

Lab Sample ID BLANK-23318
Filename P100119A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
46		---	---	ND	---	0.557
47	44/47/65	---	---	ND	---	1.67
48		---	---	ND	---	0.557
49	49/69	---	---	ND	---	1.11
50	50/53	---	---	ND	---	1.11
51	45/51	---	---	ND	---	1.11
52		---	---	ND	---	0.557
53	50/53	---	---	ND	---	1.11
54		---	---	ND	---	0.557
55		---	---	ND	---	0.557
56		---	---	ND	---	0.557
57		---	---	ND	---	0.557
58		---	---	ND	---	0.557
59	59/62/75	---	---	ND	---	1.67
60		---	---	ND	---	0.557
61	61/70/74/76	---	---	ND	---	2.23
62	59/62/75	---	---	ND	---	1.67
63		---	---	ND	---	0.557
64		---	---	ND	---	0.557
65	44/47/65	---	---	ND	---	1.67
66		---	---	ND	---	0.557
67		---	---	ND	---	0.557
68		---	---	ND	---	0.557
69	49/69	---	---	ND	---	1.11
70	61/70/74/76	---	---	ND	---	2.23
71	40/41/71	---	---	ND	---	1.67
72		---	---	ND	---	0.557
73	43/73	---	---	ND	---	1.11
74	61/70/74/76	---	---	ND	---	2.23
75	59/62/75	---	---	ND	---	1.67
76	61/70/74/76	---	---	ND	---	2.23
77		---	---	ND	---	0.557
78		---	---	ND	---	0.557
79		---	---	ND	---	0.557
80		---	---	ND	---	0.557
81		---	---	ND	---	0.557
82		---	---	ND	---	0.557
83		---	---	ND	---	0.557
84		---	---	ND	---	0.557
85	85/116/117	---	---	ND	---	1.67
86	86/87/97/108/119/125	---	---	ND	---	3.34
87	86/87/97/108/119/125	---	---	ND	---	3.34
88	88/91	---	---	ND	---	1.11
89		---	---	ND	---	0.557
90	90/101/113	---	---	ND	---	1.67

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
RT = Retention Time
I = Interference

REPORT OF LABORATORY ANALYSIS

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Tel: 612-607-1700
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Method 1668A Polychlorobiphenyl
Blank Analysis Results

Lab Sample ID BLANK-23318
Filename P100119A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
91	88/91	---	---	ND	---	1.11
92		---	---	ND	---	0.557
93	93/98/100/102	---	---	ND	---	2.23
94		---	---	ND	---	0.557
95		---	---	ND	---	0.557
96		---	---	ND	---	0.557
97	86/87/97/108/119/125	---	---	ND	---	3.34
98	93/98/100/102	---	---	ND	---	2.23
99		---	---	ND	---	0.557
100	93/98/100/102	---	---	ND	---	2.23
101	90/101/113	---	---	ND	---	1.67
102	93/98/100/102	---	---	ND	---	2.23
103		---	---	ND	---	0.557
104		---	---	ND	---	0.557
105		---	---	ND	---	0.557
106		---	---	ND	---	0.557
107	107/124	---	---	ND	---	1.11
108	86/87/97/108/119/125	---	---	ND	---	3.34
109		---	---	ND	---	0.557
110	110/115	---	---	ND	---	1.11
111		---	---	ND	---	0.557
112		---	---	ND	---	0.557
113	90/101/113	---	---	ND	---	1.67
114		---	---	ND	---	0.557
115	110/115	---	---	ND	---	1.11
116	85/116/117	---	---	ND	---	1.67
117	85/116/117	---	---	ND	---	1.67
118		---	---	ND	---	0.557
119	86/87/97/108/119/125	---	---	ND	---	3.34
120		---	---	ND	---	0.557
121		---	---	ND	---	0.557
122		---	---	ND	---	0.557
123		---	---	ND	---	0.557
124	107/124	---	---	ND	---	1.11
125	86/87/97/108/119/125	---	---	ND	---	3.34
126		---	---	ND	---	0.557
127		---	---	ND	---	0.557
128	128/166	---	---	ND	---	1.11
129	129/138/163	---	---	ND	---	1.67
130		---	---	ND	---	0.557
131		---	---	ND	---	0.557
132		---	---	ND	---	0.557
133		---	---	ND	---	0.557
134	134/143	---	---	ND	---	1.11
135	135/151	---	---	ND	---	1.11

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
RT = Retention Time
I = Interference

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
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Tel: 612-607-1700
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Method 1668A Polychlorobiphenyl
Blank Analysis Results

Lab Sample ID BLANK-23318
Filename P100119A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
136		---	---	ND	---	0.557
137		---	---	ND	---	0.557
138	129/138/163	---	---	ND	---	1.67
139	139/140	---	---	ND	---	1.11
140	139/140	---	---	ND	---	1.11
141		---	---	ND	---	0.557
142		---	---	ND	---	0.557
143	134/143	---	---	ND	---	1.11
144		---	---	ND	---	0.557
145		---	---	ND	---	0.557
146		---	---	ND	---	0.557
147	147/149	---	---	ND	---	1.11
148		---	---	ND	---	0.557
149	147/149	---	---	ND	---	1.11
150		---	---	ND	---	0.557
151	135/151	---	---	ND	---	1.11
152		---	---	ND	---	0.557
153	153/168	---	---	ND	---	1.11
154		---	---	ND	---	0.557
155		---	---	ND	---	0.557
156	156/157	---	---	ND	---	1.11
157	156/157	---	---	ND	---	1.11
158		---	---	ND	---	0.557
159		---	---	ND	---	0.557
160		---	---	ND	---	0.557
161		---	---	ND	---	0.557
162		---	---	ND	---	0.557
163	129/138/163	---	---	ND	---	1.67
164		---	---	ND	---	0.557
165		---	---	ND	---	0.557
166	128/166	---	---	ND	---	1.11
167		---	---	ND	---	0.557
168	153/168	---	---	ND	---	1.11
169		---	---	ND	---	0.557
170		---	---	ND	---	0.557
171	171/173	---	---	ND	---	1.11
172		---	---	ND	---	0.557
173	171/173	---	---	ND	---	1.11
174		---	---	ND	---	0.557
175		---	---	ND	---	0.557
176		---	---	ND	---	0.557
177		---	---	ND	---	0.557
178		---	---	ND	---	0.557
179		---	---	ND	---	0.557
180	180/193	---	---	ND	---	1.11

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
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X = Outside QC Limits
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REPORT OF LABORATORY ANALYSIS

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Tel: 612-607-1700
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Method 1668A Polychlorobiphenyl
Blank Analysis Results

Lab Sample ID BLANK-23318
Filename P100119A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
181		---	---	ND	---	0.557
182		---	---	ND	---	0.557
183	183/185	---	---	ND	---	1.11
184		---	---	ND	---	0.557
185	183/185	---	---	ND	---	1.11
186		---	---	ND	---	0.557
187		---	---	ND	---	0.557
188		---	---	ND	---	0.557
189		---	---	ND	---	0.557
190		---	---	ND	---	0.557
191		---	---	ND	---	0.557
192		---	---	ND	---	0.557
193	180/193	---	---	ND	---	1.11
194		---	---	ND	---	0.836
195		---	---	ND	---	0.836
196		---	---	ND	---	0.836
197	197/200	---	---	ND	---	1.67
198	198/199	---	---	ND	---	1.67
199	198/199	---	---	ND	---	1.67
200	197/200	---	---	ND	---	1.67
201		---	---	ND	---	0.836
202		---	---	ND	---	0.836
203		---	---	ND	---	0.836
204		---	---	ND	---	0.836
205		---	---	ND	---	0.836
206		---	---	ND	---	0.836
207		---	---	ND	---	0.836
208		---	---	ND	---	0.836
209		---	---	ND	---	0.836

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
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Method 1668A Polychlorobiphenyl
Blank Analysis Results

Client Sample ID	DFBLKTL
Lab Sample ID	BLANK-23318
Filename	P100119A_07

Congener Group	Concentration ng/L
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	ND
Total Trichloro Biphenyls	ND
Total Tetrachloro Biphenyls	ND
Total Pentachloro Biphenyls	ND
Total Hexachloro Biphenyls	ND
Total Heptachloro Biphenyls	ND
Total Octachloro Biphenyls	ND
Total Nonachloro Biphenyls	ND
Decachloro Biphenyls	ND
Total PCBs	ND

ND = Not Detected

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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Method 1668A Polychlorobiphenyls
Laboratory Control Spike Analysis Results

Lab Sample ID	LCS-23319		
Filename	P100126A_04	Matrix	Water
Total Amount Extracted	893 mL	Dilution	NA
ICAL ID	P100126A03	Extracted	01/11/2010 09:00
CCal Filename(s)	P100126A_02	Analyzed	01/26/2010 11:50
Method Blank ID	BLANK-23318	Injected By	SMT

	Native Analytes				Labeled Analytes			
PCB Isomer	**Spiked (ng)**	**Found (ng)**	**% Recovery**		**Spiked (ng)**	**Found (ng)**	**% Recovery**	
1		NC	NC		2.0	0.000	0	R
3	1.0	0.784	78		2.0	0.0577	4	IR
4	1.0	0.669	89	I	2.0	0.0540	3	R
15	1.0	0.985	99		2.0	0.484	24	R
19	1.0	0.857	86		2.0	0.216	11	R
37	1.0	1.02	102		2.0	1.31	65	
54	1.0	1.03	103		2.0	0.407	20	R
81	1.0	1.02	102		2.0	1.61	81	
77	1.0	1.03	103		2.0	1.62	81	
104	1.0	0.859	95	I	2.0	0.923	46	
105	1.0	0.944	94		2.0	1.87	94	
114	1.0	1.05	105		2.0	1.83	91	
118	1.0	1.07	107		2.0	1.78	89	
123	1.0	1.05	105		2.0	1.77	89	
126	1.0	1.02	102		2.0	1.81	91	
155	1.0	0.975	97		2.0	1.35	68	
156/157	2.0	2.00	100		4.0	3.89	97	
167	1.0	1.01	101		2.0	1.96	98	
169	1.0	1.04	104		2.0	1.81	90	
188	1.0	1.01	101		2.0	1.61	81	
189	1.0	1.04	104		2.0	1.93	96	
202	1.0	0.994	99		2.0	1.79	90	
205	1.0	1.10	110		2.0	1.74	87	
206	1.0	1.03	103		2.0	1.77	89	
208	1.0	0.984	98		2.0	1.81	91	
209	1.0	1.03	103		2.0	1.62	81	

R = Recovery outside of method 1668A control limits
Nn = Result obtained from alternate analysis
ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
ng = Nanograms
I = Interference

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyls
Laboratory Control Spike Analysis Results

Lab Sample ID	LCSD-23320		
Filename	P100119A_05	Matrix	Water
Total Amount Extracted	865 mL	Dilution	NA
ICAL ID	P100119A03	Extracted	01/11/2010 09:00
CCal Filename(s)	P100119A_02	Analyzed	01/19/2010 17:48
Method Blank ID	BLANK-23318	Injected By	SMT

	Native Analytes				Labeled Analytes			
PCB Isomer	**Spiked (ng)**	**Found (ng)**	**% Recovery**		**Spiked (ng)**	**Found (ng)**	**% Recovery**	
1		NC	NC		2.0	0.00872	1	IR
3	1.0	0.794	79		2.0	0.0478	3	IR
4	1.0	0.440	86	I	2.0	0.0335	2	IR
15	1.0	1.07	107		2.0	0.502	25	R
19	1.0	1.11	111		2.0	0.180	9	R
37	1.0	0.986	99		2.0	1.46	73	
54	1.0	1.20	120		2.0	0.426	21	R
81	1.0	1.03	103		2.0	1.80	90	
77	1.0	1.10	110		2.0	1.76	88	
104	1.0	1.000	100		2.0	0.841	42	
105	1.0	1.09	109		2.0	1.87	94	
114	1.0	1.04	104		2.0	1.85	93	
118	1.0	1.07	107		2.0	1.85	92	
123	1.0	1.04	104		2.0	1.87	94	
126	1.0	1.03	103		2.0	1.91	96	
155	1.0	0.942	94		2.0	1.29	65	
156/157	2.0	2.08	104		4.0	4.25	106	
167	1.0	1.01	101		2.0	2.16	108	
169	1.0	1.03	103		2.0	2.12	106	
188	1.0	1.13	113		2.0	1.42	71	
189	1.0	1.07	107		2.0	2.09	105	
202	1.0	1.13	113		2.0	1.58	79	
205	1.0	1.08	108		2.0	1.85	93	
206	1.0	1.01	101		2.0	1.66	83	
208	1.0	1.11	111		2.0	1.67	84	
209	1.0	0.954	95		2.0	1.62	81	

R = Recovery outside of method 1668A control limits
Nn = Result obtained from alternate analysis
ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
ng = Nanograms
I = Interference

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Method 1668A

Spike Recovery Relative Percent Difference (RPD) Results

Client	Test America-Portland		
Spike 1 ID	LCS-23319	Spike 2 ID	LCSD-23320
Spike 1 Filename	P100126A_04	Spike 2 Filename	P100119A_05

Compound	IUPAC	Spike 1 %REC	Spike 2 %REC	%RPD
2-MoCB	1	-1000	0	--
4-MoCB	3	78	79	1.3
2,2'-DiCB	4	89	86	3.4
4,4'-DiCB	15	99	107	7.8
2,2',6-TrCB	19	86	111	25.4
3,4,4'-TrCB	37	102	99	3.0
2,2',6,6'-TeCB	54	103	120	15.2
3,3',4,4'-TeCB	77	103	110	6.6
3,4,4',5-TeCB	81	102	103	1.0
2,2',4,6,6'-PeCB	104	95	100	5.1
2,3,3',4,4'-PeCB	105	94	109	14.8
2,3,4,4',5-PeCB	114	105	104	1.0
2,3',4,4',5-PeCB	118	107	107	0.0
2,3',4,4',5'-PeCB	123	105	104	1.0
3,3',4,4',5-PeCB	126	102	103	1.0
2,2',4,4',6,6'-HxCB	155	97	94	3.1
(156/157)	156/157	100	104	3.9
2,3',4,4',5,5'-HxCB	167	101	101	0.0
3,3',4,4',5,5'-HxCB	169	104	103	1.0
2,2',3,4',5,6,6'-HpCB	188	101	113	11.2
2,3,3',4,4',5,5'-HpCB	189	104	107	2.8
2,2',3,3',5,5',6,6'-OcCB	202	99	113	13.2
2,3,3',4,4',5,5',6-OcCB	205	110	108	1.8
2,2',3,3',4,4',5,5',6-NoCB	206	103	101	2.0
2,2',3,3',4,5,5',6,6'-NoCB	208	98	111	12.4
Decachlorobiphenyl	209	103	95	8.1

%REC = Percent Recovered
RPD = The difference between the two values divided by the mean value

REPORT OF LABORATORY ANALYSIS

Columbia Analytical Services™ 1317 S. 13th Avenue, Kelso, WA 98626 360.577.7222 360.636.1068 (fax) www.caslab.com

January 5, 2010 Analytical Report for Service Request No: K0912234

Jennifer Shackelford
Portland, City of
1120 SW Fifth Avenue # 1000
Portland, OR 97204

RE: NPDES Stormwater MON

Dear Jennifer:

Enclosed are the results of the samples submitted to our laboratory on December 17, 2009. For your reference, these analyses have been assigned our service request number K0912234.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3281. You may also contact me via Email at PDivvela@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Pradeep Divvela
Project Chemist

PD/ln

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated concentration that is less than the MRL or LOQ but greater than or equal to the MDL or LOD.
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The LOD has been adjusted for dilution.
i	The MRL/MDL or LOQ/LOD has been elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated concentration that is less than the MRL or LOQ but greater than or equal to the MDL or LOD.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The LOD has been adjusted for any dilution or
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD has been elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The LOD has been adjusted for any dilution or
i	The MRL/MDL or LOQ/LOD has been elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc.
Kelso, WA
State Certifications, Accreditations, and Licenses

Program	Number
Alaska DEC UST	UST-040
Arizona DHS	AZ0339
Arkansas - DEQ	88-0637
California DHS	2286
Colorado DPHE	-
Florida DOH	E87412
Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
Louisiana DEQ	3016
Louisiana DHH	LA050010
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon - DHS	WA200001
South Carolina DHEC	61002
Utah DOH	COLU
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	City of Portland	**Service Request No.:**	K0912234
Project:	NPDES Stormwater MON	**Date Received:**	12/17/09
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Matrix Spike (MS), and Laboratory/Duplicate Laboratory Control Sample (LCS/DLCS).

Sample Receipt

Two water samples were received for analysis at Columbia Analytical Services on 12/17/09. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Organochlorine Pesticides by EPA Method 8081A – ULL

Second Source Exceptions:
The analysis of Chlorinated Pesticides by EPA 8081 requires the use of dual column confirmation. When the Initial Calibration Verification (ICV) criteria are met for both columns, the higher of the two sample results is generally reported. The primary evaluation criteria were not met on the confirmation column for Methoxychlor in CAL 8946. The ICV results were reported from the acceptable column. The data quality was not affected. No further corrective action was necessary.

Calibration Verification Exceptions:
The primary evaluation criterion was exceeded for Methoxychlor in Continuing Calibration Verification (CCV) 1229F004. In accordance with CAS standard operating procedures, the alternative evaluation specified in the EPA method was performed using the average percent recovery of all analytes in the verification standard. The standard met the alternative evaluation criteria.

Relative Percent Difference Exceptions:
The Relative Percent Difference (RPD) for Toxaphene in the replicate Laboratory Control Sample (LCS) analyses (KWG0911902-1 and KWG0911902-2) was outside control criteria. Note that the individual recoveries of the analyte were within control limits. The data was flagged to indicate the problem.

Matrix Spike Recovery Exceptions:
The matrix spike recovery of beta-BHC for Batch QC was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. The matrix spike outlier suggested a potential high bias in this matrix. No further corrective action was appropriate.

The control criteria for the matrix spike recovery of 4,4'-DDE and 4,4'-DDD for Batch QC was not applicable. The chromatogram indicated non-target matrix background components contributed to the reported matrix spike concentrations. Thus, the reported recoveries contained a high bias. Based on the magnitude of background contribution, the interference appeared to be minimal.

Approved by_____ **Date** 01/05/10

Sample Confirmation Notes:
The confirmation comparison criteria of 40% difference for 4,4'-DDT was exceeded in sample F0096364; Ensosulfan Sulfate and Heptachlor in sample F0096366. The higher of the two values was reported because no evidence of a matrix interference was observed.

Elevated Detection Limits:
The MDL is elevated for a few compounds in Method Blank KWG0911902-9. The chromatogram indicated the presence of non-target background components, which were apparently introduced as laboratory artifacts. The contamination prevented adequate resolution of the target compounds at the MDL levels. Note the level of background was relatively low compared to the MDL, so the affect on the results was minimal. The results are flagged to indicate the problem.

The detection limit was elevated for all analytes in both samples. The sample extract was diluted prior to instrumental analysis due to relatively high levels of non-target background components. The extract was highly colored, which indicated the need to perform a dilution prior to injection into the instrument. Clean-up of the extract was performed within the scope of the method, but did not eliminate enough of the background components to prevent dilution. A semiquantitative screen was performed prior to final analysis. The results of the screening indicated the need to perform a dilution. The results were flagged to indicate the matrix interference.

The detection limit was further elevated for several analytes in both samples. The chromatogram indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compounds at the normal limit. The results were flagged to indicate the matrix interference.

No other anomalies associated with the analysis of these samples were observed.

Semivolatile Organic Compounds by EPA Method 8270C

Relative Percent Difference Exceptions:
The Relative Percent Difference (RPD) for 3,3'-Dichlorobenzidine in the replicate Laboratory Control Sample (LCS) analyses (KWG0911875-1 and KWG0911875-2) was outside control criteria. All spike recoveries in the LCS/DLCS were within acceptance limits, indicating the analytical batch was in control. The analyte in question was not detected in the associated field sample. The data quality was not significantly affected. No further corrective action was appropriate.

No other anomalies associated with the analysis of these samples were observed.

Approved by_____ **Date** 01/05/10

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Portland, City of	**Service Request:**	K0912234
Project:	NPDES Stormwater MON	**Date Collected:**	12/14/2009
Sample Matrix:	Water	**Date Received:**	12/17/2009

Organochlorine Pesticides

Sample Name:	F0096364	**Units:**	ng/L
Lab Code:	K0912234-001	**Basis:**	NA
Extraction Method:	EPA 3535	**Level:**	Low
Analysis Method:	8081A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	**3.7**	D	2.7	1.2	5	12/20/09	12/29/09	KWG0911902	
beta-BHC	ND	U	2.7	2.2	5	12/20/09	12/29/09	KWG0911902	
gamma-BHC (Lindane)	ND	U	2.7	2.5	5	12/20/09	12/29/09	KWG0911902	
delta-BHC	ND	Ui	2.7	0.97	5	12/20/09	12/29/09	KWG0911902	
Heptachlor	ND	Ui	3.8	3.8	5	12/20/09	12/29/09	KWG0911902	
Aldrin	ND	U	2.7	0.58	5	12/20/09	12/29/09	KWG0911902	
Heptachlor Epoxide	ND	U	2.7	1.2	5	12/20/09	12/29/09	KWG0911902	
gamma-Chlordane†	ND	U	2.7	1.7	5	12/20/09	12/29/09	KWG0911902	
Endosulfan I	ND	U	2.7	1.4	5	12/20/09	12/29/09	KWG0911902	
alpha-Chlordane	ND	U	2.7	1.5	5	12/20/09	12/29/09	KWG0911902	
Dieldrin	ND	Ui	32	32	5	12/20/09	12/29/09	KWG0911902	
4,4'-DDE	ND	U	2.7	1.0	5	12/20/09	12/29/09	KWG0911902	
Endrin	ND	U	2.7	2.6	5	12/20/09	12/29/09	KWG0911902	
Endosulfan II	ND	Ui	3.3	3.3	5	12/20/09	12/29/09	KWG0911902	
4,4'-DDD	ND	Ui	4.2	4.2	5	12/20/09	12/29/09	KWG0911902	
Endrin Aldehyde	ND	Ui	3.1	3.1	5	12/20/09	12/29/09	KWG0911902	
Endosulfan Sulfate	ND	Ui	8.5	8.5	5	12/20/09	12/29/09	KWG0911902	
4,4'-DDT	**84**	PD	2.7	0.90	5	12/20/09	12/29/09	KWG0911902	
Endrin Ketone	ND	U	2.7	1.7	5	12/20/09	12/29/09	KWG0911902	
Methoxychlor	ND	Ui	2.7	1.8	5	12/20/09	12/29/09	KWG0911902	
Toxaphene	ND	Ui	510	510	5	12/20/09	12/29/09	KWG0911902	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	59	20-102	12/29/09	Acceptable
Decachlorobiphenyl	77	35-128	12/29/09	Acceptable

Analyte Comments

gamma-Chlordane	For this analyte (CAS Registry No. 5103-74-2), USEPA has corrected the name to be beta-Chlordane, also known as trans-Chlordane.

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: NPDES Stormwater MON
Sample Matrix: Water

Service Request: K0912234
Date Collected: 12/15/2009
Date Received: 12/17/2009

Organochlorine Pesticides

Sample Name: F0096366
Lab Code: K0912234-002

Units: ng/L
Basis: NA

Extraction Method: EPA 3535
Analysis Method: 8081A

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	Ui	2.5	2.1	5	12/20/09	12/29/09	KWG0911902	
beta-BHC	ND	U	2.5	2.1	5	12/20/09	12/29/09	KWG0911902	
gamma-BHC (Lindane)	ND	U	2.5	2.4	5	12/20/09	12/29/09	KWG0911902	
delta-BHC	ND	U	2.5	0.70	5	12/20/09	12/29/09	KWG0911902	
Heptachlor	**4.2**	PD	2.5	0.90	5	12/20/09	12/29/09	KWG0911902	
Aldrin	ND	Ui	2.5	2.5	5	12/20/09	12/29/09	KWG0911902	
Heptachlor Epoxide	ND	Ui	2.5	2.5	5	12/20/09	12/29/09	KWG0911902	
gamma-Chlordane†	ND	U	2.5	1.6	5	12/20/09	12/29/09	KWG0911902	
Endosulfan I	ND	U	2.5	1.3	5	12/20/09	12/29/09	KWG0911902	
alpha-Chlordane	ND	U	2.5	1.4	5	12/20/09	12/29/09	KWG0911902	
Dieldrin	ND	Ui	30	30	5	12/20/09	12/29/09	KWG0911902	
4,4'-DDE	ND	Ui	5.4	5.4	5	12/20/09	12/29/09	KWG0911902	
Endrin	ND	Ui	4.5	4.5	5	12/20/09	12/29/09	KWG0911902	
Endosulfan II	ND	Ui	2.5	2.5	5	12/20/09	12/29/09	KWG0911902	
4,4'-DDD	ND	Ui	3.1	3.1	5	12/20/09	12/29/09	KWG0911902	
Endrin Aldehyde	ND	Ui	5.4	5.4	5	12/20/09	12/29/09	KWG0911902	
Endosulfan Sulfate	**23**	PD	2.5	1.4	5	12/20/09	12/29/09	KWG0911902	
4,4'-DDT	ND	Ui	34	34	5	12/20/09	12/29/09	KWG0911902	
Endrin Ketone	ND	U	2.5	1.6	5	12/20/09	12/29/09	KWG0911902	
Methoxychlor	ND	Ui	2.5	2.5	5	12/20/09	12/29/09	KWG0911902	
Toxaphene	ND	Ui	270	270	5	12/20/09	12/29/09	KWG0911902	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	80	20-102	12/29/09	Acceptable
Decachlorobiphenyl	68	35-128	12/29/09	Acceptable

† **Analyte Comments**

gamma-Chlordane	For this analyte (CAS Registry No. 5103-74-2), USEPA has corrected the name to be beta-Chlordane, also known as trans-Chlordane.

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: NPDES Stormwater MON
Sample Matrix: Water

Service Request: K0912234
Date Collected: NA
Date Received: NA

Organochlorine Pesticides

Sample Name: Method Blank
Lab Code: KWG0911902-9

Extraction Method: EPA 3535
Analysis Method: 8081A

Units: ng/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	0.50	0.21	1	12/20/09	12/28/09	KWG0911902	
beta-BHC	ND	U	0.50	0.41	1	12/20/09	12/28/09	KWG0911902	
gamma-BHC (Lindane)	ND	U	0.50	0.47	1	12/20/09	12/28/09	KWG0911902	
delta-BHC	ND	U	0.50	0.14	1	12/20/09	12/28/09	KWG0911902	
Heptachlor	ND	U	0.50	0.18	1	12/20/09	12/28/09	KWG0911902	
Aldrin	ND	U	0.50	0.11	1	12/20/09	12/28/09	KWG0911902	
Heptachlor Epoxide	ND	U	0.50	0.21	1	12/20/09	12/28/09	KWG0911902	
gamma-Chlordane†	ND	U	0.50	0.31	1	12/20/09	12/28/09	KWG0911902	
Endosulfan I	ND	U	0.50	0.25	1	12/20/09	12/28/09	KWG0911902	
alpha-Chlordane	ND	U	0.50	0.27	1	12/20/09	12/28/09	KWG0911902	
Dieldrin	ND	U	0.50	0.37	1	12/20/09	12/28/09	KWG0911902	
4,4'-DDE	ND	Ui	0.50	0.50	1	12/20/09	12/28/09	KWG0911902	
Endrin	ND	U	0.50	0.49	1	12/20/09	12/28/09	KWG0911902	
Endosulfan II	ND	U	0.50	0.35	1	12/20/09	12/28/09	KWG0911902	
4,4'-DDD	ND	Ui	0.50	0.50	1	12/20/09	12/28/09	KWG0911902	
Endrin Aldehyde	ND	U	0.50	0.21	1	12/20/09	12/28/09	KWG0911902	
Endosulfan Sulfate	ND	U	0.50	0.28	1	12/20/09	12/28/09	KWG0911902	
4,4'-DDT	ND	U	0.50	0.17	1	12/20/09	12/28/09	KWG0911902	
Endrin Ketone	ND	U	0.50	0.32	1	12/20/09	12/28/09	KWG0911902	
Methoxychlor	ND	U	0.50	0.28	1	12/20/09	12/28/09	KWG0911902	
Toxaphene	ND	Ui	51	51	1	12/20/09	12/28/09	KWG0911902	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	64	20-102	12/28/09	Acceptable
Decachlorobiphenyl	78	35-128	12/28/09	Acceptable

† **Analyte Comments**

gamma-Chlordane	For this analyte (CAS Registry No. 5103-74-2), USEPA has corrected the name to be beta-Chlordane, also known as trans-Chlordane.

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Portland, City of
Project: NPDES Stormwater MON
Sample Matrix: Water

Service Request: K0912234

Surrogate Recovery Summary
Organochlorine Pesticides

Extraction Method: EPA 3535
Analysis Method: 8081A

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2
F0096364	K0912234-001	59 D	77 D
F0096366	K0912234-002	80 D	68 D
Method Blank	KWG0911902-9	64	78
Batch QC	K0912227-001	70	83
Batch QCMS	KWG0911902-10	60	78
Lab Control Sample	KWG0911902-1	63	80
Duplicate Lab Control Sample	KWG0911902-2	55	78

Surrogate Recovery Control Limits (%)

Sur1 = Tetrachloro-m-xylene	20-102
Sur2 = Decachlorobiphenyl	35-128

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Portland, City of	**Service Request:**	K0912234
Project:	NPDES Stormwater MON	**Date Extracted:**	12/20/2009
Sample Matrix:	Water	**Date Analyzed:**	12/29/2009

Matrix Spike Summary
Organochlorine Pesticides

Sample Name:	Batch QC	**Units:**	ng/L
Lab Code:	K0912227-001	**Basis:**	NA
Extraction Method:	EPA 3535	**Level:**	Low
Analysis Method:	8081A	**Extraction Lot:**	KWG0911902

Batch QCMS
KWG0911902-10

Analyte Name	Sample Result	Matrix Spike Result	Matrix Spike Expected	Matrix Spike %Rec	%Rec Limits
alpha-BHC	ND	9.84	10.0	98	31-123
beta-BHC	ND	13.1	10.0	131 *	31-118
gamma-BHC (Lindane)	ND	9.74	10.0	97	31-123
delta-BHC	ND	10.2	10.0	102	40-129
Heptachlor	ND	9.56	10.0	96	23-124
Aldrin	ND	8.35	10.0	84	18-111
Heptachlor Epoxide	ND	9.01	10.0	90	28-122
gamma-Chlordane	ND	9.51	10.0	95	35-119
Endosulfan I	ND	9.40	10.0	94	17-118
alpha-Chlordane	ND	9.38	10.0	94	34-120
Dieldrin	0.40	9.78	10.0	94	32-121
4,4'-DDE	ND	9.83	10.0	98 #	24-129
Endrin	0.62	10.9	10.0	103	34-133
Endosulfan II	ND	9.24	10.0	92	19-122
4,4'-DDD	ND	10.3	10.0	103 #	29-125
Endrin Aldehyde	0.79	9.39	10.0	86	10-108
Endosulfan Sulfate	ND	9.28	10.0	93	30-120
4,4'-DDT	ND	10.9	10.0	109	28-139
Endrin Ketone	ND	9.16	10.0	92	34-113
Methoxychlor	ND	9.93	10.0	99	30-137

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Portland, City of
Project: NPDES Stormwater MON
Sample Matrix: Water

Service Request: K0912234
Date Extracted: 12/20/2009
Date Analyzed: 12/28/2009 - 12/29/2009

Lab Control Spike/Duplicate Lab Control Spike Summary
Organochlorine Pesticides

Extraction Method: EPA 3535
Analysis Method: 8081A

Units: ng/L
Basis: NA
Level: Low
Extraction Lot: KWG0911902

	Lab Control Sample KWG0911902-1 Lab Control Spike			Duplicate Lab Control Sample KWG0911902-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
alpha-BHC	10.4	10.0	104	9.91	10.0	99	36-122	5	30
beta-BHC	9.40	10.0	94	9.35	10.0	94	42-125	1	30
gamma-BHC (Lindane)	10.2	10.0	102	10.2	10.0	102	44-117	0	30
delta-BHC	10.2	10.0	102	10.2	10.0	102	48-123	0	30
Heptachlor	10.2	10.0	102	9.68	10.0	97	40-115	5	30
Aldrin	9.30	10.0	93	8.51	10.0	85	10-102	9	30
Heptachlor Epoxide	8.98	10.0	90	8.73	10.0	87	49-109	3	30
gamma-Chlordane	9.84	10.0	98	9.46	10.0	95	47-113	4	30
Endosulfan I	8.99	10.0	90	9.20	10.0	92	35-115	2	30
alpha-Chlordane	9.83	10.0	98	9.60	10.0	96	45-115	2	30
Dieldrin	10.1	10.0	101	9.66	10.0	97	50-115	4	30
4,4'-DDE	9.54	10.0	95	9.61	10.0	96	41-116	1	30
Endrin	11.5	10.0	115	11.2	10.0	112	48-126	2	30
Endosulfan II	9.99	10.0	100	9.91	10.0	99	28-128	1	30
4,4'-DDD	10.2	10.0	102	9.87	10.0	99	33-132	3	30
Endrin Aldehyde	9.28	10.0	93	9.30	10.0	93	27-104	0	30
Endosulfan Sulfate	9.64	10.0	96	9.34	10.0	93	38-118	3	30
4,4'-DDT	10.7	10.0	107	10.5	10.0	105	42-143	2	30
Endrin Ketone	9.52	10.0	95	9.31	10.0	93	30-124	2	30
Methoxychlor	10.5	10.0	105	10.4	10.0	104	43-143	1	30
Toxaphene	161	200	81	241	200	121	36-137	40 *	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Portland, City of
Project: NPDES Stormwater MON
Sample Matrix: Water

Service Request: K0912234
Date Collected: 12/14/2009
Date Received: 12/17/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: F0096364
Lab Code: K0912234-001

Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	0.20	0.035	1	12/18/09	12/28/09	KWG0911875	
Phenol	**0.52**		0.50	0.063	1	12/18/09	12/28/09	KWG0911875	
2-Chlorophenol	ND	U	0.50	0.054	1	12/18/09	12/28/09	KWG0911875	
1,3-Dichlorobenzene	ND	U	0.20	0.021	1	12/18/09	12/28/09	KWG0911875	
1,4-Dichlorobenzene	ND	U	0.20	0.029	1	12/18/09	12/28/09	KWG0911875	
1,2-Dichlorobenzene	ND	U	0.20	0.022	1	12/18/09	12/28/09	KWG0911875	
Benzyl Alcohol	**1.2**		0.50	0.073	1	12/18/09	12/28/09	KWG0911875	
Bis(2-chloroisopropyl) Ether	ND	U	0.20	0.026	1	12/18/09	12/28/09	KWG0911875	
2-Methylphenol	**0.29**	J	0.50	0.11	1	12/18/09	12/28/09	KWG0911875	
Hexachloroethane	ND	U	0.20	0.024	1	12/18/09	12/28/09	KWG0911875	
N-Nitrosodi-n-propylamine	ND	U	0.20	0.037	1	12/18/09	12/28/09	KWG0911875	
4-Methylphenol†	**0.26**	J	0.50	0.12	1	12/18/09	12/28/09	KWG0911875	
Nitrobenzene	ND	U	0.20	0.028	1	12/18/09	12/28/09	KWG0911875	
Isophorone	ND	U	0.20	0.016	1	12/18/09	12/28/09	KWG0911875	
2-Nitrophenol	**0.073**	J	0.50	0.063	1	12/18/09	12/28/09	KWG0911875	
2,4-Dimethylphenol	ND	U	4.0	2.2	1	12/18/09	12/28/09	KWG0911875	
Bis(2-chloroethoxy)methane	ND	U	0.20	0.024	1	12/18/09	12/28/09	KWG0911875	
2,4-Dichlorophenol	ND	U	0.50	0.047	1	12/18/09	12/28/09	KWG0911875	
Benzoic Acid	**2.1**	J	5.0	1.1	1	12/18/09	12/28/09	KWG0911875	
1,2,4-Trichlorobenzene	ND	U	0.20	0.016	1	12/18/09	12/28/09	KWG0911875	
Naphthalene	**0.041**	J	0.20	0.022	1	12/18/09	12/28/09	KWG0911875	
4-Chloroaniline	ND	U	0.20	0.025	1	12/18/09	12/28/09	KWG0911875	
Hexachlorobutadiene	ND	U	0.20	0.027	1	12/18/09	12/28/09	KWG0911875	
4-Chloro-3-methylphenol	ND	U	0.50	0.037	1	12/18/09	12/28/09	KWG0911875	
2-Methylnaphthalene	ND	U	0.20	0.026	1	12/18/09	12/28/09	KWG0911875	
Hexachlorocyclopentadiene	ND	U	0.99	0.19	1	12/18/09	12/28/09	KWG0911875	
2,4,6-Trichlorophenol	ND	U	0.50	0.058	1	12/18/09	12/28/09	KWG0911875	
2,4,5-Trichlorophenol	ND	U	0.50	0.031	1	12/18/09	12/28/09	KWG0911875	
2-Chloronaphthalene	ND	U	0.20	0.041	1	12/18/09	12/28/09	KWG0911875	
2-Nitroaniline	ND	U	0.20	0.024	1	12/18/09	12/28/09	KWG0911875	
Acenaphthylene	**0.043**	J	0.20	0.015	1	12/18/09	12/28/09	KWG0911875	
Dimethyl Phthalate	**0.85**		0.20	0.021	1	12/18/09	12/28/09	KWG0911875	
2,6-Dinitrotoluene	ND	U	0.20	0.033	1	12/18/09	12/28/09	KWG0911875	

Comments:

Client: Portland, City of
Project: NPDES Stormwater MON
Sample Matrix: Water

Service Request: K0912234
Date Collected: 12/14/2009
Date Received: 12/17/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: F0096364
Lab Code: K0912234-001

Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	ND	U	0.20	0.026	1	12/18/09	12/28/09	KWG0911875	
3-Nitroaniline	ND	U	0.99	0.029	1	12/18/09	12/28/09	KWG0911875	
2,4-Dinitrophenol	ND	U	4.0	0.17	1	12/18/09	12/28/09	KWG0911875	
Dibenzofuran	ND	U	0.20	0.018	1	12/18/09	12/28/09	KWG0911875	
4-Nitrophenol	**0.77**	J	2.0	0.28	1	12/18/09	12/28/09	KWG0911875	
2,4-Dinitrotoluene	ND	U	0.20	0.018	1	12/18/09	12/28/09	KWG0911875	
Fluorene	ND	U	0.20	0.027	1	12/18/09	12/28/09	KWG0911875	
4-Chlorophenyl Phenyl Ether	ND	U	0.20	0.027	1	12/18/09	12/28/09	KWG0911875	
Diethyl Phthalate	**0.19**	J	0.20	0.012	1	12/18/09	12/28/09	KWG0911875	
4-Nitroaniline	ND	U	0.99	0.019	1	12/18/09	12/28/09	KWG0911875	
2-Methyl-4,6-dinitrophenol	ND	U	2.0	0.025	1	12/18/09	12/28/09	KWG0911875	
N-Nitrosodiphenylamine	ND	U	0.20	0.048	1	12/18/09	12/28/09	KWG0911875	
4-Bromophenyl Phenyl Ether	ND	U	0.20	0.026	1	12/18/09	12/28/09	KWG0911875	
Hexachlorobenzene	ND	U	0.20	0.022	1	12/18/09	12/28/09	KWG0911875	
Pentachlorophenol	ND	U	0.99	0.34	1	12/18/09	12/28/09	KWG0911875	
Phenanthrene	**0.083**	J	0.20	0.022	1	12/18/09	12/28/09	KWG0911875	
Anthracene	ND	U	0.20	0.024	1	12/18/09	12/28/09	KWG0911875	
Di-n-butyl Phthalate	**0.24**		0.20	0.023	1	12/18/09	12/28/09	KWG0911875	
Fluoranthene	**0.14**	J	0.20	0.020	1	12/18/09	12/28/09	KWG0911875	
Pyrene	**0.14**	J	0.20	0.019	1	12/18/09	12/28/09	KWG0911875	
Butyl Benzyl Phthalate	**0.96**		0.20	0.018	1	12/18/09	12/28/09	KWG0911875	
3,3'-Dichlorobenzidine	ND	U	2.0	0.43	1	12/18/09	12/28/09	KWG0911875	
Benz(a)anthracene	**0.055**	J	0.20	0.018	1	12/18/09	12/28/09	KWG0911875	
Chrysene	**0.094**	J	0.20	0.028	1	12/18/09	12/28/09	KWG0911875	
Bis(2-ethylhexyl) Phthalate	**1.6**		0.99	0.13	1	12/18/09	12/28/09	KWG0911875	
Di-n-octyl Phthalate	ND	U	0.20	0.018	1	12/18/09	12/28/09	KWG0911875	
Benzo(b)fluoranthene	**0.083**	J	0.20	0.017	1	12/18/09	12/28/09	KWG0911875	
Benzo(k)fluoranthene	**0.027**	J	0.20	0.024	1	12/18/09	12/28/09	KWG0911875	
Benzo(a)pyrene	**0.078**	J	0.20	0.031	1	12/18/09	12/28/09	KWG0911875	
Indeno(1,2,3-cd)pyrene	**0.064**	J	0.20	0.021	1	12/18/09	12/28/09	KWG0911875	
Dibenz(a,h)anthracene	ND	U	0.20	0.017	1	12/18/09	12/28/09	KWG0911875	
Benzo(g,h,i)perylene	**0.074**	J	0.20	0.019	1	12/18/09	12/28/09	KWG0911875	

Comments:

Client: Portland, City of
Project: NPDES Stormwater MON
Sample Matrix: Water

Service Request: K0912234
Date Collected: 12/14/2009
Date Received: 12/17/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: F0096364
Lab Code: K0912234-001

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	63	12-109	12/28/09	Acceptable
Phenol-d6	66	23-106	12/28/09	Acceptable
Nitrobenzene-d5	65	26-110	12/28/09	Acceptable
2-Fluorobiphenyl	51	31-94	12/28/09	Acceptable
2,4,6-Tribromophenol	80	23-127	12/28/09	Acceptable
Terphenyl-d14	74	40-127	12/28/09	Acceptable

† Analyte Comments

4-Methylphenol	This analyte cannot be separated from 3-Methylphenol.

Comments:

Client: Portland, City of
Project: NPDES Stormwater MON
Sample Matrix: Water

Service Request: K0912234
Date Collected: NA
Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KWG0911875-3

Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	0.19	0.035	1	12/18/09	12/28/09	KWG0911875	
Phenol	ND	U	0.48	0.063	1	12/18/09	12/28/09	KWG0911875	
2-Chlorophenol	ND	U	0.48	0.054	1	12/18/09	12/28/09	KWG0911875	
1,3-Dichlorobenzene	ND	U	0.19	0.021	1	12/18/09	12/28/09	KWG0911875	
1,4-Dichlorobenzene	ND	U	0.19	0.029	1	12/18/09	12/28/09	KWG0911875	
1,2-Dichlorobenzene	ND	U	0.19	0.022	1	12/18/09	12/28/09	KWG0911875	
Benzyl Alcohol	ND	U	0.48	0.073	1	12/18/09	12/28/09	KWG0911875	
Bis(2-chloroisopropyl) Ether	ND	U	0.19	0.026	1	12/18/09	12/28/09	KWG0911875	
2-Methylphenol	ND	U	0.48	0.11	1	12/18/09	12/28/09	KWG0911875	
Hexachloroethane	ND	U	0.19	0.024	1	12/18/09	12/28/09	KWG0911875	
N-Nitrosodi-n-propylamine	ND	U	0.19	0.037	1	12/18/09	12/28/09	KWG0911875	
4-Methylphenol†	ND	U	0.48	0.12	1	12/18/09	12/28/09	KWG0911875	
Nitrobenzene	ND	U	0.19	0.028	1	12/18/09	12/28/09	KWG0911875	
Isophorone	ND	U	0.19	0.016	1	12/18/09	12/28/09	KWG0911875	
2-Nitrophenol	ND	U	0.48	0.063	1	12/18/09	12/28/09	KWG0911875	
2,4-Dimethylphenol	ND	U	3.8	2.2	1	12/18/09	12/28/09	KWG0911875	
Bis(2-chloroethoxy)methane	ND	U	0.19	0.024	1	12/18/09	12/28/09	KWG0911875	
2,4-Dichlorophenol	ND	U	0.48	0.047	1	12/18/09	12/28/09	KWG0911875	
Benzoic Acid	ND	U	4.8	1.1	1	12/18/09	12/28/09	KWG0911875	
1,2,4-Trichlorobenzene	ND	U	0.19	0.016	1	12/18/09	12/28/09	KWG0911875	
Naphthalene	ND	U	0.19	0.022	1	12/18/09	12/28/09	KWG0911875	
4-Chloroaniline	ND	U	0.19	0.025	1	12/18/09	12/28/09	KWG0911875	
Hexachlorobutadiene	ND	U	0.19	0.027	1	12/18/09	12/28/09	KWG0911875	
4-Chloro-3-methylphenol	ND	U	0.48	0.037	1	12/18/09	12/28/09	KWG0911875	
2-Methylnaphthalene	ND	U	0.19	0.026	1	12/18/09	12/28/09	KWG0911875	
Hexachlorocyclopentadiene	ND	U	0.95	0.19	1	12/18/09	12/28/09	KWG0911875	
2,4,6-Trichlorophenol	ND	U	0.48	0.058	1	12/18/09	12/28/09	KWG0911875	
2,4,5-Trichlorophenol	ND	U	0.48	0.031	1	12/18/09	12/28/09	KWG0911875	
2-Chloronaphthalene	ND	U	0.19	0.041	1	12/18/09	12/28/09	KWG0911875	
2-Nitroaniline	ND	U	0.19	0.024	1	12/18/09	12/28/09	KWG0911875	
Acenaphthylene	ND	U	0.19	0.015	1	12/18/09	12/28/09	KWG0911875	
Dimethyl Phthalate	ND	U	0.19	0.021	1	12/18/09	12/28/09	KWG0911875	
2,6-Dinitrotoluene	ND	U	0.19	0.033	1	12/18/09	12/28/09	KWG0911875	

Comments:

Client: Portland, City of
Project: NPDES Stormwater MON
Sample Matrix: Water

Service Request: K0912234
Date Collected: NA
Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KWG0911875-3

Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	ND	U	0.19	0.026	1	12/18/09	12/28/09	KWG0911875	
3-Nitroaniline	ND	U	0.95	0.029	1	12/18/09	12/28/09	KWG0911875	
2,4-Dinitrophenol	ND	U	3.8	0.17	1	12/18/09	12/28/09	KWG0911875	
Dibenzofuran	ND	U	0.19	0.018	1	12/18/09	12/28/09	KWG0911875	
4-Nitrophenol	ND	U	1.9	0.28	1	12/18/09	12/28/09	KWG0911875	
2,4-Dinitrotoluene	ND	U	0.19	0.018	1	12/18/09	12/28/09	KWG0911875	
Fluorene	ND	U	0.19	0.027	1	12/18/09	12/28/09	KWG0911875	
4-Chlorophenyl Phenyl Ether	ND	U	0.19	0.027	1	12/18/09	12/28/09	KWG0911875	
Diethyl Phthalate	**0.019**	J	0.19	0.012	1	12/18/09	12/28/09	KWG0911875	
4-Nitroaniline	ND	U	0.95	0.019	1	12/18/09	12/28/09	KWG0911875	
2-Methyl-4,6-dinitrophenol	ND	U	1.9	0.025	1	12/18/09	12/28/09	KWG0911875	
N-Nitrosodiphenylamine	ND	U	0.19	0.048	1	12/18/09	12/28/09	KWG0911875	
4-Bromophenyl Phenyl Ether	ND	U	0.19	0.026	1	12/18/09	12/28/09	KWG0911875	
Hexachlorobenzene	ND	U	0.19	0.022	1	12/18/09	12/28/09	KWG0911875	
Pentachlorophenol	ND	U	0.95	0.34	1	12/18/09	12/28/09	KWG0911875	
Phenanthrene	ND	U	0.19	0.022	1	12/18/09	12/28/09	KWG0911875	
Anthracene	ND	U	0.19	0.024	1	12/18/09	12/28/09	KWG0911875	
Di-n-butyl Phthalate	**0.043**	J	0.19	0.023	1	12/18/09	12/28/09	KWG0911875	
Fluoranthene	ND	U	0.19	0.020	1	12/18/09	12/28/09	KWG0911875	
Pyrene	ND	U	0.19	0.019	1	12/18/09	12/28/09	KWG0911875	
Butyl Benzyl Phthalate	ND	U	0.19	0.018	1	12/18/09	12/28/09	KWG0911875	
3,3'-Dichlorobenzidine	ND	U	1.9	0.43	1	12/18/09	12/28/09	KWG0911875	
Benz(a)anthracene	ND	U	0.19	0.018	1	12/18/09	12/28/09	KWG0911875	
Chrysene	ND	U	0.19	0.028	1	12/18/09	12/28/09	KWG0911875	
Bis(2-ethylhexyl) Phthalate	ND	U	0.95	0.13	1	12/18/09	12/28/09	KWG0911875	
Di-n-octyl Phthalate	ND	U	0.19	0.018	1	12/18/09	12/28/09	KWG0911875	
Benzo(b)fluoranthene	ND	U	0.19	0.017	1	12/18/09	12/28/09	KWG0911875	
Benzo(k)fluoranthene	ND	U	0.19	0.024	1	12/18/09	12/28/09	KWG0911875	
Benzo(a)pyrene	ND	U	0.19	0.031	1	12/18/09	12/28/09	KWG0911875	
Indeno(1,2,3-cd)pyrene	ND	U	0.19	0.021	1	12/18/09	12/28/09	KWG0911875	
Dibenz(a,h)anthracene	ND	U	0.19	0.017	1	12/18/09	12/28/09	KWG0911875	
Benzo(g,h,i)perylene	ND	U	0.19	0.019	1	12/18/09	12/28/09	KWG0911875	

Comments:

Client:	Portland, City of	**Service Request:**	K0912234
Project:	NPDES Stormwater MON	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG0911875-3	**Basis:**	NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	77	12-109	12/28/09	Acceptable
Phenol-d6	90	23-106	12/28/09	Acceptable
Nitrobenzene-d5	86	26-110	12/28/09	Acceptable
2-Fluorobiphenyl	66	31-94	12/28/09	Acceptable
2,4,6-Tribromophenol	86	23-127	12/28/09	Acceptable
Terphenyl-d14	115	40-127	12/28/09	Acceptable

† Analyte Comments

4-Methylphenol	This analyte cannot be separated from 3-Methylphenol.

Comments:

Client: Portland, City of
Project: NPDES Stormwater MON
Sample Matrix: Water

Service Request: K0912234

Surrogate Recovery Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3	Sur4	Sur5	Sur6
F0096364	K0912234-001	63	66	65	51	80	74
Method Blank	KWG0911875-3	77	90	86	66	86	115
Lab Control Sample	KWG0911875-1	76	79	69	70	86	100
Duplicate Lab Control Sample	KWG0911875-2	74	76	74	65	82	91

Surrogate Recovery Control Limits (%)

Sur1 = 2-Fluorophenol	12-109	Sur5 = 2,4,6-Tribromophenol	23-127
Sur2 = Phenol-d6	23-106	Sur6 = Terphenyl-d14	40-127
Sur3 = Nitrobenzene-d5	26-110		
Sur4 = 2-Fluorobiphenyl	31-94		

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Client:	Portland, City of	**Service Request:**	K0912234
Project:	NPDES Stormwater MON	**Date Extracted:**	12/18/2009
Sample Matrix:	Water	**Date Analyzed:**	12/28/2009

Lab Control Spike/Duplicate Lab Control Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method:	EPA 3520C	**Units:**	ug/L
Analysis Method:	8270C	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG0911875

	Lab Control Sample KWG0911875-1 Lab Control Spike			Duplicate Lab Control Sample KWG0911875-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Bis(2-chloroethyl) Ether	3.77	5.00	75	3.42	5.00	68	37-109	10	30
Phenol	3.89	5.00	78	3.71	5.00	74	35-114	5	30
2-Chlorophenol	3.97	5.00	79	3.67	5.00	73	37-110	8	30
1,3-Dichlorobenzene	2.44	5.00	49	1.80	5.00	36	14-68	30	30
1,4-Dichlorobenzene	2.41	5.00	48	1.85	5.00	37	15-71	27	30
1,2-Dichlorobenzene	2.59	5.00	52	2.10	5.00	42	17-76	21	30
Benzyl Alcohol	3.46	5.00	69	3.55	5.00	71	32-115	2	30
Bis(2-chloroisopropyl) Ether	3.47	5.00	69	3.21	5.00	64	29-110	8	30
2-Methylphenol	3.85	5.00	77	3.61	5.00	72	21-109	7	30
Hexachloroethane	2.18	5.00	44	1.73	5.00	35	10-59	23	30
N-Nitrosodi-n-propylamine	3.43	5.00	69	3.43	5.00	69	32-112	0	30
4-Methylphenol	3.70	5.00	74	3.70	5.00	74	19-114	0	30
Nitrobenzene	3.69	5.00	74	3.70	5.00	74	36-110	0	30
Isophorone	3.86	5.00	77	3.51	5.00	70	38-106	10	30
2-Nitrophenol	4.25	5.00	85	3.68	5.00	74	41-112	14	30
2,4-Dimethylphenol	4.34	5.00	87	3.78	5.00	76	10-106	14	30
Bis(2-chloroethoxy)methane	4.12	5.00	82	3.76	5.00	75	39-109	9	30
2,4-Dichlorophenol	4.27	5.00	85	3.98	5.00	80	37-111	7	30
Benzoic Acid	5.26	15.0	35	5.05	15.0	34	10-83	4	30
1,2,4-Trichlorobenzene	2.77	5.00	55	2.27	5.00	45	18-76	20	30
Naphthalene	3.23	5.00	65	2.89	5.00	58	31-94	11	30
4-Chloroaniline	3.53	5.00	71	3.50	5.00	70	14-108	1	30
Hexachlorobutadiene	2.40	5.00	48	1.85	5.00	37	10-59	26	30
4-Chloro-3-methylphenol	3.70	5.00	74	3.89	5.00	78	33-115	5	30
2-Methylnaphthalene	2.81	5.00	56	2.64	5.00	53	29-92	6	30
Hexachlorocyclopentadiene	1.80	5.00	36	1.35	5.00	27	10-37	28	30
2,4,6-Trichlorophenol	4.26	5.00	85	4.05	5.00	81	36-113	5	30
2,4,5-Trichlorophenol	4.56	5.00	91	4.09	5.00	82	41-112	11	30
2-Chloronaphthalene	3.34	5.00	67	3.03	5.00	61	31-95	10	30
2-Nitroaniline	4.22	5.00	84	4.03	5.00	81	40-118	5	30
Acenaphthylene	4.12	5.00	82	3.90	5.00	78	36-107	5	30
Dimethyl Phthalate	4.56	5.00	91	4.27	5.00	85	46-111	7	30
2,6-Dinitrotoluene	4.47	5.00	89	4.09	5.00	82	44-116	9	30
Acenaphthene	3.92	5.00	78	3.52	5.00	70	36-101	11	30
3-Nitroaniline	4.42	5.00	88	4.22	5.00	84	34-118	5	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Portland, City of
Project: NPDES Stormwater MON
Sample Matrix: Water

Service Request: K0912234
Date Extracted: 12/18/2009
Date Analyzed: 12/28/2009

Lab Control Spike/Duplicate Lab Control Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG0911875

	Lab Control Sample KWG0911875-1 Lab Control Spike			Duplicate Lab Control Sample KWG0911875-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
2,4-Dinitrophenol	3.01	5.00	60	2.68	5.00	54	10-116	12	30
Dibenzofuran	4.09	5.00	82	3.73	5.00	75	37-103	9	30
4-Nitrophenol	4.19	5.00	84	3.61	5.00	72	38-125	15	30
2,4-Dinitrotoluene	4.60	5.00	92	4.46	5.00	89	47-119	3	30
Fluorene	4.51	5.00	90	4.07	5.00	81	39-106	10	30
4-Chlorophenyl Phenyl Ether	4.44	5.00	89	4.07	5.00	81	37-103	9	30
Diethyl Phthalate	4.89	5.00	98	4.42	5.00	88	47-113	10	30
4-Nitroaniline	5.30	5.00	106	4.80	5.00	96	38-119	10	30
2-Methyl-4,6-dinitrophenol	4.32	5.00	86	3.77	5.00	75	10-125	14	30
N-Nitrosodiphenylamine	4.49	5.00	90	4.09	5.00	82	36-111	9	30
4-Bromophenyl Phenyl Ether	4.10	5.00	82	3.70	5.00	74	42-105	10	30
Hexachlorobenzene	4.26	5.00	85	4.07	5.00	81	42-102	5	30
Pentachlorophenol	4.11	5.00	82	3.40	5.00	68	10-119	19	30
Phenanthrene	4.28	5.00	86	3.88	5.00	78	45-104	10	30
Anthracene	4.23	5.00	85	3.94	5.00	79	41-103	7	30
Di-n-butyl Phthalate	4.36	5.00	87	4.03	5.00	81	44-126	8	30
Fluoranthene	4.58	5.00	92	4.23	5.00	85	46-109	8	30
Pyrene	4.83	5.00	97	4.25	5.00	85	46-108	13	30
Butyl Benzyl Phthalate	4.29	5.00	86	3.88	5.00	78	48-115	10	30
3,3'-Dichlorobenzidine	3.61	5.00	72	2.41	5.00	48	13-108	40 *	30
Benz(a)anthracene	4.12	5.00	82	3.84	5.00	77	47-105	7	30
Chrysene	4.36	5.00	87	3.97	5.00	79	49-105	9	30
Bis(2-ethylhexyl) Phthalate	3.80	5.00	76	3.39	5.00	68	45-122	11	30
Di-n-octyl Phthalate	3.74	5.00	75	3.72	5.00	74	48-119	0	30
Benzo(b)fluoranthene	4.03	5.00	81	4.04	5.00	81	48-108	0	30
Benzo(k)fluoranthene	4.15	5.00	83	4.11	5.00	82	49-107	1	30
Benzo(a)pyrene	3.66	5.00	73	3.45	5.00	69	42-109	6	30
Indeno(1,2,3-cd)pyrene	4.81	5.00	96	4.51	5.00	90	47-111	6	30
Dibenz(a,h)anthracene	4.78	5.00	96	4.56	5.00	91	47-110	5	30
Benzo(g,h,i)perylene	4.81	5.00	96	4.68	5.00	94	47-109	3	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Columbia Analytical Services INC.
An Employee - Owned Company

CHAIN OF CUSTODY

SR#: 709123234

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222x07 • FAX (360) 636-1068

PAGE _____ OF _____ COC #_____

PROJECT NAME: NPDES Stormwater ihcN
PROJECT NUMBER:
PROJECT MANAGER:
COMPANY/ADDRESS: City of Portland
CITY/STATE/ZIP:
E-MAIL ADDRESS:
PHONE #: FAX#:
SAMPLER'S SIGNATURE:

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625 ☐ 8270 ☐ 8270LL ☐	Volatile Organics 624 ☐ 8260 ☐	Hydrocarbons (*see below) Gas ☐ 8021 ☐ BTEX ☐ Diesel ☐ Oil ☐ Fuel Fingerprint (FIQ) ☐ NW-HCID Screen ☐	Oil & Grease/TRPH 1664 HEM ☐ 1664 SGT ☐	PCB's Aroclors ☐ Congeners ☐ (Pesticides/Herbicides low level) 608 ☐ 8081A ☐	Chlorophenolics 8141A ☐ 8151A ☐ Tri ☐ Tetra ☐ 8151M PCP ☐	PAHS 8310 ☐ SIM ☐	Metals, Total or Dissolved (See list below)	Cyanide ☐	pH, Cond., Cl, SO4, PO4, F, NO2, NO3, BOD, TSS, TDS (circle) NH3-N, COD, Total-P, TKN, TOC, DOC (circle) NO2+NO3	TOX 9020 ☐ AOX 1650 ☐ 506 ☐	REMARKS
F009163G4	12/14/09	1724		W	2		X					X									
F009163G6	12/15/09	1746		W	1							X									

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REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
___ IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # _____
Bill To: _____

TURNAROUND REQUIREMENTS

_____ 24 hr. _____ 48 hr.
_____ 5 Day
_____ Standard (10-15 working days)
_____ Provide FAX Results

_____
Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature	Signature: 12/17/09 8:30	Signature: 12/17/09	Signature: 12/17/09 1230
Date/Time	Date/Time: PS	Date/Time: PS	Date/Time: CAS
Printed Name	Printed Name	Printed Name	Printed Name: Rafael Tubin
Firm	Firm	Firm	Firm

RCOC #1 06/03

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC PD

Client / Project: City of Portland Service Request *K09* 12234

Received: 12/17/09 Opened: 12/17/09 By: brad

1. Samples were received via? *US Mail* *Fed Ex* *UPS* *DHL* *GH* *GS* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ NA
3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N
4. Is shipper's air-bill filed? If not, record air-bill number: _____ NA Y N

5. **Temperature of cooler(s) upon receipt (°C):**
   Temperature Blank (°C):
   Thermometer ID:
6. If applicable, list Chain of Custody Numbers:
7. Packing material used. *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Sleeves* *Other* N/A
8. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
9. **Did all bottles arrive in good condition (unbroken)?** *Indicate in the table below.* NA Y N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
11. Did all sample labels and tags agree with custody papers? *Indicate in the table below* NA Y N
12. **Were appropriate bottles/containers and volumes received for the tests indicated?** NA Y N
13. Were the pH-preserved bottles tested* received at the appropriate pH? *Indicate in the table below* NA Y N
14. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
15. **Are CWA Microbiology samples received with >1/2 the 24hr. hold time remaining from collection?** NA Y N
16. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

*Does not include all pH preserved sample aliquots received. See sample receiving SOP (SMO-GEN).

Additional Notes, Discrepancies, & Resolutions: X Client did not sign off on COC

February 2010 Event

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GSI Water Solutions, Inc.
55 SW Yamhill Street, Suite 400 Portland, OR 97204
P: 503.239.8799 F: 503.239.8940
info@gsiwatersolutions.com www.gsiwatersolutions.com

Laboratory Data QA/QC Review
MS4 Stormwater Data Evaluation
City Outfall Basin 19

To: File

From: Andrew Davidson, GSI Water Solutions, Inc.

Date: October 26, 2011

This memorandum presents a quality assurance/quality control (QA/QC) review of the laboratory data generated from a source control investigation sampling event conducted by the City of Portland (City) at Outfall Basin 19 on February 23, 2010. Two stormwater samples (FO105259 and FO105260) were collected and submitted for analyses.

The laboratory analyses for these source control program samples were completed by the City's Bureau of Environmental Services (BES) Water Pollution Control Laboratory (WPCL) and subcontracted laboratories. The following laboratories conducted the analyses listed:

- BES WPCL
    - E. Coli – COLILERT QT
    - Total Oil & Grease – EPA 1664
    - Ammonia Nitrogen – EPA 350.1
    - Nitrate –Nitrogen – EPA 300.0
    - Orthophosphate Phosphorus – EPA 365.1
    - Total Dissolved Solids (TDS) – SM 2540C
    - Total Phosphorus – EPA 365.4
    - Total Solids (TS) – SM 2540 B
    - Total Suspended Solids (TSS) – SM 2540 D
    - Total Hardness – SM 2340 B CALC
    - Metals (Dissolved) – EPA 200.8
    - Metals (Total) – EPA 200.8

- Columbia Analytical Services (CAS)
    - Organochlorine Pesticides – EPA 8081A
    - Semi-Volatile Organic Compounds (SVOCs) – EPA 8270C
- Pace Analytical Services (Pace)
    - Polychlorinated Biphenyls (PCB) Congeners – EPA 1668A
- Test America (TA)
    - Polynuclear Aromatic Hydrocarbons (PAHs) & Phthalates – EPA 8270M-SIM

The WPCL laboratory report and the subcontracted laboratory reports for all analyses associated with this sampling event are attached.

For the purpose of this pesticide source control investigation, the following QA/QC review was limited to review of the analytical data generated from the analysis of organochlorine pesticides for field sample FO105260. The QA/QC review of the analytical data is based on the available documentation provided by WPCL and the subcontracted laboratories, and consisted of reviewing the following elements for each laboratory report, if applicable and/or available:

- Chain-of-custody – for completeness and continuous custody
- Analysis conducted within holding times
- Chemicals of interest detected in method blanks
- Internal standard recoveries within accuracy control limits
- Surrogate recoveries within laboratory control limits
- Matrix spike and matrix spike duplicate (MS/MSD) sample results within laboratory control limits
- Laboratory control and duplicate laboratory control (LC/DLC) sample recoveries within laboratory control limits
- Relative percent differences (RPDs) for laboratory duplicate samples within laboratory control limits.

The results of the QA/QC review of the laboratory reports are presented below.

Chain-of-Custody

The chain-of-custody forms showed continuous custody of the samples. The chain-of-custody procedures appear to have been adequate indicating that sample integrity was maintained throughout the sample collection and delivery process.

Analysis Holding Times

Samples were extracted and analyzed within recommended holding times for the pesticide analysis.

Method Blanks

A method blanks was processed during the laboratory analysis of organochlorine pesticides. No analytes were detected in the method blank.

Surrogate Recoveries

Surrogate recoveries were analyzed during the analysis of organochlorine pesticides. All surrogate recoveries were within laboratory acceptance limits.

Laboratory Control/Duplicate Laboratory Control Samples

LC and DLC samples were processed during the laboratory analysis of pesticides. LC/DLC sample recoveries and RPDs were all within laboratory acceptance limits.

Other

CAS reports that results from the primary and verification columns varied by more than 40 percent for some analytes. The higher of the two values was reported when no evidence of matrix interference was observed, and the value is flagged as an estimate ("J" flag). The primary evaluation criteria were exceeded for Methoxychlor in the Initial Calibration Verification (ICV) on the confirmation column. ICV results were reported from the acceptable column and the data quality was not affected. Additionally, CAS reports that the detection limit was elevated for several analytes due to the presence of non-target background components. The results are flagged in the subcontracted report to indicate the matrix interference.

Water Pollution Control Laboratory
6543 N. Burlington Ave.
Portland, Oregon 97203-4552
(503) 823-5696

City of Portland Chain-of-Custody

Bureau of Environmental Services

Date: 2/24/10

Page: 1 of 1

Collected By: MJS

Project Name: NPDES STORMWTR MON

File Number: 4010.001 Matrix: STORMWTR

☑ Sample Time recorded in current local time

Sample time: 2/23/10 1242 – 2/24/10 1036

Requested Analyses

WPCL Sample I.D.	Location	Point Code	Sample Date	Sample Time	Sample Type	General: TS	TDS	TSS	Hardness			Metals: Total Metals (Ag, As, Cd, Cr, Cu, Pb, Zn)	Dissolved Metals (Ag, As, Cd, Cr, Cu, Pb, Zn)	Nutrients: Ammonia-nitrogen	Nitrate-nitrogen	Orthophosphate phosphorus	Total Phosphorus		Outside: SVOCs, low-level (CAS)	PAHs + Phthalates (TA)	PCB 209 Congeners (Pace)	Pesticides (CAS low-lvl)						
FO105260	4900 NW KITTRIDGE AVE (OF19)	OF19	2/23/10	1242	C	●	●	●	●			●	●	●	●	●	●		●	●	●	●					

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.	Relinquished By: 4.
Signature: Matt Sullivan Time: 1504	Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Matt Sullivan Date: 2/24/10	Printed Name: Date:	Printed Name: Date:	Printed Name: Date:
Received By: 1.	**Received By:** 2.	**Received By:** 3.	**Received By:** 4.
Signature: Time: 1504	Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Mackenzie Tirk Date: 2/24/10	Printed Name: Date:	Printed Name: Date:	Printed Name: Date:

City of Portland
Water Pollution Control Laboratory
6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656

LABORATORY ANALYSIS REPORT

Sample ID: **FO105236**
Sample Collected: 2/10/2010 15:20
Sample Received: 02/10/10
Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: NPDES STORMWTR WQ & FLOW MON
Address/Location: 4900 NW KITTRIDGE AVE (OF19)
MANHOLE GRAB
Sample Point Code: OF19
Sample Type: GRAB
Sample Matrix: STORMWTR
Comments:

System ID: AO01548
EID File # : 4010.001
LocCode: NPDESSTM
Collected By: JJM/PTB

Test Parameter	Result	Units	MRL	Method	Analysis Date
FIELD					
CONDUCTIVITY (FIELD)	114	µmhos/cm	1	SM 2510 B	02/10/10
pH (FIELD)	6.1	pH Units	0.1	SM 4500-H B	02/10/10
TEMPERATURE	8.8	Deg. C	0.1	SM 2550 B	02/10/10
MICROBIOLOGY					
E. COLI	3100	MPN/100 ml	10	COLILERT QT	02/09/10
GENERAL					
OIL & GREASE, TOTAL	<5	mg/L	5	EPA 1664	02/25/10

End of Report for Sample ID: FO105236

Report Date: 04/12/10 **Validated By: Signature on File**

City of Portland
Water Pollution Control Laboratory
6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656

LABORATORY ANALYSIS REPORT

Sample ID: **FO105259** **Sample Collected:** 2/23/2010 20:02 **Sample Received:** 02/24/10 **Sample Status:** **COMPLETE AND VALIDATED**

Proj./Company Name: NPDES STORMWTR WQ & FLOW MON
Address/Location: 4900 NW KITTRIDGE AVE (OF19)
MANHOLE GRAB
Sample Point Code: OF19
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 1 of 1
System ID: AO01928
EID File # : 4010.001
LocCode: NPDESSTM
Collected By: JJM/PTB

Comments:
LAB: Because the result for Total Oil & Grease was <5 mg/L, Non-Polar Oil & Grease is also < 5mg/L.

Test Parameter	Result	Units	MRL	Method	Analysis Date
FIELD					
CONDUCTIVITY (FIELD)	112	µmhos/cm	1	SM 2510 B	02/23/10
pH (FIELD)	6.9	pH Units	0.1	SM 4500-H B	02/23/10
TEMPERATURE	8.7	Deg. C	0.1	SM 2550 B	02/23/10
MICROBIOLOGY					
E. COLI	430	MPN/100 ml	10	COLILERT QT	02/24/10
GENERAL					
OIL & GREASE, TOTAL	<5	mg/L	5	EPA 1664	03/11/10

End of Report for Sample ID: FO105259

Report Date: 04/12/10 **Validated By: Signature on File**

City of Portland
Water Pollution Control Laboratory
6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656

LABORATORY ANALYSIS REPORT

Sample ID: **FO105260** **Sample Collected:** 2/23/2010 12:42 **Sample Received:** 02/24/10 **Sample Status:** **COMPLETE AND VALIDATED**

Proj./Company Name: NPDES STORMWTR WQ & FLOW MON
Address/Location: 4900 NW KITTRIDGE AVE (OF19) MANHOLE COMPOSITE
Sample Point Code: OF19
Sample Type: COMPOSITE
Sample Matrix: STORMWTR

System ID: AO01996
EID File # : 4010.001
LocCode: NPDESSTM
Collected By: MJS

Comments:
QA/QC: For pesticide results flagged as estimates, results from the primary and verification columns varied by more than 40%.

Test Parameter	Result	Units	MRL	Method	Analysis Date
GENERAL					
AMMONIA-NITROGEN	0.19	mg/L	0.02	EPA 350.1	03/09/10
NITRATE-NITROGEN	1.2	mg/L	0.10	EPA 300.0	02/25/10
o-PHOSPHATE-PHOSPHORUS, DISS	0.035	mg/L	0.02	EPA 365.1	02/25/10
TOTAL DISSOLVED SOLIDS @180C	89	mg/L	5	SM 2540 C	02/25/10
TOTAL PHOSPHORUS	0.13	mg/L	0.03	EPA 365.4	03/04/10
TOTAL SOLIDS	110	mg/L	2	SM 2540 B	02/25/10
TOTAL SUSPENDED SOLIDS	19	mg/L	2	SM 2540 D	02/25/10
METALS					
HARDNESS, TOTAL	42.6	mg CaCO3/L	0.5	SM 2340 B CALC	02/26/10
METALS BY ICP-MS (DISSOLVED) - 7					
ARSENIC, DISSOLVED	0.74	µg/L	0.045	EPA 200.8	03/05/10
CADMIUM, DISSOLVED	0.10	µg/L	0.1	EPA 200.8	03/05/10
CHROMIUM, DISSOLVED	<0.40	µg/L	0.4	EPA 200.8	03/05/10
COPPER, DISSOLVED	4.58	µg/L	0.2	EPA 200.8	03/05/10
LEAD, DISSOLVED	0.59	µg/L	0.1	EPA 200.8	03/05/10
SILVER, DISSOLVED	<0.10	µg/L	0.1	EPA 200.8	03/05/10
ZINC, DISSOLVED	67.2	µg/L	0.5	EPA 200.8	03/05/10
METALS BY ICP-MS (TOTAL) - 7					
ARSENIC	1.29	µg/L	0.1	EPA 200.8	03/03/10
CADMIUM	0.21	µg/L	0.1	EPA 200.8	03/03/10
CHROMIUM	2.34	µg/L	0.4	EPA 200.8	03/03/10
COPPER	12.6	µg/L	0.2	EPA 200.8	03/03/10
LEAD	7.58	µg/L	0.1	EPA 200.8	03/03/10
SILVER	<0.10	µg/L	0.1	EPA 200.8	03/03/10
ZINC	101	µg/L	0.5	EPA 200.8	03/03/10
OUTSIDE ANALYSIS					
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	9.9	ng/L	1.00	EPA 8081	03/02/10
4,4'-DDE	<3.0	ng/L	3.0	EPA 8081	03/02/10
4,4'-DDT	EST 70	ng/L	5.0	EPA 8081	03/02/10
Aldrin	<1.00	ng/L	1.00	EPA 8081	03/02/10
Alpha-BHC	EST 1.3	ng/L	1.00	EPA 8081	03/02/10
Alpha-Chlordane	<1.00	ng/L	1.00	EPA 8081	03/02/10

Report Date: 04/12/10 **Validated By: Signature on File**

City of Portland
Water Pollution Control Laboratory
6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656

LABORATORY ANALYSIS REPORT

Sample ID: **FO105260** **Sample Collected:** 2/23/2010 12:42 **Sample Received:** 02/24/10 **Sample Status:** **COMPLETE AND VALIDATED**

Proj./Company Name: NPDES STORMWTR WQ & FLOW MON
Address/Location: 4900 NW KITTRIDGE AVE (OF19)
MANHOLE COMPOSITE
Sample Point Code: OF19
Sample Type: COMPOSITE
Sample Matrix: STORMWTR

System ID: AO01996
EID File # : 4010.001
LocCode: NPDESSTM
Collected By: MJS

Comments:
QA/QC: For pesticide results flagged as estimates, results from the primary and verification columns varied by more than 40%.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Beta-BHC	<1.00	ng/L	1.00	EPA 8081	03/02/10
Delta-BHC	<1.00	ng/L	1.00	EPA 8081	03/02/10
Dieldrin	<6.0	ng/L	6.0	EPA 8081	03/02/10
Endosulfan I	EST 3.1	ng/L	1.00	EPA 8081	03/02/10
Endosulfan II	<1.3	ng/L	1.3	EPA 8081	03/02/10
Endosulfan Sulfate	<1.00	ng/L	1.00	EPA 8081	03/02/10
Endrin	<1.4	ng/L	1.4	EPA 8081	03/02/10
Endrin Aldehyde	<1.9	ng/L	1.9	EPA 8081	03/02/10
Endrin Ketone	<1.00	ng/L	1.00	EPA 8081	03/02/10
Gamma-BHC(Lindane)	<1.00	ng/L	1.00	EPA 8081	03/02/10
Gamma-Chlordane	<1.00	ng/L	1.00	EPA 8081	03/02/10
Heptachlor	<1.00	ng/L	1.00	EPA 8081	03/02/10
Heptachlor Epoxide	<1.00	ng/L	1.00	EPA 8081	03/02/10
Methoxychlor	<1.00	ng/L	1.00	EPA 8081	03/02/10
Toxaphene	<350	ng/L	350	EPA 8081	03/02/10
POLYCHLORINATED BIPHENYL CONGENERS -PACE					
Refer to Contract Report	Completed	ng/L		EPA 1668 MOD	03/18/10
POLYNUCLEAR AROMATICS & PHTHALATES - TA					
Acenaphthene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	03/01/10
Acenaphthylene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	03/01/10
Anthracene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	03/01/10
Benzo(a)anthracene	0.0203	µg/L	0.00971	EPA 8270M-SIM	03/01/10
Benzo(a)pyrene	0.0144	µg/L	0.00971	EPA 8270M-SIM	03/01/10
Benzo(b)fluoranthene	0.0178	µg/L	0.00971	EPA 8270M-SIM	03/01/10
Benzo(ghi)perylene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	03/01/10
Benzo(k)fluoranthene	0.012	µg/L	0.00971	EPA 8270M-SIM	03/01/10
Bis(2-ethylhexyl) phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	03/01/10
Butyl benzyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	03/01/10
Chrysene	0.0392	µg/L	0.00971	EPA 8270M-SIM	03/01/10
Dibenzo(a,h)anthracene	<0.00971	µg/L	0.00971	EPA 8270M-SIM	03/01/10
Diethyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	03/01/10
Dimethyl phthalate	2.56	µg/L	0.971	EPA 8270M-SIM	03/01/10
Di-n-butyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	03/01/10
Di-n-octyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	03/01/10
Fluoranthene	0.0685	µg/L	0.0194	EPA 8270M-SIM	03/01/10

Report Date: 04/12/10 **Validated By: Signature on File**

City of Portland
Water Pollution Control Laboratory
6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656

LABORATORY ANALYSIS REPORT

Sample ID: **FO105260** **Sample Collected:** 2/23/2010 12:42 **Sample Received:** 02/24/10 **Sample Status:** **COMPLETE AND VALIDATED**

Proj./Company Name: NPDES STORMWTR WQ & FLOW MON
Address/Location: 4900 NW KITTRIDGE AVE (OF19) MANHOLE COMPOSITE
Sample Point Code: OF19
Sample Type: COMPOSITE
Sample Matrix: STORMWTR

System ID: AO01996
EID File # : 4010.001
LocCode: NPDESSTM
Collected By: MJS

Comments:
QA/QC: For pesticide results flagged as estimates, results from the primary and verification columns varied by more than 40%.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Fluorene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	03/01/10
Indeno(1,2,3-cd)pyrene	0.0101	µg/L	0.00971	EPA 8270M-SIM	03/01/10
Naphthalene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	03/01/10
Phenanthrene	0.0465	µg/L	0.0194	EPA 8270M-SIM	03/01/10
Pyrene	0.104	µg/L	0.0194	EPA 8270M-SIM	03/01/10
SEMI-VOLATILE ORGANICS - CAS					
1,2,4-Trichlorobenzene	<0.20	µg/L	0.20	EPA 8270	03/01/10
1,2-Dichlorobenzene	<0.20	µg/L	0.20	EPA 8270	03/01/10
1,3-Dichlorobenzene	<0.20	µg/L	0.20	EPA 8270	03/01/10
1,4-Dichlorobenzene	<0.20	µg/L	0.20	EPA 8270	03/01/10
2,4,5-Trichlorophenol	<0.49	µg/L	0.49	EPA 8270	03/01/10
2,4,6-Trichlorophenol	<0.49	µg/L	0.49	EPA 8270	03/01/10
2,4-Dichlorophenol	<0.49	µg/L	0.49	EPA 8270	03/01/10
2,4-Dimethylphenol	<3.9	µg/L	3.9	EPA 8270	03/01/10
2,4-Dinitrophenol	<3.9	µg/L	3.9	EPA 8270	03/01/10
2,4-Dinitrotoluene	<0.20	µg/L	0.20	EPA 8270	03/01/10
2,6-Dinitrotoluene	<0.20	µg/L	0.20	EPA 8270	03/01/10
2-Chloronaphthalene	<0.20	µg/L	0.20	EPA 8270	03/01/10
2-Chlorophenol	<0.49	µg/L	0.49	EPA 8270	03/01/10
2-Methylnaphthalene	<0.20	µg/L	0.20	EPA 8270	03/01/10
2-Methylphenol	<0.49	µg/L	0.49	EPA 8270	03/01/10
2-Nitroaniline	<0.20	µg/L	0.20	EPA 8270	03/01/10
2-Nitrophenol	<0.49	µg/L	0.49	EPA 8270	03/01/10
3,3'-Dichlorobenzidine	<2.0	µg/L	2.0	EPA 8270	03/01/10
3-Nitroaniline	<0.98	µg/L	0.98	EPA 8270	03/01/10
4,6-Dinitro-2-methylphenol	<2.0	µg/L	2.0	EPA 8270	03/01/10
4-Bromophenylphenyl ether	<0.20	µg/L	0.20	EPA 8270	03/01/10
4-Chloro-3-methylphenol	<0.49	µg/L	0.49	EPA 8270	03/01/10
4-Chloroaniline	<0.20	µg/L	0.20	EPA 8270	03/01/10
4-Chlorophenylphenyl ether	<0.20	µg/L	0.20	EPA 8270	03/01/10
4-Methylphenol	<0.49	µg/L	0.49	EPA 8270	03/01/10
4-Nitroaniline	<0.98	µg/L	0.98	EPA 8270	03/01/10
4-Nitrophenol	<2.0	µg/L	2.0	EPA 8270	03/01/10
Acenaphthene	<0.20	µg/L	0.20	EPA 8270	03/01/10
Acenaphthylene	<0.20	µg/L	0.20	EPA 8270	03/01/10

City of Portland
Water Pollution Control Laboratory
6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656

LABORATORY ANALYSIS REPORT

Sample ID: **FO105260** **Sample Collected:** 2/23/2010 12:42 **Sample Received:** 02/24/10 **Sample Status:** **COMPLETE AND VALIDATED**

Proj./Company Name: NPDES STORMWTR WQ & FLOW MON
Address/Location: 4900 NW KITTRIDGE AVE (OF19)
MANHOLE COMPOSITE
Sample Point Code: OF19
Sample Type: COMPOSITE
Sample Matrix: STORMWTR

Report Page: Page 4 of 5
System ID: AO01996
EID File # : 4010.001
LocCode: NPDESSTM
Collected By: MJS

Comments:
QA/QC: For pesticide results flagged as estimates, results from the primary and verification columns varied by more than 40%.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Anthracene	<0.20	µg/L	0.20	EPA 8270	03/01/10
Benzo(a)anthracene	<0.20	µg/L	0.20	EPA 8270	03/01/10
Benzo(a)pyrene	<0.20	µg/L	0.20	EPA 8270	03/01/10
Benzo(b)fluoranthene	<0.20	µg/L	0.20	EPA 8270	03/01/10
Benzo(ghi)perylene	<0.20	µg/L	0.20	EPA 8270	03/01/10
Benzo(k)fluoranthene	<0.20	µg/L	0.20	EPA 8270	03/01/10
Benzoic acid	<4.9	µg/L	4.9	EPA 8270	03/01/10
Benzyl alcohol	<0.49	µg/L	0.49	EPA 8270	03/01/10
Bis(2-chloroethoxy) methane	<0.20	µg/L	0.20	EPA 8270	03/01/10
Bis(2-chloroethyl) ether	<0.20	µg/L	0.20	EPA 8270	03/01/10
Bis(2-chloroisopropyl) ether	<0.20	µg/L	0.20	EPA 8270	03/01/10
Bis(2-ethylhexyl) phthalate	1.2	µg/L	0.98	EPA 8270	03/01/10
Butyl benzyl phthalate	0.47	µg/L	0.20	EPA 8270	03/01/10
Chrysene	<0.20	µg/L	0.20	EPA 8270	03/01/10
Dibenzo(a,h)anthracene	<0.20	µg/L	0.20	EPA 8270	03/01/10
Dibenzofuran	<0.20	µg/L	0.20	EPA 8270	03/01/10
Diethyl phthalate	<0.20	µg/L	0.20	EPA 8270	03/01/10
Dimethyl phthalate	3.4	µg/L	0.20	EPA 8270	03/01/10
Di-n-butyl phthalate	<0.20	µg/L	0.20	EPA 8270	03/01/10
Di-n-octyl phthalate	<0.20	µg/L	0.20	EPA 8270	03/01/10
Fluoranthene	<0.20	µg/L	0.20	EPA 8270	03/01/10
Fluorene	<0.20	µg/L	0.20	EPA 8270	03/01/10
Hexachlorobenzene	<0.20	µg/L	0.20	EPA 8270	03/01/10
Hexachlorobutadiene	<0.20	µg/L	0.20	EPA 8270	03/01/10
Hexachlorocyclopentadiene	<0.98	µg/L	0.98	EPA 8270	03/01/10
Hexachloroethane	<0.20	µg/L	0.20	EPA 8270	03/01/10
Indeno(1,2,3-cd)pyrene	<0.20	µg/L	0.20	EPA 8270	03/01/10
Isophorone	<0.20	µg/L	0.20	EPA 8270	03/01/10
Naphthalene	<0.20	µg/L	0.20	EPA 8270	03/01/10
Nitrobenzene	<0.20	µg/L	0.20	EPA 8270	03/01/10
N-Nitrosodi-n-propylamine	<0.20	µg/L	0.20	EPA 8270	03/01/10
N-Nitrosodiphenylamine	<0.20	µg/L	0.20	EPA 8270	03/01/10
Pentachlorophenol	<0.98	µg/L	0.98	EPA 8270	03/01/10
Phenanthrene	<0.20	µg/L	0.20	EPA 8270	03/01/10
Phenol	<0.49	µg/L	0.49	EPA 8270	03/01/10
Pyrene	<0.20	µg/L	0.20	EPA 8270	03/01/10

Report Date: 04/12/10 **Validated By: Signature on File**

City of Portland
Water Pollution Control Laboratory
6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656

LABORATORY ANALYSIS REPORT

Sample ID:	**FO105260**	**Sample Collected:**	2/23/2010 12:42	**Sample Status:**	**COMPLETE AND VALIDATED**
		Sample Received:	02/24/10		

Proj./Company Name:	NPDES STORMWTR WQ & FLOW MON	**Report Page:**	Page 5 of 5
Address/Location:	4900 NW KITTRIDGE AVE (OF19) MANHOLE COMPOSITE	**System ID:**	AO01996
Sample Point Code:	OF19	**EID File # :**	4010.001
Sample Type:	COMPOSITE	**LocCode:**	NPDESSTM
Sample Matrix:	STORMWTR	**Collected By:**	MJS

Comments:
QA/QC: For pesticide results flagged as estimates, results from the primary and verification columns varied by more than 40%.

Test Parameter	Result	Units	MRL	Method	Analysis Date

End of Report for Sample ID: FO105260

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

www.pacelabs.com

Report Prepared for:

Howard Holmes
Test America-Portland
9405 SW Nimbus Avenue
Beaverton OR 97008

REPORT OF LABORATORY ANALYSIS FOR PCBs

Report Information:

Pace Project #: 10123473
Sample Receipt Date: 03/03/2010
Client Project #: PTB0814
Client Sub PO #: N/A
State Cert #: MN200001-005

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PCB Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Nate Habte, your Pace Project Manager.

This report has been reviewed by:

March 30, 2010

Nate Habte, Project Manager
(612) 607-6407
(612) 607-6444 (fax)
natnael.habte@pacelabs.com

Report Prepared Date:
March 29, 2010

Report of Laboratory Analysis

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

DISCUSSION

This report presents the results from the analyses performed on one sample submitted by a representative of Test America Portland. The sample was analyzed for the presence or absence of polychlorinated biphenyl (PCB) congeners using USEPA Method 1668A. Reporting limits were set to approximately 0.25-0.75 parts-per-trillion and were adjusted for the amount of the sample extracted.

The recoveries of the isotopically-labeled PCB internal standards in the sample extracts ranged from 47-109%. All of the labeled standard recoveries obtained for this project were within the target ranges specified in Method 1668A. Since the quantification of the native congeners was based on isotope dilution and internal standard methodology, the data were automatically corrected for variation in recovery and accurate values were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to contain trace levels of selected PCB congeners. The sample contained similar levels of congeners #2 and #3 and was flagged "B" on the results table. In general, levels less than ten times the background are not considered statistically different from the background.

Laboratory spike samples were also prepared with the sample batch using clean water that had been fortified with native standards. The results show that the spiked native compounds were recovered at 79-116%, with relative percent differences of 0.0-11.1%. These results indicate high degrees of accuracy and precision for these determinations. Matrix spikes were not prepared with the sample batch.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
Alabama	40770	Montana	92
Alaska	MN00064	Nebraska	
Arizona	AZ0014	Nevada	MN00064_2000
Arkansas	88-0680	New Jersey (NE	MN002
California	01155CA	New Mexico	MN00064
Colorado	MN00064	New York (NEL	11647
Connecticut	PH-0256	North Carolina	27700
EPA Region 5	WD-15J	North Dakota	R-036
EPA Region 8	8TMS-Q	Ohio	4150
Florida (NELAP	E87605	Ohio VAP	CL101
Georgia (DNR)	959	Oklahoma	D9922
Guam	09-019r	Oregon (ELAP)	MN200001-005
Hawaii	SLD	Oregon (OREL	MN200001-005
Idaho	MN00064	Pennsylvania	68-00563
Illinois	200012	Saipan	MP0003
Indiana		South Carolina	74003001
Indiana	C-MN-01	Tennesee	2818
Iowa	368	Tennessee	02818
Kansas	E-10167	Texas	T104704192-08
Kentucky	90062	Utah (NELAP)	PAM
Louisiana	LA0900016	Virginia	00251
Maine	2007029	Washington	C755
Maryland	322	West Virginia	9952C
Michigan	9909	Wisconsin	999407970
Minnesota	027-053-137	Wyoming	8TMS-Q
Mississippi	MN00064		

REPORT OF LABORATORY ANALYSIS

Appendix A

Sample Management

SUBCONTRACT ORDER
TestAmerica Portland

PTB0814

10123473

SENDING LABORATORY:

TestAmerica Portland
9405 SW Nimbus Ave.
Beaverton, OR 97008
Phone: (503) 906-9200
Fax: (503) 906-9210
Project Manager: Howard Holmes

RECEIVING LABORATORY:

Pace Analytical Services, Inc - Minneapolis
1700 Elm Street Suite 200
Minneapolis, MN 55414
Phone :(612) 607-1700
Fax: (612) 607-6444
Project Location: OR - OREGON
Receipt Temperature: _____ °C Ice: Y / N

needs Excel EDD

Standard TAT is requested unless specific due date is requested. => Due Date: 4 weeks **Initials:** HZ

Analysis	Units	Expires	Comments
Sample ID: PTB0814-01 (FO105260 - Water)		Sampled: **02/23/10 12:42**	001
1668 Coplanar PCBs - SUB	ug/l	08/22/10 12:42	

Containers Supplied:
1L Amber - Unpres. (C)

Please run 209 Congener list please

Released By — Date/Time: 3/2/10

Received By — Date/Time: 3/3/10 1004

Released By — Date/Time

Received By — Date/Time

Sample Condition Upon Receipt

Pace Analytical

Client Name: Test America Portl **Project #** 10123473

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 4170 7525 1332

Custody Seal on Cooler/Box Present: ☑ yes ☐ no Seals intact: ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other _____ Temp Blank: Yes ✓ No 3/3/10 SH

Thermometer Used 80344042 or 179425 **Type of Ice:** Wet (Blue) None ☐ Samples on ice, cooling process has begun

Cooler Temperature 2.2 **Biological Tissue is Frozen:** Yes No

Temp should be above freezing to 6°C

Comments:

Date and initials of person examining contents: 3/3/10 SH

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☐Yes ☑No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No ☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes ☑No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes ☑No ☐N/A	7.
Sufficient Volume:	☑Yes ☐No ☐N/A	8.
Correct Containers Used:	☑Yes ☐No ☐N/A	9.
-Pace Containers Used:	☐Yes ☑No ☐N/A	
Containers Intact:	☑Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC:	☑Yes ☐No ☐N/A	12.
-includes date/time/ID/Analysis Matrix: WT		
All containers needing acid/base preservation have been checked. Noncompliance are noted in 13.	☐Yes ☐No ☑N/A	13. ☐ HNO3 ☐ H2SO4 ☐ NaOH ☐ HCl Samp #
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes ☐No ☑N/A	Initial when completed / Lot # of added preservative
Exceptions: VOA,Coliform, TOC, Oil and Grease, WI-DRO (water)	☐Yes ☑No	
Samples checked for dechlorination:	☐Yes ☐No ☑N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes ☐No ☑N/A	15.
Trip Blank Present:	☐Yes ☐No ☑N/A	16.
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	
Pace Trip Blank Lot # (if purchased): _____		

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: MAH **Date:** 3/3/10

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DENR.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Reporting Flags

A = Reporting Limit based on signal to noise

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interference present

J = Estimated value

Nn = Value obtained from additional analysis

P = PCDE Interference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = See Discussion

Appendix B

Sample Analysis Summary

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America-Portland

Client's Sample ID	PTB0814-01 (FO105260-Water)		
Lab Sample ID	10123473001		
Filename	P100324A_10		
Injected By	CVS		
Total Amount Extracted	995 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	02/23/2010 12:42
ICAL ID	P100324A03	Received	03/03/2010 10:04
CCal Filename(s)	P100324A_02	Extracted	03/18/2010 19:00
Method Blank ID	BLANK-24353	Analyzed	03/24/2010 18:30

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	7.995	2.98	2.0	0.935	47
13C-4-MoCB	3	11.254	2.92	2.0	1.14	57
13C-2,2'-DiCB	4	11.589	1.61	2.0	1.46	73
13C-4,4'-DiCB	15	19.570	1.55	2.0	1.23	62
13C-2,2',6-TrCB	19	15.939	1.01	2.0	1.78	89
13C-3,4,4'-TrCB	37	27.811	1.04	2.0	1.10	55
13C-2,2',6,6'-TeCB	54	19.895	0.79	2.0	1.30	65
13C-3,4,4',5-TeCB	81	35.056	0.76	2.0	1.29	64
13C-3,3',4,4'-TeCB	77	35.643	0.80	2.0	1.37	68
13C-2,2',4,6,6'-PeCB	104	26.419	1.61	2.0	1.40	70
13C-2,3,3',4,4'-PeCB	105	39.233	1.54	2.0	1.19	59
13C-2,3,4,4',5-PeCB	114	38.562	1.59	2.0	1.13	57
13C-2,3',4,4',5-PeCB	118	38.042	1.57	2.0	1.09	54
13C-2,3',4,4',5'-PeCB	123	37.706	1.54	2.0	1.11	56
13C-3,3',4,4',5-PeCB	126	42.386	1.61	2.0	1.25	63
13C-2,2',4,4',6,6'-HxCB	155	32.625	1.28	2.0	1.56	78
13C-HxCB (156/157)	156/157	45.421	1.26	4.0	2.32	58
13C-2,3',4,4',5,5'-HxCB	167	44.264	1.26	2.0	1.14	57
13C-3,3',4,4',5,5'-HxCB	169	48.709	1.22	2.0	1.20	60
13C-2,2',3,4',5,6,6'-HpCB	188	38.562	1.05	2.0	2.05	103
13C-2,3,3',4,4',5,5'-HpCB	189	51.279	1.06	2.0	1.34	67
13C-2,2',3,3',5,5',6,6'-OcCB	202	43.996	0.92	2.0	2.19	109
13C-2,3,3',4,4',5,5',6-OcCB	205	53.974	0.87	2.0	1.69	84
13C-2,2',3,3',4,4',5,5',6-NoCB	206	56.065	0.79	2.0	1.94	97
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	50.762	0.77	2.0	2.03	102
13C--DeCB	209	58.307	0.72	2.0	1.61	81
Cleanup Standards						
13C-2,4,4'-TrCB	28	23.250	1.03	2.0	1.13	56
13C-2,3,3',5,5'-PeCB	111	35.694	1.55	2.0	1.68	84
13C-2,2',3,3',5,5',6-HpCB	178	41.681	1.04	2.0	1.89	94
Recovery Standards						
13C-2,5-DiCB	9	14.429	1.53	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	25.379	0.76	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	32.876	1.60	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	41.212	1.29	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OcCB	194	53.435	0.88	2.0	NA	NA

Conc = Concentration
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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1668A Polychlorobiphenyl
Sample Analysis Results

Client Sample ID PTB0814-01 (FO105260-Water)
Lab Sample ID 10123473001
Filename P100324A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.251
2		11.026	2.67	0.698 B	---	0.251
3		11.266	3.07	0.278 B	---	0.251
4		---	---	ND	---	0.251
5		---	---	ND	---	0.251
6		---	---	ND	---	0.251
7		---	---	ND	---	0.251
8		---	---	ND	---	0.251
9		---	---	ND	---	0.251
10		---	---	ND	---	0.251
11		---	---	ND	---	1.51
12	12/13	---	---	ND	---	0.502
13	12/13	---	---	ND	---	0.502
14		---	---	ND	---	0.251
15		---	---	ND	---	0.251
16		---	---	ND	---	0.251
17		---	---	ND	---	0.251
18	18/30	---	---	ND	---	0.502
19		---	---	ND	---	0.251
20	20/28	---	---	ND	---	0.502
21	21/33	---	---	ND	---	0.502
22		---	---	ND	---	0.251
23		---	---	ND	---	0.251
24		---	---	ND	---	0.251
25		---	---	ND	---	0.251
26	26/29	---	---	ND	---	0.502
27		---	---	ND	---	0.251
28	20/28	---	---	ND	---	0.502
29	26/29	---	---	ND	---	0.502
30	18/30	---	---	ND	---	0.502
31		22.931	0.95	0.318	---	0.251
32		---	---	ND	---	0.251
33	21/33	---	---	ND	---	0.502
34		---	---	ND	---	0.251
35		---	---	ND	---	0.251
36		---	---	ND	---	0.251
37		---	---	ND	---	0.251
38		---	---	ND	---	0.251
39		---	---	ND	---	0.251
40	40/41/71	---	---	ND	---	1.51
41	40/41/71	---	---	ND	---	1.51
42		---	---	ND	---	0.502
43	43/73	---	---	ND	---	1.00
44	44/47/65	---	---	ND	---	1.51
45	45/51	---	---	ND	---	1.00
46		---	---	ND	---	0.502
47	44/47/65	---	---	ND	---	1.51
48		---	---	ND	---	0.502

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Tel: 612-607-1700
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Method 1668A Polychlorobiphenyl
Sample Analysis Results

Client Sample ID PTB0814-01 (FO105260-Water)
Lab Sample ID 10123473001
Filename P100324A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69	---	---	ND	---	1.00
50	50/53	---	---	ND	---	1.00
51	45/51	---	---	ND	---	1.00
52		25.396	0.76	0.779	---	0.502
53	50/53	---	---	ND	---	1.00
54		---	---	ND	---	0.502
55		---	---	ND	---	0.502
56		---	---	ND	---	0.502
57		---	---	ND	---	0.502
58		---	---	ND	---	0.502
59	59/62/75	---	---	ND	---	1.51
60		---	---	ND	---	0.502
61	61/70/74/76	---	---	ND	---	2.01
62	59/62/75	---	---	ND	---	1.51
63		---	---	ND	---	0.502
64		---	---	ND	---	0.502
65	44/47/65	---	---	ND	---	1.51
66		---	---	ND	---	0.502
67		---	---	ND	---	0.502
68		---	---	ND	---	0.502
69	49/69	---	---	ND	---	1.00
70	61/70/74/76	---	---	ND	---	2.01
71	40/41/71	---	---	ND	---	1.51
72		---	---	ND	---	0.502
73	43/73	---	---	ND	---	1.00
74	61/70/74/76	---	---	ND	---	2.01
75	59/62/75	---	---	ND	---	1.51
76	61/70/74/76	---	---	ND	---	2.01
77		---	---	ND	---	0.502
78		---	---	ND	---	0.502
79		---	---	ND	---	0.502
80		---	---	ND	---	0.502
81		---	---	ND	---	0.502
82		---	---	ND	---	0.502
83		---	---	ND	---	0.502
84		---	---	ND	---	0.502
85	85/116/117	---	---	ND	---	1.51
86	86/87/97/108/119/125	---	---	ND	---	3.01
87	86/87/97/108/119/125	---	---	ND	---	3.01
88	88/91	---	---	ND	---	1.00
89		---	---	ND	---	0.502
90	90/101/113	---	---	ND	---	1.51
91	88/91	---	---	ND	---	1.00
92		---	---	ND	---	0.502
93	93/98/100/102	---	---	ND	---	2.01
94		---	---	ND	---	0.502
95		29.723	1.62	0.851	---	0.502
96		---	---	ND	---	0.502

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Method 1668A Polychlorobiphenyl
Sample Analysis Results

Client Sample ID PTB0814-01 (FO105260-Water)
Lab Sample ID 10123473001
Filename P100324A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
97	86/87/97/108/119/125	---	---	ND	---	3.01
98	93/98/100/102	---	---	ND	---	2.01
99		---	---	ND	---	0.502
100	93/98/100/102	---	---	ND	---	2.01
101	90/101/113	---	---	ND	---	1.51
102	93/98/100/102	---	---	ND	---	2.01
103		---	---	ND	---	0.502
104		---	---	ND	---	0.502
105		---	---	ND	---	0.502
106		---	---	ND	---	0.502
107	107/124	---	---	ND	---	1.00
108	86/87/97/108/119/125	---	---	ND	---	3.01
109		---	---	ND	---	0.502
110	110/115	34.956	1.58	1.24	---	1.00
111		---	---	ND	---	0.502
112		---	---	ND	---	0.502
113	90/101/113	---	---	ND	---	1.51
114		---	---	ND	---	0.502
115	110/115	34.956	1.58	(1.24)	---	1.00
116	85/116/117	---	---	ND	---	1.51
117	85/116/117	---	---	ND	---	1.51
118		38.075	1.51	1.02	---	0.502
119	86/87/97/108/119/125	---	---	ND	---	3.01
120		---	---	ND	---	0.502
121		---	---	ND	---	0.502
122		---	---	ND	---	0.502
123		---	---	ND	---	0.502
124	107/124	---	---	ND	---	1.00
125	86/87/97/108/119/125	---	---	ND	---	3.01
126		---	---	ND	---	0.502
127		---	---	ND	---	0.502
128	128/166	---	---	ND	---	1.00
129	129/138/163	---	---	ND	---	1.51
130		---	---	ND	---	0.502
131		---	---	ND	---	0.502
132		---	---	ND	---	0.502
133		---	---	ND	---	0.502
134	134/143	---	---	ND	---	1.00
135	135/151	---	---	ND	---	1.00
136		---	---	ND	---	0.502
137		---	---	ND	---	0.502
138	129/138/163	---	---	ND	---	1.51
139	139/140	---	---	ND	---	1.00
140	139/140	---	---	ND	---	1.00
141		---	---	ND	---	0.502
142		---	---	ND	---	0.502
143	134/143	---	---	ND	---	1.00
144		---	---	ND	---	0.502

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Method 1668A Polychlorobiphenyl
Sample Analysis Results

Client Sample ID PTB0814-01 (FO105260-Water)
Lab Sample ID 10123473001
Filename P100324A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
145		---	---	ND	---	0.502
146		---	---	ND	---	0.502
147	147/149	---	---	ND	---	1.00
148		---	---	ND	---	0.502
149	147/149	---	---	ND	---	1.00
150		---	---	ND	---	0.502
151	135/151	---	---	ND	---	1.00
152		---	---	ND	---	0.502
153	153/168	---	---	ND	---	1.00
154		---	---	ND	---	0.502
155		---	---	ND	---	0.502
156	156/157	---	---	ND	---	1.00
157	156/157	---	---	ND	---	1.00
158		---	---	ND	---	0.502
159		---	---	ND	---	0.502
160		---	---	ND	---	0.502
161		---	---	ND	---	0.502
162		---	---	ND	---	0.502
163	129/138/163	---	---	ND	---	1.51
164		---	---	ND	---	0.502
165		---	---	ND	---	0.502
166	128/166	---	---	ND	---	1.00
167		---	---	ND	---	0.502
168	153/168	---	---	ND	---	1.00
169		---	---	ND	---	0.502
170		---	---	ND	---	0.502
171	171/173	---	---	ND	---	1.00
172		---	---	ND	---	0.502
173	171/173	---	---	ND	---	1.00
174		---	---	ND	---	0.502
175		---	---	ND	---	0.502
176		---	---	ND	---	0.502
177		---	---	ND	---	0.502
178		---	---	ND	---	0.502
179		---	---	ND	---	0.502
180	180/193	---	---	ND	---	1.00
181		---	---	ND	---	0.502
182		---	---	ND	---	0.502
183	183/185	---	---	ND	---	1.00
184		---	---	ND	---	0.502
185	183/185	---	---	ND	---	1.00
186		---	---	ND	---	0.502
187		---	---	ND	---	0.502
188		---	---	ND	---	0.502
189		---	---	ND	---	0.502
190		---	---	ND	---	0.502
191		---	---	ND	---	0.502
192		---	---	ND	---	0.502

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Method 1668A Polychlorobiphenyl
Sample Analysis Results

Client Sample ID PTB0814-01 (FO105260-Water)
Lab Sample ID 10123473001
Filename P100324A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193	---	---	ND	---	1.00
194		---	---	ND	---	0.754
195		---	---	ND	---	0.754
196		---	---	ND	---	0.754
197	197/200	---	---	ND	---	1.51
198	198/199	---	---	ND	---	1.51
199	198/199	---	---	ND	---	1.51
200	197/200	---	---	ND	---	1.51
201		---	---	ND	---	0.754
202		---	---	ND	---	0.754
203		---	---	ND	---	0.754
204		---	---	ND	---	0.754
205		---	---	ND	---	0.754
206		---	---	ND	---	0.754
207		---	---	ND	---	0.754
208		---	---	ND	---	0.754
209		---	---	ND	---	0.754

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Method 1668A Polychlorobiphenyl
Sample Analysis Results

Client Sample ID	PTB0814-01 (FO105260-Water)
Lab Sample ID	10123473001
Filename	P100324A_10

Congener Group	Concentration ng/L
Total Monochloro Biphenyls	0.976
Total Dichloro Biphenyls	ND
Total Trichloro Biphenyls	0.318
Total Tetrachloro Biphenyls	0.779
Total Pentachloro Biphenyls	3.11
Total Hexachloro Biphenyls	ND
Total Heptachloro Biphenyls	ND
Total Octachloro Biphenyls	ND
Total Nonachloro Biphenyls	ND
Decachloro Biphenyls	ND
Total PCBs	5.18

ND = Not Detected

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyl
Blank Analysis Results

Lab Sample ID	BLANK-24353		
Filename	P100324A_05		
Injected By	CVS	Matrix	Water
Total Amount Extracted	923 mL	Extracted	03/18/2010 19:00
ICAL ID	P100324A03	Analyzed	03/24/2010 13:08
CCal Filename(s)	P100324A_02	Dilution	NA

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	8.019	3.45	2.0	0.794	40
13C-4-MoCB	3	11.266	2.93	2.0	0.958	48
13C-2,2'-DiCB	4	11.601	1.70	2.0	1.16	58
13C-4,4'-DiCB	15	19.582	1.53	2.0	1.12	56
13C-2,2',6-TrCB	19	15.951	1.05	2.0	1.39	69
13C-3,4,4'-TrCB	37	27.811	1.03	2.0	0.918	46
13C-2,2',6,6'-TeCB	54	19.912	0.78	2.0	1.04	52
13C-3,4,4',5-TeCB	81	35.055	0.77	2.0	1.23	61
13C-3,3',4,4'-TeCB	77	35.626	0.77	2.0	1.29	64
13C-2,2',4,6,6'-PeCB	104	26.419	1.61	2.0	1.22	61
13C-2,3,3',4,4'-PeCB	105	39.231	1.55	2.0	1.15	57
13C-2,3,4,4',5-PeCB	114	38.561	1.56	2.0	1.11	55
13C-2,3',4,4',5-PeCB	118	38.041	1.57	2.0	1.09	55
13C-2,3',4,4',5'-PeCB	123	37.705	1.57	2.0	1.10	55
13C-3,3',4,4',5-PeCB	126	42.384	1.57	2.0	1.21	60
13C-2,2',4,4',6,6'-HxCB	155	32.624	1.31	2.0	1.57	79
13C-HxCB (156/157)	156/157	45.437	1.25	4.0	2.36	59
13C-2,3',4,4',5,5'-HxCB	167	44.263	1.24	2.0	1.16	58
13C-3,3',4,4',5,5'-HxCB	169	48.707	1.23	2.0	1.23	61
13C-2,2',3,4',5,6,6'-HpCB	188	38.561	1.06	2.0	2.04	102
13C-2,3,3',4,4',5,5'-HpCB	189	51.272	1.04	2.0	1.35	67
13C-2,2',3,3',5,5',6,6'-OcCB	202	43.994	0.92	2.0	2.21	111
13C-2,3,3',4,4',5,5',6-OcCB	205	53.967	0.89	2.0	1.69	84
13C-2,2',3,3',4,4',5,5',6-NoCB	206	56.057	0.78	2.0	2.00	100
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	50.733	0.80	2.0	2.03	102
13C--DeCB	209	58.278	0.68	2.0	1.66	83
Cleanup Standards						
13C-2,4,4'-TrCB	28	23.266	1.03	2.0	0.927	46
13C-2,3,3',5,5'-PeCB	111	35.709	1.59	2.0	1.63	81
13C-2,2',3,3',5,5',6-HpCB	178	41.663	1.05	2.0	1.81	91
Recovery Standards						
13C-2,5-DiCB	9	14.453	1.53	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	25.379	0.78	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	32.875	1.58	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	41.210	1.26	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OcCB	194	53.449	0.92	2.0	NA	NA

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EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
RT = Retention Time
I = Interference
ng's = Nanograms

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1668A Polychlorobiphenyl
Blank Analysis Results

Lab Sample ID BLANK-24353
Filename P100324A_05

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.271
2		11.038	2.71	0.757	---	0.271
3		11.302	2.94	0.305	---	0.271
4		---	---	ND	---	0.271
5		---	---	ND	---	0.271
6		---	---	ND	---	0.271
7		---	---	ND	---	0.271
8		---	---	ND	---	0.271
9		---	---	ND	---	0.271
10		---	---	ND	---	0.271
11		---	---	ND	---	1.63
12	12/13	---	---	ND	---	0.542
13	12/13	---	---	ND	---	0.542
14		---	---	ND	---	0.271
15		---	---	ND	---	0.271
16		---	---	ND	---	0.271
17		---	---	ND	---	0.271
18	18/30	---	---	ND	---	0.542
19		---	---	ND	---	0.271
20	20/28	---	---	ND	---	0.542
21	21/33	---	---	ND	---	0.542
22		---	---	ND	---	0.271
23		---	---	ND	---	0.271
24		---	---	ND	---	0.271
25		---	---	ND	---	0.271
26	26/29	---	---	ND	---	0.542
27		---	---	ND	---	0.271
28	20/28	---	---	ND	---	0.542
29	26/29	---	---	ND	---	0.542
30	18/30	---	---	ND	---	0.542
31		---	---	ND	---	0.271
32		---	---	ND	---	0.271
33	21/33	---	---	ND	---	0.542
34		---	---	ND	---	0.271
35		---	---	ND	---	0.271
36		---	---	ND	---	0.271
37		---	---	ND	---	0.271
38		---	---	ND	---	0.271
39		---	---	ND	---	0.271
40	40/41/71	---	---	ND	---	1.63
41	40/41/71	---	---	ND	---	1.63
42		---	---	ND	---	0.542
43	43/73	---	---	ND	---	1.08
44	44/47/65	---	---	ND	---	1.63
45	45/51	---	---	ND	---	1.08

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
RT = Retention Time
I = Interference

REPORT OF LABORATORY ANALYSIS

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1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1668A Polychlorobiphenyl
Blank Analysis Results

Lab Sample ID BLANK-24353
Filename P100324A_05

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
46		---	---	ND	---	0.542
47	44/47/65	---	---	ND	---	1.63
48		---	---	ND	---	0.542
49	49/69	---	---	ND	---	1.08
50	50/53	---	---	ND	---	1.08
51	45/51	---	---	ND	---	1.08
52		---	---	ND	---	0.542
53	50/53	---	---	ND	---	1.08
54		---	---	ND	---	0.542
55		---	---	ND	---	0.542
56		---	---	ND	---	0.542
57		---	---	ND	---	0.542
58		---	---	ND	---	0.542
59	59/62/75	---	---	ND	---	1.63
60		---	---	ND	---	0.542
61	61/70/74/76	---	---	ND	---	2.17
62	59/62/75	---	---	ND	---	1.63
63		---	---	ND	---	0.542
64		---	---	ND	---	0.542
65	44/47/65	---	---	ND	---	1.63
66		---	---	ND	---	0.542
67		---	---	ND	---	0.542
68		---	---	ND	---	0.542
69	49/69	---	---	ND	---	1.08
70	61/70/74/76	---	---	ND	---	2.17
71	40/41/71	---	---	ND	---	1.63
72		---	---	ND	---	0.542
73	43/73	---	---	ND	---	1.08
74	61/70/74/76	---	---	ND	---	2.17
75	59/62/75	---	---	ND	---	1.63
76	61/70/74/76	---	---	ND	---	2.17
77		---	---	ND	---	0.542
78		---	---	ND	---	0.542
79		---	---	ND	---	0.542
80		---	---	ND	---	0.542
81		---	---	ND	---	0.542
82		---	---	ND	---	0.542
83		---	---	ND	---	0.542
84		---	---	ND	---	0.542
85	85/116/117	---	---	ND	---	1.63
86	86/87/97/108/119/125	---	---	ND	---	3.25
87	86/87/97/108/119/125	---	---	ND	---	3.25
88	88/91	---	---	ND	---	1.08
89		---	---	ND	---	0.542
90	90/101/113	---	---	ND	---	1.63

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
RT = Retention Time
I = Interference

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1668A Polychlorobiphenyl
Blank Analysis Results

Lab Sample ID BLANK-24353
Filename P100324A_05

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
91	88/91	---	---	ND	---	1.08
92		---	---	ND	---	0.542
93	93/98/100/102	---	---	ND	---	2.17
94		---	---	ND	---	0.542
95		---	---	ND	---	0.542
96		---	---	ND	---	0.542
97	86/87/97/108/119/125	---	---	ND	---	3.25
98	93/98/100/102	---	---	ND	---	2.17
99		---	---	ND	---	0.542
100	93/98/100/102	---	---	ND	---	2.17
101	90/101/113	---	---	ND	---	1.63
102	93/98/100/102	---	---	ND	---	2.17
103		---	---	ND	---	0.542
104		---	---	ND	---	0.542
105		---	---	ND	---	0.542
106		---	---	ND	---	0.542
107	107/124	---	---	ND	---	1.08
108	86/87/97/108/119/125	---	---	ND	---	3.25
109		---	---	ND	---	0.542
110	110/115	---	---	ND	---	1.08
111		---	---	ND	---	0.542
112		---	---	ND	---	0.542
113	90/101/113	---	---	ND	---	1.63
114		---	---	ND	---	0.542
115	110/115	---	---	ND	---	1.08
116	85/116/117	---	---	ND	---	1.63
117	85/116/117	---	---	ND	---	1.63
118		---	---	ND	---	0.542
119	86/87/97/108/119/125	---	---	ND	---	3.25
120		---	---	ND	---	0.542
121		---	---	ND	---	0.542
122		---	---	ND	---	0.542
123		---	---	ND	---	0.542
124	107/124	---	---	ND	---	1.08
125	86/87/97/108/119/125	---	---	ND	---	3.25
126		---	---	ND	---	0.542
127		---	---	ND	---	0.542
128	128/166	---	---	ND	---	1.08
129	129/138/163	---	---	ND	---	1.63
130		---	---	ND	---	0.542
131		---	---	ND	---	0.542
132		---	---	ND	---	0.542
133		---	---	ND	---	0.542
134	134/143	---	---	ND	---	1.08
135	135/151	---	---	ND	---	1.08

Conc = Concentration
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EMPC = Estimated Maximum Possible Concentration
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R = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
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* = See Discussion
X = Outside QC Limits
RT = Retention Time
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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1668A Polychlorobiphenyl
Blank Analysis Results

Lab Sample ID BLANK-24353
Filename P100324A_05

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
136		---	---	ND	---	0.542
137		---	---	ND	---	0.542
138	129/138/163	---	---	ND	---	1.63
139	139/140	---	---	ND	---	1.08
140	139/140	---	---	ND	---	1.08
141		---	---	ND	---	0.542
142		---	---	ND	---	0.542
143	134/143	---	---	ND	---	1.08
144		---	---	ND	---	0.542
145		---	---	ND	---	0.542
146		---	---	ND	---	0.542
147	147/149	---	---	ND	---	1.08
148		---	---	ND	---	0.542
149	147/149	---	---	ND	---	1.08
150		---	---	ND	---	0.542
151	135/151	---	---	ND	---	1.08
152		---	---	ND	---	0.542
153	153/168	---	---	ND	---	1.08
154		---	---	ND	---	0.542
155		---	---	ND	---	0.542
156	156/157	---	---	ND	---	1.08
157	156/157	---	---	ND	---	1.08
158		---	---	ND	---	0.542
159		---	---	ND	---	0.542
160		---	---	ND	---	0.542
161		---	---	ND	---	0.542
162		---	---	ND	---	0.542
163	129/138/163	---	---	ND	---	1.63
164		---	---	ND	---	0.542
165		---	---	ND	---	0.542
166	128/166	---	---	ND	---	1.08
167		---	---	ND	---	0.542
168	153/168	---	---	ND	---	1.08
169		---	---	ND	---	0.542
170		---	---	ND	---	0.542
171	171/173	---	---	ND	---	1.08
172		---	---	ND	---	0.542
173	171/173	---	---	ND	---	1.08
174		---	---	ND	---	0.542
175		---	---	ND	---	0.542
176		---	---	ND	---	0.542
177		---	---	ND	---	0.542
178		---	---	ND	---	0.542
179		---	---	ND	---	0.542
180	180/193	---	---	ND	---	1.08

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
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R = Recovery outside of Method 1668A control limits
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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
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Method 1668A Polychlorobiphenyl
Blank Analysis Results

Lab Sample ID BLANK-24353
Filename P100324A_05

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
181		---	---	ND	---	0.542
182		---	---	ND	---	0.542
183	183/185	---	---	ND	---	1.08
184		---	---	ND	---	0.542
185	183/185	---	---	ND	---	1.08
186		---	---	ND	---	0.542
187		---	---	ND	---	0.542
188		---	---	ND	---	0.542
189		---	---	ND	---	0.542
190		---	---	ND	---	0.542
191		---	---	ND	---	0.542
192		---	---	ND	---	0.542
193	180/193	---	---	ND	---	1.08
194		---	---	ND	---	0.813
195		---	---	ND	---	0.813
196		---	---	ND	---	0.813
197	197/200	---	---	ND	---	1.63
198	198/199	---	---	ND	---	1.63
199	198/199	---	---	ND	---	1.63
200	197/200	---	---	ND	---	1.63
201		---	---	ND	---	0.813
202		---	---	ND	---	0.813
203		---	---	ND	---	0.813
204		---	---	ND	---	0.813
205		---	---	ND	---	0.813
206		---	---	ND	---	0.813
207		---	---	ND	---	0.813
208		---	---	ND	---	0.813
209		---	---	ND	---	0.813

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
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REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyl
Blank Analysis Results

Client Sample ID	DFBLKHM
Lab Sample ID	BLANK-24353
Filename	P100324A_05

Congener Group	Concentration ng/L
Total Monochloro Biphenyls	1.06
Total Dichloro Biphenyls	ND
Total Trichloro Biphenyls	ND
Total Tetrachloro Biphenyls	ND
Total Pentachloro Biphenyls	ND
Total Hexachloro Biphenyls	ND
Total Heptachloro Biphenyls	ND
Total Octachloro Biphenyls	ND
Total Nonachloro Biphenyls	ND
Decachloro Biphenyls	ND
Total PCBs	1.06

ND = Not Detected

REPORT OF LABORATORY ANALYSIS

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Minneapolis, MN 55414

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Method 1668A Polychlorobiphenyls
Laboratory Control Spike Analysis Results

Lab Sample ID	LCS-24354		
Filename	P100324A_13	Matrix	Water
Total Amount Extracted	912 mL	Dilution	NA
ICAL ID	P100324A03	Extracted	03/18/2010 19:00
CCal Filename(s)	P100324A_02	Analyzed	03/24/2010 21:45
Method Blank ID	BLANK-24353	Injected By	CVS

	Native Analytes			Labeled Analytes		
PCB Isomer	**Spiked (ng)**	**Found (ng)**	**% Recovery**	**Spiked (ng)**	**Found (ng)**	**% Recovery**
1	1.0	0.835	83	2.0	0.755	38
3	1.0	1.14	114	2.0	0.862	43
4	1.0	1.06	106	2.0	1.14	57
15	1.0	0.869	87	2.0	0.930	47
19	1.0	0.935	94	2.0	1.34	67
37	1.0	0.868	87	2.0	0.895	45
54	1.0	0.837	84	2.0	0.992	50
81	1.0	0.845	84	2.0	1.12	56
77	1.0	0.793	79	2.0	1.22	61
104	1.0	1.03	103	2.0	1.25	63
105	1.0	0.926	93	2.0	1.13	56
114	1.0	0.925	93	2.0	1.06	53
118	1.0	0.948	95	2.0	1.02	51
123	1.0	0.904	90	2.0	1.05	52
126	1.0	0.849	85	2.0	1.19	60
155	1.0	1.03	103	2.0	1.52	76
156/157	2.0	1.92	96	4.0	2.16	54
167	1.0	0.955	96	2.0	1.06	53
169	1.0	0.858	86	2.0	1.12	56
188	1.0	1.04	104	2.0	2.05	102
189	1.0	0.963	96	2.0	1.34	67
202	1.0	0.964	96	2.0	2.40	120
205	1.0	0.918	92	2.0	1.76	88
206	1.0	0.960	96	2.0	1.96	98
208	1.0	0.958	96	2.0	2.13	107
209	1.0	1.16	116	2.0	1.65	83

R = Recovery outside of method 1668A control limits
Nn = Result obtained from alternate analysis
ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
ng = Nanograms
I = Interference

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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Minneapolis, MN 55414

Tel: 612-607-1700
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Method 1668A Polychlorobiphenyls
Laboratory Control Spike Analysis Results

Lab Sample ID	LCSD-24355		
Filename	P100325A_05	Matrix	Water
Total Amount Extracted	935 mL	Dilution	NA
ICAL ID	P100325A01	Extracted	03/18/2010 19:00
CCal Filename(s)	P100325A_02	Analyzed	03/25/2010 05:19
Method Blank ID	BLANK-24353	Injected By	CVS

	Native Analytes			Labeled Analytes		
PCB Isomer	**Spiked (ng)**	**Found (ng)**	**% Recovery**	**Spiked (ng)**	**Found (ng)**	**% Recovery**
1	1.0	0.859	86	2.0	0.926	46
3	1.0	1.02	102	2.0	1.07	54
4	1.0	1.04	104	2.0	1.43	71
15	1.0	0.789	79	2.0	1.14	57
19	1.0	0.863	86	2.0	1.70	85
37	1.0	0.880	88	2.0	0.897	45
54	1.0	0.850	85	2.0	1.10	55
81	1.0	0.859	86	2.0	1.11	56
77	1.0	0.813	81	2.0	1.17	58
104	1.0	1.01	101	2.0	1.25	63
105	1.0	0.893	89	2.0	1.08	54
114	1.0	0.921	92	2.0	0.997	50
118	1.0	0.954	95	2.0	0.997	50
123	1.0	0.906	91	2.0	1.01	50
126	1.0	0.830	83	2.0	1.09	54
155	1.0	1.02	102	2.0	1.49	75
156/157	2.0	1.84	92	4.0	2.08	52
167	1.0	0.939	94	2.0	1.00	50
169	1.0	0.882	88	2.0	1.04	52
188	1.0	1.03	103	2.0	2.08	104
189	1.0	0.923	92	2.0	1.29	65
202	1.0	0.947	95	2.0	2.39	120
205	1.0	0.892	89	2.0	1.74	87
206	1.0	0.902	90	2.0	2.10	105
208	1.0	0.936	94	2.0	2.12	106
209	1.0	1.15	115	2.0	1.67	83

R = Recovery outside of method 1668A control limits
Nn = Result obtained from alternate analysis
ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
ng = Nanograms
I = Interference

REPORT OF LABORATORY ANALYSIS

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Method 1668A

Spike Recovery Relative Percent Difference (RPD) Results

Client	Test America-Portland		
Spike 1 ID	LCS-24354	Spike 2 ID	LCSD-24355
Spike 1 Filename	P100324A_13	Spike 2 Filename	P100325A_05

Compound	IUPAC	Spike 1 %REC	Spike 2 %REC	%RPD
2-MoCB	1	83	86	3.6
4-MoCB	3	114	102	11.1
2,2'-DiCB	4	106	104	1.9
4,4'-DiCB	15	87	79	9.6
2,2',6-TrCB	19	94	86	8.9
3,4,4'-TrCB	37	87	88	1.1
2,2',6,6'-TeCB	54	84	85	1.2
3,3',4,4'-TeCB	77	79	81	2.5
3,4,4',5-TeCB	81	84	86	2.4
2,2',4,6,6'-PeCB	104	103	101	2.0
2,3,3',4,4'-PeCB	105	93	89	4.4
2,3,4,4',5-PeCB	114	93	92	1.1
2,3',4,4',5-PeCB	118	95	95	0.0
2,3',4,4',5'-PeCB	123	90	91	1.1
3,3',4,4',5-PeCB	126	85	83	2.4
2,2',4,4',6,6'-HxCB	155	103	102	1.0
(156/157)	156/157	96	92	4.3
2,3',4,4',5,5'-HxCB	167	96	94	2.1
3,3',4,4',5,5'-HxCB	169	86	88	2.3
2,2',3,4',5,6,6'-HpCB	188	104	103	1.0
2,3,3',4,4',5,5'-HpCB	189	96	92	4.3
2,2',3,3',5,5',6,6'-OcCB	202	96	95	1.0
2,3,3',4,4',5,5',6-OcCB	205	92	89	3.3
2,2',3,3',4,4',5,5',6-NoCB	206	96	90	6.5
2,2',3,3',4,5,5',6,6'-NoCB	208	96	94	2.1
Decachlorobiphenyl	209	116	115	0.9

%REC = Percent Recovered
RPD = The difference between the two values divided by the mean value

REPORT OF LABORATORY ANALYSIS

Columbia Analytical Services, Inc. 1317 S. 13th Avenue, Kelso, WA 98626 360.577.7222 360.636.1068 (fax) www.caslab.com

March 22, 2010 Analytical Report for Service Request No: K1001691

Jennifer Shackelford
Portland, City of
1120 SW Fifth Avenue # 1000
Portland, OR 97204

RE: NPDES Stormwater Mon.

Dear Jennifer:

Enclosed are the results of the samples submitted to our laboratory on February 25, 2010. For your reference, these analyses have been assigned our service request number K1001691.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3281. You may also contact me via Email at PDivvela@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Pradeep Divvela
Project Chemist

PD/afs

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value that was detected outside the quantitation range.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value that was detected outside the quantitation range.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value that was detected outside the quantitation range.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc.
Kelso, WA
State Certifications, Accreditations, and Licenses

Program	Number
Alaska DEC UST	UST-040
Arizona DHS	AZ0339
Arkansas - DEQ	88-0637
California DHS	2286
Colorado DPHE	-
Florida DOH	E87412
Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
Louisiana DEQ	3016
Louisiana DHH	LA050010
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon - DHS	WA200001
South Carolina DHEC	61002
Utah DOH	COLU
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	City of Portland	**Service Request No.:**	K1001691
Project:	NPDES Stormwater Mon.	**Date Received:**	02/25/10
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Laboratory/Duplicate Laboratory Control Sample (LCS/DLCS).

Sample Receipt

Two field samples were received for analysis at Columbia Analytical Services on 02/25/10. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Organochlorine Pesticides by EPA Method 8081A

Second Source Exceptions:
The analysis of Chlorinated Pesticides by EPA 8081 requires the use of dual column confirmation. When the Initial Calibration Verification (ICV) criteria are met for both columns, the higher of the two sample results is generally reported. The primary evaluation criteria were not met on the confirmation column for Methoxychlor in ICAL 8946. The ICV results were reported from the acceptable column. The data quality was not affected. No further corrective action was necessary.

Sample Confirmation Notes:
The confirmation comparison criteria of 40% difference for one or more analytes was exceeded in both samples. The higher of the two values was reported when no evidence of matrix interference was observed

Elevated Detection Limits:
The detection limit was elevated for several analytes in both samples. The chromatogram indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compounds at the normal limit. The samples were diluted in order to achieve optimal resolution of the internal standard. The results were flagged to indicate the matrix interference.

No other anomalies associated with the analysis of these samples were observed.

Semivolatile Organic Compounds by EPA Method 8270C

Initial Calibration Exceptions:
The primary evaluation criterion was exceeded for Benzyl Alcohol in Initial Calibration (ICAL) ID CAL9295. In accordance with CAS standard operating procedures, the alternative evaluation specified in the EPA method was performed using the mean Relative Standard Deviation (RSD) of all analytes in the calibration. The result of the mean RSD calculation was 9.0%. The calibration met the alternative evaluation criteria. Note that CAS/Kelso policy does not allow the use of averaging if any analyte in the ICAL exceeds 30% RSD.

Approved by _____ **Date** 03/22/10

Relative Percent Difference Exceptions:
The Relative Percent Difference (RPD) criterion for 2,4-Dimethylphenol in the replicate Laboratory Control Samples (LCS/DLCS) KWG1001811-1 and KWG1001811-2 was not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

No other anomalies associated with the analysis of these samples were observed.

Approved by_____ **Date** 03/22/10

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Portland, City of	**Service Request:**	K1001691
Project:	NPDES Stormwater Mon.	**Date Collected:**	02/23/2010
Sample Matrix:	Water	**Date Received:**	02/25/2010

Organochlorine Pesticides

Sample Name:	FO105260	**Units:**	ng/L
Lab Code:	K1001691-001	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8081A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	**1.3**	PD	1.0	0.42	2	03/02/10	03/08/10	KWG1001818	
beta-BHC	ND	U	1.0	0.82	2	03/02/10	03/08/10	KWG1001818	
gamma-BHC (Lindane)	ND	U	1.0	0.94	2	03/02/10	03/08/10	KWG1001818	
delta-BHC	ND	U	1.0	0.28	2	03/02/10	03/08/10	KWG1001818	
Heptachlor	ND	Ui	1.0	1.0	2	03/02/10	03/08/10	KWG1001818	
Aldrin	ND	Ui	1.0	1.0	2	03/02/10	03/08/10	KWG1001818	
Heptachlor Epoxide	ND	Ui	1.0	0.63	2	03/02/10	03/08/10	KWG1001818	
gamma-Chlordane†	ND	U	1.0	0.62	2	03/02/10	03/08/10	KWG1001818	
Endosulfan I	**3.1**	PD	1.0	0.50	2	03/02/10	03/08/10	KWG1001818	
alpha-Chlordane	ND	U	1.0	0.54	2	03/02/10	03/08/10	KWG1001818	
Dieldrin	ND	Ui	6.0	6.0	2	03/02/10	03/08/10	KWG1001818	
4,4'-DDE	ND	Ui	3.0	3.0	2	03/02/10	03/08/10	KWG1001818	
Endrin	ND	Ui	1.4	1.4	2	03/02/10	03/08/10	KWG1001818	
Endosulfan II	ND	Ui	1.3	1.3	2	03/02/10	03/08/10	KWG1001818	
4,4'-DDD	**9.9**	D	1.0	0.42	2	03/02/10	03/08/10	KWG1001818	
Endrin Aldehyde	ND	Ui	1.9	1.9	2	03/02/10	03/08/10	KWG1001818	
Endosulfan Sulfate	ND	U	1.0	0.56	2	03/02/10	03/08/10	KWG1001818	
4,4'-DDT	**70**	PD	5.0	1.7	10	03/02/10	03/12/10	KWG1001818	
Endrin Ketone	ND	U	1.0	0.64	2	03/02/10	03/08/10	KWG1001818	
Methoxychlor	ND	U	1.0	0.56	2	03/02/10	03/08/10	KWG1001818	
Toxaphene	ND	Ui	350	350	2	03/02/10	03/08/10	KWG1001818	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	33	20-102	03/08/10	Acceptable
Decachlorobiphenyl	103	35-128	03/08/10	Acceptable

Analyte Comments

gamma-Chlordane	For this analyte (CAS Registry No. 5103-74-2), USEPA has corrected the name to be beta-Chlordane, also known as trans-Chlordane.

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Portland, City of	**Service Request:**	K1001691
Project:	NPDES Stormwater Mon.	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Organochlorine Pesticides

Sample Name:	Method Blank	**Units:**	ng/L
Lab Code:	KWG1001818-3	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8081A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	0.50	0.21	1	03/02/10	03/05/10	KWG1001818	
beta-BHC	ND	U	0.50	0.41	1	03/02/10	03/05/10	KWG1001818	
gamma-BHC (Lindane)	ND	U	0.50	0.47	1	03/02/10	03/05/10	KWG1001818	
delta-BHC	ND	U	0.50	0.14	1	03/02/10	03/05/10	KWG1001818	
Heptachlor	ND	U	0.50	0.18	1	03/02/10	03/05/10	KWG1001818	
Aldrin	ND	U	0.50	0.11	1	03/02/10	03/05/10	KWG1001818	
Heptachlor Epoxide	ND	U	0.50	0.21	1	03/02/10	03/05/10	KWG1001818	
gamma-Chlordane†	ND	U	0.50	0.31	1	03/02/10	03/05/10	KWG1001818	
Endosulfan I	ND	U	0.50	0.25	1	03/02/10	03/05/10	KWG1001818	
alpha-Chlordane	ND	U	0.50	0.27	1	03/02/10	03/05/10	KWG1001818	
Dieldrin	ND	U	0.50	0.37	1	03/02/10	03/05/10	KWG1001818	
4,4'-DDE	ND	U	0.50	0.19	1	03/02/10	03/05/10	KWG1001818	
Endrin	ND	U	0.50	0.49	1	03/02/10	03/05/10	KWG1001818	
Endosulfan II	ND	Ui	0.50	0.50	1	03/02/10	03/05/10	KWG1001818	
4,4'-DDD	ND	U	0.50	0.21	1	03/02/10	03/05/10	KWG1001818	
Endrin Aldehyde	ND	U	0.50	0.21	1	03/02/10	03/05/10	KWG1001818	
Endosulfan Sulfate	ND	U	0.50	0.28	1	03/02/10	03/05/10	KWG1001818	
4,4'-DDT	ND	U	0.50	0.17	1	03/02/10	03/05/10	KWG1001818	
Endrin Ketone	ND	U	0.50	0.32	1	03/02/10	03/05/10	KWG1001818	
Methoxychlor	ND	U	0.50	0.28	1	03/02/10	03/05/10	KWG1001818	
Toxaphene	ND	Ui	61	61	1	03/02/10	03/05/10	KWG1001818	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	47	20-102	03/05/10	Acceptable
Decachlorobiphenyl	70	35-128	03/05/10	Acceptable

† **Analyte Comments**

gamma-Chlordane	For this analyte (CAS Registry No. 5103-74-2), USEPA has corrected the name to be beta-Chlordane, also known as trans-Chlordane.

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Portland, City of
Project: NPDES Stormwater Mon.
Sample Matrix: Water

Service Request: K1001691

Surrogate Recovery Summary
Organochlorine Pesticides

Extraction Method: EPA 3535A
Analysis Method: 8081A

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2
FO105260	K1001691-001	33 D	103 D
FO105261	K1001691-002	38 D	77 D
Method Blank	KWG1001818-3	47	70
Lab Control Sample	KWG1001818-1	41	60
Duplicate Lab Control Sample	KWG1001818-2	43	57

Surrogate Recovery Control Limits (%)

Sur1	= Tetrachloro-m-xylene	20-102
Sur2	= Decachlorobiphenyl	35-128

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Portland, City of	**Service Request:**	K1001691
Project:	NPDES Stormwater Mon.	**Date Extracted:**	03/02/2010
Sample Matrix:	Water	**Date Analyzed:**	03/05/2010

Lab Control Spike/Duplicate Lab Control Spike Summary
Organochlorine Pesticides

Extraction Method:	EPA 3535A	**Units:**	ng/L
Analysis Method:	8081A	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1001818

	Lab Control Sample KWG1001818-1 Lab Control Spike			Duplicate Lab Control Sample KWG1001818-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
alpha-BHC	7.80	10.0	78	8.02	10.0	80	36-122	3	30
beta-BHC	8.17	10.0	82	8.55	10.0	85	42-125	5	30
gamma-BHC (Lindane)	8.00	10.0	80	8.04	10.0	80	44-117	1	30
delta-BHC	8.21	10.0	82	8.19	10.0	82	48-123	0	30
Heptachlor	7.55	10.0	76	8.05	10.0	80	40-115	6	30
Aldrin	6.72	10.0	67	6.91	10.0	69	10-102	3	30
Heptachlor Epoxide	7.09	10.0	71	7.39	10.0	74	49-109	4	30
gamma-Chlordane	7.75	10.0	78	8.06	10.0	81	47-113	4	30
Endosulfan I	6.85	10.0	69	7.40	10.0	74	35-115	8	30
alpha-Chlordane	7.81	10.0	78	7.89	10.0	79	45-115	1	30
Dieldrin	7.93	10.0	79	8.22	10.0	82	50-115	4	30
4,4'-DDE	7.48	10.0	75	7.47	10.0	75	41-116	0	30
Endrin	8.98	10.0	90	9.21	10.0	92	48-126	3	30
Endosulfan II	7.90	10.0	79	8.27	10.0	83	28-128	5	30
4,4'-DDD	8.11	10.0	81	8.25	10.0	83	33-132	2	30
Endrin Aldehyde	7.04	10.0	70	7.65	10.0	77	27-104	8	30
Endosulfan Sulfate	7.65	10.0	76	8.02	10.0	80	38-118	5	30
4,4'-DDT	7.99	10.0	80	7.95	10.0	80	42-143	0	30
Endrin Ketone	7.38	10.0	74	7.85	10.0	79	30-124	6	30
Methoxychlor	8.46	10.0	85	8.65	10.0	87	43-143	2	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Columbia Analytical Services, Inc.
An Employee - Owned Company

CHAIN OF CUSTODY

SR#: X100191

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222x07 • FAX (360) 636-1068

PAGE 1 OF 1 COC #

PROJECT NAME: NPDES Stormwater Mon.
PROJECT NUMBER:
PROJECT MANAGER: Jennifer Shackelford
COMPANY/ADDRESS: City of Portland
CITY/STATE/ZIP:
E-MAIL ADDRESS:
PHONE #: FAX#:
SAMPLER'S SIGNATURE:

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☒	Volatile Organics 624☐ 8260☐	Hydrocarbons Gas☐ 8021☐ BTEX☐	☐Fuel Fingerprint (*see below) Diesel☐ Oil☐	☐NW-HCID Screen	Oil & Grease/TRPH 1664 HEM☐	PCB's Aroclors☐ 1664 SGT☐	Pesticides/Herbicides 608☐ 8081A☒ Congeners☐ Low Level 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHS 8310☐ SIM☐	Metals, Total or Dissolved (See list below)	Cyanide☐	Hex-Chrom☐	pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS (circle)	NH_3-N, COD, Total-P, TKN, TOC, DOC (circle) NO_2+NO_3	TOX 9020☐ AOX 1650☐ 506☐	REMARKS
FD105260	2/23/10	1242		W	2		X						X									
FD105261	2/23/10	1328		W	1								X									

21

REPORT REQUIREMENTS

- X I. Routine Report: Method Blank, Surrogate, as required
- ___ II. Report Dup., MS, MSD as required
- ___ III. Data Validation Report (includes all raw data)
- ___ IV. CLP Deliverable Report
- ___ V. EDD

INVOICE INFORMATION

P.O. #
Bill To:

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature	Signature	Signature	Signature
Date/Time 2/25/10 1000	Date/Time 2-25-10 10:00	Date/Time 2-25-10	Date/Time 2/25/10 11:00
Printed Name Matthew Zak	Printed Name Brad	Printed Name Brad	Printed Name
Firm COP	Firm CAS	Firm	Firm CAS

RCOC #1 06/03

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC DD

Client / Project: C of PHd Service Request *K10* 01691

Received: 2/25/10 Opened: 2/25/10 By: DJ

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
8.4	9.6	268			

7. Packing material used. *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Sleeves* *Other* _____
8. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
14. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
15. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: Gel pks thaw + warm

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244 425-420-9200 FAX 420-9210
11922 E. First Ave, Spokane, WA 99206-5302 509-924-9200 FAX 924-9290
9405 SW Nimbus Ave,Beaverton, OR 97008-7145 503-906-9200 FAX 906-9210
2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119 907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #: PTB0814

CLIENT: City of Portland

INVOICE TO: Charles Lytle

REPORT TO: Jennifer Shackelford
ADDRESS:

PHONE: FAX:

P.O. NUMBER: 36238

PROJECT NAME: NPDES Stormwater Mon.

PROJECT NUMBER:

SAMPLED BY:

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: [10] STD. [7] [5] [4] [3] [2] [1] [<1]

Petroleum Hydrocarbon Analyses: [5] STD. [4] [3] [2] [1] [<1]

[OTHER] Specify:

* Turnaround Requests less than standard may incur Rush Charges.

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	PRESERVATIVE: PAH + Alk Meth levels	PRESERVATIVE: PCB & Congeners	MATRIX (W, S; O)	# OF CONT.	LOCATION/ COMMENTS	TA WO ID
1	FO105260	2/23/10 1242	X	X	W	3		
2	FO105261	2/23/10 1328	X		W	2		
3								
4								
5								
6								
7								
8								
9								
10								

REQUESTED ANALYSES

RELEASED BY: [signature] DATE: 2/25/10
PRINT NAME: Mackenzie Zirk FIRM: City of Portland TIME: 14:40

RECEIVED BY: [signature] DATE: 2/25/10
PRINT NAME: Bob F FIRM: TAP TIME: 14:40

RELEASED BY: DATE:
PRINT NAME: FIRM: TIME:

RECEIVED BY: [signature] DATE: 2/25/10
PRINT NAME: Kristin Hoffman FIRM: TAP TIME: 16:20

ADDITIONAL REMARKS:
* Please send to PACE

TEMP: 5.8

PAGE OF

TAL-1000(0408)

TestAmerica Portland

Sample Receiving Checklist

Work Order #: PTB0814 Date/Time Received: 2/25/10 1620

Client Name and Project: City of Portland - NPDES

Time Zone:
☐EDT/EST ☐CDT/CST ☐MDT/MST ☒PDT/PST ☐AK ☐OTHER

Unpacking Checks:

Cooler #(s): 1 _____ _____ _____ _____

Temperatures: 5.8 _____ _____ _____ _____

Digi #1	Digi #2	IR Gun
☐	☐	☒ (☐Plastic ☒Glass)

Temperature out of Range:

__Not enough or No Ice
__Ice Melted
__W/in 4 Hrs of collection
__Other:_____

Initials: _____

N/A	Yes	No	
☒	☐	☐	1. If ESI client, were temp blanks received? If no, document on NOD.
☒	☐	☐	2. Cooler Seals intact? (N/A if hand delivered) if no, document on NOD.
	☒	☐	3. Chain of Custody present? If no, document on NOD.
	☒	☐	4. Bottles received intact? If no, document on NOD.
	☒	☐	5. Sample is not multiphasic? If no, document on NOD.
	☒	☐	6. Proper Container and preservatives used? If no, document on NOD.
☒	☐	☐	7. pH of all samples checked and meet requirements? If no, document on NOD.
☒	☐	☐	8. Cyanide samples checked for sulfides and meet requirements? If no, notify PM.
☒	☐	☐	9. HF Dilution required?
	☒	☐	10. Sufficient volume provided for all analysis? If no, document on NOD and consult PM before proceeding.
	☒	☐	11. Did chain of custody agree with samples received? If no, document on NOD.
	☐	☒	12. Is the "Sampled by" section of the COC completed?
☒	☐	☐	13. Were VOA/Oil Syringe samples without headspace?
☒	☐	☐	14. Were VOA vials preserved? ☐HCl ☐Sodium Thiosulfate ☐Ascorbic Acid
	☐	☒	15. Did samples require preservation with sodium thiosulfate?
☒	☐	☐	16. If yes to #15, was the residual chlorine test negative? If no, document on NOD.
☒	☐	☐	17. Are dissolved/field filtered metals bottles sediment-free? If no, document on NOD.
☒	☐	☐	18. Is sufficient volume provided for client requested MS/MSD or matrix duplicates? If no, document on NOD and contact PM before proceeding.
☒	☐	☐	19. Are analyses with short holding times received in hold?
	☒	☐	20. Was Standard Turn Around (TAT) requested?
	☒	☐	21. Receipt date(s) < 48 hours past the collection date(s)? If no, notify PM.

TestAmerica Portland

Sample Receiving Checklist

Work Order #: PTB0814

Login Checks:

Initials:

N/A	Yes	No	
	☒	☐	22. Sufficient volume provided for all analysis? If no, document on NOD & contact PM.
☒	☐	☐	23. Sufficient volume provided for client requested MS/MSD or matrix duplicates? If no, document on NOD and contact PM.
	☒	☐	24. Did the chain of custody include "received by" and "relinquished by" signatures, dates and times?
☒	☐	☐	25. Were special log in instructions read and followed?
	☒	☐	26. Were tests logged checked against the COC?
☒	☐	☐	27. Were rush notices printed and delivered?
☒	☐	☐	28. Were short hold notices printed and delivered?
☒	☐	☐	29. Were subcontract COCs printed?
☒	☐	☐	30. Was HF dilution logged?

Labeling and Storage Checks:

Initials:

N/A	Yes	No	
☒	☐	☐	31. Were the subcontracted samples/containers put in Sx fridge?
☒	☐	☐	32. Were sample bottles and COC double checked for dissolved/filtered metals?
	☒	☐	33. Did the sample ID, Date, and Time from label match what was logged?
☒	☐	☐	34. Were Foreign sample stickers affixed to each container and containers stored in foreign fridge?
☒	☐	☐	35. Were HF stickers affixed to each container, and containers stored in Sx fridge?
☒	☐	☐	36. Was an NOD for created for noted discrepancies and placed in folder?

Document any problems or discrepancies and the actions taken to resolve them on a Notice of Discrepancy form (NOD).

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PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

ORELAP#: OR100021

March 19, 2010

Jennifer Shackelford
City of Portland Water Pollution Laboratory
6543 N. Burlington Ave.
Portland, OR 97203

RE: NPDES

Enclosed are the results of analyses for samples received by the laboratory on 02/25/10 16:20. The following list is a summary of the Work Orders contained in this report, generated on 03/19/10 17:32.

If you have any questions concerning this report, please feel free to contact me.

Work Order	Project	ProjectNumber
PTB0814	NPDES	36238

TestAmerica Portland

Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory	Project Name:	**NPDES**	
6543 N. Burlington Ave.	Project Number:	36238	Report Created:
Portland, OR 97203	Project Manager:	Jennifer Shackelford	03/19/10 17:32

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FO105260	PTB0814-01	Water	02/23/10 12:42	02/25/10 16:20
FO105261	PTB0814-02	Water	02/23/10 13:28	02/25/10 16:20

TestAmerica Portland

Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory	Project Name:	**NPDES**	
6543 N. Burlington Ave.	Project Number:	36238	Report Created:
Portland, OR 97203	Project Manager:	Jennifer Shackelford	03/19/10 17:32

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PTB0814-01 (FO105260)			**Water**			**Sampled: 02/23/10 12:42**				
Bis(2-ethylhexyl)phthalate	EPA 8270m	ND	-----	0.971	ug/l	1x	10C0004	03/01/10 11:00	03/09/10 19:23	
Butyl benzyl phthalate	"	ND	-----	0.971	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	-----	0.971	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	-----	0.971	"	"	"	"	"	
Diethyl phthalate	"	ND	-----	0.971	"	"	"	"	"	
Dimethyl phthalate	"	**2.56**	-----	0.971	"	"	"	"	"	
Acenaphthene	"	ND	-----	0.0194	"	"	"	"	03/08/10 18:19	
Acenaphthylene	"	ND	-----	0.0194	"	"	"	"	"	
Anthracene	"	ND	-----	0.0194	"	"	"	"	"	
Benzo (a) anthracene	"	**0.0203**	-----	0.00971	"	"	"	"	"	
Benzo (a) pyrene	"	**0.0144**	-----	0.00971	"	"	"	"	"	
Benzo (b) fluoranthene	"	**0.0178**	-----	0.00971	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	-----	0.0194	"	"	"	"	"	
Benzo (k) fluoranthene	"	**0.0120**	-----	0.00971	"	"	"	"	"	
Chrysene	"	**0.0392**	-----	0.00971	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	-----	0.00971	"	"	"	"	"	
Fluoranthene	"	**0.0685**	-----	0.0194	"	"	"	"	"	
Fluorene	"	ND	-----	0.0194	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	**0.0101**	-----	0.00971	"	"	"	"	"	
Naphthalene	"	ND	-----	0.0194	"	"	"	"	"	
Phenanthrene	"	**0.0465**	-----	0.0194	"	"	"	"	"	
Pyrene	"	**0.104**	-----	0.0194	"	"	"	"	"	
Surrogate(s): Fluorene-d10				*77.4%*		*25 - 125 %*				"
Pyrene-d10				*92.6%*		*23 - 150 %*				"
Benzo (a) pyrene-d12				*80.2%*		*10 - 125 %*				"
PTB0814-02 (FO105261)			**Water**			**Sampled: 02/23/10 13:28**				
Bis(2-ethylhexyl)phthalate	EPA 8270m	**1.02**	-----	0.971	ug/l	1x	10C0004	03/01/10 11:00	03/13/10 01:13	
Butyl benzyl phthalate	"	**3.22**	-----	0.971	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	-----	0.971	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	-----	0.971	"	"	"	"	"	
Diethyl phthalate	"	ND	-----	0.971	"	"	"	"	"	
Dimethyl phthalate	"	ND	-----	0.971	"	"	"	"	"	
Acenaphthene	"	ND	-----	0.0194	"	"	"	"	03/08/10 23:24	
Acenaphthylene	"	ND	-----	0.0194	"	"	"	"	"	
Anthracene	"	ND	-----	0.0194	"	"	"	"	"	

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Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory	Project Name:	**NPDES**	
6543 N. Burlington Ave.	Project Number:	36238	Report Created:
Portland, OR 97203	Project Manager:	Jennifer Shackelford	03/19/10 17:32

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PTB0814-02 (FO105261)			Water			Sampled: 02/23/10 13:28				
Benzo (a) anthracene	EPA 8270m	ND	-----	0.00971	ug/l	1x	10C0004	03/01/10 11:00	03/08/10 23:24	
Benzo (a) pyrene	"	**0.0127**	-----	0.00971	"	"	"	"	"	
Benzo (b) fluoranthene	"	**0.0156**	-----	0.00971	"	"	"	"	"	
Benzo (ghi) perylene	"	**0.0352**	-----	0.0194	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	-----	0.00971	"	"	"	"	"	
Chrysene	"	**0.0434**	-----	0.00971	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	-----	0.00971	"	"	"	"	"	
Fluoranthene	"	**0.0425**	-----	0.0194	"	"	"	"	"	
Fluorene	"	ND	-----	0.0194	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	**0.0128**	-----	0.00971	"	"	"	"	"	
Naphthalene	"	**0.0318**	-----	0.0194	"	"	"	"	"	
Phenanthrene	"	**0.0422**	-----	0.0194	"	"	"	"	"	
Pyrene	"	**0.0571**	-----	0.0194	"	"	"	"	"	
Surrogate(s): *Fluorene-d10*				*89.8%*		*25 - 125 %*				"
Pyrene-d10				*70.8%*		*23 - 150 %*				"
Benzo (a) pyrene-d12				*87.6%*		*10 - 125 %*				"

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6543 N. Burlington Ave.	Project Number:	36238	Report Created:
Portland, OR 97203	Project Manager:	Jennifer Shackelford	03/19/10 17:32

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 10C0004 **Water Preparation Method: 3520B Liq-Liq**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (10C0004-BLK1)									**Extracted: 03/01/10 11:00**					
Bis(2-ethylhexyl)phthalate	EPA 8270m	ND	---	1.00	ug/l	1x	--	--	--	--	--	--	03/09/10 15:30	
Butyl benzyl phthalate	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
Di-n-butyl phthalate	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
Di-n-octyl phthalate	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
Diethyl phthalate	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
Dimethyl phthalate	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
Acenaphthene	"	ND	---	0.0200	"	"	--	--	--	--	--	--	03/08/10 17:18	
Acenaphthylene	"	ND	---	0.0200	"	"	--	--	--	--	--	--	"	
Anthracene	"	ND	---	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (a) anthracene	"	ND	---	0.0100	"	"	--	--	--	--	--	--	"	
Benzo (a) pyrene	"	ND	---	0.0100	"	"	--	--	--	--	--	--	"	
Benzo (b) fluoranthene	"	ND	---	0.0100	"	"	--	--	--	--	--	--	"	
Benzo (ghi) perylene	"	ND	---	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (k) fluoranthene	"	ND	---	0.0100	"	"	--	--	--	--	--	--	"	
Chrysene	"	ND	---	0.0100	"	"	--	--	--	--	--	--	"	
Dibenzo (a,h) anthracene	"	ND	---	0.0100	"	"	--	--	--	--	--	--	"	
Fluoranthene	"	ND	---	0.0200	"	"	--	--	--	--	--	--	"	
Fluorene	"	ND	---	0.0200	"	"	--	--	--	--	--	--	"	
Indeno (1,2,3-cd) pyrene	"	ND	---	0.0100	"	"	--	--	--	--	--	--	"	
Naphthalene	"	ND	---	0.0200	"	"	--	--	--	--	--	--	"	
Phenanthrene	"	ND	---	0.0200	"	"	--	--	--	--	--	--	"	
Pyrene	"	ND	---	0.0200	"	"	--	--	--	--	--	--	"	
Surrogate(s): Fluorene-d10		*Recovery: 80.4%*			*Limits: 25-125%*								*03/08/10 17:18*	
Pyrene-d10		*104%*			*23-150%*								*"*	
Benzo (a) pyrene-d12		*74.3%*			*10-125%*								*"*	
LCS (10C0004-BS1)									**Extracted: 03/01/10 11:00**					
Bis(2-ethylhexyl)phthalate	EPA 8270m	3.24	---	1.00	ug/l	1x	--	4.00	80.9%	(20-150)	--	--	03/09/10 16:03	
Butyl benzyl phthalate	"	3.17	---	1.00	"	"	--	"	79.3%	"	--	--	"	
Di-n-butyl phthalate	"	2.97	---	1.00	"	"	--	"	74.3%	"	--	--	"	
Di-n-octyl phthalate	"	3.26	---	1.00	"	"	--	"	81.5%	"	--	--	"	
Diethyl phthalate	"	2.68	---	1.00	"	"	--	"	66.9%	"	--	--	"	
Dimethyl phthalate	"	2.58	---	1.00	"	"	--	"	64.5%	"	--	--	"	
Acenaphthene	"	1.18	---	0.0200	"	"	--	1.25	94.3%	(35-120)	--	--	03/08/10 14:46	
Acenaphthylene	"	1.23	---	0.0200	"	"	--	"	98.7%	(34-116)	--	--	"	
Anthracene	"	1.24	---	0.0200	"	"	--	"	99.5%	(24-119)	--	--	"	
Benzo (a) anthracene	"	1.47	---	0.0100	"	"	--	"	117%	(36-128)	--	--	"	
Benzo (a) pyrene	"	1.20	---	0.0100	"	"	--	"	95.9%	(17-128)	--	--	"	
Benzo (b) fluoranthene	"	1.07	---	0.0100	"	"	--	"	85.4%	(37-131)	--	--	"	

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Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory	Project Name:	**NPDES**	
6543 N. Burlington Ave.	Project Number:	36238	Report Created:
Portland, OR 97203	Project Manager:	Jennifer Shackelford	03/19/10 17:32

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 10C0004 **Water Preparation Method: 3520B Liq-Liq**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
LCS (10C0004-BS1)								**Extracted: 03/01/10 11:00**						
Benzo (ghi) perylene	EPA 8270m	1.22	---	0.0200	ug/l	1x	--	1.25	97.4%	(26-126)	--	--	03/08/10 14:46	
Benzo (k) fluoranthene	"	1.04	---	0.0100	"	"	--	"	82.9%	(18-145)	--	--	"	
Chrysene	"	1.36	---	0.0100	"	"	--	"	109%	(16-137)	--	--	"	
Dibenzo (a,h) anthracene	"	1.34	---	0.0100	"	"	--	"	107%	(20-141)	--	--	"	
Fluoranthene	"	1.31	---	0.0200	"	"	--	"	105%	(31-125)	--	--	"	
Fluorene	"	1.25	---	0.0200	"	"	--	"	100%	(27-124)	--	--	"	
Indeno (1,2,3-cd) pyrene	"	1.30	---	0.0100	"	"	--	"	104%	(30-135)	--	--	"	
Naphthalene	"	1.19	---	0.0200	"	"	--	"	95.5%	(30-113)	--	--	"	
Phenanthrene	"	1.17	---	0.0200	"	"	--	"	93.6%	(34-126)	--	--	"	
Pyrene	"	1.62	---	0.0200	"	"	--	"	129%	(21-141)	--	--	"	
Surrogate(s): Fluorene-d10		*Recovery: 83.2%*			*Limits: 25-125%*								*03/08/10 14:46*	
Pyrene-d10		*105%*			*23-150%*								*"*	
Benzo (a) pyrene-d12		*83.9%*			*10-125%*								*"*	
LCS Dup (10C0004-BSD1)								**Extracted: 03/01/10 11:00**						
Bis(2-ethylhexyl)phthalate	EPA 8270m	3.22	---	1.00	ug/l	1x	--	4.00	80.5%	(20-150)	0.485%	(50)	03/09/10 16:37	
Butyl benzyl phthalate	"	3.16	---	1.00	"	"	--	"	79.1%	"	0.313%	"	"	
Di-n-butyl phthalate	"	2.96	---	1.00	"	"	--	"	74.1%	"	0.291%	"	"	
Di-n-octyl phthalate	"	3.23	---	1.00	"	"	--	"	80.8%	"	0.852%	"	"	
Diethyl phthalate	"	2.73	---	1.00	"	"	--	"	68.3%	"	2.00%	"	"	
Dimethyl phthalate	"	2.64	---	1.00	"	"	--	"	66.0%	"	2.22%	"	"	
Acenaphthene	"	1.18	---	0.0200	"	"	--	1.25	94.4%	(35-120)	0.176%	(35)	03/08/10 15:16	
Acenaphthylene	"	1.24	---	0.0200	"	"	--	"	99.3%	(34-116)	0.611%	"	"	
Anthracene	"	1.25	---	0.0200	"	"	--	"	99.6%	(24-119)	0.128%	"	"	
Benzo (a) anthracene	"	1.46	---	0.0100	"	"	--	"	117%	(36-128)	0.470%	"	"	
Benzo (a) pyrene	"	1.24	---	0.0100	"	"	--	"	99.2%	(17-128)	3.34%	"	"	
Benzo (b) fluoranthene	"	1.22	---	0.0100	"	"	--	"	97.2%	(37-131)	12.9%	"	"	
Benzo (ghi) perylene	"	1.23	---	0.0200	"	"	--	"	98.8%	(26-126)	1.44%	"	"	
Benzo (k) fluoranthene	"	1.11	---	0.0100	"	"	--	"	88.7%	(18-145)	6.73%	"	"	
Chrysene	"	1.37	---	0.0100	"	"	--	"	109%	(16-137)	0.385%	"	"	
Dibenzo (a,h) anthracene	"	1.35	---	0.0100	"	"	--	"	108%	(20-141)	1.06%	"	"	
Fluoranthene	"	1.29	---	0.0200	"	"	--	"	103%	(31-125)	2.00%	"	"	
Fluorene	"	1.27	---	0.0200	"	"	--	"	101%	(27-124)	1.24%	"	"	
Indeno (1,2,3-cd) pyrene	"	1.31	---	0.0100	"	"	--	"	105%	(30-135)	1.11%	"	"	
Naphthalene	"	1.16	---	0.0200	"	"	--	"	92.7%	(30-113)	2.95%	"	"	
Phenanthrene	"	1.17	---	0.0200	"	"	--	"	94.0%	(34-126)	0.458%	"	"	
Pyrene	"	1.51	---	0.0200	"	"	--	"	121%	(21-141)	6.58%	"	"	
Surrogate(s): Fluorene-d10		*Recovery: 85.9%*			*Limits: 25-125%*								*03/08/10 15:16*	
Pyrene-d10		*101%*			*23-150%*								*"*	

TestAmerica Portland

Howard Holmes, Project Manager

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

PORTLAND, OR 9405 S.W. NIMBUS AVENUE
BEAVERTON, OR 97008-7132
ph: (503) 906.9200 fax: (503) 906.9210

City of Portland Water Pollution Laboratory	Project Name:	**NPDES**	
6543 N. Burlington Ave.	Project Number:	36238	Report Created:
Portland, OR 97203	Project Manager:	Jennifer Shackelford	03/19/10 17:32

Polynuclear Aromatic Compounds per EPA 8270M-SIM - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 10C0004 **Water Preparation Method: 3520B Liq-Liq**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
LCS Dup (10C0004-BSD1)							**Extracted: 03/01/10 11:00**							
Surrogate(s): Benzo (a) pyrene-d12		*Recovery: 88.6%*			*Limits: 10-125%*								*03/08/10 15:16*	

TestAmerica Portland

Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory	Project Name:	**NPDES**	
6543 N. Burlington Ave.	Project Number:	36238	Report Created:
Portland, OR 97203	Project Manager:	Jennifer Shackelford	03/19/10 17:32

Notes and Definitions

Report Specific Notes:

None

Laboratory Reporting Conventions:

DET	-	Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.
ND	-	Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).
NR/NA	-	Not Reported / Not Available
dry	-	Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight.
wet	-	Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported on a Wet Weight Basis.
RPD	-	RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries).
MRL	-	METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.
MDL*	-	METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated Results.
Dil	-	Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
Reporting Limits	-	Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.
Electronic Signature	-	Electronic Signature added in accordance with TestAmerica's *Electronic Reporting and Electronic Signatures Policy.* Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica Portland

Howard Holmes, Project Manager

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244 425-420-9200 FAX 420-9210
11922 E. First Ave, Spokane, WA 99206-5302 509-924-9200 FAX 924-9290
9405 SW Nimbus Ave,Beaverton, OR 97008-7145 503-906-9200 FAX 906-9210
2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119 907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #: PTB0814

CLIENT: City of Portland

INVOICE TO: Charles Lytle

REPORT TO: Jennifer Shackelford
ADDRESS:

PHONE: FAX:

P.O. NUMBER: 36238

PROJECT NAME: NPDES Stormwater Mon.

PROJECT NUMBER:

SAMPLED BY:

TURNAROUND REQUEST in Business Days *

Organic & Inorganic Analyses: [10] STD. [7] [5] [4] [3] [2] [1] [<1]

Petroleum Hydrocarbon Analyses: [5] STD. [4] [3] [2] [1] [<1]

[OTHER] Specify:

* Turnaround Requests less than standard may incur Rush Charges.

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	PRESERVATIVE: PAH + Alk Meth levels	PRESERVATIVE: PCB & Congeners	MATRIX (W, S; O)	# OF CONT.	LOCATION/ COMMENTS	TA WO ID
1	FO105260	2/23/10 1242	X	X	W	3		
2	FO105261	2/23/10 1328	X		W	2		
3								
4								
5								
6								
7								
8								
9								
10								

REQUESTED ANALYSES

RELEASED BY: [signature] DATE: 2/25/10
PRINT NAME: Mackenzie Zirk FIRM: City of Portland TIME: 14:40

RECEIVED BY: [signature] DATE: 2/25/10
PRINT NAME: Bob F FIRM: TAP TIME: 14:40

RELEASED BY: DATE:
PRINT NAME: FIRM: TIME:

RECEIVED BY: [signature] DATE: 2/25/10
PRINT NAME: Kristin Hoffman FIRM: TAP TIME: 16:20

ADDITIONAL REMARKS:
* Please send to PACE

TEMP: 5.8

PAGE OF

TAL-1000(0408)

TestAmerica Portland

Sample Receiving Checklist

Work Order #: PTB0814 Date/Time Received: 2/25/10 1620

Client Name and Project: City of Portland - NPDES

Time Zone:
☐EDT/EST ☐CDT/CST ☐MDT/MST ☒PDT/PST ☐AK ☐OTHER

Unpacking Checks:

Cooler #(s): 1 _____ _____ _____ _____

Temperatures: 5.8 _____ _____ _____ _____

Digi #1	Digi #2	IR Gun
☐	☐	☒ (☐Plastic ☒Glass)

Temperature out of Range:

__Not enough or No Ice
__Ice Melted
__W/in 4 Hrs of collection
__Other:_____

Initials: _____

N/A	Yes	No	
☒	☐	☐	1. If ESI client, were temp blanks received? If no, document on NOD.
☒	☐	☐	2. Cooler Seals intact? (N/A if hand delivered) if no, document on NOD.
	☒	☐	3. Chain of Custody present? If no, document on NOD.
	☒	☐	4. Bottles received intact? If no, document on NOD.
	☒	☐	5. Sample is not multiphasic? If no, document on NOD.
	☒	☐	6. Proper Container and preservatives used? If no, document on NOD.
☒	☐	☐	7. pH of all samples checked and meet requirements? If no, document on NOD.
☒	☐	☐	8. Cyanide samples checked for sulfides and meet requirements? If no, notify PM.
☒	☐	☐	9. HF Dilution required?
	☒	☐	10. Sufficient volume provided for all analysis? If no, document on NOD and consult PM before proceeding.
	☒	☐	11. Did chain of custody agree with samples received? If no, document on NOD.
	☐	☒	12. Is the "Sampled by" section of the COC completed?
☒	☐	☐	13. Were VOA/Oil Syringe samples without headspace?
☒	☐	☐	14. Were VOA vials preserved? ☐HCl ☐Sodium Thiosulfate ☐Ascorbic Acid
	☐	☒	15. Did samples require preservation with sodium thiosulfate?
☒	☐	☐	16. If yes to #15, was the residual chlorine test negative? If no, document on NOD.
☒	☐	☐	17. Are dissolved/field filtered metals bottles sediment-free? If no, document on NOD.
☒	☐	☐	18. Is sufficient volume provided for client requested MS/MSD or matrix duplicates? If no, document on NOD and contact PM before proceeding.
☒	☐	☐	19. Are analyses with short holding times received in hold?
	☒	☐	20. Was Standard Turn Around (TAT) requested?
	☒	☐	21. Receipt date(s) < 48 hours past the collection date(s)? If no, notify PM.

TestAmerica Portland

Sample Receiving Checklist

Work Order #: PTB0814

Login Checks:

Initials:

N/A	Yes	No	
	☒	☐	22. Sufficient volume provided for all analysis? If no, document on NOD & contact PM.
☒	☐	☐	23. Sufficient volume provided for client requested MS/MSD or matrix duplicates? If no, document on NOD and contact PM.
	☒	☐	24. Did the chain of custody include "received by" and "relinquished by" signatures, dates and times?
☒	☐	☐	25. Were special log in instructions read and followed?
	☒	☐	26. Were tests logged checked against the COC?
☒	☐	☐	27. Were rush notices printed and delivered?
☒	☐	☐	28. Were short hold notices printed and delivered?
☒	☐	☐	29. Were subcontract COCs printed?
☒	☐	☐	30. Was HF dilution logged?

Labeling and Storage Checks:

Initials:

N/A	Yes	No	
☒	☐	☐	31. Were the subcontracted samples/containers put in Sx fridge?
☒	☐	☐	32. Were sample bottles and COC double checked for dissolved/filtered metals?
	☒	☐	33. Did the sample ID, Date, and Time from label match what was logged?
☒	☐	☐	34. Were Foreign sample stickers affixed to each container and containers stored in foreign fridge?
☒	☐	☐	35. Were HF stickers affixed to each container, and containers stored in Sx fridge?
☒	☐	☐	36. Was an NOD for created for noted discrepancies and placed in folder?

Document any problems or discrepancies and the actions taken to resolve them on a Notice of Discrepancy form (NOD).

October 2010 Event

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GSI Water Solutions, Inc.
55 SW Yamhill Street, Suite 400 Portland, OR 97204
P: 503.239.8799 F: 503.239.8940
info@gsiwatersolutions.com www.gsiwatersolutions.com

Laboratory Data QA/QC Review
MS4 Stormwater Data Evaluation
City Outfall Basin 19

To: File

From: Andrew Davidson, GSI Water Solutions, Inc.

Date: October 26, 2011

This memorandum presents a quality assurance/quality control (QA/QC) review of the laboratory data generated from a source control investigation sampling event conducted by the City of Portland (City) at Outfall Basin 19 on October 24, 2010. Two stormwater samples (FO10612 and FO106021) were collected and submitted for analyses.

The laboratory analyses for these source control program samples were completed by the City's Bureau of Environmental Services (BES) Water Pollution Control Laboratory (WPCL) and subcontracted laboratories. The following laboratories conducted the analyses listed:

- BES WPCL
    - E. Coli – COLILERT QT
    - Total Oil & Grease – EPA 1664
    - Ammonia Nitrogen – EPA 350.1
    - BOD5 – SM 5210B/H10360
    - Nitrate –Nitrogen – EPA 300.0
    - Orthophosphate Phosphorus – EPA 365.1
    - Total Dissolved Solids (TDS) – SM 2540C
    - Total Kjeldahl Nitrogen (TKN) – PAI-DK03
    - Total Phosphorus – EPA 365.4
    - Total Solids (TS) – SM 2540 B
    - Total Suspended Solids (TSS) – SM 2540 D
    - Total Hardness – SM 2340 B CALC

  - Metals (Dissolved) – EPA 200.8
  - Metals (Total) – EPA 200.8 310-2952
  - Polynuclear Aromatic Hydrocarbons (PAHs) & Phthalates – EPA 8270M-SIM
- Columbia Analytical Services (CAS)
  - Organochlorine Pesticides – EPA 8081A
  - Semi-Volatile Organic Compounds (SVOCs) – EPA 8270C
- Pace Analytical Services (Pace)
  - Polychlorinated Biphenyls (PCB) Congeners – EPA 1668A

The WPCL laboratory report and the subcontracted laboratory reports for all analyses associated with this sampling event are attached.

For the purpose of this pesticide source control investigation, the following QA/QC review was limited to review of the analytical data generated from the analysis of organochlorine pesticides for field sample FO106021. The QA/QC review of the analytical data is based on the available documentation provided by WPCL and the subcontracted laboratories, and consisted of reviewing the following elements for each laboratory report, if applicable and/or available:

- Chain-of-custody – for completeness and continuous custody
- Analysis conducted within holding times
- Chemicals of interest detected in method blanks
- Internal standard recoveries within accuracy control limits
- Surrogate recoveries within laboratory control limits
- Matrix spike and matrix spike duplicate (MS/MSD) sample results within laboratory control limits
- Laboratory control and duplicate laboratory control (LC/DLC) sample recoveries within laboratory control limits
- Relative percent differences (RPDs) for laboratory duplicate samples within laboratory control limits.

The results of the QA/QC review of the laboratory reports are presented below.

Chain-of-Custody

The chain-of-custody forms showed continuous custody of the samples. The chain-of-custody procedures appear to have been adequate indicating that sample integrity was maintained throughout the sample collection and delivery process.

Analysis Holding Times

Samples were extracted and analyzed within the recommended holding times for the pesticide analysis.

Method Blanks

No analytes were detected in the method blank processed during the analysis of organochlorine pesticides. CAS report that the method detection limit (MDL) for Toxaphene in the method blank was elevated due to the presence of non-target background components which were apparently introduced as laboratory artifacts. However, the background level was low compared to the MDL so the effect on the results was minimal.

Surrogate Recoveries

Surrogate recoveries were analyzed during the analysis of pesticides. All surrogate recoveries were within laboratory acceptance limits.

Laboratory Control/Duplicate Laboratory Control Samples

LC and DLC samples were processed during the laboratory analysis of pesticides. All LC/DLC sample recoveries and RPDs are within laboratory acceptance limits.

Other

CAS reports that insufficient sample volume was received to perform MS/MSD samples for the analysis of organochlorine pesticides. LC/DLC samples were analyzed in lieu of the MS/MSD samples. CAS also reports that detection limits were elevated for all analytes in the organochlorine pesticide analysis due to the presence of non-target background components. Accordingly, the sample was diluted to achieve optimal resolution of the target analytes and internal standard.

Water Pollution Control Laboratory
6543 N. Burlington Ave.
Portland, Oregon 97203-4552
(503) 823-5696

City of Portland Chain-of-Custody

Bureau of Environmental Services

Date: 10/25/10
Page: 1 of 1
Collected By: JOM, PTB AJA

Project Name: NPDES STORMWTR MON
File Number: 4010.001 **Matrix:** STORMWTR

Requested Analyses W1DJ011

☑ Sample Time recorded in ~~current local~~ PST time

Composite includes aliquots from 10/23/10 @ 1833 to 10/24/10 @ 2225

WPCL Sample I.D.	Location	Point Code	Sample Date	Sample Time	Sample Type	General: TS	TDS	TSS	Hardness	BOD	COD	Metals: Total Metals (Ag, As, Cd, Cr, Cu, Pb, Zn)	Dissolved Metals (Ag, As, Cd, Cr, Cu, Pb, Zn)	Nutrients: Ammonia-nitrogen	Nitrate-nitrogen	Orthophosphate phosphorus	Total Phosphorus	TKN	Org.: PAHs + Phthalates		Outside: SVOCs, low-level (CAS)	PCB 209 Congeners (Pace)	Pesticides (CAS low-lvl)			
FO106021	4900 NW KITTRIDGE AVE (OF19)	OF19	10/24/10	2225	C	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●			
2																										
3																										
4																										
5																										
6																										
7																										
8																										
9																										
10																										

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.	Relinquished By: 4.
Signature: [signature] Time: 1547	Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Jordan McLann Date: 10/25/10	Printed Name: Date:	Printed Name: Date:	Printed Name: Date:
Received By:	**Received By:** 2.	**Received By:** 3.	**Received By:** 4.
Signature: [signature] Time: 1547	Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Mackenzie Zink Date: 10/25/10	Printed Name: Date:	Printed Name: Date:	Printed Name: Date:

s:\eid\4000\4010.001\sampdoc\Current NPDES COC.xls

Water Pollution Control Laboratory
6543 N. Burlington Ave.
Portland, Oregon 97203-4552
(503) 823-5696

City of Portland Chain-of-Custody

Bureau of Environmental Services

Date: 10/25/10
Page: 1 of 1
Collected By: JOM, PTB AJA

Project Name: NPDES STORMWTR MON
File Number: 4010.001 **Matrix:** STORMWTR

Requested Analyses W1DJ011

☑ Sample Time recorded in ~~current local~~ PST time

Composite includes aliquots from 10/23/10 @ 1833 to 10/24/10 @ 2225

WPCL Sample I.D.	Location	Point Code	Sample Date	Sample Time	Sample Type	General: TS	TDS	TSS	Hardness	BOD	COD	Metals: Total Metals (Ag, As, Cd, Cr, Cu, Pb, Zn)	Dissolved Metals (Ag, As, Cd, Cr, Cu, Pb, Zn)	Nutrients: Ammonia-nitrogen	Nitrate-nitrogen	Orthophosphate phosphorus	Total Phosphorus	TKN	Org.: PAHs + Phthalates		Outside: SVOCs, low-level (CAS)	PCB 209 Congeners (Pace)	Pesticides (CAS low-lvl)			
FO106021	4900 NW KITTRIDGE AVE (OF19)	OF19	10/24/10	2225	C	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●			
2																										
3																										
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5																										
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7																										
8																										
9																										
10																										

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.	Relinquished By: 4.
Signature: [signature] Time: 1547	Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Jordan McLann Date: 10/25/10	Printed Name: Date:	Printed Name: Date:	Printed Name: Date:
Received By:	**Received By:** 2.	**Received By:** 3.	**Received By:** 4.
Signature: [signature] Time: 1547	Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Mackenzie Zink Date: 10/25/10	Printed Name: Date:	Printed Name: Date:	Printed Name: Date:

s:\eid\4000\4010.001\sampdoc\Current NPDES COC.xls

City of Portland
Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656

LABORATORY ANALYSIS REPORT

Sample ID: FO106021 **Sample Collected:** 10/24/10 22:25 **Sample Received:** 10/25/10 **Sample Status:** COMPLETE AND VALIDATED

Proj./Company Name: NPDES STORMWTR WQ & FLOW MON
Address/Location: 4900 NW KITTRIDGE AVE (OF19) MANHOLE COMPOSITE
Sample Point Code: OF19
Sample Type: COMPOSITE
Sample Matrix: STORMWTR

System ID: AO09439
EID File # : 4010.001
LocCode: NPDESSTM
Collected By: JJM/PTB/AJA

Comments:
LAB: Phthalate results flagged as estimates are greater than the MDL but less than the MRL.

Test Parameter	Result	Units	MRL	Method	Analysis Date
GENERAL					
AMMONIA-NITROGEN	0.070	mg/L	0.02	EPA 350.1	10/26/10
BOD5	5	mg/L	2	SM 5210B /H10360	10/26/10
COD	28	mg/L	5	SM 5220 D	10/26/10
NITRATE-NITROGEN	0.57	mg/L	0.10	EPA 300.0	10/26/10
o-PHOSPHATE-PHOSPHORUS, DISS	0.024	mg/L	0.02	EPA 365.1	10/25/10
TOTAL DISSOLVED SOLIDS @180C	50	mg/L	5	SM 2540 C	10/26/10
TOTAL KJELDAHL NITROGEN (TKN)	0.66	mg/L	0.20	PAI-DK03	10/29/10
TOTAL PHOSPHORUS	0.16	mg/L	0.03	EPA 365.4	11/03/10
TOTAL SOLIDS	86	mg/L	2	SM 2540 B	10/26/10
TOTAL SUSPENDED SOLIDS	45	mg/L	2	SM 2540 D	10/26/10
METALS					
HARDNESS, TOTAL	26.4	mg CaCO3/L	0.5	SM 2340 B CALC	10/28/10
METALS BY ICP-MS (DISSOLVED) - 7					
ARSENIC, DISSOLVED	0.44	µg/L	0.1	EPA 200.8	10/26/10
CADMIUM, DISSOLVED	0.15	µg/L	0.1	EPA 200.8	10/26/10
CHROMIUM, DISSOLVED	<0.40	µg/L	0.4	EPA 200.8	10/26/10
COPPER, DISSOLVED	3.34	µg/L	0.2	EPA 200.8	10/26/10
LEAD, DISSOLVED	0.45	µg/L	0.1	EPA 200.8	10/26/10
SILVER, DISSOLVED	<0.10	µg/L	0.1	EPA 200.8	10/26/10
ZINC, DISSOLVED	62.5	µg/L	0.5	EPA 200.8	10/26/10
METALS BY ICP-MS (TOTAL) - 7					
ARSENIC	1.06	µg/L	0.1	EPA 200.8	10/26/10
CADMIUM	0.34	µg/L	0.1	EPA 200.8	10/26/10
CHROMIUM	3.28	µg/L	0.4	EPA 200.8	10/26/10
COPPER	441	µg/L	0.2	EPA 200.8	10/26/10
LEAD	16.9	µg/L	0.1	EPA 200.8	10/26/10
SILVER	<0.10	µg/L	0.1	EPA 200.8	10/26/10
ZINC	135	µg/L	0.5	EPA 200.8	10/26/10
GCMS ANALYSIS					
POLYNUCLEAR AROMATICS & PHTHALATES					
Acenaphthene	<0.020	µg/L	0.020	EPA 8270M-SIM	10/26/10
Acenaphthylene	<0.020	µg/L	0.020	EPA 8270M-SIM	10/26/10
Anthracene	<0.020	µg/L	0.020	EPA 8270M-SIM	10/26/10

Report Date: 12/09/10 **Validated By:**

City of Portland
Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656

LABORATORY ANALYSIS REPORT

Sample ID: FO106021 **Sample Collected:** 10/24/10 22:25 **Sample Received:** 10/25/10 **Sample Status:** COMPLETE AND VALIDATED

Proj./Company Name: NPDES STORMWTR WQ & FLOW MON
Address/Location: 4900 NW KITTRIDGE AVE (OF19) MANHOLE COMPOSITE
Sample Point Code: OF19
Sample Type: COMPOSITE
Sample Matrix: STORMWTR

System ID: AO09439
EID File # : 4010.001
LocCode: NPDESSTM
Collected By: JJM/PTB/AJA

Comments:
LAB: Phthalate results flagged as estimates are greater than the MDL but less than the MRL.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Benzo(a)anthracene	0.018	µg/L	0.010	EPA 8270M-SIM	10/26/10
Benzo(a)pyrene	0.022	µg/L	0.010	EPA 8270M-SIM	10/26/10
Benzo(b)fluoranthene	0.036	µg/L	0.010	EPA 8270M-SIM	10/26/10
Benzo(ghi)perylene	0.037	µg/L	0.010	EPA 8270M-SIM	10/26/10
Benzo(k)fluoranthene	0.010	µg/L	0.010	EPA 8270M-SIM	10/26/10
Bis(2-ethylhexyl) phthalate	EST 0.96	µg/L	1.00	EPA 8270M-SIM	10/26/10
Butyl benzyl phthalate	<1.00	µg/L	1.00	EPA 8270M-SIM	10/26/10
Chrysene	0.032	µg/L	0.010	EPA 8270M-SIM	10/26/10
Dibenzo(a,h)anthracene	<0.010	µg/L	0.010	EPA 8270M-SIM	10/26/10
Diethyl phthalate	<1.00	µg/L	1.00	EPA 8270M-SIM	10/26/10
Dimethyl phthalate	EST 0.64	µg/L	1.00	EPA 8270M-SIM	10/26/10
Di-n-butyl phthalate	<1.00	µg/L	1.00	EPA 8270M-SIM	10/26/10
Di-n-octyl phthalate	<1.00	µg/L	1.00	EPA 8270M-SIM	10/26/10
Fluoranthene	0.049	µg/L	0.010	EPA 8270M-SIM	10/26/10
Fluorene	<0.020	µg/L	0.020	EPA 8270M-SIM	10/26/10
Indeno(1,2,3-cd)pyrene	0.018	µg/L	0.010	EPA 8270M-SIM	10/26/10
Naphthalene	<0.040	µg/L	0.040	EPA 8270M-SIM	10/26/10
Phenanthrene	0.031	µg/L	0.020	EPA 8270M-SIM	10/26/10
Pyrene	0.058	µg/L	0.010	EPA 8270M-SIM	10/26/10
OUTSIDE ANALYSIS					
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	<5.0	ng/L	5.00	EPA 8081	10/29/10
4,4'-DDE	<5.0	ng/L	5.00	EPA 8081	10/29/10
4,4'-DDT	<12	ng/L	12	EPA 8081	10/29/10
Aldrin	<5.3	ng/L	5.3	EPA 8081	10/29/10
Alpha-BHC	<5.0	ng/L	5.00	EPA 8081	10/29/10
Alpha-Chlordane	<5.0	ng/L	5.00	EPA 8081	10/29/10
Beta-BHC	<5.0	ng/L	5.00	EPA 8081	10/29/10
Delta-BHC	<5.0	ng/L	5.00	EPA 8081	10/29/10
Dieldrin	<5.0	ng/L	5.00	EPA 8081	10/29/10
Endosulfan I	<5.0	ng/L	5.00	EPA 8081	10/29/10
Endosulfan II	<5.0	ng/L	5.00	EPA 8081	10/29/10
Endosulfan Sulfate	<5.0	ng/L	5.00	EPA 8081	10/29/10
Endrin	<5.0	ng/L	5.00	EPA 8081	10/29/10
Endrin Aldehyde	<5.0	ng/L	5.00	EPA 8081	10/29/10

Report Date: 12/09/10 **Validated By:**

City of Portland
Water Pollution Control Laboratory
6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656

LABORATORY ANALYSIS REPORT

Sample ID: FO106021 **Sample Collected:** 10/24/10 22:25 **Sample Received:** 10/25/10 **Sample Status:** COMPLETE AND VALIDATED

Proj./Company Name: NPDES STORMWTR WQ & FLOW MON
Address/Location: 4900 NW KITTRIDGE AVE (OF19) MANHOLE COMPOSITE
Sample Point Code: OF19
Sample Type: COMPOSITE
Sample Matrix: STORMWTR

System ID: AO09439
EID File # : 4010.001
LocCode: NPDESSTM
Collected By: JJM/PTB/AJA

Comments:
LAB: Phthalate results flagged as estimates are greater than the MDL but less than the MRL.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Endrin Ketone	<5.0	ng/L	5.00	EPA 8081	10/29/10
Gamma-BHC(Lindane)	<5.0	ng/L	5.00	EPA 8081	10/29/10
Gamma-Chlordane	<5.0	ng/L	5.00	EPA 8081	10/29/10
Heptachlor	8.3	ng/L	5.00	EPA 8081	10/29/10
Heptachlor Epoxide	<5.0	ng/L	5.00	EPA 8081	10/29/10
Methoxychlor	<5.0	ng/L	5.00	EPA 8081	10/29/10
Toxaphene	<270	ng/L	270	EPA 8081	10/29/10
POLYCHLORINATED BIPHENYL CONGENERS -PACE					
Refer to Contract Report	Completed	ng/L		EPA 1668 MOD	10/29/10
SEMI-VOLATILE ORGANICS - CAS					
1,2,4-Trichlorobenzene	<0.21	µg/L	0.21	EPA 8270	10/28/10
1,2-Dichlorobenzene	<0.21	µg/L	0.21	EPA 8270	10/28/10
1,3-Dichlorobenzene	<0.21	µg/L	0.21	EPA 8270	10/28/10
1,4-Dichlorobenzene	<0.21	µg/L	0.21	EPA 8270	10/28/10
2,4,5-Trichlorophenol	<0.52	µg/L	0.52	EPA 8270	10/28/10
2,4,6-Trichlorophenol	<0.52	µg/L	0.52	EPA 8270	10/28/10
2,4-Dichlorophenol	<0.52	µg/L	0.52	EPA 8270	10/28/10
2,4-Dimethylphenol	<4.1	µg/L	4.1	EPA 8270	10/28/10
2,4-Dinitrophenol	<4.1	µg/L	4.1	EPA 8270	10/28/10
2,4-Dinitrotoluene	<0.21	µg/L	0.21	EPA 8270	10/28/10
2,6-Dinitrotoluene	<0.21	µg/L	0.21	EPA 8270	10/28/10
2-Chloronaphthalene	<0.21	µg/L	0.21	EPA 8270	10/28/10
2-Chlorophenol	<0.52	µg/L	0.52	EPA 8270	10/28/10
2-Methylnaphthalene	<0.21	µg/L	0.21	EPA 8270	10/28/10
2-Methylphenol	<0.52	µg/L	0.52	EPA 8270	10/28/10
2-Nitroaniline	<0.21	µg/L	0.21	EPA 8270	10/28/10
2-Nitrophenol	<0.52	µg/L	0.52	EPA 8270	10/28/10
3,3'-Dichlorobenzidine	<2.1	µg/L	2.1	EPA 8270	10/28/10
3-Nitroaniline	<1.1	µg/L	1.1	EPA 8270	10/28/10
4,6-Dinitro-2-methylphenol	<2.1	µg/L	2.1	EPA 8270	10/28/10
4-Bromophenylphenyl ether	<0.21	µg/L	0.21	EPA 8270	10/28/10
4-Chloro-3-methylphenol	<0.52	µg/L	0.52	EPA 8270	10/28/10
4-Chloroaniline	<0.21	µg/L	0.21	EPA 8270	10/28/10
4-Chlorophenylphenyl ether	<0.21	µg/L	0.21	EPA 8270	10/28/10
4-Methylphenol	<0.52	µg/L	0.52	EPA 8270	10/28/10

Report Date: 12/09/10 **Validated By:**

City of Portland
Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656

LABORATORY ANALYSIS REPORT

Sample ID: FO106021 **Sample Collected:** 10/24/10 22:25 **Sample Received:** 10/25/10 **Sample Status:** COMPLETE AND VALIDATED

Proj./Company Name: NPDES STORMWTR WQ & FLOW MON
Address/Location: 4900 NW KITTRIDGE AVE (OF19) MANHOLE COMPOSITE
Sample Point Code: OF19
Sample Type: COMPOSITE
Sample Matrix: STORMWTR

System ID: AO09439
EID File # : 4010.001
LocCode: NPDESSTM
Collected By: JJM/PTB/AJA

Comments:
LAB: Phthalate results flagged as estimates are greater than the MDL but less than the MRL.

Test Parameter	Result	Units	MRL	Method	Analysis Date
4-Nitroaniline	<1.1	µg/L	1.1	EPA 8270	10/28/10
4-Nitrophenol	<2.1	µg/L	2.1	EPA 8270	10/28/10
Acenaphthene	<0.21	µg/L	0.21	EPA 8270	10/28/10
Acenaphthylene	<0.21	µg/L	0.21	EPA 8270	10/28/10
Anthracene	<0.21	µg/L	0.21	EPA 8270	10/28/10
Benzo(a)anthracene	<0.21	µg/L	0.21	EPA 8270	10/28/10
Benzo(a)pyrene	<0.21	µg/L	0.21	EPA 8270	10/28/10
Benzo(b)fluoranthene	<0.21	µg/L	0.21	EPA 8270	10/28/10
Benzo(ghi)perylene	<0.21	µg/L	0.21	EPA 8270	10/28/10
Benzo(k)fluoranthene	<0.21	µg/L	0.21	EPA 8270	10/28/10
Benzoic acid	<5.2	µg/L	5.2	EPA 8270	10/28/10
Benzyl alcohol	<0.52	µg/L	0.52	EPA 8270	10/28/10
Bis(2-chloroethoxy) methane	<0.21	µg/L	0.21	EPA 8270	10/28/10
Bis(2-chloroethyl) ether	<0.21	µg/L	0.21	EPA 8270	10/28/10
Bis(2-chloroisopropyl) ether	<0.21	µg/L	0.21	EPA 8270	10/28/10
Bis(2-ethylhexyl) phthalate	1.9	µg/L	1.1	EPA 8270	10/28/10
Butyl benzyl phthalate	0.39	µg/L	0.21	EPA 8270	10/28/10
Chrysene	<0.21	µg/L	0.21	EPA 8270	10/28/10
Dibenzo(a,h)anthracene	<0.21	µg/L	0.21	EPA 8270	10/28/10
Dibenzofuran	<0.21	µg/L	0.21	EPA 8270	10/28/10
Diethyl phthalate	0.27	µg/L	0.21	EPA 8270	10/28/10
Dimethyl phthalate	1.6	µg/L	0.21	EPA 8270	10/28/10
Di-n-butyl phthalate	<0.21	µg/L	0.21	EPA 8270	10/28/10
Di-n-octyl phthalate	<0.21	µg/L	0.21	EPA 8270	10/28/10
Fluoranthene	<0.21	µg/L	0.21	EPA 8270	10/28/10
Fluorene	<0.21	µg/L	0.21	EPA 8270	10/28/10
Hexachlorobenzene	<0.21	µg/L	0.21	EPA 8270	10/28/10
Hexachlorobutadiene	<0.21	µg/L	0.21	EPA 8270	10/28/10
Hexachlorocyclopentadiene	<1.1	µg/L	1.1	EPA 8270	10/28/10
Hexachloroethane	<0.21	µg/L	0.21	EPA 8270	10/28/10
Indeno(1,2,3-cd)pyrene	<0.21	µg/L	0.21	EPA 8270	10/28/10
Isophorone	<0.21	µg/L	0.21	EPA 8270	10/28/10
Naphthalene	<0.21	µg/L	0.21	EPA 8270	10/28/10
Nitrobenzene	<0.21	µg/L	0.21	EPA 8270	10/28/10
N-Nitrosodi-n-propylamine	<0.21	µg/L	0.21	EPA 8270	10/28/10
N-Nitrosodiphenylamine	<0.21	µg/L	0.21	EPA 8270	10/28/10

Report Date: 12/09/10 **Validated By:**

City of Portland
Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656

LABORATORY ANALYSIS REPORT

Sample ID: FO106021 **Sample Collected:** 10/24/10 22:25 **Sample Received:** 10/25/10 **Sample Status:** COMPLETE AND VALIDATED

Proj./Company Name:	NPDES STORMWTR WQ & FLOW MON	**Report Page:**	Page 5 of 5
Address/Location:	4900 NW KITTRIDGE AVE (OF19) MANHOLE COMPOSITE	**System ID:**	AO09439
Sample Point Code:	OF19	**EID File # :**	4010.001
Sample Type:	COMPOSITE	**LocCode:**	NPDESSTM
Sample Matrix:	STORMWTR	**Collected By:**	JJM/PTB/AJA

Comments:
LAB: Phthalate results flagged as estimates are greater than the MDL but less than the MRL.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Pentachlorophenol	<1.1	µg/L	1.1	EPA 8270	10/28/10
Phenanthrene	<0.21	µg/L	0.21	EPA 8270	10/28/10
Phenol	<0.52	µg/L	0.52	EPA 8270	10/28/10
Pyrene	<0.21	µg/L	0.21	EPA 8270	10/28/10

End of Report for Sample ID: FO106021

Report Date: 12/09/10 **Validated By:**

Columbia Analytical Services™ 1317 S. 13th Avenue, Kelso, WA 98626 | 360.577.7222 | 360.636.1068 (fax) www.caslab.com

December 6, 2010 Analytical Report for Service Request No: K1011981

Jennifer Shackelford
City of Portland
6543 N. Burlington Ave
Portland, OR 97203

RE: NPDES Stormwater Mon

Dear Jennifer:

Enclosed are the results of the sample submitted to our laboratory on October 26, 2010. For your reference, these analyses have been assigned our service request number K1011981.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3364. You may also contact me via Email at HHolmes@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Howard Holmes
Project Chemist

HH/dlm

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value that was detected outside the quantitation range.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value that was detected outside the quantitation range.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value that was detected outside the quantitation range.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	City of Portland	**Service Request No.:**	K1011981
Project:	NPDES Stormwater Mon	**Date Received:**	11/12/10
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Laboratory/Duplicate Laboratory Control Sample (LCS/DLCS).

Sample Receipt

One water sample was received for analysis at Columbia Analytical Services on 11/12/10. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Organochlorine Pesticides by EPA Method 8081A

Sample Notes and Discussion:
Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD). A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

Elevated Detection Limits:
The MDL is elevated for Toxaphene in sample Method Blank KWG1012211-3. The chromatogram indicated the presence of non-target background components, which were apparently introduced as laboratory artifacts. The contamination prevented adequate resolution of the target compounds at the MDL. Note the level of background was relatively low compared to the MDL, so the affect on the results was minimal. The results are flagged to indicate the problem.

The detection limit was elevated for all analytes in sample F0106021. The chromatogram indicated the presence of non-target background components. The sample was diluted in order to achieve optimal resolution of the target analytes and internal standard. The results were flagged to indicate the matrix interference.

The detection limit was further elevated for a few analytes in sample F0106021. The chromatogram indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compounds at the normal limit. The results were flagged to indicate the matrix interference.

No other anomalies associated with the analysis of these samples were observed.

Semivolatile Organic Compounds by EPA Method 8270C

Sample Notes and Discussion:
Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD). A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

Approved by Howard Holmes **Date** 12-6-10

Lab Control Sample Exceptions:
The advisory criterion was exceeded for Hexachlorocyclopentadiene in Duplicate Laboratory Control Sample (DLCS) KWG1011883-2. As per the CAS/Kelso Standard Operating Procedure (SOP) for this method, these compounds are not included in the subset of analytes used to control the analysis. The recovery information reported for these analytes is for advisory purposes only (i.e. to provide additional detail related to the performance of each individual compound). No further corrective action was required.

Relative Percent Difference Exceptions:
The Relative Percent Difference (RPD) criterion for 2,4-Dimethylphenol, Hexachlorocyclopentadiene, and 3,3'-Dichlorobenzidine in the replicate Laboratory Control Samples (LCS/DLCS) KWG1011883-1 and KWG1011883-2 was not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

No other anomalies associated with the analysis of these samples were observed.

Approved by _____ **Date** 12-6-10

CHAIN OF CUSTODY

Columbia Analytical Services

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222x07 • FAX (360) 636-1068

SR#: K1011981

PAGE 1 OF 1 COC #

PROJECT NAME: NPDES Stormwater Mon
PROJECT NUMBER:
PROJECT MANAGER: Jennifer Stanclefford
COMPANY/ADDRESS: City of Portland
CITY/STATE/ZIP:
E-MAIL ADDRESS:
PHONE #: FAX #:
SAMPLER'S SIGNATURE:

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics 625 ☐ 8270 ☐ 8270LL X (low level)	Volatile Organics 624 ☐ 8260 ☐	Hydrocarbons Gas ☐ 8021 ☐ BTEX ☐	Fuel Fingerprint (*see below) Diesel ☐ Oil ☐	NW-HCID Screen	Oil & Grease/TRPH 1664 SGT ☐ 1664 HEM ☐	PCB's Aroclors ☐ Congeners ☐	Pesticides/Herbicides 608 ☐ 8081A X 8141A ☐ 8151A ☐ (low level)	Chlorophenolics Tri ☐ Tetra ☐ PCP ☐	PAHs 8310 ☐ SIM ☐	Metals, Total or Dissolved (See list below)	Cyanide ☐	pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS (circle) Hex-Chrom ☐	NH_3-N, COD, Total-P, TKN, TOC, DOC (circle) NO_2+NO_3	TOX 9020 ☐ AOX 1650 ☐ 506 ☐	REMARKS
FD06021	10/24/10	2225		W	2	X						X									

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
___ IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. #
Bill To:

TURNAROUND REQUIREMENTS

____ 24 hr. ____ 48 hr.
____ 5 Day
____ Standard (10-15 working days)
____ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER:_____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature:	Signature:	Signature:	Signature:
Printed Name:	Printed Name:	Printed Name:	Printed Name:
Firm: COP	Firm: PBS	Firm:	Firm: SAIC/NS
Date/Time: 10/26/10 1145	Date/Time: 10/26/10 1145	Date/Time:	Date/Time: 10/26/10 1440

BCOC #1 07/09

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC HH

Client / Project: City of PDX Service Request *K10* 11981

Received: 10/26/10 Opened: 10/26/10 By: SK

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
NML					

7. Packing material used. *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Sleeves* *Other* N/A
8. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
14. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
15. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	Portland, City of	**Service Request:**	K1011981
Project:	NPDES Stormwater Mon	**Date Collected:**	10/24/2010
Sample Matrix:	Water	**Date Received:**	10/26/2010

Organochlorine Pesticides

Sample Name:	F0106021	**Units:**	ng/L
Lab Code:	K1011981-001	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8081A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	5.0	2.1	10	10/29/10	11/30/10	KWG1012211	
beta-BHC	ND	U	5.0	4.1	10	10/29/10	11/30/10	KWG1012211	
gamma-BHC (Lindane)	ND	U	5.0	4.7	10	10/29/10	11/30/10	KWG1012211	
delta-BHC	ND	Ui	5.0	3.2	10	10/29/10	11/30/10	KWG1012211	
Heptachlor	**8.3**	D	5.0	1.8	10	10/29/10	11/30/10	KWG1012211	
Aldrin	ND	Ui	5.3	5.3	10	10/29/10	11/30/10	KWG1012211	
Heptachlor Epoxide	ND	U	5.0	2.1	10	10/29/10	11/30/10	KWG1012211	
gamma-Chlordane†	ND	U	5.0	3.1	10	10/29/10	11/30/10	KWG1012211	
Endosulfan I	ND	U	5.0	2.5	10	10/29/10	11/30/10	KWG1012211	
alpha-Chlordane	ND	U	5.0	2.7	10	10/29/10	11/30/10	KWG1012211	
Dieldrin	ND	U	5.0	3.7	10	10/29/10	11/30/10	KWG1012211	
4,4'-DDE	**2.8**	JPD	5.0	1.9	10	10/29/10	11/30/10	KWG1012211	
Endrin	ND	U	5.0	4.9	10	10/29/10	11/30/10	KWG1012211	
Endosulfan II	ND	U	5.0	3.5	10	10/29/10	11/30/10	KWG1012211	
4,4'-DDD	ND	U	5.0	2.1	10	10/29/10	11/30/10	KWG1012211	
Endrin Aldehyde	**4.8**	JD	5.0	2.1	10	10/29/10	11/30/10	KWG1012211	
Endosulfan Sulfate	ND	U	5.0	2.8	10	10/29/10	11/30/10	KWG1012211	
4,4'-DDT	ND	Ui	12	12	10	10/29/10	11/30/10	KWG1012211	
Endrin Ketone	ND	U	5.0	3.2	10	10/29/10	11/30/10	KWG1012211	
Methoxychlor	ND	U	5.0	4.4	10	10/29/10	11/30/10	KWG1012211	
Toxaphene	ND	Ui	270	270	10	10/29/10	11/30/10	KWG1012211	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	91	20-102	11/30/10	Acceptable
Decachlorobiphenyl	97	35-128	11/30/10	Acceptable

† Analyte Comments

gamma-Chlordane	For this analyte (CAS Registry No. 5103-74-2), USEPA has corrected the name to be beta-Chlordane, also known as trans-Chlordane.

Comments:

Client:	Portland, City of	**Service Request:**	K1011981
Project:	NPDES Stormwater Mon	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Organochlorine Pesticides

Sample Name:	Method Blank	**Units:**	ng/L
Lab Code:	KWG1012211-3	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8081A		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	0.50	0.21	1	10/29/10	11/30/10	KWG1012211	
beta-BHC	ND	U	0.50	0.41	1	10/29/10	11/30/10	KWG1012211	
gamma-BHC (Lindane)	ND	U	0.50	0.47	1	10/29/10	11/30/10	KWG1012211	
delta-BHC	ND	U	0.50	0.14	1	10/29/10	11/30/10	KWG1012211	
Heptachlor	ND	U	0.50	0.18	1	10/29/10	11/30/10	KWG1012211	
Aldrin	ND	U	0.50	0.33	1	10/29/10	11/30/10	KWG1012211	
Heptachlor Epoxide	ND	U	0.50	0.21	1	10/29/10	11/30/10	KWG1012211	
gamma-Chlordane†	ND	U	0.50	0.31	1	10/29/10	11/30/10	KWG1012211	
Endosulfan I	ND	U	0.50	0.25	1	10/29/10	11/30/10	KWG1012211	
alpha-Chlordane	ND	U	0.50	0.27	1	10/29/10	11/30/10	KWG1012211	
Dieldrin	ND	U	0.50	0.37	1	10/29/10	11/30/10	KWG1012211	
4,4'-DDE	ND	U	0.50	0.19	1	10/29/10	11/30/10	KWG1012211	
Endrin	ND	U	0.50	0.49	1	10/29/10	11/30/10	KWG1012211	
Endosulfan II	ND	U	0.50	0.35	1	10/29/10	11/30/10	KWG1012211	
4,4'-DDD	ND	U	0.50	0.21	1	10/29/10	11/30/10	KWG1012211	
Endrin Aldehyde	ND	U	0.50	0.21	1	10/29/10	11/30/10	KWG1012211	
Endosulfan Sulfate	ND	U	0.50	0.28	1	10/29/10	11/30/10	KWG1012211	
4,4'-DDT	ND	U	0.50	0.17	1	10/29/10	11/30/10	KWG1012211	
Endrin Ketone	ND	U	0.50	0.32	1	10/29/10	11/30/10	KWG1012211	
Methoxychlor	ND	U	0.50	0.44	1	10/29/10	11/30/10	KWG1012211	
Toxaphene	ND	Ui	32	32	1	10/29/10	11/30/10	KWG1012211	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	79	20-102	11/30/10	Acceptable
Decachlorobiphenyl	97	35-128	11/30/10	Acceptable

† **Analyte Comments**

gamma-Chlordane	For this analyte (CAS Registry No. 5103-74-2), USEPA has corrected the name to be beta-Chlordane, also known as trans-Chlordane.

Comments:

Client: Portland, City of
Project: NPDES Stormwater Mon
Sample Matrix: Water

Service Request: K1011981

Surrogate Recovery Summary
Organochlorine Pesticides

Extraction Method: EPA 3535A
Analysis Method: 8081A

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2
F0106021	K1011981-001	91 D	97 D
Method Blank	KWG1012211-3	79	97
Lab Control Sample	KWG1012211-1	76	88
Duplicate Lab Control Sample	KWG1012211-2	74	90

Surrogate Recovery Control Limits (%)

Sur1 =	Tetrachloro-m-xylene	20-102
Sur2 =	Decachlorobiphenyl	35-128

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Client:	Portland, City of	**Service Request:**	K1011981
Project:	NPDES Stormwater Mon	**Date Extracted:**	10/29/2010
Sample Matrix:	Water	**Date Analyzed:**	11/30/2010

Lab Control Spike/Duplicate Lab Control Spike Summary
Organochlorine Pesticides

Extraction Method:	EPA 3535A	**Units:**	ng/L
Analysis Method:	8081A	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1012211

	Lab Control Sample KWG1012211-1 Lab Control Spike			Duplicate Lab Control Sample KWG1012211-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
alpha-BHC	10.6	10.0	106	10.5	10.0	105	36-122	1	30
beta-BHC	10.3	10.0	103	10.1	10.0	101	42-125	2	30
gamma-BHC (Lindane)	10.6	10.0	106	10.6	10.0	106	44-117	0	30
delta-BHC	11.3	10.0	113	11.3	10.0	113	48-123	0	30
Heptachlor	11.1	10.0	111	11.2	10.0	112	40-115	0	30
Aldrin	9.58	10.0	96	9.47	10.0	95	10-102	1	30
Heptachlor Epoxide	10.1	10.0	101	10.1	10.0	101	49-109	1	30
gamma-Chlordane	9.84	10.0	98	9.87	10.0	99	47-113	0	30
Endosulfan I	10.5	10.0	105	10.4	10.0	104	35-115	0	30
alpha-Chlordane	10.2	10.0	102	10.2	10.0	102	45-115	0	30
Dieldrin	10.3	10.0	103	10.4	10.0	104	50-115	1	30
4,4'-DDE	10.8	10.0	108	10.7	10.0	107	41-116	1	30
Endrin	10.1	10.0	101	10.3	10.0	103	48-126	2	30
Endosulfan II	9.91	10.0	99	9.97	10.0	100	28-128	1	30
4,4'-DDD	10.9	10.0	109	10.7	10.0	107	33-132	2	30
Endrin Aldehyde	7.79	10.0	78	8.16	10.0	82	27-104	5	30
Endosulfan Sulfate	9.31	10.0	93	9.51	10.0	95	38-118	2	30
4,4'-DDT	11.0	10.0	110	11.0	10.0	110	42-143	0	30
Endrin Ketone	10.6	10.0	106	10.7	10.0	107	30-124	1	30
Methoxychlor	10.3	10.0	103	9.84	10.0	98	43-143	5	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Portland, City of
Project: NPDES Stormwater Mon
Sample Matrix: Water

Service Request: K1011981
Date Collected: 10/24/2010
Date Received: 10/26/2010

Semi-Volatile Organic Compounds by GC/MS

Sample Name: F0106021
Lab Code: K1011981-001

Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	0.21	0.036	1	10/28/10	11/18/10	KWG1011883	
Phenol	**0.081**	J	0.52	0.065	1	10/28/10	11/18/10	KWG1011883	
2-Chlorophenol	ND	U	0.52	0.056	1	10/28/10	11/18/10	KWG1011883	
1,3-Dichlorobenzene	ND	U	0.21	0.022	1	10/28/10	11/18/10	KWG1011883	
1,4-Dichlorobenzene	ND	U	0.21	0.030	1	10/28/10	11/18/10	KWG1011883	
1,2-Dichlorobenzene	ND	U	0.21	0.023	1	10/28/10	11/18/10	KWG1011883	
Benzyl Alcohol	ND	U	0.52	0.075	1	10/28/10	11/18/10	KWG1011883	
Bis(2-chloroisopropyl) Ether	ND	U	0.21	0.027	1	10/28/10	11/18/10	KWG1011883	
2-Methylphenol	ND	U	0.52	0.12	1	10/28/10	11/18/10	KWG1011883	
Hexachloroethane	ND	U	0.21	0.025	1	10/28/10	11/18/10	KWG1011883	
N-Nitrosodi-n-propylamine	ND	U	0.21	0.038	1	10/28/10	11/18/10	KWG1011883	
4-Methylphenol†	ND	U	0.52	0.13	1	10/28/10	11/18/10	KWG1011883	
Nitrobenzene	ND	U	0.21	0.029	1	10/28/10	11/18/10	KWG1011883	
Isophorone	**0.042**	J	0.21	0.017	1	10/28/10	11/18/10	KWG1011883	
2-Nitrophenol	ND	U	0.52	0.065	1	10/28/10	11/18/10	KWG1011883	
2,4-Dimethylphenol	ND	U	4.1	2.3	1	10/28/10	11/18/10	KWG1011883	
Bis(2-chloroethoxy)methane	ND	U	0.21	0.025	1	10/28/10	11/18/10	KWG1011883	
2,4-Dichlorophenol	ND	U	0.52	0.048	1	10/28/10	11/18/10	KWG1011883	
Benzoic Acid	**1.4**	J	5.2	1.2	1	10/28/10	11/18/10	KWG1011883	
1,2,4-Trichlorobenzene	ND	U	0.21	0.017	1	10/28/10	11/18/10	KWG1011883	
Naphthalene	**0.045**	J	0.21	0.023	1	10/28/10	11/18/10	KWG1011883	
4-Chloroaniline	ND	U	0.21	0.026	1	10/28/10	11/18/10	KWG1011883	
Hexachlorobutadiene	ND	U	0.21	0.028	1	10/28/10	11/18/10	KWG1011883	
4-Chloro-3-methylphenol	ND	U	0.52	0.038	1	10/28/10	11/18/10	KWG1011883	
2-Methylnaphthalene	ND	U	0.21	0.027	1	10/28/10	11/18/10	KWG1011883	
Hexachlorocyclopentadiene	ND	U	1.1	0.20	1	10/28/10	11/18/10	KWG1011883	
2,4,6-Trichlorophenol	ND	U	0.52	0.060	1	10/28/10	11/18/10	KWG1011883	
2,4,5-Trichlorophenol	ND	U	0.52	0.032	1	10/28/10	11/18/10	KWG1011883	
2-Chloronaphthalene	ND	U	0.21	0.042	1	10/28/10	11/18/10	KWG1011883	
2-Nitroaniline	ND	U	0.21	0.025	1	10/28/10	11/18/10	KWG1011883	
Acenaphthylene	ND	U	0.21	0.016	1	10/28/10	11/18/10	KWG1011883	
Dimethyl Phthalate	**1.6**		0.21	0.022	1	10/28/10	11/18/10	KWG1011883	
2,6-Dinitrotoluene	ND	U	0.21	0.034	1	10/28/10	11/18/10	KWG1011883	

Comments:

Client: Portland, City of
Project: NPDES Stormwater Mon
Sample Matrix: Water

Service Request: K1011981
Date Collected: 10/24/2010
Date Received: 10/26/2010

Semi-Volatile Organic Compounds by GC/MS

Sample Name: F0106021
Lab Code: K1011981-001

Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	ND	U	0.21	0.027	1	10/28/10	11/18/10	KWG1011883	
3-Nitroaniline	ND	U	1.1	0.030	1	10/28/10	11/18/10	KWG1011883	
2,4-Dinitrophenol	ND	U	4.1	0.18	1	10/28/10	11/18/10	KWG1011883	
Dibenzofuran	ND	U	0.21	0.019	1	10/28/10	11/18/10	KWG1011883	
4-Nitrophenol	ND	U	2.1	0.29	1	10/28/10	11/18/10	KWG1011883	
2,4-Dinitrotoluene	ND	U	0.21	0.019	1	10/28/10	11/18/10	KWG1011883	
Fluorene	ND	U	0.21	0.028	1	10/28/10	11/18/10	KWG1011883	
4-Chlorophenyl Phenyl Ether	ND	U	0.21	0.028	1	10/28/10	11/18/10	KWG1011883	
Diethyl Phthalate	**0.27**		0.21	0.013	1	10/28/10	11/18/10	KWG1011883	
4-Nitroaniline	ND	U	1.1	0.020	1	10/28/10	11/18/10	KWG1011883	
2-Methyl-4,6-dinitrophenol	ND	U	2.1	0.026	1	10/28/10	11/18/10	KWG1011883	
N-Nitrosodiphenylamine	ND	U	0.21	0.049	1	10/28/10	11/18/10	KWG1011883	
4-Bromophenyl Phenyl Ether	ND	U	0.21	0.027	1	10/28/10	11/18/10	KWG1011883	
Hexachlorobenzene	ND	U	0.21	0.023	1	10/28/10	11/18/10	KWG1011883	
Pentachlorophenol	ND	U	1.1	0.35	1	10/28/10	11/18/10	KWG1011883	
Phenanthrene	**0.11**	J	0.21	0.023	1	10/28/10	11/18/10	KWG1011883	
Anthracene	**0.055**	J	0.21	0.025	1	10/28/10	11/18/10	KWG1011883	
Di-n-butyl Phthalate	**0.15**	J	0.21	0.024	1	10/28/10	11/18/10	KWG1011883	
Fluoranthene	**0.18**	J	0.21	0.021	1	10/28/10	11/18/10	KWG1011883	
Pyrene	**0.19**	J	0.21	0.020	1	10/28/10	11/18/10	KWG1011883	
Butyl Benzyl Phthalate	**0.39**		0.21	0.019	1	10/28/10	11/18/10	KWG1011883	
3,3'-Dichlorobenzidine	ND	U	2.1	0.44	1	10/28/10	11/18/10	KWG1011883	
Benz(a)anthracene	**0.074**	J	0.21	0.019	1	10/28/10	11/18/10	KWG1011883	
Chrysene	**0.13**	J	0.21	0.029	1	10/28/10	11/18/10	KWG1011883	
Bis(2-ethylhexyl) Phthalate	**1.9**		1.1	0.14	1	10/28/10	11/18/10	KWG1011883	
Di-n-octyl Phthalate	**0.11**	J	0.21	0.019	1	10/28/10	11/18/10	KWG1011883	
Benzo(b)fluoranthene	**0.13**	J	0.21	0.018	1	10/28/10	11/18/10	KWG1011883	
Benzo(k)fluoranthene	**0.028**	J	0.21	0.025	1	10/28/10	11/18/10	KWG1011883	
Benzo(a)pyrene	**0.096**	J	0.21	0.032	1	10/28/10	11/18/10	KWG1011883	
Indeno(1,2,3-cd)pyrene	**0.063**	J	0.21	0.022	1	10/28/10	11/18/10	KWG1011883	
Dibenz(a,h)anthracene	ND	U	0.21	0.018	1	10/28/10	11/18/10	KWG1011883	
Benzo(g,h,i)perylene	**0.093**	J	0.21	0.020	1	10/28/10	11/18/10	KWG1011883	

Comments:

Client:	Portland, City of	**Service Request:**	K1011981
Project:	NPDES Stormwater Mon	**Date Collected:**	10/24/2010
Sample Matrix:	Water	**Date Received:**	10/26/2010

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	F0106021	**Units:**	ug/L
Lab Code:	K1011981-001	**Basis:**	NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	79	12-109	11/18/10	Acceptable
Phenol-d6	87	23-106	11/18/10	Acceptable
Nitrobenzene-d5	83	26-110	11/18/10	Acceptable
2-Fluorobiphenyl	82	31-94	11/18/10	Acceptable
2,4,6-Tribromophenol	103	23-127	11/18/10	Acceptable
Terphenyl-d14	100	40-127	11/18/10	Acceptable

† Analyte Comments

4-Methylphenol	This analyte cannot be separated from 3-Methylphenol.

Comments:

Client: Portland, City of
Project: NPDES Stormwater Mon
Sample Matrix: Water

Service Request: K1011981
Date Collected: NA
Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KWG1011883-3

Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	0.20	0.035	1	10/28/10	11/18/10	KWG1011883	
Phenol	**0.17**	J	0.48	0.063	1	10/28/10	11/18/10	KWG1011883	
2-Chlorophenol	ND	U	0.48	0.054	1	10/28/10	11/18/10	KWG1011883	
1,3-Dichlorobenzene	ND	U	0.20	0.021	1	10/28/10	11/18/10	KWG1011883	
1,4-Dichlorobenzene	ND	U	0.20	0.029	1	10/28/10	11/18/10	KWG1011883	
1,2-Dichlorobenzene	ND	U	0.20	0.022	1	10/28/10	11/18/10	KWG1011883	
Benzyl Alcohol	ND	U	0.48	0.073	1	10/28/10	11/18/10	KWG1011883	
Bis(2-chloroisopropyl) Ether	ND	U	0.20	0.026	1	10/28/10	11/18/10	KWG1011883	
2-Methylphenol	ND	U	0.48	0.11	1	10/28/10	11/18/10	KWG1011883	
Hexachloroethane	ND	U	0.20	0.024	1	10/28/10	11/18/10	KWG1011883	
N-Nitrosodi-n-propylamine	ND	U	0.20	0.037	1	10/28/10	11/18/10	KWG1011883	
4-Methylphenol†	ND	U	0.48	0.12	1	10/28/10	11/18/10	KWG1011883	
Nitrobenzene	ND	U	0.20	0.028	1	10/28/10	11/18/10	KWG1011883	
Isophorone	ND	U	0.20	0.016	1	10/28/10	11/18/10	KWG1011883	
2-Nitrophenol	ND	U	0.48	0.063	1	10/28/10	11/18/10	KWG1011883	
2,4-Dimethylphenol	ND	U	3.9	2.2	1	10/28/10	11/18/10	KWG1011883	
Bis(2-chloroethoxy)methane	ND	U	0.20	0.024	1	10/28/10	11/18/10	KWG1011883	
2,4-Dichlorophenol	ND	U	0.48	0.047	1	10/28/10	11/18/10	KWG1011883	
Benzoic Acid	ND	U	4.8	1.1	1	10/28/10	11/18/10	KWG1011883	
1,2,4-Trichlorobenzene	ND	U	0.20	0.016	1	10/28/10	11/18/10	KWG1011883	
Naphthalene	ND	U	0.20	0.022	1	10/28/10	11/18/10	KWG1011883	
4-Chloroaniline	ND	U	0.20	0.025	1	10/28/10	11/18/10	KWG1011883	
Hexachlorobutadiene	ND	U	0.20	0.027	1	10/28/10	11/18/10	KWG1011883	
4-Chloro-3-methylphenol	ND	U	0.48	0.037	1	10/28/10	11/18/10	KWG1011883	
2-Methylnaphthalene	ND	U	0.20	0.026	1	10/28/10	11/18/10	KWG1011883	
Hexachlorocyclopentadiene	ND	U	0.96	0.19	1	10/28/10	11/18/10	KWG1011883	
2,4,6-Trichlorophenol	ND	U	0.48	0.058	1	10/28/10	11/18/10	KWG1011883	
2,4,5-Trichlorophenol	ND	U	0.48	0.031	1	10/28/10	11/18/10	KWG1011883	
2-Chloronaphthalene	ND	U	0.20	0.041	1	10/28/10	11/18/10	KWG1011883	
2-Nitroaniline	ND	U	0.20	0.024	1	10/28/10	11/18/10	KWG1011883	
Acenaphthylene	ND	U	0.20	0.015	1	10/28/10	11/18/10	KWG1011883	
Dimethyl Phthalate	ND	U	0.20	0.021	1	10/28/10	11/18/10	KWG1011883	
2,6-Dinitrotoluene	ND	U	0.20	0.033	1	10/28/10	11/18/10	KWG1011883	

Comments:

Client: Portland, City of
Project: NPDES Stormwater Mon
Sample Matrix: Water

Service Request: K1011981
Date Collected: NA
Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KWG1011883-3

Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	ND	U	0.20	0.026	1	10/28/10	11/18/10	KWG1011883	
3-Nitroaniline	ND	U	0.96	0.029	1	10/28/10	11/18/10	KWG1011883	
2,4-Dinitrophenol	ND	U	3.9	0.17	1	10/28/10	11/18/10	KWG1011883	
Dibenzofuran	ND	U	0.20	0.018	1	10/28/10	11/18/10	KWG1011883	
4-Nitrophenol	ND	U	2.0	0.28	1	10/28/10	11/18/10	KWG1011883	
2,4-Dinitrotoluene	ND	U	0.20	0.018	1	10/28/10	11/18/10	KWG1011883	
Fluorene	ND	U	0.20	0.027	1	10/28/10	11/18/10	KWG1011883	
4-Chlorophenyl Phenyl Ether	ND	U	0.20	0.027	1	10/28/10	11/18/10	KWG1011883	
Diethyl Phthalate	**0.028**	J	0.20	0.012	1	10/28/10	11/18/10	KWG1011883	
4-Nitroaniline	ND	U	0.96	0.019	1	10/28/10	11/18/10	KWG1011883	
2-Methyl-4,6-dinitrophenol	ND	U	2.0	0.025	1	10/28/10	11/18/10	KWG1011883	
N-Nitrosodiphenylamine	ND	U	0.20	0.048	1	10/28/10	11/18/10	KWG1011883	
4-Bromophenyl Phenyl Ether	ND	U	0.20	0.026	1	10/28/10	11/18/10	KWG1011883	
Hexachlorobenzene	ND	U	0.20	0.022	1	10/28/10	11/18/10	KWG1011883	
Pentachlorophenol	ND	U	0.96	0.34	1	10/28/10	11/18/10	KWG1011883	
Phenanthrene	ND	U	0.20	0.022	1	10/28/10	11/18/10	KWG1011883	
Anthracene	ND	U	0.20	0.024	1	10/28/10	11/18/10	KWG1011883	
Di-n-butyl Phthalate	**0.028**	J	0.20	0.023	1	10/28/10	11/18/10	KWG1011883	
Fluoranthene	ND	U	0.20	0.020	1	10/28/10	11/18/10	KWG1011883	
Pyrene	ND	U	0.20	0.019	1	10/28/10	11/18/10	KWG1011883	
Butyl Benzyl Phthalate	ND	U	0.20	0.018	1	10/28/10	11/18/10	KWG1011883	
3,3'-Dichlorobenzidine	ND	U	2.0	0.43	1	10/28/10	11/18/10	KWG1011883	
Benz(a)anthracene	ND	U	0.20	0.018	1	10/28/10	11/18/10	KWG1011883	
Chrysene	ND	U	0.20	0.028	1	10/28/10	11/18/10	KWG1011883	
Bis(2-ethylhexyl) Phthalate	ND	U	0.96	0.13	1	10/28/10	11/18/10	KWG1011883	
Di-n-octyl Phthalate	ND	U	0.20	0.018	1	10/28/10	11/18/10	KWG1011883	
Benzo(b)fluoranthene	ND	U	0.20	0.017	1	10/28/10	11/18/10	KWG1011883	
Benzo(k)fluoranthene	ND	U	0.20	0.024	1	10/28/10	11/18/10	KWG1011883	
Benzo(a)pyrene	ND	U	0.20	0.031	1	10/28/10	11/18/10	KWG1011883	
Indeno(1,2,3-cd)pyrene	ND	U	0.20	0.021	1	10/28/10	11/18/10	KWG1011883	
Dibenz(a,h)anthracene	ND	U	0.20	0.017	1	10/28/10	11/18/10	KWG1011883	
Benzo(g,h,i)perylene	ND	U	0.20	0.019	1	10/28/10	11/18/10	KWG1011883	

Comments:

Client: Portland, City of
Project: NPDES Stormwater Mon
Sample Matrix: Water

Service Request: K1011981
Date Collected: NA
Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KWG1011883-3

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	89	12-109	11/18/10	Acceptable
Phenol-d6	88	23-106	11/18/10	Acceptable
Nitrobenzene-d5	90	26-110	11/18/10	Acceptable
2-Fluorobiphenyl	82	31-94	11/18/10	Acceptable
2,4,6-Tribromophenol	86	23-127	11/18/10	Acceptable
Terphenyl-d14	110	40-127	11/18/10	Acceptable

† Analyte Comments

4-Methylphenol	This analyte cannot be separated from 3-Methylphenol.

Comments:

Client: Portland, City of
Project: NPDES Stormwater Mon
Sample Matrix: Water

Service Request: K1011981

Surrogate Recovery Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3	Sur4	Sur5	Sur6
F0106021	K1011981-001	79	87	83	82	103	100
Method Blank	KWG1011883-3	89	88	90	82	86	110
Lab Control Sample	KWG1011883-1	80	81	84	73	87	97
Duplicate Lab Control Sample	KWG1011883-2	85	86	86	76	89	97

Surrogate Recovery Control Limits (%)

Sur1 = 2-Fluorophenol	12-109	Sur5 = 2,4,6-Tribromophenol	23-127
Sur2 = Phenol-d6	23-106	Sur6 = Terphenyl-d14	40-127
Sur3 = Nitrobenzene-d5	26-110		
Sur4 = 2-Fluorobiphenyl	31-94		

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: Portland, City of
Project: NPDES Stormwater Mon
Sample Matrix: Water

Service Request: K1011981
Date Extracted: 10/28/2010
Date Analyzed: 11/18/2010

Lab Control Spike/Duplicate Lab Control Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1011883

	Lab Control Sample KWG1011883-1 Lab Control Spike			Duplicate Lab Control Sample KWG1011883-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Bis(2-chloroethyl) Ether	4.23	5.00	85	4.41	5.00	88	37-109	4	30
Phenol	4.19	5.00	84	4.45	5.00	89	35-114	6	30
2-Chlorophenol	4.37	5.00	87	4.50	5.00	90	37-110	3	30
1,3-Dichlorobenzene	2.86	5.00	57	2.72	5.00	54	14-68	5	30
1,4-Dichlorobenzene	2.94	5.00	59	2.89	5.00	58	15-71	2	30
1,2-Dichlorobenzene	3.08	5.00	62	3.16	5.00	63	17-76	2	30
Benzyl Alcohol	4.71	5.00	94	4.89	5.00	98	32-115	4	30
Bis(2-chloroisopropyl) Ether	4.26	5.00	85	4.37	5.00	87	29-110	3	30
2-Methylphenol	3.47	5.00	69	4.10	5.00	82	21-109	17	30
Hexachloroethane	2.58	5.00	52	2.38	5.00	48	10-59	8	30
N-Nitrosodi-n-propylamine	4.55	5.00	91	4.53	5.00	91	32-112	0	30
4-Methylphenol	3.70	5.00	74	4.17	5.00	83	19-114	12	30
Nitrobenzene	4.34	5.00	87	4.37	5.00	87	36-110	1	30
Isophorone	4.24	5.00	85	4.09	5.00	82	38-106	4	30
2-Nitrophenol	4.59	5.00	92	4.56	5.00	91	41-112	1	30
2,4-Dimethylphenol	1.74	5.00	35	3.01	5.00	60	10-106	54 *	30
Bis(2-chloroethoxy)methane	4.47	5.00	89	4.47	5.00	89	39-109	0	30
2,4-Dichlorophenol	4.60	5.00	92	4.45	5.00	89	37-111	3	30
Benzoic Acid	4.89	15.0	33	4.30	15.0	29	10-83	13	30
1,2,4-Trichlorobenzene	3.20	5.00	64	3.03	5.00	61	18-76	5	30
Naphthalene	3.87	5.00	77	3.85	5.00	77	31-94	1	30
4-Chloroaniline	3.34	5.00	67	3.57	5.00	71	14-108	7	30
Hexachlorobutadiene	2.41	5.00	48	2.02	5.00	40	10-59	18	30
4-Chloro-3-methylphenol	4.39	5.00	88	4.56	5.00	91	33-115	4	30
2-Methylnaphthalene	3.92	5.00	78	3.82	5.00	76	29-92	3	30
Hexachlorocyclopentadiene	0.653	5.00	13	0.417	5.00	8 *	10-37	44 *	30
2,4,6-Trichlorophenol	4.36	5.00	87	4.54	5.00	91	36-113	4	30
2,4,5-Trichlorophenol	4.38	5.00	88	4.58	5.00	92	41-112	4	30
2-Chloronaphthalene	3.94	5.00	79	3.96	5.00	79	31-95	1	30
2-Nitroaniline	4.70	5.00	94	4.61	5.00	92	40-118	2	30
Acenaphthylene	4.36	5.00	87	4.36	5.00	87	36-107	0	30
Dimethyl Phthalate	4.40	5.00	88	4.40	5.00	88	46-111	0	30
2,6-Dinitrotoluene	4.66	5.00	93	4.64	5.00	93	44-116	0	30
Acenaphthene	4.16	5.00	83	4.14	5.00	83	36-101	0	30
3-Nitroaniline	4.44	5.00	89	4.53	5.00	91	34-118	2	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Portland, City of
Project: NPDES Stormwater Mon
Sample Matrix: Water

Service Request: K1011981
Date Extracted: 10/28/2010
Date Analyzed: 11/18/2010

Lab Control Spike/Duplicate Lab Control Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1011883

	Lab Control Sample KWG1011883-1 Lab Control Spike			Duplicate Lab Control Sample KWG1011883-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
2,4-Dinitrophenol	2.71	5.00	54	2.83	5.00	57	10-116	4	30
Dibenzofuran	4.27	5.00	85	4.18	5.00	84	37-103	2	30
4-Nitrophenol	4.11	5.00	82	4.12	5.00	82	38-125	0	30
2,4-Dinitrotoluene	4.59	5.00	92	4.58	5.00	92	47-119	0	30
Fluorene	4.40	5.00	88	4.30	5.00	86	39-106	2	30
4-Chlorophenyl Phenyl Ether	4.22	5.00	84	4.18	5.00	84	37-103	1	30
Diethyl Phthalate	4.38	5.00	88	4.33	5.00	87	47-113	1	30
4-Nitroaniline	4.40	5.00	88	4.41	5.00	88	38-119	0	30
2-Methyl-4,6-dinitrophenol	3.84	5.00	77	3.72	5.00	74	10-125	3	30
N-Nitrosodiphenylamine	4.36	5.00	87	4.27	5.00	85	36-111	2	30
4-Bromophenyl Phenyl Ether	4.52	5.00	90	4.45	5.00	89	42-105	1	30
Hexachlorobenzene	4.60	5.00	92	4.45	5.00	89	42-102	3	30
Pentachlorophenol	3.85	5.00	77	3.94	5.00	79	10-119	2	30
Phenanthrene	4.51	5.00	90	4.43	5.00	89	45-104	2	30
Anthracene	4.42	5.00	88	4.39	5.00	88	41-103	1	30
Di-n-butyl Phthalate	4.48	5.00	90	4.51	5.00	90	44-126	1	30
Fluoranthene	4.68	5.00	94	4.58	5.00	92	46-109	2	30
Pyrene	4.69	5.00	94	4.62	5.00	92	46-108	2	30
Butyl Benzyl Phthalate	4.58	5.00	92	4.51	5.00	90	48-115	1	30
3,3'-Dichlorobenzidine	1.79	5.00	36	3.15	5.00	63	13-108	55 *	30
Benz(a)anthracene	4.60	5.00	92	4.52	5.00	90	47-105	2	30
Chrysene	4.63	5.00	93	4.61	5.00	92	49-105	0	30
Bis(2-ethylhexyl) Phthalate	4.58	5.00	92	4.53	5.00	91	45-122	1	30
Di-n-octyl Phthalate	4.65	5.00	93	4.57	5.00	91	48-119	2	30
Benzo(b)fluoranthene	4.52	5.00	90	4.51	5.00	90	48-108	0	30
Benzo(k)fluoranthene	4.67	5.00	93	4.56	5.00	91	49-107	2	30
Benzo(a)pyrene	4.38	5.00	88	4.39	5.00	88	42-109	0	30
Indeno(1,2,3-cd)pyrene	4.62	5.00	92	4.53	5.00	91	47-111	2	30
Dibenz(a,h)anthracene	4.67	5.00	93	4.60	5.00	92	47-110	1	30
Benzo(g,h,i)perylene	4.55	5.00	91	4.52	5.00	90	47-109	1	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Pace Analytical™

www.pacelabs.com

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

Report Prepared for:

Darrell Auvil
Test America
9405 SW Nimbus Avenue
Beaverton OR 97008

REPORT OF LABORATORY ANALYSIS FOR PCBs

Report Information:

Pace Project #: 10141785
Sample Receipt Date: 10/28/2010
Client Project #: PTJ0860
Client Sub PO #: N/A
State Cert #: MN200001-005

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PCB Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Scott Unze, your Pace Project Manager.

This report has been reviewed by:

November 15, 2010

Scott Unze, Project Manager
(612) 607-6383
(612) 607-6444 (fax)
scott.unze@pacelabs.com

ACCREDITED IN ACCORDANCE WITH nelac

Report Prepared Date:
November 15, 2010

Report of Laboratory Analysis

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

DISCUSSION

This report presents the results from the analyses performed on one sample submitted by a representative of Test America - Portland. The sample was analyzed for the presence or absence of polychlorinated biphenyl (PCB) congeners using USEPA Method 1668A. Reporting limits were set to 0.25-0.75 parts per trillion and were adjusted for sample volume.

The isotopically-labeled PCB internal standards in the sample extract were recovered at 66-96%. All of the labeled internal standard recoveries obtained for this project were within the target ranges specified in the method. Since the quantification of the native PCB congeners was based on internal standard and isotope dilution methodology, the data were automatically corrected for variation in recovery and accurate values were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to be free of PCB congeners at the reporting limits. This indicates that the sample preparation steps did not significantly impact the measurement of the native congeners in the field sample.

Laboratory spike samples were also prepared with the sample batch using a reference matrix that had been fortified with native standards. The results show that the spiked native compounds were recovered at 92-116% with relative percent differences of 0-5.3%. These results indicate high levels of accuracy and precision for these analyses. Matrix spikes were not prepared with the sample batch.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
Alabama	40770	Montana	92
Alaska	MN00064	Nebraska	
Arizona	AZ0014	Nevada	MN000642010A
Arkansas	88-0680	New Jersey (NE	MN002
California	01155CA	New Mexico	MN00064
Colorado	MN00064	New York (NEL	11647
Connecticut	PH-0256	North Carolina	27700
EPA Region 5	WD-15J	North Dakota	R-036
EPA Region 8	8TMS-Q	Ohio	4150
Florida (NELAP	E87605	Ohio VAP	CL101
Georgia (DNR)	959	Oklahoma	D9922
Guam	09-019r	Oregon (ELAP)	MN200001-005
Hawaii	SLD	Oregon (OREL	MN200001-005
Idaho	MN00064	Pennsylvania	68-00563
Illinois	200012	Saipan	MP0003
Indiana	C-MN-01	South Carolina	74003001
Indiana	C-MN-01	Tennesee	2818
Iowa	368	Tennessee	02818
Kansas	E-10167	Texas	T104704192-08
Kentucky	90062	Utah (NELAP)	PAM
Louisiana	LA0900016	Virginia	00251
Maine	2007029	Washington	C755
Maryland	322	West Virginia	9952C
Michigan	9909	Wisconsin	999407970
Minnesota	027-053-137	Wyoming	8TMS-Q
Mississippi	MN00064		

REPORT OF LABORATORY ANALYSIS

Appendix A

Sample Management

SUBCONTRACT ORDER
TestAmerica Portland

PTJ0860 1127 10141785

SENDING LABORATORY:

TestAmerica Portland
9405 SW Nimbus Ave.
Beaverton, OR 97008
Phone: (503) 906-9200
Fax: (503) 906-9210
Project Manager: Darrell Auvil

RECEIVING LABORATORY:

Pace Analytical Services, Inc - Minneapolis
1700 Elm Street Suite 200
Minneapolis, MN 55414
Phone :(612) 607-1700
Fax: (612) 607-6444
Project Location: OR - OREGON
Receipt Temperature:_____°C Ice: Y / N

needs Excel EDD

Standard TAT is requested unless specific due date is requested. => Due Date: _____ Initials: _____

Analysis	Units	Expires	Comments
Sample ID: PTJ0860-01 (F0106021 - Water)		Sampled: **10/24/10 22:25**	C01
1668 PCB 209 Congeners - SUB	ug/l	04/22/11 22:25	
Containers Supplied:			
1L Amber - Unpres. (A)			

T2 1.1

10/27/10 1505 Megan Lee
Released By Date/Time

Received By Date/Time

Released By Date/Time

Received By Date/Time

Sample Condition Upon Receipt

Pace Analytical

Client Name: Test America **Project #** 10141785

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 417075264468

Optional: Proj. Due Date: Proj. Name:

Custody Seal on Cooler/Box Present: ☑ yes ☐ no **Seals intact:** ☑ yes ☐ no

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other _____ **Temp Blank:** Yes ✓ No _____

Thermometer Used 80344042 or 179425 **Type of Ice:** Wet Blue None ☐ Samples on ice, cooling process has begun

Cooler Temperature 1.1 **Biological Tissue is Frozen:** Yes No

Temp should be above freezing to 6°C

Date and initials of person examining contents: 10/28/10 MSD

Comments:

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☐Yes ☑No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No ☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes ☑No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes ☑No ☐N/A	7.
Sufficient Volume:	☑Yes ☐No ☐N/A	8.
Correct Containers Used:	☑Yes ☐No ☐N/A	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
Containers Intact:	☑Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC:	☑Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: WT		
All containers needing acid/base preservation have been checked. Noncompliance are noted in 13.	☐Yes ☐No ☑N/A	13. ☐ HNO3 ☐ H2SO4 ☐ NaOH ☐ HCl Samp #
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes ☐No ☑N/A	
Exceptions: VOA,Coliform, TOC, Oil and Grease, WI-DRO (water)	☐Yes ☑No	Initial when completed / Lot # of added preservative
Samples checked for dechlorination:	☐Yes ☐No ☑N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes ☐No ☑N/A	15.
Trip Blank Present:	☐Yes ☐No ☑N/A	16.
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	
Pace Trip Blank Lot # (if purchased): _____		

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ **Date:** 10/28/10

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DENR.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Reporting Flags

A = Reporting Limit based on signal to noise

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interference present

J = Estimated value

Nn = Value obtained from additional analysis

P = PCDE Interference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = See Discussion

Appendix B

Sample Analysis Summary

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PTJ0860-01:F0106021		
Lab Sample ID	10141785001		
Filename	P101106A_06		
Injected By	BAL		
Total Amount Extracted	988 mL	Matrix	Water
% Moisture	NA	Dilution	3
Dry Weight Extracted	NA	Collected	10/24/2010 22:25
ICAL ID	P101106A04	Received	10/28/2010 09:47
CCal Filename(s)	P101106A_01	Extracted	10/29/2010 13:45
Method Blank ID	BLANK-26844	Analyzed	11/06/2010 09:11

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	7.791	3.24	2.0	1.36	68
13C-4-MoCB	3	10.978	3.08	2.0	1.53	76
13C-2,2'-DiCB	4	11.314	1.56	2.0	1.52	76
13C-4,4'-DiCB	15	19.211	1.53	2.0	1.41	71
13C-2,2',6-TrCB	19	15.604	1.08	2.0	1.56	78
13C-3,4,4'-TrCB	37	27.419	1.09	2.0	1.49	75
13C-2,2',6,6'-TeCB	54	19.537	0.79	2.0	1.65	83
13C-3,4,4',5-TeCB	81	34.631	0.80	2.0	1.41	71
13C-3,3',4,4'-TeCB	77	35.218	0.82	2.0	1.42	71
13C-2,2',4,6,6'-PeCB	104	26.011	1.61	2.0	1.73	86
13C-2,3,3',4,4'-PeCB	105	38.808	1.59	2.0	1.36	68
13C-2,3,4,4',5-PeCB	114	38.153	1.62	2.0	1.36	68
13C-2,3',4,4',5-PeCB	118	37.617	1.64	2.0	1.33	66
13C-2,3',4,4',5'-PeCB	123	37.281	1.58	2.0	1.36	68
13C-3,3',4,4',5-PeCB	126	41.961	1.58	2.0	1.35	68
13C-2,2',4,4',6,6'-HxCB	155	32.199	1.27	2.0	1.94	97
13C-HxCB (156/157)	156/157	44.980	1.26	4.0	2.95	74
13C-2,3',4,4',5,5'-HxCB	167	43.822	1.25	2.0	1.44	72
13C-3,3',4,4',5,5'-HxCB	169	48.267	1.28	2.0	1.46	73
13C-2,2',3,4',5,6,6'-HpCB	188	38.120	1.05	2.0	1.91	95
13C-2,3,3',4,4',5,5'-HpCB	189	50.794	1.05	2.0	1.54	77
13C-2,2',3,3',5,5',6,6'-OcCB	202	43.554	0.91	2.0	1.95	98
13C-2,3,3',4,4',5,5',6-OcCB	205	53.467	0.89	2.0	1.81	91
13C-2,2',3,3',4,4',5,5',6-NoCB	206	55.472	0.75	2.0	1.89	95
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	50.277	0.79	2.0	1.92	96
13C--DeCB	209	57.606	0.73	2.0	1.73	86
Cleanup Standards						
13C-2,4,4'-TrCB	28	22.874	1.08	2.0	1.50	75
13C-2,3,3',5,5'-PeCB	111	35.285	1.61	2.0	1.57	78
13C-2,2',3,3',5,5',6-HpCB	178	41.223	1.05	2.0	1.80	90
Recovery Standards						
13C-2,5-DiCB	9	14.118	1.56	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	24.971	0.79	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	32.451	1.62	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	40.770	1.30	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OcCB	194	52.928	0.89	2.0	NA	NA

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1668A Polychlorobiphenyl
Sample Analysis Results

Client Sample ID PTJ0860-01:F0106021
Lab Sample ID 10141785001
Filename P101106A_06

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.253
2		---	---	ND	---	0.253
3		---	---	ND	---	0.253
4		---	---	ND	---	0.253
5		---	---	ND	---	0.253
6		---	---	ND	---	0.253
7		---	---	ND	---	0.253
8		---	---	ND	---	0.253
9		---	---	ND	---	0.253
10		---	---	ND	---	0.253
11		---	---	ND	---	1.52
12	12/13	---	---	ND	---	0.506
13	12/13	---	---	ND	---	0.506
14		---	---	ND	---	0.253
15		---	---	ND	---	0.253
16		---	---	ND	---	0.253
17		---	---	ND	---	0.253
18	18/30	---	---	ND	---	0.506
19		---	---	ND	---	0.253
20	20/28	---	---	ND	---	0.506
21	21/33	---	---	ND	---	0.506
22		---	---	ND	---	0.253
23		---	---	ND	---	0.253
24		---	---	ND	---	0.253
25		---	---	ND	---	0.253
26	26/29	---	---	ND	---	0.506
27		---	---	ND	---	0.253
28	20/28	---	---	ND	---	0.506
29	26/29	---	---	ND	---	0.506
30	18/30	---	---	ND	---	0.506
31		22.556	0.99	0.283	---	0.253
32		---	---	ND	---	0.253
33	21/33	---	---	ND	---	0.506
34		---	---	ND	---	0.253
35		---	---	ND	---	0.253
36		---	---	ND	---	0.253
37		---	---	ND	---	0.253
38		---	---	ND	---	0.253
39		---	---	ND	---	0.253
40	40/41/71	---	---	ND	---	1.52
41	40/41/71	---	---	ND	---	1.52
42		---	---	ND	---	0.506
43	43/73	---	---	ND	---	1.01
44	44/47/65	---	---	ND	---	1.52
45	45/51	---	---	ND	---	1.01
46		---	---	ND	---	0.506
47	44/47/65	---	---	ND	---	1.52
48		---	---	ND	---	0.506

Conc = Concentration
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Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1668A Polychlorobiphenyl
Sample Analysis Results

Client Sample ID PTJ0860-01:F0106021
Lab Sample ID 10141785001
Filename P101106A_06

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69	---	---	ND	---	1.01
50	50/53	---	---	ND	---	1.01
51	45/51	---	---	ND	---	1.01
52		---	---	ND	---	0.506
53	50/53	---	---	ND	---	1.01
54		---	---	ND	---	0.506
55		---	---	ND	---	0.506
56		---	---	ND	---	0.506
57		---	---	ND	---	0.506
58		---	---	ND	---	0.506
59	59/62/75	---	---	ND	---	1.52
60		---	---	ND	---	0.506
61	61/70/74/76	---	---	ND	---	2.02
62	59/62/75	---	---	ND	---	1.52
63		---	---	ND	---	0.506
64		---	---	ND	---	0.506
65	44/47/65	---	---	ND	---	1.52
66		---	---	ND	---	0.506
67		---	---	ND	---	0.506
68		---	---	ND	---	0.506
69	49/69	---	---	ND	---	1.01
70	61/70/74/76	---	---	ND	---	2.02
71	40/41/71	---	---	ND	---	1.52
72		---	---	ND	---	0.506
73	43/73	---	---	ND	---	1.01
74	61/70/74/76	---	---	ND	---	2.02
75	59/62/75	---	---	ND	---	1.52
76	61/70/74/76	---	---	ND	---	2.02
77		---	---	ND	---	0.506
78		---	---	ND	---	0.506
79		---	---	ND	---	0.506
80		---	---	ND	---	0.506
81		---	---	ND	---	0.506
82		---	---	ND	---	0.506
83		---	---	ND	---	0.506
84		---	---	ND	---	0.506
85	85/116/117	---	---	ND	---	1.52
86	86/87/97/108/119/125	---	---	ND	---	3.04
87	86/87/97/108/119/125	---	---	ND	---	3.04
88	88/91	---	---	ND	---	1.01
89		---	---	ND	---	0.506
90	90/101/113	---	---	ND	---	1.52
91	88/91	---	---	ND	---	1.01
92		---	---	ND	---	0.506
93	93/98/100/102	---	---	ND	---	2.02
94		---	---	ND	---	0.506
95		29.315	1.58	0.581	---	0.506
96		---	---	ND	---	0.506

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Method 1668A Polychlorobiphenyl
Sample Analysis Results

Client Sample ID PTJ0860-01:F0106021
Lab Sample ID 10141785001
Filename P101106A_06

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
97	86/87/97/108/119/125	---	---	ND	---	3.04
98	93/98/100/102	---	---	ND	---	2.02
99		---	---	ND	---	0.506
100	93/98/100/102	---	---	ND	---	2.02
101	90/101/113	---	---	ND	---	1.52
102	93/98/100/102	---	---	ND	---	2.02
103		---	---	ND	---	0.506
104		---	---	ND	---	0.506
105		---	---	ND	---	0.506
106		---	---	ND	---	0.506
107	107/124	---	---	ND	---	1.01
108	86/87/97/108/119/125	---	---	ND	---	3.04
109		---	---	ND	---	0.506
110	110/115	---	---	ND	---	1.01
111		---	---	ND	---	0.506
112		---	---	ND	---	0.506
113	90/101/113	---	---	ND	---	1.52
114		---	---	ND	---	0.506
115	110/115	---	---	ND	---	1.01
116	85/116/117	---	---	ND	---	1.52
117	85/116/117	---	---	ND	---	1.52
118		37.650	1.49	0.798	---	0.506
119	86/87/97/108/119/125	---	---	ND	---	3.04
120		---	---	ND	---	0.506
121		---	---	ND	---	0.506
122		---	---	ND	---	0.506
123		---	---	ND	---	0.506
124	107/124	---	---	ND	---	1.01
125	86/87/97/108/119/125	---	---	ND	---	3.04
126		---	---	ND	---	0.506
127		---	---	ND	---	0.506
128	128/166	---	---	ND	---	1.01
129	129/138/163	40.803	1.23	1.58	---	1.52
130		---	---	ND	---	0.506
131		---	---	ND	---	0.506
132		---	---	ND	---	0.506
133		---	---	ND	---	0.506
134	134/143	---	---	ND	---	1.01
135	135/151	---	---	ND	---	1.01
136		---	---	ND	---	0.506
137		---	---	ND	---	0.506
138	129/138/163	40.803	1.23	(1.58)	---	1.52
139	139/140	---	---	ND	---	1.01
140	139/140	---	---	ND	---	1.01
141		---	---	ND	---	0.506
142		---	---	ND	---	0.506
143	134/143	---	---	ND	---	1.01
144		---	---	ND	---	0.506

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Method 1668A Polychlorobiphenyl
Sample Analysis Results

Client Sample ID PTJ0860-01:F0106021
Lab Sample ID 10141785001
Filename P101106A_06

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
145		---	---	ND	---	0.506
146		---	---	ND	---	0.506
147	147/149	---	---	ND	---	1.01
148		---	---	ND	---	0.506
149	147/149	---	---	ND	---	1.01
150		---	---	ND	---	0.506
151	135/151	---	---	ND	---	1.01
152		---	---	ND	---	0.506
153	153/168	39.546	1.23	1.24	---	1.01
154		---	---	ND	---	0.506
155		---	---	ND	---	0.506
156	156/157	---	---	ND	---	1.01
157	156/157	---	---	ND	---	1.01
158		---	---	ND	---	0.506
159		---	---	ND	---	0.506
160		---	---	ND	---	0.506
161		---	---	ND	---	0.506
162		---	---	ND	---	0.506
163	129/138/163	40.803	1.23	(1.58)	---	1.52
164		---	---	ND	---	0.506
165		---	---	ND	---	0.506
166	128/166	---	---	ND	---	1.01
167		---	---	ND	---	0.506
168	153/168	39.546	1.23	(1.24)	---	1.01
169		---	---	ND	---	0.506
170		---	---	ND	---	0.506
171	171/173	---	---	ND	---	1.01
172		---	---	ND	---	0.506
173	171/173	---	---	ND	---	1.01
174		---	---	ND	---	0.506
175		---	---	ND	---	0.506
176		---	---	ND	---	0.506
177		---	---	ND	---	0.506
178		---	---	ND	---	0.506
179		---	---	ND	---	0.506
180	180/193	46.388	1.05	1.09	---	1.01
181		---	---	ND	---	0.506
182		---	---	ND	---	0.506
183	183/185	---	---	ND	---	1.01
184		---	---	ND	---	0.506
185	183/185	---	---	ND	---	1.01
186		---	---	ND	---	0.506
187		42.162	1.06	0.693	---	0.506
188		---	---	ND	---	0.506
189		---	---	ND	---	0.506
190		---	---	ND	---	0.506
191		---	---	ND	---	0.506
192		---	---	ND	---	0.506

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Method 1668A Polychlorobiphenyl
Sample Analysis Results

Client Sample ID PTJ0860-01:F0106021
Lab Sample ID 10141785001
Filename P101106A_06

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193	46.388	1.05	(1.09)	---	1.01
194		---	---	ND	---	0.759
195		---	---	ND	---	0.759
196		---	---	ND	---	0.759
197	197/200	---	---	ND	---	1.52
198	198/199	---	---	ND	---	1.52
199	198/199	---	---	ND	---	1.52
200	197/200	---	---	ND	---	1.52
201		---	---	ND	---	0.759
202		---	---	ND	---	0.759
203		---	---	ND	---	0.759
204		---	---	ND	---	0.759
205		---	---	ND	---	0.759
206		---	---	ND	---	0.759
207		---	---	ND	---	0.759
208		---	---	ND	---	0.759
209		---	---	ND	---	0.759

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Method 1668A Polychlorobiphenyl
Sample Analysis Results

Client Sample ID	PTJ0860-01:F0106021
Lab Sample ID	10141785001
Filename	P101106A_06

Congener Group	Concentration ng/L
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	ND
Total Trichloro Biphenyls	0.283
Total Tetrachloro Biphenyls	ND
Total Pentachloro Biphenyls	1.38
Total Hexachloro Biphenyls	2.82
Total Heptachloro Biphenyls	1.78
Total Octachloro Biphenyls	ND
Total Nonachloro Biphenyls	ND
Decachloro Biphenyls	ND
Total PCBs	6.26

ND = Not Detected

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyl
Blank Analysis Results

Lab Sample ID	BLANK-26844		
Filename	P101105A_10		
Injected By	SMT	Matrix	Water
Total Amount Extracted	1020 mL	Extracted	10/29/2010 13:45
ICAL ID	P101105A02	Analyzed	11/05/2010 11:41
CCal Filename(s)	P101105A_01	Dilution	3

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	7.887	3.09	2.0	0.888	44
13C-4-MoCB	3	11.085	2.85	2.0	0.975	49
13C-2,2'-DiCB	4	11.433	1.56	2.0	1.02	51
13C-4,4'-DiCB	15	19.352	1.56	2.0	1.15	58
13C-2,2',6-TrCB	19	15.734	1.04	2.0	1.16	58
13C-3,4,4'-TrCB	37	27.554	1.05	2.0	1.41	71
13C-2,2',6,6'-TeCB	54	19.673	0.78	2.0	1.22	61
13C-3,4,4',5-TeCB	81	34.781	0.78	2.0	1.34	67
13C-3,3',4,4'-TeCB	77	35.385	0.83	2.0	1.39	70
13C-2,2',4,6,6'-PeCB	104	26.145	1.54	2.0	1.58	79
13C-2,3,3',4,4'-PeCB	105	38.940	1.61	2.0	1.36	68
13C-2,3,4,4',5-PeCB	114	38.303	1.64	2.0	1.31	66
13C-2,3',4,4',5-PeCB	118	37.766	1.54	2.0	1.27	63
13C-2,3',4,4',5'-PeCB	123	37.431	1.56	2.0	1.33	66
13C-3,3',4,4',5-PeCB	126	42.109	1.55	2.0	1.35	68
13C-2,2',4,4',6,6'-HxCB	155	32.350	1.28	2.0	1.88	94
13C-HxCB (156/157)	156/157	45.111	1.25	4.0	3.23	81
13C-2,3',4,4',5,5'-HxCB	167	43.987	1.23	2.0	1.62	81
13C-3,3',4,4',5,5'-HxCB	169	48.414	1.26	2.0	1.61	80
13C-2,2',3,4',5,6,6'-HpCB	188	38.269	1.08	2.0	1.76	88
13C-2,3,3',4,4',5,5'-HpCB	189	50.963	1.08	2.0	1.66	83
13C-2,2',3,3',5,5',6,6'-OcCB	202	43.685	0.95	2.0	1.06	53
13C-2,3,3',4,4',5,5',6-OcCB	205	53.614	0.87	2.0	1.84	92
13C-2,2',3,3',4,4',5,5',6-NoCB	206	55.640	0.79	2.0	1.99	100
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	50.424	0.81	2.0	1.76	88
13C--DeCB	209	57.816	0.72	2.0	1.83	92
Cleanup Standards						
13C-2,4,4'-TrCB	28	23.010	1.11	2.0	1.30	65
13C-2,3,3',5,5'-PeCB	111	35.418	1.56	2.0	1.61	81
13C-2,2',3,3',5,5',6-HpCB	178	41.371	1.08	2.0	1.91	95
Recovery Standards						
13C-2,5-DiCB	9	14.236	1.58	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	25.123	0.79	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	32.601	1.55	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	40.919	1.28	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OcCB	194	53.096	0.91	2.0	NA	NA

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
RT = Retention Time
I = Interference
ng's = Nanograms

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1668A Polychlorobiphenyl
Blank Analysis Results

Lab Sample ID BLANK-26844
Filename P101105A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.245
2		---	---	ND	---	0.245
3		---	---	ND	---	0.245
4		---	---	ND	---	0.245
5		---	---	ND	---	0.245
6		---	---	ND	---	0.245
7		---	---	ND	---	0.245
8		---	---	ND	---	0.245
9		---	---	ND	---	0.245
10		---	---	ND	---	0.245
11		---	---	ND	---	1.47
12	12/13	---	---	ND	---	0.490
13	12/13	---	---	ND	---	0.490
14		---	---	ND	---	0.245
15		---	---	ND	---	0.245
16		---	---	ND	---	0.245
17		---	---	ND	---	0.245
18	18/30	---	---	ND	---	0.490
19		---	---	ND	---	0.245
20	20/28	---	---	ND	---	0.490
21	21/33	---	---	ND	---	0.490
22		---	---	ND	---	0.245
23		---	---	ND	---	0.245
24		---	---	ND	---	0.245
25		---	---	ND	---	0.245
26	26/29	---	---	ND	---	0.490
27		---	---	ND	---	0.245
28	20/28	---	---	ND	---	0.490
29	26/29	---	---	ND	---	0.490
30	18/30	---	---	ND	---	0.490
31		---	---	ND	---	0.245
32		---	---	ND	---	0.245
33	21/33	---	---	ND	---	0.490
34		---	---	ND	---	0.245
35		---	---	ND	---	0.245
36		---	---	ND	---	0.245
37		---	---	ND	---	0.245
38		---	---	ND	---	0.245
39		---	---	ND	---	0.245
40	40/41/71	---	---	ND	---	1.47
41	40/41/71	---	---	ND	---	1.47
42		---	---	ND	---	0.490
43	43/73	---	---	ND	---	0.980
44	44/47/65	---	---	ND	---	1.47
45	45/51	---	---	ND	---	0.980

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
RT = Retention Time
I = Interference

REPORT OF LABORATORY ANALYSIS

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1700 Elm Street - Suite 200
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Tel: 612-607-1700
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Method 1668A Polychlorobiphenyl
Blank Analysis Results

Lab Sample ID BLANK-26844
Filename P101105A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
46		---	---	ND	---	0.490
47	44/47/65	---	---	ND	---	1.47
48		---	---	ND	---	0.490
49	49/69	---	---	ND	---	0.980
50	50/53	---	---	ND	---	0.980
51	45/51	---	---	ND	---	0.980
52		---	---	ND	---	0.490
53	50/53	---	---	ND	---	0.980
54		---	---	ND	---	0.490
55		---	---	ND	---	0.490
56		---	---	ND	---	0.490
57		---	---	ND	---	0.490
58		---	---	ND	---	0.490
59	59/62/75	---	---	ND	---	1.47
60		---	---	ND	---	0.490
61	61/70/74/76	---	---	ND	---	1.96
62	59/62/75	---	---	ND	---	1.47
63		---	---	ND	---	0.490
64		---	---	ND	---	0.490
65	44/47/65	---	---	ND	---	1.47
66		---	---	ND	---	0.490
67		---	---	ND	---	0.490
68		---	---	ND	---	0.490
69	49/69	---	---	ND	---	0.980
70	61/70/74/76	---	---	ND	---	1.96
71	40/41/71	---	---	ND	---	1.47
72		---	---	ND	---	0.490
73	43/73	---	---	ND	---	0.980
74	61/70/74/76	---	---	ND	---	1.96
75	59/62/75	---	---	ND	---	1.47
76	61/70/74/76	---	---	ND	---	1.96
77		---	---	ND	---	0.490
78		---	---	ND	---	0.490
79		---	---	ND	---	0.490
80		---	---	ND	---	0.490
81		---	---	ND	---	0.490
82		---	---	ND	---	0.490
83		---	---	ND	---	0.490
84		---	---	ND	---	0.490
85	85/116/117	---	---	ND	---	1.47
86	86/87/97/108/119/125	---	---	ND	---	2.94
87	86/87/97/108/119/125	---	---	ND	---	2.94
88	88/91	---	---	ND	---	0.980
89		---	---	ND	---	0.490
90	90/101/113	---	---	ND	---	1.47

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
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NC = Not Calculated
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X = Outside QC Limits
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REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyl
Blank Analysis Results

Lab Sample ID BLANK-26844
Filename P101105A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
91	88/91	---	---	ND	---	0.980
92		---	---	ND	---	0.490
93	93/98/100/102	---	---	ND	---	1.96
94		---	---	ND	---	0.490
95		---	---	ND	---	0.490
96		---	---	ND	---	0.490
97	86/87/97/108/119/125	---	---	ND	---	2.94
98	93/98/100/102	---	---	ND	---	1.96
99		---	---	ND	---	0.490
100	93/98/100/102	---	---	ND	---	1.96
101	90/101/113	---	---	ND	---	1.47
102	93/98/100/102	---	---	ND	---	1.96
103		---	---	ND	---	0.490
104		---	---	ND	---	0.490
105		---	---	ND	---	0.490
106		---	---	ND	---	0.490
107	107/124	---	---	ND	---	0.980
108	86/87/97/108/119/125	---	---	ND	---	2.94
109		---	---	ND	---	0.490
110	110/115	---	---	ND	---	0.980
111		---	---	ND	---	0.490
112		---	---	ND	---	0.490
113	90/101/113	---	---	ND	---	1.47
114		---	---	ND	---	0.490
115	110/115	---	---	ND	---	0.980
116	85/116/117	---	---	ND	---	1.47
117	85/116/117	---	---	ND	---	1.47
118		---	---	ND	---	0.490
119	86/87/97/108/119/125	---	---	ND	---	2.94
120		---	---	ND	---	0.490
121		---	---	ND	---	0.490
122		---	---	ND	---	0.490
123		---	---	ND	---	0.490
124	107/124	---	---	ND	---	0.980
125	86/87/97/108/119/125	---	---	ND	---	2.94
126		---	---	ND	---	0.490
127		---	---	ND	---	0.490
128	128/166	---	---	ND	---	0.980
129	129/138/163	---	---	ND	---	1.47
130		---	---	ND	---	0.490
131		---	---	ND	---	0.490
132		---	---	ND	---	0.490
133		---	---	ND	---	0.490
134	134/143	---	---	ND	---	0.980
135	135/151	---	---	ND	---	0.980

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
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R = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
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RT = Retention Time
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REPORT OF LABORATORY ANALYSIS

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Minneapolis, MN 55414

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Method 1668A Polychlorobiphenyl
Blank Analysis Results

Lab Sample ID BLANK-26844
Filename P101105A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
136		---	---	ND	---	0.490
137		---	---	ND	---	0.490
138	129/138/163	---	---	ND	---	1.47
139	139/140	---	---	ND	---	0.980
140	139/140	---	---	ND	---	0.980
141		---	---	ND	---	0.490
142		---	---	ND	---	0.490
143	134/143	---	---	ND	---	0.980
144		---	---	ND	---	0.490
145		---	---	ND	---	0.490
146		---	---	ND	---	0.490
147	147/149	---	---	ND	---	0.980
148		---	---	ND	---	0.490
149	147/149	---	---	ND	---	0.980
150		---	---	ND	---	0.490
151	135/151	---	---	ND	---	0.980
152		---	---	ND	---	0.490
153	153/168	---	---	ND	---	0.980
154		---	---	ND	---	0.490
155		---	---	ND	---	0.490
156	156/157	---	---	ND	---	0.980
157	156/157	---	---	ND	---	0.980
158		---	---	ND	---	0.490
159		---	---	ND	---	0.490
160		---	---	ND	---	0.490
161		---	---	ND	---	0.490
162		---	---	ND	---	0.490
163	129/138/163	---	---	ND	---	1.47
164		---	---	ND	---	0.490
165		---	---	ND	---	0.490
166	128/166	---	---	ND	---	0.980
167		---	---	ND	---	0.490
168	153/168	---	---	ND	---	0.980
169		---	---	ND	---	0.490
170		---	---	ND	---	0.490
171	171/173	---	---	ND	---	0.980
172		---	---	ND	---	0.490
173	171/173	---	---	ND	---	0.980
174		---	---	ND	---	0.490
175		---	---	ND	---	0.490
176		---	---	ND	---	0.490
177		---	---	ND	---	0.490
178		---	---	ND	---	0.490
179		---	---	ND	---	0.490
180	180/193	---	---	ND	---	0.980

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
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Method 1668A Polychlorobiphenyl
Blank Analysis Results

Lab Sample ID BLANK-26844
Filename P101105A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
181		---	---	ND	---	0.490
182		---	---	ND	---	0.490
183	183/185	---	---	ND	---	0.980
184		---	---	ND	---	0.490
185	183/185	---	---	ND	---	0.980
186		---	---	ND	---	0.490
187		---	---	ND	---	0.490
188		---	---	ND	---	0.490
189		---	---	ND	---	0.490
190		---	---	ND	---	0.490
191		---	---	ND	---	0.490
192		---	---	ND	---	0.490
193	180/193	---	---	ND	---	0.980
194		---	---	ND	---	0.735
195		---	---	ND	---	0.735
196		---	---	ND	---	0.735
197	197/200	---	---	ND	---	1.47
198	198/199	---	---	ND	---	1.47
199	198/199	---	---	ND	---	1.47
200	197/200	---	---	ND	---	1.47
201		---	---	ND	---	0.735
202		---	---	ND	---	0.735
203		---	---	ND	---	0.735
204		---	---	ND	---	0.735
205		---	---	ND	---	0.735
206		---	---	ND	---	0.735
207		---	---	ND	---	0.735
208		---	---	ND	---	0.735
209		---	---	ND	---	0.735

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
NA = Not Applicable
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Method 1668A Polychlorobiphenyl
Blank Analysis Results

Client Sample ID
Lab Sample ID BLANK-26844
Filename P101105A_10

Congener Group	Concentration ng/L
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	ND
Total Trichloro Biphenyls	ND
Total Tetrachloro Biphenyls	ND
Total Pentachloro Biphenyls	ND
Total Hexachloro Biphenyls	ND
Total Heptachloro Biphenyls	ND
Total Octachloro Biphenyls	ND
Total Nonachloro Biphenyls	ND
Decachloro Biphenyls	ND
Total PCBs	ND

ND = Not Detected

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyls
Laboratory Control Spike Analysis Results

Lab Sample ID	LCS-26845		
Filename	P101105A_06	Matrix	Water
Total Amount Extracted	1040 mL	Dilution	NA
ICAL ID	P101105A02	Extracted	10/29/2010 13:45
CCal Filename(s)	P101105A_01	Analyzed	11/05/2010 07:23
Method Blank ID	BLANK-26844	Injected By	SMT

	Native Analytes			Labeled Analytes		
PCB Isomer	**Spiked (ng)**	**Found (ng)**	**% Recovery**	**Spiked (ng)**	**Found (ng)**	**% Recovery**
1	1.0	0.969	97	2.0	0.935	47
3	1.0	0.964	96	2.0	0.961	48
4	1.0	0.940	94	2.0	1.07	53
15	1.0	1.01	101	2.0	1.07	54
19	1.0	0.921	92	2.0	1.12	56
37	1.0	0.963	96	2.0	1.35	67
54	1.0	0.995	99	2.0	1.09	55
81	1.0	1.03	103	2.0	1.29	64
77	1.0	1.01	101	2.0	1.31	66
104	1.0	0.987	99	2.0	1.43	72
105	1.0	1.12	112	2.0	1.28	64
114	1.0	1.06	106	2.0	1.25	63
118	1.0	1.11	111	2.0	1.24	62
123	1.0	1.05	105	2.0	1.22	61
126	1.0	1.00	100	2.0	1.30	65
155	1.0	0.953	95	2.0	1.68	84
156/157	2.0	2.05	102	4.0	2.97	74
167	1.0	1.02	102	2.0	1.43	71
169	1.0	1.00	100	2.0	1.46	73
188	1.0	0.989	99	2.0	1.81	91
189	1.0	0.993	99	2.0	1.70	85
202	1.0	0.953	95	2.0	0.982	49
205	1.0	0.987	99	2.0	1.82	91
206	1.0	0.915	92	2.0	1.89	94
208	1.0	0.955	95	2.0	1.83	92
209	1.0	1.15	115	2.0	1.77	89

R = Recovery outside of method 1668A control limits
Nn = Result obtained from alternate analysis
ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
ng = Nanograms
I = Interference

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyls
Laboratory Control Spike Analysis Results

Lab Sample ID	LCSD-26846		
Filename	P101105A_07	Matrix	Water
Total Amount Extracted	1020 mL	Dilution	NA
ICAL ID	P101105A02	Extracted	10/29/2010 13:45
CCal Filename(s)	P101105A_01	Analyzed	11/05/2010 08:27
Method Blank ID	BLANK-26844	Injected By	SMT

	Native Analytes			Labeled Analytes		
PCB Isomer	**Spiked (ng)**	**Found (ng)**	**% Recovery**	**Spiked (ng)**	**Found (ng)**	**% Recovery**
1	1.0	0.965	96	2.0	0.676	34
3	1.0	0.930	93	2.0	0.735	37
4	1.0	0.993	99	2.0	0.813	41
15	1.0	1.02	102	2.0	0.842	42
19	1.0	0.971	97	2.0	0.870	43
37	1.0	0.925	93	2.0	1.17	59
54	1.0	0.982	98	2.0	0.853	43
81	1.0	1.01	101	2.0	1.26	63
77	1.0	0.994	99	2.0	1.29	64
104	1.0	0.980	98	2.0	1.26	63
105	1.0	1.08	108	2.0	1.23	62
114	1.0	1.04	104	2.0	1.21	60
118	1.0	1.08	108	2.0	1.22	61
123	1.0	1.05	105	2.0	1.26	63
126	1.0	1.00	100	2.0	1.24	62
155	1.0	0.918	92	2.0	1.77	88
156/157	2.0	2.02	101	4.0	3.03	76
167	1.0	1.01	101	2.0	1.56	78
169	1.0	0.965	96	2.0	1.58	79
188	1.0	0.961	96	2.0	1.87	94
189	1.0	0.983	98	2.0	1.77	89
202	1.0	0.957	96	2.0	1.08	54
205	1.0	0.960	96	2.0	1.89	95
206	1.0	0.960	96	2.0	2.02	101
208	1.0	0.957	96	2.0	1.90	95
209	1.0	1.16	116	2.0	1.82	91

R = Recovery outside of method 1668A control limits
Nn = Result obtained from alternate analysis
ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
ng = Nanograms
I = Interference

REPORT OF LABORATORY ANALYSIS

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Method 1668A

Spike Recovery Relative Percent Difference (RPD) Results

Client	Test America		
Spike 1 ID	LCS-26845	Spike 2 ID	LCSD-26846
Spike 1 Filename	P101105A_06	Spike 2 Filename	P101105A_07

Compound	IUPAC	Spike 1 %REC	Spike 2 %REC	%RPD
2-MoCB	1	97	96	1.0
4-MoCB	3	96	93	3.2
2,2'-DiCB	4	94	99	5.2
4,4'-DiCB	15	101	102	1.0
2,2',6-TrCB	19	92	97	5.3
3,4,4'-TrCB	37	96	93	3.2
2,2',6,6'-TeCB	54	99	98	1.0
3,3',4,4'-TeCB	77	101	99	2.0
3,4,4',5-TeCB	81	103	101	2.0
2,2',4,6,6'-PeCB	104	99	98	1.0
2,3,3',4,4'-PeCB	105	112	108	3.6
2,3,4,4',5-PeCB	114	106	104	1.9
2,3',4,4',5-PeCB	118	111	108	2.7
2,3',4,4',5'-PeCB	123	105	105	0.0
3,3',4,4',5-PeCB	126	100	100	0.0
2,2',4,4',6,6'-HxCB	155	95	92	3.2
(156/157)	156/157	102	101	1.0
2,3',4,4',5,5'-HxCB	167	102	101	1.0
3,3',4,4',5,5'-HxCB	169	100	96	4.1
2,2',3,4',5,6,6'-HpCB	188	99	96	3.1
2,3,3',4,4',5,5'-HpCB	189	99	98	1.0
2,2',3,3',5,5',6,6'-OcCB	202	95	96	1.0
2,3,3',4,4',5,5',6-OcCB	205	99	96	3.1
2,2',3,3',4,4',5,5',6-NoCB	206	92	96	4.3
2,2',3,3',4,5,5',6,6'-NoCB	208	95	96	1.0
Decachlorobiphenyl	209	115	116	0.9

%REC = Percent Recovered
RPD = The difference between the two values divided by the mean value

REPORT OF LABORATORY ANALYSIS

February 2011 Event

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Laboratory Data QA/QC Review
MS4 Data Evaluation
City Outfall Basin 19

To: File

From: Andrew Davidson, GSI Water Solutions, Inc.

Date: October 28, 2011

This memorandum presents a quality assurance/quality control (QA/QC) review of the laboratory data generated from a source control investigation sampling event conducted by the City of Portland (City) at Outfall Basin 19 on February 12, 2011. A field sample (W11B114-01) was collected and submitted for analyses.

The laboratory analyses for these source control program samples were completed by the City's Bureau of Environmental Services (BES) Water Pollution Control Laboratory (WPCL) and subcontracted laboratories. The following laboratories conducted the analyses listed:

- BES WPCL
    - Biological Oxygen Demand (BOD) – SM 5210B/H10360
    - Chemical Oxygen Demand (COD) – SM 5220D
    - Total Dissolved Solids (TDS) – SM 2540C
    - Total Solids (TS) – SM 2540B
    - Total Suspended Solids (TSS) – SM 2540D
    - Ammonia Nitrogen – EPA 350.1
    - Nitrate –Nitrogen – EPA 300.0
    - Orthophosphate Phosphorus – EPA 365.1
    - Total Kjeldahl nitrogen (TKN) – PAI-DK03
    - Total Phosphorus – EPA 365.4
    - Hardness – SM 2340B
    - Calcium – EPA 200.7

  - Magnesium – EPA 200.7
  - Metals (Total) – EPA 200.8
  - Metals (Dissolved) – EPA 200.8
  - Polynuclear Aromatic Hydrocarbons (PAHs) & Phthalates – EPA 8270M-SIM
- Columbia Analytical Services (CAS)
  - Organochlorine Pesticides – EPA 8081B
  - Semi-Volatile Organic Compounds (SVOCs) – EPA 8270C
- Pace Analytical Services (Pace)
  - Polychlorinated Biphenyls (PCB) Congeners – EPA 1668A

The WPCL laboratory report and the subcontracted laboratory reports for all analyses associated with this sampling event are attached.

For the purpose of this pesticide source control investigation, the following QA/QC review was limited to review of the analytical data generated from the analysis of organochlorine pesticides. The QA/QC review of the analytical data is based on the available documentation provided by WPCL and the subcontracted laboratories, and consisted of reviewing the following elements for each laboratory report, if applicable and/or available:

- Chain-of-custody – for completeness and continuous custody
- Analysis conducted within holding times
- Chemicals of interest detected in method blanks
- Internal standard recoveries within accuracy control limits
- Surrogate recoveries within laboratory control limits
- Matrix spike and matrix spike duplicate (MS/MSD) sample results within laboratory control limits
- Laboratory control and duplicate laboratory control (LC/DLC) sample recoveries within laboratory control limits
- Relative percent differences (RPDs) for laboratory duplicate samples within laboratory control limits.

The results of the QA/QC review of the laboratory reports are presented below.

Chain-of-Custody

The chain-of-custody forms showed continuous custody of the samples. The chain-of-custody procedures appear to have been adequate indicating that sample integrity was maintained throughout the sample collection and delivery process.

Analysis Holding Times

Samples were extracted and analyzed within the recommended holding times for the organochlorine pesticide analysis.

Method Blanks

A method blank was processed during the laboratory analysis of organochlorine pesticides. No analytes were detected in the method blank.

Surrogate Recoveries

Surrogates were analyzed during the pesticide analysis. Surrogate recoveries were within laboratory acceptance limits with one exception; the control criteria were exceeded for the surrogate, decachlorobiphenyl, due to matrix interference that prevented adequate resolution of the target compounds. However, the other surrogate, tetrachloro-m-xylene, was well within control limits, indicating the integrity of the extraction was intact. Accordingly, CAS reports that no corrective action was necessary.

Laboratory Control/Duplicate Laboratory Control Samples

LC/DLC samples were processed during the laboratory analysis of pesticides. LC/DLC sample recoveries and RPDs were within laboratory acceptance limits

Other

CAS reports that the primary evaluation criteria were not met on the confirmation column for 4,4'-DDT and Methoxychlor during the organochlorine pesticide analysis. The results were reported from the column with an acceptable continuing calibration verification (CCV), and the data quality is not affected. Additionally, for some analytes, the relative percent difference between analytical results from the two columns is greater than 40 percent. These values are flagged as estimates ("J" flag). CAS also reports that detection limits were elevated for a few analytes due to matrix interference from non-target background components. Affected analytes are flagged in the subcontracted report to indicate the matrix interference.

Water Pollution Control Laboratory
6543 N. Burlington Ave.
Portland, Oregon 97203-4552
(503) 823-5696

City of Portland Chain-of-Custody

Bureau of Environmental Services

Date: 2/14/11
Page: 1 of 1
Collected By: JJM, CJK

Project Name: NPDES STORMWTR MON
File Number: 4010.001 **Matrix:** STORMWTR

Requested Analyses W11B114

☑ Sample Time recorded in current local time

Samples collected on 2/12/11 from 1802 to 2232

WPCL Sample I.D.	Location	Point Code	Sample Date	Sample Time	Sample Type	General: TS	TDS	TSS	Hardness	BOD	COD	Metals: Total Metals (Ag, As, Cd, Cr, Cu, Pb, Zn)	Dissolved Metals (Ag, As, Cd, Cr, Cu, Pb, Zn)	Nutrients: Ammonia-nitrogen	Nitrate-nitrogen	Orthophosphate phosphorus	Total Phosphorus	TKN	Org.: PAHs + Phthalates		Outside: SVOCs, low-level (CAS)	PCB 209 Congeners (Pace)	Pesticides (CAS low-lvl)				
-01	4900 NW KITTRIDGE AVE (OF19)	OF19	2/12/11	2232	C	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●				
2																											
3																											
4																											
5																											
6																											
7																											
8																											
9																											
10																											

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.	Relinquished By: 4.
Signature: [signature] Time: 1037	Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Jordan McCann Date: 2/14/11	Printed Name: Date:	Printed Name: Date:	Printed Name: Date:
Received By: 1.	**Received By:** 2.	**Received By:** 3.	**Received By:** 4.
Signature: [signature] Time: 1037	Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Mackenzie Cirk Date: 2/14/11	Printed Name: Date:	Printed Name: Date:	Printed Name: Date:

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City of Portland
Water Pollution Control Laboratory
6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656

LABORATORY ANALYSIS REPORT

Project:	**NPDES Stormwater**	Client:	MS4
Work Order:	**W11B120**	Project Mgr:	Frank Wildensee
Received:	2/14/11 15:28	WQDB #:	Janus31
Submitted By:	Field Operations		

Sample	Laboratory ID	Matrix	Type	Sample Collection Date Start	End	Qualifier
OF19	W11B120-01	Stormwater	Grab	02/14/11 14:50	02/14/11 14:50	
S45U	W11B120-02	Stormwater	Grab	02/14/11 13:35	02/14/11 13:35	

Analyte	Result	Units	MRL	Dilution	Batch	Prepared	Analyzed	Method	Qualifier
Field Parameters									
Field conductivity									
OF19 : W11B120-01									
Conductivity	**138**	umhos/cm	0	1	B11B205	02/14/11	02/14/11	Field conductivity	
S45U : W11B120-02									
Conductivity	**152**	umhos/cm	0	1	B11B205	02/14/11	02/14/11	Field conductivity	
Field pH									
OF19 : W11B120-01									
pH	**7.0**	pH Units	0.1	1	B11B205	02/14/11	02/14/11	Field pH	
S45U : W11B120-02									
pH	**6.5**	pH Units	0.1	1	B11B205	02/14/11	02/14/11	Field pH	
Field temperature									
OF19 : W11B120-01									
Temperature	**9.9**	°C	0.0	1	B11B205	02/14/11	02/14/11	Field temperature	
S45U : W11B120-02									
Temperature	**11.5**	°C	0.0	1	B11B205	02/14/11	02/14/11	Field temperature	
Microbiology									
E. coli by Colilert Quantitray									
OF19 : W11B120-01									
E. coli	**320**	MPN/100 mL	10	1	B11B213	02/15/11	02/16/11	Colilert QT	
S45U : W11B120-02									
E. coli	**20000**	MPN/100 mL	10	1	B11B213	02/15/11	02/16/11	Colilert QT	

Reported: 03/03/11 15:17

The results in this report apply only to the samples analyzed. Qualifiers and case narrative comments are essential to interpretation of the analytical results. Report reproductions and/or data summaries without qualifiers and comments are incomplete.

Renee Chauvin, Laboratory Coordinator QA/QC

City of Portland
Water Pollution Control Laboratory
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Project:	**NPDES Stormwater**	Client:	MS4
Work Order:	**W11B120**	Project Mgr:	Frank Wildensee

Analyte	Result	Units	MRL	Dilution	Batch	Prepared	Analyzed	Method	Qualifier
General Chemistry									
Total Oil & Grease									
OF19 : W11B120-01									
Oil & grease, total	ND	mg/L	5.0		B11C026	03/01/11	03/01/11	EPA 1664	
S45U : W11B120-02									
Oil & grease, total	ND	mg/L	5.0		B11C026	03/01/11	03/01/11	EPA 1664	

Reported: 03/03/11 15:17

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Water Pollution Control Laboratory
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Project:	**NPDES Stormwater**	Client:	MS4
Work Order:	**W11B120**	Project Mgr:	Frank Wildensee

Quality Control Report

Microbiology - QC

Analyte	Result	Units	MRL	Spike Level	Source Result	%Rec *(Limits)*	RPD *(Limit)*	Prepared: Analyzed	Qualifier
E. coli by Colilert Quantitray - Batch B11B213									
Duplicate (B11B213-DUP1)					**Source: W11B120-01**				
E. coli	**460**	MPN/100 mL	10		320		36 *(100)*	02/15/11 :02/16/11	

General Chemistry - QC

Analyte	Result	Units	MRL	Spike Level	Source Result	%Rec *(Limits)*	RPD *(Limit)*	Prepared: Analyzed	Qualifier
Total Oil & Grease - Batch B11C026									
Blank (B11C026-BLK1)									
Oil & grease, total	ND	mg/L	5.0					03/01/11 :03/01/11	
LCS (B11C026-BS1)									
Oil & grease, total	**14.0**	mg/L	5.0	20.0		70 *(70-110)*		03/01/11 :03/01/11	
LCS (B11C026-BS2)									
Oil & grease, total	**188**	mg/L	5.0	200		94 *(70-110)*		03/01/11 :03/01/11	

Definitions

DET	Analyte Detected	ND	Analyte Not Detected at or above the reporting limit
MRL	Method Reporting Limit	MDL	Method Detection Limit
NR	Not Reportable	dry	Sample results reported on a dry weight basis
% Rec.	Percent Recovery	RPD	Relative Percent Difference

Reported: 03/03/11 15:17

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6543 N. Burlington Ave.
Portland, Oregon 97203-4552
(503) 823-5696

City of Portland Chain-of-Custody

Bureau of Environmental Services

Date: 2/14/11

Page: 1 of 1

Collected By: JTM, CJK

Project Name:	NPDES STORMWTR MON		
File Number:	4010.001	Matrix:	STORMWTR

Requested Analyses W11B120

☑ Sample Time recorded in current local time

* Run Non-Polar Oil & Grease if detect

	WPCL Sample I.D.	Location	Point Code	Sample Date	Sample Time	Sample Type	General: Total Oil & Grease*	Micro: E. coli	Comments	Field: Temperature (degrees C) Meter No.: combo #2	Field: Conductivity (umhos/cm) Meter No.: combo #2	Field: pH (pH Units) Meter No.: combo #2
1	-01	4900 NW KITTRIDGE AVE (OF19)	4900 NW KITTRIDGE AVE	2/14/11	1450	G	●	●		9.9	138	7.0
2	-02	SE 45th AVE & UMATILLA ST (STORM SEWER)	S45U	2/14/11	1335	G	●	●		11.5	152	6.5
3												
4												
5												
6												
7												
8												
9												
10												

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.	Relinquished By: 4.
Signature: [signature] Time: 1528	Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Jordan Mclann Date: 2/14/11	Printed Name: Date:	Printed Name: Date:	Printed Name: Date:
Received By: 1.	Received By: 2.	Received By: 3.	Received By: 4.
Signature: [signature] Time: 1528	Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: MacKenzie Tirk Date: 2/14/11	Printed Name: Date:	Printed Name: Date:	Printed Name: Date:

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City of Portland
Water Pollution Control Laboratory
6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656

LABORATORY ANALYSIS REPORT

Project:	**NPDES Stormwater**	Client:	MS4
Work Order:	**W11B114**	Project Mgr:	Frank Wildensee
Received:	2/14/11 10:37	WQDB #:	Janus31
Submitted By:	Field Operations		

Sample	Laboratory ID	Matrix	Type	Sample Collection Date Start	End	Qualifier
OF19	W11B114-01	Stormwater	Composite	02/12/11 18:02	02/12/11 22:32	

OF19 : W11B114-01

Analyte	Result	Units	MDL	MRL	Dilution	Batch	Prepared	Analyzed	Method	Qualifier
General Chemistry										
BOD	**6**	mg/L		2		B11B202	02/14/11	02/19/11	SM 5210B/ H10360	
COD	**61**	mg/L		5		B11B300	02/22/11	02/22/11	SM 5220D	
Total dissolved solids	**83**	mg/L		5		B11B201	02/14/11	02/15/11	SM 2540C	
Total solids	**195**	mg/L		2		B11B204	02/14/11	02/15/11	SM 2540B	
Total suspended solids	**148**	mg/L		2		B11B203	02/14/11	02/14/11	SM 2540D	
Nutrients										
Ammonia-nitrogen	**0.114**	mg/L		0.020	1	B11B294	02/22/11	02/22/11	EPA 350.1	
Nitrate-nitrogen	**0.52**	mg/L		0.10	1	B11B186	02/14/11	02/14/11	EPA 300.0	
o-phosphate-Phosphorus	**0.109**	mg/L		0.020	1	B11B199	02/14/11	02/14/11	EPA 365.1	
Total Kjeldahl nitrogen (TKN)	**0.94**	mg/L		0.20	1	B11B218	02/15/11	02/17/11	PAI-DK03	
Total phosphorus	**0.403**	mg/L		0.030	1	B11B218	02/15/11	02/16/11	EPA 365.4	
Total Metals										
Hardness by calculation										
Hardness	**50.7**	mg CaCO3/L		0.456	1	[CALC]	02/16/11	02/16/11	SM 2340B	
Calcium	**16.6**	mg/L		0.100	1	B11B228	02/16/11	02/16/11	EPA 200.7	
Magnesium	**2.23**	mg/L		0.050	1	B11B228	02/16/11	02/16/11	EPA 200.7	
Total Metals by ICPMS										
Arsenic	**1.31**	ug/L		0.100	1	B11B249	02/16/11	02/17/11	EPA 200.8	
Cadmium	**0.290**	ug/L		0.100	1	B11B249	02/16/11	02/17/11	EPA 200.8	
Chromium	**5.26**	ug/L		0.400	1	B11B249	02/16/11	02/17/11	EPA 200.8	
Copper	**80.7**	ug/L		0.200	1	B11B249	02/16/11	02/17/11	EPA 200.8	
Lead	**42.6**	ug/L		0.100	1	B11B249	02/16/11	02/17/11	EPA 200.8	
Silver	ND	ug/L		0.100	1	B11B249	02/16/11	02/17/11	EPA 200.8	
Zinc	**143**	ug/L		0.500	1	B11B249	02/16/11	02/17/11	EPA 200.8	

Reported: 03/29/11 08:45

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Renee Chauvin, Laboratory Coordinator QA/QC

City of Portland
Water Pollution Control Laboratory
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Project:	**NPDES Stormwater**	Client:	MS4
Work Order:	**W11B114**	Project Mgr:	Frank Wildensee

Analyte	Result	Units	MDL	MRL	Dilution	Batch	Prepared	Analyzed	Method	Qualifier
Dissolved Metals										
Dissolved Metals by ICPMS										
Arsenic, dissolved	**0.478**	ug/L		0.100	1	B11B241	02/16/11	02/16/11	EPA 200.8	
Cadmium, dissolved	**0.104**	ug/L		0.100	1	B11B241	02/16/11	02/16/11	EPA 200.8	
Chromium, dissolved	ND	ug/L		0.400	1	B11B241	02/16/11	02/16/11	EPA 200.8	
Copper, dissolved	**5.82**	ug/L		0.200	1	B11B241	02/16/11	02/16/11	EPA 200.8	
Lead, dissolved	**0.815**	ug/L		0.100	1	B11B241	02/16/11	02/16/11	EPA 200.8	
Silver, dissolved	ND	ug/L		0.100	1	B11B241	02/16/11	02/16/11	EPA 200.8	
Zinc, dissolved	**56.4**	ug/L		0.500	1	B11B241	02/16/11	02/16/11	EPA 200.8	
Semivolatile Organics - SIM										
Polynuclear Aromatics & Phthalates by GCMS-SIM										
Acenaphthene	ND	ug/L	0.020	0.020	1	B11B235	02/16/11	02/24/11	EPA 8270-SIM	
Acenaphthylene	**0.028**	ug/L	0.020	0.020	1	B11B235	02/16/11	02/24/11	EPA 8270-SIM	
Anthracene	**0.063**	ug/L	0.020	0.020	1	B11B235	02/16/11	02/24/11	EPA 8270-SIM	
Benzo(a)anthracene	**0.085**	ug/L	0.010	0.010	1	B11B235	02/16/11	02/24/11	EPA 8270-SIM	
Benzo(a)pyrene	**0.10**	ug/L	0.010	0.010	1	B11B235	02/16/11	02/24/11	EPA 8270-SIM	
Benzo(b)fluoranthene	**0.15**	ug/L	0.010	0.010	1	B11B235	02/16/11	02/24/11	EPA 8270-SIM	
Benzo(g,h,i)perylene	**0.17**	ug/L	0.010	0.010	1	B11B235	02/16/11	02/24/11	EPA 8270-SIM	
Benzo(k)fluoranthene	**0.042**	ug/L	0.010	0.010	1	B11B235	02/16/11	02/24/11	EPA 8270-SIM	
Chrysene	**0.13**	ug/L	0.010	0.010	1	B11B235	02/16/11	02/24/11	EPA 8270-SIM	
Dibenzo(a,h)anthracene	**0.029**	ug/L	0.010	0.010	1	B11B235	02/16/11	02/24/11	EPA 8270-SIM	
Fluoranthene	**0.24**	ug/L	0.010	0.010	1	B11B235	02/16/11	02/24/11	EPA 8270-SIM	
Fluorene	**0.034**	ug/L	0.020	0.020	1	B11B235	02/16/11	02/24/11	EPA 8270-SIM	
Indeno(1,2,3-cd)pyrene	**0.084**	ug/L	0.010	0.010	1	B11B235	02/16/11	02/24/11	EPA 8270-SIM	
1-Methylnaphthalene	**0.065**	ug/L	0.020	0.020	1	B11B235	02/16/11	02/24/11	EPA 8270-SIM	
2-Methylnaphthalene	**0.073**	ug/L	0.020	0.020	1	B11B235	02/16/11	02/24/11	EPA 8270-SIM	
Naphthalene	**0.063**	ug/L	0.040	0.040	1	B11B235	02/16/11	02/24/11	EPA 8270-SIM	
Phenanthrene	**0.14**	ug/L	0.020	0.020	1	B11B235	02/16/11	02/24/11	EPA 8270-SIM	
Pyrene	**0.33**	ug/L	0.010	0.010	1	B11B235	02/16/11	02/24/11	EPA 8270-SIM	
Butyl benzyl phthalate	**1.0**	ug/L	0.50	1.0	1	B11B235	02/16/11	02/24/11	EPA 8270-SIM	
Di-n-butyl phthalate	**0.65**	ug/L	0.50	1.0	1	B11B235	02/16/11	02/24/11	EPA 8270-SIM	J
Diethyl phthalate	ND	ug/L	0.50	1.0	1	B11B235	02/16/11	02/24/11	EPA 8270-SIM	
Dimethyl phthalate	**2.1**	ug/L	0.50	1.0	1	B11B235	02/16/11	02/24/11	EPA 8270-SIM	
Di-n-octyl phthalate	ND	ug/L	0.50	1.0	1	B11B235	02/16/11	02/24/11	EPA 8270-SIM	
Bis(2-ethylhexyl) phthalate	**4.0**	ug/L	0.50	1.0	1	B11B235	02/16/11	02/24/11	EPA 8270-SIM	
Surrogate	***Result***		***Expected***	***%Rec***	***Limits(%)***					
2-Methylnaphthalene-d10	*0.17*		*0.216*	*79%*	*20-110*	*B11B235*	*02/16/11*	*02/24/11*	*EPA 8270-SIM*	
Fluoranthene-d10	*0.18*		*0.216*	*85%*	*35-130*	*B11B235*	*02/16/11*	*02/24/11*	*EPA 8270-SIM*	

Reported: 03/29/11 08:45

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Renee Chauvin, Laboratory Coordinator QA/QC

City of Portland
Water Pollution Control Laboratory
6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656

Project:	**NPDES Stormwater**	Client:	MS4
Work Order:	**W11B114**	Project Mgr:	Frank Wildensee

Quality Control Report

General Chemistry - QC

Analyte	Result	Units	MDL	MRL	Spike Level	Source Result	%Rec *(Limits)*	RPD *(Limit)*	Prepared: Analyzed	Qualifier
Biochemical Oxygen Demand - Batch B11B202										
Blank (B11B202-BLK1)										
BOD	ND	mg/L		2					02/14/11 :02/19/11	
Blank (B11B202-BLK2)										
BOD	ND	mg/L		2					02/14/11 :02/19/11	
LCS (B11B202-BS1)										
BOD	**200**	mg/L			198		101 *(90.4-114)*		02/14/11 :02/19/11	
Duplicate (B11B202-DUP1)			**Source: W11B113-01**							
BOD	**6**	mg/L		2		6		0 *(20)*	02/14/11 :02/19/11	
Chemical Oxygen Demand - Batch B11B300										
Blank (B11B300-BLK1)										
COD	ND	mg/L		5					02/22/11 :02/22/11	
LCS (B11B300-BS1)										
COD	**104**	mg/L		5	100		104 *(90-110)*		02/22/11 :02/22/11	
Duplicate (B11B300-DUP1)			**Source: W11B114-01**							
COD	**58**	mg/L		5		61		5 *(20)*	02/22/11 :02/22/11	
Matrix Spike (B11B300-MS1)			**Source: W11B114-01**							
COD	**115**	mg/L		5	50.5	61	107 *(80-120)*		02/22/11 :02/22/11	
Total Dissolved Solids - Batch B11B201										
Blank (B11B201-BLK1)										
Total dissolved solids	ND	mg/L		5					02/14/11 :02/15/11	
LCS (B11B201-BS1)										
Total dissolved solids	**97**	mg/L			100		97 *(90-110)*		02/14/11 :02/15/11	
Duplicate (B11B201-DUP1)			**Source: W11B095-01**							
Total dissolved solids	**315**	mg/L		5		331		5 *(20)*	02/14/11 :02/15/11	
Total Solids - Batch B11B204										
LCS (B11B204-BS1)										
Total solids	**90**	mg/L			100		90 *(90-110)*		02/14/11 :02/15/11	
Duplicate (B11B204-DUP1)			**Source: W11B114-01**							
Total solids	**199**	mg/L		2		195		2 *(20)*	02/14/11 :02/15/11	
Total Suspended Solids - Batch B11B203										
Duplicate (B11B203-DUP1)			**Source: W11B112-01**							
Total suspended solids	**205**	mg/L		2		180		13 *(20)*	02/14/11 :02/14/11	

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Renee Chauvin, Laboratory Coordinator QA/QC

City of Portland
Water Pollution Control Laboratory
6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656

Project:	**NPDES Stormwater**	Client:	MS4
Work Order:	**W11B114**	Project Mgr:	Frank Wildensee

Nutrients - QC

Analyte	Result	Units	MDL	MRL	Spike Level	Source Result	%Rec *(Limits)*	RPD *(Limit)*	Prepared: Analyzed	Qualifier
Ammonia-Nitrogen - Batch B11B294										
Blank (B11B294-BLK1)										
Ammonia-nitrogen	ND	mg/L		0.020					02/22/11 :02/22/11	
LCS (B11B294-BS1)										
Ammonia-nitrogen	**1.02**	mg/L		0.020	1.00		102 *(90-110)*		02/22/11 :02/22/11	
Duplicate (B11B294-DUP1)			**Source: W11B113-01**							
Ammonia-nitrogen	**0.209**	mg/L		0.020		0.210		0.7 *(20)*	02/22/11 :02/22/11	
Matrix Spike (B11B294-MS1)			**Source: W11B113-01**							
Ammonia-nitrogen	**1.20**	mg/L		0.020	1.00	0.210	99 *(80-120)*		02/22/11 :02/22/11	
ortho-Phosphate-P - Batch B11B199										
Blank (B11B199-BLK1)										
o-phosphate-Phosphorus	ND	mg/L		0.020					02/14/11 :02/14/11	
LCS (B11B199-BS1)										
o-phosphate-Phosphorus	**0.099**	mg/L		0.020	0.100		99 *(90-110)*		02/14/11 :02/14/11	
Duplicate (B11B199-DUP1)			**Source: W11B112-01**							
o-phosphate-Phosphorus	ND	mg/L		0.020		ND		*(20)*	02/14/11 :02/14/11	
Matrix Spike (B11B199-MS1)			**Source: W11B112-01**							
o-phosphate-Phosphorus	**0.098**	mg/L		0.020	0.100	ND	98 *(80-120)*		02/14/11 :02/14/11	
Total Kjeldahl Nitrogen - Batch B11B218										
Blank (B11B218-BLK1)										
Total Kjeldahl nitrogen (TKN)	ND	mg/L		0.20					02/15/11 :02/17/11	
LCS (B11B218-BS1)										
Total Kjeldahl nitrogen (TKN)	**1.98**	mg/L		0.20	2.00		99 *(90-110)*		02/15/11 :02/17/11	
Duplicate (B11B218-DUP1)			**Source: W11B114-01**							
Total Kjeldahl nitrogen (TKN)	**0.94**	mg/L		0.20		0.94		0.1 *(20)*	02/15/11 :02/17/11	
Matrix Spike (B11B218-MS1)			**Source: W11B114-01**							
Total Kjeldahl nitrogen (TKN)	**2.99**	mg/L		0.20	2.00	0.94	102 *(80-120)*		02/15/11 :02/17/11	
Total Phosphorus - Batch B11B218										
Blank (B11B218-BLK1)										
Total phosphorus	ND	mg/L		0.030					02/15/11 :02/16/11	
LCS (B11B218-BS1)										
Total phosphorus	**0.203**	mg/L		0.030	0.200		102 *(90-110)*		02/15/11 :02/16/11	
Duplicate (B11B218-DUP1)			**Source: W11B114-01**							
Total phosphorus	**0.408**	mg/L		0.030		0.403		1 *(20)*	02/15/11 :02/16/11	
Matrix Spike (B11B218-MS1)			**Source: W11B114-01**							
Total phosphorus	**0.618**	mg/L		0.030	0.200	0.403	107 *(80-120)*		02/15/11 :02/16/11	
Nitrate by IC - Batch B11B186										
Blank (B11B186-BLK1)										
Nitrate-nitrogen	ND	mg/L		0.10					02/14/11 :02/14/11	

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City of Portland
Water Pollution Control Laboratory
6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656

Project:	**NPDES Stormwater**	Client:	MS4
Work Order:	**W11B114**	Project Mgr:	Frank Wildensee

Nutrients - QC

Analyte	Result	Units	MDL	MRL	Spike Level	Source Result	%Rec *(Limits)*	RPD *(Limit)*	Prepared: Analyzed	Qualifier
Nitrate by IC - Batch B11B186										
LCS (B11B186-BS1)										
Nitrate-nitrogen	**2.98**	mg/L		0.10	3.00		99 *(90-110)*		02/14/11 :02/14/11	
Duplicate (B11B186-DUP1)			**Source: W11B102-02**							
Nitrate-nitrogen	ND	mg/L		0.10		ND		*(20)*	02/14/11 :02/14/11	
Duplicate (B11B186-DUP2)			**Source: W11B118-02**							
Nitrate-nitrogen	**0.493**	mg/L		0.10		0.497		0.8 *(20)*	02/14/11 :02/14/11	
Matrix Spike (B11B186-MS1)			**Source: W11B102-02**							
Nitrate-nitrogen	**3.06**	mg/L		0.10	3.06	ND	100 *(80-120)*		02/14/11 :02/14/11	
Matrix Spike (B11B186-MS2)			**Source: W11B118-02**							
Nitrate-nitrogen	**3.64**	mg/L		0.10	3.06	0.497	103 *(80-120)*		02/14/11 :02/14/11	

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Project:	**NPDES Stormwater**	Client:	MS4
Work Order:	**W11B114**	Project Mgr:	Frank Wildensee

Total Metals - QC

Analyte	Result	Units	MDL	MRL	Spike Level	Source Result	%Rec *(Limits)*	RPD *(Limit)*	Prepared: Analyzed	Qualifier
Total Metals by ICP - Batch B11B228 for Hardness										
Blank (B11B228-BLK1)										
Calcium	ND	mg/L		0.100					02/16/11 :02/16/11	
Magnesium	ND	mg/L		0.050					02/16/11 :02/16/11	
LCS (B11B228-BS1)										
Calcium	**5.13**	mg/L		0.100	5.00		103 *(85-115)*		02/16/11 :02/16/11	
Magnesium	**2.10**	mg/L		0.050	2.00		105 *(85-115)*		02/16/11 :02/16/11	
Duplicate (B11B228-DUP1)			**Source: W11B132-01**							
Calcium	**23.3**	mg/L		0.100		23.5		0.9 *(20)*	02/16/11 :02/16/11	
Magnesium	**0.689**	mg/L		0.050		0.688		0.1 *(20)*	02/16/11 :02/16/11	
Matrix Spike (B11B228-MS1)			**Source: W11B132-01**							
Calcium	**28.1**	mg/L		0.100	5.00	23.5	91 *(70-130)*		02/16/11 :02/16/11	
Magnesium	**2.74**	mg/L		0.050	2.00	0.688	103 *(70-130)*		02/16/11 :02/16/11	
Total Metals by ICPMS - Batch B11B249										
Blank (B11B249-BLK1)										
Arsenic	ND	ug/L		0.045					02/16/11 :02/17/11	
Cadmium	ND	ug/L		0.100					02/16/11 :02/17/11	
Chromium	ND	ug/L		0.400					02/16/11 :02/17/11	
Copper	ND	ug/L		0.200					02/16/11 :02/17/11	
Lead	ND	ug/L		0.100					02/16/11 :02/17/11	
Silver	ND	ug/L		0.100					02/16/11 :02/17/11	
Zinc	ND	ug/L		0.500					02/16/11 :02/17/11	
LCS (B11B249-BS1)										
Arsenic	**10.2**	ug/L		0.045	10.0		102 *(85-115)*		02/16/11 :02/17/11	
Cadmium	**9.84**	ug/L		0.100	10.0		98 *(85-115)*		02/16/11 :02/17/11	
Chromium	**9.76**	ug/L		0.400	10.0		98 *(85-115)*		02/16/11 :02/17/11	
Copper	**10.1**	ug/L		0.200	10.0		101 *(85-115)*		02/16/11 :02/17/11	
Lead	**9.98**	ug/L		0.100	10.0		100 *(85-115)*		02/16/11 :02/17/11	
Silver	**9.72**	ug/L		0.100	10.0		97 *(85-115)*		02/16/11 :02/17/11	
Zinc	**49.1**	ug/L		0.500	50.0		98 *(85-115)*		02/16/11 :02/17/11	
Duplicate (B11B249-DUP1)			**Source: W11B117-01**							
Arsenic	**0.186**	ug/L		0.045		0.167		11 *(20)*	02/16/11 :02/17/11	
Cadmium	ND	ug/L		0.100		ND		*(20)*	02/16/11 :02/17/11	
Chromium	**0.492**	ug/L		0.400		0.512		4 *(20)*	02/16/11 :02/17/11	
Copper	**3.90**	ug/L		0.200		4.09		5 *(20)*	02/16/11 :02/17/11	
Lead	**1.09**	ug/L		0.100		1.11		2 *(20)*	02/16/11 :02/17/11	
Silver	ND	ug/L		0.100		ND		*(20)*	02/16/11 :02/17/11	
Zinc	**18.4**	ug/L		0.500		18.4		0.2 *(20)*	02/16/11 :02/17/11	
Duplicate (B11B249-DUP2)			**Source: W11B130-03**							
Arsenic	**0.088**	ug/L		0.045		0.095		7 *(20)*	02/16/11 :02/17/11	
Cadmium	ND	ug/L		0.100		ND		*(20)*	02/16/11 :02/17/11	

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City of Portland
Water Pollution Control Laboratory
6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656

Project:	**NPDES Stormwater**	Client:	MS4
Work Order:	**W11B114**	Project Mgr:	Frank Wildensee

Total Metals - QC

Analyte	Result	Units	MDL	MRL	Spike Level	Source Result	%Rec *(Limits)*	RPD *(Limit)*	Prepared: Analyzed	Qualifier
Total Metals by ICPMS - Batch B11B249										
Duplicate (B11B249-DUP2)			**Source: W11B130-03**							
Chromium	ND	ug/L		0.400		ND		*(20)*	02/16/11 :02/17/11	
Copper	**1.11**	ug/L		0.200		1.08		3 *(20)*	02/16/11 :02/17/11	
Lead	**0.662**	ug/L		0.100		0.643		3 *(20)*	02/16/11 :02/17/11	
Silver	ND	ug/L		0.100		ND		*(20)*	02/16/11 :02/17/11	
Zinc	**6.80**	ug/L		0.500		6.58		3 *(20)*	02/16/11 :02/17/11	
Duplicate (B11B249-DUP3)			**Source: W11B139-04**							
Arsenic	**0.777**	ug/L		0.045		0.728		6 *(20)*	02/16/11 :02/17/11	
Cadmium	ND	ug/L		0.100		ND		*(20)*	02/16/11 :02/17/11	
Chromium	**1.75**	ug/L		0.400		1.73		1 *(20)*	02/16/11 :02/17/11	
Copper	**5.39**	ug/L		0.200		5.14		5 *(20)*	02/16/11 :02/17/11	
Lead	**1.04**	ug/L		0.100		1.02		2 *(20)*	02/16/11 :02/17/11	
Silver	**0.191**	ug/L		0.100		0.178		7 *(20)*	02/16/11 :02/17/11	
Zinc	**38.2**	ug/L		0.500		37.9		0.6 *(20)*	02/16/11 :02/17/11	
Matrix Spike (B11B249-MS1)			**Source: W11B117-01**							
Arsenic	**10.6**	ug/L		0.045	10.0	0.167	104 *(70-130)*		02/16/11 :02/17/11	
Cadmium	**9.85**	ug/L		0.100	10.0	ND	99 *(70-130)*		02/16/11 :02/17/11	
Chromium	**10.3**	ug/L		0.400	10.0	0.512	98 *(70-130)*		02/16/11 :02/17/11	
Copper	**14.3**	ug/L		0.200	10.0	4.09	102 *(70-130)*		02/16/11 :02/17/11	
Lead	**11.2**	ug/L		0.100	10.0	1.11	101 *(70-130)*		02/16/11 :02/17/11	
Silver	**9.95**	ug/L		0.100	10.0	ND	100 *(70-130)*		02/16/11 :02/17/11	
Zinc	**67.0**	ug/L		0.500	50.0	18.4	97 *(70-130)*		02/16/11 :02/17/11	
Matrix Spike (B11B249-MS2)			**Source: W11B130-03**							
Arsenic	**10.5**	ug/L		0.045	10.0	0.095	104 *(70-130)*		02/16/11 :02/17/11	
Cadmium	**9.73**	ug/L		0.100	10.0	ND	97 *(70-130)*		02/16/11 :02/17/11	
Chromium	**10.1**	ug/L		0.400	10.0	ND	101 *(70-130)*		02/16/11 :02/17/11	
Copper	**11.5**	ug/L		0.200	10.0	1.08	104 *(70-130)*		02/16/11 :02/17/11	
Lead	**10.7**	ug/L		0.100	10.0	0.643	101 *(70-130)*		02/16/11 :02/17/11	
Silver	**9.93**	ug/L		0.100	10.0	ND	99 *(70-130)*		02/16/11 :02/17/11	
Zinc	**55.1**	ug/L		0.500	50.0	6.58	97 *(70-130)*		02/16/11 :02/17/11	
Matrix Spike (B11B249-MS3)			**Source: W11B139-04**							
Arsenic	**19.0**	ug/L		0.045	20.0	0.728	92 *(70-130)*		02/16/11 :02/17/11	
Cadmium	**17.6**	ug/L		0.100	20.0	ND	88 *(70-130)*		02/16/11 :02/17/11	
Chromium	**21.5**	ug/L		0.400	20.0	1.73	99 *(70-130)*		02/16/11 :02/17/11	
Copper	**25.4**	ug/L		0.200	20.0	5.14	101 *(70-130)*		02/16/11 :02/17/11	
Lead	**22.3**	ug/L		0.100	20.0	1.02	106 *(70-130)*		02/16/11 :02/17/11	
Silver	**19.3**	ug/L		0.100	20.0	0.178	95 *(70-130)*		02/16/11 :02/17/11	
Zinc	**115**	ug/L		0.500	100	37.9	77 *(70-130)*		02/16/11 :02/17/11	

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Project:	**NPDES Stormwater**	Client:	MS4
Work Order:	**W11B114**	Project Mgr:	Frank Wildensee

Dissolved Metals - QC

Analyte	Result	Units	MDL	MRL	Spike Level	Source Result	%Rec *(Limits)*	RPD *(Limit)*	Prepared: Analyzed	Qualifier
Dissolved Metals by ICPMS - Batch B11B241										
Blank (B11B241-BLK1)										
Arsenic, dissolved	ND	ug/L		0.100					02/16/11 :02/16/11	
Cadmium, dissolved	ND	ug/L		0.100					02/16/11 :02/16/11	
Chromium, dissolved	ND	ug/L		0.400					02/16/11 :02/16/11	
Copper, dissolved	ND	ug/L		0.200					02/16/11 :02/16/11	
Lead, dissolved	ND	ug/L		0.100					02/16/11 :02/16/11	
Silver, dissolved	ND	ug/L		0.100					02/16/11 :02/16/11	
Zinc, dissolved	ND	ug/L		0.500					02/16/11 :02/16/11	
LCS (B11B241-BS1)										
Arsenic, dissolved	**5.00**	ug/L		0.100	5.00		100 *(85-115)*		02/16/11 :02/16/11	
Cadmium, dissolved	**5.05**	ug/L		0.100	5.00		101 *(85-115)*		02/16/11 :02/16/11	
Chromium, dissolved	**4.98**	ug/L		0.400	5.00		100 *(85-115)*		02/16/11 :02/16/11	
Copper, dissolved	**5.03**	ug/L		0.200	5.00		101 *(85-115)*		02/16/11 :02/16/11	
Lead, dissolved	**5.01**	ug/L		0.100	5.00		100 *(85-115)*		02/16/11 :02/16/11	
Silver, dissolved	**5.01**	ug/L		0.100	5.00		100 *(85-115)*		02/16/11 :02/16/11	
Zinc, dissolved	**25.5**	ug/L		0.500	25.0		102 *(85-115)*		02/16/11 :02/16/11	
Duplicate (B11B241-DUP1)			**Source: W11B103-02**							
Arsenic, dissolved	**0.329**	ug/L		0.100		0.329		0 *(20)*	02/16/11 :02/16/11	
Cadmium, dissolved	ND	ug/L		0.100		ND		*(20)*	02/16/11 :02/16/11	
Chromium, dissolved	ND	ug/L		0.400		ND		*(20)*	02/16/11 :02/16/11	
Copper, dissolved	**2.56**	ug/L		0.200		2.58		0.8 *(20)*	02/16/11 :02/16/11	
Lead, dissolved	ND	ug/L		0.100		ND		*(20)*	02/16/11 :02/16/11	
Silver, dissolved	ND	ug/L		0.100		ND		*(20)*	02/16/11 :02/16/11	
Zinc, dissolved	**12.6**	ug/L		0.500		12.4		2 *(20)*	02/16/11 :02/16/11	
Duplicate (B11B241-DUP2)			**Source: W11B117-01**							
Arsenic, dissolved	**0.138**	ug/L		0.100		0.148		6 *(20)*	02/16/11 :02/16/11	
Cadmium, dissolved	ND	ug/L		0.100		ND		*(20)*	02/16/11 :02/16/11	
Chromium, dissolved	ND	ug/L		0.400		ND		*(20)*	02/16/11 :02/16/11	
Copper, dissolved	**2.33**	ug/L		0.200		2.29		2 *(20)*	02/16/11 :02/16/11	
Lead, dissolved	ND	ug/L		0.100		ND		*(20)*	02/16/11 :02/16/11	
Silver, dissolved	ND	ug/L		0.100		ND		*(20)*	02/16/11 :02/16/11	
Zinc, dissolved	**13.1**	ug/L		0.500		12.9		1 *(20)*	02/16/11 :02/16/11	
Duplicate (B11B241-DUP3)			**Source: W11B130-04**							
Arsenic, dissolved	ND	ug/L		0.100		0.079		*(20)*	02/16/11 :02/16/11	
Cadmium, dissolved	ND	ug/L		0.100		ND		*(20)*	02/16/11 :02/16/11	
Chromium, dissolved	ND	ug/L		0.400		ND		*(20)*	02/16/11 :02/16/11	
Copper, dissolved	**1.83**	ug/L		0.200		1.80		2 *(20)*	02/16/11 :02/16/11	
Lead, dissolved	**0.133**	ug/L		0.100		0.134		1 *(20)*	02/16/11 :02/16/11	
Silver, dissolved	ND	ug/L		0.100		ND		*(20)*	02/16/11 :02/16/11	
Zinc, dissolved	**20.6**	ug/L		0.500		20.1		2 *(20)*	02/16/11 :02/16/11	
Matrix Spike (B11B241-MS1)			**Source: W11B103-02**							

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Project:	**NPDES Stormwater**	Client:	MS4
Work Order:	**W11B114**	Project Mgr:	Frank Wildensee

Dissolved Metals - QC

Analyte	Result	Units	MDL	MRL	Spike Level	Source Result	%Rec *(Limits)*	RPD *(Limit)*	Prepared: Analyzed	Qualifier
Dissolved Metals by ICPMS - Batch B11B241										
Matrix Spike (B11B241-MS1)			**Source: W11B103-02**							
Arsenic, dissolved	**5.72**	ug/L		0.100	5.22	0.329	103 *(70-130)*		02/16/11 :02/16/11	
Cadmium, dissolved	**5.34**	ug/L		0.100	5.22	ND	102 *(70-130)*		02/16/11 :02/16/11	
Chromium, dissolved	**5.66**	ug/L		0.400	5.22	ND	108 *(70-130)*		02/16/11 :02/16/11	
Copper, dissolved	**8.16**	ug/L		0.200	5.22	2.58	107 *(70-130)*		02/16/11 :02/16/11	
Lead, dissolved	**5.51**	ug/L		0.100	5.22	ND	106 *(70-130)*		02/16/11 :02/16/11	
Silver, dissolved	**5.16**	ug/L		0.100	5.22	ND	99 *(70-130)*		02/16/11 :02/16/11	
Zinc, dissolved	**39.7**	ug/L		0.500	26.1	12.4	104 *(70-130)*		02/16/11 :02/16/11	
Matrix Spike (B11B241-MS2)			**Source: W11B117-01**							
Arsenic, dissolved	**5.54**	ug/L		0.100	5.22	0.148	103 *(70-130)*		02/16/11 :02/16/11	
Cadmium, dissolved	**5.42**	ug/L		0.100	5.22	ND	104 *(70-130)*		02/16/11 :02/16/11	
Chromium, dissolved	**5.33**	ug/L		0.400	5.22	ND	102 *(70-130)*		02/16/11 :02/16/11	
Copper, dissolved	**7.76**	ug/L		0.200	5.22	2.29	105 *(70-130)*		02/16/11 :02/16/11	
Lead, dissolved	**5.65**	ug/L		0.100	5.22	ND	108 *(70-130)*		02/16/11 :02/16/11	
Silver, dissolved	**5.19**	ug/L		0.100	5.22	ND	99 *(70-130)*		02/16/11 :02/16/11	
Zinc, dissolved	**40.4**	ug/L		0.500	26.1	12.9	105 *(70-130)*		02/16/11 :02/16/11	
Matrix Spike (B11B241-MS3)			**Source: W11B130-04**							
Arsenic, dissolved	**5.57**	ug/L		0.100	5.22	0.079	105 *(70-130)*		02/16/11 :02/16/11	
Cadmium, dissolved	**5.37**	ug/L		0.100	5.22	ND	103 *(70-130)*		02/16/11 :02/16/11	
Chromium, dissolved	**5.33**	ug/L		0.400	5.22	ND	102 *(70-130)*		02/16/11 :02/16/11	
Copper, dissolved	**7.16**	ug/L		0.200	5.22	1.80	103 *(70-130)*		02/16/11 :02/16/11	
Lead, dissolved	**5.68**	ug/L		0.100	5.22	0.134	106 *(70-130)*		02/16/11 :02/16/11	
Silver, dissolved	**5.22**	ug/L		0.100	5.22	ND	100 *(70-130)*		02/16/11 :02/16/11	
Zinc, dissolved	**46.2**	ug/L		0.500	26.1	20.1	100 *(70-130)*		02/16/11 :02/16/11	

Reported: 03/29/11 08:45

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Renee Chauvin, Laboratory Coordinator QA/QC

City of Portland
Water Pollution Control Laboratory
6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656

Project:	**NPDES Stormwater**	Client:	MS4
Work Order:	**W11B114**	Project Mgr:	Frank Wildensee

Semivolatile Organics - SIM - QC

Analyte	Result	Units	MDL	MRL	Spike Level	Source Result	%Rec *(Limits)*	RPD *(Limit)*	Prepared: Analyzed	Qualifier
Polynuclear Aromatics & Phthalates by GCMS-SIM - Batch B11B235										
Blank (B11B235-BLK1)										
Acenaphthene	ND	ug/L	0.020	0.020					02/16/11 :02/23/11	
Acenaphthylene	ND	ug/L	0.020	0.020					02/16/11 :02/23/11	
Anthracene	ND	ug/L	0.020	0.020					02/16/11 :02/23/11	
Benzo(a)anthracene	ND	ug/L	0.010	0.010					02/16/11 :02/23/11	
Benzo(a)pyrene	ND	ug/L	0.010	0.010					02/16/11 :02/23/11	
Benzo(b)fluoranthene	ND	ug/L	0.010	0.010					02/16/11 :02/23/11	
Benzo(g,h,i)perylene	ND	ug/L	0.010	0.010					02/16/11 :02/23/11	
Benzo(k)fluoranthene	ND	ug/L	0.010	0.010					02/16/11 :02/23/11	
Chrysene	ND	ug/L	0.010	0.010					02/16/11 :02/23/11	
Dibenzo(a,h)anthracene	ND	ug/L	0.010	0.010					02/16/11 :02/23/11	
Fluoranthene	ND	ug/L	0.010	0.010					02/16/11 :02/23/11	
Fluorene	ND	ug/L	0.020	0.020					02/16/11 :02/23/11	
Indeno(1,2,3-cd)pyrene	ND	ug/L	0.010	0.010					02/16/11 :02/23/11	
1-Methylnaphthalene	ND	ug/L	0.020	0.020					02/16/11 :02/23/11	
2-Methylnaphthalene	ND	ug/L	0.020	0.020					02/16/11 :02/23/11	
Naphthalene	ND	ug/L	0.040	0.040					02/16/11 :02/23/11	
Phenanthrene	ND	ug/L	0.020	0.020					02/16/11 :02/23/11	
Pyrene	ND	ug/L	0.010	0.010					02/16/11 :02/23/11	
Butyl benzyl phthalate	ND	ug/L	0.50	1.0					02/16/11 :02/23/11	
Di-n-butyl phthalate	ND	ug/L	0.50	1.0					02/16/11 :02/23/11	
Diethyl phthalate	ND	ug/L	0.50	1.0					02/16/11 :02/23/11	
Dimethyl phthalate	ND	ug/L	0.50	1.0					02/16/11 :02/23/11	
Di-n-octyl phthalate	ND	ug/L	0.50	1.0					02/16/11 :02/23/11	
Bis(2-ethylhexyl) phthalate	ND	ug/L	0.50	1.0					02/16/11 :02/23/11	
Surrogate										
2-Methylnaphthalene-d10	*0.18*			ug/L	*0.216*		83		02/16/11 :02/23/11	
Fluoranthene-d10	*0.21*			ug/L	*0.216*		97		02/16/11 :02/23/11	
LCS (B11B235-BS1)										
Acenaphthene	**0.0795**	ug/L	0.020	0.020	0.108		74 *(27-123)*		02/16/11 :02/23/11	
Acenaphthylene	**0.0881**	ug/L	0.020	0.020	0.108		82 *(34-116)*		02/16/11 :02/23/11	
Anthracene	**0.0935**	ug/L	0.020	0.020	0.108		86 *(42-123)*		02/16/11 :02/23/11	
Benzo(a)anthracene	**0.0935**	ug/L	0.010	0.010	0.108		86 *(63-143)*		02/16/11 :02/23/11	
Benzo(a)pyrene	**0.0827**	ug/L	0.010	0.010	0.108		76 *(41-144)*		02/16/11 :02/23/11	
Benzo(b)fluoranthene	**0.0881**	ug/L	0.010	0.010	0.108		82 *(57-139)*		02/16/11 :02/23/11	
Benzo(g,h,i)perylene	**0.0951**	ug/L	0.010	0.010	0.108		88 *(23-155)*		02/16/11 :02/23/11	
Benzo(k)fluoranthene	**0.0822**	ug/L	0.010	0.010	0.108		76 *(54-137)*		02/16/11 :02/23/11	
Chrysene	**0.0903**	ug/L	0.010	0.010	0.108		84 *(64-142)*		02/16/11 :02/23/11	
Dibenzo(a,h)anthracene	**0.101**	ug/L	0.010	0.010	0.108		93 *(27-159)*		02/16/11 :02/23/11	
Fluoranthene	**0.102**	ug/L	0.010	0.010	0.108		94 *(68-128)*		02/16/11 :02/23/11	
Fluorene	**0.0886**	ug/L	0.020	0.020	0.108		82 *(48-122)*		02/16/11 :02/23/11	

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Renee Chauvin, Laboratory Coordinator QA/QC

City of Portland
Water Pollution Control Laboratory
6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656

Project:	**NPDES Stormwater**	Client:	MS4
Work Order:	**W11B114**	Project Mgr:	Frank Wildensee

Semivolatile Organics - SIM - QC

Analyte	Result	Units	MDL	MRL	Spike Level	Source Result	%Rec *(Limits)*	RPD *(Limit)*	Prepared: Analyzed	Qualifier
Polynuclear Aromatics & Phthalates by GCMS-SIM - Batch B11B235										
LCS (B11B235-BS1)										
Indeno(1,2,3-cd)pyrene	**0.0978**	ug/L	0.010	0.010	0.108		90 *(29-156)*		02/16/11 :02/23/11	
1-Methylnaphthalene	**0.0746**	ug/L	0.020	0.020	0.108		69 *(50-150)*		02/16/11 :02/23/11	
2-Methylnaphthalene	**0.0735**	ug/L	0.020	0.020	0.108		68 *(50-150)*		02/16/11 :02/23/11	
Naphthalene	**0.0827**	ug/L	0.040	0.040	0.108		76 *(45-135)*		02/16/11 :02/23/11	
Phenanthrene	**0.0957**	ug/L	0.020	0.020	0.108		88 *(49-129)*		02/16/11 :02/23/11	
Pyrene	**0.0968**	ug/L	0.010	0.010	0.108		90 *(67-132)*		02/16/11 :02/23/11	
Butyl benzyl phthalate	**1.33**	ug/L	0.50	1.0	1.08		123 *(50-150)*		02/16/11 :02/23/11	
Di-n-butyl phthalate	**1.29**	ug/L	0.50	1.0	1.08		119 *(50-150)*		02/16/11 :02/23/11	
Diethyl phthalate	**1.31**	ug/L	0.50	1.0	1.08		121 *(50-150)*		02/16/11 :02/23/11	
Dimethyl phthalate	**1.21**	ug/L	0.50	1.0	1.08		112 *(50-150)*		02/16/11 :02/23/11	
Di-n-octyl phthalate	**1.27**	ug/L	0.50	1.0	1.08		118 *(50-150)*		02/16/11 :02/23/11	
Bis(2-ethylhexyl) phthalate	**1.56**	ug/L	0.50	1.0	1.08		144 *(50-150)*		02/16/11 :02/23/11	
Surrogate										
2-Methylnaphthalene-d10	*0.16*			ug/L	*0.216*		73 *(20-110)*		02/16/11 :02/23/11	
Fluoranthene-d10	*0.21*			ug/L	*0.216*		96 *(35-130)*		02/16/11 :02/23/11	
Matrix Spike (B11B235-MS1)			**Source: W11B106-01**							**Z0**
Acenaphthene	**0.323**	ug/L	0.020	0.020	0.270	0.155	62 *(14-123)*		02/16/11 :02/24/11	
Acenaphthylene	**0.309**	ug/L	0.020	0.020	0.270	0.0503	96 *(17-116)*		02/16/11 :02/24/11	
Anthracene	**0.435**	ug/L	0.020	0.020	0.270	0.336	37 *(22-123)*		02/16/11 :02/24/11	
Benzo(a)anthracene	**0.779**	ug/L	0.010	0.010	0.270	0.829	-19 *(32-143)*		02/16/11 :02/24/11	
Benzo(a)pyrene	**0.769**	ug/L	0.010	0.010	0.270	0.768	0.4 *(21-144)*		02/16/11 :02/24/11	
Benzo(b)fluoranthene	**0.894**	ug/L	0.010	0.010	0.270	0.931	-14 *(29-139)*		02/16/11 :02/24/11	
Benzo(g,h,i)perylene	**0.646**	ug/L	0.010	0.010	0.270	0.515	49 *(12-155)*		02/16/11 :02/24/11	
Benzo(k)fluoranthene	**0.497**	ug/L	0.010	0.010	0.270	0.355	52 *(27-137)*		02/16/11 :02/24/11	
Chrysene	**0.914**	ug/L	0.010	0.010	0.270	0.931	-6 *(32-142)*		02/16/11 :02/24/11	
Dibenzo(a,h)anthracene	**0.405**	ug/L	0.010	0.010	0.270	0.165	89 *(14-159)*		02/16/11 :02/24/11	
Fluoranthene	**1.35**	ug/L	0.010	0.010	0.270	1.86	-191 *(34-128)*		02/16/11 :02/24/11	
Fluorene	**0.330**	ug/L	0.020	0.020	0.270	0.115	80 *(24-122)*		02/16/11 :02/24/11	
Indeno(1,2,3-cd)pyrene	**0.618**	ug/L	0.010	0.010	0.270	0.468	56 *(15-156)*		02/16/11 :02/24/11	
1-Methylnaphthalene	**0.308**	ug/L	0.020	0.020	0.270	0.0422	98 *(50-150)*		02/16/11 :02/24/11	
2-Methylnaphthalene	**0.315**	ug/L	0.020	0.020	0.270	0.0578	95 *(50-150)*		02/16/11 :02/24/11	
Naphthalene	**0.291**	ug/L	0.040	0.040	0.270	0.0665	83 *(23-135)*		02/16/11 :02/24/11	
Phenanthrene	**0.836**	ug/L	0.020	0.020	0.270	1.33	-185 *(25-129)*		02/16/11 :02/24/11	
Pyrene	**1.35**	ug/L	0.010	0.010	0.270	1.80	-165 *(34-132)*		02/16/11 :02/24/11	
Butyl benzyl phthalate	**3.36**	ug/L	0.50	1.0	2.70	ND	124 *(25-150)*		02/16/11 :02/24/11	
Di-n-butyl phthalate	**3.19**	ug/L	0.50	1.0	2.70	ND	118 *(25-150)*		02/16/11 :02/24/11	
Diethyl phthalate	**3.26**	ug/L	0.50	1.0	2.70	ND	121 *(25-150)*		02/16/11 :02/24/11	
Dimethyl phthalate	**3.26**	ug/L	0.50	1.0	2.70	ND	121 *(25-150)*		02/16/11 :02/24/11	
Di-n-octyl phthalate	**3.56**	ug/L	0.50	1.0	2.70	ND	132 *(25-150)*		02/16/11 :02/24/11	
Bis(2-ethylhexyl) phthalate	**5.29**	ug/L	0.50	1.0	2.70	2.27	112 *(25-150)*		02/16/11 :02/24/11	
Surrogate										

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City of Portland
Water Pollution Control Laboratory
6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656

Project:	**NPDES Stormwater**	Client:	MS4
Work Order:	**W11B114**	Project Mgr:	Frank Wildensee

Semivolatile Organics - SIM - QC

Analyte	Result	Units	MDL	MRL	Spike Level	Source Result	%Rec *(Limits)*	RPD *(Limit)*	Prepared: Analyzed	Qualifier
Polynuclear Aromatics & Phthalates by GCMS-SIM - Batch B11B235										
Matrix Spike (B11B235-MS1)			**Source: W11B106-01**							**Z0**
Surrogate										
2-Methylnaphthalene-d10	*0.16*			ug/L	*0.216*		73 *(20-110)*		02/16/11 :02/24/11	
Fluoranthene-d10	*0.18*			ug/L	*0.216*		85 *(35-130)*		02/16/11 :02/24/11	
Matrix Spike Dup (B11B235-MSD1)			**Source: W11B106-01**							**Z0**
Acenaphthene	**0.328**	ug/L	0.020	0.020	0.270	0.155	64 *(14-123)*	1 *(50)*	02/16/11 :02/24/11	
Acenaphthylene	**0.298**	ug/L	0.020	0.020	0.270	0.0503	92 *(17-116)*	4 *(50)*	02/16/11 :02/24/11	
Anthracene	**0.414**	ug/L	0.020	0.020	0.270	0.336	29 *(22-123)*	5 *(50)*	02/16/11 :02/24/11	
Benzo(a)anthracene	**0.758**	ug/L	0.010	0.010	0.270	0.829	-26 *(32-143)*	3 *(50)*	02/16/11 :02/24/11	
Benzo(a)pyrene	**0.745**	ug/L	0.010	0.010	0.270	0.768	-8 *(21-144)*	3 *(50)*	02/16/11 :02/24/11	
Benzo(b)fluoranthene	**0.828**	ug/L	0.010	0.010	0.270	0.931	-38 *(29-139)*	8 *(50)*	02/16/11 :02/24/11	
Benzo(g,h,i)perylene	**0.619**	ug/L	0.010	0.010	0.270	0.515	39 *(12-155)*	4 *(50)*	02/16/11 :02/24/11	
Benzo(k)fluoranthene	**0.526**	ug/L	0.010	0.010	0.270	0.355	63 *(27-137)*	6 *(50)*	02/16/11 :02/24/11	
Chrysene	**0.866**	ug/L	0.010	0.010	0.270	0.931	-24 *(32-142)*	5 *(50)*	02/16/11 :02/24/11	
Dibenzo(a,h)anthracene	**0.388**	ug/L	0.010	0.010	0.270	0.165	82 *(14-159)*	4 *(50)*	02/16/11 :02/24/11	
Fluoranthene	**1.33**	ug/L	0.010	0.010	0.270	1.86	-197 *(34-128)*	1 *(50)*	02/16/11 :02/24/11	
Fluorene	**0.320**	ug/L	0.020	0.020	0.270	0.115	76 *(24-122)*	3 *(50)*	02/16/11 :02/24/11	
Indeno(1,2,3-cd)pyrene	**0.593**	ug/L	0.010	0.010	0.270	0.468	46 *(15-156)*	4 *(50)*	02/16/11 :02/24/11	
1-Methylnaphthalene	**0.289**	ug/L	0.020	0.020	0.270	0.0422	91 *(50-150)*	6 *(50)*	02/16/11 :02/24/11	
2-Methylnaphthalene	**0.292**	ug/L	0.020	0.020	0.270	0.0578	87 *(50-150)*	7 *(50)*	02/16/11 :02/24/11	
Naphthalene	**0.278**	ug/L	0.040	0.040	0.270	0.0665	78 *(23-135)*	5 *(50)*	02/16/11 :02/24/11	
Phenanthrene	**0.844**	ug/L	0.020	0.020	0.270	1.33	-181 *(25-129)*	1 *(50)*	02/16/11 :02/24/11	
Pyrene	**1.33**	ug/L	0.010	0.010	0.270	1.80	-170 *(34-132)*	1 *(50)*	02/16/11 :02/24/11	
Butyl benzyl phthalate	**3.24**	ug/L	0.50	1.0	2.70	ND	120 *(25-150)*	4 *(50)*	02/16/11 :02/24/11	
Di-n-butyl phthalate	**3.04**	ug/L	0.50	1.0	2.70	ND	113 *(25-150)*	5 *(50)*	02/16/11 :02/24/11	
Diethyl phthalate	**3.14**	ug/L	0.50	1.0	2.70	ND	116 *(25-150)*	4 *(50)*	02/16/11 :02/24/11	
Dimethyl phthalate	**3.15**	ug/L	0.50	1.0	2.70	ND	117 *(25-150)*	4 *(50)*	02/16/11 :02/24/11	
Di-n-octyl phthalate	**3.51**	ug/L	0.50	1.0	2.70	ND	130 *(25-150)*	1 *(50)*	02/16/11 :02/24/11	
Bis(2-ethylhexyl) phthalate	**5.11**	ug/L	0.50	1.0	2.70	2.27	105 *(25-150)*	3 *(50)*	02/16/11 :02/24/11	
Surrogate										
2-Methylnaphthalene-d10	*0.16*			ug/L	*0.216*		75 *(20-110)*		02/16/11 :02/24/11	
Fluoranthene-d10	*0.17*			ug/L	*0.216*		80 *(35-130)*		02/16/11 :02/24/11	

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Project:	**NPDES Stormwater**	Client:	MS4
Work Order:	**W11B114**	Project Mgr:	Frank Wildensee

Qualifiers

J	Analyte was detected but at a concentration below the reporting limit; the result is an estimate.
Z0	Low Matrix Spike and Matrix Spike Duplicate recoveries are attributable to non-homogeneous matrix and, for some compounds, the high concentration of target analyte in the sample compared to a low spiking level.

Definitions

DET	Analyte Detected	ND	Analyte Not Detected at or above the reporting limit
MRL	Method Reporting Limit	MDL	Method Detection Limit
NR	Not Reportable	dry	Sample results reported on a dry weight basis
% Rec.	Percent Recovery	RPD	Relative Percent Difference

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Water Pollution Control Laboratory
6543 N. Burlington Ave.
Portland, Oregon 97203-4552
(503) 823-5696

City of Portland Chain-of-Custody

Bureau of Environmental Services

Date: 2/14/11
Page: 1 of 1
Collected By: JJM, CJK

Project Name: NPDES STORMWTR MON
File Number: 4010.001 **Matrix:** STORMWTR

Requested Analyses W11B114

☑ Sample Time recorded in current local time

Samples collected on 2/12/11 from 1802 to 2232

WPCL Sample I.D.	Location	Point Code	Sample Date	Sample Time	Sample Type	General: TS	TDS	TSS	Hardness	BOD	COD	Metals: Total Metals (Ag, As, Cd, Cr, Cu, Pb, Zn)	Dissolved Metals (Ag, As, Cd, Cr, Cu, Pb, Zn)	Nutrients: Ammonia-nitrogen	Nitrate-nitrogen	Orthophosphate phosphorus	Total Phosphorus	TKN	Org.: PAHs + Phthalates		Outside: SVOCs, low-level (CAS)	PCB 209 Congeners (Pace)	Pesticides (CAS low-lvl)				
-01	4900 NW KITTRIDGE AVE (OF19)	OF19	2/12/11	2232	C	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●				
2																											
3																											
4																											
5																											
6																											
7																											
8																											
9																											
10																											

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.	Relinquished By: 4.
Signature: [signature] Time: 1037	Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Jordan McCann Date: 2/14/11	Printed Name: Date:	Printed Name: Date:	Printed Name: Date:
Received By: 1.	**Received By:** 2.	**Received By:** 3.	**Received By:** 4.
Signature: [signature] Time: 1037	Signature: Time:	Signature: Time:	Signature: Time:
Printed Name: Mackenzie Cirk Date: 2/14/11	Printed Name: Date:	Printed Name: Date:	Printed Name: Date:

s:\eid\4000\4010.001\sampdoc\Current NPDES COC.xls

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

www.pacelabs.com

Report Prepared for:

Darrell Auvil
Test America
9405 SW Nimbus Avenue
Beaverton OR 97008

REPORT OF LABORATORY ANALYSIS FOR PCBs

Report Information:

Pace Project #: 10149758
Sample Receipt Date: 02/16/2011
Client Project #: PUB0415
Client Sub PO #: N/A
State Cert #: MN200001-005

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PCB Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Scott Unze, your Pace Project Manager.

This report has been reviewed by:

March 07, 2011

Scott Unze, Project Manager
(612) 607-6383
(612) 607-6444 (fax)
scott.unze@pacelabs.com

Report Prepared Date:
March 7, 2011

Report of Laboratory Analysis

The results relate only to the samples included in this report.

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DISCUSSION

This report presents the results from the analyses performed on one sample submitted by a representative of Test America - Portland. The sample was analyzed for the presence or absence of polychlorinated biphenyl (PCB) congeners using USEPA Method 1668A. Reporting limits were set to approximately 25-75 parts per trillion and were adjusted for the amount of dry sample extracted.

The isotopically-labeled PCB internal standards in the sample extract were recovered at 53-99%. All of the labeled internal standard recoveries obtained for this project were within the target ranges specified in the method. Since the quantification of the native PCB congeners was based on internal standard and isotope dilution methodology, the data were automatically corrected for variation in recovery and accurate values were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to contain low levels of two PCB congeners. These congeners were present in the sample extract at similar levels and may be, at least partially, attributed to the background. In general, levels less than ten times the background are not considered statistically different from the background.

Laboratory spike samples were also prepared with the sample batch using clean water that had been fortified with native standards. The results show that the spiked native compounds were recovered at 83-119%, with relative percent differences of 0.0-15.4%. These results indicate high degrees of accuracy and precision for these determinations. Matrix spikes were not prepared with the sample batch.

Pace Analytical Services, Inc.
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Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
Alabama	40770	Montana	92
Alaska	MN00064	Nebraska	
Arizona	AZ0014	Nevada	MN000642010A
Arkansas	88-0680	New Jersey (NE	MN002
California	01155CA	New Mexico	MN00064
Colorado	MN00064	New York (NEL	11647
Connecticut	PH-0256	North Carolina	27700
EPA Region 5	WD-15J	North Dakota	R-036
EPA Region 8	8TMS-Q	Ohio	4150
Florida (NELAP	E87605	Ohio VAP	CL101
Georgia (DNR)	959	Oklahoma	D9922
Guam	09-019r	Oregon (ELAP)	MN200001-005
Hawaii	SLD	Oregon (OREL	MN200001-005
Idaho	MN00064	Pennsylvania	68-00563
Illinois	200012	Saipan	MP0003
Indiana	C-MN-01	South Carolina	74003001
Indiana	C-MN-01	Tennesee	2818
Iowa	368	Tennessee	02818
Kansas	E-10167	Texas	T104704192-08
Kentucky	90062	Utah (NELAP)	PAM
Louisiana	LA0900016	Virginia	00251
Maine	2007029	Washington	C755
Maryland	322	West Virginia	9952C
Michigan	9909	Wisconsin	999407970
Minnesota	027-053-137	Wyoming	8TMS-Q
Mississippi	MN00064		

REPORT OF LABORATORY ANALYSIS

Appendix A

Sample Management

Subcontract Order - TestAmerica Portland (PUB0415)

431 10149758

SENDING LABORATORY:

TestAmerica Portland
9405 SW Nimbus Ave.
Beaverton, OR 97008
Phone: (503) 906-9200
Fax: (503) 906-9210
Project Manager: Darrell Auvil

RECEIVING LABORATORY:

Pace Analytical Services, Inc - Minneapolis
1700 Elm Street Suite 200
Minneapolis, MN 55414
Phone :(612) 607-1700
Fax: (612) 607-6444
Project Location: Oregon
Receipt Temperature:_____°C Ice: Y / N

W11B114 Autolog from WPCL 02/14/11 16:08

Standard TAT is requested unless specific due date is requested. => Due Date: _____ Initials:

Analysis	Units	Expires	Comments
Sample ID: PUB0415-01 (W11B114-01 (OF19) - Stormwater	Sampled: **02/12/11 22:32**		007
1668 PCB 209 Congeners - SUB	ug/l	08/11/11 22:32	209 cong. to PACE
Containers Supplied:			
1L Amber - Unpres. (A)			

Released By 2/15/11 Date/Time

Released By Date/Time

Received By Date/Time

Received By 21611 0957 Date/Time

+=0.4°

Sample Condition Upon Receipt

Pace Analytical

Client Name: testamerica Project # 10149758

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 417075269492 2164H

Optional: Proj. Due Date: Proj. Name:

Custody Seal on Cooler/Box Present: ☐ yes ☐ no Seals intact: ☑ yes ☐ no

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other _____ Temp Blank: Yes ✓ No _____

Thermometer Used 80344042 or 179425 Type of Ice: Wet (Blue) None ☐ Samples on ice, cooling process has begun

Cooler Temperature 0.4c Biological Tissue is Frozen: Yes No

Date and initials of person examining contents: 2/16H

Temp should be above freezing to 6°C Comments:

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☐Yes ☑No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No ☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes ☑No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes ☑No ☐N/A	7.
Sufficient Volume:	☑Yes ☐No ☐N/A	8.
Correct Containers Used:	☑Yes ☐No ☐N/A	9.
-Pace Containers Used:	☐Yes ☑No ☐N/A	
Containers Intact:	☑Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC:	☐Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: WT		
All containers needing acid/base preservation have been checked. Noncompliance are noted in 13.	☐Yes ☐No ☑N/A	13. ☐ HNO3 ☐ H2SO4 ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes ☐No ☑N/A	Samp #
Exceptions: VOA,Coliform, TOC, Oil and Grease, WI-DRO (water)	☐Yes ☑No	Initial when completed / Lot # of added preservative
Samples checked for dechlorination:	☐Yes ☐No ☐N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes ☐No ☑N/A	15.
Trip Blank Present:	☐Yes ☐No ☑N/A	16.
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ **Date:** 02/17/11

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR. Pace Analytical Services, Inc.

F-L213Rev.00, 05Aug2009 1700 Elm Street SE, Suite 200, Minneapolis

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Minneapolis, MN 55414

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Reporting Flags

A = Reporting Limit based on signal to noise

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interference present

J = Estimated value

Nn = Value obtained from additional analysis

P = PCDE Interference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = See Discussion

Appendix B

Sample Analysis Summary

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PUB0415-01:W11B114-01(OF-19)		
Lab Sample ID	10149758001		
Filename	P110304A_10		
Injected By	BAL		
Total Amount Extracted	953 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	02/12/2011 22:32
ICAL ID	P110304A02	Received	02/16/2011 09:57
CCal Filename(s)	P110304A_01	Extracted	03/01/2011 13:00
Method Blank ID	BLANK-28022	Analyzed	03/04/2011 12:51

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	6.635	3.33	2.0	1.19	59
13C-4-MoCB	3	9.510	3.40	2.0	1.20	60
13C-2,2'-DiCB	4	9.846	1.68	2.0	1.07	53
13C-4,4'-DiCB	15	17.573	1.59	2.0	1.21	60
13C-2,2',6-TrCB	19	14.003	1.16	2.0	1.15	57
13C-3,4,4'-TrCB	37	25.699	1.06	2.0	1.31	66
13C-2,2',6,6'-TeCB	54	17.885	0.81	2.0	1.25	62
13C-3,4,4',5-TeCB	81	32.893	0.79	2.0	1.53	76
13C-3,3',4,4'-TeCB	77	33.463	0.79	2.0	1.55	77
13C-2,2',4,6,6'-PeCB	104	24.324	1.57	2.0	1.39	70
13C-2,3,3',4,4'-PeCB	105	37.051	1.58	2.0	1.52	76
13C-2,3,4,4',5-PeCB	114	36.414	1.60	2.0	1.54	77
13C-2,3',4,4',5-PeCB	118	35.878	1.58	2.0	1.56	78
13C-2,3',4,4',5'-PeCB	123	35.542	1.55	2.0	1.54	77
13C-3,3',4,4',5-PeCB	126	40.204	1.57	2.0	1.45	73
13C-2,2',4,4',6,6'-HxCB	155	30.495	1.32	2.0	1.69	85
13C-HxCB (156/157)	156/157	43.223	1.33	4.0	3.10	77
13C-2,3',4,4',5,5'-HxCB	167	42.082	1.28	2.0	1.58	79
13C-3,3',4,4',5,5'-HxCB	169	46.459	1.33	2.0	1.52	76
13C-2,2',3,4',5,6,6'-HpCB	188	36.398	1.05	2.0	1.97	99
13C-2,3,3',4,4',5,5'-HpCB	189	48.986	1.05	2.0	1.79	89
13C-2,2',3,3',5,5',6,6'-OcCB	202	41.797	0.89	2.0	1.74	87
13C-2,3,3',4,4',5,5',6-OcCB	205	51.594	0.90	2.0	1.86	93
13C-2,2',3,3',4,4',5,5',6-NoCB	206	53.361	0.78	2.0	1.85	92
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	48.469	0.78	2.0	1.72	86
13C--DeCB	209	55.215	0.73	2.0	1.86	93
Cleanup Standards						
13C-2,4,4'-TrCB	28	21.205	1.04	2.0	1.40	70
13C-2,3,3',5,5'-PeCB	111	33.563	1.57	2.0	1.60	80
13C-2,2',3,3',5,5',6-HpCB	178	39.500	1.06	2.0	1.67	83
Recovery Standards						
13C-2,5-DiCB	9	12.565	1.57	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	23.318	0.80	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	30.746	1.56	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	39.030	1.25	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OcCB	194	51.098	0.93	2.0	NA	NA

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
RT = Retention Time
I = Interference
ng's = Nanograms

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1668A Polychlorobiphenyl
Sample Analysis Results

Client Sample ID PUB0415-01:W11B114-01(OF-19)
Lab Sample ID 10149758001
Filename P110304A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.262
2		9.283	2.92	0.265 B	---	0.262
3		9.534	2.86	0.337 B	---	0.262
4		---	---	ND	---	0.262
5		---	---	ND	---	0.262
6		---	---	ND	---	0.262
7		---	---	ND	---	0.262
8		13.691	1.34	0.351	---	0.262
9		---	---	ND	---	0.262
10		---	---	ND	---	0.262
11		---	---	ND	---	1.57
12	12/13	---	---	ND	---	0.524
13	12/13	---	---	ND	---	0.524
14		---	---	ND	---	0.262
15		17.597	1.44	0.322	---	0.262
16		17.525	1.16	0.378	---	0.262
17		16.962	1.06	0.441	---	0.262
18	18/30	16.459	1.06	0.902	---	0.524
19		---	---	ND	---	0.262
20	20/28	21.222	0.97	1.45	---	0.524
21	21/33	21.490	1.06	0.590	---	0.524
22		21.943	1.04	0.454	---	0.262
23		---	---	ND	---	0.262
24		---	---	ND	---	0.262
25		---	---	ND	---	0.262
26	26/29	---	---	ND	---	0.524
27		---	---	ND	---	0.262
28	20/28	21.222	0.97	(1.45)	---	0.524
29	26/29	---	---	ND	---	0.524
30	18/30	16.459	1.06	(0.902)	---	0.524
31		20.903	0.99	1.28	---	0.262
32		18.170	0.96	0.318	---	0.262
33	21/33	21.490	1.06	(0.590)	---	0.524
34		---	---	ND	---	0.262
35		---	---	ND	---	0.262
36		---	---	ND	---	0.262
37		25.733	0.96	0.461	---	0.262
38		---	---	ND	---	0.262
39		---	---	ND	---	0.262
40	40/41/71	---	---	ND	---	1.57
41	40/41/71	---	---	ND	---	1.57
42		---	---	ND	---	0.524
43	43/73	---	---	ND	---	1.05
44	44/47/65	24.408	0.79	1.58	---	1.57
45	45/51	---	---	ND	---	1.05
46		---	---	ND	---	0.524
47	44/47/65	24.408	0.79	(1.58)	---	1.57
48		---	---	ND	---	0.524

Conc = Concentration
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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1668A Polychlorobiphenyl
Sample Analysis Results

Client Sample ID PUB0415-01:W11B114-01(OF-19)
Lab Sample ID 10149758001
Filename P110304A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69	---	---	ND	---	1.05
50	50/53	---	---	ND	---	1.05
51	45/51	---	---	ND	---	1.05
52		23.334	0.79	2.14	---	0.524
53	50/53	---	---	ND	---	1.05
54		---	---	ND	---	0.524
55		---	---	ND	---	0.524
56		29.606	0.77	0.572	---	0.524
57		---	---	ND	---	0.524
58		---	---	ND	---	0.524
59	59/62/75	---	---	ND	---	1.57
60		---	---	ND	---	0.524
61	61/70/74/76	28.566	0.75	2.48	---	2.10
62	59/62/75	---	---	ND	---	1.57
63		---	---	ND	---	0.524
64		25.783	0.76	0.591	---	0.524
65	44/47/65	24.408	0.79	(1.58)	---	1.57
66		28.902	0.76	1.26	---	0.524
67		---	---	ND	---	0.524
68		---	---	ND	---	0.524
69	49/69	---	---	ND	---	1.05
70	61/70/74/76	28.566	0.75	(2.48)	---	2.10
71	40/41/71	---	---	ND	---	1.57
72		---	---	ND	---	0.524
73	43/73	---	---	ND	---	1.05
74	61/70/74/76	28.566	0.75	(2.48)	---	2.10
75	59/62/75	---	---	ND	---	1.57
76	61/70/74/76	28.566	0.75	(2.48)	---	2.10
77		---	---	ND	---	0.524
78		---	---	ND	---	0.524
79		---	---	ND	---	0.524
80		---	---	ND	---	0.524
81		---	---	ND	---	0.524
82		---	---	ND	---	0.524
83		---	---	ND	---	0.524
84		28.717	1.65	0.616	---	0.524
85	85/116/117	---	---	ND	---	1.57
86	86/87/97/108/119/125	---	---	ND	---	3.15
87	86/87/97/108/119/125	---	---	ND	---	3.15
88	88/91	---	---	ND	---	1.05
89		---	---	ND	---	0.524
90	90/101/113	30.780	1.55	2.34	---	1.57
91	88/91	---	---	ND	---	1.05
92		---	---	ND	---	0.524
93	93/98/100/102	---	---	ND	---	2.10
94		---	---	ND	---	0.524
95		27.611	1.53	1.77	---	0.524
96		---	---	ND	---	0.524

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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Tel: 612-607-1700
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Method 1668A Polychlorobiphenyl
Sample Analysis Results

Client Sample ID PUB0415-01:W11B114-01(OF-19)
Lab Sample ID 10149758001
Filename P110304A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
97	86/87/97/108/119/125	---	---	ND	---	3.15
98	93/98/100/102	---	---	ND	---	2.10
99		31.384	1.51	0.916	---	0.524
100	93/98/100/102	---	---	ND	---	2.10
101	90/101/113	30.780	1.55	(2.34)	---	1.57
102	93/98/100/102	---	---	ND	---	2.10
103		---	---	ND	---	0.524
104		---	---	ND	---	0.524
105		37.068	1.47	1.03	---	0.524
106		---	---	ND	---	0.524
107	107/124	---	---	ND	---	1.05
108	86/87/97/108/119/125	---	---	ND	---	3.15
109		---	---	ND	---	0.524
110	110/115	32.792	1.60	2.73	---	1.05
111		---	---	ND	---	0.524
112		---	---	ND	---	0.524
113	90/101/113	30.780	1.55	(2.34)	---	1.57
114		---	---	ND	---	0.524
115	110/115	32.792	1.60	(2.73)	---	1.05
116	85/116/117	---	---	ND	---	1.57
117	85/116/117	---	---	ND	---	1.57
118		35.911	1.54	2.25	---	0.524
119	86/87/97/108/119/125	---	---	ND	---	3.15
120		---	---	ND	---	0.524
121		---	---	ND	---	0.524
122		---	---	ND	---	0.524
123		---	---	ND	---	0.524
124	107/124	---	---	ND	---	1.05
125	86/87/97/108/119/125	---	---	ND	---	3.15
126		---	---	ND	---	0.524
127		---	---	ND	---	0.524
128	128/166	---	---	ND	---	1.05
129	129/138/163	39.047	1.27	4.02	---	1.57
130		---	---	ND	---	0.524
131		---	---	ND	---	0.524
132		35.962	1.28	1.07	---	0.524
133		---	---	ND	---	0.524
134	134/143	---	---	ND	---	1.05
135	135/151	---	---	ND	---	1.05
136		---	---	ND	---	0.524
137		---	---	ND	---	0.524
138	129/138/163	39.047	1.27	(4.02)	---	1.57
139	139/140	---	---	ND	---	1.05
140	139/140	---	---	ND	---	1.05
141		37.991	1.34	0.645	---	0.524
142		---	---	ND	---	0.524
143	134/143	---	---	ND	---	1.05
144		---	---	ND	---	0.524

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
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ND = Not Detected
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NC = Not Calculated
* = See Discussion
X = Outside QC Limits
RT = Retention Time
I = Interference
ng's = Nanograms

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1668A Polychlorobiphenyl
Sample Analysis Results

Client Sample ID PUB0415-01:W11B114-01(OF-19)
Lab Sample ID 10149758001
Filename P110304A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
145		---	---	ND	---	0.524
146		---	---	ND	---	0.524
147	147/149	34.721	1.21	2.27	---	1.05
148		---	---	ND	---	0.524
149	147/149	34.721	1.21	(2.27)	---	1.05
150		---	---	ND	---	0.524
151	135/151	---	---	ND	---	1.05
152		---	---	ND	---	0.524
153	153/168	37.823	1.19	2.45	---	1.05
154		---	---	ND	---	0.524
155		---	---	ND	---	0.524
156	156/157	---	---	ND	---	1.05
157	156/157	---	---	ND	---	1.05
158		---	---	ND	---	0.524
159		---	---	ND	---	0.524
160		---	---	ND	---	0.524
161		---	---	ND	---	0.524
162		---	---	ND	---	0.524
163	129/138/163	39.047	1.27	(4.02)	---	1.57
164		---	---	ND	---	0.524
165		---	---	ND	---	0.524
166	128/166	---	---	ND	---	1.05
167		---	---	ND	---	0.524
168	153/168	37.823	1.19	(2.45)	---	1.05
169		---	---	ND	---	0.524
170		45.855	1.04	0.783	---	0.524
171	171/173	---	---	ND	---	1.05
172		---	---	ND	---	0.524
173	171/173	---	---	ND	---	1.05
174		41.261	0.99	0.767	---	0.524
175		---	---	ND	---	0.524
176		---	---	ND	---	0.524
177		---	---	ND	---	0.524
178		---	---	ND	---	0.524
179		---	---	ND	---	0.524
180	180/193	44.631	1.06	1.63	---	1.05
181		---	---	ND	---	0.524
182		---	---	ND	---	0.524
183	183/185	---	---	ND	---	1.05
184		---	---	ND	---	0.524
185	183/185	---	---	ND	---	1.05
186		---	---	ND	---	0.524
187		40.439	1.05	0.822	---	0.524
188		---	---	ND	---	0.524
189		---	---	ND	---	0.524
190		---	---	ND	---	0.524
191		---	---	ND	---	0.524
192		---	---	ND	---	0.524

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

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Method 1668A Polychlorobiphenyl
Sample Analysis Results

Client Sample ID PUB0415-01:W11B114-01(OF-19)
Lab Sample ID 10149758001
Filename P110304A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193	44.631	1.06	(1.63)	---	1.05
194		---	---	ND	---	0.787
195		---	---	ND	---	0.787
196		---	---	ND	---	0.787
197	197/200	---	---	ND	---	1.57
198	198/199	---	---	ND	---	1.57
199	198/199	---	---	ND	---	1.57
200	197/200	---	---	ND	---	1.57
201		---	---	ND	---	0.787
202		---	---	ND	---	0.787
203		---	---	ND	---	0.787
204		---	---	ND	---	0.787
205		---	---	ND	---	0.787
206		---	---	ND	---	0.787
207		---	---	ND	---	0.787
208		---	---	ND	---	0.787
209		---	---	ND	---	0.787

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Method 1668A Polychlorobiphenyl
Sample Analysis Results

Client Sample ID	PUB0415-01:W11B114-01(OF-19)
Lab Sample ID	10149758001
Filename	P110304A_10

Congener Group	Concentration ng/L
Total Monochloro Biphenyls	0.602
Total Dichloro Biphenyls	0.672
Total Trichloro Biphenyls	6.27
Total Tetrachloro Biphenyls	8.62
Total Pentachloro Biphenyls	11.6
Total Hexachloro Biphenyls	10.5
Total Heptachloro Biphenyls	4.00
Total Octachloro Biphenyls	ND
Total Nonachloro Biphenyls	ND
Decachloro Biphenyls	ND
Total PCBs	42.3

ND = Not Detected

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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Tel: 612-607-1700
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Method 1668A Polychlorobiphenyl
Blank Analysis Results

Lab Sample ID	BLANK-28022		
Filename	P110304A_07		
Injected By	BAL	Matrix	Water
Total Amount Extracted	1010 mL	Extracted	03/01/2011 13:00
ICAL ID	P110304A02	Analyzed	03/04/2011 09:44
CCal Filename(s)	P110304A_01	Dilution	NA

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	6.683	2.77	2.0	1.37	68
13C-4-MoCB	3	9.546	3.19	2.0	1.39	70
13C-2,2'-DiCB	4	9.858	1.53	2.0	1.23	61
13C-4,4'-DiCB	15	17.585	1.58	2.0	1.41	71
13C-2,2',6-TrCB	19	14.027	1.11	2.0	1.37	68
13C-3,4,4'-TrCB	37	25.699	1.08	2.0	1.47	73
13C-2,2',6,6'-TeCB	54	17.902	0.80	2.0	1.47	73
13C-3,4,4',5-TeCB	81	32.893	0.77	2.0	1.56	78
13C-3,3',4,4'-TeCB	77	33.463	0.78	2.0	1.50	75
13C-2,2',4,6,6'-PeCB	104	24.307	1.63	2.0	1.59	79
13C-2,3,3',4,4'-PeCB	105	37.052	1.57	2.0	1.48	74
13C-2,3,4,4',5-PeCB	114	36.398	1.57	2.0	1.47	74
13C-2,3',4,4',5-PeCB	118	35.878	1.54	2.0	1.50	75
13C-2,3',4,4',5'-PeCB	123	35.542	1.56	2.0	1.49	74
13C-3,3',4,4',5-PeCB	126	40.188	1.55	2.0	1.34	67
13C-2,2',4,4',6,6'-HxCB	155	30.495	1.21	2.0	1.85	93
13C-HxCB (156/157)	156/157	43.189	1.27	4.0	2.81	70
13C-2,3',4,4',5,5'-HxCB	167	42.066	1.25	2.0	1.46	73
13C-3,3',4,4',5,5'-HxCB	169	46.443	1.24	2.0	1.43	72
13C-2,2',3,4',5,6,6'-HpCB	188	36.398	1.04	2.0	2.07	104
13C-2,3,3',4,4',5,5'-HpCB	189	48.965	1.07	2.0	1.63	81
13C-2,2',3,3',5,5',6,6'-OcCB	202	41.781	0.87	2.0	1.91	96
13C-2,3,3',4,4',5,5',6-OcCB	205	51.551	0.89	2.0	1.93	97
13C-2,2',3,3',4,4',5,5',6-NoCB	206	53.340	0.78	2.0	1.99	99
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	48.448	0.80	2.0	1.92	96
13C--DeCB	209	55.194	0.69	2.0	2.20	110
Cleanup Standards						
13C-2,4,4'-TrCB	28	21.205	1.07	2.0	1.81	90
13C-2,3,3',5,5'-PeCB	111	33.564	1.56	2.0	1.73	87
13C-2,2',3,3',5,5',6-HpCB	178	39.483	1.01	2.0	2.02	101
Recovery Standards						
13C-2,5-DiCB	9	12.589	1.58	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	23.301	0.83	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	30.730	1.54	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	39.014	1.27	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OcCB	194	51.077	0.90	2.0	NA	NA

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RT = Retention Time
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ng's = Nanograms

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyl
Blank Analysis Results

Lab Sample ID BLANK-28022
Filename P110304A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.249
2		9.319	3.07	0.272	---	0.249
3		9.570	3.17	0.332	---	0.249
4		---	---	ND	---	0.249
5		---	---	ND	---	0.249
6		---	---	ND	---	0.249
7		---	---	ND	---	0.249
8		---	---	ND	---	0.249
9		---	---	ND	---	0.249
10		---	---	ND	---	0.249
11		---	---	ND	---	1.49
12	12/13	---	---	ND	---	0.497
13	12/13	---	---	ND	---	0.497
14		---	---	ND	---	0.249
15		---	---	ND	---	0.249
16		---	---	ND	---	0.249
17		---	---	ND	---	0.249
18	18/30	---	---	ND	---	0.497
19		---	---	ND	---	0.249
20	20/28	---	---	ND	---	0.497
21	21/33	---	---	ND	---	0.497
22		---	---	ND	---	0.249
23		---	---	ND	---	0.249
24		---	---	ND	---	0.249
25		---	---	ND	---	0.249
26	26/29	---	---	ND	---	0.497
27		---	---	ND	---	0.249
28	20/28	---	---	ND	---	0.497
29	26/29	---	---	ND	---	0.497
30	18/30	---	---	ND	---	0.497
31		---	---	ND	---	0.249
32		---	---	ND	---	0.249
33	21/33	---	---	ND	---	0.497
34		---	---	ND	---	0.249
35		---	---	ND	---	0.249
36		---	---	ND	---	0.249
37		---	---	ND	---	0.249
38		---	---	ND	---	0.249
39		---	---	ND	---	0.249
40	40/41/71	---	---	ND	---	1.49
41	40/41/71	---	---	ND	---	1.49
42		---	---	ND	---	0.497
43	43/73	---	---	ND	---	0.995
44	44/47/65	---	---	ND	---	1.49
45	45/51	---	---	ND	---	0.995

Conc = Concentration
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Method 1668A Polychlorobiphenyl
Blank Analysis Results

Lab Sample ID BLANK-28022
Filename P110304A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
46		---	---	ND	---	0.497
47	44/47/65	---	---	ND	---	1.49
48		---	---	ND	---	0.497
49	49/69	---	---	ND	---	0.995
50	50/53	---	---	ND	---	0.995
51	45/51	---	---	ND	---	0.995
52		---	---	ND	---	0.497
53	50/53	---	---	ND	---	0.995
54		---	---	ND	---	0.497
55		---	---	ND	---	0.497
56		---	---	ND	---	0.497
57		---	---	ND	---	0.497
58		---	---	ND	---	0.497
59	59/62/75	---	---	ND	---	1.49
60		---	---	ND	---	0.497
61	61/70/74/76	---	---	ND	---	1.99
62	59/62/75	---	---	ND	---	1.49
63		---	---	ND	---	0.497
64		---	---	ND	---	0.497
65	44/47/65	---	---	ND	---	1.49
66		---	---	ND	---	0.497
67		---	---	ND	---	0.497
68		---	---	ND	---	0.497
69	49/69	---	---	ND	---	0.995
70	61/70/74/76	---	---	ND	---	1.99
71	40/41/71	---	---	ND	---	1.49
72		---	---	ND	---	0.497
73	43/73	---	---	ND	---	0.995
74	61/70/74/76	---	---	ND	---	1.99
75	59/62/75	---	---	ND	---	1.49
76	61/70/74/76	---	---	ND	---	1.99
77		---	---	ND	---	0.497
78		---	---	ND	---	0.497
79		---	---	ND	---	0.497
80		---	---	ND	---	0.497
81		---	---	ND	---	0.497
82		---	---	ND	---	0.497
83		---	---	ND	---	0.497
84		---	---	ND	---	0.497
85	85/116/117	---	---	ND	---	1.49
86	86/87/97/108/119/125	---	---	ND	---	2.98
87	86/87/97/108/119/125	---	---	ND	---	2.98
88	88/91	---	---	ND	---	0.995
89		---	---	ND	---	0.497
90	90/101/113	---	---	ND	---	1.49

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
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ng/L = Nanograms per liter

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Method 1668A Polychlorobiphenyl
Blank Analysis Results

Lab Sample ID BLANK-28022
Filename P110304A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
91	88/91	---	---	ND	---	0.995
92		---	---	ND	---	0.497
93	93/98/100/102	---	---	ND	---	1.99
94		---	---	ND	---	0.497
95		---	---	ND	---	0.497
96		---	---	ND	---	0.497
97	86/87/97/108/119/125	---	---	ND	---	2.98
98	93/98/100/102	---	---	ND	---	1.99
99		---	---	ND	---	0.497
100	93/98/100/102	---	---	ND	---	1.99
101	90/101/113	---	---	ND	---	1.49
102	93/98/100/102	---	---	ND	---	1.99
103		---	---	ND	---	0.497
104		---	---	ND	---	0.497
105		---	---	ND	---	0.497
106		---	---	ND	---	0.497
107	107/124	---	---	ND	---	0.995
108	86/87/97/108/119/125	---	---	ND	---	2.98
109		---	---	ND	---	0.497
110	110/115	---	---	ND	---	0.995
111		---	---	ND	---	0.497
112		---	---	ND	---	0.497
113	90/101/113	---	---	ND	---	1.49
114		---	---	ND	---	0.497
115	110/115	---	---	ND	---	0.995
116	85/116/117	---	---	ND	---	1.49
117	85/116/117	---	---	ND	---	1.49
118		---	---	ND	---	0.497
119	86/87/97/108/119/125	---	---	ND	---	2.98
120		---	---	ND	---	0.497
121		---	---	ND	---	0.497
122		---	---	ND	---	0.497
123		---	---	ND	---	0.497
124	107/124	---	---	ND	---	0.995
125	86/87/97/108/119/125	---	---	ND	---	2.98
126		---	---	ND	---	0.497
127		---	---	ND	---	0.497
128	128/166	---	---	ND	---	0.995
129	129/138/163	---	---	ND	---	1.49
130		---	---	ND	---	0.497
131		---	---	ND	---	0.497
132		---	---	ND	---	0.497
133		---	---	ND	---	0.497
134	134/143	---	---	ND	---	0.995
135	135/151	---	---	ND	---	0.995

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Blank Analysis Results

Lab Sample ID BLANK-28022
Filename P110304A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
136		---	---	ND	---	0.497
137		---	---	ND	---	0.497
138	129/138/163	---	---	ND	---	1.49
139	139/140	---	---	ND	---	0.995
140	139/140	---	---	ND	---	0.995
141		---	---	ND	---	0.497
142		---	---	ND	---	0.497
143	134/143	---	---	ND	---	0.995
144		---	---	ND	---	0.497
145		---	---	ND	---	0.497
146		---	---	ND	---	0.497
147	147/149	---	---	ND	---	0.995
148		---	---	ND	---	0.497
149	147/149	---	---	ND	---	0.995
150		---	---	ND	---	0.497
151	135/151	---	---	ND	---	0.995
152		---	---	ND	---	0.497
153	153/168	---	---	ND	---	0.995
154		---	---	ND	---	0.497
155		---	---	ND	---	0.497
156	156/157	---	---	ND	---	0.995
157	156/157	---	---	ND	---	0.995
158		---	---	ND	---	0.497
159		---	---	ND	---	0.497
160		---	---	ND	---	0.497
161		---	---	ND	---	0.497
162		---	---	ND	---	0.497
163	129/138/163	---	---	ND	---	1.49
164		---	---	ND	---	0.497
165		---	---	ND	---	0.497
166	128/166	---	---	ND	---	0.995
167		---	---	ND	---	0.497
168	153/168	---	---	ND	---	0.995
169		---	---	ND	---	0.497
170		---	---	ND	---	0.497
171	171/173	---	---	ND	---	0.995
172		---	---	ND	---	0.497
173	171/173	---	---	ND	---	0.995
174		---	---	ND	---	0.497
175		---	---	ND	---	0.497
176		---	---	ND	---	0.497
177		---	---	ND	---	0.497
178		---	---	ND	---	0.497
179		---	---	ND	---	0.497
180	180/193	---	---	ND	---	0.995

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Method 1668A Polychlorobiphenyl
Blank Analysis Results

Lab Sample ID BLANK-28022
Filename P110304A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
181		---	---	ND	---	0.497
182		---	---	ND	---	0.497
183	183/185	---	---	ND	---	0.995
184		---	---	ND	---	0.497
185	183/185	---	---	ND	---	0.995
186		---	---	ND	---	0.497
187		---	---	ND	---	0.497
188		---	---	ND	---	0.497
189		---	---	ND	---	0.497
190		---	---	ND	---	0.497
191		---	---	ND	---	0.497
192		---	---	ND	---	0.497
193	180/193	---	---	ND	---	0.995
194		---	---	ND	---	0.746
195		---	---	ND	---	0.746
196		---	---	ND	---	0.746
197	197/200	---	---	ND	---	1.49
198	198/199	---	---	ND	---	1.49
199	198/199	---	---	ND	---	1.49
200	197/200	---	---	ND	---	1.49
201		---	---	ND	---	0.746
202		---	---	ND	---	0.746
203		---	---	ND	---	0.746
204		---	---	ND	---	0.746
205		---	---	ND	---	0.746
206		---	---	ND	---	0.746
207		---	---	ND	---	0.746
208		---	---	ND	---	0.746
209		---	---	ND	---	0.746

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
RT = Retention Time
I = Interference

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1668A Polychlorobiphenyl
Blank Analysis Results

Client Sample ID	DFBLKCW
Lab Sample ID	BLANK-28022
Filename	P110304A_07

Congener Group	Concentration ng/L
Total Monochloro Biphenyls	0.604
Total Dichloro Biphenyls	ND
Total Trichloro Biphenyls	ND
Total Tetrachloro Biphenyls	ND
Total Pentachloro Biphenyls	ND
Total Hexachloro Biphenyls	ND
Total Heptachloro Biphenyls	ND
Total Octachloro Biphenyls	ND
Total Nonachloro Biphenyls	ND
Decachloro Biphenyls	ND
Total PCBs	0.604

ND = Not Detected

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1668A Polychlorobiphenyls
Laboratory Control Spike Analysis Results

Lab Sample ID	LCS-28023		
Filename	P110304B_03	Matrix	Water
Total Amount Extracted	1010 mL	Dilution	NA
ICAL ID	P110304B02	Extracted	03/01/2011 13:00
CCal Filename(s)	P110304B_01	Analyzed	03/04/2011 18:36
Method Blank ID	BLANK-28022	Injected By	CVS

	Native Analytes			Labeled Analytes		
PCB Isomer	**Spiked (ng)**	**Found (ng)**	**% Recovery**	**Spiked (ng)**	**Found (ng)**	**% Recovery**
1	1.0	0.963	96	2.0	1.85	92
3	1.0	1.02	102	2.0	1.59	79
4	1.0	0.905	91	2.0	1.82	91
15	1.0	0.980	98	2.0	1.20	60
19	1.0	0.888	89	2.0	1.65	83
37	1.0	0.929	93	2.0	1.14	57
54	1.0	0.941	94	2.0	1.28	64
81	1.0	0.886	89	2.0	1.22	61
77	1.0	0.888	89	2.0	1.20	60
104	1.0	0.912	91	2.0	1.84	92
105	1.0	0.950	95	2.0	1.25	63
114	1.0	0.910	91	2.0	1.18	59
118	1.0	0.909	91	2.0	1.24	62
123	1.0	0.924	92	2.0	1.25	62
126	1.0	0.908	91	2.0	1.14	57
155	1.0	0.923	92	2.0	2.31	115
156/157	2.0	1.86	93	4.0	3.04	76
167	1.0	0.925	92	2.0	1.59	80
169	1.0	0.929	93	2.0	1.58	79
188	1.0	0.889	89	2.0	1.96	98
189	1.0	0.940	94	2.0	1.52	76
202	1.0	0.943	94	2.0	2.00	100
205	1.0	0.959	96	2.0	1.83	92
206	1.0	0.962	96	2.0	2.10	105
208	1.0	0.921	92	2.0	1.89	95
209	1.0	0.928	93	2.0	2.53	127

R = Recovery outside of method 1668A control limits
Nn = Result obtained from alternate analysis
ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
ng = Nanograms
I = Interference

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1668A Polychlorobiphenyls
Laboratory Control Spike Analysis Results

Lab Sample ID	LCSD-28024		
Filename	P110304B_04	Matrix	Water
Total Amount Extracted	1030 mL	Dilution	NA
ICAL ID	P110304B02	Extracted	03/01/2011 13:00
CCal Filename(s)	P110304B_01	Analyzed	03/04/2011 19:38
Method Blank ID	BLANK-28022	Injected By	CVS

	Native Analytes			Labeled Analytes		
PCB Isomer	**Spiked (ng)**	**Found (ng)**	**% Recovery**	**Spiked (ng)**	**Found (ng)**	**% Recovery**
1	1.0	1.01	101	2.0	1.56	78
3	1.0	1.19	119	2.0	1.34	67
4	1.0	0.928	93	2.0	1.65	83
15	1.0	0.984	98	2.0	1.14	57
19	1.0	0.832	83	2.0	1.62	81
37	1.0	0.965	97	2.0	1.08	54
54	1.0	1.02	102	2.0	1.15	57
81	1.0	0.878	88	2.0	1.13	56
77	1.0	0.873	87	2.0	1.11	56
104	1.0	0.905	91	2.0	1.86	93
105	1.0	0.952	95	2.0	1.20	60
114	1.0	0.926	93	2.0	1.14	57
118	1.0	0.909	91	2.0	1.20	60
123	1.0	0.893	89	2.0	1.22	61
126	1.0	0.879	88	2.0	1.09	54
155	1.0	0.925	92	2.0	2.38	119
156/157	2.0	1.85	93	4.0	2.93	73
167	1.0	0.914	91	2.0	1.51	75
169	1.0	0.944	94	2.0	1.42	71
188	1.0	0.916	92	2.0	2.04	102
189	1.0	0.925	92	2.0	1.55	77
202	1.0	0.989	99	2.0	1.97	98
205	1.0	0.927	93	2.0	1.93	96
206	1.0	0.925	93	2.0	2.18	109
208	1.0	0.920	92	2.0	1.90	95
209	1.0	0.923	92	2.0	2.51	126

R = Recovery outside of method 1668A control limits
Nn = Result obtained from alternate analysis
ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
ng = Nanograms
I = Interference

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1668A

Spike Recovery Relative Percent Difference (RPD) Results

Client	Test America		
Spike 1 ID	LCS-28023	Spike 2 ID	LCSD-28024
Spike 1 Filename	P110304B_03	Spike 2 Filename	P110304B_04

Compound	IUPAC	Spike 1 %REC	Spike 2 %REC	%RPD
2-MoCB	1	96	101	5.1
4-MoCB	3	102	119	15.4
2,2'-DiCB	4	91	93	2.2
4,4'-DiCB	15	98	98	0.0
2,2',6-TrCB	19	89	83	7.0
3,4,4'-TrCB	37	93	97	4.2
2,2',6,6'-TeCB	54	94	102	8.2
3,3',4,4'-TeCB	77	89	87	2.3
3,4,4',5-TeCB	81	89	88	1.1
2,2',4,6,6'-PeCB	104	91	91	0.0
2,3,3',4,4'-PeCB	105	95	95	0.0
2,3,4,4',5-PeCB	114	91	93	2.2
2,3',4,4',5-PeCB	118	91	91	0.0
2,3',4,4',5'-PeCB	123	92	89	3.3
3,3',4,4',5-PeCB	126	91	88	3.4
2,2',4,4',6,6'-HxCB	155	92	92	0.0
(156/157)	156/157	93	93	0.0
2,3',4,4',5,5'-HxCB	167	92	91	1.1
3,3',4,4',5,5'-HxCB	169	93	94	1.1
2,2',3,4',5,6,6'-HpCB	188	89	92	3.3
2,3,3',4,4',5,5'-HpCB	189	94	92	2.2
2,2',3,3',5,5',6,6'-OcCB	202	94	99	5.2
2,3,3',4,4',5,5',6-OcCB	205	96	93	3.2
2,2',3,3',4,4',5,5',6-NoCB	206	96	93	3.2
2,2',3,3',4,5,5',6,6'-NoCB	208	92	92	0.0
Decachlorobiphenyl	209	93	92	1.1

%REC = Percent Recovered
RPD = The difference between the two values divided by the mean value

REPORT OF LABORATORY ANALYSIS

Columbia Analytical Services, Inc.
1317 S. 13th Avenue, Kelso, WA 98626 360.577.7222 360.636.1068 (fax) www.caslab.com

March 25, 2011 Analytical Report for Service Request No: K1101263

Jennifer Shackelford
City of Portland
6543 N. Burlington Ave
Portland, OR 97203

RE: NPDES Stormwater/W11B114

Dear Jennifer:

Enclosed are the results of the sample submitted to our laboratory on February 15, 2011. For your reference, these analyses have been assigned our service request number K1101263.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3364. You may also contact me via Email at HHolmes@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Howard Holmes
Project Chemist

HH/dlm

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value that was detected outside the quantitation range.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	In accordance with the 2007 EPA Methods Update Rule published in the Federal Register, the holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value that was detected outside the quantitation range.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value that was detected outside the quantitation range.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc.
Kelso, WA
State Certifications, Accreditations, and Licenses

Agency	Number
Alaska DEC UST	UST-040
Arizona DHS	AZ0339
Arkansas - DEQ	88-0637
California DHS	2286
Florida DOH	E87412
Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
Louisiana DEQ	3016
Louisiana DHH	LA050010
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon - DEQ	WA100010
South Carolina DHEC	61002
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	City of Portland	**Service Request No.:**	K1101263
Project:	NPDES Stormwater	**Date Received:**	2/15/11
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Laboratory/Duplicate Laboratory Control Sample (LCS/DLCS).

Sample Receipt

One water sample was received for analysis at Columbia Analytical Services on 2/15/11. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Organochlorine Pesticides by EPA Method 8081A

Second Source Exceptions:
The analysis of Chlorinated Pesticides by EPA 8081 requires the use of dual column confirmation. When the Initial Calibration Verification (ICV) criteria are met for both columns, the lower of the two sample results is generally reported. The data quality was not affected. No further corrective action was necessary.

Calibration Verification Exceptions:
The analysis of Chlorinated Pesticides by EPA 8081 requires the use of dual column confirmation. When the Continuing Calibration Verification (CCV) criterion is met for both columns, the lower of the two sample results is generally reported. The primary evaluation criteria were not met on the confirmation column for 4,4'-DDT and Methoxychlor in CCV 03180055. The results were reported from the column with an acceptable CCV. The data quality was not affected. No further corrective action was necessary.

Surrogate Exceptions:
The control criteria were exceeded for Decachlorobiphenyl in sample W11B114-01 due to matrix interference. The presence of non-target background components prevented adequate resolution of the surrogate. Accurate quantitation was not possible. The other surrogate, Tetrachloro-m-xylene, was well within control limits, indicating the integrity of the extraction was intact. No further corrective action was appropriate.

Elevated Detection Limits:
The detection limit was elevated for a few analytes in sample W11B114-01. The chromatogram indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compounds at the normal limit. The results were flagged to indicate the matrix interference.

No other anomalies associated with the analysis of these samples were observed.

Approved by Howard Holmes **Date** 3-25-11

Semivolatile Organic Compounds by EPA Method 8270C

Lab Control Sample Exceptions:
The lower advisory criterion was exceeded by 1% for 3,3'-Dichlorobenzidine in the duplicate Laboratory Control Samples (LCS/DLCS) KWG1101467-1 and KWG1101467-2. As per the CAS/Kelso Standard Operating Procedure (SOP) for this method, these compounds are not included in the subset of analytes used to control the analysis. The recovery information reported for these analytes is for advisory purposes only (i.e. to provide additional detail related to the performance of each individual compound). No further corrective action was required.

Relative Percent Difference Exceptions:
The Relative Percent Difference (RPD) criterion for 3,3'-Dichlorobenzidine in the duplicate Laboratory Control Samples (LCS/DLCS) KWG1101467-1 and KWG1101467-2 was not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

Elevated Detection Limits:
The detection limits were elevated in sample W11B114-01. The sample extract was diluted prior to instrumental analysis due to relatively high levels of non-target background components. Clean-up of the extract was performed within the scope of the method, but did not eliminate enough of the background components to prevent dilution. A semi-quantitative screen was performed prior to final analysis. The results of the screening indicated the need to perform a dilution.

Sample Notes and Discussion:
Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD). A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

No other anomalies associated with the analysis of these samples were observed.

Approved by Howard Holmes **Date** 3-25-11

K1101203

SUBCONTRACT ORDER

City of Portland Water Pollution Control Lab

W11B114

SENDING LABORATORY:

City of Portland Water Pollution Control Lab
6543 N. Burlington Ave
Portland, OR 97203
Phone: 503-823-5600
Fax: 503-823-5656
Invoice To: Charles Lytle

RECEIVING LABORATORY:

Columbia Analytical Services
1317 S. 13th Avenue
Kelso, WA 98626
Phone :(360) 577-7222
Fax: (360) 636-1068

WPCL Project Name
NPDES Stormwater

TURNAROUND REQUEST

[X] Standard

[ ] Rush _ day(s)

Analysis	Due	Expires	Laboratory ID	Comments
Sample ID: W11B114-01	**Water**	**Sampled: 02/12/11 22:32**		
Out-Semivol 8270 LL (CAS)	03/01/11 17:00	02/19/11 22:32		
Out-Pesticides Chlor LL (CAS)	03/01/11 17:00	02/19/11 22:32		
Containers Supplied:				
G amber 1L (D)	G amber 1L (E)			

Released By	Date	Received By	Date
	2/15/11 @ 855		2-15-11 8:55
Released By	Date	Received By	Date
			2/15/11 1230

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC H·H

Client / Project: City of Portland Service Request *K11* 1203

Received: 2/15/11 Opened: 2/15/11 By: CM Unloaded: 2/15/11 By: CM

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* (*Courier*) *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y (N) If yes, how many and where? _____
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID NA	Tracking Number (NA)	Filed
16.1	—	293	W11B114		

7. Packing material used. *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Sleeves* *Other* None
8. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA (Y) N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* (NA) Y N
14. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
15. Was C12/Res negative? NA (Y) N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

Client:	Portland, City of	**Service Request:**	K1101263
Project:	NPDES Stormwater/W11B114	**Date Collected:**	02/12/2011
Sample Matrix:	Water	**Date Received:**	02/15/2011

Organochlorine Pesticides

Sample Name:	W11B114-01	**Units:**	ng/L
Lab Code:	K1101263-001	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8081B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	Ui	1.2	1.2	1	02/18/11	03/19/11	KWG1101816	
beta-BHC	ND	Ui	1.9	1.9	1	02/18/11	03/19/11	KWG1101816	
gamma-BHC (Lindane)	ND	Ui	1.6	1.6	1	02/18/11	03/19/11	KWG1101816	
delta-BHC	**6.8**	P	0.50	0.14	1	02/18/11	03/19/11	KWG1101816	
Heptachlor	**5.0**	P	0.50	0.18	1	02/18/11	03/19/11	KWG1101816	
Aldrin	**1.0**	P	0.50	0.33	1	02/18/11	03/19/11	KWG1101816	
Heptachlor Epoxide	ND	Ui	3.3	3.3	1	02/18/11	03/19/11	KWG1101816	
gamma-Chlordane†	ND	Ui	0.86	0.86	1	02/18/11	03/19/11	KWG1101816	
Endosulfan I	ND	Ui	1.1	1.1	1	02/18/11	03/19/11	KWG1101816	
alpha-Chlordane	ND	Ui	3.0	3.0	1	02/18/11	03/19/11	KWG1101816	
Dieldrin	ND	Ui	2.3	2.3	1	02/18/11	03/19/11	KWG1101816	
4,4'-DDE	ND	Ui	5.4	5.4	1	02/18/11	03/19/11	KWG1101816	
Endrin	**14**		0.50	0.49	1	02/18/11	03/19/11	KWG1101816	
Endosulfan II	ND	Ui	1.7	1.7	1	02/18/11	03/19/11	KWG1101816	
4,4'-DDD	ND	Ui	4.9	4.9	1	02/18/11	03/19/11	KWG1101816	
Endrin Aldehyde	ND	Ui	5.5	5.5	1	02/18/11	03/19/11	KWG1101816	
Endosulfan Sulfate	ND	Ui	1.6	1.6	1	02/18/11	03/19/11	KWG1101816	
4,4'-DDT	ND	Ui	15	15	1	02/18/11	03/19/11	KWG1101816	
Endrin Ketone	ND	Ui	1.6	1.6	1	02/18/11	03/19/11	KWG1101816	
Methoxychlor	ND	Ui	4.9	4.9	1	02/18/11	03/19/11	KWG1101816	
Toxaphene	ND	Ui	440	440	1	02/18/11	03/19/11	KWG1101816	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	97	20-102	03/19/11	Acceptable
Decachlorobiphenyl	185	35-128	03/19/11	Outside Control Limits

† Analyte Comments

gamma-Chlordane	For this analyte (CAS Registry No. 5103-74-2), USEPA has corrected the name to be beta-Chlordane, also known as trans-Chlordane.

Comments:

Client:	Portland, City of	**Service Request:**	K1101263
Project:	NPDES Stormwater/W11B114	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Organochlorine Pesticides

Sample Name:	Method Blank	**Units:**	ng/L
Lab Code:	KWG1101816-11	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8081B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	0.50	0.21	1	02/18/11	03/19/11	KWG1101816	
beta-BHC	ND	U	0.50	0.41	1	02/18/11	03/19/11	KWG1101816	
gamma-BHC (Lindane)	ND	U	0.50	0.47	1	02/18/11	03/19/11	KWG1101816	
delta-BHC	ND	U	0.50	0.14	1	02/18/11	03/19/11	KWG1101816	
Heptachlor	ND	U	0.50	0.18	1	02/18/11	03/19/11	KWG1101816	
Aldrin	ND	U	0.50	0.33	1	02/18/11	03/19/11	KWG1101816	
Heptachlor Epoxide	ND	U	0.50	0.21	1	02/18/11	03/19/11	KWG1101816	
gamma-Chlordane†	ND	U	0.50	0.31	1	02/18/11	03/19/11	KWG1101816	
Endosulfan I	ND	U	0.50	0.25	1	02/18/11	03/19/11	KWG1101816	
alpha-Chlordane	ND	U	0.50	0.27	1	02/18/11	03/19/11	KWG1101816	
Dieldrin	ND	U	0.50	0.37	1	02/18/11	03/19/11	KWG1101816	
4,4'-DDE	ND	U	0.50	0.19	1	02/18/11	03/19/11	KWG1101816	
Endrin	ND	U	0.50	0.49	1	02/18/11	03/19/11	KWG1101816	
Endosulfan II	ND	U	0.50	0.35	1	02/18/11	03/19/11	KWG1101816	
4,4'-DDD	ND	U	0.50	0.21	1	02/18/11	03/19/11	KWG1101816	
Endrin Aldehyde	ND	U	0.50	0.21	1	02/18/11	03/19/11	KWG1101816	
Endosulfan Sulfate	ND	U	0.50	0.28	1	02/18/11	03/19/11	KWG1101816	
4,4'-DDT	ND	U	0.50	0.17	1	02/18/11	03/19/11	KWG1101816	
Endrin Ketone	ND	U	0.50	0.32	1	02/18/11	03/19/11	KWG1101816	
Methoxychlor	ND	U	1.0	0.44	1	02/18/11	03/19/11	KWG1101816	
Toxaphene	ND	U	25	17	1	02/18/11	03/19/11	KWG1101816	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	50	20-102	03/19/11	Acceptable
Decachlorobiphenyl	97	35-128	03/19/11	Acceptable

† Analyte Comments

gamma-Chlordane	For this analyte (CAS Registry No. 5103-74-2), USEPA has corrected the name to be beta-Chlordane, also known as trans-Chlordane.

Comments:

Client: Portland, City of
Project: NPDES Stormwater/W11B114
Sample Matrix: Water

Service Request: K1101263

Surrogate Recovery Summary
Organochlorine Pesticides

Extraction Method: EPA 3535A
Analysis Method: 8081B

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2	
W11B114-01	K1101263-001	97	185	*
Method Blank	KWG1101816-11	50	97	
Lab Control Sample	KWG1101816-3	46	93	
Duplicate Lab Control Sample	KWG1101816-4	45	89	

Surrogate Recovery Control Limits (%)

Sur1 =	Tetrachloro-m-xylene	20-102
Sur2 =	Decachlorobiphenyl	35-128

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: Portland, City of
Project: NPDES Stormwater/W11B114
Sample Matrix: Water

Service Request: K1101263
Date Extracted: 02/18/2011
Date Analyzed: 03/19/2011

Lab Control Spike/Duplicate Lab Control Spike Summary
Organochlorine Pesticides

Extraction Method: EPA 3535A
Analysis Method: 8081B

Units: ng/L
Basis: NA
Level: Low
Extraction Lot: KWG1101816

	Lab Control Sample KWG1101816-3 Lab Control Spike			Duplicate Lab Control Sample KWG1101816-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
alpha-BHC	6.32	10.0	63	5.81	10.0	58	36-122	8	30
beta-BHC	6.87	10.0	69	6.50	10.0	65	42-125	6	30
gamma-BHC (Lindane)	6.56	10.0	66	6.14	10.0	61	44-117	7	30
delta-BHC	6.87	10.0	69	6.53	10.0	65	48-123	5	30
Heptachlor	6.18	10.0	62	5.73	10.0	57	40-115	8	30
Aldrin	5.21	10.0	52	4.70	10.0	47	10-102	10	30
Heptachlor Epoxide	6.10	10.0	61	5.93	10.0	59	49-109	3	30
gamma-Chlordane	6.05	10.0	61	5.74	10.0	57	47-113	5	30
Endosulfan I	5.99	10.0	60	5.82	10.0	58	35-115	3	30
alpha-Chlordane	6.11	10.0	61	5.67	10.0	57	45-115	7	30
Dieldrin	6.27	10.0	63	5.53	10.0	55	50-115	13	30
4,4'-DDE	10.4	10.0	104	10.2	10.0	102	41-116	2	30
Endrin	5.48	10.0	55	5.98	10.0	60	48-126	9	30
Endosulfan II	6.54	10.0	65	6.63	10.0	66	28-128	1	30
4,4'-DDD	6.93	10.0	69	7.25	10.0	72	33-132	4	30
Endrin Aldehyde	5.11	10.0	51	5.39	10.0	54	27-104	5	30
Endosulfan Sulfate	6.14	10.0	61	5.92	10.0	59	38-118	4	30
4,4'-DDT	6.75	10.0	68	7.00	10.0	70	42-143	4	30
Endrin Ketone	6.95	10.0	70	7.03	10.0	70	30-124	1	30
Methoxychlor	7.56	10.0	76	9.08	10.0	91	43-143	18	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: Portland, City of
Project: NPDES Stormwater/W11B114
Sample Matrix: Water

Service Request: K1101263
Date Collected: 02/12/2011
Date Received: 02/15/2011

Semi-Volatile Organic Compounds by GC/MS

Sample Name: W11B114-01
Lab Code: K1101263-001

Units: ug/L
Basis: NA

Extraction Method: EPA 3520C
Analysis Method: 8270C

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	1.1	0.19	5	02/16/11	02/22/11	KWG1101467	
Phenol	ND	U	2.7	0.33	5	02/16/11	02/22/11	KWG1101467	
2-Chlorophenol	ND	U	2.7	0.29	5	02/16/11	02/22/11	KWG1101467	
1,3-Dichlorobenzene	ND	U	1.1	0.11	5	02/16/11	02/22/11	KWG1101467	
1,4-Dichlorobenzene	ND	U	1.1	0.16	5	02/16/11	02/22/11	KWG1101467	
1,2-Dichlorobenzene	ND	U	1.1	0.12	5	02/16/11	02/22/11	KWG1101467	
Benzyl Alcohol	ND	U	2.7	0.39	5	02/16/11	02/22/11	KWG1101467	
Bis(2-chloroisopropyl) Ether	ND	U	1.1	0.14	5	02/16/11	02/22/11	KWG1101467	
2-Methylphenol	ND	U	2.7	0.58	5	02/16/11	02/22/11	KWG1101467	
Hexachloroethane	ND	U	1.1	0.13	5	02/16/11	02/22/11	KWG1101467	
N-Nitrosodi-n-propylamine	ND	U	1.1	0.20	5	02/16/11	02/22/11	KWG1101467	
4-Methylphenol†	ND	U	2.7	0.63	5	02/16/11	02/22/11	KWG1101467	
Nitrobenzene	ND	U	1.1	0.15	5	02/16/11	02/22/11	KWG1101467	
Isophorone	ND	U	1.1	0.084	5	02/16/11	02/22/11	KWG1101467	
2-Nitrophenol	ND	U	2.7	0.33	5	02/16/11	02/22/11	KWG1101467	
2,4-Dimethylphenol	ND	U	21	12	5	02/16/11	02/22/11	KWG1101467	
Bis(2-chloroethoxy)methane	ND	U	1.1	0.13	5	02/16/11	02/22/11	KWG1101467	
2,4-Dichlorophenol	ND	U	2.7	0.25	5	02/16/11	02/22/11	KWG1101467	
Benzoic Acid	ND	U	27	5.8	5	02/16/11	02/22/11	KWG1101467	
1,2,4-Trichlorobenzene	ND	U	1.1	0.084	5	02/16/11	02/22/11	KWG1101467	
Naphthalene	ND	U	1.1	0.12	5	02/16/11	02/22/11	KWG1101467	
4-Chloroaniline	ND	U	1.1	0.14	5	02/16/11	02/22/11	KWG1101467	
Hexachlorobutadiene	ND	U	1.1	0.15	5	02/16/11	02/22/11	KWG1101467	
4-Chloro-3-methylphenol	ND	U	2.7	0.20	5	02/16/11	02/22/11	KWG1101467	
2-Methylnaphthalene	ND	U	1.1	0.14	5	02/16/11	02/22/11	KWG1101467	
Hexachlorocyclopentadiene	ND	U	5.3	0.99	5	02/16/11	02/22/11	KWG1101467	
2,4,6-Trichlorophenol	ND	U	2.7	0.31	5	02/16/11	02/22/11	KWG1101467	
2,4,5-Trichlorophenol	ND	U	2.7	0.17	5	02/16/11	02/22/11	KWG1101467	
2-Chloronaphthalene	ND	U	1.1	0.22	5	02/16/11	02/22/11	KWG1101467	
2-Nitroaniline	ND	U	1.1	0.13	5	02/16/11	02/22/11	KWG1101467	
Acenaphthylene	ND	U	1.1	0.079	5	02/16/11	02/22/11	KWG1101467	
Dimethyl Phthalate	**2.2**	D	1.1	0.11	5	02/16/11	02/22/11	KWG1101467	
2,6-Dinitrotoluene	ND	U	1.1	0.18	5	02/16/11	02/22/11	KWG1101467	

Comments:

Client: Portland, City of
Project: NPDES Stormwater/W11B114
Sample Matrix: Water

Service Request: K1101263
Date Collected: 02/12/2011
Date Received: 02/15/2011

Semi-Volatile Organic Compounds by GC/MS

Sample Name: W11B114-01
Lab Code: K1101263-001

Units: ug/L
Basis: NA

Extraction Method: EPA 3520C
Analysis Method: 8270C

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	ND	U	1.1	0.14	5	02/16/11	02/22/11	KWG1101467	
3-Nitroaniline	ND	U	5.3	0.16	5	02/16/11	02/22/11	KWG1101467	
2,4-Dinitrophenol	ND	U	21	0.89	5	02/16/11	02/22/11	KWG1101467	
Dibenzofuran	ND	U	1.1	0.094	5	02/16/11	02/22/11	KWG1101467	
4-Nitrophenol	ND	U	11	1.5	5	02/16/11	02/22/11	KWG1101467	
2,4-Dinitrotoluene	ND	U	1.1	0.094	5	02/16/11	02/22/11	KWG1101467	
Fluorene	ND	U	1.1	0.15	5	02/16/11	02/22/11	KWG1101467	
4-Chlorophenyl Phenyl Ether	ND	U	1.1	0.15	5	02/16/11	02/22/11	KWG1101467	
Diethyl Phthalate	**0.24**	JD	1.1	0.063	5	02/16/11	02/22/11	KWG1101467	
4-Nitroaniline	ND	U	5.3	0.099	5	02/16/11	02/22/11	KWG1101467	
2-Methyl-4,6-dinitrophenol	ND	U	11	0.14	5	02/16/11	02/22/11	KWG1101467	
N-Nitrosodiphenylamine	ND	U	1.1	0.25	5	02/16/11	02/22/11	KWG1101467	
4-Bromophenyl Phenyl Ether	ND	U	1.1	0.14	5	02/16/11	02/22/11	KWG1101467	
Hexachlorobenzene	ND	U	1.1	0.12	5	02/16/11	02/22/11	KWG1101467	
Pentachlorophenol	ND	U	5.3	1.8	5	02/16/11	02/22/11	KWG1101467	
Phenanthrene	**0.19**	JD	1.1	0.12	5	02/16/11	02/22/11	KWG1101467	
Anthracene	ND	U	1.1	0.13	5	02/16/11	02/22/11	KWG1101467	
Di-n-butyl Phthalate	**0.44**	JD	1.1	0.12	5	02/16/11	02/22/11	KWG1101467	
Fluoranthene	**0.23**	JD	1.1	0.11	5	02/16/11	02/22/11	KWG1101467	
Pyrene	**0.33**	JD	1.1	0.099	5	02/16/11	02/22/11	KWG1101467	
Butyl Benzyl Phthalate	**0.58**	JD	1.1	0.094	5	02/16/11	02/22/11	KWG1101467	
3,3'-Dichlorobenzidine	ND	U	11	2.3	5	02/16/11	02/22/11	KWG1101467	
Benz(a)anthracene	**0.15**	JD	1.1	0.094	5	02/16/11	02/22/11	KWG1101467	
Chrysene	**0.23**	JD	1.1	0.15	5	02/16/11	02/22/11	KWG1101467	
Bis(2-ethylhexyl) Phthalate	**2.0**	JD	5.3	0.68	5	02/16/11	02/22/11	KWG1101467	
Di-n-octyl Phthalate	ND	U	1.1	0.094	5	02/16/11	02/22/11	KWG1101467	
Benzo(b)fluoranthene	ND	U	1.1	0.089	5	02/16/11	02/22/11	KWG1101467	
Benzo(k)fluoranthene	ND	U	1.1	0.13	5	02/16/11	02/22/11	KWG1101467	
Benzo(a)pyrene	ND	U	1.1	0.17	5	02/16/11	02/22/11	KWG1101467	
Indeno(1,2,3-cd)pyrene	ND	U	1.1	0.11	5	02/16/11	02/22/11	KWG1101467	
Dibenz(a,h)anthracene	ND	U	1.1	0.089	5	02/16/11	02/22/11	KWG1101467	
Benzo(g,h,i)perylene	ND	U	1.1	0.099	5	02/16/11	02/22/11	KWG1101467	

Comments:

Client:	Portland, City of	**Service Request:**	K1101263
Project:	NPDES Stormwater/W11B114	**Date Collected:**	02/12/2011
Sample Matrix:	Water	**Date Received:**	02/15/2011

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	W11B114-01	**Units:**	ug/L
Lab Code:	K1101263-001	**Basis:**	NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	68	12-109	02/22/11	Acceptable
Phenol-d6	71	23-106	02/22/11	Acceptable
Nitrobenzene-d5	73	26-110	02/22/11	Acceptable
2-Fluorobiphenyl	64	31-94	02/22/11	Acceptable
2,4,6-Tribromophenol	78	23-127	02/22/11	Acceptable
Terphenyl-d14	60	40-127	02/22/11	Acceptable

† Analyte Comments

4-Methylphenol	This analyte cannot be separated from 3-Methylphenol.

Comments:

Client: Portland, City of
Project: NPDES Stormwater/W11B114
Sample Matrix: Water

Service Request: K1101263
Date Collected: NA
Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KWG1101467-3

Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	0.20	0.035	1	02/16/11	02/22/11	KWG1101467	
Phenol	ND	U	0.50	0.063	1	02/16/11	02/22/11	KWG1101467	
2-Chlorophenol	ND	U	0.50	0.054	1	02/16/11	02/22/11	KWG1101467	
1,3-Dichlorobenzene	ND	U	0.20	0.021	1	02/16/11	02/22/11	KWG1101467	
1,4-Dichlorobenzene	ND	U	0.20	0.029	1	02/16/11	02/22/11	KWG1101467	
1,2-Dichlorobenzene	ND	U	0.20	0.022	1	02/16/11	02/22/11	KWG1101467	
Benzyl Alcohol	ND	U	0.50	0.073	1	02/16/11	02/22/11	KWG1101467	
Bis(2-chloroisopropyl) Ether	ND	U	0.20	0.026	1	02/16/11	02/22/11	KWG1101467	
2-Methylphenol	ND	U	0.50	0.11	1	02/16/11	02/22/11	KWG1101467	
Hexachloroethane	ND	U	0.20	0.024	1	02/16/11	02/22/11	KWG1101467	
N-Nitrosodi-n-propylamine	ND	U	0.20	0.037	1	02/16/11	02/22/11	KWG1101467	
4-Methylphenol†	ND	U	0.50	0.12	1	02/16/11	02/22/11	KWG1101467	
Nitrobenzene	ND	U	0.20	0.028	1	02/16/11	02/22/11	KWG1101467	
Isophorone	ND	U	0.20	0.016	1	02/16/11	02/22/11	KWG1101467	
2-Nitrophenol	ND	U	0.50	0.063	1	02/16/11	02/22/11	KWG1101467	
2,4-Dimethylphenol	ND	U	4.0	2.2	1	02/16/11	02/22/11	KWG1101467	
Bis(2-chloroethoxy)methane	ND	U	0.20	0.024	1	02/16/11	02/22/11	KWG1101467	
2,4-Dichlorophenol	ND	U	0.50	0.047	1	02/16/11	02/22/11	KWG1101467	
Benzoic Acid	ND	U	5.0	1.1	1	02/16/11	02/22/11	KWG1101467	
1,2,4-Trichlorobenzene	ND	U	0.20	0.016	1	02/16/11	02/22/11	KWG1101467	
Naphthalene	ND	U	0.20	0.022	1	02/16/11	02/22/11	KWG1101467	
4-Chloroaniline	ND	U	0.20	0.025	1	02/16/11	02/22/11	KWG1101467	
Hexachlorobutadiene	ND	U	0.20	0.027	1	02/16/11	02/22/11	KWG1101467	
4-Chloro-3-methylphenol	ND	U	0.50	0.037	1	02/16/11	02/22/11	KWG1101467	
2-Methylnaphthalene	ND	U	0.20	0.026	1	02/16/11	02/22/11	KWG1101467	
Hexachlorocyclopentadiene	ND	U	0.99	0.19	1	02/16/11	02/22/11	KWG1101467	
2,4,6-Trichlorophenol	ND	U	0.50	0.058	1	02/16/11	02/22/11	KWG1101467	
2,4,5-Trichlorophenol	ND	U	0.50	0.031	1	02/16/11	02/22/11	KWG1101467	
2-Chloronaphthalene	ND	U	0.20	0.041	1	02/16/11	02/22/11	KWG1101467	
2-Nitroaniline	ND	U	0.20	0.024	1	02/16/11	02/22/11	KWG1101467	
Acenaphthylene	ND	U	0.20	0.015	1	02/16/11	02/22/11	KWG1101467	
Dimethyl Phthalate	ND	U	0.20	0.021	1	02/16/11	02/22/11	KWG1101467	
2,6-Dinitrotoluene	ND	U	0.20	0.033	1	02/16/11	02/22/11	KWG1101467	

Comments:

Client: Portland, City of
Project: NPDES Stormwater/W11B114
Sample Matrix: Water

Service Request: K1101263
Date Collected: NA
Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KWG1101467-3

Units: ug/L
Basis: NA

Extraction Method: EPA 3520C
Analysis Method: 8270C

Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	ND	U	0.20	0.026	1	02/16/11	02/22/11	KWG1101467	
3-Nitroaniline	ND	U	0.99	0.029	1	02/16/11	02/22/11	KWG1101467	
2,4-Dinitrophenol	ND	U	4.0	0.17	1	02/16/11	02/22/11	KWG1101467	
Dibenzofuran	ND	U	0.20	0.018	1	02/16/11	02/22/11	KWG1101467	
4-Nitrophenol	ND	U	2.0	0.28	1	02/16/11	02/22/11	KWG1101467	
2,4-Dinitrotoluene	ND	U	0.20	0.018	1	02/16/11	02/22/11	KWG1101467	
Fluorene	ND	U	0.20	0.027	1	02/16/11	02/22/11	KWG1101467	
4-Chlorophenyl Phenyl Ether	ND	U	0.20	0.027	1	02/16/11	02/22/11	KWG1101467	
Diethyl Phthalate	**0.023**	J	0.20	0.012	1	02/16/11	02/22/11	KWG1101467	
4-Nitroaniline	ND	U	0.99	0.019	1	02/16/11	02/22/11	KWG1101467	
2-Methyl-4,6-dinitrophenol	ND	U	2.0	0.025	1	02/16/11	02/22/11	KWG1101467	
N-Nitrosodiphenylamine	ND	U	0.20	0.048	1	02/16/11	02/22/11	KWG1101467	
4-Bromophenyl Phenyl Ether	ND	U	0.20	0.026	1	02/16/11	02/22/11	KWG1101467	
Hexachlorobenzene	ND	U	0.20	0.022	1	02/16/11	02/22/11	KWG1101467	
Pentachlorophenol	ND	U	0.99	0.34	1	02/16/11	02/22/11	KWG1101467	
Phenanthrene	ND	U	0.20	0.022	1	02/16/11	02/22/11	KWG1101467	
Anthracene	ND	U	0.20	0.024	1	02/16/11	02/22/11	KWG1101467	
Di-n-butyl Phthalate	**0.037**	J	0.20	0.023	1	02/16/11	02/22/11	KWG1101467	
Fluoranthene	ND	U	0.20	0.020	1	02/16/11	02/22/11	KWG1101467	
Pyrene	ND	U	0.20	0.019	1	02/16/11	02/22/11	KWG1101467	
Butyl Benzyl Phthalate	**0.037**	J	0.20	0.018	1	02/16/11	02/22/11	KWG1101467	
3,3'-Dichlorobenzidine	ND	U	2.0	0.43	1	02/16/11	02/22/11	KWG1101467	
Benz(a)anthracene	ND	U	0.20	0.018	1	02/16/11	02/22/11	KWG1101467	
Chrysene	ND	U	0.20	0.028	1	02/16/11	02/22/11	KWG1101467	
Bis(2-ethylhexyl) Phthalate	ND	U	0.99	0.13	1	02/16/11	02/22/11	KWG1101467	
Di-n-octyl Phthalate	ND	U	0.20	0.018	1	02/16/11	02/22/11	KWG1101467	
Benzo(b)fluoranthene	ND	U	0.20	0.017	1	02/16/11	02/22/11	KWG1101467	
Benzo(k)fluoranthene	ND	U	0.20	0.024	1	02/16/11	02/22/11	KWG1101467	
Benzo(a)pyrene	ND	U	0.20	0.031	1	02/16/11	02/22/11	KWG1101467	
Indeno(1,2,3-cd)pyrene	ND	U	0.20	0.021	1	02/16/11	02/22/11	KWG1101467	
Dibenz(a,h)anthracene	ND	U	0.20	0.017	1	02/16/11	02/22/11	KWG1101467	
Benzo(g,h,i)perylene	ND	U	0.20	0.019	1	02/16/11	02/22/11	KWG1101467	

Comments:

Client:	Portland, City of	**Service Request:**	K1101263
Project:	NPDES Stormwater/W11B114	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name:	Method Blank	**Units:**	ug/L
Lab Code:	KWG1101467-3	**Basis:**	NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	72	12-109	02/22/11	Acceptable
Phenol-d6	76	23-106	02/22/11	Acceptable
Nitrobenzene-d5	77	26-110	02/22/11	Acceptable
2-Fluorobiphenyl	68	31-94	02/22/11	Acceptable
2,4,6-Tribromophenol	75	23-127	02/22/11	Acceptable
Terphenyl-d14	100	40-127	02/22/11	Acceptable

† Analyte Comments

4-Methylphenol	This analyte cannot be separated from 3-Methylphenol.

Comments:

Client: Portland, City of
Project: NPDES Stormwater/W11B114
Sample Matrix: Water

Service Request: K1101263

Surrogate Recovery Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3	Sur4	Sur5	Sur6
W11B114-01	K1101263-001	68 D	71 D	73 D	64 D	78 D	60 D
Method Blank	KWG1101467-3	72	76	77	68	75	100
Lab Control Sample	KWG1101467-1	74	75	74	61	77	89
Duplicate Lab Control Sample	KWG1101467-2	84	86	85	71	85	99

Surrogate Recovery Control Limits (%)

Sur1 = 2-Fluorophenol	12-109	Sur5 = 2,4,6-Tribromophenol	23-127
Sur2 = Phenol-d6	23-106	Sur6 = Terphenyl-d14	40-127
Sur3 = Nitrobenzene-d5	26-110		
Sur4 = 2-Fluorobiphenyl	31-94		

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

Client: Portland, City of
Project: NPDES Stormwater/W11B114
Sample Matrix: Water

Service Request: K1101263
Date Extracted: 02/16/2011
Date Analyzed: 02/22/2011

Lab Control Spike/Duplicate Lab Control Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1101467

	Lab Control Sample KWG1101467-1 Lab Control Spike			Duplicate Lab Control Sample KWG1101467-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Bis(2-chloroethyl) Ether	3.73	5.00	75	4.06	5.00	81	37-109	8	30
Phenol	3.82	5.00	76	4.12	5.00	82	35-114	8	30
2-Chlorophenol	4.02	5.00	80	4.25	5.00	85	37-110	5	30
1,3-Dichlorobenzene	1.90	5.00	38	2.21	5.00	44	14-68	15	30
1,4-Dichlorobenzene	1.94	5.00	39	2.33	5.00	47	15-71	18	30
1,2-Dichlorobenzene	2.23	5.00	45	2.56	5.00	51	17-76	14	30
Benzyl Alcohol	3.88	5.00	78	4.21	5.00	84	32-115	8	30
Bis(2-chloroisopropyl) Ether	3.43	5.00	69	3.70	5.00	74	29-110	8	30
2-Methylphenol	3.49	5.00	70	3.62	5.00	72	21-109	3	30
Hexachloroethane	1.39	5.00	28	1.49	5.00	30	10-59	7	30
N-Nitrosodi-n-propylamine	3.61	5.00	72	3.90	5.00	78	32-112	8	30
4-Methylphenol	3.57	5.00	71	3.66	5.00	73	19-114	2	30
Nitrobenzene	3.65	5.00	73	3.87	5.00	77	36-110	6	30
Isophorone	3.49	5.00	70	3.65	5.00	73	38-106	4	30
2-Nitrophenol	3.89	5.00	78	4.31	5.00	86	41-112	10	30
2,4-Dimethylphenol	2.11	5.00	42	1.79	5.00	36	10-106	16	30
Bis(2-chloroethoxy)methane	3.71	5.00	74	3.99	5.00	80	39-109	7	30
2,4-Dichlorophenol	3.80	5.00	76	4.24	5.00	85	37-111	11	30
Benzoic Acid	3.36	15.0	22	2.52	15.0	17	10-83	29	30
1,2,4-Trichlorobenzene	2.06	5.00	41	2.47	5.00	49	18-76	18	30
Naphthalene	2.88	5.00	58	3.37	5.00	67	31-94	16	30
4-Chloroaniline	2.95	5.00	59	2.88	5.00	58	14-108	2	30
Hexachlorobutadiene	1.29	5.00	26	1.29	5.00	26	10-59	0	30
4-Chloro-3-methylphenol	3.78	5.00	76	3.91	5.00	78	33-115	3	30
2-Methylnaphthalene	2.83	5.00	57	3.29	5.00	66	29-92	15	30
Hexachlorocyclopentadiene	0.543	5.00	11	0.618	5.00	12	10-37	13	30
2,4,6-Trichlorophenol	3.77	5.00	75	3.88	5.00	78	36-113	3	30
2,4,5-Trichlorophenol	3.88	5.00	78	4.03	5.00	81	41-112	4	30
2-Chloronaphthalene	2.69	5.00	54	3.20	5.00	64	31-95	17	30
2-Nitroaniline	3.57	5.00	71	3.65	5.00	73	40-118	2	30
Acenaphthylene	3.50	5.00	70	3.83	5.00	77	36-107	9	30
Dimethyl Phthalate	3.84	5.00	77	3.98	5.00	80	46-111	4	30
2,6-Dinitrotoluene	4.00	5.00	80	4.31	5.00	86	44-116	8	30
Acenaphthene	3.12	5.00	62	3.51	5.00	70	36-101	12	30
3-Nitroaniline	3.80	5.00	76	3.85	5.00	77	34-118	1	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Portland, City of	**Service Request:**	K1101263
Project:	NPDES Stormwater/W11B114	**Date Extracted:**	02/16/2011
Sample Matrix:	Water	**Date Analyzed:**	02/22/2011

Lab Control Spike/Duplicate Lab Control Spike Summary
Semi-Volatile Organic Compounds by GC/MS

Extraction Method:	EPA 3520C	**Units:**	ug/L
Analysis Method:	8270C	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1101467

	Lab Control Sample KWG1101467-1 Lab Control Spike			Duplicate Lab Control Sample KWG1101467-2 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
2,4-Dinitrophenol	3.04	5.00	61	2.82	5.00	56	10-116	7	30
Dibenzofuran	3.28	5.00	66	3.62	5.00	72	37-103	10	30
4-Nitrophenol	3.33	5.00	67	3.50	5.00	70	38-125	5	30
2,4-Dinitrotoluene	3.90	5.00	78	4.08	5.00	82	47-119	4	30
Fluorene	3.39	5.00	68	3.70	5.00	74	39-106	9	30
4-Chlorophenyl Phenyl Ether	3.22	5.00	64	3.56	5.00	71	37-103	10	30
Diethyl Phthalate	3.85	5.00	77	3.95	5.00	79	47-113	3	30
4-Nitroaniline	3.78	5.00	76	3.91	5.00	78	38-119	3	30
2-Methyl-4,6-dinitrophenol	3.57	5.00	71	3.65	5.00	73	10-125	2	30
N-Nitrosodiphenylamine	3.53	5.00	71	3.67	5.00	73	36-111	4	30
4-Bromophenyl Phenyl Ether	3.48	5.00	70	3.71	5.00	74	42-105	6	30
Hexachlorobenzene	3.45	5.00	69	3.68	5.00	74	42-102	7	30
Pentachlorophenol	3.65	5.00	73	3.72	5.00	74	10-119	2	30
Phenanthrene	3.62	5.00	72	3.86	5.00	77	45-104	7	30
Anthracene	3.58	5.00	72	3.86	5.00	77	41-103	8	30
Di-n-butyl Phthalate	3.87	5.00	77	4.05	5.00	81	44-126	5	30
Fluoranthene	3.79	5.00	76	3.84	5.00	77	46-109	1	30
Pyrene	3.95	5.00	79	4.03	5.00	81	46-108	2	30
Butyl Benzyl Phthalate	4.00	5.00	80	4.17	5.00	83	48-115	4	30
3,3'-Dichlorobenzidine	3.24	5.00	65	0.604	5.00	12 *	13-108	137 *	30
Benz(a)anthracene	3.81	5.00	76	3.88	5.00	78	47-105	2	30
Chrysene	3.90	5.00	78	4.05	5.00	81	49-105	4	30
Bis(2-ethylhexyl) Phthalate	3.99	5.00	80	4.04	5.00	81	45-122	1	30
Di-n-octyl Phthalate	3.75	5.00	75	3.86	5.00	77	48-119	3	30
Benzo(b)fluoranthene	3.97	5.00	79	4.05	5.00	81	48-108	2	30
Benzo(k)fluoranthene	3.97	5.00	79	4.08	5.00	82	49-107	3	30
Benzo(a)pyrene	3.96	5.00	79	4.02	5.00	80	42-109	2	30
Indeno(1,2,3-cd)pyrene	4.10	5.00	82	4.19	5.00	84	47-111	2	30
Dibenz(a,h)anthracene	4.03	5.00	81	4.11	5.00	82	47-110	2	30
Benzo(g,h,i)perylene	4.00	5.00	80	4.06	5.00	81	47-109	1	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Columbia Analytical Services™ 1317 S. 13th Avenue, Kelso, WA 98626 360.577.7222 360.636.1068 (fax) www.caslab.com

March 25, 2011 Analytical Report for Service Request No: K1101263

Jennifer Shackelford
City of Portland
6543 N. Burlington Ave
Portland, OR 97203

RE: NPDES Stormwater/W11B114

Dear Jennifer:

Enclosed are the results of the sample submitted to our laboratory on February 15, 2011. For your reference, these analyses have been assigned our service request number K1101263.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3364. You may also contact me via Email at HHolmes@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Howard Holmes
Project Chemist

HH/dlm

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value that was detected outside the quantitation range.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	In accordance with the 2007 EPA Methods Update Rule published in the Federal Register, the holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value that was detected outside the quantitation range.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value that was detected outside the quantitation range.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition*: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

Columbia Analytical Services, Inc.
Kelso, WA
State Certifications, Accreditations, and Licenses

Agency	Number
Alaska DEC UST	UST-040
Arizona DHS	AZ0339
Arkansas - DEQ	88-0637
California DHS	2286
Florida DOH	E87412
Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
Louisiana DEQ	3016
Louisiana DHH	LA050010
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon - DEQ	WA100010
South Carolina DHEC	61002
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	City of Portland	**Service Request No.:**	K1101263
Project:	NPDES Stormwater	**Date Received:**	2/15/11
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Laboratory/Duplicate Laboratory Control Sample (LCS/DLCS).

Sample Receipt

One water sample was received for analysis at Columbia Analytical Services on 2/15/11. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Organochlorine Pesticides by EPA Method 8081A

Second Source Exceptions:
The analysis of Chlorinated Pesticides by EPA 8081 requires the use of dual column confirmation. When the Initial Calibration Verification (ICV) criteria are met for both columns, the lower of the two sample results is generally reported. The data quality was not affected. No further corrective action was necessary.

Calibration Verification Exceptions:
The analysis of Chlorinated Pesticides by EPA 8081 requires the use of dual column confirmation. When the Continuing Calibration Verification (CCV) criterion is met for both columns, the lower of the two sample results is generally reported. The primary evaluation criteria were not met on the confirmation column for 4,4'-DDT and Methoxychlor in CCV 03180055. The results were reported from the column with an acceptable CCV. The data quality was not affected. No further corrective action was necessary.

Surrogate Exceptions:
The control criteria were exceeded for Decachlorobiphenyl in sample W11B114-01 due to matrix interference. The presence of non-target background components prevented adequate resolution of the surrogate. Accurate quantitation was not possible. The other surrogate, Tetrachloro-m-xylene, was well within control limits, indicating the integrity of the extraction was intact. No further corrective action was appropriate.

Elevated Detection Limits:
The detection limit was elevated for a few analytes in sample W11B114-01. The chromatogram indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compounds at the normal limit. The results were flagged to indicate the matrix interference.

No other anomalies associated with the analysis of these samples were observed.

Approved by Howard Holmes **Date** 3-25-11

Semivolatile Organic Compounds by EPA Method 8270C

Lab Control Sample Exceptions:
The lower advisory criterion was exceeded by 1% for 3,3'-Dichlorobenzidine in the duplicate Laboratory Control Samples (LCS/DLCS) KWG1101467-1 and KWG1101467-2. As per the CAS/Kelso Standard Operating Procedure (SOP) for this method, these compounds are not included in the subset of analytes used to control the analysis. The recovery information reported for these analytes is for advisory purposes only (i.e. to provide additional detail related to the performance of each individual compound). No further corrective action was required.

Relative Percent Difference Exceptions:
The Relative Percent Difference (RPD) criterion for 3,3'-Dichlorobenzidine in the duplicate Laboratory Control Samples (LCS/DLCS) KWG1101467-1 and KWG1101467-2 was not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

Elevated Detection Limits:
The detection limits were elevated in sample W11B114-01. The sample extract was diluted prior to instrumental analysis due to relatively high levels of non-target background components. Clean-up of the extract was performed within the scope of the method, but did not eliminate enough of the background components to prevent dilution. A semi-quantitative screen was performed prior to final analysis. The results of the screening indicated the need to perform a dilution.

Sample Notes and Discussion:
Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD). A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

No other anomalies associated with the analysis of these samples were observed.

Approved by Howard Holmes **Date** 3-25-11

K1101203

SUBCONTRACT ORDER

City of Portland Water Pollution Control Lab

W11B114

SENDING LABORATORY:

City of Portland Water Pollution Control Lab
6543 N. Burlington Ave
Portland, OR 97203
Phone: 503-823-5600
Fax: 503-823-5656
Invoice To: Charles Lytle

RECEIVING LABORATORY:

Columbia Analytical Services
1317 S. 13th Avenue
Kelso, WA 98626
Phone :(360) 577-7222
Fax: (360) 636-1068

WPCL Project Name
NPDES Stormwater

TURNAROUND REQUEST
[X] Standard
[ ] Rush _ day(s)

Analysis	Due	Expires	Laboratory ID	Comments
Sample ID: W11B114-01	**Water**	**Sampled: 02/12/11 22:32**		
Out-Semivol 8270 LL (CAS)	03/01/11 17:00	02/19/11 22:32		
Out-Pesticides Chlor LL (CAS)	03/01/11 17:00	02/19/11 22:32		
Containers Supplied:				
G amber 1L (D)	G amber 1L (E)			

Released By	Date	Received By	Date
	2/15/11 @ 855		2-15-11 8:55
Released By	Date	Received By	Date
			2/15/11 1230

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC H·H

Client / Project: City of Portland Service Request *K11* 1203

Received: 2/15/11 Opened: 2/15/11 By: CM Unloaded: 2/15/11 By: CM

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* (*Courier*) *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y (N) If yes, how many and where? _____
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID NA	Tracking Number (NA)	Filed
16.1	—	293	W11B114		

7. Packing material used. *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Sleeves* *Other* None
8. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA (Y) N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* (NA) Y N
14. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
15. Was C12/Res negative? NA (Y) N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

Client:	Portland, City of	**Service Request:**	K1101263
Project:	NPDES Stormwater/W11B114	**Date Collected:**	02/12/2011
Sample Matrix:	Water	**Date Received:**	02/15/2011

Organochlorine Pesticides

Sample Name:	W11B114-01	**Units:**	ng/L
Lab Code:	K1101263-001	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8081B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	Ui	1.2	1.2	1	02/18/11	03/19/11	KWG1101816	
beta-BHC	ND	Ui	1.9	1.9	1	02/18/11	03/19/11	KWG1101816	
gamma-BHC (Lindane)	ND	Ui	1.6	1.6	1	02/18/11	03/19/11	KWG1101816	
delta-BHC	**6.8**	P	0.50	0.14	1	02/18/11	03/19/11	KWG1101816	
Heptachlor	**5.0**	P	0.50	0.18	1	02/18/11	03/19/11	KWG1101816	
Aldrin	**1.0**	P	0.50	0.33	1	02/18/11	03/19/11	KWG1101816	
Heptachlor Epoxide	ND	Ui	3.3	3.3	1	02/18/11	03/19/11	KWG1101816	
gamma-Chlordane†	ND	Ui	0.86	0.86	1	02/18/11	03/19/11	KWG1101816	
Endosulfan I	ND	Ui	1.1	1.1	1	02/18/11	03/19/11	KWG1101816	
alpha-Chlordane	ND	Ui	3.0	3.0	1	02/18/11	03/19/11	KWG1101816	
Dieldrin	ND	Ui	2.3	2.3	1	02/18/11	03/19/11	KWG1101816	
4,4'-DDE	ND	Ui	5.4	5.4	1	02/18/11	03/19/11	KWG1101816	
Endrin	**14**		0.50	0.49	1	02/18/11	03/19/11	KWG1101816	
Endosulfan II	ND	Ui	1.7	1.7	1	02/18/11	03/19/11	KWG1101816	
4,4'-DDD	ND	Ui	4.9	4.9	1	02/18/11	03/19/11	KWG1101816	
Endrin Aldehyde	ND	Ui	5.5	5.5	1	02/18/11	03/19/11	KWG1101816	
Endosulfan Sulfate	ND	Ui	1.6	1.6	1	02/18/11	03/19/11	KWG1101816	
4,4'-DDT	ND	Ui	15	15	1	02/18/11	03/19/11	KWG1101816	
Endrin Ketone	ND	Ui	1.6	1.6	1	02/18/11	03/19/11	KWG1101816	
Methoxychlor	ND	Ui	4.9	4.9	1	02/18/11	03/19/11	KWG1101816	
Toxaphene	ND	Ui	440	440	1	02/18/11	03/19/11	KWG1101816	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	97	20-102	03/19/11	Acceptable
Decachlorobiphenyl	185	35-128	03/19/11	Outside Control Limits

† Analyte Comments

gamma-Chlordane	For this analyte (CAS Registry No. 5103-74-2), USEPA has corrected the name to be beta-Chlordane, also known as trans-Chlordane.

Comments:

Client:	Portland, City of	**Service Request:**	K1101263
Project:	NPDES Stormwater/W11B114	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA

Organochlorine Pesticides

Sample Name:	Method Blank	**Units:**	ng/L
Lab Code:	KWG1101816-11	**Basis:**	NA
Extraction Method:	EPA 3535A	**Level:**	Low
Analysis Method:	8081B		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	0.50	0.21	1	02/18/11	03/19/11	KWG1101816	
beta-BHC	ND	U	0.50	0.41	1	02/18/11	03/19/11	KWG1101816	
gamma-BHC (Lindane)	ND	U	0.50	0.47	1	02/18/11	03/19/11	KWG1101816	
delta-BHC	ND	U	0.50	0.14	1	02/18/11	03/19/11	KWG1101816	
Heptachlor	ND	U	0.50	0.18	1	02/18/11	03/19/11	KWG1101816	
Aldrin	ND	U	0.50	0.33	1	02/18/11	03/19/11	KWG1101816	
Heptachlor Epoxide	ND	U	0.50	0.21	1	02/18/11	03/19/11	KWG1101816	
gamma-Chlordane†	ND	U	0.50	0.31	1	02/18/11	03/19/11	KWG1101816	
Endosulfan I	ND	U	0.50	0.25	1	02/18/11	03/19/11	KWG1101816	
alpha-Chlordane	ND	U	0.50	0.27	1	02/18/11	03/19/11	KWG1101816	
Dieldrin	ND	U	0.50	0.37	1	02/18/11	03/19/11	KWG1101816	
4,4'-DDE	ND	U	0.50	0.19	1	02/18/11	03/19/11	KWG1101816	
Endrin	ND	U	0.50	0.49	1	02/18/11	03/19/11	KWG1101816	
Endosulfan II	ND	U	0.50	0.35	1	02/18/11	03/19/11	KWG1101816	
4,4'-DDD	ND	U	0.50	0.21	1	02/18/11	03/19/11	KWG1101816	
Endrin Aldehyde	ND	U	0.50	0.21	1	02/18/11	03/19/11	KWG1101816	
Endosulfan Sulfate	ND	U	0.50	0.28	1	02/18/11	03/19/11	KWG1101816	
4,4'-DDT	ND	U	0.50	0.17	1	02/18/11	03/19/11	KWG1101816	
Endrin Ketone	ND	U	0.50	0.32	1	02/18/11	03/19/11	KWG1101816	
Methoxychlor	ND	U	1.0	0.44	1	02/18/11	03/19/11	KWG1101816	
Toxaphene	ND	U	25	17	1	02/18/11	03/19/11	KWG1101816	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	50	20-102	03/19/11	Acceptable
Decachlorobiphenyl	97	35-128	03/19/11	Acceptable

† Analyte Comments

gamma-Chlordane	For this analyte (CAS Registry No. 5103-74-2), USEPA has corrected the name to be beta-Chlordane, also known as trans-Chlordane.

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Portland, City of
Project: NPDES Stormwater/W11B114
Sample Matrix: Water

Service Request: K1101263

Surrogate Recovery Summary
Organochlorine Pesticides

Extraction Method: EPA 3535A
Analysis Method: 8081B

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2	
W11B114-01	K1101263-001	97	185	*
Method Blank	KWG1101816-11	50	97	
Lab Control Sample	KWG1101816-3	46	93	
Duplicate Lab Control Sample	KWG1101816-4	45	89	

Surrogate Recovery Control Limits (%)

Sur1 =	Tetrachloro-m-xylene	20-102
Sur2 =	Decachlorobiphenyl	35-128

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

Client:	Portland, City of	**Service Request:**	K1101263
Project:	NPDES Stormwater/W11B114	**Date Extracted:**	02/18/2011
Sample Matrix:	Water	**Date Analyzed:**	03/19/2011

Lab Control Spike/Duplicate Lab Control Spike Summary
Organochlorine Pesticides

Extraction Method:	EPA 3535A	**Units:**	ng/L
Analysis Method:	8081B	**Basis:**	NA
		Level:	Low
		Extraction Lot:	KWG1101816

	Lab Control Sample KWG1101816-3 Lab Control Spike			Duplicate Lab Control Sample KWG1101816-4 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
alpha-BHC	6.32	10.0	63	5.81	10.0	58	36-122	8	30
beta-BHC	6.87	10.0	69	6.50	10.0	65	42-125	6	30
gamma-BHC (Lindane)	6.56	10.0	66	6.14	10.0	61	44-117	7	30
delta-BHC	6.87	10.0	69	6.53	10.0	65	48-123	5	30
Heptachlor	6.18	10.0	62	5.73	10.0	57	40-115	8	30
Aldrin	5.21	10.0	52	4.70	10.0	47	10-102	10	30
Heptachlor Epoxide	6.10	10.0	61	5.93	10.0	59	49-109	3	30
gamma-Chlordane	6.05	10.0	61	5.74	10.0	57	47-113	5	30
Endosulfan I	5.99	10.0	60	5.82	10.0	58	35-115	3	30
alpha-Chlordane	6.11	10.0	61	5.67	10.0	57	45-115	7	30
Dieldrin	6.27	10.0	63	5.53	10.0	55	50-115	13	30
4,4'-DDE	10.4	10.0	104	10.2	10.0	102	41-116	2	30
Endrin	5.48	10.0	55	5.98	10.0	60	48-126	9	30
Endosulfan II	6.54	10.0	65	6.63	10.0	66	28-128	1	30
4,4'-DDD	6.93	10.0	69	7.25	10.0	72	33-132	4	30
Endrin Aldehyde	5.11	10.0	51	5.39	10.0	54	27-104	5	30
Endosulfan Sulfate	6.14	10.0	61	5.92	10.0	59	38-118	4	30
4,4'-DDT	6.75	10.0	68	7.00	10.0	70	42-143	4	30
Endrin Ketone	6.95	10.0	70	7.03	10.0	70	30-124	1	30
Methoxychlor	7.56	10.0	76	9.08	10.0	91	43-143	18	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Pace Analytical™

www.pacelabs.com

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

Report Prepared for:

Darrell Auvil
Test America
9405 SW Nimbus Avenue
Beaverton OR 97008

REPORT OF LABORATORY ANALYSIS FOR PCBs

Report Information:

Pace Project #: 10149758
Sample Receipt Date: 02/16/2011
Client Project #: PUB0415
Client Sub PO #: N/A
State Cert #: MN200001-005

Invoicing & Reporting Options:

The report provided has been invoiced as a Level 2 PCB Report. If an upgrade of this report package is requested, an additional charge may be applied.

Please review the attached invoice for accuracy and forward any questions to Scott Unze, your Pace Project Manager.

This report has been reviewed by:

March 07, 2011

Scott Unze, Project Manager
(612) 607-6383
(612) 607-6444 (fax)
scott.unze@pacelabs.com

Report Prepared Date:
March 7, 2011

Report of Laboratory Analysis

The results relate only to the samples included in this report.

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414
Phone: 612.607.1700
Fax: 612.607.6444

DISCUSSION

This report presents the results from the analyses performed on one sample submitted by a representative of Test America - Portland. The sample was analyzed for the presence or absence of polychlorinated biphenyl (PCB) congeners using USEPA Method 1668A. Reporting limits were set to approximately 25-75 parts per trillion and were adjusted for the amount of dry sample extracted.

The isotopically-labeled PCB internal standards in the sample extract were recovered at 53-99%. All of the labeled internal standard recoveries obtained for this project were within the target ranges specified in the method. Since the quantification of the native PCB congeners was based on internal standard and isotope dilution methodology, the data were automatically corrected for variation in recovery and accurate values were obtained.

A laboratory method blank was prepared and analyzed with the sample batch as part of our routine quality control procedures. The results show the blank to contain low levels of two PCB congeners. These congeners were present in the sample extract at similar levels and may be, at least partially, attributed to the background. In general, levels less than ten times the background are not considered statistically different from the background.

Laboratory spike samples were also prepared with the sample batch using clean water that had been fortified with native standards. The results show that the spiked native compounds were recovered at 83-119%, with relative percent differences of 0.0-15.4%. These results indicate high degrees of accuracy and precision for these determinations. Matrix spikes were not prepared with the sample batch.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
Alabama	40770	Montana	92
Alaska	MN00064	Nebraska	
Arizona	AZ0014	Nevada	MN000642010A
Arkansas	88-0680	New Jersey (NE	MN002
California	01155CA	New Mexico	MN00064
Colorado	MN00064	New York (NEL	11647
Connecticut	PH-0256	North Carolina	27700
EPA Region 5	WD-15J	North Dakota	R-036
EPA Region 8	8TMS-Q	Ohio	4150
Florida (NELAP	E87605	Ohio VAP	CL101
Georgia (DNR)	959	Oklahoma	D9922
Guam	09-019r	Oregon (ELAP)	MN200001-005
Hawaii	SLD	Oregon (OREL	MN200001-005
Idaho	MN00064	Pennsylvania	68-00563
Illinois	200012	Saipan	MP0003
Indiana	C-MN-01	South Carolina	74003001
Indiana	C-MN-01	Tennesee	2818
Iowa	368	Tennessee	02818
Kansas	E-10167	Texas	T104704192-08
Kentucky	90062	Utah (NELAP)	PAM
Louisiana	LA0900016	Virginia	00251
Maine	2007029	Washington	C755
Maryland	322	West Virginia	9952C
Michigan	9909	Wisconsin	999407970
Minnesota	027-053-137	Wyoming	8TMS-Q
Mississippi	MN00064		

REPORT OF LABORATORY ANALYSIS

Appendix A

Sample Management

Subcontract Order - TestAmerica Portland (PUB0415)

431 10149758

SENDING LABORATORY:

TestAmerica Portland
9405 SW Nimbus Ave.
Beaverton, OR 97008
Phone: (503) 906-9200
Fax: (503) 906-9210
Project Manager: Darrell Auvil

RECEIVING LABORATORY:

Pace Analytical Services, Inc - Minneapolis
1700 Elm Street Suite 200
Minneapolis, MN 55414
Phone :(612) 607-1700
Fax: (612) 607-6444
Project Location: Oregon
Receipt Temperature: _____ °C Ice: Y / N

W11B114 Autolog from WPCL 02/14/11 16:08

Standard TAT is requested unless specific due date is requested. => Due Date: _____ Initials:

Analysis	Units	Expires	Comments
Sample ID: PUB0415-01 (W11B114-01 (OF19) - Stormwater Sampled: **02/12/11 22:32**			07
1668 PCB 209 Congeners - SUB	ug/l	08/11/11 22:32	209 cong. to PACE
Containers Supplied:			
1L Amber - Unpres. (A)			

Released By 2/15/11 Date/Time

Released By Date/Time

Received By Date/Time

Received By CR 21611 0957 Date/Time

+=0.4°

Sample Condition Upon Receipt

Pace Analytical

Client Name: Testamerica **Project #** 10149758

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: 417075269492 2164H

Custody Seal on Cooler/Box Present: ☐ yes ☐ no **Seals intact:** ☑ yes ☐ no

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other _____ **Temp Blank:** Yes ✓ No _____

Thermometer Used ~~80344042~~ or 179425 **Type of Ice:** Wet (Blue) None ☐ Samples on ice, cooling process has begun

Cooler Temperature 0.4c **Biological Tissue is Frozen:** Yes No

Date and initials of person examining contents: 2/16H

Temp should be above freezing to 6°C **Comments:**

Chain of Custody Present:	☑Yes	☐No	☐N/A	1.
Chain of Custody Filled Out:	☑Yes	☐No	☐N/A	2.
Chain of Custody Relinquished:	☑Yes	☐No	☐N/A	3.
Sampler Name & Signature on COC:	☐Yes	☑No	☐N/A	4.
Samples Arrived within Hold Time:	☑Yes	☐No	☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes	☑No	☐N/A	6.
Rush Turn Around Time Requested:	☐Yes	☑No	☐N/A	7.
Sufficient Volume:	☑Yes	☐No	☐N/A	8.
Correct Containers Used:	☑Yes	☐No	☐N/A	9.
-Pace Containers Used:	☐Yes	☑No	☐N/A	
Containers Intact:	☑Yes	☐No	☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes	☐No	☑N/A	11.
Sample Labels match COC:	☐Yes	☐No	☐N/A	12.
-Includes date/time/ID/Analysis Matrix: WT				
All containers needing acid/base preservation have been checked. Noncompliance are noted in 13.	☐Yes	☐No	☑N/A	13. ☐ HNO3 ☐ H2SO4 ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes	☐No	☑N/A	Samp #
Exceptions: VOA,Coliform, TOC, Oil and Grease, WI-DRO (water	☐Yes	☑No		Initial when completed / Lot # of added preservative
Samples checked for dechlorination:	☐Yes	☐No	☑N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes	☐No	☑N/A	15.
Trip Blank Present:	☐Yes	☐No	☑N/A	16.
Trip Blank Custody Seals Present	☐Yes	☐No	☑N/A	
Pace Trip Blank Lot # (if purchased):				

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: [signature] **Date:** 02/17/11

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DENR.

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Reporting Flags

A = Reporting Limit based on signal to noise

B = Less than 10x higher than method blank level

C = Result obtained from confirmation analysis

D = Result obtained from analysis of diluted sample

E = Exceeds calibration range

I = Interference present

J = Estimated value

Nn = Value obtained from additional analysis

P = PCDE Interference

R = Recovery outside target range

S = Peak saturated

U = Analyte not detected

V = Result verified by confirmation analysis

X = %D Exceeds limits

Y = Calculated using average of daily RFs

* = See Discussion

Appendix B

Sample Analysis Summary

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PUB0415-01:W11B114-01(OF-19)		
Lab Sample ID	10149758001		
Filename	P110304A_10		
Injected By	BAL		
Total Amount Extracted	953 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	02/12/2011 22:32
ICAL ID	P110304A02	Received	02/16/2011 09:57
CCal Filename(s)	P110304A_01	Extracted	03/01/2011 13:00
Method Blank ID	BLANK-28022	Analyzed	03/04/2011 12:51

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	6.635	3.33	2.0	1.19	59
13C-4-MoCB	3	9.510	3.40	2.0	1.20	60
13C-2,2'-DiCB	4	9.846	1.68	2.0	1.07	53
13C-4,4'-DiCB	15	17.573	1.59	2.0	1.21	60
13C-2,2',6-TrCB	19	14.003	1.16	2.0	1.15	57
13C-3,4,4'-TrCB	37	25.699	1.06	2.0	1.31	66
13C-2,2',6,6'-TeCB	54	17.885	0.81	2.0	1.25	62
13C-3,4,4',5-TeCB	81	32.893	0.79	2.0	1.53	76
13C-3,3',4,4'-TeCB	77	33.463	0.79	2.0	1.55	77
13C-2,2',4,6,6'-PeCB	104	24.324	1.57	2.0	1.39	70
13C-2,3,3',4,4'-PeCB	105	37.051	1.58	2.0	1.52	76
13C-2,3,4,4',5-PeCB	114	36.414	1.60	2.0	1.54	77
13C-2,3',4,4',5-PeCB	118	35.878	1.58	2.0	1.56	78
13C-2,3',4,4',5'-PeCB	123	35.542	1.55	2.0	1.54	77
13C-3,3',4,4',5-PeCB	126	40.204	1.57	2.0	1.45	73
13C-2,2',4,4',6,6'-HxCB	155	30.495	1.32	2.0	1.69	85
13C-HxCB (156/157)	156/157	43.223	1.33	4.0	3.10	77
13C-2,3',4,4',5,5'-HxCB	167	42.082	1.28	2.0	1.58	79
13C-3,3',4,4',5,5'-HxCB	169	46.459	1.33	2.0	1.52	76
13C-2,2',3,4',5,6,6'-HpCB	188	36.398	1.05	2.0	1.97	99
13C-2,3,3',4,4',5,5'-HpCB	189	48.986	1.05	2.0	1.79	89
13C-2,2',3,3',5,5',6,6'-OcCB	202	41.797	0.89	2.0	1.74	87
13C-2,3,3',4,4',5,5',6-OcCB	205	51.594	0.90	2.0	1.86	93
13C-2,2',3,3',4,4',5,5',6-NoCB	206	53.361	0.78	2.0	1.85	92
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	48.469	0.78	2.0	1.72	86
13C--DeCB	209	55.215	0.73	2.0	1.86	93
Cleanup Standards						
13C-2,4,4'-TrCB	28	21.205	1.04	2.0	1.40	70
13C-2,3,3',5,5'-PeCB	111	33.563	1.57	2.0	1.60	80
13C-2,2',3,3',5,5',6-HpCB	178	39.500	1.06	2.0	1.67	83
Recovery Standards						
13C-2,5-DiCB	9	12.565	1.57	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	23.318	0.80	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	30.746	1.56	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	39.030	1.25	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OcCB	194	51.098	0.93	2.0	NA	NA

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REPORT OF LABORATORY ANALYSIS

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1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1668A Polychlorobiphenyl
Sample Analysis Results

Client Sample ID PUB0415-01:W11B114-01(OF-19)
Lab Sample ID 10149758001
Filename P110304A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.262
2		9.283	2.92	0.265 B	---	0.262
3		9.534	2.86	0.337 B	---	0.262
4		---	---	ND	---	0.262
5		---	---	ND	---	0.262
6		---	---	ND	---	0.262
7		---	---	ND	---	0.262
8		13.691	1.34	0.351	---	0.262
9		---	---	ND	---	0.262
10		---	---	ND	---	0.262
11		---	---	ND	---	1.57
12	12/13	---	---	ND	---	0.524
13	12/13	---	---	ND	---	0.524
14		---	---	ND	---	0.262
15		17.597	1.44	0.322	---	0.262
16		17.525	1.16	0.378	---	0.262
17		16.962	1.06	0.441	---	0.262
18	18/30	16.459	1.06	0.902	---	0.524
19		---	---	ND	---	0.262
20	20/28	21.222	0.97	1.45	---	0.524
21	21/33	21.490	1.06	0.590	---	0.524
22		21.943	1.04	0.454	---	0.262
23		---	---	ND	---	0.262
24		---	---	ND	---	0.262
25		---	---	ND	---	0.262
26	26/29	---	---	ND	---	0.524
27		---	---	ND	---	0.262
28	20/28	21.222	0.97	(1.45)	---	0.524
29	26/29	---	---	ND	---	0.524
30	18/30	16.459	1.06	(0.902)	---	0.524
31		20.903	0.99	1.28	---	0.262
32		18.170	0.96	0.318	---	0.262
33	21/33	21.490	1.06	(0.590)	---	0.524
34		---	---	ND	---	0.262
35		---	---	ND	---	0.262
36		---	---	ND	---	0.262
37		25.733	0.96	0.461	---	0.262
38		---	---	ND	---	0.262
39		---	---	ND	---	0.262
40	40/41/71	---	---	ND	---	1.57
41	40/41/71	---	---	ND	---	1.57
42		---	---	ND	---	0.524
43	43/73	---	---	ND	---	1.05
44	44/47/65	24.408	0.79	1.58	---	1.57
45	45/51	---	---	ND	---	1.05
46		---	---	ND	---	0.524
47	44/47/65	24.408	0.79	(1.58)	---	1.57
48		---	---	ND	---	0.524

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Method 1668A Polychlorobiphenyl
Sample Analysis Results

Client Sample ID PUB0415-01:W11B114-01(OF-19)
Lab Sample ID 10149758001
Filename P110304A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69	---	---	ND	---	1.05
50	50/53	---	---	ND	---	1.05
51	45/51	---	---	ND	---	1.05
52		23.334	0.79	2.14	---	0.524
53	50/53	---	---	ND	---	1.05
54		---	---	ND	---	0.524
55		---	---	ND	---	0.524
56		29.606	0.77	0.572	---	0.524
57		---	---	ND	---	0.524
58		---	---	ND	---	0.524
59	59/62/75	---	---	ND	---	1.57
60		---	---	ND	---	0.524
61	61/70/74/76	28.566	0.75	2.48	---	2.10
62	59/62/75	---	---	ND	---	1.57
63		---	---	ND	---	0.524
64		25.783	0.76	0.591	---	0.524
65	44/47/65	24.408	0.79	(1.58)	---	1.57
66		28.902	0.76	1.26	---	0.524
67		---	---	ND	---	0.524
68		---	---	ND	---	0.524
69	49/69	---	---	ND	---	1.05
70	61/70/74/76	28.566	0.75	(2.48)	---	2.10
71	40/41/71	---	---	ND	---	1.57
72		---	---	ND	---	0.524
73	43/73	---	---	ND	---	1.05
74	61/70/74/76	28.566	0.75	(2.48)	---	2.10
75	59/62/75	---	---	ND	---	1.57
76	61/70/74/76	28.566	0.75	(2.48)	---	2.10
77		---	---	ND	---	0.524
78		---	---	ND	---	0.524
79		---	---	ND	---	0.524
80		---	---	ND	---	0.524
81		---	---	ND	---	0.524
82		---	---	ND	---	0.524
83		---	---	ND	---	0.524
84		28.717	1.65	0.616	---	0.524
85	85/116/117	---	---	ND	---	1.57
86	86/87/97/108/119/125	---	---	ND	---	3.15
87	86/87/97/108/119/125	---	---	ND	---	3.15
88	88/91	---	---	ND	---	1.05
89		---	---	ND	---	0.524
90	90/101/113	30.780	1.55	2.34	---	1.57
91	88/91	---	---	ND	---	1.05
92		---	---	ND	---	0.524
93	93/98/100/102	---	---	ND	---	2.10
94		---	---	ND	---	0.524
95		27.611	1.53	1.77	---	0.524
96		---	---	ND	---	0.524

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Method 1668A Polychlorobiphenyl
Sample Analysis Results

Client Sample ID PUB0415-01:W11B114-01(OF-19)
Lab Sample ID 10149758001
Filename P110304A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
97	86/87/97/108/119/125	---	---	ND	---	3.15
98	93/98/100/102	---	---	ND	---	2.10
99		31.384	1.51	0.916	---	0.524
100	93/98/100/102	---	---	ND	---	2.10
101	90/101/113	30.780	1.55	(2.34)	---	1.57
102	93/98/100/102	---	---	ND	---	2.10
103		---	---	ND	---	0.524
104		---	---	ND	---	0.524
105		37.068	1.47	1.03	---	0.524
106		---	---	ND	---	0.524
107	107/124	---	---	ND	---	1.05
108	86/87/97/108/119/125	---	---	ND	---	3.15
109		---	---	ND	---	0.524
110	110/115	32.792	1.60	2.73	---	1.05
111		---	---	ND	---	0.524
112		---	---	ND	---	0.524
113	90/101/113	30.780	1.55	(2.34)	---	1.57
114		---	---	ND	---	0.524
115	110/115	32.792	1.60	(2.73)	---	1.05
116	85/116/117	---	---	ND	---	1.57
117	85/116/117	---	---	ND	---	1.57
118		35.911	1.54	2.25	---	0.524
119	86/87/97/108/119/125	---	---	ND	---	3.15
120		---	---	ND	---	0.524
121		---	---	ND	---	0.524
122		---	---	ND	---	0.524
123		---	---	ND	---	0.524
124	107/124	---	---	ND	---	1.05
125	86/87/97/108/119/125	---	---	ND	---	3.15
126		---	---	ND	---	0.524
127		---	---	ND	---	0.524
128	128/166	---	---	ND	---	1.05
129	129/138/163	39.047	1.27	4.02	---	1.57
130		---	---	ND	---	0.524
131		---	---	ND	---	0.524
132		35.962	1.28	1.07	---	0.524
133		---	---	ND	---	0.524
134	134/143	---	---	ND	---	1.05
135	135/151	---	---	ND	---	1.05
136		---	---	ND	---	0.524
137		---	---	ND	---	0.524
138	129/138/163	39.047	1.27	(4.02)	---	1.57
139	139/140	---	---	ND	---	1.05
140	139/140	---	---	ND	---	1.05
141		37.991	1.34	0.645	---	0.524
142		---	---	ND	---	0.524
143	134/143	---	---	ND	---	1.05
144		---	---	ND	---	0.524

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Method 1668A Polychlorobiphenyl
Sample Analysis Results

Client Sample ID PUB0415-01:W11B114-01(OF-19)
Lab Sample ID 10149758001
Filename P110304A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
145		---	---	ND	---	0.524
146		---	---	ND	---	0.524
147	147/149	34.721	1.21	2.27	---	1.05
148		---	---	ND	---	0.524
149	147/149	34.721	1.21	(2.27)	---	1.05
150		---	---	ND	---	0.524
151	135/151	---	---	ND	---	1.05
152		---	---	ND	---	0.524
153	153/168	37.823	1.19	2.45	---	1.05
154		---	---	ND	---	0.524
155		---	---	ND	---	0.524
156	156/157	---	---	ND	---	1.05
157	156/157	---	---	ND	---	1.05
158		---	---	ND	---	0.524
159		---	---	ND	---	0.524
160		---	---	ND	---	0.524
161		---	---	ND	---	0.524
162		---	---	ND	---	0.524
163	129/138/163	39.047	1.27	(4.02)	---	1.57
164		---	---	ND	---	0.524
165		---	---	ND	---	0.524
166	128/166	---	---	ND	---	1.05
167		---	---	ND	---	0.524
168	153/168	37.823	1.19	(2.45)	---	1.05
169		---	---	ND	---	0.524
170		45.855	1.04	0.783	---	0.524
171	171/173	---	---	ND	---	1.05
172		---	---	ND	---	0.524
173	171/173	---	---	ND	---	1.05
174		41.261	0.99	0.767	---	0.524
175		---	---	ND	---	0.524
176		---	---	ND	---	0.524
177		---	---	ND	---	0.524
178		---	---	ND	---	0.524
179		---	---	ND	---	0.524
180	180/193	44.631	1.06	1.63	---	1.05
181		---	---	ND	---	0.524
182		---	---	ND	---	0.524
183	183/185	---	---	ND	---	1.05
184		---	---	ND	---	0.524
185	183/185	---	---	ND	---	1.05
186		---	---	ND	---	0.524
187		40.439	1.05	0.822	---	0.524
188		---	---	ND	---	0.524
189		---	---	ND	---	0.524
190		---	---	ND	---	0.524
191		---	---	ND	---	0.524
192		---	---	ND	---	0.524

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Sample Analysis Results

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IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193	44.631	1.06	(1.63)	---	1.05
194		---	---	ND	---	0.787
195		---	---	ND	---	0.787
196		---	---	ND	---	0.787
197	197/200	---	---	ND	---	1.57
198	198/199	---	---	ND	---	1.57
199	198/199	---	---	ND	---	1.57
200	197/200	---	---	ND	---	1.57
201		---	---	ND	---	0.787
202		---	---	ND	---	0.787
203		---	---	ND	---	0.787
204		---	---	ND	---	0.787
205		---	---	ND	---	0.787
206		---	---	ND	---	0.787
207		---	---	ND	---	0.787
208		---	---	ND	---	0.787
209		---	---	ND	---	0.787

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Method 1668A Polychlorobiphenyl
Sample Analysis Results

Client Sample ID	PUB0415-01:W11B114-01(OF-19)
Lab Sample ID	10149758001
Filename	P110304A_10

Congener Group	Concentration ng/L
Total Monochloro Biphenyls	0.602
Total Dichloro Biphenyls	0.672
Total Trichloro Biphenyls	6.27
Total Tetrachloro Biphenyls	8.62
Total Pentachloro Biphenyls	11.6
Total Hexachloro Biphenyls	10.5
Total Heptachloro Biphenyls	4.00
Total Octachloro Biphenyls	ND
Total Nonachloro Biphenyls	ND
Decachloro Biphenyls	ND
Total PCBs	42.3

ND = Not Detected

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Method 1668A Polychlorobiphenyl
Blank Analysis Results

Lab Sample ID	BLANK-28022		
Filename	P110304A_07		
Injected By	BAL	Matrix	Water
Total Amount Extracted	1010 mL	Extracted	03/01/2011 13:00
ICAL ID	P110304A02	Analyzed	03/04/2011 09:44
CCal Filename(s)	P110304A_01	Dilution	NA

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	6.683	2.77	2.0	1.37	68
13C-4-MoCB	3	9.546	3.19	2.0	1.39	70
13C-2,2'-DiCB	4	9.858	1.53	2.0	1.23	61
13C-4,4'-DiCB	15	17.585	1.58	2.0	1.41	71
13C-2,2',6-TrCB	19	14.027	1.11	2.0	1.37	68
13C-3,4,4'-TrCB	37	25.699	1.08	2.0	1.47	73
13C-2,2',6,6'-TeCB	54	17.902	0.80	2.0	1.47	73
13C-3,4,4',5-TeCB	81	32.893	0.77	2.0	1.56	78
13C-3,3',4,4'-TeCB	77	33.463	0.78	2.0	1.50	75
13C-2,2',4,6,6'-PeCB	104	24.307	1.63	2.0	1.59	79
13C-2,3,3',4,4'-PeCB	105	37.052	1.57	2.0	1.48	74
13C-2,3,4,4',5-PeCB	114	36.398	1.57	2.0	1.47	74
13C-2,3',4,4',5-PeCB	118	35.878	1.54	2.0	1.50	75
13C-2,3',4,4',5'-PeCB	123	35.542	1.56	2.0	1.49	74
13C-3,3',4,4',5-PeCB	126	40.188	1.55	2.0	1.34	67
13C-2,2',4,4',6,6'-HxCB	155	30.495	1.21	2.0	1.85	93
13C-HxCB (156/157)	156/157	43.189	1.27	4.0	2.81	70
13C-2,3',4,4',5,5'-HxCB	167	42.066	1.25	2.0	1.46	73
13C-3,3',4,4',5,5'-HxCB	169	46.443	1.24	2.0	1.43	72
13C-2,2',3,4',5,6,6'-HpCB	188	36.398	1.04	2.0	2.07	104
13C-2,3,3',4,4',5,5'-HpCB	189	48.965	1.07	2.0	1.63	81
13C-2,2',3,3',5,5',6,6'-OcCB	202	41.781	0.87	2.0	1.91	96
13C-2,3,3',4,4',5,5',6-OcCB	205	51.551	0.89	2.0	1.93	97
13C-2,2',3,3',4,4',5,5',6-NoCB	206	53.340	0.78	2.0	1.99	99
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	48.448	0.80	2.0	1.92	96
13C--DeCB	209	55.194	0.69	2.0	2.20	110
Cleanup Standards						
13C-2,4,4'-TrCB	28	21.205	1.07	2.0	1.81	90
13C-2,3,3',5,5'-PeCB	111	33.564	1.56	2.0	1.73	87
13C-2,2',3,3',5,5',6-HpCB	178	39.483	1.01	2.0	2.02	101
Recovery Standards						
13C-2,5-DiCB	9	12.589	1.58	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	23.301	0.83	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	30.730	1.54	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	39.014	1.27	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OcCB	194	51.077	0.90	2.0	NA	NA

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
RT = Retention Time
I = Interference
ng's = Nanograms

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 1668A Polychlorobiphenyl
Blank Analysis Results

Lab Sample ID BLANK-28022
Filename P110304A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.249
2		9.319	3.07	0.272	---	0.249
3		9.570	3.17	0.332	---	0.249
4		---	---	ND	---	0.249
5		---	---	ND	---	0.249
6		---	---	ND	---	0.249
7		---	---	ND	---	0.249
8		---	---	ND	---	0.249
9		---	---	ND	---	0.249
10		---	---	ND	---	0.249
11		---	---	ND	---	1.49
12	12/13	---	---	ND	---	0.497
13	12/13	---	---	ND	---	0.497
14		---	---	ND	---	0.249
15		---	---	ND	---	0.249
16		---	---	ND	---	0.249
17		---	---	ND	---	0.249
18	18/30	---	---	ND	---	0.497
19		---	---	ND	---	0.249
20	20/28	---	---	ND	---	0.497
21	21/33	---	---	ND	---	0.497
22		---	---	ND	---	0.249
23		---	---	ND	---	0.249
24		---	---	ND	---	0.249
25		---	---	ND	---	0.249
26	26/29	---	---	ND	---	0.497
27		---	---	ND	---	0.249
28	20/28	---	---	ND	---	0.497
29	26/29	---	---	ND	---	0.497
30	18/30	---	---	ND	---	0.497
31		---	---	ND	---	0.249
32		---	---	ND	---	0.249
33	21/33	---	---	ND	---	0.497
34		---	---	ND	---	0.249
35		---	---	ND	---	0.249
36		---	---	ND	---	0.249
37		---	---	ND	---	0.249
38		---	---	ND	---	0.249
39		---	---	ND	---	0.249
40	40/41/71	---	---	ND	---	1.49
41	40/41/71	---	---	ND	---	1.49
42		---	---	ND	---	0.497
43	43/73	---	---	ND	---	0.995
44	44/47/65	---	---	ND	---	1.49
45	45/51	---	---	ND	---	0.995

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
RT = Retention Time
I = Interference

REPORT OF LABORATORY ANALYSIS

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1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
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Method 1668A Polychlorobiphenyl
Blank Analysis Results

Lab Sample ID BLANK-28022
Filename P110304A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
46		---	---	ND	---	0.497
47	44/47/65	---	---	ND	---	1.49
48		---	---	ND	---	0.497
49	49/69	---	---	ND	---	0.995
50	50/53	---	---	ND	---	0.995
51	45/51	---	---	ND	---	0.995
52		---	---	ND	---	0.497
53	50/53	---	---	ND	---	0.995
54		---	---	ND	---	0.497
55		---	---	ND	---	0.497
56		---	---	ND	---	0.497
57		---	---	ND	---	0.497
58		---	---	ND	---	0.497
59	59/62/75	---	---	ND	---	1.49
60		---	---	ND	---	0.497
61	61/70/74/76	---	---	ND	---	1.99
62	59/62/75	---	---	ND	---	1.49
63		---	---	ND	---	0.497
64		---	---	ND	---	0.497
65	44/47/65	---	---	ND	---	1.49
66		---	---	ND	---	0.497
67		---	---	ND	---	0.497
68		---	---	ND	---	0.497
69	49/69	---	---	ND	---	0.995
70	61/70/74/76	---	---	ND	---	1.99
71	40/41/71	---	---	ND	---	1.49
72		---	---	ND	---	0.497
73	43/73	---	---	ND	---	0.995
74	61/70/74/76	---	---	ND	---	1.99
75	59/62/75	---	---	ND	---	1.49
76	61/70/74/76	---	---	ND	---	1.99
77		---	---	ND	---	0.497
78		---	---	ND	---	0.497
79		---	---	ND	---	0.497
80		---	---	ND	---	0.497
81		---	---	ND	---	0.497
82		---	---	ND	---	0.497
83		---	---	ND	---	0.497
84		---	---	ND	---	0.497
85	85/116/117	---	---	ND	---	1.49
86	86/87/97/108/119/125	---	---	ND	---	2.98
87	86/87/97/108/119/125	---	---	ND	---	2.98
88	88/91	---	---	ND	---	0.995
89		---	---	ND	---	0.497
90	90/101/113	---	---	ND	---	1.49

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
RT = Retention Time
I = Interference

REPORT OF LABORATORY ANALYSIS

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Tel: 612-607-1700
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Method 1668A Polychlorobiphenyl
Blank Analysis Results

Lab Sample ID BLANK-28022
Filename P110304A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
91	88/91	---	---	ND	---	0.995
92		---	---	ND	---	0.497
93	93/98/100/102	---	---	ND	---	1.99
94		---	---	ND	---	0.497
95		---	---	ND	---	0.497
96		---	---	ND	---	0.497
97	86/87/97/108/119/125	---	---	ND	---	2.98
98	93/98/100/102	---	---	ND	---	1.99
99		---	---	ND	---	0.497
100	93/98/100/102	---	---	ND	---	1.99
101	90/101/113	---	---	ND	---	1.49
102	93/98/100/102	---	---	ND	---	1.99
103		---	---	ND	---	0.497
104		---	---	ND	---	0.497
105		---	---	ND	---	0.497
106		---	---	ND	---	0.497
107	107/124	---	---	ND	---	0.995
108	86/87/97/108/119/125	---	---	ND	---	2.98
109		---	---	ND	---	0.497
110	110/115	---	---	ND	---	0.995
111		---	---	ND	---	0.497
112		---	---	ND	---	0.497
113	90/101/113	---	---	ND	---	1.49
114		---	---	ND	---	0.497
115	110/115	---	---	ND	---	0.995
116	85/116/117	---	---	ND	---	1.49
117	85/116/117	---	---	ND	---	1.49
118		---	---	ND	---	0.497
119	86/87/97/108/119/125	---	---	ND	---	2.98
120		---	---	ND	---	0.497
121		---	---	ND	---	0.497
122		---	---	ND	---	0.497
123		---	---	ND	---	0.497
124	107/124	---	---	ND	---	0.995
125	86/87/97/108/119/125	---	---	ND	---	2.98
126		---	---	ND	---	0.497
127		---	---	ND	---	0.497
128	128/166	---	---	ND	---	0.995
129	129/138/163	---	---	ND	---	1.49
130		---	---	ND	---	0.497
131		---	---	ND	---	0.497
132		---	---	ND	---	0.497
133		---	---	ND	---	0.497
134	134/143	---	---	ND	---	0.995
135	135/151	---	---	ND	---	0.995

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
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R = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
RT = Retention Time
I = Interference

REPORT OF LABORATORY ANALYSIS

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Tel: 612-607-1700
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Method 1668A Polychlorobiphenyl
Blank Analysis Results

Lab Sample ID BLANK-28022
Filename P110304A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
136		---	---	ND	---	0.497
137		---	---	ND	---	0.497
138	129/138/163	---	---	ND	---	1.49
139	139/140	---	---	ND	---	0.995
140	139/140	---	---	ND	---	0.995
141		---	---	ND	---	0.497
142		---	---	ND	---	0.497
143	134/143	---	---	ND	---	0.995
144		---	---	ND	---	0.497
145		---	---	ND	---	0.497
146		---	---	ND	---	0.497
147	147/149	---	---	ND	---	0.995
148		---	---	ND	---	0.497
149	147/149	---	---	ND	---	0.995
150		---	---	ND	---	0.497
151	135/151	---	---	ND	---	0.995
152		---	---	ND	---	0.497
153	153/168	---	---	ND	---	0.995
154		---	---	ND	---	0.497
155		---	---	ND	---	0.497
156	156/157	---	---	ND	---	0.995
157	156/157	---	---	ND	---	0.995
158		---	---	ND	---	0.497
159		---	---	ND	---	0.497
160		---	---	ND	---	0.497
161		---	---	ND	---	0.497
162		---	---	ND	---	0.497
163	129/138/163	---	---	ND	---	1.49
164		---	---	ND	---	0.497
165		---	---	ND	---	0.497
166	128/166	---	---	ND	---	0.995
167		---	---	ND	---	0.497
168	153/168	---	---	ND	---	0.995
169		---	---	ND	---	0.497
170		---	---	ND	---	0.497
171	171/173	---	---	ND	---	0.995
172		---	---	ND	---	0.497
173	171/173	---	---	ND	---	0.995
174		---	---	ND	---	0.497
175		---	---	ND	---	0.497
176		---	---	ND	---	0.497
177		---	---	ND	---	0.497
178		---	---	ND	---	0.497
179		---	---	ND	---	0.497
180	180/193	---	---	ND	---	0.995

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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Minneapolis, MN 55414

Tel: 612-607-1700
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Method 1668A Polychlorobiphenyl
Blank Analysis Results

Lab Sample ID BLANK-28022
Filename P110304A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
181		---	---	ND	---	0.497
182		---	---	ND	---	0.497
183	183/185	---	---	ND	---	0.995
184		---	---	ND	---	0.497
185	183/185	---	---	ND	---	0.995
186		---	---	ND	---	0.497
187		---	---	ND	---	0.497
188		---	---	ND	---	0.497
189		---	---	ND	---	0.497
190		---	---	ND	---	0.497
191		---	---	ND	---	0.497
192		---	---	ND	---	0.497
193	180/193	---	---	ND	---	0.995
194		---	---	ND	---	0.746
195		---	---	ND	---	0.746
196		---	---	ND	---	0.746
197	197/200	---	---	ND	---	1.49
198	198/199	---	---	ND	---	1.49
199	198/199	---	---	ND	---	1.49
200	197/200	---	---	ND	---	1.49
201		---	---	ND	---	0.746
202		---	---	ND	---	0.746
203		---	---	ND	---	0.746
204		---	---	ND	---	0.746
205		---	---	ND	---	0.746
206		---	---	ND	---	0.746
207		---	---	ND	---	0.746
208		---	---	ND	---	0.746
209		---	---	ND	---	0.746

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
RT = Retention Time
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REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyl
Blank Analysis Results

Client Sample ID	DFBLKCW
Lab Sample ID	BLANK-28022
Filename	P110304A_07

Congener Group	Concentration ng/L
Total Monochloro Biphenyls	0.604
Total Dichloro Biphenyls	ND
Total Trichloro Biphenyls	ND
Total Tetrachloro Biphenyls	ND
Total Pentachloro Biphenyls	ND
Total Hexachloro Biphenyls	ND
Total Heptachloro Biphenyls	ND
Total Octachloro Biphenyls	ND
Total Nonachloro Biphenyls	ND
Decachloro Biphenyls	ND
Total PCBs	0.604

ND = Not Detected

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyls
Laboratory Control Spike Analysis Results

Lab Sample ID	LCS-28023		
Filename	P110304B_03	Matrix	Water
Total Amount Extracted	1010 mL	Dilution	NA
ICAL ID	P110304B02	Extracted	03/01/2011 13:00
CCal Filename(s)	P110304B_01	Analyzed	03/04/2011 18:36
Method Blank ID	BLANK-28022	Injected By	CVS

	Native Analytes			Labeled Analytes		
PCB Isomer	**Spiked (ng)**	**Found (ng)**	**% Recovery**	**Spiked (ng)**	**Found (ng)**	**% Recovery**
1	1.0	0.963	96	2.0	1.85	92
3	1.0	1.02	102	2.0	1.59	79
4	1.0	0.905	91	2.0	1.82	91
15	1.0	0.980	98	2.0	1.20	60
19	1.0	0.888	89	2.0	1.65	83
37	1.0	0.929	93	2.0	1.14	57
54	1.0	0.941	94	2.0	1.28	64
81	1.0	0.886	89	2.0	1.22	61
77	1.0	0.888	89	2.0	1.20	60
104	1.0	0.912	91	2.0	1.84	92
105	1.0	0.950	95	2.0	1.25	63
114	1.0	0.910	91	2.0	1.18	59
118	1.0	0.909	91	2.0	1.24	62
123	1.0	0.924	92	2.0	1.25	62
126	1.0	0.908	91	2.0	1.14	57
155	1.0	0.923	92	2.0	2.31	115
156/157	2.0	1.86	93	4.0	3.04	76
167	1.0	0.925	92	2.0	1.59	80
169	1.0	0.929	93	2.0	1.58	79
188	1.0	0.889	89	2.0	1.96	98
189	1.0	0.940	94	2.0	1.52	76
202	1.0	0.943	94	2.0	2.00	100
205	1.0	0.959	96	2.0	1.83	92
206	1.0	0.962	96	2.0	2.10	105
208	1.0	0.921	92	2.0	1.89	95
209	1.0	0.928	93	2.0	2.53	127

R = Recovery outside of method 1668A control limits
Nn = Result obtained from alternate analysis
ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
ng = Nanograms
I = Interference

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyls
Laboratory Control Spike Analysis Results

Lab Sample ID	LCSD-28024		
Filename	P110304B_04	Matrix	Water
Total Amount Extracted	1030 mL	Dilution	NA
ICAL ID	P110304B02	Extracted	03/01/2011 13:00
CCal Filename(s)	P110304B_01	Analyzed	03/04/2011 19:38
Method Blank ID	BLANK-28022	Injected By	CVS

	Native Analytes			Labeled Analytes		
PCB Isomer	**Spiked (ng)**	**Found (ng)**	**% Recovery**	**Spiked (ng)**	**Found (ng)**	**% Recovery**
1	1.0	1.01	101	2.0	1.56	78
3	1.0	1.19	119	2.0	1.34	67
4	1.0	0.928	93	2.0	1.65	83
15	1.0	0.984	98	2.0	1.14	57
19	1.0	0.832	83	2.0	1.62	81
37	1.0	0.965	97	2.0	1.08	54
54	1.0	1.02	102	2.0	1.15	57
81	1.0	0.878	88	2.0	1.13	56
77	1.0	0.873	87	2.0	1.11	56
104	1.0	0.905	91	2.0	1.86	93
105	1.0	0.952	95	2.0	1.20	60
114	1.0	0.926	93	2.0	1.14	57
118	1.0	0.909	91	2.0	1.20	60
123	1.0	0.893	89	2.0	1.22	61
126	1.0	0.879	88	2.0	1.09	54
155	1.0	0.925	92	2.0	2.38	119
156/157	2.0	1.85	93	4.0	2.93	73
167	1.0	0.914	91	2.0	1.51	75
169	1.0	0.944	94	2.0	1.42	71
188	1.0	0.916	92	2.0	2.04	102
189	1.0	0.925	92	2.0	1.55	77
202	1.0	0.989	99	2.0	1.97	98
205	1.0	0.927	93	2.0	1.93	96
206	1.0	0.925	93	2.0	2.18	109
208	1.0	0.920	92	2.0	1.90	95
209	1.0	0.923	92	2.0	2.51	126

R = Recovery outside of method 1668A control limits
Nn = Result obtained from alternate analysis
ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
ng = Nanograms
I = Interference

REPORT OF LABORATORY ANALYSIS

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Method 1668A

Spike Recovery Relative Percent Difference (RPD) Results

Client	Test America		
Spike 1 ID	LCS-28023	Spike 2 ID	LCSD-28024
Spike 1 Filename	P110304B_03	Spike 2 Filename	P110304B_04

Compound	IUPAC	Spike 1 %REC	Spike 2 %REC	%RPD
2-MoCB	1	96	101	5.1
4-MoCB	3	102	119	15.4
2,2'-DiCB	4	91	93	2.2
4,4'-DiCB	15	98	98	0.0
2,2',6-TrCB	19	89	83	7.0
3,4,4'-TrCB	37	93	97	4.2
2,2',6,6'-TeCB	54	94	102	8.2
3,3',4,4'-TeCB	77	89	87	2.3
3,4,4',5-TeCB	81	89	88	1.1
2,2',4,6,6'-PeCB	104	91	91	0.0
2,3,3',4,4'-PeCB	105	95	95	0.0
2,3,4,4',5-PeCB	114	91	93	2.2
2,3',4,4',5-PeCB	118	91	91	0.0
2,3',4,4',5'-PeCB	123	92	89	3.3
3,3',4,4',5-PeCB	126	91	88	3.4
2,2',4,4',6,6'-HxCB	155	92	92	0.0
(156/157)	156/157	93	93	0.0
2,3',4,4',5,5'-HxCB	167	92	91	1.1
3,3',4,4',5,5'-HxCB	169	93	94	1.1
2,2',3,4',5,6,6'-HpCB	188	89	92	3.3
2,3,3',4,4',5,5'-HpCB	189	94	92	2.2
2,2',3,3',5,5',6,6'-OcCB	202	94	99	5.2
2,3,3',4,4',5,5',6-OcCB	205	96	93	3.2
2,2',3,3',4,4',5,5',6-NoCB	206	96	93	3.2
2,2',3,3',4,5,5',6,6'-NoCB	208	92	92	0.0
Decachlorobiphenyl	209	93	92	1.1

%REC = Percent Recovered
RPD = The difference between the two values divided by the mean value

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