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Investigation and
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Measures

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Outfall Basin 44A Source Investigation Report

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City of Portland Outfall Project
ECSI No. 2425

■

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PREPARED BY



ENVIRONMENTAL SERVICES
CITY OF PORTLAND
working for clean rivers

Contents

1 Introduction	1-1
1.1 Objective and Scope.....	1-1
1.2 Report Organization	1-1
2 Background	2-1
2.1 River Mile 11E.....	2-1
2.2 Conveyance System Configuration and Drainage Basin.....	2-1
2.3 Contaminants of Interest.....	2-1
2.4 Potential Upland Sources.....	2-2
3 Source Investigation Approach	3-1
4 Stormwater Sampling and Analysis.....	4-1
4.1 Field Activities.....	4-1
4.2 Storm Events Sampled	4-1
4.3 Analytical Approach.....	4-2
4.4 Summary of Results.....	4-3
5 Stormwater Solids Sampling and Analysis	5-1
5.1 Field Activities.....	5-1
5.1.1 Sediment Trap Sampling (Phase 1).....	5-1
5.1.2 Catch Basin Solids Sampling (Phase 2)	5-1
5.2 Analytical Approach.....	5-2
5.3 Summary of Results.....	5-2
6 Data Evaluation	6-1
6.1 Basin-Level Screening.....	6-1
6.1.1 Stormwater Data	5-1
6.1.2 Sediment Trap Data	5-1
6.2 Source Tracing (Upper Basin).....	6-2
6.3 Evaluation of Potential Upland Sources	6-2
7 Conclusions and Next Steps	7-1
8 References.....	8-1

Appendices

Appendix A – Field Photographs

Appendix B – Field Notes

Appendix C – Laboratory Reports (on CD only)

List of Tables

Table 1 Current and Historic NPDES Permits in Basin 44A

Table 2 Basin 44A Stormwater Sampling Event Summary

Table 3 Basin 44A Stormwater Results

Table 4 Basin 44A Stormwater - PCB Congeners Results

Table 5 Basin 44A Inline Solids Results

Table 6 Basin 44A Inline Solids - PCB Congeners Results

Table 7 Basin 44A Stormwater Data Evaluation Summary

List of Figures

Figure 1 Outfall 44A Drainage Basin Overview

Figure 2 Basin 44A Storm Event Precipitation Graphs

Figure 3 Basin 44A Stormwater and Inline Solids – Total PCBs

Abbreviations and Acronyms

APOC	Area of Potential Concern
BEHP	bis(2-ethylhexyl)phthalate
BES	Bureau of Environmental Services
City	City of Portland
COI	contaminants of interest
CSO	combined sewer overflow
DDD	dichlorodiphenyldichloroethane
DDE	dichlorodiphenyldichloroethylene
DDT	dichlorodiphenyltrichloroethane
DDx	sum of DDD, DDE, and DDT
DEQ	Oregon Department of Environmental Quality
ECSI	Environmental Cleanup Site Information
EPA	United States Environmental Protection Agency
HYDRA	Hydrological Data Retrieval and Alarm
JSCS	Joint Source Control Strategy
LWG	Lower Willamette Group
MRL	method reporting limit
mg/Kg	milligram(s) per kilogram
µg/Kg	microgram(s) per kilogram
µg/L	microgram(s) per liter
NPDES	National Pollutant Discharge Elimination System
PA	Preliminary Assessment
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PST	Pacific Standard Time
QAPP	Quality Assurance Project Plan
RI	remedial investigation
RM	river mile
SAP	sampling and analysis plan
SLV	screening level value
SOP	standard operating procedure

SVOC	semivolatile organic compound
TOC	total organic carbon
TSS	total suspended solids
UIC	underground injection control
WPCL	Water Pollution and Control Laboratory

SECTION 1

Introduction

This report presents the results of the City of Portland (City) source investigation activities in Outfall Basin 44A. Outfall 44A discharges to the east bank of the Willamette River at river mile (RM) 11.2. The area of the river between RM 11 and 11.6 (referred to as RM 11E) has been targeted for focused inriver and upland investigations in response to detections of elevated concentrations of polychlorinated biphenyls (PCBs) and other contaminants in river sediment, water, and fish tissue samples from this area. The Oregon Department of Environmental Quality (DEQ) and the City Bureau of Environmental Services (BES) are collaborating on upland source control in this area consistent with the City's ongoing source control program described in the August 13, 2003, Intergovernmental Agreement between DEQ and the City. The source investigation described in this report was conducted in response to DEQ's correspondence dated August 13, 2008 (DEQ, 2008a), which requested the City to investigate whether contaminant sources are discharging to the east bank of the river via Outfalls 43, 44, 44A, and 45. The results of this investigation do not indicate the presence of significant current sources of contaminants in Basin 44A, and further City source tracing activities are not needed in this basin.

1.1 Objective and Scope

The purpose of the investigation described in this report is to conduct a stormwater pathway screening evaluation of Basin 44A in accordance with the Portland Harbor Joint Source Control Strategy (JSCS) (DEQ/EPA, 2005, as amended 2007) to determine whether Basin 44A is a significant pathway for contaminant discharges from upland sources to the river. The investigation includes stormwater and sediment trap results from basin-level screening to evaluate the potential for sources to be present in the basin (Phase 1), as well as results from inline solids sampling at selected locations to assess a suspected source within the basin (Phase 2). The data are evaluated by comparison to JSCS screening level values and the ranges of concentrations detected in basins throughout Portland Harbor.

1.2 Report Organization

The remainder of this report is organized as follows:

- *Section 2: Background* — Summarizes the context for the source investigation, conveyance system configuration and drainage basin setting, contaminants of interest, and potential upland sources.
- *Section 3: Source Investigation Approach* — Describes the rationale, sequence, and chronology of the sampling and analytical activities conducted for this source investigation.
- *Section 4: Stormwater Sampling and Analysis* — Describes the stormwater sampling location, storm events sampled, analytical program approach and summarizes the stormwater analytical results.

- *Section 5: Stormwater Solids Sampling and Analysis* — Describes the sediment trap and inline solids sampling and analyses, and summarizes the analytical results.
- *Section 6: Data Evaluation* — Evaluates the results of the stormwater and solids sampling to assess whether there are significant current sources of contaminants in the basin.
- *Section 7: Conclusions* — Summarizes the findings from the source investigation.
- *Section 8: References*

Background

2.1 River Mile 11E

Inriver data (sediment, surface water, and tissue) collected by the Lower Willamette Group (LWG) indicates the presence of historic and potential current sources of contaminants to the east bank of the river between RM 11 and 11.6. To assist EPA and DEQ with the evaluation of data from this area, the LWG compiled background information on potential sources to the contaminated reach (LWG, 2007). Subsequently, the U.S. Environmental Protection Agency (EPA) expanded the Portland Harbor Study Area to RM 11.8 and DEQ requested parties discharging to the RM11E area to conduct investigations of potential sources to the river (DEQ, 2008a).

The City compiled background information on City basins discharging to RM 11E to support the source investigation approach and Sampling and Analysis Plan (SAP) for Basins 43, 44, and 44A (BES, 2008) and initiated source investigations in these basins in 2008. Additional inriver and upland data collection efforts have been conducted by the City and other parties in this area, which has been designated as Area of Potential Concern (AOPC) 25 by EPA (EPA, 2009). In addition to Outfall 44A, three other City outfalls (Outfalls 43, 44, and 45), one Oregon Department of Transportation outfall, and approximately 13 private industrial outfalls also discharge to AOPC 25.

2.2 Conveyance System Configuration and Drainage Basin

Outfall 44A was built in 1974 and is a 72-inch combined sewer outfall with 115 acres of separated stormwater drainage area. Figure 1 depicts the current configuration of the Outfall 44A separated storm system and basin boundary. The stormwater conveyance system includes a number of branch lines that drain predominantly smaller properties along and east of N. Interstate Avenue and in the vicinity of N. Russell Avenue. The lower portion (west of Interstate 5) of Basin 44A is approximately 37 acres and is zoned industrial (light industrial and employment district). The upper half of the basin (east of Interstate 5) is primarily residential (zoned institutional and high-density), with some open space and commercial (zoned employment district) land uses.

Diversions of combined flow to Outfall 44A can occur during large stormwater runoff events. Land use in the combined sewer area is primarily single-family residential use, along with a lesser amount of commercial land use concentrated along major arterials such as NE Martin Luther King Jr. Boulevard. By the end of 2011, most of the storm drainage and all combined sewer drainage areas discharging to Outfall 44A will be diverted to the eastside tunnel and combined sewer overflows (CSOs) will no longer occur through this outfall.

2.3 Contaminants of Interest

During the development of the SAP for Basin 44A, available RM 11E sediment data were reviewed to identify contaminants of interest (COI) for the basin source investigation (BES,

2008). Elevated levels of PCBs, polycyclic aromatic hydrocarbons (PAHs), and DDT (and its breakdown products) were observed in the area, though spatial distributions did not point to a single source. Based on this review, PCBs were identified as the primary COI for the basin investigation.

2.4 Potential Upland Sources

Upland facilities identified as potential sources to the Basin 44A conveyance system include DEQ Cleanup Program sites, as listed in DEQ's Environmental Cleanup Site Information (ECSI) database, and facilities permitted by DEQ under the National Pollutant Discharge Elimination System (NPDES) industrial stormwater discharge permit program due to stormwater exposures to industrial operations. Two sites in Basin 44A are listed in the ECSI database and one site has been asked to join the DEQ Cleanup program: PacifiCorp's Knott Street Substation (part of the larger PacifiCorp – Albina Riverlots site, ECSI #5117), Tarr, Inc. (ECSI #1139), and Ross Island Sand & Gravel Co., Albina Plant Dock (ECSI # to be assigned). Two of these three sites have NPDES stormwater permits¹ (see Table 1). The locations of the ECSI and NPDES permit sites are shown on Figure 1. Information for these sites is summarized below.

- *PacifiCorp (a.k.a. PP&L) Knott Street Substation (part of ECSI #5117)*: This substation is located in the primarily residential upper portion of Basin 44A. The site entered the DEQ Cleanup Program in December 2008. PacifiCorp submitted a Remedial Investigation (Pre-RI) Assessment work plan in February 2009 (Bridgewater, 2009a) and a final Preliminary Assessment (PA) report for the Knott Street Substation in October 2009 (Bridgewater, 2009b). Based on the information presented in the PA, the substation has been in operation for over 100 years and releases of PCB-containing oil have been documented at this site. In addition, historic operations on this site included a fire station, "wet wash laundry," and carpenter's shop, which could have resulted in releases of other contaminants. Stormwater infiltrates at the majority of the site. Runoff from two portions of the site currently drains to two drywells, which PacifiCorp is in the process of decommissioning (CH2M HILL, 2010). Dry well #1 is located in the western corner of the facility and serves as drainage for the active electrical components within the substation. Dry well #2 is located east of the active electrical component and drains a very small area (approximately 0.01 acres) of the western portion of the substation. Plans are underway to construct a new infiltration basin on site to capture stormwater runoff from the area draining to dry well #1; the area drained by dry well #2 will not be affected by the removal of the dry well (CH2M HILL, 2010). Fate and transport from site overland flows are being addressed as part of the Pre-RI Assessment to determine if further evaluation of the stormwater pathway is needed at this site.
- *Tarr Inc. (ECSI #1139)*: This site is a bulk petroleum storage, packaging and distribution operation and is located in the lower portion of Basin 44A at 2429 N. Borthwick Avenue. According to information for this site on the ECSI database (DEQ, 2008b), extensive petroleum- and solvent-contaminated soil was discovered at this site in 1991 during decommissioning of an underground storage tank. Although some of the subsurface contamination was excavated, a "large volume" of contaminated soil could not be

¹ KF Jacobsen & Co. operates on the Ross Island Sand & Gravel site.

removed due to risk to onsite structures, and the contaminated soil that was left in place was not adequately characterized for solvent contamination. In addition, an oil spill reportedly occurred in 1991 on a nearby gravel lot leased by the site operator for storage of empty oil trucks and tanks. The site joined DEQ's Voluntary Cleanup Program in January 2002 and completed a Phase II investigation in December 2002. Onsite and offsite vapors were identified in 2007; vapor treatment systems and additional offsite probes were installed in 2007 and 2008, respectively (DEQ, 2008b). No pathways for site COIs to the river have been identified (DEQ, 2010a). The site currently operates under an NPDES 1200-Z Industrial Stormwater permit and discharges to Basin 44A.

- *Ross Island Sand & Gravel Co., Albina Plant Dock (ECSI # to be assigned)*: DEQ has identified this site as a location where a stormwater source control evaluation is needed (DEQ, 2010a). Site operations include recycled asphalt processing, hot mix asphalt production, and a concrete batch plant. Stormwater discharges from the site are regulated under an NPDES 1200-A Industrial Stormwater permit, issued to facilities with mining, quarrying, asphalt mix batch, or concrete batch operations. With the exception of a small portion of the stormwater conveyance system in the vicinity of the concrete batch plant, stormwater lines at this site discharge to the Basin 44A drainage system downstream of the planned diversion to the eastside tunnel.

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SECTION 3

Source Investigation Approach

The City's investigation activities in Basin 44A were conducted in two phases, as presented in the project-specific SAP and SAP amendment (BES, 2008; BES, 2009a)². This section summarizes the overall approach and timeline of the phased investigation. Detailed descriptions of the sampling activities and analytical approach are provided in Section 4 (stormwater sampling) and Section 5 (stormwater solids sampling).

During Phase 1 of the investigation, the City collected stormwater grab samples and concurrent inline sediment trap samples at a location representative of the majority of the basin, as a screening step to identify future source investigation priorities for the City outfall basins discharging to the RM 11E area. Subsequent stormwater drainage system information obtained from the Ross Island Co. Albina Dock site during permit review and site inspection indicated that approximately 2 acres of site drainage area connects to Basin 44A downstream of the monitoring location utilized during Phase 1.³ The stormwater samples were collected during four storm events between November 2008 and March 2009. The sediment traps were deployed in October 2008 and removed in May 2009.

Phase 2 of the investigation entailed additional stormwater solids sampling in the upper portion of Basin 44A to evaluate whether contaminants are being discharged from the PacifiCorp Knott Street Substation, a suspected source within the basin. In preparation for the Phase 2 work (as described in the SAP amendment), the City reviewed available Phase 1 stormwater data, conducted field inspections, and evaluated conveyance system records to clarify locations of lateral connections from potential sources and areas of possible inline solids deposits in the vicinity of those sources. Based on this evaluation, two catch basins were selected for sampling at the locations described in Section 5. The catch basin solids samples were collected in April 2009.

Sample collection and handling procedures were conducted using the applicable standard operating procedures (SOPs)⁴ included in the City's *Amended Programmatic Sampling and Analysis Plan* (Programmatic SAP) for collection of water and solids samples for the City of Portland Outfalls Project (BES, 2007a) and in accordance with the *Amended Programmatic Quality Assurance Project Plan* (Programmatic QAPP) for the project (BES, 2007b).

² The SAP was finalized in accordance with DEQ's comments and approval provided in a memorandum dated December 2, 2008 (DEQ, 2008c).

³ No access point to Basin 44A exists at or downstream of this connection.

⁴ The SOPs are established and maintained by the City's Field Operations section to standardize the data collection methodologies for a wide range of monitoring activities and thereby to maintain comparability and representativeness of the data produced.

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Stormwater Sampling and Analysis

4.1 Field Activities

The City conducted the stormwater sampling activities in accordance with the SAP (BES, 2008). Manhole ABC311 (located in the 72-inch main line) (Figure 1) was chosen as the sampling location in Basin 44A because it is located downstream of all connections to the basin conveyance system that were known at that time.⁵ The location represents approximately 113 acres of the 115-acre separated storm system. In accordance with the JSCS, stormwater samples were collected during four storm events, two of which targeted “first-flush” conditions (broadly defined for the purposes of basin-level monitoring as being within the first 3 hours of observed runoff). Photographs of the sampling location and stormwater flow conditions are provided in Appendix A. Field notes taken during sampling activities are provided in Appendix B.

4.2 Storm Events Sampled

The SAP identifies the following target storm event criteria (consistent with the JSCS) for stormwater sampling:

- Antecedent dry period of at least 24 hours (as defined by <0.1 inches of rainfall over the previous 24 hours);
- Minimum predicted rainfall volume of >0.2 inches for the storm event; and
- Expected duration of the storm event of at least 3 hours.

These criteria were developed as part of the JSCS for implementation by upland sites. For the purposes of the City’s basin-scale source investigations, the criteria are used as general guidelines to determine if forecasted storms should be targeted for sampling. Based on the City’s experience with stormwater monitoring in this region, smaller storms or those of shorter duration may not generate runoff at the outfall that would be representative of entire stormwater basins that have large areas or significant pervious components. To the extent practicable, project personnel adhered to sampling only those forecasted storms meeting the target storm criteria to help ensure that stormwater samples would be representative of stormwater runoff from the targeted drainage areas.

Samples were defined as meeting or not meeting “first-flush” conditions based on the rain gage data, field observations, and the timing of sample collection during the storm event. Table 2 includes a summary of the characteristics of each sampling event and designates those events that have been determined to meet “first-flush” criteria. Precipitation graphs for each event from hourly rainfall data collected at the Albina rain gage (located at 2920 N. Larrabee Avenue)⁶

⁵ The Ross Island Co. Albina Dock site (ECIS number to be assigned) was recently identified as connecting to Basin 44A downstream of the sample location at manhole ABC311.

⁶ Station #117 in the City’s Hydrological Data Retrieval and Alarm (HYDRA) system rain gage network.

are shown on Figure 2. Brief descriptions of the storm events sampled are provided below. As described below, the target JSCS criteria for stormwater sampling were met for all four sampling events.

- *November 20, 2008*: No rainfall was recorded at the Albina rain gage for the six days preceding this event. The minimum forecasted rainfall for this event was 0.29 inches. Rainfall began on November 20th between 6:00 and 7:00 a.m., Pacific Standard Time (PST), and the Basin 44A sample was collected at 9:56 a.m. By the time of sampling, 0.25 inches of rainfall had been recorded by the Albina rain gage; a total of 0.52 inches was recorded by the time the storm event ended between 7:00 and 8:00 p.m. that evening. The sample from this event is not considered to reflect first-flush conditions.
- *December 12, 2008*: No rainfall was recorded at the Albina rain gage for the three days preceding this event. The minimum forecasted rainfall for this event was 0.52 inches. Rainfall began between 10:00 and 11:00 a.m. and the sample was collected at 11:20 a.m. By the time of sampling, 0.11 inches of rainfall had been recorded; a total of 0.44 inches was recorded by the time the event ended at approximately midnight on December 12th. The sample from this event is considered to reflect first-flush conditions.
- *February 23, 2009*: No rainfall was recorded at the Albina rain gage for the seven days preceding this event. The minimum forecasted rainfall for this event was 0.37 inches. The first rainfall was recorded at 8:00 a.m. on the morning of the 23rd and the sample was collected at approximately 2:55 p.m. By the conclusion of the sampling time, 0.36 inches of rainfall had been recorded, with more than half of this volume occurring during the two hours preceding sample collection. It rained a total of 0.48 inches on February 23rd and continued raining periodically over the next three days. The February 23rd sample is not considered to reflect first-flush conditions.
- *March 23, 2009*: Less than 0.1 inches of precipitation were recorded in the five days preceding this event. The minimum forecasted rainfall for this event was 0.21 inches. Rainfall began between 12:00 and 1:00 p.m. (PST) and peaked in intensity between 3:00 and 4:00 p.m. The sample was collected at 2:14 p.m. PST. Approximately 0.02 inches of rainfall had been recorded at the time of sampling. The rain event ended shortly after 11:00 p.m. on March 23; at that time a total of 0.16 inches of precipitation had been recorded by the Albina rain gage. The sample from this event is considered to reflect first-flush conditions. The total precipitation amount for the March 23, 2009, event was less than the targeted 0.2-inch minimum, but the predicted precipitation was within the targeted amount, and field observations at the time of sampling indicated the sampled flow represented stormwater discharge. However, because the sample was collected after only a relatively small amount of rainfall had occurred (approximately 0.02 inches), the sample may not be representative of discharges from the entire basin.

Based on these sampling conditions, the four stormwater samples are considered to meet the Basin 44A sampling objectives.

4.3 Analytical Approach

Stormwater samples were analyzed for PCB congeners, organochlorine pesticides, semivolatile organic compounds (SVOCs) (including PAHs and phthalates), total metals, and total

suspended solids (TSS) by the BES Water Pollution and Control Laboratory (WPCL) and subcontracted laboratories in accordance with the SAP.

4.4 Summary of Results

PCB congeners, pesticides, SVOCs, and metals were detected in one or more samples at low concentrations. Tables 3 and 4 summarize the laboratory analytical results for the stormwater samples and include the JSCS screening level values (SLVs) for reference. The total PCBs concentrations are displayed on Figure 3 along with solids data collected during Phase 2. The laboratory reports and data review memoranda for the samples were previously submitted to DEQ (BES, 2009b, 2009c, 2009d) and are included for reference in Appendix C. The stormwater data and solids data are evaluated in Section 6.

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Stormwater Solids Sampling and Analysis

The City collected solids samples during the Phase 1 and Phase 2 source investigations. During Phase 1, sediment traps were deployed at the stormwater sampling location to collect a concurrent integrated solids sample for basin-level source screening. During Phase 2 sampling, two additional inline solids samples were collected from catch basins farther upstream in the conveyance system, adjacent to a suspected source to the basin. The field activities, analytical approach, and results for the solids sampling are described below.

5.1 Field Activities

5.1.1 Sediment Trap Sampling (Phase 1)

Sediment trap deployment and sampling procedures during Phase 1 were conducted in accordance with the SAP (BES, 2008). Two sets of sediment traps were installed immediately downstream of Manhole ABC311 (see Figure 1) in the 72-inch main line on October 17, 2008. The sediment traps were inspected periodically, and accumulated sediments were removed on May 27, 2009. Approximately 1.0 to 1.5 inches of solids had accumulated in each of the four trap bottles at the time of removal. In accordance with the BES SOP 5.01b, "Sampling Stormwater Solids Using Inline Sediment Traps," field personnel filtered the bottle contents at the City's WPCL and composited the samples to generate final solids samples for laboratory analysis. Selected photographs of the sediment traps in their installed locations are provided in Appendix A. Field notes taken during sediment trap installation, monitoring, removal, and sample processing activities are provided in Appendix B.

The volume of sample collected from the sediment traps was sufficient to conduct all laboratory analyses specified in the SAP on the primary sample, except for the full SVOC scan, and selected analyses on a duplicate sample.

5.1.2 Catch Basin Solids Sampling (Phase 2)

The City collected catch basin solids in Basin 44A on April 8, 2009, in accordance with the SAP (BES, 2008) and SAP amendment (BES, 2009a) at the following two locations (see Figure 1):

- Catch basin ADZ315 located on the north side of NE Russell Street adjacent to the driveway at the PacifiCorp Knott Street Substation.
- Catch basin APL263 located at the northwestern corner of the intersection between NE Rodney Avenue and NE Russell Street, adjacent to the southeast corner of the PacifiCorp Knott Street Substation.

The samples were homogenized and sieved at the WPCL using a #10 sieve; the sieved portions of the samples were submitted for analysis. This approach was developed to minimize potential dilution effects of road-deicing aggregate material applied to the rights-of-way in December 2008 (BES, 2009c).

5.2 Analytical Approach

In accordance with the SAP and SAP amendment, the solids samples were analyzed by the WPCL or subcontracted laboratories for PCB Aroclors, metals, SVOCs, total organic carbon (TOC), total solids, and grain size. In addition, the sediment trap samples were analyzed for pesticides and PCB congeners. Because of sample size limitations, the sediment trap samples were analyzed for PAHs and phthalates but not the full SVOC scan.

5.3 Summary of Results

PCBs, SVOCs, and metals were detected in one or more samples at low concentrations. Tables 5 and 6 summarize the laboratory analytical results for the solids samples and include the JSCS SLVs for reference. The total PCBs concentrations are displayed on Figure 3 along with stormwater data collected during Phase 1. The laboratory reports and data review memoranda for the solids samples were previously submitted to DEQ (BES, 2009e, 2009f) and are included for reference in Appendix C. Solids data are evaluated in Section 6 along with stormwater data collected during Phase 1.

Data Evaluation

The objective of the Basin 44A investigation was to evaluate the potential presence of significant sources to the basin. Because the JSCS SLVs are conservative screening values selected to be protective of inriver receptors, exceedances of SLVs in in-pipe media (e.g., stormwater and stormwater solids) do not necessarily indicate the presence of significant sources warranting additional source tracing or source control. For example, some SLVs are below estimated background concentrations and concentrations present in undeveloped natural areas and are below some NPDES benchmarks (e.g., NPDES 1200-Z permit benchmarks for metals are one to two orders-of-magnitude higher than the surface water SLVs). To assess if the data indicate sources to stormwater, the City evaluated the Basin 44A data set against the harborwide data collected by the City and other parties, to provide references for interpreting the potential significance of the source investigation results.

6.1 Basin-Level Screening

6.1.1 Stormwater Data

Stormwater data for all analytes for which one or more stormwater sample concentrations exceeded the applicable JSCS SLVs (see Tables 3 and 4) were further evaluated to assess the potential need for further source tracing. This assessment was conducted on the geometric mean⁷ of the concentrations to account for the inherent variability in stormwater data. The geometric mean concentrations first were compared to the applicable JSCS SLVs, and analytes for which the geometric mean concentration is less than the SLV were not carried forward for further assessment. Analytes for which the geometric mean concentration is greater than the SLV were compared to the following additional screening factors, as applicable: the DEQ default background concentrations (DEQ, 2002), the harborwide source tracing categories developed as part of the *Stormwater Evaluation Report* (BES, 2010), and NPDES 1200-Z permit benchmarks. The results of this screening are presented in Table 7.

The development of the harborwide source tracing categories in the *Stormwater Evaluation Report* (BES, 2010) consisted of a statistical analysis of stormwater data collected by the City, the LWG, and others from City and non-City outfall basins within Portland Harbor. The harborwide analyses resulted in the sorting of analytes by basin into one of three source tracing categories (i.e., “1-lower”, “2-moderate”, and “3-higher”) relative to harborwide distribution of stormwater concentration levels. These categories were then used as the basis for identifying which analytes should be evaluated further, in the context of known and suspected sources, to determine if additional source investigation was needed in City outfall basins. Rather than

⁷ Use of the geometric mean is consistent with DEQ’s use of the annual geometric mean concentration as a protective compliance limit in the City’s Underground Injection Control (UIC) permit (DEQ, 2005), DEQ-issued NPDES 1200-Z permits (DEQ, 2006), and DEQ’s Industrial Stormwater Advisory Committee discussions regarding monitoring approaches under DEQ’s NPDES program (DEQ 2009a, 2009b, and 2009c).

regenerate the statistical analyses for the purpose of evaluating the Basin 44A data, a simplified approach was used to generate conservative geomean concentrations for comparison purposes.⁸

As indicated in Table 7 and summarized below, the stormwater data do not indicate potentially significant sources to the basin:

- *Total PCBs*: The basin geometric mean concentration is low relative to the range of harborwide values [i.e., falls into the lowest source tracing category defined in the *Stormwater Evaluation Report* (BES, 2010)].
- *Metals*: The basin geometric mean concentrations of arsenic, cadmium, copper, lead and zinc exceed the applicable JSCS SLVs. However, the arsenic, cadmium, and lead geometric mean concentrations are less than DEQ estimated background concentrations, and the copper geometric mean concentration falls in the lowest harborwide source tracing category. The zinc geometric mean concentration is just outside the lowest harborwide source tracing category and well below the DEQ NPDES permit benchmark.
- *PAHs*: The basin geometric mean concentrations for the individual PAHs listed are all less than the applicable SLV and are low relative to the range of harborwide values.
- For those analytes listed in Table 7 for which the basin geomean concentration exceeds the applicable SLV and for which no source tracing category is available (i.e., pesticides and pentachlorophenol),⁹ further evaluation of the data indicates overall concentrations for the basin are low because the geometric mean only slightly exceeds the JSCS SLV, detections were few, and/or the data are qualified.

In addition, DEQ has compiled and graphed concentrations for selected contaminants detected in stormwater (and solids) from a larger number of industrial sites throughout the Portland Harbor and has provided the graphs in its *Guidance for Evaluating the Stormwater Pathway at Upland Sites* (DEQ, 2010b) to assist with data evaluation. Comparison of the Basin 44A geometric mean concentrations that exceeded the JSCS SLVs to DEQ's guidance graphs for stormwater analytes (where available) indicates concentrations in Basin 44A are low in all cases.

6.1.2 Sediment Trap Data

Consistent with the stormwater data, analyte concentrations in the sediment trap samples are generally low and not indicative of significant sources in the basin. Although certain constituents were detected in the sediment trap samples at concentrations exceeding the JSCS

⁸ Geometric mean values were calculated using the following conventions: (1) averaging the concentrations (for each analyte) for the 12/12/2008 primary and duplicate samples to calculate a single concentration (for each analyte) for the 12/12/2008 event prior to calculating the overall geometric mean concentration; and (2) setting the value for concentrations reported as below the laboratory method reporting (MRL) limit to 1/2 the value of the laboratory MRL; 1/2 the value of the highest MRL is used in the case of non-detect results for summed analytes (e.g., total PCBs).

⁹ Based on a lack of sufficient harborwide data to conduct a robust statistical analysis (BES, 2010), source tracing categories were not developed for all analytes.

Toxicity SLVs, most average concentrations¹⁰ were within an order-of-magnitude of the SLVs and most of the exceedances were slight (less than 2 times the SLV) (see Table 5).

The average concentrations of one PAH (naphthalene) and bis(2-ethylhexyl)phthalate (BEHP) exceed the Toxicity SLVs by more than a factor of 10 in the sediment trap samples. However, total PAHs and BEHP concentrations in the sediment trap samples are low relative to the range of concentrations detected in stormwater solids included in DEQ's Guidance for Evaluating the Stormwater Pathway at Upland Sites (DEQ, 2010b).

The highest total PCB congeners concentration detected in the parent sediment trap sample (169 µg/Kg) is approximately 4 times higher than the total PCB congeners concentration in the duplicate sample (40.6 µg/Kg) from the same location (note: both results are considered estimated because the relative percent difference of 123% is outside of acceptable control limits). The average concentration is considered low relative to the range of total PCBs concentrations detected at industrial sites discharging to the Portland Harbor (DEQ, 2010b). Additionally, the PCB Aroclor concentrations in both the parent and duplicate samples are low (31 and 15 µg/Kg, respectively).

6.2 Source Tracing (Upper Basin Solids Data)

Results for solids samples from the two catch basins adjacent to the PacifiCorp Knott Street Substation do not indicate this site is a current contaminant source to the Basin 44A conveyance system. Although the total PCB Aroclor concentrations in the catch basin solids samples are slightly higher than the PCB Aroclor concentrations detected in the downstream sediment traps, the detections are not considered significant. Few constituents exceeded the JSCS Toxicity SLVs in either sample and, with the exception of BEHP, most of the exceedances were slight or within one order-of-magnitude of the SLV. For those analytes for which DEQ has compiled data for comparison (DEQ, 2010b), including BEHP, all analyte concentrations in the two catch basin solids samples from adjacent to the PacifiCorp Knott Street Substation are low relative to the range of concentrations detected in stormwater solids from Portland Harbor industrial sites. These results support the findings from the basin-scale screening of stormwater and solids that indicated no significant sources in the basin.

6.3 Evaluation of Potential Upland Sources

Two of the three potential upland sources identified in the basin — the PacifiCorp Knott Street Substation and Tarr, Inc. — connect upstream of the basin sampling location and the basin-level screening results do not indicate that significant contaminant sources are discharging to Basin 44A. Stormwater discharges from the Tarr site may be contributing to the zinc concentrations detected in City sediment trap and stormwater samples. Zinc permit benchmark exceedances have occurred at the site, though the majority of site stormwater samples detected zinc at concentrations between the SLV and the benchmark (36-600 µg/L). In addition, results for the two catch basin samples collected in the upper basin for source tracing purposes confirm that the PacifiCorp substation does not appear to be a significant contaminant source via overland flows to these catch basins.

¹⁰ Parent and duplicate sample average concentrations were calculated following guidelines used by the LWG for data reporting (Kennedy/Jenks, 2004).

Contributions to the Basin 44A conveyance system from the Ross Island Co. Albina Dock site are not reflected in the basin data set because the discharge point is downstream of manhole ABC311. The point of connection is also downstream of the planned diversion point for the Basin 44A flow to the eastside CSO tunnel. Recognizing that the site will continue to discharge to the river via Outfall 44A once the eastside tunnel has been completed, DEQ has requested the facility owners to evaluate the site's stormwater pathway.

SECTION 7

Conclusions

Results of this source investigation do not indicate that significant current sources of PCBs or other contaminants of interest are discharging to the Basin 44A conveyance system. Specific findings supporting this conclusion are as follows:

- The sampling objectives defined in the SAP and SAP amendment were met, and the resulting data are considered representative of stormwater and solids discharging to the Basin 44A conveyance system.
- PCBs concentrations in stormwater and inline solids from this basin are low relative to concentrations for basins and industrial sites discharging to Portland Harbor.
- The overall stormwater and solids data set indicate concentrations of all other detected contaminants are generally low. Most individual sample concentrations were less than JSCS SLVs and, for those concentrations greater than the SLVs, the factors of exceedance are low.
- Stormwater data were compared to data harborwide in a manner similar to that utilized in the *City Stormwater Evaluation Report* (BES, 2010). Concentrations of all analytes in stormwater are low, based on comparison of the basin geometric mean concentrations to the SLVs, DEQ default background concentrations (DEQ, 2002), harborwide concentration ranges, DEQ guidance (DEQ, 2010b), and other screening factors.
- For those analytes for which DEQ has compiled data for comparison (DEQ, 2010b), analyte concentrations in the sediment trap and catch basin solids are low relative to the range of concentrations detected in stormwater solids from Portland Harbor industrial sites.
- Contaminant concentrations in stormwater do not indicate potential future violations of City wastewater discharge limits and prohibitions.

With the scheduled completion of the eastside CSO tunnel in 2011, all stormwater collected in Basin 44A upgradient of the connection from the Ross Island Co. Albina Dock site will be captured by the tunnel and diverted to the municipal wastewater treatment facility. As the Ross Island Co. Albina Dock site will be the only drainage area discharging to Outfall 44A post-diversion, the City will evaluate site data collected as part of the DEQ-requested stormwater pathway evaluation to determine whether site source control implementation may be needed under DEQ or City authorities.

Based on these findings, the City concludes that no further source tracing efforts in Basin 44A are needed. The source investigation results presented in this report and plans for conveyance system diversion will support future DEQ decisions for this basin. The City anticipates requesting a DEQ decision following the development of a summary report that will refer to this investigation and cover the City outfall basins discharging to AOPC 25.

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SECTION 8

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Table 1: Current⁽¹⁾ and Historic NPDES Permits in Basin 44A

Address	Company	Permit Type and Time Period			Available Stormwater Data Period	Notes
		Type	Issue Date	Expiration Date ⁽²⁾		
2429 N. Borthwick	Priestly Oil & Chemical Co.	1200-T	10/30/1992	9/30/1996	4/1995-2/2010	1200-T to Priestly Oil & Chemical 10/30/92
	Tarr Acquisitions, LLC	1200-T	4/18/1995	9/30/1996		Name Changed to Tarr Acquisition, LLC 4/24/1995 Small to Mid-sized bulk petroleum tank farm for storage, packaging & distribution of oils, lubes, solvents, & fuels. Has diesel fuel, gasoline cardlock station on site. DEQ File #100571
		1200-Z	8/18/1998	6/30/2002		
		1200-Z	10/10/2002	6/30/2007		
		1200-Z	9/25/2007	6/30/2012		
1050 N. River	Lone Star Northwest	100-J	12/20/1990	12/31/1995	N/A	Site has Air Discharge Permit #26-1995 & dock dredge permit. Had 931 N River as address.
	Glacier Northwest, Inc.	100-J	10/22/1996	7/31/2001		Name changed to Glacier NW ~2000. DEQ-not part of ISW Program 2001. Fueling onsite. DEQ File # 44571/C, see DEQ for data.
1208 N. River	KF Jacobsen & Co Inc.-Plant	1000	12/13/1997	6/30/2002	N/A	Site in use since 1927, receives aggregates by barge. Since 1990 taking in recycled asphalt (RAP) by truck. Shares site w/Ross Island Sand & Gravel. Grinding of RAP done onsite for use with paving mixes. DEQ file # 105307
		1200-A	4/20/2001	6/30/2007		
		1200-A	4/20/2001	6/30/2002		
		1200-A	unknown	6/30/2007		
		1200-A	11/20/2007	6/30/2012		

Notes:

(1) Current permits are indicated in bold.

(2) Expiration date as shown on general permit. DEQ typically gives administrative permit extension date until a new general permit can be issued.

ISW - City of Portland Industrial Stormwater Program.

Table 2
Basin 44A Stormwater Sampling Event Summary

Storm Date and Time	Sample Type	Antecedent Dry Period (days)⁽¹⁾	Minimum Forecasted Rainfall Total (Inches)⁽²⁾	First Flush Event?⁽³⁾
11/20/08 09:56 (PST)	Grab	6	0.29	No
12/12/08 11:20 (PST)	Grab	3	0.52	Yes
02/23/09 14:55 (PST)	Grab	7	0.37	No
03/23/09 15:14 (PDT)	Grab	5	0.21	Yes

Notes:

PST = Pacific Standard Time

PDT = Pacific Daylight Time

⁽¹⁾ Days receiving less than 0.10 inches over 24 hours as recorded at the Albina Rain Gage, 2920 N. Larrabee Avenue.

⁽²⁾ Provided by Extended Range Forecasting, Inc.

Table 3
Basin 44A Stormwater Results

		Manhole ABC311 Downstream in 72" Line					JSCS Stormwater SLVs ⁽¹⁾		
		Event 1 FO081412	Event 2 FO081480	Event 2 Duplicate FO081482	Event 3 FO095221	Event 4 FO095376	Human Health Fish Consumption ⁽²⁾	Human Health Ingestion ⁽³⁾	Ecological ⁽⁴⁾
Class	Analyte	Units	11/20/2008	12/12/2008	12/12/2008	2/23/2009	3/23/2009		
Field Measurements									
	Conductivity	µmhos/cm	43	38	NA	37	97	--	--
	pH	units	7	6.2	NA	7.3	7.5	--	--
	Temperature	Deg. C	10.7	7.2	NA	9.1	10.0	--	--
Total Suspended Solids (SM 2540D)									
	TSS	mg/L	13	118	105	209	140	--	--
Total Metals (EPA 200.8)									
	Arsenic	µg/L	0.47	0.85	0.91	1.36	1.19	0.14	0.045
	Cadmium	µg/L	0.21	0.54	0.52	0.54	0.61	--	5
	Chromium	µg/L	0.98	5.13	5.21	8.68	6.96	--	100
	Copper	µg/L	9.89	29.2	29	31.7	44.8	--	1300
	Lead	µg/L	3.05	12.5	12.9	30	11.6	--	15
	Mercury ⁽⁵⁾	µg/L	0.0089	0.025	0.018	0.023	0.019	0.146	2
	Nickel	µg/L	1.37	3.53	3.44	6.05	11.80	4600	730
	Silver	µg/L	0.10 U	0.10 U	0.10 U	0.10 U	0.67	--	100
	Zinc	µg/L	98.4	190	183	205	365	26000	5000
Pesticides (EPA 8081A)									
	4,4'-DDE	µg/L	NA	0.00053 U	0.000555 U	0.0050 U	0.0025 J	0.00031	0.28
	4,4'-DDD	µg/L	NA	0.0030 U	0.00076 U	0.016	0.0012 J	0.00022	0.2
	4,4'-DDT	µg/L	NA	0.0011 U	0.0025 U	0.011 U	0.0025 U	0.00022	0.2
	Estimated Total DDx ⁽⁶⁾	µg/L	NA	ND	ND	0.016	0.0037 J	--	0.2
	Aldrin	µg/L	NA	0.0053	0.0053	0.0050 U	0.0025 U	0.00005	0.004
	alpha-BHC (α-BHC)	µg/L	NA	0.00053 U	0.00058 U	0.0050 U	0.0025 U	0.0049	0.011
	beta-BHC (β-BHC)	µg/L	NA	0.0017 U	0.0018 U	0.0056 U	0.0025 U	0.017	0.037
	delta-BHC (δ-BHC)	µg/L	NA	0.0025 U	0.0031 U	0.0050 U	0.0025 U	--	--
	gamma-BHC (γ-BHC, Lindane)	µg/L	NA	0.00053 U	0.00052 U	0.058 U	0.0025 U	1.8	0.052
	alpha-Chlordane ⁽⁷⁾	µg/L	NA	0.00053 U	0.00052 U	0.0050 U	0.038 U	--	--
	beta-Chlordane ⁽⁷⁾	µg/L	NA	0.00063 U	0.00052 U	0.0050 U	0.0025 U	--	--
	Total Chlordane ⁽⁸⁾	µg/L	NA	ND	ND	ND	ND	0.00081	0.19
	Dieldrin	µg/L	NA	0.00053 U	0.00052 U	0.0050 U	0.0025 U	0.000054	0.0042
	Endosulfan I	µg/L	NA	0.00053 U	0.00052 U	0.013	0.0025 U	89	220
	Endosulfan II	µg/L	NA	0.00053 U	0.00052 U	0.0050 U	0.0025 U	89	220
	Endosulfan Sulfate	µg/L	NA	0.0011 U	0.0011 U	0.0050 U	0.0019 J	89	--
	Endrin	µg/L	NA	0.00053 U	0.00052 U	0.0050 U	0.0025 U	0.06	2
	Endrin Aldehyde	µg/L	NA	0.00053 U	0.00052 U	0.0032 J	0.0025 U	0.3	--
	Endrin Ketone	µg/L	NA	0.00084 U	0.00052 U	0.0064	0.0025 U	--	--
	Heptachlor	µg/L	NA	0.0020 U	0.0016 U	0.0050 U	0.0025 U	0.000079	0.015
	Heptachlor Epoxide	µg/L	NA	0.0017	0.00050 U	0.0050 U	0.0025 U	0.000039	0.0074
	Methoxychlor	µg/L	NA	0.00053 U	0.00052 U	0.0050 U	0.0025 U	--	40
	Toxaphene	µg/L	NA	0.073 U	0.087 U	0.25 U	0.13 U	0.00028	0.061
Polychlorinated Biphenyl Congeners (PCBs) (EPA 1668A)									
	Total PCBs ⁽⁹⁾⁽¹⁰⁾	µg/L	0.00171	0.0194	0.0281	0.0340	ND	0.000064	0.034

Table 3
Basin 44A Stormwater Results

		Manhole ABC311 Downstream in 72" Line					JSCS Stormwater SLVs ⁽¹⁾		
		Event 1 FO081412	Event 2 FO081480	Event 2 Duplicate FO081482	Event 3 FO095221	Event 4 FO095376	Human Health Fish Consumption ⁽²⁾	Human Health Ingestion ⁽³⁾	Ecological ⁽⁴⁾
Class	Analyte	Units	11/20/2008	12/12/2008	12/12/2008	2/23/2009	3/23/2009		
Polycyclic aromatic hydrocarbons (PAHs) (EPA 8270-SIM)									
	Acenaphthene	µg/L	0.0194 U	0.0194 U	0.0194 U	0.0777 U	0.0194 U	990	0.2
	Acenaphthylene	µg/L	0.0380	0.0312	0.0287	0.0777 U	0.0194 U	--	0.2
	Anthracene	µg/L	0.0194 U	0.0194 U	0.112	0.0777 U	0.0194 U	40000	0.2
	Benzo(a)anthracene	µg/L	0.00971 U	0.0312	0.0231	0.0553	0.00971 U	0.018	0.092
	Benzo(a)pyrene	µg/L	0.00971 U	0.0383	0.0263	0.0556	0.00971 U	0.018	0.0092
	Benzo(b)fluoranthene	µg/L	0.00971 U	0.0516	0.0362	0.079	0.00971 U	0.018	0.092
	Benzo(g,h,i)perylene	µg/L	0.0194 U	0.0704	0.0527	0.0878	0.00971 U	--	0.2
	Benzo(k)fluoranthene	µg/L	0.00971 U	0.0372	0.0271	0.0572	0.00971 U	0.018	0.2
	Chrysene	µg/L	0.016	0.0906	0.0468	0.158	0.0288	0.018	0.2
	Dibenzo(a,h)anthracene	µg/L	0.0097 U	0.0104	0.00971 U	0.0388 U	0.00971 U	0.018	0.0092
	Fluoranthene	µg/L	0.0334	0.192	0.144	0.233	0.0536	140	0.2
	Fluorene	µg/L	0.0194 U	0.0194	0.0365	0.0777 U	0.0194 U	5300	0.2
	Indeno(1,2,3-cd)pyrene	µg/L	0.00971 U	0.0326	0.0216	0.0458	0.00971 U	0.018	0.092
	Naphthalene	µg/L	0.0648	0.781	0.551	0.358	0.0488	--	0.2
	Phenanthrene	µg/L	0.0342	0.139	0.163	0.169	0.0533	--	0.2
	Pyrene	µg/L	0.0349	0.0962	0.0523	0.16	0.0843	4000	0.2
	Total PAHs ⁽¹⁰⁾	µg/L	0.2213	1.6211	1.3213	1.4587	0.2688	--	--
Polycyclic aromatic hydrocarbons (PAHs) (EPA 8270C)									
	Acenaphthene	µg/L	0.22 U	1.1 U	1.1 U	2.1 U	0.2 U	990	0.2
	Acenaphthylene	µg/L	0.220 U	1.1 U	1.1 U	2.1 U	0.2 U	--	0.2
	Anthracene	µg/L	0.22 U	1.1 U	1.1 U	2.1 U	0.2 U	40000	0.2
	Benzo(a)anthracene	µg/L	0.22 U	1.1 U	0.057 J	2.1 U	0.2 U	0.018	0.092
	Benzo(a)pyrene	µg/L	0.22 U	1.1 U	1.1 U	2.1 U	0.2 U	0.018	0.0092
	Benzo(b)fluoranthene	µg/L	0.22 U	1.1 U	1.1 U	2.1 U	0.2 U	0.018	0.092
	Benzo(g,h,i)perylene	µg/L	0.22 U	1.1 U	1.1 U	2.1 U	0.2 U	--	0.2
	Benzo(k)fluoranthene	µg/L	0.22 U	1.1 U	1.1 U	2.1 U	0.2 U	0.018	0.2
	Chrysene	µg/L	0.22 U	1.1 U	0.15 J	2.1 U	0.2 U	0.018	0.2
	Dibenzo(a,h)anthracene	µg/L	0.22 U	1.1 U	1.1 U	2.1 U	0.2 U	0.018	0.0092
	Fluoranthene	µg/L	0.220 U	0.22 J	0.2 J	0.44 J	0.2 U	140	0.2
	Fluorene	µg/L	0.22 U	1.1 U	1.1 U	2.1 U	0.2 U	5300	0.2
	Indeno(1,2,3-cd)pyrene	µg/L	0.22 U	1.1 U	1.1 U	2.1 U	0.2 U	0.018	0.092
	Naphthalene	µg/L	0.08 J	0.54 J	0.93 J	0.93 J	0.2 U	--	0.2
	Phenanthrene	µg/L	0.033 J	0.19 J	0.24 J	0.26 J	0.2 U	--	0.2
	Pyrene	µg/L	0.04 J	0.28 J	0.24	0.57 J	0.2 U	4000	0.2
	Total PAHs ⁽¹⁰⁾	µg/L	0.15 J	1.23 J	1.817 J	2.2 J	ND	--	--
Phthalates (EPA 8270-SIM)									
	Bis(2-ethylhexyl)phthalate	µg/L	1.05	2.24	2.13	4.38	1.34	2.2	4.8
	Butylbenzylphthalate	µg/L	0.97 U	0.971 U	0.971 U	1.94 U	0.971 U	1900	7300
	Di-n-butylphthalate	µg/L	0.97 U	0.971 U	0.971 U	1.94 U	0.971 U	4500	3700
	Di-n-octylphthalate	µg/L	0.97 U	0.579	0.971 U	1.94 U	0.971 U	--	1500
	Diethylphthalate	µg/L	0.97 U	0.971 U	0.971 U	1.94 U	0.971 U	44000	29000
	Dimethylphthalate	µg/L	0.97 U	0.971 U	0.971 U	1.94 U	0.971 U	1100000	370000
Phthalates (EPA 8270C)									
	(BEHP)	µg/L	0.66 J	3.6 J	3.9	5.8 J	1.1	2.2	4.8
	Butyl Benzyl Phthalate	µg/L	0.27	1.1 U	0.43	2.1 U	0.2 U	1900	7300
	Di-n-butyl phthalate	µg/L	0.24	0.31 J	0.32 J	2.1 U	0.2 U	4500	3700
	Di-n-octyl phthalate	µg/L	0.22 U	1.1 U	1.1 U	2.1 U	0.2 U	--	1500
	Diethyl phthalate	µg/L	0.18 J	1.1 U	1.1 U	2.1 U	0.23	44000	29000
	Dimethyl phthalate	µg/L	0.19 J	1.1 U	1.1 U	2.1 U	0.097 J	1100000	370000

Table 3
Basin 44A Stormwater Results

		Manhole ABC311 Downstream in 72" Line					JSCS Stormwater SLVs ⁽¹⁾			
			Event 1 FO081412	Event 2 FO081480	Event 2 Duplicate FO081482	Event 3 FO095221	Event 4 FO095376			
Class	Analyte	Units	11/20/2008	12/12/2008	12/12/2008	2/23/2009	3/23/2009	Human Health Fish Consumption ⁽²⁾	Human Health Ingestion ⁽³⁾	Ecological ⁽⁴⁾
SVOCs (EPA 8270C)										
	1,2,4-Trichlorobenzene	µg/L	0.22 U	1.1 U	1.1 U	2.1 U	0.2 U	70	8.2	110
	1,2-Dichlorobenzene	µg/L	0.22 U	1.1 U	0.21 U	2.1 U	0.2 U	1300	49	763
	1,3-Dichlorobenzene	µg/L	0.22 U	1.1 U	0.21 U	2.1 U	0.2 U	960	14	763
	1,4-Dichlorobenzene	µg/L	0.22 U	1.1 U	0.21 U	2.1 U	0.2 U	190	2.8	763
	2,4,5-Trichlorophenol	µg/L	0.53 U	2.6 U	2.6 U	5.1 U	0.5 U	3600	3700	--
	2,4,6-Trichlorophenol	µg/L	0.53 U	2.6 U	2.6 U	5.1 U	0.5 U	2.4	6.1	970
	2,4-Dichlorophenol	µg/L	0.53 U	2.6 U	2.6 U	5.1 U	0.5 U	290	110	365
	2,4-Dimethylphenol	µg/L	4.3 U	21 U	21 U	41 U	4 U	850	730	--
	2,4-Dinitrophenol	µg/L	4.3 U	21 U	21 U	41 U	4 U	5300	73	150
	2,4-Dinitrotoluene	µg/L	0.22 U	1.1 U	1.1 U	2.1 U	0.2 U	3.4	73	--
	2,6-Dinitrotoluene	µg/L	0.22 U	1.1 U	1.1 U	2.1 U	0.2 U	--	37	--
	2-Chloronaphthalene	µg/L	0.22 U	1.1 U	1.1 U	2.1 U	0.2 U	1600	490	--
	2-Chlorophenol	µg/L	0.53 U	2.6 U	0.52 U	5.1 U	0.5 U	150	30	2000
	2-Methylnaphthalene	µg/L	0.22 U	1.1 U	1.1 U	2.1 U	0.2 U	--	0.2	2.1
	2-Methylphenol	µg/L	0.25 J	2.6 U	0.47 J	5.1 U	0.5 U	--	180	13
	2-Nitroaniline	µg/L	0.22 U	1.1 U	1.1 U	2.1 U	0.2 U	--	110	--
	2-Nitrophenol	µg/L	0.10 J	2.6 U	2.6 U	5.1 U	0.5 U	--	1100	150
	3,3'-Dichlorobenzidine	µg/L	2.2 U	11 U	2.1 U	21 U	2 U	0.028	0.15	763
	3-Nitroaniline	µg/L	1.1 U	5.1 U	5.2 U	11 U	1 U	--	3.2	--
	4,6-Dinitro-2-methylphenol	µg/L	2.2 U	11 U	11 U	21 U	2 U	280	--	150
	4-Bromophenylphenyl ether	µg/L	0.22 U	1.1 U	1.1 U	2.1 U	0.2 U	--	--	--
	4-Chloro-3-methylphenol	µg/L	0.53 U	2.6 U	2.6 U	5.1 U	0.5 U	--	--	--
	4-Chloroaniline	µg/L	0.22 U	1.1 U	1.1 U	2.1 U	0.2 U	--	150	--
	4-Chlorophenyl phenyl ether	µg/L	0.22 U	1.1 U	1.1 U	2.1 U	0.2 U	--	0.06	--
	4-Methylphenol	µg/L	0.65	0.7 J	0.69	5.1 U	0.5 U	--	180	--
	4-Nitroaniline	µg/L	1.1 U	5.1 U	5.2 U	11 U	1 U	--	3.2	--
	4-Nitrophenol	µg/L	2.2 U	11 U	11 U	21 U	2 U	--	290	150
	Benzoic acid	µg/L	1.7 J	6.1 J	5.9 J	51 U	2.7 J	--	150000	42
	Benzyl alcohol	µg/L	3.20	0.8 J	0.97	5.1 U	0.5 U	--	11000	8.6
	Bis(2-chloroethoxy) methane	µg/L	0.22 U	1.1 U	1.1 U	2.1 U	0.2 U	--	--	--
	Bis(2-chloroethyl) ether	µg/L	0.22 U	1.1 U	0.21 U	2.1 U	0.2 U	0.53	0.06	--
	Bis(2-chloroisopropyl) ether	µg/L	0.22 U	1.1 U	0.21 U	2.1 U	0.2 U	--	0.95	--
	Dibenzofuran	µg/L	0.22 U	1.1 U	1.1 U	2.1 U	0.2 U	--	12	3.7
	Hexachlorobenzene	µg/L	0.22 U	1.1 U	1.1 U	2.1 U	0.2 U	0.00029	0.042	100
	Hexachlorobutadiene	µg/L	0.22 U	1.1 U	1.1 U	2.1 U	0.2 U	18	0.86	9.3
	Hexachlorocyclopentadiene	µg/L	1.1 U	5.1 U	5.2 U	11 U	1 U	1100	50	5.2
	Hexachloroethane	µg/L	0.22 U	1.1 U	0.21 U	2.1 U	0.2 U	3.3	4.8	540
	Isophorone	µg/L	0.22 U	1.1 U	1.1 U	2.1 U	0.2 U	960	71	--

Table 3
Basin 44A Stormwater Results

		Manhole ABC311 Downstream in 72" Line					JSCS Stormwater SLVs ⁽¹⁾		
		Event 1 FO081412	Event 2 FO081480	Event 2 Duplicate FO081482	Event 3 FO095221	Event 4 FO095376	Human Health Fish Consumption ⁽²⁾	Human Health Ingestion ⁽³⁾	Ecological ⁽⁴⁾
Class	Analyte	Units	11/20/2008	12/12/2008	12/12/2008	2/23/2009	3/23/2009		
	Nitrobenzene	µg/L	0.22 U	1.1 U	0.21 U	2.1 U	0.2 U	690	3.4
	N-Nitrosodi-n-propylamine	µg/L	0.22 U	1.1 U	0.21 U	2.1 U	0.2 U	0.51	0.0096
	N-Nitrosodiphenylamine	µg/L	0.220 U	1.1 U	1.1 U	2.1 U	0.2 U	6	14
	Pentachlorophenol	µg/L	0.47 J	5.1 U	5.2 U	11 U	0.86 J	3	0.56
	Phenol	µg/L	0.80	0.56 J	0.38 J	5.1 U	0.76	1700000	11000
									2560

Notes:

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

J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL

-- No JSCS screening level available

NA = Not analyzed

ND = Not detected

umhos/cm = micromhos per centimeter

µg/L = Micrograms per liter

mg/L = Milligrams per liter

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

⁽²⁾ 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

⁽³⁾ The SLVs for chemicals in water for human ingestion represent the most conservative value between EPA's MCLs and Region 9 PRGs

⁽⁴⁾ 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

⁽⁵⁾ Mercury analysis by WPCL SOP M-10.02

⁽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

⁽⁹⁾ See Table 4 for individual congener results

⁽¹⁰⁾ Total PCBs and PAHs are calculated by assigning "0" to undetected constituents

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

bold = Concentration exceeds DEQ's SLV

Table 4
Basin 44A Stormwater - PCB Congeners Results

			Manhole ABC311 Downstream in 72" Line					JSCS Stormwater SLVs ⁽²⁾		
IUPAC Number ⁽¹⁾	Chemical Name	Units	Event 1	Event 2	Event 2	Event 3	Event 4	Human Health Fish Consumption ⁽³⁾	Human Health Ingestion ⁽⁴⁾	Ecological ⁽⁵⁾
			FO081412	FO081480	Duplicate FO081482	FO095221	FO095376			
Chlorinated Biphenyl Congeners (EPA 1668A)										
PCB 1	2-MoCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000249 U	0.000251 U	--	--	--
PCB 2	3-MoCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000249 U	0.000251 U	--	--	--
PCB 3	4-MoCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000249 U	0.000251 U	--	--	--
PCB 4	2,2'-DiCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000249 U	0.000251 U	--	--	--
PCB 5	2,3-DiCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000249 U	0.000251 U	--	--	--
PCB 6	2,3'-DiCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000249 U	0.000251 U	--	--	--
PCB 7	2,4-DiCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000249 U	0.000251 U	--	--	--
PCB 8	2,4'-DiCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000364 U	0.000251 U	--	--	--
PCB 9	2,5-DiCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000294 U	0.000251 U	--	--	--
PCB 10	2,6-DiCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000294 U	0.000251 U	--	--	--
PCB 11	3,3'-DiCB	µg/L	0.000581 U	0.000653	0.000778	0.00293	0.00151 U	--	--	--
PCB 12/13	3,4-DiCB + 3,4'-DiCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.00502 U	--	--	--
PCB 14	3,5-DiCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000249 U	0.000251 U	--	--	--
PCB 15	4,4'-DiCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000249 U	0.000251 U	--	--	--
PCB 16	2,2',3-TriCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000250	0.000251 U	--	--	--
PCB 17	2,2',4-TriCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000269	0.000251 U	--	--	--
PCB 18/30	2,2',5-TriCB + 2,4,6-TriCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000530	0.00502 U	--	--	--
PCB 19	2,2',6-TriCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000249 U	0.000251 U	--	--	--
PCB 20/28	2,3,3'-TriCB + 2,4,4'-TriCB	µg/L	0.000581 U	0.000606 U	0.000605 U	0.000916	0.00502 U	--	--	--
PCB 21/33	2,3,4-TriCB + 2',3,4-TriCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000522	0.00502 U	--	--	--
PCB 22	2,3,4'-TriCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000399	0.000251 U	--	--	--
PCB 23	2,3,5-TriCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000249 U	0.000251 U	--	--	--
PCB 24	2,3,6-TriCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000249 U	0.000251 U	--	--	--
PCB 25	2,3',4-TriCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000249 U	0.000251 U	--	--	--
PCB 26/29	2,3',5-TriCB + 2,4,5-TriCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.00502 U	--	--	--
PCB 27	2,3',6-TriCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000249 U	0.000251 U	--	--	--
PCB 31	2,4',5-TriCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000775	0.000251 U	--	--	--
PCB 32	2,4',6-TriCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000249 U	0.000251 U	--	--	--
PCB 34	2',3,5-TriCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000249 U	0.000251 U	--	--	--
PCB 35	3,3',4-TriCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000249 U	0.000251 U	--	--	--
PCB 36	3,3',5-TriCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000249 U	0.000251 U	--	--	--
PCB 37	3,4,4'-TriCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000284	0.000251 U	--	--	--
PCB 38	3,4,5-TriCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000249 U	0.000251 U	--	--	--
PCB 39	3,4',5-TriCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000249 U	0.000251 U	--	--	--
PCB 40/41/71	2,2',3,3'-TeCB + 2,2',3,4'-TeCB + 2,3',4',6'-TeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.00149 U	0.00151 U	--	--	--
PCB 42	2,2',3,4'-TeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 43	2,2',3,5'-TeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 44/47/65	2,2',3,5'-TeCB + 2,2',4,4'-TeCB + 2,3,5,6'-TeCB	µg/L	0.000581 U	0.000606 U	0.000605 U	0.00149 U	0.00151 U	--	--	--
PCB 45/51	2,2',3,6'-TeCB + 2,2',4,6'-TeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000997 U	0.00100 U	--	--	--
PCB 46	2,2',3,6'-TeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 48	2,2',4,5'-TeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 49/69	2,2',4,5'-TeCB + 2,3',4,6'-TeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000997 U	0.00100 U	--	--	--
PCB 50/53	2,2',4,6'-TeCB + 2,2',5,6'-TeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000997 U	0.00100 U	--	--	--
PCB 52	2,2',5,5'-TeCB	µg/L	0.000485 U	0.000614	0.000730	0.00122	0.000502 U	--	--	--
PCB 54	2,2',6,6'-TeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 55	2,3,3',4'-TeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 56	2,3,3',4'-TeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--

Table 4
Basin 44A Stormwater - PCB Congeners Results

IUPAC Number ⁽¹⁾	Chemical Name	Units	Manhole ABC311 Downstream in 72" Line					JSCS Stormwater SLVs ⁽²⁾		
			Event 1 FO081412	Event 2 FO081480	Event 2 Duplicate FO081482	Event 3 FO095221	Event 4 FO095376	Human Health Fish Consumption ⁽³⁾	Human Health Ingestion ⁽⁴⁾	Ecological ⁽⁵⁾
			11/20/2008	12/12/2008	12/12/2008	2/23/2009	3/23/2009			
PCB 57	2,3,3',5'-TeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 58	2,3,3',5'-TeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 59/62/75	2,3,3',6'-TeCB + 2,3,4,6'-TeCB + 2,4,4',6'-TeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.00149 U	0.00151 U	--	--	--
PCB 60	2,3,4,4'-TeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 61/70/74/76	2,3,4,5'-TeCB + 2,3',4',5'-TeCB + 2,4,4',5'-TeCB + 2',3,4,5'-	µg/L	0.000485 U	0.000634	0.000713	0.00199 U	0.00201 U	--	--	--
PCB 63	2,3,4',5'-TeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 64	2,3,4',6'-TeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 66	2,3',4,4'-TeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000862	0.000502 U	--	--	--
PCB 67	2,3',4,5'-TeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 68	2,3',4,5'-TeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 72	2,3',5,5'-TeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 73	2,3',5',6'-TeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 77	3,3',4,4'-TeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 78	3,3',4,5'-TeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 79	3,3',4,5'-TeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 80	3,3',5,5'-TeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 81	3,4,4',5'-TeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 82	2,2',3,3',4'-PeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 83	2,2',3,3',5'-PeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 84	2,2',3,3',6'-PeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000516	0.000502 U	--	--	--
PCB 85/116/117	2,2',3,4,4'-PeCB + 2,3,4,5,6'-PeCB + 2,3,4',5,6'-PeCB	µg/L	0.000581 U	0.000606 U	0.000605 U	0.00149 U	0.00151 U	--	--	--
PCB 86/87/97/108/119/125	2,2',3,4,5'-PeCB + 2,2',3,4,5'-PeCB + 2,2',3',4,5'-PeCB + 2,3,3',4,5'-PeCB + 2,3',4,4',6'-PeCB + 2',3,4,5,6'-PeCB	µg/L	0.000969 U	0.00101 U	0.00101 U	0.00299 U	0.00301 U	--	--	--
PCB 88/91	2,2',3,4,6'-PeCB + 2,2',3,4',6'-PeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000997 U	0.00100 U	--	--	--
PCB 89	2,2',3,4,6'-PeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 90/101/113	2,2',3,4',5'-PeCB + 2,2',4,5,5'-PeCB + 2,3,3',5',6'-PeCB	µg/L	0.000485 U	0.00131	0.00180	0.00208	0.00151 U	--	--	--
PCB 92	2,2',3,5,5'-PeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 93/98/100/102	2,2',3,5,6'-PeCB + 2,2',3',4,6'-PeCB + 2,2',4,4',6'-PeCB + 2,2',4,5,6'-PeCB	µg/L	0.000727 U	0.000757 U	0.000756 U	0.00199 U	0.00201 U	--	--	--
PCB 94	2,2',3,5,6'-PeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 95	2,2',3,5',6'-PeCB	µg/L	0.000485 U	0.000971	0.00138	0.00166	0.000502 U	--	--	--
PCB 96	2,2',3,6,6'-PeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 99	2,2',4,4',5'-PeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000646	0.000502 U	--	--	--
PCB 103	2,2',4,5',6'-PeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 104	2,2',4,6,6'-PeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 105	2,3,3',4,4'-PeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000765	0.000502 U	--	--	--
PCB 106	2,3,3',4,5'-PeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 107/124	2,3,3',4',5'-PeCB + 2',3,4,5,5'-PeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000997 U	0.00100 U	--	--	--
PCB 109	2,3,3',4,6'-PeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 110/115	2,3,3',4',6'-PeCB + 2,3,4,4',6'-PeCB	µg/L	0.000617	0.00125	0.00155	0.000997	0.00100 U	--	--	--
PCB 111	2,3,3',5,5'-PeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 112	2,3,3',5,6'-PeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 114	2,3,4,4',5'-PeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 118	2,3',4,4',5'-PeCB	µg/L	0.000542	0.000761	0.000900	0.00167	0.000502 U	--	--	--
PCB 120	2,3',4,5,5'-PeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 121	2,3',4,5',6'-PeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 122	2',3,3',4,5'-PeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 123	2',3,4,4',5'-PeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 126	3,3',4,4',5'-PeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 127	3,3',4,5,5'-PeCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 128/166	2,2',3,3',4,4'-HxCB + 2,3,4,4',5,6'-HxCB	µg/L	0.000969 U	0.00101 U	0.00101 U	0.000997 U	0.00100 U	--	--	--
PCB 129/138/163	2,2',3,3',4,5'-HxCB + 2,2',3,4,4',5'-HxCB + 2,3,3',4',5,6'-HxCB	µg/L	0.000552	0.00238	0.00321	0.00319	0.00100 U	--	--	--

Table 4
Basin 44A Stormwater - PCB Congeners Results

IUPAC Number ⁽¹⁾	Chemical Name	Units	Manhole ABC311 Downstream in 72" Line					JSCS Stormwater SLVs ⁽²⁾		
			Event 1 FO081412	Event 2 FO081480	Event 2 Duplicate FO081482	Event 3 FO095221	Event 4 FO095376	Human Health Fish Consumption ⁽³⁾	Human Health Ingestion ⁽⁴⁾	Ecological ⁽⁵⁾
			11/20/2008	12/12/2008	12/12/2008	2/23/2009	3/23/2009			
PCB 130	2,2',3,3',4,5'-HxCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 131	2,2',3,3',4,6'-HxCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 132	2,2',3,3',4,6'-HxCB	µg/L	0.000485 U	0.000747	0.00108	0.00109	0.000502 U	--	--	--
PCB 133	2,2',3,3',5,5'-HxCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 134/143	2,2',3,3',5,6'-HxCB + 2,2',3,4,5,6'-HxCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000997 U	0.00100 U	--	--	--
PCB 135/151	2,2',3,3',5,6'-HxCB + 2,2',3,5,5',6'-HxCB	µg/L	0.000494 U	0.00102	0.00150	0.000997 U	0.00100 U	--	--	--
PCB 136	2,2',3,3',6,6'-HxCB	µg/L	0.000485 U	0.000505 U	0.000545	0.000498 U	0.000502 U	--	--	--
PCB 137	2,2',3,4,4',5'-HxCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 139/140	2,2',3,4,4',6'-HxCB + 2,2',3,4,4',6'-HxCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000997 U	0.00100 U	--	--	--
PCB 141	2,2',3,4,5,5'-HxCB	µg/L	0.000485 U	0.000505 U	0.000697	0.000521	0.000502 U	--	--	--
PCB 142	2,2',3,4,5,6'-HxCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 144	2,2',3,4,5',6'-HxCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 145	2,2',3,4,6,6'-HxCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 146	2,2',3,4,5,5'-HxCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 147/149	2,2',3,4',5,6'-HxCB + 2,2',3,4',5',6'-HxCB	µg/L	0.000485 U	0.00208	0.00297	0.00234	0.00100 U	--	--	--
PCB 148	2,2',3,4',5,6'-HxCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 150	2,2',3,4',6,6'-HxCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 152	2,2',3,5,6,6'-HxCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 153/168	2,2',4,4',5,5'-HxCB + 2,3',4,4',5,6'-HxCB	µg/L	0.000581 U	0.00229	0.00300	0.00257	0.00100 U	--	--	--
PCB 154	2,2',4,4',6,6'-HxCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 155	2,2',4,4',6,6'-HxCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 156/157	2,3,3',4,4',5-HxCB + 2,3,3',4,4',5'-HxCB	µg/L	0.000969 U	0.00101 U	0.00101 U	0.000997 U	0.00100 U	--	--	--
PCB 158	2,3,3',4,4',6'-HxCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 159	2,3,3',4,5,5'-HxCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 160	2,3,3',4,5,6'-HxCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 161	2,3,3',4,5',6'-HxCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 162	2,3,3',4',5,5'-HxCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 164	2,3,3',4',5',6'-HxCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 165	2,3,3',5,5',6'-HxCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 167	2,3',4,4',5,5'-HxCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 169	3,3',4,4',5,5'-HxCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 170	2,2',3,3',4,4',5-HpCB	µg/L	0.000485 U	0.000774	0.00106	0.000859	0.000502 U	--	--	--
PCB 171/173	2,2',3,3',4,4',6-HpCB + 2,2',3,3',4,5,6-HpCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000997 U	0.00100 U	--	--	--
PCB 172	2,2',3,3',4,5,5'-HpCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 174	2,2',3,3',4,5,6'-HpCB	µg/L	0.000485 U	0.000719	0.000998	0.00102	0.000502 U	--	--	--
PCB 175	2,2',3,3',4,5',6-HpCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 176	2,2',3,3',4,6,6'-HpCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 177	2,2',3,3',4',5,6-HpCB	µg/L	0.000485 U	0.000505 U	0.000584	0.000535	0.000502 U	--	--	--
PCB 178	2,2',3,3',5,5',6-HpCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 179	2,2',3,3',5,6,6'-HpCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 180/193	2,2',3,4,4',5,5'-HpCB + 2,3,3',4',5,5',6-HpCB	µg/L	0.000485 U	0.00166	0.00217	0.00196	0.00100 U	--	--	--
PCB 181	2,2',3,4,4',5,6-HpCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 182	2,2',3,4,4',5,6'-HpCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 183/185	2,2',3,4,4',5',6-HpCB + 2,2',3,4,5,5',6-HpCB	µg/L	0.000485 U	0.000533	0.000718	0.000997 U	0.00100 U	--	--	--
PCB 184	2,2',3,4,4',6,6'-HpCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 186	2,2',3,4,5,6,6'-HpCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 187	2,2',3,4',5,5',6-HpCB	µg/L	0.000485 U	0.000946	0.00121	0.00104	0.000502 U	--	--	--
PCB 188	2,2',3,4',5,6,6'-HpCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 189	2,3,3',4,4',5,5'-HpCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 190	2,3,3',4,4',5,6-HpCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 191	2,3,3',4,4',5',6-HpCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--
PCB 192	2,3,3',4,5,5',6-HpCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000498 U	0.000502 U	--	--	--

Table 4
Basin 44A Stormwater - PCB Congeners Results

IUPAC Number ⁽¹⁾	Chemical Name	Units	Manhole ABC311 Downstream in 72" Line					JSCS Stormwater SLVs ⁽²⁾		
			Event 1 FO081412	Event 2 FO081480	Event 2 Duplicate FO081482	Event 3 FO095221	Event 4 FO095376	Human Health Fish Consumption ⁽³⁾	Human Health Ingestion ⁽⁴⁾	Ecological ⁽⁵⁾
			11/20/2008	12/12/2008	12/12/2008	2/23/2009	3/23/2009			
PCB 194	2,2',3,3',4,4',5,5'-O ₂ CB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000747 U	0.000753 U	--	--	--
PCB 195	2,2',3,3',4,4',5,6'-O ₂ CB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000747 U	0.000753 U	--	--	--
PCB 196	2,2',3,3',4,4',5,6'-O ₂ CB	µg/L	0.000679 U	0.000707 U	0.000705 U	0.000747 U	0.000753 U	--	--	--
PCB 197/200	2,2',3,3',4,4',6,6'-O ₂ CB + 2,2',3,3',4,5,6,6'-O ₂ CB	µg/L	0.00242 U	0.00252 U	0.00252 U	0.00149 U	0.00151 U	--	--	--
PCB 198/199	2,2',3,3',4,5,5',6'-O ₂ CB + 2,2',3,3',4,5,5',6'-O ₂ CB	µg/L	0.000485 U	0.000505 U	0.000516 U	0.00149 U	0.00151 U	--	--	--
PCB 201	2,2',3,3',4,5',6,6'-O ₂ CB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000747 U	0.000753 U	--	--	--
PCB 202	2,2',3,3',5,5',6,6'-O ₂ CB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000747 U	0.000753 U	--	--	--
PCB 203	2,2',3,4,4',5,5',6'-O ₂ CB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000747 U	0.000753 U	--	--	--
PCB 204	2,2',3,4,4',5,6,6'-O ₂ CB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000747 U	0.000753 U	--	--	--
PCB 205	2,3,3',4,4',5,5',6'-O ₂ CB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000747 U	0.000753 U	--	--	--
PCB 206	2,2',3,3',4,4',5,5',6'-NoCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000747 U	0.000753 U	--	--	--
PCB 207	2,2',3,3',4,4',5,6,6'-NoCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000747 U	0.000753 U	--	--	--
PCB 208	2,2',3,3',4,5,5',6,6'-NoCB	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000747 U	0.000753 U	--	--	--
PCB 209	Decachlorobiphenyl	µg/L	0.000485 U	0.000505 U	0.000504 U	0.000747 U	0.000753 U	--	--	--
	Total Monochlorobiphenyls	µg/L	ND	ND	ND	ND	ND	--	--	--
	Total Dichlorobiphenyls	µg/L	ND	0.000653	0.000778	0.00329	ND	--	--	--
	Total Trichlorobiphenyls	µg/L	ND	ND	ND	0.00394	ND	--	--	--
	Total Tetrachlorobiphenyls	µg/L	ND	0.00125	0.00144	0.00208	ND	--	--	--
	Total Pentachlorobiphenyls	µg/L	0.00116	0.00430	0.00563	0.00960	ND	--	--	--
	Total Hexachlorobiphenyls	µg/L	0.000552	0.00852	0.0130	0.00971	ND	--	--	--
	Total Heptachlorobiphenyls	µg/L	ND	0.00463	0.00674	0.00542	ND	--	--	--
	Total Octachlorobiphenyls	µg/L	ND	ND	0.000516 ND	ND	ND	--	--	--
	Total Nonachlorobiphenyls	µg/L	ND	ND	ND	ND	ND	--	--	--
	Total Decachlorobiphenyls	µg/L	ND	ND	ND	ND	ND	--	--	--
	Total PCBs	µg/L	0.00171	0.0194	0.0281	0.0340	ND	0.000064	0.034	0.014

Notes:

MoCB = Monochlorobiphenyl

DiCB = Dichlorobiphenyl

TriCB = Trichlorobiphenyl

TeCB = Tetrachlorobiphenyl

PeCB = Pentachlorobiphenyl

HeCB = Hexachlorobiphenyl

HpCB = Heptachlorobiphenyl

OcCB = Octachlorobiphenyl

NoCB = Nonachlorobiphenyl

-- No JSCS screening level available

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

µg/L = Micrograms per liter

ND = Not detected

⁽¹⁾ IUPAC = International Union of Pure and Applied Chemistry⁽²⁾ JSCS SLVs = Portland Harbor Joint Source Control Strategy Screening Level Values (DEQ/EPA Final December 2005, Amended July 2007)⁽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

■ = Highlighted value has been selected by DEQ for initial upland source control screening evaluations

bold = Concentration exceeds DEQ SLV.

Table 5
Basin 44A Inline Solids Results

		Sediment Trap Samples			Catch Basin Samples (Upper Basin)				
		Manhole ABC311 Downstream of manhole in 72" line ST1: FO095662	Duplicate Manhole ABC311 ST1: FO095677	Parent/Duplicate Sample Average ⁽²⁾ ST1: FO095662 & FO095677	Catch Basin ADZ315 NE Russell St. at Substation Driveway FO095477	Catch Basin APL263 NW Corner of NE Russell and NE Rodney Intersection FO095478	JSCS ⁽¹⁾ Screening Level Value		
Class	Analyte	Units	6/2/2009	6/2/2009	6/2/2009	4/8/2009	4/8/2009	Toxicity	Bioaccumulation
Polychlorinated Biphenyl Congeners (PCBs) (EPA 1668M)									
	Total PCBs ⁽⁷⁾⁽⁸⁾	µg/Kg	169 ⁽⁹⁾	40.6 ⁽⁹⁾	104.8	NA	NA	676	0.39
Polychlorinated Biphenyl Aroclors (EPA 8082)									
	Aroclor 1016	µg/Kg	10 U	10 U	10	10 U	30 U	530	--
	Aroclor 1221	µg/Kg	20 U	20 U	20	20 U	60 U	--	--
	Aroclor 1232	µg/Kg	10 U	10 U	10	10 U	30 U	--	--
	Aroclor 1242	µg/Kg	10 U	10 U	10	10 U	30 U	--	--
	Aroclor 1248	µg/Kg	10 U	10 U	10	10 U	30 U	1500	--
	Aroclor 1254	µg/Kg	11	10 U ⁷	11	25	30 U	300	--
	Aroclor 1260	µg/Kg	20	15	18	51	72	200	--
	Aroclor 1262	µg/Kg	10 U	10 U	10	10 U	30 U	--	--
	Aroclor 1268	µg/Kg	10 U	10 U	10	10 U	30 U	--	--
	Total PCBs ⁽⁷⁾⁽¹⁰⁾	µg/Kg	31 ⁽¹¹⁾	15 ⁽¹¹⁾	23	76	72	676	0.39
Polynuclear Aromatic Hydrocarbons (EPA 8270C SIM)									
	2-Methylnaphthalene	µg/Kg	NA	NA	NA	290 U	450 U	200	--
	Acenaphthene	µg/Kg	103 U	104 U	104 U	75.3 U	234 U	300	--
	Acenaphthylene	µg/Kg	103 U	104 U	104 U	75.3 U	234 U	200	--
	Anthracene	µg/Kg	103 U	104 U	104 U	75.3 U	234 U	845	--
	Benzo(a)anthracene	µg/Kg	159	159	159	92.3	234 U	1050	--
	Benzo(a)pyrene	µg/Kg	175	194	185	131	234 U	1450	--
	Benzo(b)fluoranthene	µg/Kg	254	254	254	180	254	--	--
	Benzo(g,h,i)perylene	µg/Kg	283	290	287	224	297	300	--
	Benzo(k)fluoranthene	µg/Kg	165	175	170	123	234 U	13000	--
	Chrysene	µg/Kg	355	351	353	211	455	1290	--
	Dibenzo(a,h)anthracene	µg/Kg	103 U	104 U	104 U	75.3 U	234 U	1300	--
	Dibenzofuran	µg/Kg	NA	NA	NA	290 U	450 U	--	--
	Fluoranthene	µg/Kg	532	497	515	223	588	2230	37000
	Fluorene	µg/Kg	103 U	104 U	104 U	75.3 U	234 U	536	--
	Indeno(1,2,3-cd)pyrene	µg/Kg	161	166	164	126	234 U	100	--
	Naphthalene	µg/Kg	8,240 ⁽¹²⁾	3,750 ⁽¹²⁾	5,995	75.3 U	234 U	561	--
	Phenanthrene	µg/Kg	285	328	307	114	427	1170	--
	Pyrene	µg/Kg	400	383	392	233	648	1520	1900
	Total PAHs ⁽⁷⁾	µg/Kg	11,009	6,547	8,778	1,657	2,669	--	--
Polynuclear Aromatic Hydrocarbons (EPA 8270C)									
	2-Methylnaphthalene	µg/Kg	NA	NA	NA	290 U	450 U	200	--
	Acenaphthene	µg/Kg	NA	NA	NA	290 U	450 U	300	--
	Acenaphthylene	µg/Kg	NA	NA	NA	290 U	450 U	200	--
	Anthracene	µg/Kg	NA	NA	NA	290 U	450 U	845	--
	Benzo(a)anthracene	µg/Kg	NA	NA	NA	130 J	160 J	1050	--
	Benzo(a)pyrene	µg/Kg	NA	NA	NA	170 J	450 U	1450	--
	Benzo(b)fluoranthene	µg/Kg	NA	NA	NA	320	340 J	--	--
	Benzo(g,h,i)perylene	µg/Kg	NA	NA	NA	340	420 J	300	--
	Benzo(k)fluoranthene	µg/Kg	NA	NA	NA	81 J	130 J	13000	--
	Chrysene	µg/Kg	NA	NA	NA	160 J	450	1290	--
	Dibenzo(a,h)anthracene	µg/Kg	NA	NA	NA	290 U	450 U	1300	--
	Dibenzofuran	µg/Kg	NA	NA	NA	290 U	450 U	--	--
	Fluoranthene	µg/Kg	NA	NA	NA	280 J	570	2230	37000
	Fluorene	µg/Kg	NA	NA	NA	290 U	450 J	536	--
	Indeno(1,2,3-cd)pyrene	µg/Kg	NA	NA	NA	240 J	210 J	100	--
	Naphthalene	µg/Kg	NA	NA	NA	290 U	470	561	--
	Phenanthrene	µg/Kg	NA	NA	NA	130 J	320 J	1170	--
	Pyrene	µg/Kg	NA	NA	NA	300	750	1520	1900
	Total PAHs ⁽⁷⁾	µg/Kg	NA	NA	NA	2151 J	4270 J	--	--

Table 5
Basin 44A Inline Solids Results

Class	Analyte	Units	Sediment Trap Samples			Catch Basin Samples (Upper Basin)		JSCS ⁽¹⁾ Screening Level Value	
			Manhole ABC311 Downstream of manhole in 72" line ST1: FO095662	Duplicate Manhole ABC311 ST1: FO095677	Parent/Duplicate Sample Average ⁽²⁾ ST1: FO095662 & FO095677	Catch Basin ADZ315 NE Russell St. at Substation Driveway FO095477	Catch Basin APL263 NW Corner of NE Russell and NE Rodney Intersection FO095478		
			6/2/2009	6/2/2009	6/2/2009	4/8/2009	4/8/2009	Toxicity	Bioaccumulation
Phthalates (EPA8270C SIM)									
	Bis(2-ethylhexyl) phthalate (BEHP)	µg/Kg	26,600	19,700	23,150	3,000	26,100	800	330
	Butyl Benzyl Phthalate	µg/Kg	5,160 U	5,200 U	5180 U	1,510 U	11,700 U	--	--
	Diethyl phthalate	µg/Kg	5,160 U	5,200 U	5180 U	1,510 U	11,700 U	600	--
	Dimethyl phthalate	µg/Kg	5,160 U	5,200 U	5180 U	1,510 U	11,700 U	--	--
	Di-n-butyl phthalate	µg/Kg	5,160 U	5,200 U	5180 U	1,510 U	11,700 U	100	60
	Di-n-octyl phthalate	µg/Kg	7,740 U	5,200 U	6470 U	1,510 U	11,700 U	--	--
Phthalates (EPA8270C)									
	Bis(2-ethylhexyl) phthalate (BEHP)	µg/Kg	NA	NA	NA	2,000 J	13,000	800	330
	Butyl Benzyl Phthalate	µg/Kg	NA	NA	NA	150 J	450 U	--	--
	Diethyl phthalate	µg/Kg	NA	NA	NA	290 U	450 U	600	--
	Dimethyl phthalate	µg/Kg	NA	NA	NA	87 J	350 J	--	--
	Di-n-butyl phthalate	µg/Kg	NA	NA	NA	280 J	900 U	100	60
	Di-n-octyl phthalate	µg/Kg	NA	NA	NA	290 U	450 U	--	--
Semivolatile Organic Compounds (EPA8270C)									
	1,2,4-Trichlorobenzene	µg/Kg	NA	NA	NA	290 U	450 U	9200	--
	1,2-Dichlorobenzene	µg/Kg	NA	NA	NA	290 U	450 U	1700	--
	1,3-Dichlorobenzene	µg/Kg	NA	NA	NA	290 U	450 U	300	--
	1,4-Dichlorobenzene	µg/Kg	NA	NA	NA	290 U	450 U	300	--
	2,4,5-Trichlorophenol	µg/Kg	NA	NA	NA	290 U	450 U	--	--
	2,4,6-Trichlorophenol	µg/Kg	NA	NA	NA	290 U	450 U	--	--
	2,4-Dichlorophenol	µg/Kg	NA	NA	NA	290 U	450 U	--	--
	2,4-Dimethylpheno	µg/Kg	NA	NA	NA	1500 U	2300 U	--	--
	2,4-Dinitrophenol	µg/Kg	NA	NA	NA	5,700 U	9,000 U	--	--
	2,4-Dinitrotoluene	µg/Kg	NA	NA	NA	290 U	450 U	--	--
	2,6-Dinitrotoluene	µg/Kg	NA	NA	NA	290 U	450 U	--	--
	2-Chloronaphthalene	µg/Kg	NA	NA	NA	290 U	450 U	--	--
	2-Chlorophenol	µg/Kg	NA	NA	NA	290 U	450 U	--	--
	2-Methyl-4,6-dinitrophenol	µg/Kg	NA	NA	NA	2,900 U	4,500 U	--	--
	2-Methylphenol	µg/Kg	NA	NA	NA	290 U	450 U	--	--
	2-Nitroaniline	µg/Kg	NA	NA	NA	570 U	900 U	--	--
	2-Nitrophenol	µg/Kg	NA	NA	NA	290 U	450 U	--	--
	3,3'-Dichlorobenzidine	µg/Kg	NA	NA	NA	2,900 U	4,500 U	--	--
	3-Nitroaniline	µg/Kg	NA	NA	NA	570 U	900 U	--	--
	4-Bromophenylphenyl ether	µg/Kg	NA	NA	NA	290 U	450 U	--	--
	4-Chloro-3-methylphenol	µg/Kg	NA	NA	NA	290 U	450 U	--	--
	4-Chloroaniline	µg/Kg	NA	NA	NA	290 U	450 U	--	--
	4-Chlorophenyl phenyl ether	µg/Kg	NA	NA	NA	290 U	450 U	--	--
	4-Methylphenol	µg/Kg	NA	NA	NA	290 U	290 J	--	--

Table 5
Basin 44A Inline Solids Results

Class	Analyte	Units	Sediment Trap Samples			Catch Basin Samples (Upper Basin)		JSCS ⁽¹⁾ Screening Level Value	
			Manhole ABC311 Downstream of manhole in 72" line ST1: FO095662	Duplicate Manhole ABC311 ST1: FO095677	Parent/Duplicate Sample Average ⁽²⁾ ST1: FO095662 & FO095677	Catch Basin ADZ315 NE Russell St. at Substation Driveway FO095477	Catch Basin APL263 NW Corner of NE Russell and NE Rodney Intersection FO095478		
			6/2/2009	6/2/2009	6/2/2009	4/8/2009	4/8/2009	Toxicity	Bioaccumulation
	4-Nitroaniline	µg/Kg	NA	NA	NA	570 U	900 U	--	--
	4-Nitrophenol	µg/Kg	NA	NA	NA	2,900 U	4,500 U	--	--
	Benzoic acid	µg/Kg	NA	NA	NA	5,700 U	9,000 U	--	--
	Benzyl alcohol	µg/Kg	NA	NA	NA	570 U	900 U	--	--
	Bis(2-chloroethoxy) methane	µg/Kg	NA	NA	NA	290 U	450 U	--	--
	Bis(2-chloroethyl) ether	µg/Kg	NA	NA	NA	290 U	450 U	--	--
	Bis(2-chloroisopropyl) ether	µg/Kg	NA	NA	NA	290 U	450 U	--	--
	Hexachlorobenzene	µg/Kg	NA	NA	NA	290 U	450 U	100	19
	Hexachlorobutadiene	µg/Kg	NA	NA	NA	290 U	450 U	600	--
	Hexachlorocyclopentadiene	µg/Kg	NA	NA	NA	1500 U	2300 U	400	--
	Hexachloroethane	µg/Kg	NA	NA	NA	290 U	450 U	--	--
	Isophorone	µg/Kg	NA	NA	NA	290 U	450 U	--	--
	Nitrobenzene	µg/Kg	NA	NA	NA	290 U	450 U	--	--
	N-Nitrosodi-n-propylamine	µg/Kg	NA	NA	NA	290 U	450 U	--	--
	N-Nitrosodiphenylamine	µg/Kg	NA	NA	NA	290 U	450 U	--	--
	Pentachlorophenol	µg/Kg	NA	NA	NA	2,900 U	2,800 J	1000	250
	Phenol	µg/Kg	NA	NA	NA	850 U	230 J	50	--

Notes:

J = The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.

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

NA = Not analyzed or not applicable.

ND = Not detected.

-- No JSCS screening level available.

µg/Kg = Micrograms per kilogram.

mg/Kg = Milligrams per kilogram.

⁽¹⁾JSCS - Portland Harbor Joint Source Control Strategy (DEQ/EPA Final December 2005, Amended July 2007)

⁽²⁾The average concentration for the parent and duplicate samples was calculated following guidelines used by the LWG for data reporting (Kennedy/Jenks, 2004).

⁽³⁾The mercury concentrations for the parent and duplicate sample are considered estimates because the RPD between the samples is outside control limits (RPD = 134%)

⁽⁴⁾Estimated Total DDx is the sum of DDE, DDD and DDT

⁽⁵⁾Alpha-chlordane is also known as cis-Chlordane. Beta-Chlordane is also known as trans-chlordane and gamma-chlordane

⁽⁶⁾Total Chlordane is the sum of alpha-, and beta-isomers

⁽⁷⁾Total PCBs and PAHs are calculated by assigning "0" to undetected constituents

⁽⁸⁾Individual congener results are summarized in Table 5

⁽⁹⁾The PCB congener concentrations for the parent and duplicate sample are considered estimates because the RPD between the samples is outside control limits (RPD = 123%)

⁽¹⁰⁾A trace level of Aroclor 1254 was evident at a concentration below the MRL

⁽¹¹⁾The PCB Aroclor concentrations for the parent and duplicate sample are considered estimates because the RPD between the samples is outside control limits (RPD = 70%)

⁽¹²⁾The naphthalene concentrations for the parent and duplicate sample are considered estimates because the RPD between the samples is outside control limits (RPD = 75%)

J = concentration exceeds JSCS Toxicity Screening Level Value

B = concentration exceeds JSCS Bioaccumulation Screening Level Value

Table 6
Basin 44A Inline Solids - PCB Congeners Results

			Manhole ABC311 Downstream of manhole in 72" line ST1: FO095662	Manhole ABC311 Duplicate ST1: FO095677	JSCS ⁽²⁾ Screening Level Value	
IUPAC Number ⁽¹⁾	Chemical Name	Units	6/2/2009	6/2/2009	Toxicity	Bioaccumulation
Chlorinated Biphenyl Congeners (EPA 1668A)						
PCB 1	2-MoCB	µg/Kg	0.0294 U	0.0287 U	--	--
PCB 2	3-MoCB	µg/Kg	0.0294 U	0.0287 U	--	--
PCB 3	4-MoCB	µg/Kg	0.0294 U	0.0287 U	--	--
PCB 4	2,2'-DiCB	µg/Kg	0.279	0.0707	--	--
PCB 5	2,3-DiCB	µg/Kg	0.0294 U	0.0287 U	--	--
PCB 6	2,3'-DiCB	µg/Kg	0.0882	0.0287 U	--	--
PCB 7	2,4-DiCB	µg/Kg	0.0294 U	0.0287 U	--	--
PCB 8	2,4'-DiCB	µg/Kg	0.466	0.136	--	--
PCB 9	2,5-DiCB	µg/Kg	0.0294 U	0.0287 U	--	--
PCB 10	2,6-DiCB	µg/Kg	0.0294 U	0.0287 U	--	--
PCB 11	3,3'-DiCB	µg/Kg	1.82	0.474	--	--
PCB 12/13	3,4-DiCB + 3,4'-DiCB	µg/Kg	0.0588 U	0.0575 U	--	--
PCB 14	3,5-DiCB	µg/Kg	0.0294 U	0.0287 U	--	--
PCB 15	4,4'-DiCB	µg/Kg	0.377	0.0848	--	--
PCB 16	2,2',3-TriCB	µg/Kg	0.940	0.150	--	--
PCB 17	2,2',4-TriCB	µg/Kg	0.730	0.119	--	--
PCB 18/30	2,2',5-TriCB + 2,4,6-TriCB	µg/Kg	1.59	0.263	--	--
PCB 19	2,2',6-TriCB	µg/Kg	0.208	0.0450	--	--
PCB 20/28	2,3,3'-TriCB + 2,4,4'-TriCB	µg/Kg	2.20	0.398	--	--
PCB 21/33	2,3,4-TriCB + 2',3,4-TriCB	µg/Kg	1.34	0.250	--	--
PCB 22	2,3,4'-TriCB	µg/Kg	0.912	0.173	--	--
PCB 23	2,3,5-TriCB	µg/Kg	0.0294 U	0.0287 U	--	--
PCB 24	2,3,6-TriCB	µg/Kg	0.0294 U	0.0287 U	--	--
PCB 25	2,3',4-TriCB	µg/Kg	0.142	0.0287 U	--	--
PCB 26/29	2,3',5-TriCB + 2,4,5-TriCB	µg/Kg	0.366	0.0627	--	--
PCB 27	2,3',6-TriCB	µg/Kg	0.115	0.0287 U	--	--
PCB 31	2,4',5-TriCB	µg/Kg	1.86	0.326	--	--
PCB 32	2,4',6-TriCB	µg/Kg	0.538	0.0960	--	--
PCB 34	2',3,5-TriCB	µg/Kg	0.0294 U	0.0287 U	--	--
PCB 35	3,3',4-TriCB	µg/Kg	0.0651	0.0287 U	--	--
PCB 36	3,3',5-TriCB	µg/Kg	0.0294 U	0.0287 U	--	--
PCB 37	3,4,4'-TriCB	µg/Kg	0.922	0.156	--	--
PCB 38	3,4,5-TriCB	µg/Kg	0.0294 U	0.0287 U	--	--
PCB 39	3,4',5-TriCB	µg/Kg	0.0294 U	0.0287 U	--	--
PCB 40/41/71	2,2',3,3'-TeCB + 2,2',3,4'-TeCB + 2,3',4',6'-TeCB	µg/Kg	1.30	0.175	--	--
PCB 42	2,2',3,4'-TeCB	µg/Kg	0.555	0.0737	--	--
PCB 43	2,2',3,5'-TeCB	µg/Kg	0.0870	0.0575 U	--	--
PCB 44/47/65	2,2',3,5'-TeCB + 2,2',4,4'-TeCB + 2,3,5,6'-TeCB	µg/Kg	3.23	0.210	--	--
PCB 45/51	2,2',3,6'-TeCB + 2,2',4,6'-TeCB	µg/Kg	1.06	0.119	--	--
PCB 46	2,2',3,6'-TeCB	µg/Kg	0.161	0.0575 U	--	--
PCB 48	2,2',4,5'-TeCB	µg/Kg	0.439	0.0575 U	--	--
PCB 49/69	2,2',4,5'-TeCB + 2,3',4,6'-TeCB	µg/Kg	1.63	0.195	--	--
PCB 50/53	2,2',4,6'-TeCB + 2,2',5,6'-TeCB	µg/Kg	0.579	0.115 U	--	--
PCB 52	2,2',5,5'-TeCB	µg/Kg	2.59	0.346	--	--
PCB 54	2,2',6,6'-TeCB	µg/Kg	0.0588 U	0.0575 U	--	--
PCB 55	2,3,3',4'-TeCB	µg/Kg	0.0588 U	0.0575 U	--	--
PCB 56	2,3,3',4'-TeCB	µg/Kg	1.05	0.190	--	--
PCB 57	2,3,3',5'-TeCB	µg/Kg	0.117	0.0575 U	--	--
PCB 58	2,3,3',5'-TeCB	µg/Kg	0.0588 U	0.0575 U	--	--
PCB 59/62/75	2,3,3',6'-TeCB + 2,3,4,6'-TeCB + 2,4,4',6'-TeCB	µg/Kg	0.221	0.172 U	--	--
PCB 60	2,3,4,4'-TeCB	µg/Kg	0.566	0.101	--	--
PCB 61/70/74/76	2,3,4,5'-TeCB + 2,3',4',5'-TeCB + 2,4,4',5'-TeCB + 2',3,4,5'-TeCB	µg/Kg	3.62	0.635	--	--
PCB 63	2,3,4',5'-TeCB	µg/Kg	0.0758	0.0575 U	--	--
PCB 64	2,3,4',6'-TeCB	µg/Kg	0.833	0.118	--	--
PCB 66	2,3',4,4'-TeCB	µg/Kg	1.77	0.319	--	--
PCB 67	2,3',4,5'-TeCB	µg/Kg	0.0674	0.0575 U	--	--
PCB 68	2,3',4,5'-TeCB	µg/Kg	0.0588 U	0.0575 U	--	--
PCB 72	2,3',5,5'-TeCB	µg/Kg	0.0588 U	0.0575 U	--	--
PCB 73	2,2',3,5'-TeCB	µg/Kg	0.0588 U	0.0575 U	--	--
PCB 77	3,3',4,4'-TeCB	µg/Kg	0.344	0.0575 U	--	0.052
PCB 78	3,3',4,5'-TeCB	µg/Kg	0.0588 U	0.0575 U	--	--
PCB 79	3,3',4,5'-TeCB	µg/Kg	0.0588 U	0.0575 U	--	--
PCB 80	3,3',5,5'-TeCB	µg/Kg	0.0588 U	0.0575 U	--	--

Table 6
Basin 44A Inline Solids - PCB Congeners Results

IUPAC Number ⁽¹⁾	Chemical Name	Units	Manhole ABC311 Downstream of manhole in 72" line ST1: FO095662	Manhole ABC311 Duplicate ST1: FO095677	JSCS ⁽²⁾ Screening Level Value	
			6/2/2009	6/2/2009	Toxicity	Bioaccumulation
PCB 81	3,4,4',5'-TeCB	µg/Kg	0.0588 U	0.0575 U	--	0.017
PCB 82	2,2',3,3',4'-PeCB	µg/Kg	0.472	0.111	--	--
PCB 83	2,2',3,3',5'-PeCB	µg/Kg	0.194	0.0575 U	--	--
PCB 84	2,2',3,3',6'-PeCB	µg/Kg	0.966	0.181	--	--
PCB 85/116/117	2,2',3,4,4'-PeCB + 2,3,4,5,6-PeCB + 2,3,4',5,6'-PeCB	µg/Kg	0.681	0.172 U	--	--
PCB 86/87/97/108/119/125	2,2',3,4,5-PeCB + 2,2',3,4,5'-PeCB + 2,2',3',4,5-PeCB + 2,3,3',4,5'-PeCB + 2,3',4,4',6'-PeCB + 2',3,4,5,6'-PeCB	µg/Kg	2.88	0.600	--	--
PCB 88/91	2,2',3,4,6-PeCB + 2,2',4,6'-PeCB	µg/Kg	0.700	0.115 U	--	--
PCB 89	2,2',3,4,6'-PeCB	µg/Kg	0.0588 U	0.0575 U	--	--
PCB 90/101/113	2,2',3,4',5-PeCB + 2,2',4,5,5'-PeCB + 2,3,3',5',6-PeCB	µg/Kg	6.27	1.22	--	--
PCB 92	2,2',3,5,5'-PeCB	µg/Kg	0.935	0.172	--	--
PCB 93/98/100/102	2,2',3,5,6-PeCB + 2,2',3',4,6-PeCB + 2,2',4,4',6-PeCB + 2,2',4,5,6'-PeCB	µg/Kg	0.347	0.230 U	--	--
PCB 94	2,2',3,5,6'-PeCB	µg/Kg	0.0850	0.0575 U	--	--
PCB 95	2,2',3,5',6'-PeCB	µg/Kg	4.10	0.762	--	--
PCB 96	2,2',3,6,6'-PeCB	µg/Kg	0.0588 U	0.0575 U	--	--
PCB 99	2,2',4,4',5-PeCB	µg/Kg	1.70	0.388	--	--
PCB 103	2,2',4,5',6-PeCB	µg/Kg	0.0778	0.0575 U	--	--
PCB 104	2,2',4,6,6'-PeCB	µg/Kg	0.0588 U	0.0575 U	--	--
PCB 105	2,3,3',4,4'-PeCB	µg/Kg	1.52	0.461	--	0.17
PCB 106	2,3,3',4,5-PeCB	µg/Kg	0.0588 U	0.0575 U	--	--
PCB 107/124	2,3,3',4',5-PeCB + 2',3,4,5,5'-PeCB	µg/Kg	0.139	0.115 U	--	--
PCB 109	2,3,3',4,6-PeCB	µg/Kg	0.217	0.0700	--	--
PCB 110/115	2,3,3',4',6-PeCB + 2,3,4,4',6-PeCB	µg/Kg	5.56	1.17	--	--
PCB 111	2,3,3',5,5'-PeCB	µg/Kg	0.0588 U	0.0575 U	--	--
PCB 112	2,3,3',5,6-PeCB	µg/Kg	0.0588 U	0.0575 U	--	--
PCB 114	2,3,4,4',5-PeCB	µg/Kg	0.0770	0.0575 U	--	0.17
PCB 118	2,3',4,4',5-PeCB	µg/Kg	3.62	1.04	--	0.12
PCB 120	2,3',4,5,5'-PeCB	µg/Kg	0.0588 U	0.0575 U	--	--
PCB 121	2,3',4,5',6-PeCB	µg/Kg	0.0588 U	0.0575 U	--	--
PCB 122	2',3,3',4,5-PeCB	µg/Kg	0.0588 U	0.0575 U	--	--
PCB 123	2',3,4,4',5-PeCB	µg/Kg	0.0588 U	0.0575 U	--	0.21
PCB 126	3,3',4,4',5-PeCB	µg/Kg	0.0892	0.0575 U	--	0.00005
PCB 127	3,3',4,5,5'-PeCB	µg/Kg	0.0588 U	0.0575 U	--	--
PCB 128/166	2,2',3,3',4,4'-HxCB + 2,3,4,4',5,6-HxCB	µg/Kg	1.22	0.327	--	--
PCB 129/138/163	2,2',3,3',4,5-HxCB + 2,2',3,4,4',5'-HxCB + 2,3,3',4',5,6-HxCB	µg/Kg	12.6	3.39	--	--
PCB 130	2,2',3,3',4,5'-HxCB	µg/Kg	0.529	0.129	--	--
PCB 131	2,2',3,3',4,6-HxCB	µg/Kg	0.108	0.0575 U	--	--
PCB 132	2,2',3,3',4,6'-HxCB	µg/Kg	4.17	1.04	--	--
PCB 133	2,2',3,3',5,5'-HxCB	µg/Kg	0.164	0.0575 U	--	--
PCB 134/143	2,2',3,3',5,6-HxCB + 2,2',3,4,5,6'-HxCB	µg/Kg	0.514	0.115 U	--	--
PCB 135/151	2,2',3,3',5,6'-HxCB + 2,2',3,5,5',6-HxCB	µg/Kg	6.28	1.19	--	--
PCB 136	2,2',3,3',6,6'-HxCB	µg/Kg	1.97	0.397	--	--
PCB 137	2,2',3,4,4',5-HxCB	µg/Kg	0.206	0.0589	--	--
PCB 139/140	2,2',3,4,4',6-HxCB + 2,2',3,4,4',6'-HxCB	µg/Kg	0.118 U	0.115 U	--	--
PCB 141	2,2',3,4,5,5'-HxCB	µg/Kg	2.67	0.811	--	--
PCB 142	2,2',3,4,5,6-HxCB	µg/Kg	0.0588 U	0.0575 U	--	--
PCB 144	2,2',3,4,5',6-HxCB	µg/Kg	0.687	0.155	--	--
PCB 145	2,2',3,4,6,6'-HxCB	µg/Kg	0.0588 U	0.0575 U	--	--
PCB 146	2,2',3,4',5,5'-HxCB	µg/Kg	1.62	0.404	--	--
PCB 147/149	2,2',3,4',5,6-HxCB + 2,2',3,4',5',6-HxCB	µg/Kg	12.0	2.82	--	--
PCB 148	2,2',3,4',5,6'-HxCB	µg/Kg	0.0588 U	0.0575 U	--	--
PCB 150	2,2',3,4',6,6'-HxCB	µg/Kg	0.0588 U	0.0575 U	--	--
PCB 152	2,2',3,5,6,6'-HxCB	µg/Kg	0.0588 U	0.0575 U	--	--
PCB 153/168	2,2',4,4',5,5'-HxCB + 2,3',4,4',5',6-HxCB	µg/Kg	11.7	3.10	--	--
PCB 154	2,2',4,4',5,6'-HxCB	µg/Kg	0.114	0.0575 U	--	--
PCB 155	2,2',4,4',6,6'-HxCB	µg/Kg	0.0588 U	0.0575 U	--	--
PCB 156/157	2,3,3',4,4',5-HxCB + 2,3,3',4,4',5'-HxCB	µg/Kg	0.954	0.288	--	--
PCB 158	2,3,3',4,4',6-HxCB	µg/Kg	1.09	0.306	--	--
PCB 159	2,3,3',4,5,5'-HxCB	µg/Kg	0.0588 U	0.0575 U	--	--
PCB 160	2,3,3',4,5,6-HxCB	µg/Kg	0.0588 U	0.0575 U	--	--
PCB 161	2,3,3',4,5',6-HxCB	µg/Kg	0.0588 U	0.0575 U	--	--
PCB 162	2,3,3',4',5,5'-HxCB	µg/Kg	0.146	0.0575 U	--	--
PCB 164	2,3,3',4',5',6-HxCB	µg/Kg	0.867	0.247	--	--
PCB 165	2,3,3',5,5',6-HxCB	µg/Kg	0.0588 U	0.0575 U	--	--
PCB 167	2,3',4,4',5,5'-HxCB	µg/Kg	0.320	0.105	--	0.21

Table 6
Basin 44A Inline Solids - PCB Congeners Results

IUPAC Number ⁽¹⁾	Chemical Name	Units	Manhole ABC311 Downstream of manhole in 72" line ST1: FO095662	Manhole ABC311 Duplicate ST1: FO095677	JSCS ⁽²⁾ Screening Level Value	
			6/2/2009	6/2/2009	Toxicity	Bioaccumulation
PCB 169	3,3',4,4',5,5'-HxCB	µg/Kg	0.0588 U	0.0575 U	--	0.00021
PCB 170	2,2',3,3',4,4',5-HpCB	µg/Kg	3.83	1.40	--	--
PCB 171/173	2,2',3,3',4,4',6-HpCB + 2,2',3,3',4,5,6-HpCB	µg/Kg	1.21	0.42	--	--
PCB 172	2,2',3,3',4,5,5'-HpCB	µg/Kg	0.634	0.223	--	--
PCB 174	2,2',3,3',4,5,6'-HpCB	µg/Kg	4.04	1.53	--	--
PCB 175	2,2',3,3',4,5',6-HpCB	µg/Kg	0.183	0.0575 U	--	--
PCB 176	2,2',3,3',4,6,6'-HpCB	µg/Kg	0.639	0.179	--	--
PCB 177	2,2',3,3',4',5,6-HpCB	µg/Kg	2.51	0.839	--	--
PCB 178	2,2',3,3',5,5',6-HpCB	µg/Kg	0.960	0.257	--	--
PCB 179	2,2',3,3',5,6,6'-HpCB	µg/Kg	2.22	0.585	--	--
PCB 180/193	2,2',3,4,4',5,5'-HpCB + 2,3,3',4',5,5',6-HpCB	µg/Kg	8.72	3.19	--	--
PCB 181	2,2',3,4,4',5,6-HpCB	µg/Kg	0.0588 U	0.0575 U	--	--
PCB 182	2,2',3,4,4',5,6'-HpCB	µg/Kg	0.0588 U	0.0575 U	--	--
PCB 183/185	2,2',3,4,4',5',6-HpCB + 2,2',3,4,5,5',6-HpCB	µg/Kg	2.90	1.02	--	--
PCB 184	2,2',3,4,4',6,6'-HpCB	µg/Kg	0.0588 U	0.0575 U	--	--
PCB 186	2,2',3,4,5,6,6'-HpCB	µg/Kg	0.0588 U	0.0575 U	--	--
PCB 187	2,2',3,4',5,5',6-HpCB	µg/Kg	6.06	1.71	--	--
PCB 188	2,2',3,4',5,6,6'-HpCB	µg/Kg	0.0588 U	0.0575 U	--	--
PCB 189	2,3,3',4,4',5,5'-HpCB	µg/Kg	0.166	0.0575 U	--	1.2
PCB 190	2,3,3',4,4',5,6-HpCB	µg/Kg	0.764	0.283	--	--
PCB 191	2,3,3',4,4',5',6-HpCB	µg/Kg	0.143	0.0575 U	--	--
PCB 192	2,3,3',4,5,5',6-HpCB	µg/Kg	0.0588 U	0.0575 U	--	--
PCB 194	2,2',3,3',4,4',5,5'-OxCB	µg/Kg	1.5	0.658	--	--
PCB 195	2,2',3,3',4,4',5,6-OxCB	µg/Kg	0.734	0.293	--	--
PCB 196	2,2',3,3',4,4',5,6'-OxCB	µg/Kg	1.05	0.359	--	--
PCB 197/200	2,2',3,3',4,4',6,6'-OxCB + 2,2',3,3',4,5,6,6'-OxCB	µg/Kg	0.384	0.172 U	--	--
PCB 198/199	2,2',3,3',4,5,5',6-OxCB + 2,2',3,3',4,5,5',6'-OxCB	µg/Kg	2.24	0.736	--	--
PCB 201	2,2',3,3',4,5',6,6'-OxCB	µg/Kg	0.270	0.0862 U	--	--
PCB 202	2,2',3,3',5,5',6,6'-OxCB	µg/Kg	0.324	0.117	--	--
PCB 203	2,2',3,4,4',5,5',6-OxCB	µg/Kg	1.07	0.420	--	--
PCB 204	2,2',3,4,4',5,6,6'-OxCB	µg/Kg	0.0882 U	0.0862 U	--	--
PCB 205	2,3,3',4,4',5,5',6-OxCB	µg/Kg	0.105	0.0862 U	--	--
PCB 206	2,2',3,3',4,4',5,5',6-NoCB	µg/Kg	0.547	0.173	--	--
PCB 207	2,2',3,3',4,4',5,6,6'-NoCB	µg/Kg	0.0882 U	0.0862 U	--	--
PCB 208	2,2',3,3',4,5,5',6,6'-NoCB	µg/Kg	0.167	0.0862 U	--	--
PCB 209	Decachlorobiphenyl	µg/Kg	0.0959	0.0862 U	--	--
Total Monochlorobiphenyls		µg/Kg	ND	ND	--	--
Total Dichlorobiphenyls		µg/Kg	3.03	0.766	--	--
Total Trichlorobiphenyls		µg/Kg	11.9	2.04	--	--
Total Tetrachlorobiphenyls		µg/Kg	20.3	2.48	--	--
Total Pentachlorobiphenyls		µg/Kg	30.6	6.18	--	--
Total Hexachlorobiphenyls		µg/Kg	59.9	14.8	--	--
Total Heptachlorobiphenyls		µg/Kg	35.0	11.6	--	--
Total Octachlorobiphenyls		µg/Kg	7.68	2.58	--	--
Total Nonachlorobiphenyls		µg/Kg	0.714	0.173	--	--
Total Decachlorobiphenyls		µg/Kg	0.0959	ND	--	--
Total PCBs		µg/Kg	169	40.6	676	0.39

Notes:

MoCB = Monochlorobiphenyl

DiCB = Dichlorobiphenyl

TriCB = Trichlorobiphenyl

TeCB = Tetrachlorobiphenyl

PeCB = Pentachlorobiphenyl

HeCB = Hexachlorobiphenyl

HpCB = Heptachlorobiphenyl

OcCB = Octachlorobiphenyl

NoCB = Nonachlorobiphenyl

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

-- No JSCS screening level available.

µg/Kg = Micrograms per kilogram.

⁽¹⁾IUPAC - International Union of Pure and Applied Chemistry

⁽²⁾JSCS - Portland Harbor Joint Source Control Strategy (DEQ/EPA Final December 2005, Amended July 2007).

bold = concentration exceeds JSCS Bioaccumulation Screening Level Value


 = concentration exceeds JSCS Toxicity Screening Level Value

Table 7
Basin 44A Stormwater Evaluation Summary

Analytes with Detection(s) Exceeding JSCS SLVs ⁽¹⁾	Geometric Mean ⁽²⁾ of Concentration (µg/L)	JSCS SLV ⁽³⁾ (µg/L)	Geometric Mean >SLV?	Additional Screening Factors			Data Indicate Potentially Significant Current Source?	Rationale
				DEQ Background ⁽⁴⁾ (µg/L)	Harborwide Source Tracing Category ⁽⁵⁾	NPDES Permit Benchmark ⁽⁶⁾ (µg/L)		
PCB Congeners								
Total PCBs	0.00675	0.000064	Yes	--	1	--	No	Basin geometric mean concentration falls within the lowest source tracing category (BES, 2010).
Total Metals								
Arsenic	0.905	0.045	Yes	2	1	--	No	Basin geometric mean concentration is below DEQ estimated background concentration.
Cadmium	0.438	0.094	Yes	<1	2	--	No	Basin geometric mean concentration is below DEQ estimated background concentration.
Copper	25.3	2.7	Yes	9	1	100	No	Basin geometric mean concentration falls within the lowest source tracing category (BES, 2010).
Lead	10.8	0.54	Yes	13.3	1	400	No	Basin geometric mean concentration is below DEQ estimated background concentration.
Silver	0.096	0.12	No	<1	Note ⁽⁷⁾	--	No	Basin geometric mean concentration is less than the JSCS SLV.
Zinc	192	36	Yes	38	2	600	No	Basin geometric mean concentration is only slightly greater than the upper confidence interval (UCL) for the lowest source tracing category (0.186 µg/L; BES, 2010) and is significantly less than the NPDES permit benchmark
Pesticides								
4,4'-DDE	0.00119	0.00031	Yes	--	NA	--	No	Analyte was detected in only one stormwater sample, and the basin geometric mean concentration is less than 10 times the JSCS SLV.
4,4'-DDD	0.00262	0.00022	Yes	--	NA	--	No	Analyte was detected in only two stormwater samples, and both detections were qualified (flagged) results. Basin geometric mean concentration is only slightly greater than 10 times the JSCS SLV.
Aldrin	0.0025	0.00005	Yes	--	NA	--	No	Analyte was detected only in samples (parent and duplicate) from one storm event, and both detections were qualified (flagged) results. Analyte was not detected in the samples from the last two storm events.
Heptachlor Epoxide	0.00174	0.000039	Yes	--	NA	--	No	Analyte was detected only in parent sample (not duplicate) from one storm event, and the detection was a qualified (flagged) result. Analyte was not detected in the samples from the last two storm events.
PAHs (EPA 8270-SIM)								
Benzo(a)anthracene	0.0137	0.018	No	--	Note ⁽⁷⁾	--	No	Basin geometric mean concentration is less than the JSCS SLV.
Benzo(a)pyrene	0.0143	0.018	No	--	Note ⁽⁷⁾	--	No	Basin geometric mean concentration is less than the JSCS SLV.
Benzo(b)fluoranthene	0.0169	0.018	No	--	Note ⁽⁷⁾	--	No	Basin geometric mean concentration is less than the JSCS SLV.
Benzo(k)fluoranthene	0.0144	0.018	No	--	Note ⁽⁷⁾	--	No	Basin geometric mean concentration is less than the JSCS SLV.
Chrysene	0.0473	0.018	Yes	--	1	--	No	Basin geometric mean concentration falls within the lowest source tracing category (BES, 2010).
Fluoranthene	0.0915	0.2	No	--	Note ⁽⁷⁾	--	No	Basin geometric mean concentration is less than the JSCS SLV.
Indeno(1,2,3-cd)pyrene	0.0131	0.018	No	--	Note ⁽⁷⁾	--	No	Basin geometric mean concentration is less than the JSCS SLV.
Naphthalene	0.166	0.2	No	--	Note ⁽⁷⁾	--	No	Basin geometric mean concentration is less than the JSCS SLV.
Total PAHs	0.598	--	--	--	2	--	No	No source tracing is needed for individual PAHs based on low geometric mean concentrations relative to JSCS SLVs and/or harborwide source tracing categories.
Phthalates (EPA 8270-SIM)								
Bis(2-ethylhexyl)phthalate	1.92	2.2	No	--	Note ⁽⁷⁾	--	No	Basin geometric mean concentration is less than the JSCS SLV.
SVOCs (EPA 8270C)								
Pentachlorophenol	1.55	0.56	Yes	--	NA	--	No	Analyte was detected in only two stormwater samples, and only one detection exceeds (slightly) the JSCS SLV. Basin geometric mean concentration is less than 10 times the JSCS SLV.

Notes:

NA = Harborwide source tracing category not developed for this constituent.

⁽¹⁾ Stormwater analytes for which at least one detected concentration exceeded the corresponding JSCS SLV. See Tables 2 and 3.

⁽²⁾ Geometric mean values were calculated using the following conventions: (1) averaging the concentrations (for each analyte) for the 12/12/2008 primary and duplicate samples to calculate a single concentration (for each analyte) for the 12/12/2008 event prior to calculating the overall geometric mean concentration; and (2) setting the value for concentrations reported as below the laboratory method reporting limit (MRL) to 1/2 the value of the MRL; 1/2 the value of the highest MRL is used in the case of non-detect results for summed analytes (e.g., total PCBs).

⁽³⁾ Joint Source Control Strategy (JSCS) Screening Level Value (SLV) (DEQ/EPA 2005, as updated in July 2007).

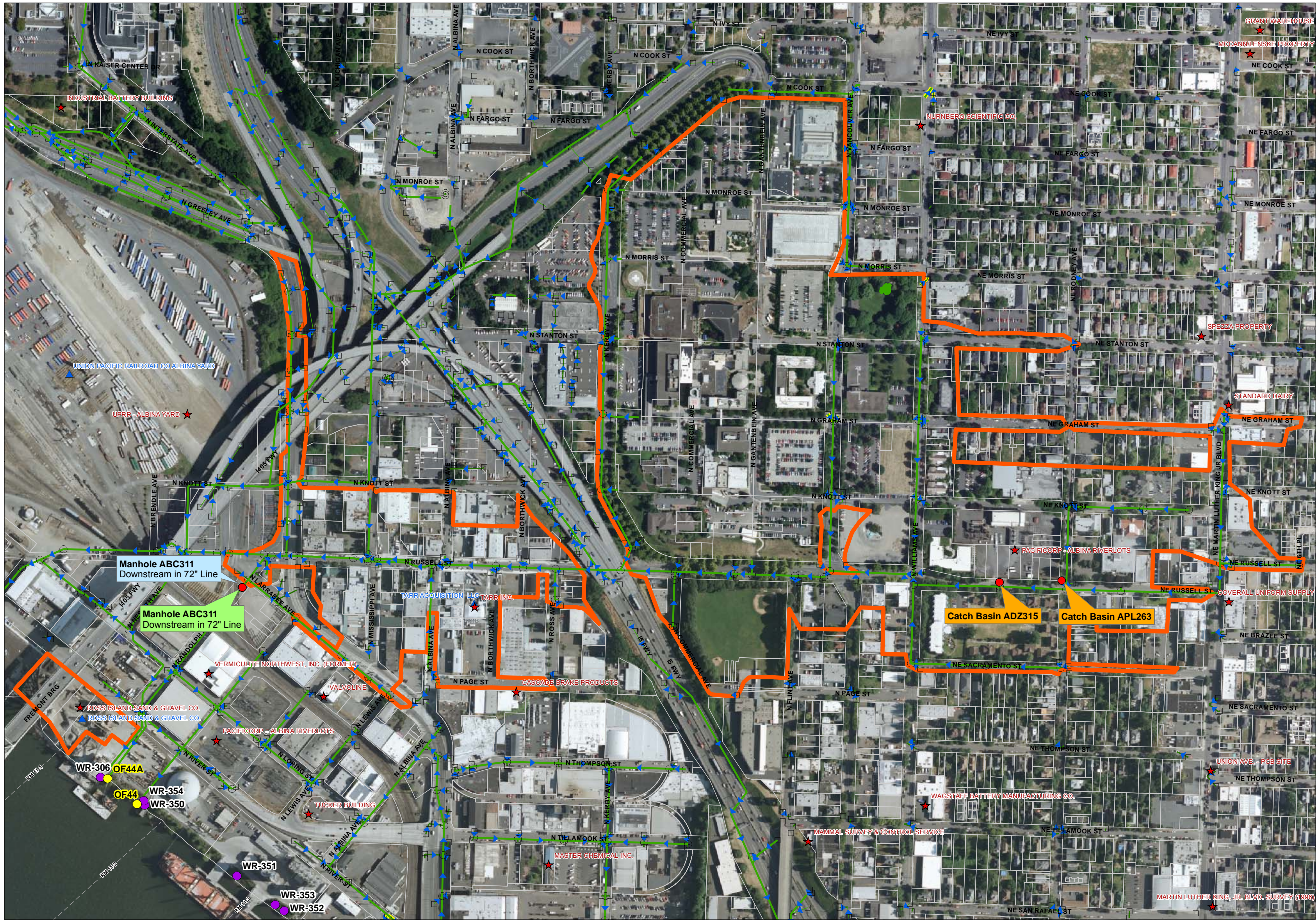
⁽⁴⁾ Oregon Department of Environmental Quality (DEQ), 2002. Default background concentrations for metals. Internal DEQ memorandum, to DEQ Cleanup Project Managers, from: Toxicology Workgroup. Dated October 28, 2002.

⁽⁵⁾ Based on data from City and non-City outfalls discharging to the Portland Harbor. See *City Stormwater Evaluation Report* (BES, 2010) for detailed description of source tracing category significance and development.

⁽⁶⁾ NPDES = National Pollution Discharge Elimination System.

⁽⁷⁾ No additional screening warranted (geometric mean concentration is less than the JSCS SLV).

Figures



- LEGEND**
- Outfall Basin 44A
 - Sample Location
 - Sediment Trap Sample
 - Stormwater Sample
 - Inline Solids Sample
 - City Outfall
 - Non-City Outfall
 - Storm Line
 - Manhole
 - Catch Basin
 - DEQ ECSI Site
 - NPDES Permit
 - Tax Lot
 - River Mile Tenth

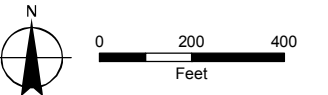


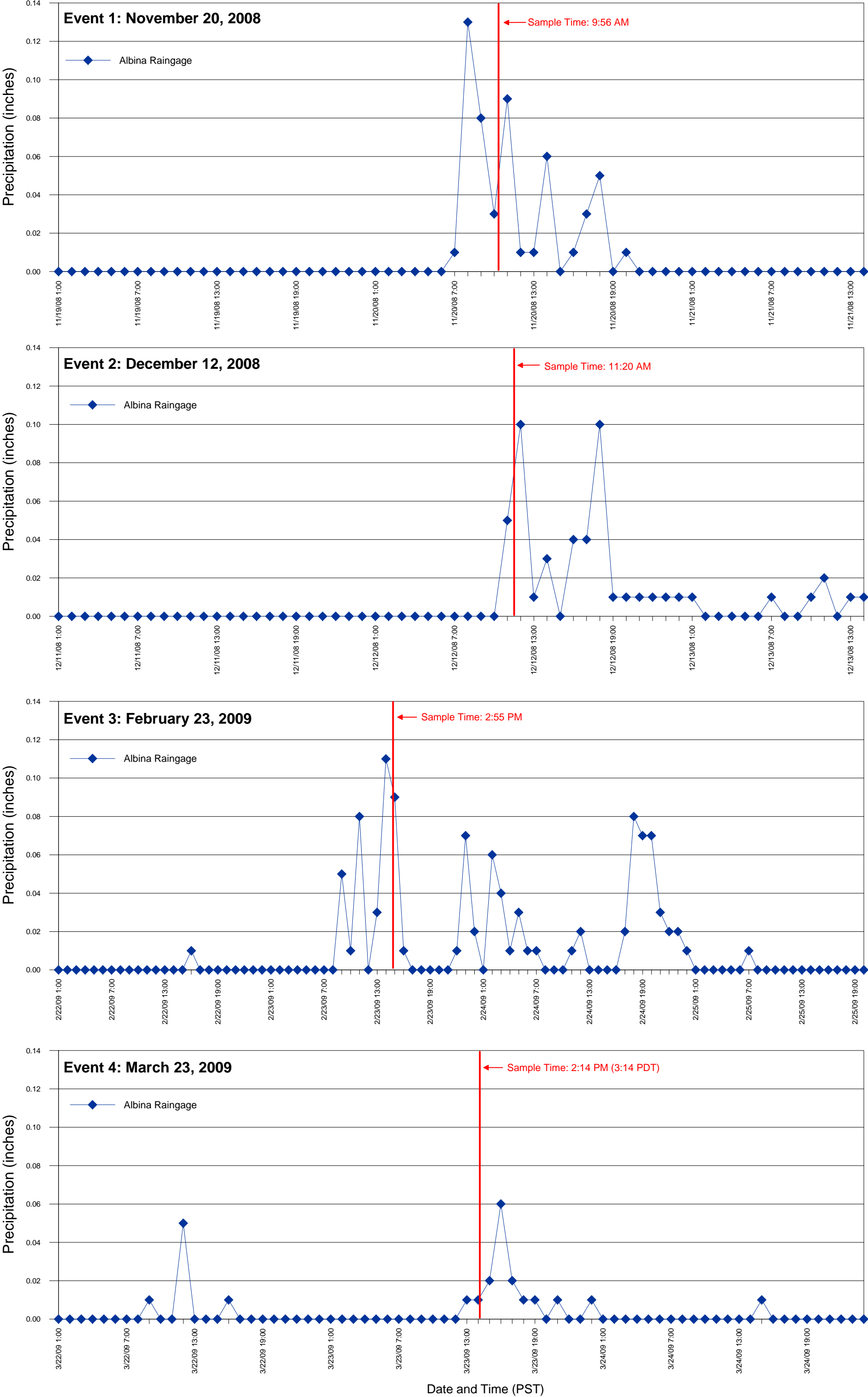
FIGURE 1
Outfall Basin 44A
Drainage Basin Overview

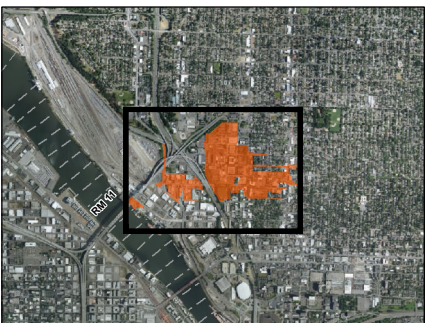
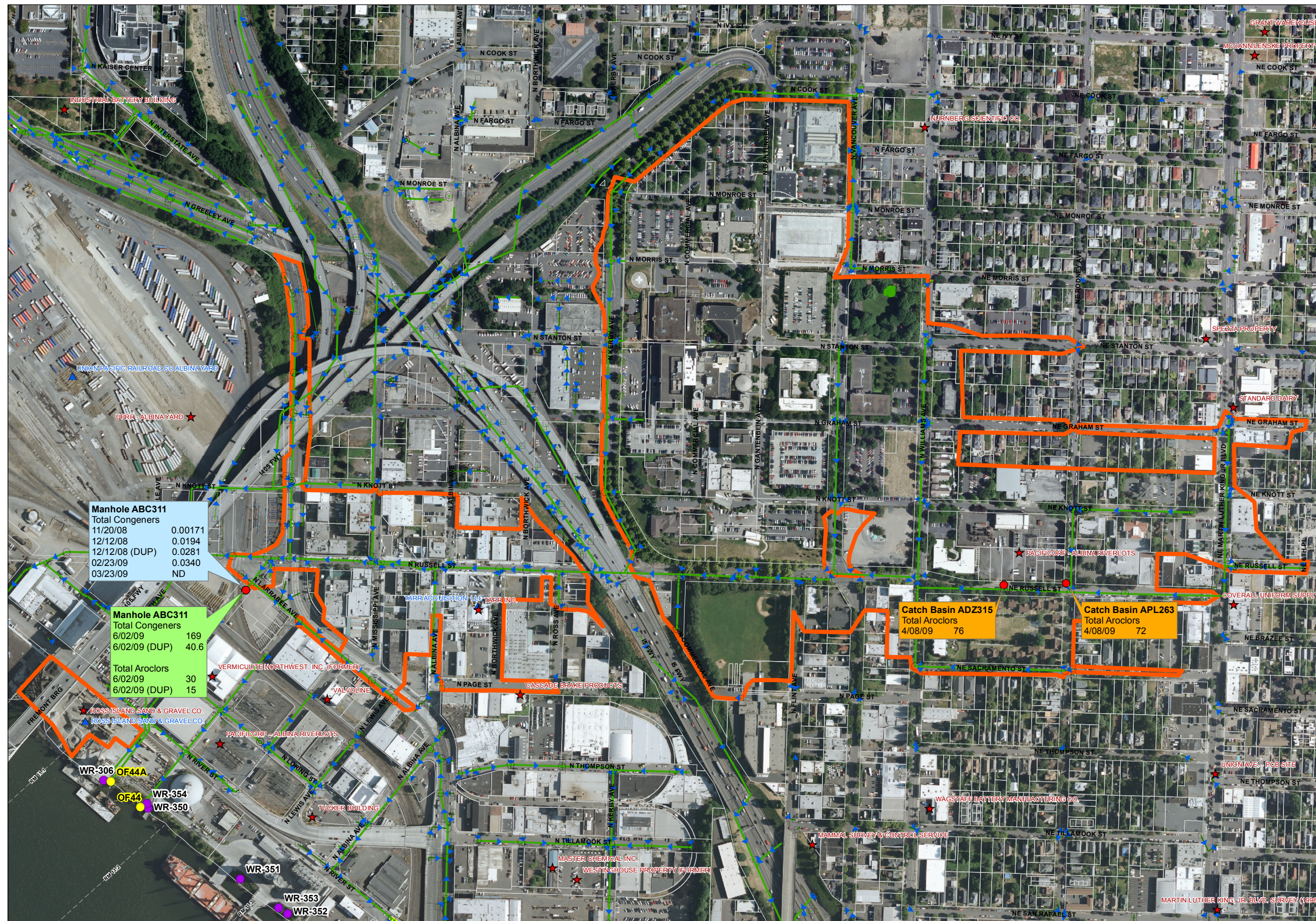
Disclaimer:
Information contained on this map is accurate according to available records, however the City of Portland makes no warranty, expressed or implied, as to the completeness or accuracy of the information published.

Prepared By:
GSI, February 7, 2011
005_SCIRI/OF_Basin_44A
Source: Inv_Report
City of Portland BES,
Aerial Photo 2009

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

Figure 2
Outfall 44A
Storm Event Precipitation Graphs





APPENDIX A

Field Photographs

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2008 – 2009 Stormwater Sampling



Photo 1 (December 2008). Stormwater sampling location ("SW1", Manhole ABC311).



Photo 2 (December 2008). Stormwater flowing through Manhole ABC311 during sampling event.

2008 – 2009 Sediment Trap Deployment



Photo 3 (October 2008). Two sets of installed sediment traps at sampling location ST1 (Manhole ABC311). The trap in the foreground is the farthest upstream.



Photo 4 (May 2009). Sediment traps at time of removal.

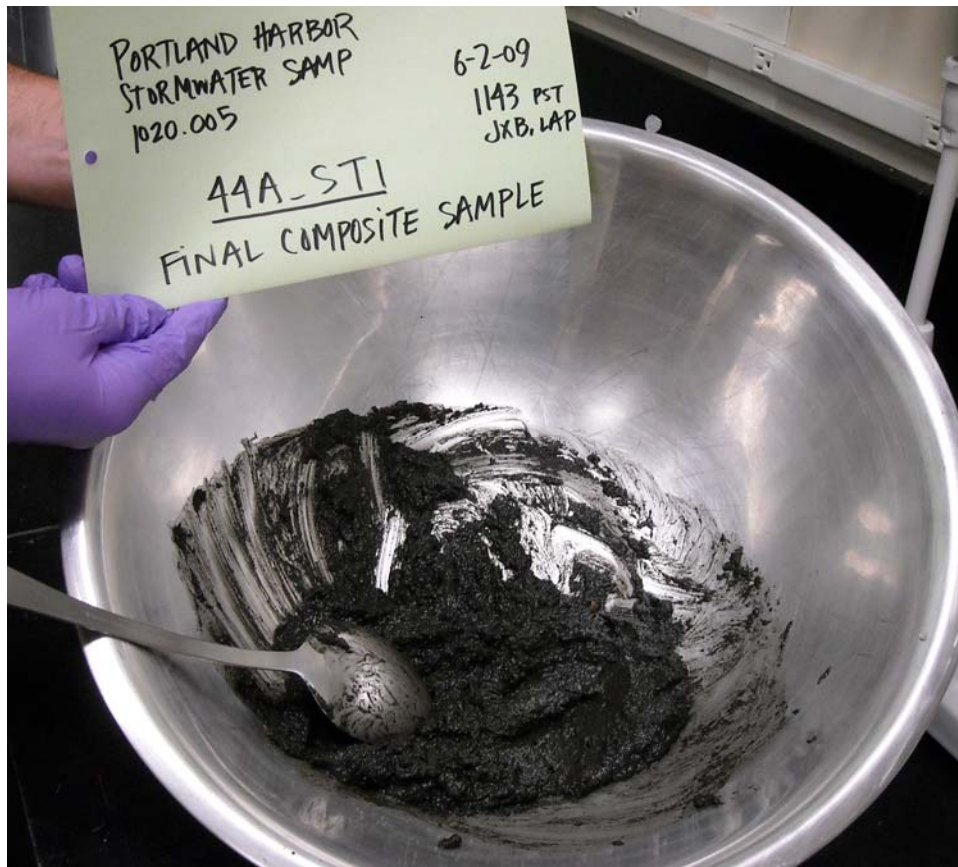


Photo 5 (June 2009). Composited and homogenized sediment trap sample submitted for analyses.

2009 Catch Basin Solids Sampling



Photo 6 (April 2009). Collecting a solids sample from catch basin ADZ315.

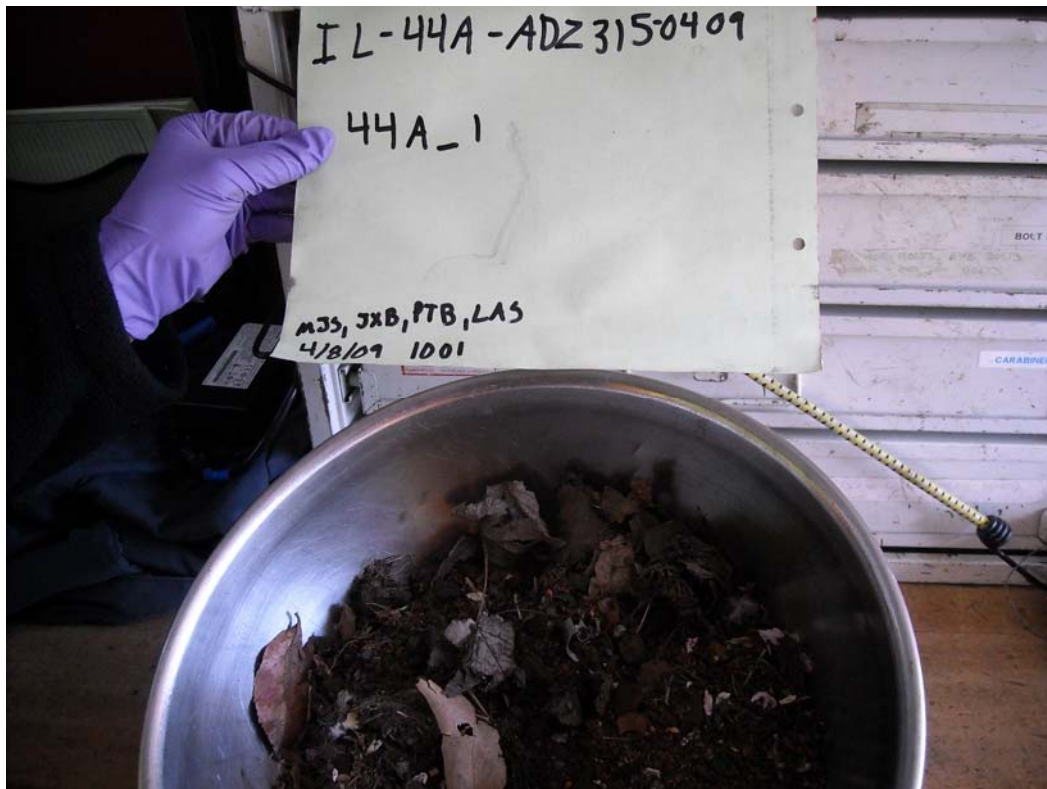


Photo 7 (April 2009). Homogenized solids sample collected from catch basin ADZ315.



Photo 8 (April 2009). Catch basin APL263 at the intersection of NE Russell and NE Rodney Streets.

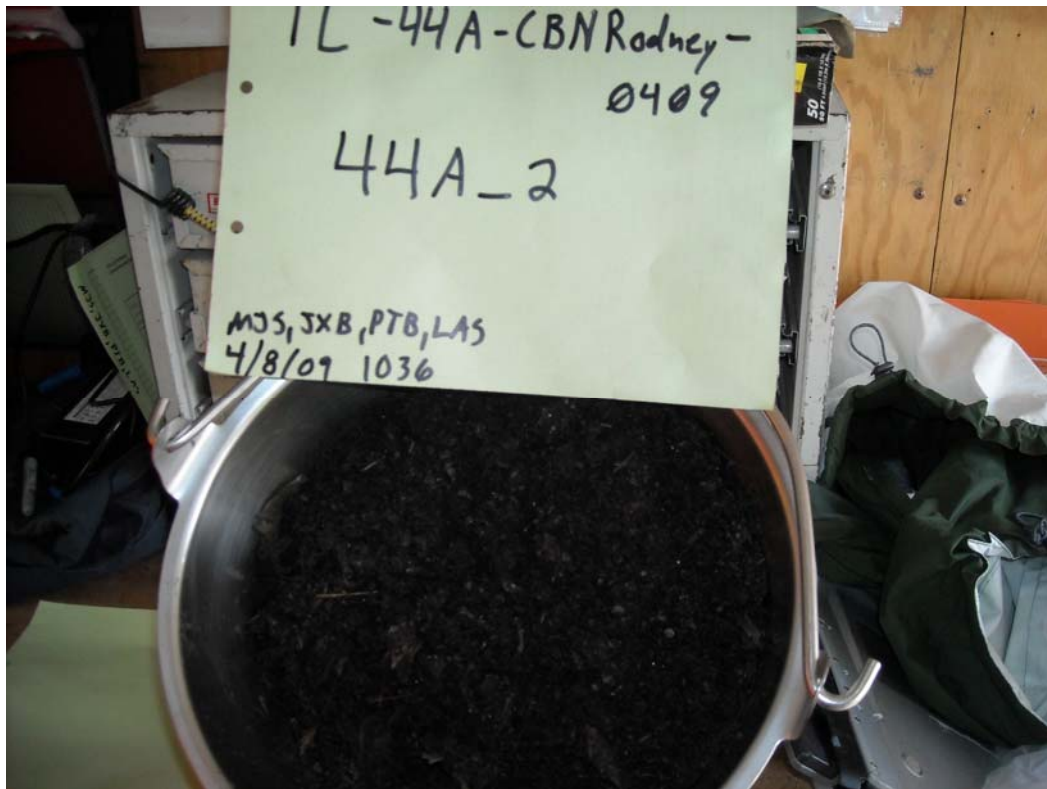


Photo 9 (April 2009). Homogenized solids sample collected from catch basin APL263.

APPENDIX B

Field Notes

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Stormwater Sampling

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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: 11/20/08
Page: 1 of 1
Collected By: PCB/PHA

Project Name: PORTLAND HARBOR STORMWATER SAMP

File Number: 1020.005

Matrix: STORMWTR

Requested Analyses

FY 2008-09 Stormwater Grab Chain-of-custody

☒ Sample Time recorded in PST

WPCL Sample I.D.

Location

Point Code Sample Date Sample Time Sample Type

PCB Congeners (All 209)
PAH + Phthalates (TA)
SVOC's (CAS)
TSS

Total Metals (As, Cd, Cr, Cu, Pb, Ni, Ag, Zn)
Total Mercury

Temperature (Deg C)

Conductivity (umhos/cm)

pH (pH units)

FO 081408

SW-43-ABC290-1108
N ALBINA & RIVER

43_SW1

11/20/08

0932

G

FO 081409

SW-43-ABC339-1108
N KERBY & WHEELER

43_SW2

11/20/08

0854

G

FO 081410

SW-43-ABC552-1108
N WHEELER PL & KERBY

43_SW3

11/20/08

0911

G

FO 081411

SW-44-ABC352-1108
N HARDING & RIVER

44_SW1

11/20/08

0941

G

FO 081412

SW-44-ABC311-1108
N LARABEE & RANDOLPH

44A_SW1

11/20/08

0956

G

FO 081413

FIELD DECON BLANK

FDB

11/20/08

1006

G

FO 081414

DUPLICATE

DUP

11/20/08

G

Signature: *[Signature]* Time: 11/32

Printed Name: *[Signature]* Date: 11/20/08

Received By: 1. *[Signature]* Time: 11/20/08

Printed Name: *[Signature]* Date: 11/20/08

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Printed Name: *[Signature]* Date: 11/20/08

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Printed Name: *[Signature]* Date: 11/20/08

Signature: *[Signature]* Time: 11/32

Printed Name: *[Signature]* Date: 11/20/08

Received By: 3. *[Signature]* Time: 11/20/08

Printed Name: *[Signature]* Date: 11/20/08

Signature: *[Signature]* Time: 11/32

Printed Name: *[Signature]* Date: 11/20/08

Received By: 4. *[Signature]* Time: 11/20/08

Printed Name: *[Signature]* Date: 11/20/08



Page 1 of 1

Project Portland Harbor Stormwater Sump
Location Basins 43, 44, 44A
Subject 1st sampling event

Project No. 1020.005
Date 11/20/08
By LEB/PTA

²
0852: Arrived at 43-SW²B to heavy steady rain. Rain began this morning at approx 0700. Visible flow of ~ 0.5fps in manhole. Collected sample plus duplicate. Took photos (1) Flow in MH (2) Drainage area. Off-site @ 0905.

0908 Arrived @ 43-SW3 to steady moderate rain. Collected sample at 0911. ~~Strong~~ Sewage odor in MH and sample. Sample had lots of solids, was turbid and brown in color.

0925 Offsite

0928 Arrive at 43-SW1 to steady rain. Collected sample @ 0930. Sanitary seep evident in MH, but does not appear to be flowing at the higher volume observed during previous sed trap install visits. Offsite @ 0935

0939 Arrive @ ~~09~~ 44-SW1 to steady, light rain. Collected sample successfully @ 0941. Laterals flowing into MH, deflecting off PVC and spraying sed trap in pipe. No sewage odor in sample. Low turbidity, no odor, but very slight sheen present in sample. Offsite @ 0948.

0953 Arrive @ 44A-SW1. To very light rain. Sample collected successfully. Field decon blank collected here as well at 1006.

1010 Off site to WPCL to relinquish samples.

Attachments



City of Portland
Chain-of-Custody
Bureau of Environmental Services



Date: 12/12/08
Page: 1 of 1
Collected By: MSS, JWB

Project Name: **PORTLAND HARBOR STORMWATER SAMP**

File Number: **1020.005**

Matrix: **STORMWTR**

Requested Analyses

FY 2008-09 Stormwater Grab Chain-of-custody

☒ Sample Time recorded in PST

WPCL Sample I.D.	Location	Point Code	Sample Date	Sample Time	Sample Type	General				Organics				Metals		Field		
						TSS	PCB Congeners (All 209)	PAH + Phthalates (TA)	SVOC's (CAS)	Pesticides (CAS)	Total Metals (As, Cd, Cr, Cu, Pb, Ni, Ag, Zn)	Total Mercury	Temperature (Deg C)	Conductivity (umhos/cm)	pH (pH units)			
FO 081475	SW-43-ABC290-1208 N ALBINA & RIVER	43_SW1	12/12/08	1157	G	•	•	•	•	•	•	•	•	•	7.8	56	7.9	
FO 081476	SW-43-ABC339-1208 N KERBY & WHEELER	43_SW2	12/12/08	1321	G	•	•	•	•	•	•	•	•	•	7.7	29	7.1	
FO 081477	SW-43-ABC352-1208 N WHEELER PL & KERBY	43_SW3	12/12/08	1332	G	•	•	•	•	•	•	•	•	•	7.9	106	7.2	
FO 081478	SW-43-ABC449-1208 N KERBY & TILLAMOOK	43_SW4	12/12/08	1310	G	•	•	•	•	•	•	•	•	•	7.8	34	7.5	
FO 081479	SW-44-ABC352-1208 N HARDING & RIVER	44_SW1	12/12/08	1144	G	•	•	•	•	•	•	•	•	•	7.1	81	10.1	
FO 081480	SW-44A-ABC311-1208 N LABREE & RANDOLPH	44A_SW1	12/12/08	1122	G	•	•	•	•	•	•	•	•	•	7.2	38	6.2	
FO 081481	FIELD DECON BLANK	FDB	12/12/08	1344	G	•	•	•	•	•	•	•	•	•				
FO 081482	DUPLICATE	DUP	12/12/08		G	•	•	•	•	•	•	•	•	•				

Relinquished By: 1 Matt Sullivan 12/12/08
Signature: [Signature] Time: 1435
Printed Name: Matt Sullivan Date: 12/12/08
Received By: 1 Matt Sullivan 12/12/08
Signature: [Signature] Time:
Printed Name: Date:

Relinquished By: 2
Signature: Time:
Printed Name: Date:
Received By: 2
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Printed Name: Date:

Relinquished By: 3
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Page 1 of 2

Project Portland Harbor SW

Project No. 1020.005

Location 6 outfall grab sites

Date 12/12/08

Subject Event 2

By MJS, JXB

1035 - rain has intensified from very light to moderate steady rain - will go out to sites at this point.

1112 - on site @ 44A-SW1 to very heavy consistent rain and heavy runoff. Flow in pipe is flowing very fast and is extremely turbid. Collected sample and duplicate from 1100-1132. Took photos of flow in pipe and of street near manhole.

1138 - on site @ 44-SW1 - light but steady rain - good flow entering catch basin and heavy flow in pipe. Collected sample 1144 - 1149

1155 on site @ 43-SW1. light rain but runoff still entering catch basins. Sampled 1157-1205 sample is moderately turbid.

1205 Rain has stopped

1216 Rain has started up again and is currently quite light

1255 Rain intensifying

1306 - on site @ 43-SW4 to moderate steady rain and good runoff entering catch basins. Sample is moderately turbid

1321 - on site @ 43-SW2 to steady rain & flow. Sample is moderately turbid.

1330 - on site @ 43-SW3 to heavy flow

Attachments sample is extremely turbid



Page 2 of 2

Project Portland Harbor Stormwater

Project No. 1020.005

Location _____

Date 12/12/08

Subject Event 2

By MSS, JKB

1344 Collected Field Decon Blank at 43-SW3 immediately after collecting sample, using a new clean beaker. (Did not collect first b/c we were approaching 3 hour first flush deadline).

Attachments



City of Portland
Chain-of-Custody
Bureau of Environmental Services



Date: 2/23/09
Page: 1 of 1
Collected By: M.S. Davis

Project Name: **PORTLAND HARBOR STORMWATER SAMP**

File Number: **1020.005**

Matrix: **STORMWTR**

Requested Analyses

FY 2008-09 Stormwater Grab Chain-of-custody

☐ Sample Time recorded in PST

WPCL Sample I.D.

Location

Point Code

Sample Date

Sample Time

Sample Type

TSS

PCB Congeners (All 209)

PAH + Phthalates (TA)

SVOC's (CAS)

Pesticides (CAS)

Total Metals (As, Cd, Cr, Cu, Pb, Ni, Ag, Zn)

Total Mercury

Temperature (Deg C)

Conductivity (umhos/cm)

pH (pH units)

FO095216

SW-43-ABC290-MMNY
N ALBINA & RIVER

43_SW1

2/23/09

1442

G

•

•

•

•

•

•

•

9.0

41

7.1

FO095217

SW-43-ABC339-MMNY
N KERBY & WHEELER

43_SW2

2/23/09

1410

G

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•

•

•

•

9.1

31

7.2

FO095218

SW-43-ABC552-MMNY
N WHEELER PL & KERBY

43_SW3

2/23/09

1518
1415

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7.2

FO095219

SW-43-ABC499-MMNY
N KERBY & TILLAMOOK

43_SW4

2/23/09

1358

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9.4

24

7.5

FO095220

SW-44-ABC352-MMNY
N HARDING & RIVER

44_SW1

2/23/09

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7.2

FO095221

SW-44A-ABC311-MMNY
N LARABEE & RANDOLPH

44A_SW1

2/23/09

1455

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9.1

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FO095222

FIELD DECON BLANK

FDB

2/23/09

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FO095223

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2/23/09

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Signature: Matt Sullivan Time: 1621

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Printed Name: Matt Sullivan Date: 2/23/09

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Page 1 of 1

Project Portland Harbor Stormwater Sample
Location basins 43, 44, and 44A
Subject Event ^{MS} 34

Project No. 1020.005
Date 2/23/09
By MJS, JXB

1337 - very heavy rain falling throughout the region - will go to Albina and determine if there is sufficient rain/run-off to sample.

43-SW4 - on site at 1354 to heavy rain + good run-off. Sample is very turbid and has a pronounced sheen.

43-SW2 - on site at 1406 to continued rain and flow cascading from laterals into manhole chamber. Water pooled in manhole is visibly flowing. Samples are extremely turbid.

44-SW1 - on site @ 1420 to continued moderate rain and very heavy runoff. Collected duplicate for TSS + PCBs. Samples are extremely turbid w/ visible suspended soil visible entering catch basin.

43-SW1 - on site @ 1439 to continued rain and heavy run-off. Samples are again extremely turbid - heavy truck traffic.

44A-SW1 - on site at 1452 to decreasing rain but still very heavy flow. Samples extremely turbid. Rain intensifying again.

43-SW3 - on site @ 1509 to steady moderate rain. Rain decreased throughout sampling but flow remained extremely heavy. Odor and visual particles in sample may indicate a CSO event occurring.
1530 collected FDB w/ a new clean bailer at 43-SW3.

Attachments



Project Name: PORTLAND HARBOR STORMWATER SAMP

File Number: 1020.005

Matrix: STORMWTR

Requested Analyses

FY 2008-09 Stormwater Grab Chain-of-custody

Sample Time recorded in PST

CL Sample ID.	Location	Point Code	Sample Date	Sample Time	Sample Type	General				Organics				Metals		Field		
						TSS				PCB Congeners (All 209)	PAH + Phthalates (TA)	SVOC's (CAS)	Pesticides (CAS)	Total Metals (As, Cd, Cr, Cu, Pb, Ni, Ag, Zn)	Total Mercury	Temperature (Deg C)	Conductivity (umhos/cm)	pH (pH units)
FO095371	SW-43-ABC290-MMYY N ALBINA & RIVER	43_SW1	3/33/04	13:48	G	•				•	•	•	•	•	•	9.8	132	7.3
FO095372	SW-43-ABC339-MMYY N KERBY & WHEELER	43_SW2		13:30	G	•				•	•	•	•	•	•	10.5	90	6.9
FO095373	SW-43-ABC362-MMYY N WHEELER PL & KERBY	43_SW3		14:54	G	•				•	•	•	•	•	•	10.7	552	7.6
FO095374	SW-43-ABC499-MMYY N KERBY & TILLAMOOK	43_SW4		13:22	G	•				•	•	•	•	•	•	10.7	122	7.1
FO095375	SW-44-ABC352-MMYY N HARDING & RIVER	44_SW1		14:02	G	•				•	•	•	•	•	•	9.1	129	7.8
FO095376	SW-44A-ABC311-MMYY N LARABEE & RANDOLPH	44A_SW1		14:14	G	•				•	•	•	•	•	•	10.0	97	7.5
FO095377	FIELD DECON BLANK	FDB		14:32	G	•				•	•	•	•	•	•			
FO095378	DUPLICATE	DUP			G	•				•	•	•	•	•	•			

Signature: *Matt Sullivan* Time: 16:47

Relinquished By: 2

Signature: _____ Time: _____

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Printed Name: *Matt Sullivan* Date: 3/33/04

Signature: _____ Time: _____

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Page 1 of 1

Project Portland Harbor Stormwater

Project No. 1020.005

Location Basin 43, 44, and 44a

Date 3/23/09

Subject Event 5

By MJS, JXB

1123 PST Light rain beginning, radar shows significant moisture arriving from the west. significant

1219 ~~No significant~~ On-site at basin 43; no rain yet but it is now beginning to rain more sprinkle more consistently.

1300 rain is now intensifying and pavement now completely wet although nothing is yet running off.

1309 runoff is beginning and is currently entering 3 of the 4 catch basins in the intersection.

1314 Flow in manhole has increased - will collect sample @ 43-SW 4

1330 on site @ 43-SW 2. There is abundant flow exiting the manhole. Rain continues to be light but steady and there is visible runoff - collected sample.

1348 on site @ 43-SW 1. Still light but steady rain.

Visible runoff and good flow in the manhole. Sample is very turbid.

1402 on site @ 44-SW 1 to continued steady light rain.

There is visible runoff entering catch basin. Collected sample and duplicate for TSS + PCBs. Sample was extremely turbid with a dark gray color.

1414 on site @ 44A-SW 1. Light rain continuing w/ steady runoff. Good flow in manhole. Collected sample which was extremely turbid.

1432 on-site at 43-SW 3. Light rain continues. will collect FDB prior to sampling.

1445 Light steady rain continuing. There is light but consistent flow entering catch basin. Flow in manhole is light but extremely turbid. ~~collect sample~~ ^{sample} contains visible suspended particles and is

Attachments very turbid. Measured extremely high conductivity reading (552 uS/cm). Sample has milky green and a ~~hydrocarbon~~ petroleum like odor.

Solids Sampling

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Solids Sampling: Sediment Trap

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Page 1 of 1

Project PORTLAND HARBOR STORMWATER SAMP

Project No. 1020.005

Location BASINS 43, 44, 44A

Date 10/17/08

Subject 08/09 INLINE SED TRAP INSTALLATION

By JXB/MJS

BACKGROUND: High pressure system has moved into the northwest/
Fog & overcast conditions turning into clear sky's ~60-65°F.
Last measurable precip > 48 hours.

All times in PDT

0933 PDT - Arrive on site @ N. Larabee & Randolph (ABC311)

JXB installs "standard" sed traps (44A-ST1) approx. 6-8'
DS from ^{edge of} manhole chamber in the 72" main pipe. JXB also
installs base plates for ~~rectangular~~ ^{square} sed traps (R&D) approx 9" ^{DS} from standard sed traps. ^{JXB}

Took photos of Sed Trap installation.

JXB mounts "EPA certified clean" narrow mouth HDPE
bottles in standard pair using clean nitrile gloves,
after flushing invert w/HPDT. Bottle caps were removed
& placed in clean Ziplock bag. Took photo of sed traps w/out bottle caps.

Bottle 1 mounted in US trap (44A-ST1-B1)

Bottle 2 mounted in DS trap (44A-ST1-B2)

1250 - Arrive on site & 2100 N Albina Ave (ABC363). MJS

attempts to install a pair of "standard" sed traps downstream of
MH chamber. 16" pipe is clay, making anchor bolt installation challenging.
Anchor bolts are in place but not engaged ^{fully} (only acting like pegs).

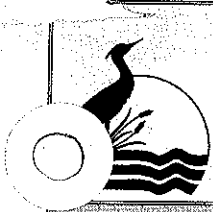
Will need to keep an eye on traps during storm events. There is
a low probability that traps will get blown out due to small pipe
diameter & slight sag in pipe. Large quantity of solids inline
may be due to ESCSO construction activities - talk to Angela Henderson.
MJS completed standard sed trap installation. Took photos of sed.
traps w/out bottle caps.

Attachments

43-ST1-B1 installed upstream ~5.0" from EOP

43-ST1-B2 installed downstream ~16.0" from EOP.

JXB removed
sed traps
at site
for 150' Deployment
period
Note to be used for
ESCSO River shaft
removal



CITY OF PORTLAND
ENVIRONMENTAL SERVICES

Field Operations
6543 N. Burlington Ave
Portland, OR 97203-5452



INLINE SEDIMENT TRAP FIELD DATA SHEET

Project Name: <i>Portland Harbor Stormwater Sump</i>	Project No.: <i>1020-005</i>	Date: <i>10/17/08</i>	By: <i>MJS, JVB</i>
Site Address: <i>N. Larabee + Randolph</i>	Sample Pt Code: <i>44A-ST1</i>	Basin: <i>44A</i>	Hansen ID: <i>ABC311</i>

SECTION 1 - INSTALLATION INFORMATION

Traffic control and/or site access concerns:

manhole is located in center of abandoned "spur" road w/ very little traffic

Describe flow conditions and depth and/or any standing water at time of install (does river appear to back up into this line intermittently?):

- There is a small but consistent base flow in pipe. ~0.3" of flow depth at ~1 fps

- River does not appear to back up into site

Describe sediments in pipe if present (depth, sampleable quantities, lateral extent, etc.):

no sediment present in pipe

Sed trap bottles installed on:

10/17/08 & 10/30/08

Sediment trap location(s) (pipe size, distance from center of node, proximity to laterals, etc.):

Primary sed traps are located just off the pipe in vert 78" and 90" downstream of edge of the manhole chamber in the 78" pipe. ~65"

Secondary sed traps are ~9' downstream of primary traps, ~202" & 312" downstream of mh. chamber. ~standard

Pipe diameter (inches):

72"

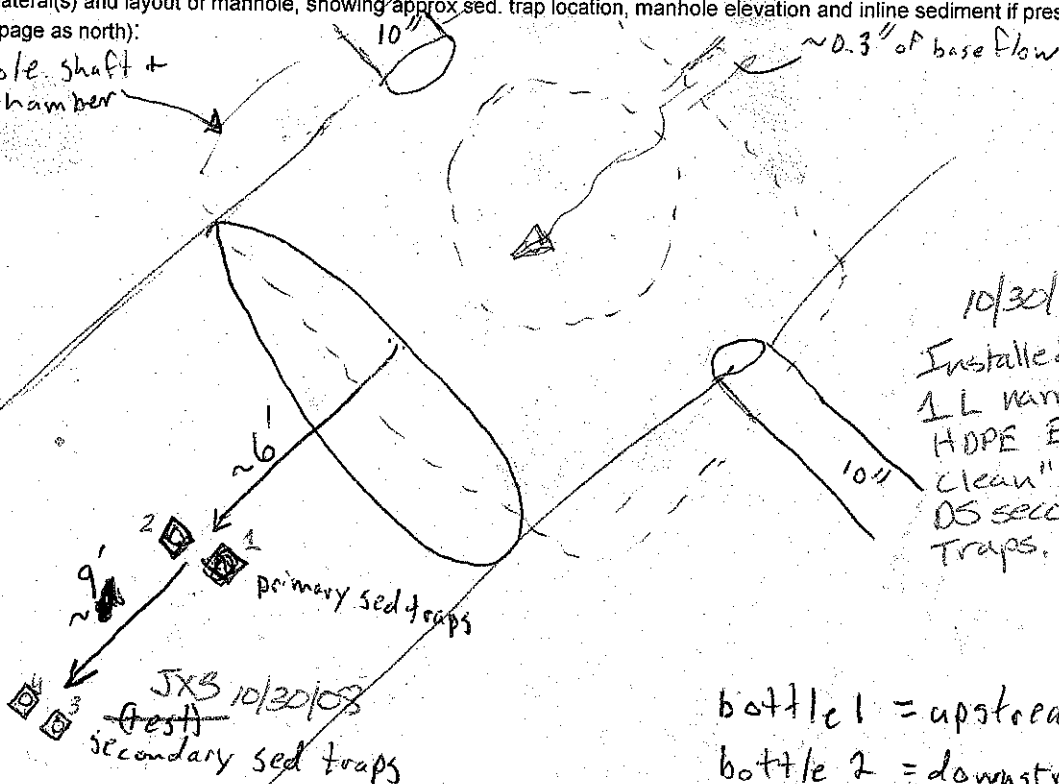
Distance from MH node (feet):

6' = 7.5'

SED TRAP SITE DIAGRAM

(Sketch map of the lateral(s) and layout of manhole, showing approx sed. trap location, manhole elevation and inline sediment if present. Orient drawing using the top of the page as north):

manhole shaft + chamber



bottle 1 = upstream (65" downstream of EOP)
bottle 2 = downstream (90" downstream of EOP)

bottle 3 = upstream (~202" downstream of EOP)
bottle 4 = downstream (~312" downstream of EOP)



Page 1 of 2

Project PORTLAND HARBOR STORMWATER SAMP

Project No. 1020.005

Location BASINS 44A, 43 & 18(R&D)

Date 10/30/08

Subject INLINE SED TRAP INSTALLS

By JXB/AJA

0951 PST - Arrive on site @ 44A-ST1 [N. Larabee & Randolph/ABC311] to install ^{additional} sed trap bottles & housing for secondary (standard) sed traps, located approx. 9.0' DS from primary sed traps. Primary sed traps & bottles, along with secondary sed trap base plates were installed on 10/17/08 @ this site.

AJA prepares to make entry. Entrant caps primary sed trap bottles w/ site's designated clean bottle caps, ^{wearing clean gloves} prior to moving DS in main line to install secondary sed trap housing. Entrant notes accumulation of organic leaf debris around primary sed trap base plates. Primary sed trap bottles are full of stormwater w/ mouths of bottles free of obstructions.
bottle mouths JXB 10/16/08

Entrant installed secondary sed trap housing w/ clean gloves; secured decontaminated 1L HDPE narrow-mouth bottles in secondary sed traps & removed bottle caps w/ clean gloves. Bottle caps from primary & secondary sed trap bottles were placed into clean, individual Ziplock bags for deployment period storage & labeled. Photo taken of primary & secondary sed trap pairs insitu.

1035 - Left site for Basin 18 R&D site AAT557.

1130 - Arrive on site @ 18-ST2 [3950 NW Yeon Ave (AAT557)] to install four different sed trap ^{designs} for Basin 18 R&D. JXB 11/14/08

1) Standard Sed Trap w/ 1-L HDPE, narrow-mouth bottle

2) Standard sed trap w/ 1-L HDPE, wide-mouth bottle

Attachments 3) Rectangular low-profile 1L HDPE wide-mouth ^{bottle} trap

4) Square low-profile 1L HDPE wide-mouth bottle trap



Page 1 of 4

Project PORTLAND HARBOR STORMWATER SAMP

Project No. 1020.005

Location Basin 43, 44 & 44A

Date 1/8/09

Subject INLINE SED TRAP CHECKS

By JXB/ECH

BACKGROUND: Large frontal system has moved through the Northwest w/ heavy bands of moisture (Pineapple Express), following a prolonged arctic front throughout the entire ^{region} Northwest (Rain on Snow event). High pressure ridge beginning to build, leading to increased temperatures & a prolonged dry period. This will be the first field check of the sed traps in Basin 43, 44 & 44A following ^{their} installation.

* All times in PST

Willamette River Staff Gauge Reading \Rightarrow 13.14' @ 0930 (~16.14')

(POT datum Adjustment)

0951 - Arrive on site @ 44A-ST1 (ACC311). ECH prepares to enter MHT. Baseflow in pipe measured at ~1.8" & 1.5-2.0 fps. Noticeable petroleum odor observed in MHT chamber. Entrant notes significant build up of organic debris around primary & secondary sed traps housing. Took a photo of debris on/around ~~furthest~~ ^{from} upstream trap. Entrant secured bottle caps, working ^{from} upstream to downstream, while wearing clean gloves. Entrant removed sed trap bottles for visual observations after removing debris. All traps were in tact.

Primary Sed Trap pair:

- 44A-ST1-B1 - Had a total accumulation of ~0.5" of solids w/ fines adhered to the inside of the bottle wall. Significant buildup of organics around trap housing, but bottle opening was free of obstructions. Bottle was completely full of stormwater w/ a visible sheen on the surface & no apparent odor.

- 44A-ST1-B2 - Had approx. 1.5" of total accumulation of solids w/ fines adhered to the inside wall of the bottle. Minor buildup of organics on trap housing; bottle opening free of obstructions. Bottle was full of stormwater w/ a visible sheen on the surface & no apparent odor.

Attachments



Page 2 of 4

Project PORTLAND HARBOR STORMWATER SAMP

Project No. 1030.005

Location Basin 43, 44/44A

Date 1/8/09

Subject INLINE SED TRAP CHECKS

By JXB/ECH

44A-ST1 (cont.)

Secondary Sed Trap Pair:

• 44A-ST1-B3 - Total accumulation of solids was approx. 0.5" w/ minor fines adhered to the inside walls of the bottle (adhesions). Organic debris wrapped around trap housing & partially obstructing bottle opening (~80% obstructed). Debris was removed by entrant. Bottle was full of stormwater w/ a visible sheen on the surface & no apparent odor.

• 44A-ST1-B4 - Total accumulation of solids was approx. 1.0-0.5" w/ an average depth of ~0.7" (captured solids were deposited in the bottom of the bottle @ an angle) w/ adhesions on ^{the} inside of ^{the} bottle walls. Bottle was full of stormwater w/ a visible sheen ^{JXB} on the surface & no apparent odor. Minor buildup of organics on trap housing.

Total accumulation of solids @ 44A-ST1 = ~3.2"

Entrant re-secured trap bottles & removed bottle caps while wearing clean gloves. Bottle caps were placed in clean, designated Ziplock for duration of deployment period.

1050 - Left 44A-ST1 for Basin 44 - 44-ST1

1103 - Arrive on site @ 44-ST1 (ABC352). Upon arrival, field crew observed substantial oily sheen/spill around manhole, extending upstream of MH manhole (MH) CB along curb, into parking area
Attachments @ 2204 N. River St. Took photos of sheen.

Pt. Code: 44A-ST1		SECTION 2 - MONTHLY FIELD CHECK INFORMATION		Hansen ID: ABC 311
Date: 1/8/09	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N		Archived ID:
By: JXB/ECH	US Bottle 1 - 0.5" DS Bottle 2 - ~1.5" US Bottle 3 - 0.5" DS Bottle 4 - ~0.7"	If removed which one(s)? Final Removal? Y/N		
Comments: Traps are in tacked, Baseflow was ~1.8" @ 1.5-2.0 fps. Noticeable petroleum odor observed in mitchamber. Significant build up of organic debris around housings. Primary & secondary traps full of stormwater.				
US Bottle	44A-ST1-B1: Fines adhered to the inside of the bottle walls. Total accumulation of solids was ~0.5". Significant build up of organics around housing, but bottle opening free of obstructions. Bottle full of stormwater w/ visible sheen & no apparent odor.			
DS Bottle	44A-ST1-B3: Fines adhered to inside of bottle walls. Bottle opening was ~80% obstructed. Removed obstruction. Total accumulation of solids was ~0.5". Bottle was full of stormwater w/ visible sheen & no apparent odor.			
	44A-ST1-B2: Fines adhered to inside of bottle walls w/ a total accumulation of solids @ ~1.5". Minor build up of organics on housing. Bottle full of stormwater w/ a visible sheen & no odor.			
Photos Taken? Y/N				
Describe: 44A-ST1-B4: Fines adhered to inside walls of bottle. Accumulation of solids was ~1.0-0.5" w/ average depth of ~0.7". Bottle full of stormwater w/ a visible sheen & no odor. Photos of organic debris on trap housing & bottle opening obstructions.				
Date: 2/18/09	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N		Archived ID:
By: JXB/ECH	US Bottle 1 - ~0.8" DS Bottle 2 - ~1.5" US Bottle 3 - ~0.6" DS Bottle 4 - ~0.7"	If removed which one(s)? Final Removal? Y/N		
Comments: Primary and secondary traps are in tacked. Baseflow on site was approx. 0.2" @ 0.5 fps. Organics and plastics adhered to all four sediment trap housings. 44A-ST1-B3 bottle opening was completely obstructed by a paper towel. Iron bacteria film on surface of captured stormwater (adhesions).				
US Bottle	44A-ST1-B1: Fines adhered to the inside walls of the bottle. Bottle is full of stormwater up to the bottle neck. Approx. 0.5" of accumulated sediment in bottom of bottle.			
	44A-ST1-B3: Minor adhesions on inside walls. Bottle is full of stormwater up the bottle neck. Approx. 1.5" of accumulated sediment in bottom of bottle.			
DS Bottle	44A-ST1-B2: Adhesions on inside bottle walls w/ stormwater up to bottle neck. Approx. 0.6" of captured sediment in bottom of bottle.			
	44A-ST1-B4: Minor adhesions on inside surface of bottle walls w/ captured stormwater up to bottle neck. Approx. 0.7" of captured sediment in bottom of sed trap bottle.			
Photos Taken? Y/N				
Describe: Iron bacteria on surface of captured stormwater & paper towel obstruction on B3				
Date: 3/18/09	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N		Archived ID:
By: JXB/MSS	US Bottle 1 - ~1.25" DS Bottle 2 - ~1.7" Bottle 3 - ~1.0" Bottle 4 - ~0.9"	If removed which one(s)? Final Removal? Y/N		
Comments: Primary & secondary traps are in tacked & all bottle openings are free of obstructions. Leaves & organic material adhered to trap housing. Baseflow was approx. 0.25" w/ a flow of ~1.0 fps. Primary & Secondary sediment traps were full of captured stormwater w/ no visible sheen on surface of captured stormwater. US Bottle No odor detected. Minor fines adhered to the inside walls of all the bottles.				
US Bottle	44A-ST1-B1: Total accumulation of captured solids in bottom of bottle was approx. 1.25"			
	44A-ST1-B3: Total accumulation of captured solids in bottom of bottle was approx. 1.0"			
DS Bottle	44A-ST1-B2: Total accumulation of captured solids in bottom of bottle was approx. 1.7"			
	44A-ST1-B4: Total accumulation of captured solids in bottom of bottle was approx. 0.9"			
Photos Taken? Y/N				
Describe:				



Page 1 of 5

Project Portland Harbor Stormwater Samp.

Project No. 1020.005

Location Basins 43, 44 & 44A

Date 2/18/09

Subject Inline sediment Trap Checks

By JXB/ECH

BACKGROUND: Extended dry period (5-day accumulation = 0.06 inches - Albina Raingage) w/a high pressure system currently set up throughout the region. Current weather is cool (mid-to-low 50's) and overcast. FO to conduct second inspection of ~~JXB~~ inline sediment traps installed in Basins 43, 44 & 44A ~~of~~ for 08/09 wet season.

* All times in PST

0952 - Arrive on site @ 44A-ST1 (W. Larabee & Randolph). ECH prepares to enter stormwater node ABC311. Baseflow was approx. 0.2" w/a flow of 0.5 fps. ECH inspects primary & secondary inline sediment traps @ 44A-ST1.

44A-ST1-B1 & B2 - Primary Sed Traps:

Organics and plastics were adhered to the housing of both sed traps. Bottle openings were free of obstructions. Both sed trap bottles were full of stormwater up to the neck of the bottle. Entrant observed iron bacteria film on surface of captured Stormwater. Took photo of iron bacteria film.

44A-ST1-B1 - Total accumulation of sed in bottom of sed trap bottle was approx. 0.8"

44A-ST1-B2 - Total accumulation of sed in bottom of sed trap bottle was approx 1.5"

44A-ST1-B3 & B4 - Secondary Sed Traps: Organics and plastics were also adhered to the housing of both secondary sed traps.

Attachments



Page 2 of 5

Project Portland Harbor Stormwater Sump

Project No. 1020.005

Location Basins 43, 44 & 44A

Date 2/18/09

Subject Inline Sediment Trap Checks

By JXB/ECH

44A-ST1-B3 & B4 - Secondary sed traps (cont): Bottle opening for 44A-ST1-B3 was completely obstructed by a paper towel. Entrant carefully removed obstruction, while wearing clean nitrile gloves, after taking a photo of bottle & obstruction. Both sed. trap bottles are full of stormwater up to the neck of the bottle. Iron bacteria film was also observed on the surface of the captured stormwater in the secondary sed trap bottles.

44A-ST1-B3 - Total accumulation of sed. in bottom of sed. trap bottle was approx. 0.6"

44A-ST1-B4 - Total accumulation of sed. in bottom of sed. trap bottle was approx. 0.7"

1018 - Entrant re-secured primary & secondary sed. trap bottles in inline stainless housing & removed bottle caps. Entrant observed a minor oily sheen^{moving from upstream to downstream} on surface of baseflow, while leaving stormwater node.

1037 - Leave 44A-ST1 & travel to Basin 44.

1057 - Arrive on site @ 44-ST1 (N. Harding & River ST). BES Inspector, Rick Hyatt on site. Rick informed FO that a PPL sub-contractor had performed directional-drilling on 2/17, from power pole paralleling N. River ST north, to ESCSO microtunnel shaft for a new power pad. Rick mentioned that PPL sub had drilled into 8" plugged lateral, entering stormwater node ABC352 from the north east. Rick was on site ^{JXB} when on site

Attachments when subsurface lateral was struck; drilling was stopped & drill head repositioned. Rick observed no visible fines or displaced soil exiting lateral into ABC352.



Page 1 of 4

Project Portland Harbor Stormwater Samp.

Project No. 1020.005

Location Basins 43, 44 & 44A

Date 3/18/09

Subject Inline Sediment Trap Checks

By JXB/MTS

For background information &/or weather ^{discussion} see Basin 18 R & D notes from 3/18/09 on file.

* All times in PST

1010 - Arrive on site @ 44A-ST1 [N. Larabee & Randolph (AB311)] to inspect primary & secondary sediment traps. MTS prepares to enter MH.

Primary & secondary traps are in tact & are free of obstructions. Observed baseflow was ~0.25' w/a flow of ~1.0 tps. Leaves & organics were adhered to the trap housing. Entrant capped sediment trap bottles & conducted visual inspection.

Primary Sed Traps: No visible sheen on surface of captured stormwater, nor was there a discernable odor.

44A-ST1-B1 - Was full of captured stormwater w/a total accumulation of captured solids of approx. 1.25". Minor fines adhered to the inside surfaces of the bottle (adhesions).

44A-ST1-B2 - Was full of captured stormwater w/a total accumulation of captured solids of approx. 1.7". ^{minor} Adhesions were also present in bottle.

Secondary Sed Traps: No visible sheen on surface of stormwater captured in traps, nor was there a discernable odor.

44A-ST1-B3 - Was full of captured stormwater w/a total accumulation of captured solids of approx 1.0" w/visible adhesions on the inside surfaces of the bottle.

44A-ST1-B4 - Was full of captured stormwater w/a total accumulation of captured solids of approx. 0.9". Adhesions were also present in bottle.

1033 - Entrant secured bottles in traps & removed bottle caps. Left Basin 44A for Basin 44.



Page 1 of 1

Project Portland Harbor Stormwater Sump

Project No. 1020.005

Location To File

Date 3/19/09

Subject Albina River Lots/Solids Accumulation Rates
Basin Total Accumulation

By JXB

Basin 43

43-ST1 = 1.0" [0.3" gain in captured solids accumulation ^{since 1/18/09}]

43-ST2 = 2.3" [No change]

43-ST3 = 3.8" [0.4" gain in captured solids accumulation ^{since 2/18/09}]

43-ST4 = 0.8" [0.2" gain in captured solids accumulation ^{since 2/18/09}]

Basin 44

44-ST1 = 0.5" [0.3" gain in captured solids accumulation ^{since 2/18/09}]

Total solids for site (archived solids & current solids) = 1.1"

JXB Basin 44A 4.9"

44A Basin 44AST 4.9" [1.3" gain in captured solids accumulation ^{since 2/18/09}]
JXB



Page 2 of 3 JXS

Project Portland Harbor SW Samp
Location Basins 43+44+44A - Albina Riverots
Subject Sed trap final removal

Project No. 1020.005
Date 5/27/09
By MTB, JXB, ECH

0937 On site for removal of 44A - ST1 B1, B2, B3, B4 - located at ABL311, N. Larabee + Randolph. About 1/4" of baseflow moving at about 1.0 fps flowing through ^{main} invert. All 4 bottles are completely full of stormwater. B1 ~~stuck~~ bottle top was partially obstructed with fabric, plastic and organics. B2, B3, B4 were all clear ^{except JXB} some organic debris around the housing. Entrant took pictures of bottles in situ and began to remove bottles. Bottles and sed trap housing removed. Baseplates remain installed. Baseplates do not seem to adversely impact flow - will notify maintenance of equipment in collection system ^{JXB}
1041 - On site @ ~~44~~ ⁴³ ST4 (ABC500) for removal of sed. traps from ^{ST3} N Tillamook + Kerby. There is ~0.3" of base flow. Both bottles are full of stormwater. There is debris, plastic, and organic material, and metal screen on the housing of bottle 1. Bottle 2 had a rag collected on the housing. Bottle ~~1~~ had a leaf perched on the opening but was not obstructing flow in. ~1.25" of sediment accumulated upstream of the sed traps. Removed the bottles and sed. trap housings and left the base-plates installed.
1120 - on-site @ 43. ST3 - ABC550 to remove sed traps. There is ~0.2" of base flow. Upstream (#2) bottle has rags and organics on housing, but bottle opening is clear. Bottle 1 (downstream bottle) has

Attachments

Pt. Code 44A-ST1		SECTION 2 - MONTHLY FIELD CHECK INFORMATION		Hansen ID: ABC311
Date: 5/27/09	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? <input checked="" type="checkbox"/> Y/N If removed which one(s)?		Archived ID:
By: JXB/ECH/MSS	US Bottle ₃₁ - 1.3" DS Bottle ₃₂ - 1.2" US Bottle ₃₃ - 1.3-1.5" DS Bottle ₃₄ - 1.0"	Final Removal? <input checked="" type="checkbox"/> Y/N End of 08/09 deployment		44A-ST1-B1 10/17/08 - 5/27/09 - 0950 PST
Comments: On site to remove primary & secondary sed traps at end of deployment period. Traps are intact. Baseflow was ~0.25" w/ flow of ~1.0 fps. upstream, primary sed trap bottle opening (44A-ST1-B1) was partially obstructed by plastic trash, organics & fibrous material. The remaining sed. traps had primarily organics adhered to trap housing & were not obstructed. US Bottle ₃₄ III: Total accumulation was ~1.0" of captured solids w/ minor adhesions on inside of bottle. DS Bottle ₃₃ : Total accumulation of solids was ~0.3" - 0.5" w/ minor adhesions on inside of bottle. DS Bottle ₃₂ : Total accumulation of captured solids was ~1.2" w/ minor adhesions. Discrepancy between March capture volume & final volume most likely due to settling of compounds. DS Bottle ₃₄ : Total accumulation of captured solids was ~1.3" w/ minor adhesions. Note: Primary & secondary traps were completely full of captured stormwater. Photos Taken? <input checked="" type="checkbox"/> Y/N decomposing odor & no visible sheen.				
Date:	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N If removed which one(s)?		Archived ID:
By:	US Bottle - DS Bottle - Bottle - Bottle -	Final Removal? Y/N		44A-ST1-B2 10/17/08 - 5/27/09 - 0950 PST
Comments: Sed. traps insitu prior to final removal of debris obstructions.				
Date:	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N If removed which one(s)?		Archived ID:
By:	US Bottle - DS Bottle - Bottle - Bottle -	Final Removal? Y/N		44A-ST1-B3 10/30/08 - 5/27/09 - 0950 PST
Comments:				
Date:	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N If removed which one(s)?		Archived ID:
By:	US Bottle - DS Bottle - Bottle - Bottle -	Final Removal? Y/N		44A-ST1-B4 10/30/08 - 5/27/09 - 0950 PST
Comments:				
Date:	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N If removed which one(s)?		Archived ID:
By:	US Bottle - DS Bottle - Bottle - Bottle -	Final Removal? Y/N		44A-ST1-B5 10/30/08 - 5/27/09 - 0950 PST
Comments:				
Date:	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N If removed which one(s)?		Archived ID:
By:	US Bottle - DS Bottle - Bottle - Bottle -	Final Removal? Y/N		44A-ST1-B6 10/30/08 - 5/27/09 - 0950 PST
Comments:				
Date:	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N If removed which one(s)?		Archived ID:
By:	US Bottle - DS Bottle - Bottle - Bottle -	Final Removal? Y/N		44A-ST1-B7 10/30/08 - 5/27/09 - 0950 PST
Comments:				
Date:	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N If removed which one(s)?		Archived ID:
By:	US Bottle - DS Bottle - Bottle - Bottle -	Final Removal? Y/N		44A-ST1-B8 10/30/08 - 5/27/09 - 0950 PST
Comments:				
Date:	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N If removed which one(s)?		Archived ID:
By:	US Bottle - DS Bottle - Bottle - Bottle -	Final Removal? Y/N		44A-ST1-B9 10/30/08 - 5/27/09 - 0950 PST
Comments:				
Date:	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N If removed which one(s)?		Archived ID:
By:	US Bottle - DS Bottle - Bottle - Bottle -	Final Removal? Y/N		44A-ST1-B10 10/30/08 - 5/27/09 - 0950 PST
Comments:				

Holding
Sticker


Holding
Sticker

Pt. Code: 44A-STI		SECTION 2 – MONTHLY FIELD CHECK INFORMATION		Hansen ID: ABC311
Date:	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N If removed which one(s)?		Archived ID:
By:	US Bottle - DS Bottle - Bottle - Bottle -	Final Removal? Y/N		<div style="border: 1px solid black; border-radius: 50%; padding: 10px; text-align: center;">Holding Sticker</div>
Comments:				
US Bottle -				
DS Bottle -				
Photos Taken? Y/N				
Describe:				
Date:	Estimated sed. depth per bottle (% by volume & inches):	Bottles removed/replaced? Y/N If removed which one(s)?		Archived ID:
By:	US Bottle - DS Bottle - Bottle - Bottle -	Final Removal? Y/N		<div style="border: 1px solid black; border-radius: 50%; padding: 10px; text-align: center;">Holding Sticker</div>
Comments:				
Bottle -				
DS Bottle -				
Photos Taken? Y/N				
Describe:				

Pt. Code: 44A-STI		SECTION 3 – COMPOSITE SAMPLE		Hansen ID: ABC311
Sample ID: FO095662	Duplicate sample collected at this site? <input checked="" type="checkbox"/> YN	DUPLICATE ID: DUP JXB 6/18/09 FO095677		
Duplicate Sample ID on COC:	Any deviations from standard operating procedures? Y <input checked="" type="checkbox"/> N			
affix FO number sticker FO095677	Describe:			
Comments: ^{Processing} See Sediment Trap Field Data Sheet.				

[illegible]

44A-ST1 Primary Sed. Trap

	CITY OF PORTLAND ENVIRONMENTAL SERVICES Water Pollution Control Laboratory 6543 N. Burlington Ave Portland, OR 97203-5452		

INLINE SEDIMENT TRAP SAMPLE PROCESSING DATA SHEET

Project Name: PORTLAND HARBOR STORMWATER SAMP.		Project Number: 1020.005	
Sample Processing Conducted By: MJS	Sample Pt. Code: 44A-ST1	Removal Date: 5/27/09	Processing Date: 6/1/09 - 6/2/09 (A)
Basin: 44A	Hansen ID: ABC 82500 ^{ABC} ₃₁₁	Subbasin: —	
Sediment Trap Location Description/Address: Primary Traps: located just off the pipe invert ~ 65' downstream from the edge of the manhole chamber in the 72" diameter, main concrete line. <div style="text-align: right;">N. Larabee & Randolph JXB 6/18/09</div>			

SEDIMENT TRAP PROCESSING/FILTRATION NOTES

Filter Equipment/Method:		Portland Harbor, 90-millimeter (mm) stainless steel filter support w/conical glass microfiltration system [Field Operations (FO) Standard Operating Procedure (SOP) 5.01b & Evaluation of Microfiltration Equipment for Phthalates Technical Memorandum - September 18, 2007].	
Filter brand, grade, porosity in micrometers (µm) and material (e.g., Fisher Scientific, qualitative P2, 1-5 µm cellulose filter paper): Fisher brand, qualitative P2PS 5-10 µm			
Sediment Trap Bottle ID: 44A-ST1-B1 -		Sediment Trap Bottle ID: 44A-ST1-B2 -	
Total Est. Depth of Accumulated Sed in Bottle (inches): 1.3		Total Est. Depth of Accumulated Sed in Bottle (inches): 1.2	
Sample Processing Start Time: 1005 (6/1/09)	Sample Processing End Time: 1345 (6/1/09)	Sample Processing Start Time: 1350 (6/1/09)	Sample Processing End Time: 0934 (6/2/09)
Number of Filters Used: 12 (JXB 6/18/09)	Number of Filters Used: 17 - 1 P8, 16 P5 (A)		
Est. total volume of Ultra Pure DI used to remobilize adhered stormwater solids within bottle in milliliters (mL): 50		Est. total volume of Ultra Pure DI used to remobilize adhered stormwater solids within bottle in milliliters (mL): ≈ 170 mL	
Tare Weight [empty jar in grams (g)]: 200.300.0g		Tare Weight [jar and filtered sed. from Bottle 1 in grams (g)]: 202.1g	
Dewatered/Filtered Sed. Weight (g): 161.2g		Dewatered/Filtered Sed. Weight (g): 165.7g 163.8g	
Sample Processing Notes/Comments: Homogenized subsample is mainly fine, dark brown silt particles w/ small amount of coarse particles. Odor of decomposing organic material. (A) from green sheets		Sample Processing Notes/Comments: Sample primarily consists of fine sand silts & clay w/ some organic matter. Dark brown in color. Strong decomposing organic material odor noted.	

Visual Description of Final Composite Sample: Final composite sample was primarily fine silts & clay particles w/ coarse fine to medium sand. Composite was black in color w/ red & white inclusions. Visible sheen on surface of composite & strong decomposing organic/chemical odor present.			
COC Time (time composite jar is capped): 1151 6/2/09 JXB	Total Dewatered/Filtered Sed. Weight in grams (g): 611.9g	Sample Jars Collected (number, size, full or partial): 2x 807 jars ~90% filled	
Sample ID: FO095662	Duplicate sample collected? Y/N DUPLICATE ID FO095677 (JXB 6/18/09)		
Duplicate Sample ID on COC: FO095677	Any deviations from standard operating procedures? Y/N Describe:		

	<p>CITY OF PORTLAND</p> <h2 style="margin: 0;">ENVIRONMENTAL SERVICES</h2> <p>Water Pollution Control Laboratory 6543 N. Burlington Ave Portland, OR 97203-5452</p>	
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INLINE SEDIMENT TRAP SAMPLE PROCESSING DATA SHEET

Project Name: PORTLAND HARBOR STORMWATER SAMP.		Project Number: 1020.005	
Sample Processing Conducted By: JXB/MJS	Sample Pt. Code: 44A-ST1	Removal Date: 5/27/09	Processing Date: 6/1/09 - 6/2/09 (F) ✓
Basin: 44A	Hansen ID: ABC311	Subbasin: N/A	

Sediment Trap Location Description/Address: Secondary sed. traps were installed ~9' downstream of primary sed traps (44A-ST1-B1 & 44A-ST1-B2) in main 72" diameter line. Traps were located ~202" & 212" from the manhole chamber outlet, end of pipe (EOP) downstream. **Address: N. Larabee & Randolph** **6/2/09**

SEDIMENT TRAP PROCESSING/FILTRATION NOTES

Filter Equipment/Method:	Portland Harbor, 90-millimeter (mm) stainless steel filter support w/conical glass microfiltration system [Field Operations (FO) Standard Operating Procedure (SOP) 5.01b & Evaluation of Microfiltration Equipment for Phthalates Technical Memorandum - September 18, 2007].
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Filter brand, grade, porosity in micrometers (µm) and material (e.g., Fisher Scientific, qualitative P2, 1-5 µm cellulose filter paper):
Fisher Scientific, qualitative P5, 5-10 µm cellulose filter

Sediment Trap Bottle ID: 44A-ST1-B3-	Sediment Trap Bottle ID: 44A-ST1-B4-
Total Est. Depth of Accumulated Sed in Bottle (inches): 1.3"-1.5"	Total Est. Depth of Accumulated Sed in Bottle (inches): 1.0"

Sample Processing Start Time: 6/1/09 @ 1001 PST	Sample Processing End Time: 6/1/09 @ 1255 PST	Sample Processing Start Time: 6/1/09 @ 1335 PST ✓	Sample Processing End Time: 6/2/09 @ 1000 PST ✓
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Number of Filters Used: 7 x P5, 5-10 µm	Number of Filters Used: 9 x P5, 5-10 µm
Est. total volume of Ultra Pure DI used to remobilize adhered stormwater solids within bottle in milliliters (mL): ~100 mL	Est. total volume of Ultra Pure DI used to remobilize adhered stormwater solids within bottle in milliliters (mL): 100-125 mL
Tare Weight [empty jar in grams (g)]: 199.1g	Tare Weight [jar and filtered sed. from Bottle 1 in grams (g)]: 364.4g
Dewatered/Filtered Sed. Weight (g): 135.3g 165.3g	Dewatered/Filtered Sed. Weight (g): 141.4g

<p>Sample Processing Notes/Comments: Filtered subsample consists primarily of fine silts & clay particles, w/some coarse medium to large sands, small coarse angular gravels & organic particles. Subsample was predominantly brownish-black in color w/ red & white inclusions. Visible sheen on surface of subsample w/ strong, decomposing organic odor present.</p>	<p>Sample Processing Notes/Comments: Filtered solids subsample primarily consisted of fine silts & clay particles w/ some fine to coarse medium sands & woody organic particles. Subsample was brownish-black in color w/ red & white inclusions. Strong decomposing organic odor present.</p>
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Visual Description of Final Composite Sample:

COC Time (time composite jar is capped):	Total Dewatered/Filtered Sed. Weight in grams (g):	Sample Jars Collected (number, size, full or partial):
Sample ID: affix FO number sticker	Duplicate sample collected? Y/N DUPLICATE ID	
Duplicate Sample ID on COC: affix FO number sticker	Any deviations from standard operating procedures? Y/N (N) Describe:	



Page 1a of 6a

Project Portland Harbor Stormwater Sump

Project No. 1020.005

Location WPLL Field Lab

Date 6/1/09

Subject Basin 44A sediment trap processing

By MJS

1000 PST - set up microfiltration system w/ @ P5, 5-10 um cellulose filter. Primed filter w/ a small amount of ultra-pure DI water to secure filter

1005 began to process bottle 1 of site 44A-ST1-B1
1027 Filter 1 clogged - no recoverable solids. Replaced w/ a new P5, 5-10 um filter and resumed processing

1038 Filter 2 clogged - no recoverable solids. Replaced w/ a new P5, 5-10 um filter and resumed processing

1047 - Filter 3 clogged - no recoverable solids. Replaced w/ a new P5, 5-10 um filter and resumed processing

1056 - Filter 4 clogged - sampleable solids retained on filter consisting of fine silts and organic material. Took photo of sample, then ^{scraped} ~~sampled~~ material into ^{sample} ~~sample~~ jar. Replaced w/ new P5, 5-10 um filter, primed w/ UPDI and resumed processing.

1108 - Filter 5 clogged - solids retained on filter consisting of fine silts + organics. Scraped material into sample jar, replaced filter w/ new P5, 5-10 um filter, primed w/ UPDI + resumed processing.

1125 - Filter 6 clogged - solids retained on filter - fine silts + organics. Scraped material into sample jar, replaced filter w/ new P5, primed w/ UPDI + resumed processing.

1148 - Filter 7 clogged - solids retained on filter - silts + organics w/ some fine sand. Scraped material off filter into sample jar. Installed new P5 filter + primed w/ UPDI + resumed processing.

1203 - Filter 8 clogged - solids retained on filter - silts, organics

Attachments and fine sand. Scraped into sample jar.



Page 2a of 6a

Project Portland Harbor Stormwater Samp.

Project No. 1020-005

Location WPCF Field Lab

Date 6/11/09

Subject Basin 44A sediment trap processing

By MJS

44A-ST1-B1 cont'd: Installed new P5 (5-10um) filter, primed w/ UPDI and resumed processing.

1251 - Filter 9 clogged - solids retained on filter - silts, organics and fine sand. ~~scraped~~ ^{scraped} into sample jar. ^{exp 6/18/09} Installed new P5 (5-10um) filter and primed w/ UPDI. Added 50ml of UPDI to sample bottle to mobilize solids that are residual in bottle, and processed.

1304 Filter 10 clogged - small amount of solids retained on filter consisting of very fine silts w/ a small amount of coarse sand. Scraped material into sample jar, replaced filter w/ new P5 (5-10um) filter and poured off remainder of bottle into filter apparatus.

1317 Filter clogged before all water was drawn through, so poured off remaining water in filter apparatus back into sample bottle and continued filtering until all remaining water was drawn through.

1319 - water had been drawn through filter 11, and a small amount of material was retained on the filter consisting of very fine silt/clay particles and coarse to fine sands. Replaced filter w/ new P5 (5-10um) filter, primed w/ UPDI and poured all of remaining sample into the filter apparatus.

1336 - all water has been drawn through the filter (filter # 12). Small amount of material has been retained on the filter and consists of fine silt/clay particles along with some coarse sand and large organic particles.

~~1339~~ 1339 - weighed Fall sample jar = 361.2g ^(jar weight of jar filled)

Total weight of sample = 361.2 - 200.0 = 161.2g

^(JXB) 6/18/09

Homogenized sample which is mainly fine dark brown silt particles w/ small amount of coarse particles. Sample has an odor of decomposed

Attachments organic material capped jar @ 1345.



Page 3a of 6a

Project Portland Harbor Stormwater Samp

Project No. 1080.005

Location WPLL Field Lab

Date 6/1/09

Subject Basin 44A sediment trap processing

By MJS

1350 - begin processing 44A-ST1-B2. Began w/ P5 (5-10 um) filter. 1353 - Filter #1 clogged, w/ no recoverable solids.

1355 - Installed a new P8 (20-25 um) filter and will attempt to filter all of the supernate with this larger pore filter.

1409 - Filter #2 clogged. Small amount of recoverable material is left on the filter which consists of mainly large organic particles. ^{(JXB) 6/1/09} ~~Scraped~~ ^{scraped} this material. Installed new P5 (5-10 um) filter (because have successfully filtered all supernate), primed w/ UPDI and began processing solids-containing portion of the sample.

1431 - Filter #3 is clogged. Solids retained on filter, consisting of fine silt/clay particles and organic material. ^{(JXB) 6/1/09} ~~Scraped~~ ^{scraped} material off filter and inserted into sample jar. Replaced filter w/ new P5 (5-10 um) filter, primed w/ UPDI and resumed processing.

1446 - Filter #4 is clogged. Organic and fine silt/clay particles retained on filter surface, which was ^{Scraped} ~~scraped~~ into sample jar. Replaced w/ new P5 filter, primed and resumed processing.

1503 - Filter #5 is clogged. Organic and fine silt/clay particles retained ^{Scraped} ~~scraped~~ into sample jar and replaced w/ new P5 filter + resumed.

1512 - Filter #6 is clogged, very fine silt/clay particles retained. ^{Scraped} ~~scraped~~ into sample jar and replaced w/ new P5 filter + resumed.

1527 - Filter #7 is clogged, very fine silt/clay particles and organics retained. ^{Scraped} ~~scraped~~ material into sample jar and replaced.

1550 - Filter #8 is clogged, with fine silt/clay and organic particles adhered to filter. ^{Scraped} ~~scraped~~ into sample jar. Placed sample jar in fridge for overnight storage. ^{(JXB) 6/1/09}

sealed off filtering apparatus w/ parafilm for overnight storage.

Attachments

Photo taken

Photo taken

(JXB) 6/1/09

and 44A-ST1-B2, remaining aliquots

Page 4a of 6a

Project PORTLAND HARBOR STORMWATER SAMP. Project No. 1020.005
Location WPCL Field Lab Date 6/2/09
Subject Basin 44A Sed Trap Processing By LAP

0715: Retrieved sample bottle & jar from fridge. Installed a new P5 (5-10 µm) filter, primed w/ UPDI & resumed filtration. ~~TPD~~

0728: Filter #9 is clogged. Organic & fine silt/clay particles retained on ~~filter~~ ^{scrapped} ~~filter~~ surface, which was ~~scraped~~ ^{scrapped} into 6/18 log sample jar. Replaced w/ new P5 filter, primed & resumed processing.

0738: Filter #10 is clogged. Organic & fine silt/clay material (dark brown in color) retained on filter surface — scraped into sample jar. Replaced w/ a new P5 filter, primed, & resumed processing.

~~0800~~

0756: Filter #11 is clogged. Organic & fine silt/clay material retained on filter surface, which was scraped into sample jar. Replaced w/ a new P5 filter, primed & resumed processing. Added approx. 10 ml of UPDI to sample bottle to mobilize solids that are residual.

Attachments



Page 5a of 6a

Project PORTLAND HARBOR STORMWATER SAMP. Project No. 1020.005
Location WPCL Field Lab Date 6-2-09
Subject BASIN 44A Sed Trap Processing By LAP

0803: Filter #12 is clogged. Organic & fine silt/clay material retained on filter surface, which was scraped into sample jar. Replaced w/ a new P5 filter, primed & resumed filtration. Added approx 20 ml of UPDi to sample bottle to mobilize solids. (Subtotal = 30 ml UPDi).

0842: Filter #13 is clogged. Primarily fine silts & clay particles retained on filter surface, which was scraped into sample jar. Replaced w/ a new P5 filter, primed & resumed filtration. Added approx 20 ml UPDi to sample bottle (subtotal = 50 ml).

0900: Filter #14 is clogged. Material consists of fine silts & clay - scraped into sample jar. Replaced w/ a new P5 filter, primed & resumed processing. Added approx. 50 ml to sample bottle to mobilize remaining solids. (Subtotal = 100 ml).

0911: Filter #15 is clogged. Fine sand material primarily, scraped into sample jar. Replaced w/ a new P5 filter, primed & resumed processing. Added approx. 50 ml UPDi to sample bottle (subtotal = 150 ml).

Attachments



Page 6a of 6a

Project PORTLAND HARBOR STORMWATER SAMP.

Project No. 1020.005

Location WPCL Field Lab

Date 6-2-09

Subject Basin 44A Sed Trap Processing

By LAP

0923: Filter #16 is clogged. Small amount of fine sand material scraped into sample jar. Replaced w/ a new P5 filter, primed & resumed processing. Added approx 20 ml UPDI to mobilize remaining solids in sample jar. (~170ml total) JXB 6/18/09

0934: Removed Filter #17. 44A-ST1-B2 has been thoroughly processed. Trace amounts of fine sand & some organic material scraped into sample jar & capped.

(Solids+ jar+ lid)

Weighted full sample jar = 365.9 grams
Less weight of empty sample jar - 202.1 g
(w/ lid)

Weight of de-watered & filtered sediment = 163.8 g

- Approx. 170 ml UPDI used

~~1020~~



Page 16 of 76

Project PORTLAND HARBOR STORMWATER SAMP.

Project No. 1020.006

Location WPCL FIELD LAB / 44A-ST1

Date 6/11/09 - 6/2/09

Subject BASIN 44A SED. TRAP PROCESSING.

By JXB

ALLTIMES IN PST

0951

1057- Set up deconed PDX Harbor microfiltration system. Equipped filtration system w/ a PS, 5-10 um qualitative cellulose filter. Primed filtration system w/ ultra pure de ionized water (UPDI)

Took a photo of secondary sed trap bottle 44A-ST1-B3. MSS will process ^{primary sed traps} (44A-ST1-B1 & 44A-ST1-B2) w/ a second ^{deconed} microfiltration system. Note: Time reference for 44A-ST1-B3 photo was in PDT.

on white erase board (JXB) 6/22/09

1001- Began processing 44A-ST1-B3.

1015- Clogged filter. Retained solids on surface of filter were primarily medium coarse sands & large coarse organic particles.

Took a photo of retained solids. ^{Scraped} filtered solids off of filter surface using a deconed stainless spatula. Placed filtered solids in labeled sample jar. Removed spent filter, replaced w/ another PS, 5-10 um filter, primed filtration system & continued to process 44A-ST1-B3.

1038- Clogged filter. Retained solids primarily consist of fine silts & clay particles w/ coarse medium sands & ^{JXB} large coarse organic particles. ^{Scraped} solids off of filter & placed retained solids in sample jar. Removed spent filter, equipped filtration system w/ another PS, 5-10 um filter, primed filter w/ UPDI & continued processing.

1058- Clogged filter. Sampleable solids retained on surface of filter. Took a photo of retained solids. ^{Scraped} retained solids "cake" off of filter & placed in sample jar. Equipped filtration system w/ new ^{JXB} attachments PS, 5-10 um filter, primed filter w/ UPDI & continued processing.

Photo of retained solids on surface of filter B2 taken (JXB) 6/22/09



Page 26 of 76

Project PORTLAND HARBOR STORMWATER SAMP

Project No. 1070.005

Location WPCL FIELD LAB/ 44A-ST1

Date 6/11/09 - 6/21/09

Subject BASIN 44A SED. TRAP PROCESSING

By JXB

✓ 1110 - Clogged Filter. Substantial filtered solids retained on surface of filter. Took a photo of solids. Solids primarily consist of fine silts & clay particles, coarse medium sands & large organic particles. Scraped filtered solids & placed into sample jar. Removed spent filter, equipped filtration system w 5th PS, 5-10 um filter. Primed filter & continued processing.

1155 - Clogged Filter. Substantial ^{amount of} filtered solids retained on surface of filter. Scraped filtered solids off of filter surface & placed in sample jar. Equipped filtration system w/ new section of peristaltic tubing. Removed ^{spent} filter & equipped system w/ new PS, 5-10 um filter. Primed system w/ UPDI. Added ~100ml ^{UPDI} to sample bottle to remobilize solids ^{JXB} adhered to inside surfaces of bottle. Poured ^{half of} solids-UPDI slurry into filtration system & continued processing.

1225 - Clogged Filter. Scraped retained solids off of surface of filter & placed into sample jar. Removed filter. Equipped filtration system w/ 7th PS, 5-10 um filter. Primed filter & proceeded to process remaining remobilized solids-UPDI slurry.

1255 - Clogged Filter. Filtered all remaining remobilized solids-UPDI slurry. Retained solids on surface of ^{last} filter are primarily large coarse sand particles & small angular coarse gravels. Took photo. Scraped JXB filter, removing filtered solids & added to retained solids in sample jar.

Total wet weight of filtered solids = 165.3g

Attachments



Page 3b of 7b

Project PORTLAND HARBOR STORMWATER SAMP.

Project No. 1020.005

Location WPCL FIELD LAB/44A-ST1

Date 6/1/09 - 6/2/09

Subject BASIN 44A SED TRAP PROCESSING

By JXB

ALL TIMES IN PST

1335- Equipped microfiltration system w/ a P5, 5-10 μ m qualitative filter. Primed filter w/ UPDI. Took a photo of 44A-ST1-B4. MJS to process 44A-ST1-B1 & 44A-ST1-B2 concurrently w/ secondary traps (44A-ST1-B3 & 44A-ST1-B4). Began processing 44A-ST1-B4

1415- Filter clogged. ~80% of supernatant filtered through microfiltration system. Trace amounts of solids retained on filter, primarily some coarse sands & organics (woody particles). Little-to-no solids ^{recovered} recovered. JXB. Removed filter & replaced w/ another P5, 5-10 μ m filter. Primed filter & continued processing. JXB 6/2/09

1430- Second filter clogged. ^{Able} to filter remaining supernate. Trace solids retained on surface of filter, primarily coarse sands & woody particles. No solids recovered. Removed filter & equipped filtration system w/ another P5, 5-10 μ m filter. Continued processing, pouring a portion of solids slurry into filtration system.

1440- Clogged third filter. Retained solids on filter were primarily fine silts & clays & woody, organic particles. ^{Took a photo of them} Scraped solids & placed into a tared sample jar. Removed filter. Continued processing using another P5, 5-10 μ m filter. Attempted processing another ~20% of ^{remaining} solids slurry from 44A-ST1-B4

1500- Clogged fourth filter. Sampleable solids on surface of filter. Retained solids were primarily coarse fine sands, fine silts & clay particles, & woody organic debris. ^{Scraped} Scraped solids off of filter after taking a photo & placed in tared sample jar. ^{JXB 6/2/09} Removed filter, equipped system w/ new P5 filter & attempted to process another ~20-30% of ^{remaining} solids slurry. Filtered solids are very dry. 5



Page 4b of 7b

Project PORTLAND HARBOR STORMWATER SAMP.

Project No. 1020.005

Location WPCL FIELD LAB/ 44A-ST1

Date 6/1/09 - 6/2/09

Subject BASIN 44A SED TRAP PROCESSING

By JXB

1520 - Clogged Fifth Filter. Sampleable solids retained on surface of filter. Took photo of retained solids. Solids consist primarily of fine silts & clay particles w/coarse white & red inclusions w/some woody organic particles. Scraped solids from filter & placed into tared sample jar. Placed tared sample jar w/processed solids in the Lab fridge.

Added ~100 mL of UPDI to sed trap bottle to mobilize remaining solids adhered to the bottom & sides of the bottle. Remaining mobilized solids will be processed on 6/2/09.

Covered microfiltration system w/ aluminum foil & wrapped ports w/ Parafilm in order to close off system from Lab's atmosphere overnight.

6/2/09 @ 0715 PST - Removed sed trap bottle 44A-ST1-B4, containing remaining mobilized solids w/UPDI & tared sample jar from lab refrigerator. Removed aluminum foil & Parafilm from microfiltration system. Equipped system w/new P5, 5-10 µm filter. Primed filter & continued processing remaining mobilized solids from 44A-ST1-B4.

0820 - Clogged sixth filter. Took photo of retained solids on filter. Added solids to retained solids in tared sample jar. Solids primarily consist of fine silts & clay particles & medium sized woody organic debris. Removed spent filter. Equipped system w/ another P5 filter & continued processing.

Attachments



Page 56 of 76

Project PORTLAND HARBOR STORMWATER SAMP.

Project No. 1020.005

Location WPCL FIELD LAB/44A-ST1

Date 6/11/09 - 6/12/09

Subject BASIN 44A SED TRAP PROCESSING

By JXB

0852- Clogged seventh filter. Solids retained on surface of filter. Filtered solids were primarily fine silts & clay particles & woody organic debris. Removed solids. Equipped system w/ new PS, 5-10um filter. Continued processing ^{remaining} final solids mobilized w/ UPDI. 8

0915- Filtration of last ^{residual} solids mobilized w/ UPDI taking a long time - slower than previous filtrations. ✓

0935- Clogged eighth filter. Minimal solids retained on filter. Scraped off solids & placed into tared sample jar. Filtered solids appear to have more fine sands compared to previous filtered solids. Removed spent filter & equipped system w/ new PS filter. Processed the last of the remobilized solids. ✓

1000- ^{All} UPDI filtered through filter; last of the remobilized solids retained on surface of filter. Removed filtered solids & placed into tared sample jar containing processed solids from 44A-STLB4. Weighed filtered solids. ✓

Total wet weight of filtered solids
for 44A-STLB4 = 141.4g

Tare weight of sample
jar w/ lid = 700.9g

Processed Solids w/ tared jar total weight = 342.3g

342.3g
- 200.9g

Attachments 141.4g



Page 66 of 76

Project PORTLAND HARBOR STORMWATER SAMP

Project No. 1020.005 6/22/09

Location WPCL FIELD LAB/ 44A-ST1 COMP.

Date 6/11/09 - 6/21/09

Subject BASIN 44A SED TRAP PROCESSING

By JXB

1015 - Successfully processed & filtered solids from all four sed. trap bottles (Primary & secondary). Filtered/retained solids from each sed trap bottle were placed into individual 8 oz sample jars.

Primary Sed Traps

Secondary Sed Traps

44A-ST1-B1

44A-ST1-B2

44A-ST1-B3

44A-ST1-B4

Tare weight of sample jar w/ lid (g) 200.0 g ✓

202.1 g ✓

199.1 g ✓

200.9 g ✓

Total mass of sample jar w/ lid & filtered solids (g) 361.2 g ✓

365.9 g ✓

364.4 g ✓

342.3 g ✓

Tare weight of filtered jar w/ lid (g) 361.2 g

365.9 g

364.4 g

342.3 g

- 200.0

- 202.1

- 199.1

- 200.9

161.2 g ✓ +

163.8 g ✓ +

165.3 g ✓ +

141.4 g ✓

Filtered wet weight of solids (g)

" "

" "

" "

1041 - Emptied filtered solids, contained in each of the four sample jars, into a decontaminated stainless steel bowl for subsequent homogenization. (Filtered sample volumes exceeded 8 oz jars). Bowl & sample placed in fridge.

Weight of composite spoon = 110.2 g

Weight of sample bowl = + 739.5 g

Tare weight of composite

Sample bowl & spoon = 849.7 g

Total mass of filtered wet weight solids = 631.7 g
Prior to composite

1050 - Added ~10-35 mL of UPDI to each sample jar containing residual solids from the processing of each sed trap bottle. Mobilized solids & filtered in order to mitigate loss of solids. Used a P5, 5-10 µm filter to capture residual solids.

Total residual solids retained on inside of sample jars lost from process = 9.5 g ✓

Attachments



Page 7b of 7b

Project PORTLAND HARBOR STORMWATER SAMP

Project No. 1020.005

Location WPCL FIELD LAB/44A-ST1 COMP.

Date 6/1/09 - 6/2/09

Subject BASIN 44A SED TRAP PROCESSING

By JXB

1143 - Thoroughly mixed all filtered-processed solids in deconed stainless bowl. Took photo of final composite. Placed equal aliquots, splitting homogeneous composite into two tared 8 oz sample jars

	44A-ST1a(jar a)	44A-ST1b(jar b)
Total mass of sample jar w/lid & filtered solids (g)	508.1 g	506.9 g
Weight of tared jar w/lid (g)	200.7 g	202.4 g

Filtered wet weight of solids in grams [total mass (-) tared jar] $307.4 \text{ g} + 304.5 \text{ g} \Rightarrow$ 44A-ST1 total wet weight of filtered solids = 611.9 g

- Mass/Weight of dirty bowl + spoon + residual solids = 860.1 g
 - Tare weight of composite sample bowl + spoon = -849.7 g
- 10.4 g retained on comp. bowl & spoon

$10.4 \text{ g} + 9.5 \text{ g} \Rightarrow$ total residual solids retained on inside surfaces of sample jars lost

Total solids lost due to compositing process = 19.9 g

1151 - Capped sample jars & placed in Lab fridge. All processed sed trap solids samples for Albina River lots to be subsequently relinquished & attachments analyzed for percent solids in-house in order to determine analyte priorities.

JXB

Solids Sampling: Grab Samples

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Requested Analyses

Field Comments

ALL SAMPLES WERE SIEVED BY #10 SIEVE

F0095478

Age Group	1980	1990	2000	2010	2020
0-14	15	12	10	8	7
15-24	12	10	8	6	5
25-34	10	8	6	4	3
35-44	8	6	4	2	1
45-54	6	4	2	1	0
55-64	4	2	1	0	0
65-74	2	1	0	0	0
75+	1	0	0	0	0



Page 1 of 1

Project PORTLAND HARBOR INLINE SAMP

Project No. 1020.001

Location BASIN 44A

Date 4/8/09

Subject INLINE SED SAMP / CB SOLIDS SAMPLING

By JXB / MJS / LAS / PTB

* All times in PST

(CB)

0951 - Arrive in Basin 44A @ catch basin ADZ315 on NE Russell St. Grate of CB was plugged w/ ~30-40% sediment, organics & plastics. Carefully removed debris from CB grate & then removed grate. Solids deposited in bottom of CB floor were primarily organics w/ some trace amounts of sands, silts & minor fines.

1001 - Due to low solids volume ^{observed initially in} floor of CB ADZ315, solids were first sampled along CB perimeter ^{JXB} (grate collar primarily) to increase overall composite volume, & then solids from CB floor were subsequently added to overall bulk sample [44A-1]

1027 - Arrive on site @ unmapped CB on northwest corner of NE Russell & Rodney Ave. CB is connected to stormwater node ABC516. CB grate was ^{partially} plugged ~25% w/ organics, sediment & plastics. Carefully removed debris from grate & then removed grate cover. Removed top-most layer of debris from deposited solids in bottom of CB (top-most layer of debris consisted primarily of fluffy, dry organics).

1036 - Remaining solids deposited in CB were collected. Material from CB outlet was also added to bulk sample.

[44A-2]

Attachments



CITY OF PORTLAND
ENVIRONMENTAL SERVICES

Water Pollution Control Laboratory
6543 N. Burlington Ave.
Portland, OR 97203-5452



**CATCH BASIN SOLIDS SAMPLING
FIELD DATA SHEET**

Project Name:

Portland Harbor Inline Samp.

Project Number:

1020.001

Sampling Team:

JXA/MJS/LAS/PTB

Date:

4/8/09

Arrival Time:

0951

Basin:

44A

Node:

ADZ315

Address:

CB on NE Russell St.

Current weather and last known rainfall:

Cloud & overcast. Last measurable precip was > 5 days.

SECTION 1 - PRE-SAMPLING VISUAL OBSERVATION REPORT

Describe potential solids or contaminant sources that could impact catch basin (const. activities, erosion, vehicles, material storage, onsite processes, etc.):

CB is adjacent to PP&L substation on NE Russell St

Describe debris and/or clogging around, or in catch basin grate/cover:

CB grate was plugged ~30-40% with sediments, organics & plastic particles.

Is there standing water in catch basin?

No

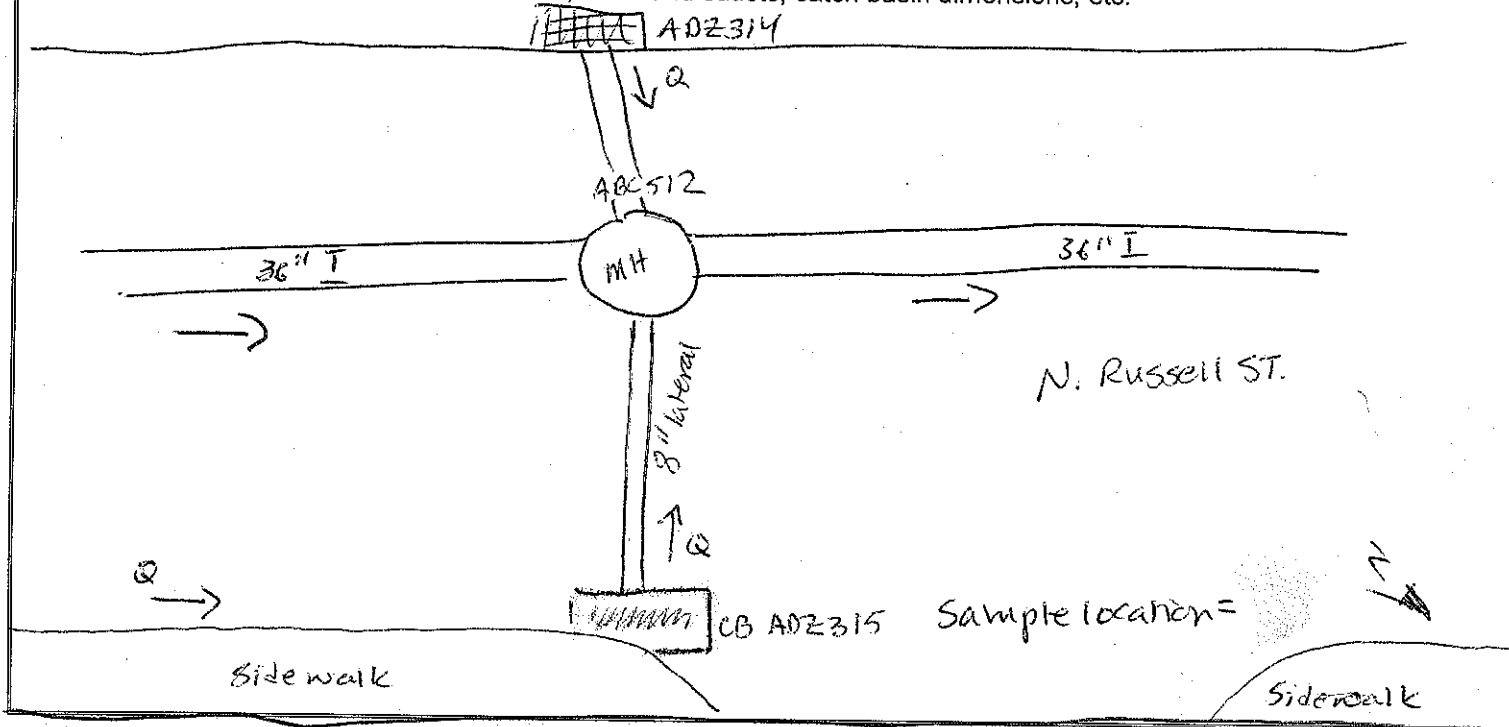
Describe visual or olfactory observations of contamination at catch basin if any (odor, sheen, discoloration, etc.)

None

Describe depth of sediments present in catch basin and the total depth of the catch basin or sump:

Solids in CB, primarily leaves & organics, were ~0.75" in average depth w/ ^{0.1" deep} shallow average on the corners of approx. CB depth was ~2'

SITE DIAGRAM: Include street intersections, inlets and outlets, catch basin dimensions, etc.



PP&L Substation

Date: 4/8/09	SECTION 2 - SAMPLE COLLECTION REPORT		Node: A0Z315
Sampling Equipment:	<input type="checkbox"/> Stainless steel spoon & stainless steel bucket <input checked="" type="checkbox"/> OTHER (DESCRIBE) stainless steel flat-face scoop & bowl		
Equipment decontamination procedure:	<input checked="" type="checkbox"/> Per SOP7.01a <input type="checkbox"/> OTHER (DESCRIBE)		
Sample date: 4/8/09	Sample time: 1001		
Sample Identification Code: IL-44A-A0Z315-0409	Sample collection technique and if/how overlying water was removed: Overlying water was not present. Removed all solids from CB grate ledge & then removed all solids from floor of CB		
Subsample number and location:	80% of all subsample material was taken from the CB grate ledge/collar. Remaining subsample material was taken from floor of CB.		
Color of sample:	Dark brown w/ abundant decomposed organics & red oxidized particles.		
Texture/particle size:	75% fines; ~25% sands & silts & large organics		
Visual or olfactory evidence of contamination in bulk sediment sample (odor, sheen, discoloration, etc.)	None		
Amount and type of debris in bulk sample:	Mainly fines w/ minor sands & silts & large organics		
Amount and type of debris removed from final sample:	<1% (plastics & large coarse gravels)		
Compositing notes: Bulk subsample material will be composited & then sieved at the WPC for subsequent analysis using a #10 (2mm) stainless steel sieve.			
Sample jars collected (number, size, full or partial)? 1x full stainless steel bowl			
If not enough sample to fill all of the jars, list jars collected and related analytes sampled (as per analyte priority list in work order).			
Lab ID FO095477	Duplicate sample collected? <input checked="" type="checkbox"/> Y Dupe ID		
Duplicate sample identification # on COC:			
Any deviations from standard procedures: No			

SECTION 3 - PHOTOGRAPH LOG

Overview of CB showing drainage area	yes
Catch basin plan view prior to sampling showing solids	yes
Lateral connections to/from CB	yes
Homogenized sample (sediment in bowl)	yes



Page 1 of 1

Project Portland Harbor Inline Sed. Samp. Project No. 1020.001
Location IL-44A-ADZ315-0409 44A-1 Date 4/10/09
Subject Sample Processing JxB 4/12/09 By JJM, PHA

0910 Started recording weights of processing receptacles for original sample
Captured photo of original bulk sample after vigorously mixing,
homogenizing sample.

0970 Initiated dry sieving. Sample is approximately 20% organics, 5%
gravels Sieved through No. 10 (2 mm) stainless steel mesh

0942 Completed dry sieving. Captured photo of final sieved material.

0945 Filled 6 4oz. sample, 3 8oz. jars.

Original bulk composite weight = 2.23 kg

Sieved sample weight = 1.49 kg

Excluded material weight = 0.73 kg

FO095477



CITY OF PORTLAND
ENVIRONMENTAL SERVICES

Water Pollution Control Laboratory
6543 N. Burlington Ave.,
Portland, OR 97203-5452



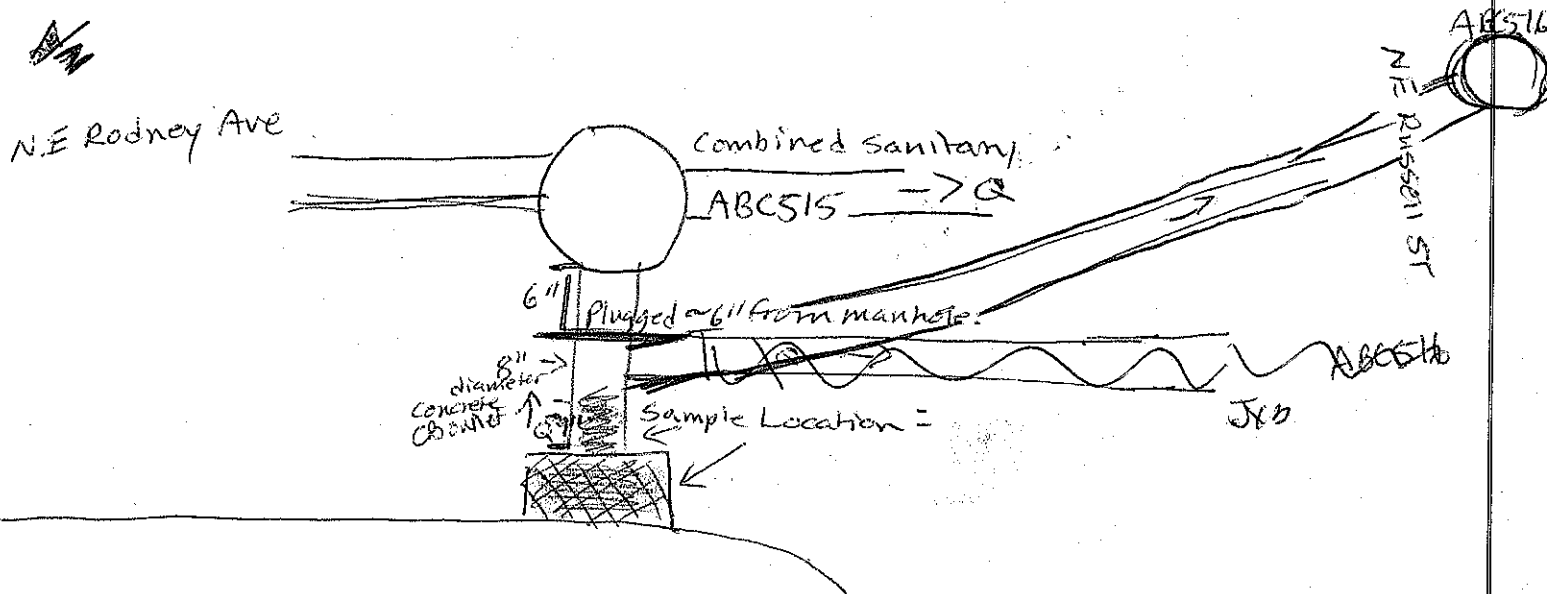
**CATCH BASIN SOLIDS SAMPLING
FIELD DATA SHEET**

Project Name: <u>Portland Harbor Inline samp</u>		Project Number: <u>1020.001</u>	
Sampling Team: <u>JXB/MJS/LAS/PTB</u>	Date: <u>4/8/09</u>	Arrival Time: <u>1027</u>	
Basin: <u>44A</u>	Node: <u>unmapped CB</u>	Address: <u>NE Russell & Rodney Ave</u>	
Current weather and last known rainfall: <u>Cool & overcast w/ last measurable precip > 5 days</u>			

SECTION 1 - PRE-SAMPLING VISUAL OBSERVATION REPORT

Describe potential solids or contaminant sources that could impact catch basin (const. activities, erosion, vehicles, material storage, onsite processes, etc.):	<u>Parked vehicles adjacent to PP&L substation. ON NE Russell St</u>
Describe debris and/or clogging around, or in catch basin grate/cover:	<u>CB grate was partially plugged w/ large organics, sediment & plastics.</u>
Is there standing water in catch basin?	<u>NO</u>
Describe visual or olfactory observations of contamination at catch basin if any (odor, sheen, discoloration, etc.)	<u>None</u>
Describe depth of sediments present in catch basin and the total depth of the catch basin or sump:	<u>Removed top layer of fluffy, dry organics in bottom of CB from sample. Removed remaining solids w/ an average depth of 2.0 - 2.5" from CB bottom & CB outlet. Total depth of CB was ~18"</u>

SITE DIAGRAM: Include street intersections, inlets and outlets, catch basin dimensions, etc.



Date: 4/8/09	SECTION 2 - SAMPLE COLLECTION REPORT		Node: Unmapped
Sampling Equipment:	<input type="checkbox"/> Stainless steel spoon & stainless steel bucket <input checked="" type="checkbox"/> OTHER (DESCRIBE) <i>Stainless steel flat-face scoop & bucket</i>		
Equipment decontamination procedure:	<input checked="" type="checkbox"/> Per SOP7.01a <input type="checkbox"/> OTHER (DESCRIBE)		
Sample date: 4/8/09	Sample time: 1036		
Sample Identification Code: IL-44A-NE RODNEY-CB-NE-0409 IL-44A-CB RODNEY-0409 NE JXB	Sample collection technique and if/how overlying water was removed: <i>Removed top 0.2" of dry overlying organic material from sample. Remaining solids in bottom of CB were subsampled. All solids were removed. Removed solids had an average depth of 2.0-2.5" on average. Also removed solids (19") from upstream of outlet EOP. 30% of subsample material from CB & ~20% solids taken from CB outlet.</i>		
Subsample number and location:			
Color of sample:	Dark brown		
Texture/particle size:	CB was exclusively organics (CB was ~40% organics & ~60% sands & silts w/ minor fines)		
Visual or olfactory evidence of contamination in bulk sediment sample (odor, sheen, discoloration, etc.)	None		
Amount and type of debris in bulk sample:	Organics (large proportion), sands & silts & minor fines		
Amount and type of debris removed from final sample:	<10% Large organics (i.e., leaves & cherry tree blossoms)		
Compositing notes: <i>Bulk sample was failed & will be processed & sieved back @ WPCL for subsequent analysis</i>			
Sample jars collected (number, size, full or partial)? <i>1x full 2.5 gallon stainless bucket</i>			
If not enough sample to fill all of the jars, list jars collected and related analytes sampled (as per analyte priority list in work order).			
Lab ID FO095478	Duplicate sample collected? <input checked="" type="checkbox"/> Y <input type="checkbox"/> N Dupe ID		
Duplicate sample identification # on COC:			
Any deviations from standard procedures: <i>No</i>			

SECTION 3 - PHOTOGRAPH LOG

Overview of CB showing drainage area	yes
Catch basin plan view prior to sampling showing solids	yes
Lateral connections to/from CB	yes
Homogenized sample (sediment in bowl)	yes



IL-44A-NERodney-CBStone-φ4φ9

Page 1 of 1

Project Portland Harbor Inline Samp. Project No. 1020-001
Location IL-44A-CBNERODNEY-φ4φ9 44A-2 Date 4/10/2009
Subject Sample Sieving By PTB, JXB
(TIME IN DST)

1100-Compositing began after transfer of bulk sample to shallow composite bowl. Took picture.

1115-Added 1.5 L water (nanopure DI) for wet sieving and began sieving. Sample is ~85% organic material and ~5% fines and ~70% sand, silts and miscellaneous garbage. Sample also has a strong piney scent.

1130-Due to high organic content in sample very little is actually passing through the sieve. Before organic clumps/masses are discarded they are squeezed to expel any water containing fines.

1150-Added another 0.5 L of nanopure DI to facilitate wet sieving.

1215-Added another 0.25 L of nanopure DI

1253-Finished sieving. Took photo of sieved material.

1300-Filled sample jars.

BULK SAMPLE WEIGHT: 6.94 kg

SIEVED SAMPLE WEIGHT: 2.38 kg

EXCLUDED MATERIAL WEIGHT: 4.55 kg

FO095478

APPENDIX C

Laboratory Reports (on CD only)



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 Albina Riverlots Source Control Investigation Fourth Quarter 2008 Stormwater Sampling – Event 1

To: File
From: Erin Carroll, GSI
Date: January 7, 2009

This memorandum presents a quality assurance/quality control (QA/QC) review of the laboratory data generated during a source control investigation sampling event conducted by the City of Portland (City) in the Albina Riverlots area on November 20, 2008. Five stormwater samples were collected from Outfall Basins 43, 44, and 44A and submitted for analyses. A field decontamination blank (FO081413) and field duplicate (FO081414) were also submitted for analysis.

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 Laboratory
 - Total Metals – EPA 200.8
 - Total Mercury – WPCL SOP M-10.02
 - Total suspended solids (TSS) – SM 2540D
- Test America (TA)
 - Polycyclic Aromatic Hydrocarbons (PAHs) – EPA 8270M-SIM
 - Phthalates – EPA 8270M-SIM
- Columbia Analytical Services (CAS)
 - Semivolatile Organic Compounds (SVOCs) – EPA 8270C
- Pace Analytical Services (Pace)
 - Polychlorinated Biphenyls as Congeners (PCB Congeners) – EPA 1668A

The laboratory reports are attached to this document and included as Attachment A to the Fourth Quarter 2008 Albina Riverlots Quarterly Report.

This QA/QC review is based on the available documentation supplied from each laboratory. The QA/QC review of the analytical data consisted of reviewing the following for each laboratory report:

- Chain-of-custody – for completeness and continuous custody
- Analysis conducted within holding times
- Chemicals of interest detected in method blanks
- Surrogate recoveries within accuracy control limits
- Internal standard recoveries within accuracy control limits
- Matrix spike and matrix spike duplicate results within control limits
- If applicable, laboratory control sample and duplicate laboratory control sample recoveries within control limits

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

Chain-of-Custody

The chain-of-custody forms showed continuous custody of the samples. The chain-of-custody procedures were adequate and sample integrity was maintained throughout the sample collection and delivery process.

Analysis Holding Times

The samples were extracted and analyzed within the required method-specific holding times.

Method Blanks

Method blanks were processed during the laboratory analyses of PAHs, phthalates, SVOCs, and PCB congeners. There are no reported detections of PAHs or phthalates in the associated method blank(s).

Several SVOCs were detected in the method blank for the EPA 8270C analysis and in the field samples (including the field decontamination blank) at estimated concentrations (greater than the method detection limit but less than the method reporting limit). The presence of these SVOCs in the samples is considered to be a result of laboratory contamination. Therefore the sample result is noted as not detected at a concentration greater than the method reporting limit.

A low concentration of PCB Congener #11 (0.667 ng/L) was detected in the method blank but not detected in associated field samples. Therefore the data are not qualified.

Surrogate Recoveries

Surrogate recoveries were completed during the laboratory analysis of PAHs and SVOCs. All surrogate recoveries were within laboratory control limits.

Internal Standard Recoveries

Internal standard recoveries were processed during the laboratory analysis of PCB congeners. All of the labeled internal standard recoveries were within the target ranges specified in the method.

Matrix Spike/Matrix Spike Duplicates

CAS reports there was insufficient volume to perform a matrix spike/matrix spike duplicate (MS/MSD) analysis for SVOCs. Laboratory control sample/duplicate laboratory control sample (LCS/ DLCS) were analyzed and reported in lieu of the MS/MSD for these samples.

Laboratory Control/ Duplicate Laboratory Control Samples

Laboratory control/ duplicate laboratory control samples (LCS/DLCS) were processed during the laboratory analysis of PAHs, phthalates, and SVOCs. All laboratory control sample recoveries were within laboratory control limits except for benzoic acid and pentachlorophenol by EPA 8270C. The spike recovery of pentachlorophenol in the replicate LCS/DLCS was outside the lower control limit. Pentachlorophenol was detected in several field samples at estimated concentrations. The reduced recovery error indicates a potential low bias for this compound.

The advisory criterion was exceeded for benzoic acid in the replicate LCS/DLCS. Benzoic acid was detected in one or more field samples at concentrations less than the MRL and greater than or equal to the MDL, with one exception. Benzoic acid was detected at a concentration greater than the MRL in one sample from Basin 43 (FO081410). The lower LCS/LCDS recoveries for benzoic acid may indicate a low bias for this analyte.



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 Albina Riverlots Source Control Investigation Fourth Quarter 2008 Stormwater Sampling – Event 2

To: File
From: Erin Carroll, GSI
Date: February 20, 2009

This memorandum presents a quality assurance/quality control (QA/QC) review of the laboratory data generated during a source control investigation sampling event conducted by the City of Portland (City) in the Albina Riverlots area on December 12, 2008. Six stormwater samples were collected from Outfall Basins 43, 44, and 44A and submitted for analyses. A field decontamination blank (FO081481) and field duplicate (FO081482) were also submitted for analysis.

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
 - Metals – EPA 200.8
 - Mercury – WPCL SOP M-10.02
 - Total suspended solids (TSS) – SM 2540D
- Test America (TA)
 - Polycyclic Aromatic Hydrocarbons (PAHs) – EPA 8270M-SIM
 - Phthalates – EPA 8270M-SIM
- Columbia Analytical Services (CAS)
 - Semivolatile Organic Compounds (SVOCs) – EPA 8270C
 - Organochlorine Pesticides – EPA 8081
- Pace Analytical Services (Pace)
 - Polychlorinated Biphenyls as Congeners (PCB Congeners) – EPA 1668A

The WPCL summary report for all analyses associated with this stormwater sampling event and the subcontracted laboratory's data reports are attached. The WPCL summary report comments that, with some exceptions (included in the following sections below), all analytical QA/QC criteria were met for these samples including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. The following QA/QC review is based on the available documentation supplied from each subcontracted laboratory and on exceptions noted in the WPCL summary report. The QA/QC review of the analytical data consisted of reviewing the following for each laboratory report, if available:

- Chain-of-custody – for completeness and continuous custody
- Analysis conducted within holding times
- Chemicals of interest detected in method blanks
- Surrogate recoveries within laboratory control limits
- Internal standard recoveries within laboratory control limits
- Laboratory control sample and duplicate laboratory control sample (LCS/DLCS) recoveries within laboratory control limits

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

Chain-of-Custody

The chain-of-custody forms showed continuous custody of the samples. The chain-of-custody procedures were adequate and sample integrity was maintained throughout the sample collection and delivery process.

Analysis Holding Times

The samples were extracted and analyzed within the required method-specific holding times.

Method Blanks

Method blanks were processed during the subcontracted laboratory analyses of PAHs, phthalates, pesticides, SVOCs, and PCB congeners. There are no reported detections of PAHs, pesticides, and PCB congeners in the associated method blanks.

Four SVOCs including phenol, diethyl phthalate, di-n-butyl phthalate, and butyl benzyl phthalate, were detected in the method blank for the EPA 8270C analysis and in the field samples (including the field decontamination blank) at estimated concentrations (greater than the method detection limit but less than the method reporting limit). The presence of these SVOCs in the samples at concentrations less than the MRL is considered to be a result of laboratory contamination; therefore, these data are shown as not detected ("U") at a concentration greater than the MRL. Di-n-butyl phthalate and/or butyl benzyl phthalate were detected at concentrations greater than the respective MRLs in samples FO081475 and F0181482. These data are flagged accordingly ("B") in the data table and may be biased high.

Surrogate Recoveries

Surrogate recoveries were completed during the subcontracted laboratory analysis of PAHs, pesticides, and SVOCs. All surrogate recoveries were within laboratory control limits.

Internal Standard Recoveries

Internal standard recoveries were processed during the laboratory analysis of PCB congeners. The labeled internal standard recoveries were within the target ranges specified in the method with 14 exceptions. These exceptions are flagged “P” in the Pace laboratory report. Pace states that the data were automatically corrected for variation in recovery and accurate values were obtained.

Laboratory Control/ Duplicate Laboratory Control Samples

Laboratory control/ duplicate laboratory control samples (LCS/DLCS) were processed during the laboratory analysis of PAHs, phthalates, SVOCs and PCB congeners. The laboratory advisory criteria were exceeded during the SVOC analysis for benzoic acid and 2,4-dinitrophenol; however, CAS reports that because these compounds are not included in the subset of analytes used to control the analysis, no further corrective action was required.

The recovery of pentachlorophenol in the LCS was outside the lower control limit. Pentachlorophenol was not detected in field samples at concentrations greater than the MRL but was detected in one sample at a concentration greater than the MDL. This detection is flagged as estimated (“J”) because the value is less than the MRL; the estimated concentration may be biased low because of the LCS control limit exceedance.

The relative percent difference (RPD) for 2,4-Dinitrophenol between the LCS/DLCS was outside of control limits. CAS reports that the RPD criterion for this analyte is not applicable because the analyte concentration was not significantly greater than the MRL.

The RPD for 4-Chloroaniline between the LCS/DLCS was outside of control limits. However, because the percent recoveries for the LCS and the DLCS were within acceptance limits, the analytical batch was in control and no further corrective action was taken.

Other

Some organochlorine pesticide compounds are reported as estimated (“EST”) because the results from the primary and verification gas chromatography columns varied by more than 40 percent RPD.

The laboratory reports for PAHs, phthalates, pesticides, and SVOCs indicate that the method reporting limit was elevated in a number of samples due to sample matrix effects.

A field decontamination blank was collected and analyzed for metals, PAHs, phthalates, pesticides, SVOC, and PCB Congeners. Three SVOCs were detected in the field decontamination blank at estimated concentrations between the MDL and the MRL. Because two of the three of these detected compounds (diethyl phthalate and di-n-butyl phthalate) were also detected in the method blank at similar concentrations these results are considered a result of laboratory contamination and are shown as not detected (“U”) at a concentration greater than the MRL (as discussed above). The third SVOC, bis(2-ethylhexyl)phthalate, was not detected in the method blank and is flagged as an estimated value “J”. No other analytes were detected in the field decontamination blank.



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 Albina Riverlots Source Control Investigation First Quarter 2009 Stormwater Sampling – Event 4

To: File
From: Erin Carroll, GSI
Date: April 3, 2009

This memorandum presents a quality assurance/quality control (QA/QC) review of the laboratory data generated during a source control investigation sampling event conducted by the City of Portland (City) in the Albina Riverlots area on February 23, 2009. Six stormwater samples were collected from Outfall Basins 43, 44, and 44A and submitted for analyses. A field decontamination blank (FO095222) and field duplicate (FO095223) were also submitted for analysis.

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
 - Total Metals – EPA 200.8
 - Total Mercury – WPCL SOP M-10.02
 - Total suspended solids (TSS) – SM 2540D
- Test America (TA)
 - Polycyclic Aromatic Hydrocarbons (PAHs) – EPA 8270M-SIM
 - Phthalates – EPA 8270M-SIM
- Columbia Analytical Services (CAS)
 - Semivolatile Organic Compounds (SVOCs) – EPA 8270C
 - Organochlorine Pesticides – EPA 8081
- Pace Analytical Services (Pace)
 - Polychlorinated Biphenyls as Congeners (PCB Congeners) – EPA 1668A

The WPCL summary report for all analyses associated with this stormwater sampling event and the subcontracted laboratory's data reports are attached. The WPCL summary report comments that, with some exceptions (included in the following sections below), all analytical QA/QC criteria were met for these samples including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. The following QA/QC review is based on the available documentation supplied from each subcontracted laboratory and on exceptions noted in the WPCL summary report. The QA/QC review of the analytical data consisted of reviewing the following for each laboratory report, if available:

- Chain-of-custody – for completeness and continuous custody
- Analysis conducted within holding times
- Chemicals of interest detected in method blanks
- Surrogate recoveries within laboratory control limits
- Internal standard recoveries within laboratory control limits
- Matrix spike and matrix spike duplicate results within laboratory control limits
- Laboratory control sample and duplicate laboratory control sample (LCS/DLCS) recoveries within laboratory control limits

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

Chain-of-Custody

The chain-of-custody forms showed continuous custody of the samples. The chain-of-custody procedures were adequate and sample integrity was maintained throughout the sample collection and delivery process.

Analysis Holding Times

The samples were extracted and analyzed within the required method-specific holding times.

Method Blanks

Method blanks were processed during the subcontracted laboratory analyses of PAHs, phthalates, pesticides, SVOCs, and PCB congeners. There are no reported detections of PAHs, pesticides, and PCB congeners in the associated method blanks.

Four SVOCs including phenol, diethyl phthalate, di-n-butyl phthalate, and butyl benzyl phthalate, were detected in the method blank for the EPA 8270C analysis and in the field samples (including the field decontamination blank) at estimated concentrations (greater than the method detection limit but less than the method reporting limit). The presence of these SVOCs in the samples at concentrations less than the MRL is considered to be a result of laboratory contamination; therefore, these data are shown as not detected at a concentration greater than the MRL.

Surrogate Recoveries

Surrogate recoveries were completed during the subcontracted laboratory analysis of PAHs, phthalates, pesticides, and SVOCs. All surrogate recoveries were within laboratory control limits.

Internal Standard Recoveries

Internal standard recoveries were processed during the laboratory analysis of PCB congeners. The labeled internal standard recoveries were within the laboratory control limits.

Laboratory Control/ Duplicate Laboratory Control Samples

Laboratory control/ duplicate laboratory control samples (LCS/DLCS) were processed during the laboratory analysis of PAHs, phthalates, SVOCs and PCB congeners. The LCS/DLCS recoveries and relative percent differences were within the laboratory control limits.

Other

The laboratory reports for PAHs, phthalates, pesticides, and SVOCs indicate that the method reporting limits were elevated in a number of samples due to sample matrix effects and non-target background components.

Some organochlorine pesticide compounds are reported as estimated (“P”) because the results from the primary and verification gas chromatography columns varied by more than 40 percent RPD.

A field decontamination blank was collected and analyzed for metals, PAHs, phthalates, pesticides, SVOC, and PCB congeners. Three SVOCs were detected in the field decontamination blank at estimated concentrations between the MDL and the MRL. Because two of the three detected compounds (diethyl phthalate and di-n-butyl phthalate) were also detected in the method blank at similar concentrations, these results are considered a result of laboratory contamination and are shown as not detected at a concentration greater than the MRL (as discussed above). The third SVOC, bis(2-ethylhexyl)phthalate, was not detected in the method blank and is flagged as an estimated value “J”. Zinc also was detected in the field decontamination blank at a low concentration (0.65 ug/L). Zinc concentrations in the field samples were greater than 20 times the concentration detected in the field decontamination blank; therefore, no zinc data are qualified.



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 Albina Riverlots Source Control Investigation Second Quarter 2009 Stormwater Sampling – Event 5

To: File
From: Julia Fowler, GSI
Date: May 22, 2009

This memorandum presents a quality assurance/quality control (QA/QC) review of the laboratory data generated during a source control investigation sampling event conducted by the City of Portland (City) in the Albina Riverlots area on March 23, 2009. Six stormwater samples were collected from Outfall Basins 43, 44, and 44A and submitted for analyses. A field decontamination blank (FO095377) and field duplicate (FO095378) were also submitted for analysis.

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
 - Total Metals – EPA 200.8
 - Total Mercury – WPCL SOP M-10.02
 - Total Suspended Solids (TSS) – SM 2540D
- Test America (TA)
 - Polycyclic Aromatic Hydrocarbons (PAHs) – EPA 8270M-SIM
 - Phthalates – EPA 8270M-SIM
- Columbia Analytical Services (CAS)
 - Semivolatile Organic Compounds (SVOCs) – EPA 8270C
 - Organochlorine Pesticides – EPA 8081
- Pace Analytical Services (Pace)
 - Polychlorinated Biphenyls as Congeners (PCB Congeners) – EPA 1668A

The WPCL summary report for all analyses associated with this stormwater sampling event and the subcontracted laboratory's data reports are attached. The WPCL summary report comments that, with some exceptions (included in the following sections below), all analytical QA/QC criteria were met for these samples including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. The following QA/QC review is based on the available documentation supplied from each subcontracted laboratory and on exceptions noted in the WPCL summary report. The QA/QC review of the analytical data consisted of reviewing the following for each laboratory report, if available:

- Chain-of-custody for completeness and continuous custody
- Analysis conducted within holding times
- Chemicals of interest detected in method blanks
- Surrogate recoveries within laboratory control limits
- Internal standard recoveries within laboratory control limits
- Matrix spike and matrix spike duplicate results within laboratory control limits
- Laboratory control sample and duplicate laboratory control sample (LCS/DLCS) recoveries within laboratory control limits

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

Chain-of-Custody

The chain-of-custody forms showed continuous custody of the samples. The chain-of-custody procedures were adequate and sample integrity was maintained throughout the sample collection and delivery process.

Analysis Holding Times

The samples were extracted and analyzed within the required method-specific holding times.

Method Blanks

Method blanks were processed during the subcontracted laboratory analyses of PAHs, phthalates, pesticides, SVOCs, and PCB congeners. Naphthalene was detected in the method blank analyzed for PAHs by EPA 8270M-SIM at a concentration between one-half the method reporting limit (MRL) and the MRL. In accordance with TA policy, the detections of naphthalene reported in samples FO095372, FO095373, FO095374, FO095375, and FO095376 are flagged as estimated ("B"); these detections should be considered as biased high or possibly false positives.

Phenol and di-n-butyl phthalate were detected in the method blank analyzed for SVOCs by 8270C at estimated concentrations between the MDL and the MRL. For those samples with detected concentrations of phenol, if the concentration is less than 10 times higher than the method blank results, the sample result is flagged with a "B" indicating the result is an estimated value. The results for phenol should therefore be considered biased high or possibly false

positives. The values in the accompanying DEQ table for di-n-butyl phthalate are from the EPA 8270M-SIM method and are not qualified.

Surrogate Recoveries

Surrogate recoveries were completed during the subcontracted laboratory analysis of PAHs, phthalates, pesticides, and SVOCs. The control criteria were exceeded during the PAH analysis by EPA 8270M-SIM for two surrogates in sample FO095374. TA reports that there was insufficient sample volume to re-extract and no further corrective action was possible. Based on information from WPCL¹, because the sample results appear to be consistent with the other samples, the data are not qualified.

The control criterion was exceeded during the SVOC analysis by 8270C for one surrogate in sample FO095376. CAS reports a reanalysis was not performed because insufficient sample was available and no further action was taken. WPCL notes that some results for late-eluting compounds could be low estimates in this sample. However, because the other two surrogates were within control criteria, no data are qualified.

Internal Standard Recoveries

Internal standard recoveries were processed during the laboratory analysis of PCB congeners. The labeled internal standard recoveries were within the target ranges specified in the method, with the exception of three congeners in the laboratory control sample (LCS). These exceptions are flagged “P” in the Pace laboratory report. Pace states that the data were automatically corrected for variation in recovery and accurate values were obtained.

Matrix Spike/Matrix Spike Duplicates

Matrix spike/matrix spike duplicates (MS/MSD) were processed during the laboratory analysis of PAHs and phthalates. The MS/MSD recoveries and relative percent differences were within the laboratory control limits.

CAS reports there was insufficient volume to perform a matrix spike/matrix spike duplicate (MS/MSD) analysis for SVOCs by EPA 8270C and pesticides. A laboratory control sample/duplicate laboratory control sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

Laboratory Control/ Duplicate Laboratory Control Samples

A laboratory control sample (LCS) was processed during the laboratory analysis of PAHs and phthalates. The LCS recoveries were within the laboratory control limits.

Laboratory control/ duplicate laboratory control samples (LCS/DLCS) were processed during the laboratory analysis of SVOCs, pesticides and PCB congeners. The LCS/DLCS recoveries and relative percent differences were within the laboratory control limits.

Other

The CAS laboratory report for pesticides indicates that the method reporting limits were elevated in most samples due to non-target background components (matrix interference). Additionally,

¹ Email communication from Peter Abrams, WPCL to Julia Fowler, GSI. May 21, 2008.

CAS notes that the JP qualifier indicates that the confirmation comparison criteria are not applicable because at least one of the values is below the MRL.

A field decontamination blank was collected and analyzed for metals, PAHs, phthalates, pesticides, SVOC, and PCB congeners. Two metals (copper and zinc) were detected in the field decontamination blank at estimated concentrations between the MDL and the MRL. Copper and zinc concentrations in the field samples were greater than 10 times the concentrations detected in the field decontamination blank; therefore, no copper or zinc data are flagged. 4,4'-DDE also was detected in the field decontamination blank. DDE was detected in two samples at similar concentrations; these data are flagged as estimated.



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 Upland Source Control Investigation Outfall Basins 43, 44, and 44A

To: File
From: Erin Carroll, GSI
Date: August 12, 2009

This memorandum presents a quality assurance/quality control (QA/QC) review of the laboratory data generated during a source control investigation sampling event conducted by the City of Portland (City) in the winter and spring 2008/2009. Six solids samples were collected from sediment traps in Outfall Basins 43, 44, and 44A and submitted for analyses. A field duplicate (FO095677) from Outfall Basin 44A also was submitted for analysis.

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
 - Total Solids – SM 2540 G
 - Metals – EPA 6020
 - Polychlorinated Biphenyl (PCB) Aroclors – EPA 8082
- Analytical Resources, Incorporated (ARI)
 - Grain Size – ASTM D421/422
- Columbia Analytical Services (CAS)
 - Organochlorine Pesticides – EPA 8081A
- Test America (TA)
 - Polycyclic Aromatic Hydrocarbons (PAHs) and Phthalates – EPA 8270M-SIM
 - Total Organic Carbon (TOC) – EPA 9060 MOD

- Pace Analytical Services (Pace)
 - PCB Congeners – EPA 1668A

The WPCL summary reports and the subcontracted laboratory's data reports are attached for all analyses associated with these source control program samples. The WPCL summary report comments that, with some exceptions (included in the following sections below), all analytical QA/QC criteria were met for these samples including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

The following QA/QC review is based on the available laboratory documentation and on exceptions noted in the WPCL summary report. The QA/QC review of the analytical data consisted of reviewing the following for each laboratory report, if available:

- Chain-of-custody for completeness and continuous custody
- Analysis conducted within holding times
- Chemicals of interest detected in method blanks
- Surrogate recoveries within laboratory control limits
- Internal standard recoveries within laboratory control limits
- Matrix spike and matrix spike duplicate results within laboratory control limits
- Laboratory control sample and duplicate laboratory control sample recoveries within laboratory control limits

The results of the QA/QC review of the subcontracted 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

The samples were extracted and analyzed within the recommended method-specific holding times.

Method Blanks

Method blanks were processed during the subcontracted laboratory analysis of PAHs, phthalates, organochlorine pesticides, TOC, and PCB congeners. There are no reported detections of PAHs, phthalates, pesticides, and TOC in the associated method blanks.

PCB congener 31 was detected in the Pace method blank. One field sample from Outfall Basin 43 (FO095659) had a result that was less than 10 times greater than the detection in the associated method blank and is flagged with a "B". The total PCB congener concentration should be considered slightly biased high.

Surrogate Recoveries

Surrogate recoveries were completed during the subcontracted laboratory analysis of PAHs, phthalates, and organochlorine pesticides. The phthalate samples required dilution which resulted in surrogate concentrations below the reporting limits and the surrogate recovery information is not applicable. All PAH and pesticide surrogate recoveries were within laboratory control limits.

Internal Standard Recoveries

Internal standard recoveries were processed during the laboratory analysis of PCB congeners. The labeled internal standard recoveries were within the laboratory control limits.

Matrix Spike/Matrix Spike Duplicates

Matrix spike/matrix spike duplicates (MS/MSD) were processed during the laboratory analysis of TOC and SVOCs. The MS/MSD recoveries and relative percent difference (RPD) were within laboratory control limits.

Laboratory Control Samples/Duplicate Laboratory Control Samples

Laboratory control samples (LCS) were processed during the laboratory analysis of PAHs, phthalates, TOC, and PCB Congeners. The LCS recoveries were within the laboratory control limits. LCS and duplicate laboratory control samples (DLCS) were processed during the laboratory analysis of organochlorine pesticides. The LCS/DLCS recoveries were within the laboratory control limits.

Other

The laboratory reports for PAHs, phthalates, and organochlorine pesticides indicate that the method reporting limits were elevated in a number of samples due to sample matrix effects and non-target background components.

Some organochlorine pesticide compounds are reported as estimated (“P”) because the results from the primary and verification gas chromatography columns varied by more than 40 percent RPD. WPCL has flagged these results as estimates (EST) in their summary report.

CAS reports that the presence of PCBs may have interfered with the quantification of pesticide concentrations, which may have resulted in a high bias for some results. WPCL also notes that the presence of PCBs may have affected the reporting limits for the pesticide analysis.

WPCL reports that, given the chlordane detection in sample FO095661, the reported value for Aroclor 1254 may be a high estimate due to interferences from components of chlordane. This result is flagged “EST” in the WPCL report and data tables.

WPCL reports that trace concentrations of Aroclor 1254 were evident at concentrations below the MRL in sample FO095677; the data are reported as not detected at a concentration greater than the MRL.

Some of the PCB Aroclor MRLs are raised due to the low solids content of the samples from Outfall Basin 43.



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 Upland Source Control Investigation Outfall Basins 44 and 44A (April 7 and 8, 2009)

To: File
From: Julia Fowler, GSI
Date: May 29, 2009

This memorandum presents a quality assurance/quality control (QA/QC) review of the laboratory data generated during source control investigation sampling and analyses conducted by the City of Portland (City) on April 7 and 8, 2009. The City collected ten inline solids samples in Outfall Basin 44 and two inline solids samples in Outfall Basin 44A and submitted the samples for analysis.

The laboratory analyses for this solids sample was 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
 - Total Solids – SM 2540G
 - Metals – EPA 6020
 - Diesel- and oil-range hydrocarbons – Washington State Department of Ecology Method NWTPH-Dx
 - Polychlorinated Biphenyls (PCBs) as Aroclors – EPA 8082
- Analytical Resources, Incorporated (ARI)
 - Grain Size – ASTM D421/422
- Columbia Analytical Services (CAS)
 - Semivolatile Organic Compounds (SVOCs) – EPA 8270C
 - Chlorinated Pesticides – EPA 1699M (on two samples only – FO096567 and FO095468)
- Test America (TA)

- Polynuclear Aromatic Hydrocarbons (PAHs) and Phthalates – EPA 8270M-SIM
- Total Organic Carbon (TOC) – EPA 9060 MOD

The WPCL summary report for all analyses associated with this stormwater sampling event and the subcontracted laboratory's data report are attached. The WPCL summary report comments that unless otherwise noted, all analytical QA/QC criteria were met for these samples including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

The following QA/QC review is based on the available laboratory documentation and on exceptions noted in the WPCL summary report. The QA/QC review of the analytical data consisted of reviewing the following for each laboratory report, if available:

- Chain-of-custody for completeness and continuous custody
- Analysis conducted within holding times
- Chemicals of interest detected in method blanks
- Surrogate recoveries within laboratory control limits
- Matrix spike and matrix spike duplicate results within laboratory control limits
- Laboratory control sample and duplicate laboratory control sample recoveries within laboratory control limits

The results of the QA/QC review of the subcontracted 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

The samples were extracted and analyzed within the recommended method-specific holding times with the exception of the two samples analyzed for pesticides. The pesticide analyses were conducted approximately 3 weeks past the recommended holding time of 14 days.

Method Blanks

Method blanks were processed during the subcontracted laboratory analysis of SVOCs, PAHs phthalates, pesticides and TOC. Bis(2-ethylhexyl)phthalate (BEHP) was detected in the method blank at a concentration between the method detection limit (MDL) and the method reporting limit (MRL). Because BEHP concentrations detected in the field samples were greater than 10 times the method blank detection, the sample data are not affected.

Hexachlorobenzene, 4,4'-DDE, 2,4'-DDT, 4,4'-DDD, 4,4'-DDT and 4,4'-DDT were detected at concentrations between the MDL and the MRL. The sample results for these constituents should be considered slightly biased high. Methoxychlor was detected in the method blank at a concentration greater than the MRL. Sample results for these constituents are flagged "B" if the concentration is less than 10 times the method blank concentration and should be considered

biased high or false positives. If the sample results are greater than 10 times the blank concentrations, the data are not flagged.

Surrogate Recoveries

Surrogate recoveries were completed during the subcontracted laboratory analysis of SVOCs, PAHs, phthalates and pesticides. For the SVOC analyses, CAS reports that the control criteria for all surrogates in sample FO095470 and for surrogate Terphenyl-d14 in some samples are not applicable. The samples required dilution which resulted in surrogate concentrations below the reporting limits.

Matrix Spike/Matrix Spike Duplicates

Matrix spike/matrix spike duplicates (MS/MSD) were processed during the laboratory analysis of TOC and SVOCs. The MS/MSD recoveries and relative percent difference (RPD) were within laboratory control limits.

Laboratory Control Samples/Duplicate Laboratory Control Samples

Laboratory control samples (LCS) were processed during the laboratory analysis of PAHs, phthalates, pesticides and TOC. The LCS recoveries were within the laboratory control limits. LCS and duplicate laboratory control samples were processed during the laboratory analysis of SVOCs. The LCS recoveries were within the laboratory control limits. CAS reports that the RPD criterion for 2,4-dimethylphenol was not applicable because the analyte concentration was not significantly greater than the MRL. Refer to the CAS report for further discussion.

The recovery of 2,4'-DDD during the pesticide analysis in the LCS was outside the control limits. CAS reports that, based on the method and historic data, the recoveries observed were in the range expected for this procedure, no further corrective action was taken.

Other

The method reporting limits (MRL) for all samples were significantly elevated during the EPA 8270C analyses and for the two samples analyzed for pesticides due to the presence of non-target background components.

WPCL reports that chlordane was detected at a significant concentration during the Aroclor analysis of sample FO095467. As a result, the MRLs for the Aroclors are raised due to interference from the pesticide contamination.

Stormwater Samples

Event 1: November 20, 2008



City of Portland
Chain-of-Custody
Bureau of Environmental Services



Date: 11/20/08
Page: 1 of 1
Collected By: KCB/PHH

Project Name: PORTLAND HARBOR STORMWATER SAMP

File Number: 1020.005

Matrix: STORMWTR

Requested Analyses

FY 2008-09 Stormwater Grab Chain-of-custody

☒ Sample Time recorded in PST

WPCL Sample I.D.	Location	Point Code	Sample Date	Sample Time	Sample Type	General				Metals		Field		
						PCB Congeners (All 209)	PAH + Phthalates (TA)	SVOC's (CAS)	TSS	Total Metals (As, Cd, Cr, Cu, Pb, Ni, Ag, Zn)	Total Mercury	Temperature (Deg C)	Conductivity (umhos/cm)	pH (pH units)
FO 081408	SW-43-ABC290-1108 N ALBINA & RIVER	43_SW1	11/20/08	0932	G	•	•	•	•	•	•	9.5	49	7.4
FO 081409	SW-43-ABC539-1108 N KERBY & WHEELER	43_SW2	11/20/08	0854	G	•	•	•	•	•	•	8.9	23	6.4
FO 081410	SW-43-ABC552-1108 N WHEELER PL & KERBY	43_SW3	11/20/08	0911	G	•	•	•	•	•	•	11.4	132	7.4
FO 081411	SW-44-ABC352-1108 N HARDING & RIVER	44_SW1	11/20/08	0941	G	•	•	•	•	•	•	9.4	48	7.6
FO 081412	SW-44A-ABC311-1108 N LARABEE & RANDOLPH	44A_SW1	11/20/08	0956	G	•	•	•	•	•	•	10.7	43	7.0
FO 081413	FIELD DECON BLANK	FDB	11/20/08	1006	G	•	•	•	•	•	•			
FO 081414	DUPLICATE	DUP	11/20/08		G	•	•	•	•	•	•			

Signature: <i>[Signature]</i>	Time: 11/32	Signature: <i>[Signature]</i>	Time: 11/32	Signature: <i>[Signature]</i>	Time: 11/32	Signature: <i>[Signature]</i>	Time: 11/32
Printed Name: <i>[Name]</i>	Date: 11/20/08	Printed Name: <i>[Name]</i>	Date: 11/20/08	Printed Name: <i>[Name]</i>	Date: 11/20/08	Printed Name: <i>[Name]</i>	Date: 11/20/08
Received By: 1		Received By: 2		Received By: 3		Received By: 4	
Signature: <i>[Signature]</i>	Time: 11/32	Signature: <i>[Signature]</i>	Time: 11/32	Signature: <i>[Signature]</i>	Time: 11/32	Signature: <i>[Signature]</i>	Time: 11/32
Printed Name: <i>[Name]</i>	Date: 11/20/08	Printed Name: <i>[Name]</i>	Date: 11/20/08	Printed Name: <i>[Name]</i>	Date: 11/20/08	Printed Name: <i>[Name]</i>	Date: 11/20/08

S:\EID\10001\920.005 - Portland Harbor Stormwater Sample\Sample\Portland Harbor Stormwater Of Grab COC FY08-09.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: **FO081412** Sample Collected: 11/20/08 09:56 Sample Status: **COMPLETE AND VALIDATED**
Sample Received: 11/20/08

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-44A-ABC311-1108
N LARABEE & RANDOLPH
Sample Point Code: 44A_SW1
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 1 of 4

System ID: AM10908
EID File #: 1020.005
LocCode: PORTHASW
Collected By: RCB/PHA

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Low recoveries in the LCS and LCS Dup for Semivolatile compounds Benzoic Acid and Pentachlorophenol indicate low bias for these components.

Test Parameter	Result	Units	MRL	Method	Analysis Date
FIELD					
CONDUCTIVITY (FIELD)	43	μ mhos/cm	1	SM 2510 B	11/20/08
pH (FIELD)	7.0	pH Units	0.1	SM 4500-H B	11/20/08
TEMPERATURE	10.7	Deg. C	0.1	SM 2550 B	11/20/08
GENERAL					
TOTAL SUSPENDED SOLIDS	13	mg/L	2	SM 2540 D	11/20/08
METALS					
MERCURY	0.0089	μ g/L	0.002	WPCLSOP M-10.02	11/21/08
METALS BY ICP-MS (TOTAL) - 8					
ARSENIC	0.47	μ g/L	0.1	EPA 200.8	11/24/08
CADMIUM	0.21	μ g/L	0.1	EPA 200.8	11/24/08
CHROMIUM	0.98	μ g/L	0.4	EPA 200.8	11/24/08
COPPER	9.89	μ g/L	0.2	EPA 200.8	11/24/08
LEAD	3.05	μ g/L	0.1	EPA 200.8	11/24/08
NICKEL	1.37	μ g/L	0.2	EPA 200.8	11/24/08
SILVER	<0.10	μ g/L	0.1	EPA 200.8	11/24/08
ZINC	98.4	μ g/L	0.5	EPA 200.8	11/24/08
OUTSIDE ANALYSIS					
POLYCHLORINATED BIPHENYL CONGENERS -PACE					
Refer to Contract Report	Completed	ng/L		EPA 1668 MOD	12/02/08
POLYNUCLEAR AROMATICS & PHTHALATES - TA					
Acenaphthene	<0.0194	μ g/L	0.0194	EPA 8270M-SIM	11/21/08
Acenaphthylene	0.0380	μ g/L	0.0194	EPA 8270M-SIM	11/21/08
Anthracene	<0.0194	μ g/L	0.0194	EPA 8270M-SIM	11/21/08
Benzo(a)anthracene	<0.00971	μ g/L	0.00971	EPA 8270M-SIM	11/21/08
Benzo(a)pyrene	<0.00971	μ g/L	0.00971	EPA 8270M-SIM	11/21/08
Benzo(b)fluoranthene	<0.00971	μ g/L	0.00971	EPA 8270M-SIM	11/21/08
Benzo(ghi)perylene	<0.0194	μ g/L	0.0194	EPA 8270M-SIM	11/21/08
Benzo(k)fluoranthene	<0.00971	μ g/L	0.00971	EPA 8270M-SIM	11/21/08
Bis(2-ethylhexyl) phthalate	1.05	μ g/L	0.971	EPA 8270M-SIM	11/21/08
Butyl benzyl phthalate	<0.971	μ g/L	0.971	EPA 8270M-SIM	11/21/08
Chrysene	0.0160	μ g/L	0.00971	EPA 8270M-SIM	11/21/08
Dibenzo(a,h)anthracene	<0.00971	μ g/L	0.00971	EPA 8270M-SIM	11/21/08

Report Date: 01/02/09

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: FO081412

Sample Collected: 11/20/08 09:56
Sample Received: 11/20/08

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-44A-ABC311-1108
N LARABEE & RANDOLPH
Sample Point Code: 44A_SW1
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 2 of 4

System ID: AM10908
EID File #: 1020.005
LocCode: PORTHASW
Collected By: RCB/PHA

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Low recoveries in the LCS and LCS Dup for Semivolatile compounds Benzoic Acid and Pentachlorophenol indicate low bias for these components.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Diethyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	11/21/08
Dimethyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	11/21/08
Di-n-butyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	11/21/08
Di-n-octyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	11/21/08
Fluoranthene	0.0334	µg/L	0.0194	EPA 8270M-SIM	11/21/08
Fluorene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	11/21/08
Indeno(1,2,3-cd)pyrene	<0.00971	µg/L	0.00971	EPA 8270M-SIM	11/21/08
Naphthalene	0.0648	µg/L	0.0194	EPA 8270M-SIM	11/21/08
Phenanthrene	0.0342	µg/L	0.0194	EPA 8270M-SIM	11/21/08
Pyrene	0.0349	µg/L	0.0194	EPA 8270M-SIM	11/21/08

SEMI-VOLATILE ORGANICS - CAS

1,2,4-Trichlorobenzene	<0.22	µg/L	0.22	EPA 8270	11/26/08
1,2-Dichlorobenzene	<0.22	µg/L	0.22	EPA 8270	11/26/08
1,3-Dichlorobenzene	<0.22	µg/L	0.22	EPA 8270	11/26/08
1,4-Dichlorobenzene	<0.22	µg/L	0.22	EPA 8270	11/26/08
2,4,5-Trichlorophenol	<0.53	µg/L	0.53	EPA 8270	11/26/08
2,4,6-Trichlorophenol	<0.53	µg/L	0.53	EPA 8270	11/26/08
2,4-Dichlorophenol	<0.53	µg/L	0.53	EPA 8270	11/26/08
2,4-Dimethylphenol	<4.3	µg/L	4.3	EPA 8270	11/26/08
2,4-Dinitrophenol	<4.3	µg/L	4.3	EPA 8270	11/26/08
2,4-Dinitrotoluene	<0.22	µg/L	0.22	EPA 8270	11/26/08
2,6-Dinitrotoluene	<0.22	µg/L	0.22	EPA 8270	11/26/08
2-Chloronaphthalene	<0.22	µg/L	0.22	EPA 8270	11/26/08
2-Chlorophenol	<0.53	µg/L	0.53	EPA 8270	11/26/08
2-Methylnaphthalene	<0.22	µg/L	0.22	EPA 8270	11/26/08
2-Methylphenol	<0.53	µg/L	0.53	EPA 8270	11/26/08
2-Nitroaniline	<0.22	µg/L	0.22	EPA 8270	11/26/08
2-Nitrophenol	<0.53	µg/L	0.53	EPA 8270	11/26/08
3,3'-Dichlorobenzidine	<2.2	µg/L	2.2	EPA 8270	11/26/08
3-Nitroaniline	<1.1	µg/L	1.1	EPA 8270	11/26/08
4,6-Dinitro-2-methylphenol	<2.2	µg/L	2.2	EPA 8270	11/26/08
4-Bromophenylphenyl ether	<0.22	µg/L	0.22	EPA 8270	11/26/08
4-Chloro-3-methylphenol	<0.53	µg/L	0.53	EPA 8270	11/26/08
4-Chloroaniline	<0.22	µg/L	0.22	EPA 8270	11/26/08

Report Date: 01/02/09

Validated By: 



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LABORATORY ANALYSIS REPORT

Sample ID: **FO081412**

Sample Collected: 11/20/08 09:56
Sample Received: 11/20/08

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-44A-ABC311-1108
N LARABEE & RANDOLPH
Sample Point Code: 44A_SW1
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 3 of 4

System ID: AM10908
EID File #: 1020.005
LocCode: PORTHASW
Collected By: RCB/PHA

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Low recoveries in the LCS and LCS Dup for Semivolatile compounds Benzoic Acid and Pentachlorophenol indicate low bias for these components.

Test Parameter	Result	Units	MRL	Method	Analysis Date
4-Chlorophenylphenyl ether	<0.22	µg/L	0.22	EPA 8270	11/26/08
4-Methylphenol	0.65	µg/L	0.53	EPA 8270	11/26/08
4-Nitroaniline	<1.1	µg/L	1.1	EPA 8270	11/26/08
4-Nitrophenol	<2.2	µg/L	2.2	EPA 8270	11/26/08
Acenaphthene	<0.22	µg/L	0.22	EPA 8270	11/26/08
Acenaphthylene	<0.22	µg/L	0.22	EPA 8270	11/26/08
Anthracene	<0.22	µg/L	0.22	EPA 8270	11/26/08
Benzo(a)anthracene	<0.22	µg/L	0.22	EPA 8270	11/26/08
Benzo(a)pyrene	<0.22	µg/L	0.22	EPA 8270	11/26/08
Benzo(b)fluoranthene	<0.22	µg/L	0.22	EPA 8270	11/26/08
Benzo(g,h,i)perylene	<0.22	µg/L	0.22	EPA 8270	11/26/08
Benzo(k)fluoranthene	<0.22	µg/L	0.22	EPA 8270	11/26/08
Benzoic acid	<5.3	µg/L	5.3	EPA 8270	11/26/08
Benzyl alcohol	3.2	µg/L	0.53	EPA 8270	11/26/08
Bis(2-chloroethoxy) methane	<0.22	µg/L	0.22	EPA 8270	11/26/08
Bis(2-chloroethyl) ether	<0.22	µg/L	0.22	EPA 8270	11/26/08
Bis(2-chloroisopropyl) ether	<0.22	µg/L	0.22	EPA 8270	11/26/08
Bis(2-ethylhexyl) phthalate	<1.1	µg/L	1.1	EPA 8270	11/26/08
Butyl benzyl phthalate	0.27	µg/L	0.22	EPA 8270	11/26/08
Chrysene	<0.22	µg/L	0.22	EPA 8270	11/26/08
Dibenzo(a,h)anthracene	<0.22	µg/L	0.22	EPA 8270	11/26/08
Dibenzofuran	<0.22	µg/L	0.22	EPA 8270	11/26/08
Diethyl phthalate	<0.22	µg/L	0.22	EPA 8270	11/26/08
Dimethyl phthalate	<0.22	µg/L	0.22	EPA 8270	11/26/08
Di-n-butyl phthalate	0.24	µg/L	0.22	EPA 8270	11/26/08
Di-n-octyl phthalate	<0.22	µg/L	0.22	EPA 8270	11/26/08
Fluoranthene	<0.22	µg/L	0.22	EPA 8270	11/26/08
Fluorene	<0.22	µg/L	0.22	EPA 8270	11/26/08
Hexachlorobenzene	<0.22	µg/L	0.22	EPA 8270	11/26/08
Hexachlorobutadiene	<0.22	µg/L	0.22	EPA 8270	11/26/08
Hexachlorocyclopentadiene	<1.1	µg/L	1.1	EPA 8270	11/26/08
Hexachloroethane	<0.22	µg/L	0.22	EPA 8270	11/26/08
Indeno(1,2,3-cd)pyrene	<0.22	µg/L	0.22	EPA 8270	11/26/08
Isophorone	<0.22	µg/L	0.22	EPA 8270	11/26/08
Naphthalene	<0.22	µg/L	0.22	EPA 8270	11/26/08

Report Date: 01/02/09

Validated By:



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Water Pollution Control Laboratory
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LABORATORY ANALYSIS REPORT

Sample ID: FO081412

Sample Collected: 11/20/08 09:56
Sample Received: 11/20/08

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-44A-ABC311-1108
N LARABEE & RANDOLPH
Sample Point Code: 44A_SW1
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 4 of 4

System ID: AM10908
EID File #: 1020.005
LocCode: PORTHASW
Collected By: RCB/PHA

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Low recoveries in the LCS and LCS Dup for Semivolatile compounds Benzoic Acid and Pentachlorophenol indicate low bias for these components.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Nitrobenzene	<0.22	µg/L	0.22	EPA 8270	11/26/08
N-Nitrosodi-n-propylamine	<0.22	µg/L	0.22	EPA 8270	11/26/08
N-Nitrosodiphenylamine	<0.22	µg/L	0.22	EPA 8270	11/26/08
Pentachlorophenol	<1.1	µg/L	1.1	EPA 8270	11/26/08
Phenanthrene	<0.22	µg/L	0.22	EPA 8270	11/26/08
Phenol	0.80	µg/L	0.53	EPA 8270	11/26/08
Pyrene	<0.22	µg/L	0.22	EPA 8270	11/26/08

End of Report for Sample ID: FO081412

Report Date: 01/02/09

Validated By: 



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Water Pollution Control Laboratory
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LABORATORY ANALYSIS REPORT

Sample ID: FO081413

Sample Collected: 11/20/08 10:06
Sample Received: 11/20/08

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: FIELD DECON BLANK

Report Page: Page 1 of 4

Sample Point Code: FDBLANK
Sample Type: GRAB
Sample Matrix: DIWTR

System ID: AM10909
EID File #: 1020.005
LocCode: PORTHASW
Collected By: RCB/PHA

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Low recoveries in the LCS and LCS Dup for Semivolatile compounds Benzoic Acid and Pentachlorophenol indicate low bias for these components.

Test Parameter	Result	Units	MRL	Method	Analysis Date
GENERAL					
TOTAL SUSPENDED SOLIDS	<2	mg/L	2	SM 2540 D	11/20/08
METALS					
MERCURY	<0.0010	µg/L	0.002	WPCLSOP M-10.02	11/21/08
METALS BY ICP-MS (TOTAL) - 8					
ARSENIC	<0.10	µg/L	0.1	EPA 200.8	11/24/08
CADMIUM	<0.10	µg/L	0.1	EPA 200.8	11/24/08
CHROMIUM	<0.40	µg/L	0.4	EPA 200.8	11/24/08
COPPER	<0.20	µg/L	0.2	EPA 200.8	11/24/08
LEAD	<0.10	µg/L	0.1	EPA 200.8	11/24/08
NICKEL	<0.20	µg/L	0.2	EPA 200.8	11/24/08
SILVER	<0.10	µg/L	0.1	EPA 200.8	11/24/08
ZINC	<0.50	µg/L	0.5	EPA 200.8	11/24/08
OUTSIDE ANALYSIS					
POLYCHLORINATED BIPHENYL CONGENERS -PACE					
Refer to Contract Report	Completed	ng/L		EPA 1668 MOD	12/02/08
POLYNUCLEAR AROMATICS & PHTHALATES - TA					
Acenaphthene	<0.0198	µg/L	0.0198	EPA 8270M-SIM	11/21/08
Acenaphthylene	<0.0198	µg/L	0.0198	EPA 8270M-SIM	11/21/08
Anthracene	<0.0198	µg/L	0.0198	EPA 8270M-SIM	11/21/08
Benzo(a)anthracene	<0.00990	µg/L	0.00990	EPA 8270M-SIM	11/21/08
Benzo(a)pyrene	<0.00990	µg/L	0.00990	EPA 8270M-SIM	11/21/08
Benzo(b)fluoranthene	<0.00990	µg/L	0.00990	EPA 8270M-SIM	11/21/08
Benzo(ghi)perylene	<0.0198	µg/L	0.0198	EPA 8270M-SIM	11/21/08
Benzo(k)fluoranthene	<0.00990	µg/L	0.00990	EPA 8270M-SIM	11/21/08
Bis(2-ethylhexyl) phthalate	<0.990	µg/L	0.990	EPA 8270M-SIM	11/21/08
Butyl benzyl phthalate	<0.990	µg/L	0.990	EPA 8270M-SIM	11/21/08
Chrysene	<0.00990	µg/L	0.00990	EPA 8270M-SIM	11/21/08
Dibenzo(a,h)anthracene	<0.00990	µg/L	0.00990	EPA 8270M-SIM	11/21/08
Diethyl phthalate	<0.990	µg/L	0.990	EPA 8270M-SIM	11/21/08
Dimethyl phthalate	<0.990	µg/L	0.990	EPA 8270M-SIM	11/21/08
Di-n-butyl phthalate	<0.990	µg/L	0.990	EPA 8270M-SIM	11/21/08
Di-n-octyl phthalate	<0.990	µg/L	0.990	EPA 8270M-SIM	11/21/08

Report Date: 01/02/09

Validated By:



LABORATORY ANALYSIS REPORT

Sample ID: **FO081413**

Sample Collected: 11/20/08 10:06
Sample Received: 11/20/08

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: FIELD DECON BLANK

Report Page: Page 2 of 4

Sample Point Code: FDBLANK
Sample Type: GRAB
Sample Matrix: DIWTR

System ID: AM10909
EID File #: 1020.005
LocCode: PORTHASW
Collected By: RCB/PHA

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Low recoveries in the LCS and LCS Dup for Semivolatile compounds Benzoic Acid and Pentachlorophenol indicate low bias for these components.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Fluoranthene	<0.0198	µg/L	0.0198	EPA 8270M-SIM	11/21/08
Fluorene	<0.0198	µg/L	0.0198	EPA 8270M-SIM	11/21/08
Indeno(1,2,3-cd)pyrene	<0.00990	µg/L	0.00990	EPA 8270M-SIM	11/21/08
Naphthalene	<0.0198	µg/L	0.0198	EPA 8270M-SIM	11/21/08
Phenanthrene	<0.0198	µg/L	0.0198	EPA 8270M-SIM	11/21/08
Pyrene	<0.0198	µg/L	0.0198	EPA 8270M-SIM	11/21/08
SEMI-VOLATILE ORGANICS - CAS					
1,2,4-Trichlorobenzene	<0.21	µg/L	0.21	EPA 8270	11/26/08
1,2-Dichlorobenzene	<0.21	µg/L	0.21	EPA 8270	11/26/08
1,3-Dichlorobenzene	<0.21	µg/L	0.21	EPA 8270	11/26/08
1,4-Dichlorobenzene	<0.21	µg/L	0.21	EPA 8270	11/26/08
2,4,5-Trichlorophenol	<0.52	µg/L	0.52	EPA 8270	11/26/08
2,4,6-Trichlorophenol	<0.52	µg/L	0.52	EPA 8270	11/26/08
2,4-Dichlorophenol	<0.52	µg/L	0.52	EPA 8270	11/26/08
2,4-Dimethylphenol	<4.2	µg/L	4.2	EPA 8270	11/26/08
2,4-Dinitrophenol	<4.2	µg/L	4.2	EPA 8270	11/26/08
2,4-Dinitrotoluene	<0.21	µg/L	0.21	EPA 8270	11/26/08
2,6-Dinitrotoluene	<0.21	µg/L	0.21	EPA 8270	11/26/08
2-Chloronaphthalene	<0.21	µg/L	0.21	EPA 8270	11/26/08
2-Chlorophenol	<0.52	µg/L	0.52	EPA 8270	11/26/08
2-Methylnaphthalene	<0.21	µg/L	0.21	EPA 8270	11/26/08
2-Methylphenol	<0.52	µg/L	0.52	EPA 8270	11/26/08
2-Nitroaniline	<0.21	µg/L	0.21	EPA 8270	11/26/08
2-Nitrophenol	<0.52	µg/L	0.52	EPA 8270	11/26/08
3,3'-Dichlorobenzidine	<2.1	µg/L	2.1	EPA 8270	11/26/08
3-Nitroaniline	<1.1	µg/L	1.1	EPA 8270	11/26/08
4,6-Dinitro-2-methylphenol	<2.1	µg/L	2.1	EPA 8270	11/26/08
4-Bromophenylphenyl ether	<0.21	µg/L	0.21	EPA 8270	11/26/08
4-Chloro-3-methylphenol	<0.52	µg/L	0.52	EPA 8270	11/26/08
4-Chloroaniline	<0.21	µg/L	0.21	EPA 8270	11/26/08
4-Chlorophenylphenyl ether	<0.21	µg/L	0.21	EPA 8270	11/26/08
4-Methylphenol	<0.52	µg/L	0.52	EPA 8270	11/26/08
4-Nitroaniline	<1.1	µg/L	1.1	EPA 8270	11/26/08
4-Nitrophenol	<2.1	µg/L	2.1	EPA 8270	11/26/08

Report Date: 01/02/09

Validated By:



City of Portland
Water Pollution Control Laboratory
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LABORATORY ANALYSIS REPORT

Sample ID: FO081413

Sample Collected: 11/20/08 10:06
Sample Received: 11/20/08

Sample Status: COMPLETE AND
VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: FIELD DECON BLANK

Report Page: Page 3 of 4

Sample Point Code: FDBLANK
Sample Type: GRAB
Sample Matrix: DIWTR

System ID: AM10909
EID File # : 1020.005
LocCode: PORTHASW
Collected By: RCB/PHA

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Low recoveries in the LCS and LCS Dup for Semivolatile compounds Benzoic Acid and Pentachlorophenol indicate low bias for these components.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Acenaphthene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Acenaphthylene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Anthracene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Benzo(a)anthracene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Benzo(a)pyrene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Benzo(b)fluoranthene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Benzo(g,h,i)perylene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Benzo(k)fluoranthene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Benzoic acid	<5.2	µg/L	5.2	EPA 8270	11/26/08
Benzyl alcohol	<0.52	µg/L	0.52	EPA 8270	11/26/08
Bis(2-chloroethoxy) methane	<0.21	µg/L	0.21	EPA 8270	11/26/08
Bis(2-chloroethyl) ether	<0.21	µg/L	0.21	EPA 8270	11/26/08
Bis(2-chloroisopropyl) ether	<0.21	µg/L	0.21	EPA 8270	11/26/08
Bis(2-ethylhexyl) phthalate	<1.1	µg/L	1.1	EPA 8270	11/26/08
Butyl benzyl phthalate	<0.21	µg/L	0.21	EPA 8270	11/26/08
Chrysene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Dibenzo(a,h)anthracene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Dibenzofuran	<0.21	µg/L	0.21	EPA 8270	11/26/08
Diethyl phthalate	<0.21	µg/L	0.21	EPA 8270	11/26/08
Dimethyl phthalate	<0.21	µg/L	0.21	EPA 8270	11/26/08
Di-n-butyl phthalate	<0.21	µg/L	0.21	EPA 8270	11/26/08
Di-n-octyl phthalate	<0.21	µg/L	0.21	EPA 8270	11/26/08
Fluoranthene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Fluorene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Hexachlorobenzene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Hexachlorobutadiene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Hexachlorocyclopentadiene	<1.1	µg/L	1.1	EPA 8270	11/26/08
Hexachloroethane	<0.21	µg/L	0.21	EPA 8270	11/26/08
Indeno(1,2,3-cd)pyrene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Isophorone	<0.21	µg/L	0.21	EPA 8270	11/26/08
Naphthalene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Nitrobenzene	<0.21	µg/L	0.21	EPA 8270	11/26/08
N-Nitrosodi-n-propylamine	<0.21	µg/L	0.21	EPA 8270	11/26/08
N-Nitrosodiphenylamine	<0.21	µg/L	0.21	EPA 8270	11/26/08
Pentachlorophenol	<1.1	µg/L	1.1	EPA 8270	11/26/08

Report Date: 01/02/09

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: FO081413

Sample Collected: 11/20/08 10:06
Sample Received: 11/20/08

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: FIELD DECON BLANK

Report Page: Page 4 of 4

Sample Point Code: FDBLANK
Sample Type: GRAB
Sample Matrix: DIWTR

System ID: AM10909
EID File #: 1020.005
LocCode: PORTHASW
Collected By: RCB/PHA

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Low recoveries in the LCS and LCS Dup for Semivolatile compounds Benzoic Acid and Pentachlorophenol indicate low bias for these components.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Phenanthrene	<0.21	µg/L	0.21	EPA 8270	11/26/08
Phenol	<0.52	µg/L	0.52	EPA 8270	11/26/08
Pyrene	<0.21	µg/L	0.21	EPA 8270	11/26/08

End of Report for Sample ID: FO081413

Report Date: 01/02/09

Validated By:

December 15, 2008

Analytical Report for Service Request No: K0811464

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

RE: Portland Harbor Stormwater

Dear Jennifer:

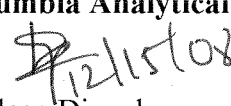
Enclosed are the results of the samples submitted to our laboratory on November 21, 2008. For your reference, these analyses have been assigned our service request number K0811464.

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/lb

Page 1 of 37

cc: Peter Abrams, City of Portland

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 but greater than or equal to the MDL.
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- i The MRL/MDL has been elevated due to a matrix interference.
- X See case narrative.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- B The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- 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.
- 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 has been elevated due to a matrix interference.
- X See case narrative.
- * The duplicate analysis not within control limits. See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.

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 (25% for CLP Pesticides).
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- i The MRL/MDL has been elevated due to a chromatographic interference.
- X See case narrative.

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)	-

Case Narrative

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request No.: K0811464
Date Received: 11/21/2008

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

Seven water samples were received for analysis at Columbia Analytical Services on 11/21/2008. 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.

Semivolatile Organic Compounds by EPA Method 8270C LL

Lab Control Sample Exceptions:

The spike recovery of Pentachlorophenol in the replicate Laboratory Control Samples (LCS/DLCS) KWG0812669-1 and KWG0812669-2 was outside the lower control criterion. The analyte in question was not detected in the associated field samples. The error associated with reduced recovery equates to a potential low bias. Additional analysis of the associated field samples could not be performed because insufficient sample remained for testing. The data is flagged to indicate the problem. No further corrective action was taken.

The advisory criterion was exceeded for Benzoic Acid in the replicate Laboratory Control Samples (LCS/DLCS) KWG0812669-1 and KWG0812669-2. As per the CAS/Kelso Standard Operating Procedure (SOP) for this method, this compound is not included in the subset of analytes used to control the analysis. The recovery information reported for this analyte 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.

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  Date 

Chain of Custody Documentation

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC PD

Client / Project: City of Portland Service Request K08 11464
 Received: 11/21/08 Opened: 11/21/08 By: [Signature]

1. Samples were received via? ☐ US Mail ☐ Fed Ex ☐ UPS ☐ DHL ☐ GH ☐ GS ☒ PD ☒ 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): 1-1
 Temperature Blank (°C): NP
6. If applicable, list Chain of Custody Numbers: _____
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 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 and 1631 Mercury bottles 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	Broken	pH	Reagent	Volume added	Reagent Lot Number	Initials

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

Additional Notes, Discrepancies, & Resolutions: _____

Semi-Volatile Organic Compounds EPA Method 8270C

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0811464
Date Collected: 11/20/2008
Date Received: 11/21/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081412
Lab Code: K0811464-005
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	0.22	0.037	1	11/26/08	12/09/08	KWG0812669	
Phenol	0.80		0.53	0.067	1	11/26/08	12/09/08	KWG0812669	
2-Chlorophenol	ND	U	0.53	0.057	1	11/26/08	12/09/08	KWG0812669	
1,3-Dichlorobenzene	ND	U	0.22	0.023	1	11/26/08	12/09/08	KWG0812669	
1,4-Dichlorobenzene	ND	U	0.22	0.031	1	11/26/08	12/09/08	KWG0812669	
1,2-Dichlorobenzene	ND	U	0.22	0.024	1	11/26/08	12/09/08	KWG0812669	
Benzyl Alcohol	3.2		0.53	0.077	1	11/26/08	12/09/08	KWG0812669	
Bis(2-chloroisopropyl) Ether	ND	U	0.22	0.028	1	11/26/08	12/09/08	KWG0812669	
2-Methylphenol	0.25	J	0.53	0.12	1	11/26/08	12/09/08	KWG0812669	
Hexachloroethane	ND	U	0.22	0.026	1	11/26/08	12/09/08	KWG0812669	
N-Nitrosodi-n-propylamine	ND	U	0.22	0.039	1	11/26/08	12/09/08	KWG0812669	
4-Methylphenol†	0.65		0.53	0.13	1	11/26/08	12/09/08	KWG0812669	
Nitrobenzene	ND	U	0.22	0.030	1	11/26/08	12/09/08	KWG0812669	
Isophorone	ND	U	0.22	0.017	1	11/26/08	12/09/08	KWG0812669	
2-Nitrophenol	0.10	J	0.53	0.067	1	11/26/08	12/09/08	KWG0812669	
2,4-Dimethylphenol	ND	U	4.3	2.4	1	11/26/08	12/09/08	KWG0812669	
Bis(2-chloroethoxy)methane	ND	U	0.22	0.026	1	11/26/08	12/09/08	KWG0812669	
2,4-Dichlorophenol	ND	U	0.53	0.050	1	11/26/08	12/09/08	KWG0812669	
Benzoic Acid	1.7	J	5.3	1.2	1	11/26/08	12/09/08	KWG0812669	
1,2,4-Trichlorobenzene	ND	U	0.22	0.017	1	11/26/08	12/09/08	KWG0812669	
Naphthalene	0.075	J	0.22	0.024	1	11/26/08	12/09/08	KWG0812669	
4-Chloroaniline	ND	U	0.22	0.027	1	11/26/08	12/09/08	KWG0812669	
Hexachlorobutadiene	ND	U	0.22	0.029	1	11/26/08	12/09/08	KWG0812669	
4-Chloro-3-methylphenol	ND	U	0.53	0.039	1	11/26/08	12/09/08	KWG0812669	
2-Methylnaphthalene	ND	U	0.22	0.028	1	11/26/08	12/09/08	KWG0812669	
Hexachlorocyclopentadiene	ND	U	1.1	0.20	1	11/26/08	12/09/08	KWG0812669	
2,4,6-Trichlorophenol	ND	U	0.53	0.062	1	11/26/08	12/09/08	KWG0812669	
2,4,5-Trichlorophenol	ND	U	0.53	0.033	1	11/26/08	12/09/08	KWG0812669	
2-Chloronaphthalene	ND	U	0.22	0.044	1	11/26/08	12/09/08	KWG0812669	
2-Nitroaniline	ND	U	0.22	0.026	1	11/26/08	12/09/08	KWG0812669	
Acenaphthylene	ND	U	0.22	0.016	1	11/26/08	12/09/08	KWG0812669	
Dimethyl Phthalate	0.19	J	0.22	0.023	1	11/26/08	12/09/08	KWG0812669	
2,6-Dinitrotoluene	ND	U	0.22	0.035	1	11/26/08	12/09/08	KWG0812669	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0811464
Date Collected: 11/20/2008
Date Received: 11/21/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081412
Lab Code: K0811464-005

Units: ug/L

Basis: NA

Extraction Method: EPA 3520C

Level: Low

Analysis Method: 8270C

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	ND	U	0.22	0.028	1	11/26/08	12/09/08	KWG0812669	
3-Nitroaniline	ND	U	1.1	0.031	1	11/26/08	12/09/08	KWG0812669	
2,4-Dinitrophenol	ND	U	4.3	0.18	1	11/26/08	12/09/08	KWG0812669	
Dibenzofuran	ND	U	0.22	0.019	1	11/26/08	12/09/08	KWG0812669	
4-Nitrophenol	ND	U	2.2	0.30	1	11/26/08	12/09/08	KWG0812669	
2,4-Dinitrotoluene	ND	U	0.22	0.019	1	11/26/08	12/09/08	KWG0812669	
Fluorene	ND	U	0.22	0.029	1	11/26/08	12/09/08	KWG0812669	
4-Chlorophenyl Phenyl Ether	ND	U	0.22	0.029	1	11/26/08	12/09/08	KWG0812669	
Diethyl Phthalate	0.18	J	0.22	0.013	1	11/26/08	12/09/08	KWG0812669	
4-Nitroaniline	ND	U	1.1	0.020	1	11/26/08	12/09/08	KWG0812669	
2-Methyl-4,6-dinitrophenol	ND	U	2.2	0.027	1	11/26/08	12/09/08	KWG0812669	
N-Nitrosodiphenylamine	ND	U	0.22	0.051	1	11/26/08	12/09/08	KWG0812669	
4-Bromophenyl Phenyl Ether	ND	U	0.22	0.028	1	11/26/08	12/09/08	KWG0812669	
Hexachlorobenzene	ND	U	0.22	0.024	1	11/26/08	12/09/08	KWG0812669	
Pentachlorophenol	0.47	J	1.1	0.36	1	11/26/08	12/09/08	KWG0812669	
Phenanthrene	0.033	J	0.22	0.024	1	11/26/08	12/09/08	KWG0812669	
Anthracene	ND	U	0.22	0.026	1	11/26/08	12/09/08	KWG0812669	
Di-n-butyl Phthalate	0.24		0.22	0.025	1	11/26/08	12/09/08	KWG0812669	
Fluoranthene	ND	U	0.22	0.022	1	11/26/08	12/09/08	KWG0812669	
Pyrene	0.039	J	0.22	0.020	1	11/26/08	12/09/08	KWG0812669	
Butyl Benzyl Phthalate	0.27		0.22	0.019	1	11/26/08	12/09/08	KWG0812669	
3,3'-Dichlorobenzidine	ND	U	2.2	0.46	1	11/26/08	12/09/08	KWG0812669	
Benz(a)anthracene	ND	U	0.22	0.019	1	11/26/08	12/09/08	KWG0812669	
Chrysene	ND	U	0.22	0.030	1	11/26/08	12/09/08	KWG0812669	
Bis(2-ethylhexyl) Phthalate	0.66	J	1.1	0.14	1	11/26/08	12/09/08	KWG0812669	
Di-n-octyl Phthalate	ND	U	0.22	0.019	1	11/26/08	12/09/08	KWG0812669	
Benzo(b)fluoranthene	ND	U	0.22	0.018	1	11/26/08	12/09/08	KWG0812669	
Benzo(k)fluoranthene	ND	U	0.22	0.026	1	11/26/08	12/09/08	KWG0812669	
Benzo(a)pyrene	ND	U	0.22	0.033	1	11/26/08	12/09/08	KWG0812669	
Indeno(1,2,3-cd)pyrene	ND	U	0.22	0.023	1	11/26/08	12/09/08	KWG0812669	
Dibenz(a,h)anthracene	ND	U	0.22	0.018	1	11/26/08	12/09/08	KWG0812669	
Benzo(g,h,i)perylene	ND	U	0.22	0.020	1	11/26/08	12/09/08	KWG0812669	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0811464
Date Collected: 11/20/2008
Date Received: 11/21/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081412
Lab Code: K0811464-005

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	68	21-119	12/09/08	Acceptable
Phenol-d6	72	31-121	12/09/08	Acceptable
Nitrobenzene-d5	70	29-121	12/09/08	Acceptable
2-Fluorobiphenyl	69	25-109	12/09/08	Acceptable
2,4,6-Tribromophenol	89	30-131	12/09/08	Acceptable
Terphenyl-d14	60	20-140	12/09/08	Acceptable

† Analyte Comments

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

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor Stormwater
 Sample Matrix: Water

Service Request: K0811464
 Date Collected: 11/20/2008
 Date Received: 11/21/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081413
 Lab Code: K0811464-006
 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	0.037	1	11/26/08	12/09/08	KWG0812669	
Phenol	ND	U	0.52	0.065	1	11/26/08	12/09/08	KWG0812669	
2-Chlorophenol	ND	U	0.52	0.056	1	11/26/08	12/09/08	KWG0812669	
1,3-Dichlorobenzene	ND	U	0.21	0.022	1	11/26/08	12/09/08	KWG0812669	
1,4-Dichlorobenzene	ND	U	0.21	0.030	1	11/26/08	12/09/08	KWG0812669	
1,2-Dichlorobenzene	ND	U	0.21	0.023	1	11/26/08	12/09/08	KWG0812669	
Benzyl Alcohol	ND	U	0.52	0.076	1	11/26/08	12/09/08	KWG0812669	
Bis(2-chloroisopropyl) Ether	ND	U	0.21	0.027	1	11/26/08	12/09/08	KWG0812669	
2-Methylphenol	ND	U	0.52	0.12	1	11/26/08	12/09/08	KWG0812669	
Hexachloroethane	ND	U	0.21	0.025	1	11/26/08	12/09/08	KWG0812669	
N-Nitrosodi-n-propylamine	ND	U	0.21	0.039	1	11/26/08	12/09/08	KWG0812669	
4-Methylphenol†	ND	U	0.52	0.13	1	11/26/08	12/09/08	KWG0812669	
Nitrobenzene	ND	U	0.21	0.029	1	11/26/08	12/09/08	KWG0812669	
Isophorone	ND	U	0.21	0.017	1	11/26/08	12/09/08	KWG0812669	
2-Nitrophenol	ND	U	0.52	0.065	1	11/26/08	12/09/08	KWG0812669	
2,4-Dimethylphenol	ND	U	4.2	2.3	1	11/26/08	12/09/08	KWG0812669	
Bis(2-chloroethoxy)methane	ND	U	0.21	0.025	1	11/26/08	12/09/08	KWG0812669	
2,4-Dichlorophenol	ND	U	0.52	0.049	1	11/26/08	12/09/08	KWG0812669	
Benzoic Acid	ND	U	5.2	1.2	1	11/26/08	12/09/08	KWG0812669	
1,2,4-Trichlorobenzene	ND	U	0.21	0.017	1	11/26/08	12/09/08	KWG0812669	
Naphthalene	ND	U	0.21	0.023	1	11/26/08	12/09/08	KWG0812669	
4-Chloroaniline	ND	U	0.21	0.026	1	11/26/08	12/09/08	KWG0812669	
Hexachlorobutadiene	ND	U	0.21	0.028	1	11/26/08	12/09/08	KWG0812669	
4-Chloro-3-methylphenol	ND	U	0.52	0.039	1	11/26/08	12/09/08	KWG0812669	
2-Methylnaphthalene	ND	U	0.21	0.027	1	11/26/08	12/09/08	KWG0812669	
Hexachlorocyclopentadiene	ND	U	1.1	0.20	1	11/26/08	12/09/08	KWG0812669	
2,4,6-Trichlorophenol	ND	U	0.52	0.060	1	11/26/08	12/09/08	KWG0812669	
2,4,5-Trichlorophenol	ND	U	0.52	0.032	1	11/26/08	12/09/08	KWG0812669	
2-Chloronaphthalene	ND	U	0.21	0.043	1	11/26/08	12/09/08	KWG0812669	
2-Nitroaniline	ND	U	0.21	0.025	1	11/26/08	12/09/08	KWG0812669	
Acenaphthylene	ND	U	0.21	0.016	1	11/26/08	12/09/08	KWG0812669	
Dimethyl Phthalate	ND	U	0.21	0.022	1	11/26/08	12/09/08	KWG0812669	
2,6-Dinitrotoluene	ND	U	0.21	0.035	1	11/26/08	12/09/08	KWG0812669	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0811464
Date Collected: 11/20/2008
Date Received: 11/21/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081413
Lab Code: K0811464-006
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	11/26/08	12/09/08	KWG0812669	
3-Nitroaniline	ND	U	1.1	0.030	1	11/26/08	12/09/08	KWG0812669	
2,4-Dinitrophenol	ND	U	4.2	0.18	1	11/26/08	12/09/08	KWG0812669	
Dibenzofuran	ND	U	0.21	0.019	1	11/26/08	12/09/08	KWG0812669	
4-Nitrophenol	ND	U	2.1	0.29	1	11/26/08	12/09/08	KWG0812669	
2,4-Dinitrotoluene	ND	U	0.21	0.019	1	11/26/08	12/09/08	KWG0812669	
Fluorene	ND	U	0.21	0.028	1	11/26/08	12/09/08	KWG0812669	
4-Chlorophenyl Phenyl Ether	ND	U	0.21	0.028	1	11/26/08	12/09/08	KWG0812669	
Diethyl Phthalate	0.052	J	0.21	0.013	1	11/26/08	12/09/08	KWG0812669	
4-Nitroaniline	ND	U	1.1	0.020	1	11/26/08	12/09/08	KWG0812669	
2-Methyl-4,6-dinitrophenol	ND	U	2.1	0.026	1	11/26/08	12/09/08	KWG0812669	
N-Nitrosodiphenylamine	ND	U	0.21	0.050	1	11/26/08	12/09/08	KWG0812669	
4-Bromophenyl Phenyl Ether	ND	U	0.21	0.027	1	11/26/08	12/09/08	KWG0812669	
Hexachlorobenzene	ND	U	0.21	0.023	1	11/26/08	12/09/08	KWG0812669	
Pentachlorophenol	ND	U	1.1	0.36	1	11/26/08	12/09/08	KWG0812669	
Phenanthrene	ND	U	0.21	0.023	1	11/26/08	12/09/08	KWG0812669	
Anthracene	ND	U	0.21	0.025	1	11/26/08	12/09/08	KWG0812669	
Di-n-butyl Phthalate	0.12	J	0.21	0.024	1	11/26/08	12/09/08	KWG0812669	
Fluoranthene	ND	U	0.21	0.021	1	11/26/08	12/09/08	KWG0812669	
Pyrene	ND	U	0.21	0.020	1	11/26/08	12/09/08	KWG0812669	
Butyl Benzyl Phthalate	0.055	J	0.21	0.019	1	11/26/08	12/09/08	KWG0812669	
3,3'-Dichlorobenzidine	ND	U	2.1	0.45	1	11/26/08	12/09/08	KWG0812669	
Benz(a)anthracene	ND	U	0.21	0.019	1	11/26/08	12/09/08	KWG0812669	
Chrysene	ND	U	0.21	0.029	1	11/26/08	12/09/08	KWG0812669	
Bis(2-ethylhexyl) Phthalate	0.26	J	1.1	0.14	1	11/26/08	12/09/08	KWG0812669	
Di-n-octyl Phthalate	ND	U	0.21	0.019	1	11/26/08	12/09/08	KWG0812669	
Benzo(b)fluoranthene	ND	U	0.21	0.018	1	11/26/08	12/09/08	KWG0812669	
Benzo(k)fluoranthene	ND	U	0.21	0.025	1	11/26/08	12/09/08	KWG0812669	
Benzo(a)pyrene	ND	U	0.21	0.032	1	11/26/08	12/09/08	KWG0812669	
Indeno(1,2,3-cd)pyrene	ND	U	0.21	0.022	1	11/26/08	12/09/08	KWG0812669	
Dibenz(a,h)anthracene	ND	U	0.21	0.018	1	11/26/08	12/09/08	KWG0812669	
Benzo(g,h,i)perylene	ND	U	0.21	0.020	1	11/26/08	12/09/08	KWG0812669	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0811464
Date Collected: 11/20/2008
Date Received: 11/21/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081413
Lab Code: K0811464-006

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	79	21-119	12/09/08	Acceptable
Phenol-d6	78	31-121	12/09/08	Acceptable
Nitrobenzene-d5	80	29-121	12/09/08	Acceptable
2-Fluorobiphenyl	73	25-109	12/09/08	Acceptable
2,4,6-Tribromophenol	90	30-131	12/09/08	Acceptable
Terphenyl-d14	101	20-140	12/09/08	Acceptable

† Analyte Comments

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

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor Stormwater
 Sample Matrix: Water

Service Request: K0811464
 Date Collected: NA
 Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
 Lab Code: KWG0812669-3
 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	11/26/08	12/05/08	KWG0812669	
Phenol	0.27	J	0.50	0.063	1	11/26/08	12/05/08	KWG0812669	
2-Chlorophenol	ND	U	0.50	0.054	1	11/26/08	12/05/08	KWG0812669	
1,3-Dichlorobenzene	ND	U	0.20	0.021	1	11/26/08	12/05/08	KWG0812669	
1,4-Dichlorobenzene	ND	U	0.20	0.029	1	11/26/08	12/05/08	KWG0812669	
1,2-Dichlorobenzene	ND	U	0.20	0.022	1	11/26/08	12/05/08	KWG0812669	
Benzyl Alcohol	ND	U	0.50	0.073	1	11/26/08	12/05/08	KWG0812669	
Bis(2-chloroisopropyl) Ether	ND	U	0.20	0.026	1	11/26/08	12/05/08	KWG0812669	
2-Methylphenol	ND	U	0.50	0.11	1	11/26/08	12/05/08	KWG0812669	
Hexachloroethane	ND	U	0.20	0.024	1	11/26/08	12/05/08	KWG0812669	
N-Nitrosodi-n-propylamine	ND	U	0.20	0.037	1	11/26/08	12/05/08	KWG0812669	
4-Methylphenol†	ND	U	0.50	0.12	1	11/26/08	12/05/08	KWG0812669	
Nitrobenzene	ND	U	0.20	0.028	1	11/26/08	12/05/08	KWG0812669	
Isophorone	ND	U	0.20	0.016	1	11/26/08	12/05/08	KWG0812669	
2-Nitrophenol	ND	U	0.50	0.063	1	11/26/08	12/05/08	KWG0812669	
2,4-Dimethylphenol	ND	U	4.0	2.2	1	11/26/08	12/05/08	KWG0812669	
Bis(2-chloroethoxy)methane	ND	U	0.20	0.024	1	11/26/08	12/05/08	KWG0812669	
2,4-Dichlorophenol	ND	U	0.50	0.047	1	11/26/08	12/05/08	KWG0812669	
Benzoic Acid	ND	U	5.0	1.1	1	11/26/08	12/05/08	KWG0812669	
1,2,4-Trichlorobenzene	ND	U	0.20	0.016	1	11/26/08	12/05/08	KWG0812669	
Naphthalene	ND	U	0.20	0.022	1	11/26/08	12/05/08	KWG0812669	
4-Chloroaniline	ND	U	0.20	0.025	1	11/26/08	12/05/08	KWG0812669	
Hexachlorobutadiene	ND	U	0.20	0.027	1	11/26/08	12/05/08	KWG0812669	
4-Chloro-3-methylphenol	ND	U	0.50	0.037	1	11/26/08	12/05/08	KWG0812669	
2-Methylnaphthalene	ND	U	0.20	0.026	1	11/26/08	12/05/08	KWG0812669	
Hexachlorocyclopentadiene	ND	U	1.0	0.19	1	11/26/08	12/05/08	KWG0812669	
2,4,6-Trichlorophenol	ND	U	0.50	0.058	1	11/26/08	12/05/08	KWG0812669	
2,4,5-Trichlorophenol	ND	U	0.50	0.031	1	11/26/08	12/05/08	KWG0812669	
2-Chloronaphthalene	ND	U	0.20	0.041	1	11/26/08	12/05/08	KWG0812669	
2-Nitroaniline	ND	U	0.20	0.024	1	11/26/08	12/05/08	KWG0812669	
Acenaphthylene	ND	U	0.20	0.015	1	11/26/08	12/05/08	KWG0812669	
Dimethyl Phthalate	0.023	J	0.20	0.021	1	11/26/08	12/05/08	KWG0812669	
2,6-Dinitrotoluene	ND	U	0.20	0.033	1	11/26/08	12/05/08	KWG0812669	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0811464
Date Collected: NA
Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KWG0812669-3
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	11/26/08	12/05/08	KWG0812669	
3-Nitroaniline	ND	U	1.0	0.029	1	11/26/08	12/05/08	KWG0812669	
2,4-Dinitrophenol	ND	U	4.0	0.17	1	11/26/08	12/05/08	KWG0812669	
Dibenzofuran	ND	U	0.20	0.018	1	11/26/08	12/05/08	KWG0812669	
4-Nitrophenol	ND	U	2.0	0.28	1	11/26/08	12/05/08	KWG0812669	
2,4-Dinitrotoluene	ND	U	0.20	0.018	1	11/26/08	12/05/08	KWG0812669	
Fluorene	ND	U	0.20	0.027	1	11/26/08	12/05/08	KWG0812669	
4-Chlorophenyl Phenyl Ether	ND	U	0.20	0.027	1	11/26/08	12/05/08	KWG0812669	
Diethyl Phthalate	0.022	J	0.20	0.012	1	11/26/08	12/05/08	KWG0812669	
4-Nitroaniline	ND	U	1.0	0.019	1	11/26/08	12/05/08	KWG0812669	
2-Methyl-4,6-dinitrophenol	ND	U	2.0	0.025	1	11/26/08	12/05/08	KWG0812669	
N-Nitrosodiphenylamine	ND	U	0.20	0.048	1	11/26/08	12/05/08	KWG0812669	
4-Bromophenyl Phenyl Ether	ND	U	0.20	0.026	1	11/26/08	12/05/08	KWG0812669	
Hexachlorobenzene	ND	U	0.20	0.022	1	11/26/08	12/05/08	KWG0812669	
Pentachlorophenol	ND	U	1.0	0.34	1	11/26/08	12/05/08	KWG0812669	
Phenanthrene	ND	U	0.20	0.022	1	11/26/08	12/05/08	KWG0812669	
Anthracene	ND	U	0.20	0.024	1	11/26/08	12/05/08	KWG0812669	
Di-n-butyl Phthalate	0.10	J	0.20	0.023	1	11/26/08	12/05/08	KWG0812669	
Fluoranthene	ND	U	0.20	0.020	1	11/26/08	12/05/08	KWG0812669	
Pyrene	ND	U	0.20	0.019	1	11/26/08	12/05/08	KWG0812669	
Butyl Benzyl Phthalate	0.061	J	0.20	0.018	1	11/26/08	12/05/08	KWG0812669	
3,3'-Dichlorobenzidine	ND	U	2.0	0.43	1	11/26/08	12/05/08	KWG0812669	
Benz(a)anthracene	ND	U	0.20	0.018	1	11/26/08	12/05/08	KWG0812669	
Chrysene	ND	U	0.20	0.028	1	11/26/08	12/05/08	KWG0812669	
Bis(2-ethylhexyl) Phthalate	0.15	J	1.0	0.13	1	11/26/08	12/05/08	KWG0812669	
Di-n-octyl Phthalate	ND	U	0.20	0.018	1	11/26/08	12/05/08	KWG0812669	
Benzo(b)fluoranthene	ND	U	0.20	0.017	1	11/26/08	12/05/08	KWG0812669	
Benzo(k)fluoranthene	ND	U	0.20	0.024	1	11/26/08	12/05/08	KWG0812669	
Benzo(a)pyrene	ND	U	0.20	0.031	1	11/26/08	12/05/08	KWG0812669	
Indeno(1,2,3-cd)pyrene	ND	U	0.20	0.021	1	11/26/08	12/05/08	KWG0812669	
Dibenz(a,h)anthracene	ND	U	0.20	0.017	1	11/26/08	12/05/08	KWG0812669	
Benzo(g,h,i)perylene	ND	U	0.20	0.019	1	11/26/08	12/05/08	KWG0812669	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0811464
Date Collected: NA
Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KWG0812669-3

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	82	21-119	12/05/08	Acceptable
Phenol-d6	79	31-121	12/05/08	Acceptable
Nitrobenzene-d5	81	29-121	12/05/08	Acceptable
2-Fluorobiphenyl	74	25-109	12/05/08	Acceptable
2,4,6-Tribromophenol	88	30-131	12/05/08	Acceptable
Terphenyl-d14	98	20-140	12/05/08	Acceptable

† Analyte Comments

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

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Portland, City of
 Project: Portland Harbor Stormwater
 Sample Matrix: Water

Service Request: K0811464

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

Extraction Method: EPA 3520C
 Analysis Method: 8270C

Units: PERCENT
 Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>	<u>Sur3</u>	<u>Sur4</u>	<u>Sur5</u>	<u>Sur6</u>
FO 081408	K0811464-001	64	65	63	61	92	82
FO 081409	K0811464-002	69	68	65	63	95	86
FO 081410	K0811464-003	75	75	80	54	90	48
FO 081411	K0811464-004	61	60	58	60	89	74
FO 081412	K0811464-005	68	72	70	69	89	60
FO 081413	K0811464-006	79	78	80	73	90	101
FO 081414	K0811464-007	67	68	65	66	95	76
Method Blank	KWG0812669-3	82	79	81	74	88	98
Lab Control Sample	KWG0812669-1	83	82	81	75	97	99
Duplicate Lab Control Sample	KWG0812669-2	75	72	74	68	90	95

Surrogate Recovery Control Limits (%)

Sur1 = 2-Fluorophenol	21-119	Sur5 = 2,4,6-Tribromophenol	30-131
Sur2 = Phenol-d6	31-121	Sur6 = Terphenyl-d14	20-140
Sur3 = Nitrobenzene-d5	29-121		
Sur4 = 2-Fluorobiphenyl	25-109		

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
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0811464
Date Extracted: 11/26/2008
Date Analyzed: 12/05/2008

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: KWG0812669

Analyte Name	Lab Control Sample KWG0812669-1 Lab Control Spike			Duplicate Lab Control Sample KWG0812669-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
Bis(2-chloroethyl) Ether	4.60	5.00	92	3.68	5.00	74	39-115	22	30
Phenol	4.66	5.00	93	3.82	5.00	76	39-117	20	30
2-Chlorophenol	4.58	5.00	92	3.75	5.00	75	40-113	20	30
1,3-Dichlorobenzene	1.83	5.00	37	1.51	5.00	30	18-71	20	30
1,4-Dichlorobenzene	2.04	5.00	41	1.65	5.00	33	19-73	21	30
1,2-Dichlorobenzene	2.17	5.00	43	1.80	5.00	36	22-78	19	30
Benzyl Alcohol	4.34	5.00	87	3.65	5.00	73	37-119	17	30
Bis(2-chloroisopropyl) Ether	4.03	5.00	81	3.29	5.00	66	35-113	20	30
2-Methylphenol	4.37	5.00	87	3.76	5.00	75	26-113	15	30
Hexachloroethane	1.42	5.00	28	1.13	5.00	23	11-62	23	30
N-Nitrosodi-n-propylamine	4.22	5.00	84	3.55	5.00	71	32-117	17	30
4-Methylphenol	4.04	5.00	81	3.53	5.00	71	25-118	13	30
Nitrobenzene	4.24	5.00	85	3.55	5.00	71	37-116	18	30
Isophorone	4.74	5.00	95	3.84	5.00	77	39-112	21	30
2-Nitrophenol	4.83	5.00	97	3.70	5.00	74	42-116	27	30
2,4-Dimethylphenol	3.99	5.00	80	3.96	5.00	79	10-113	1	30
Bis(2-chloroethoxy)methane	4.76	5.00	95	3.80	5.00	76	40-113	22	30
2,4-Dichlorophenol	4.74	5.00	95	3.89	5.00	78	39-115	20	30
Benzoic Acid	ND	15.0	0 *	0.664	15.0	4 *	10-102		30
1,2,4-Trichlorobenzene	2.45	5.00	49	1.89	5.00	38	21-78	26	30
Naphthalene	3.47	5.00	69	2.79	5.00	56	33-98	22	30
4-Chloroaniline	4.34	5.00	87	3.78	5.00	76	10-119	14	30
Hexachlorobutadiene	1.45	5.00	29	1.11	5.00	22	10-61	27	30
4-Chloro-3-methylphenol	4.73	5.00	95	3.82	5.00	76	37-119	21	30
2-Methylnaphthalene	3.33	5.00	67	2.63	5.00	53	32-95	23	30
Hexachlorocyclopentadiene	0.776	5.00	16	0.717	5.00	14	10-39	8	30
2,4,6-Trichlorophenol	4.86	5.00	97	4.21	5.00	84	40-117	14	30
2,4,5-Trichlorophenol	4.80	5.00	96	4.10	5.00	82	44-116	16	30
2-Chloronaphthalene	3.42	5.00	68	2.83	5.00	57	21-115	19	30
2-Nitroaniline	4.74	5.00	95	3.82	5.00	76	43-124	22	30
Acenaphthylene	4.25	5.00	85	3.46	5.00	69	41-114	21	30
Dimethyl Phthalate	4.97	5.00	99	4.12	5.00	82	47-117	19	30
2,6-Dinitrotoluene	4.94	5.00	99	4.05	5.00	81	45-120	20	30
Acenaphthene	4.04	5.00	81	3.37	5.00	67	38-106	18	30
3-Nitroaniline	4.86	5.00	97	4.11	5.00	82	31-125	17	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
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0811464
Date Extracted: 11/26/2008
Date Analyzed: 12/05/2008

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: KWG0812669

Analyte Name	Lab Control Sample KWG0812669-1 Lab Control Spike			Duplicate Lab Control Sample KWG0812669-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
2,4-Dinitrophenol	1.10	5.00	22	1.21	5.00	24	10-121	9	30
Dibenzofuran	4.25	5.00	85	3.51	5.00	70	40-107	19	30
4-Nitrophenol	4.54	5.00	91	3.81	5.00	76	43-133	18	30
2,4-Dinitrotoluene	4.99	5.00	100	4.25	5.00	85	47-125	16	30
Fluorene	4.38	5.00	88	3.60	5.00	72	40-112	19	30
4-Chlorophenyl Phenyl Ether	4.06	5.00	81	3.35	5.00	67	39-108	19	30
Diethyl Phthalate	4.83	5.00	97	4.59	5.00	92	47-120	5	30
4-Nitroaniline	4.81	5.00	96	4.27	5.00	85	36-128	12	30
2-Methyl-4,6-dinitrophenol	1.01	5.00	20	1.16	5.00	23	19-127	14	30
N-Nitrosodiphenylamine	4.80	5.00	96	4.03	5.00	81	36-114	17	30
4-Bromophenyl Phenyl Ether	4.41	5.00	88	3.52	5.00	70	43-110	22	30
Hexachlorobenzene	4.37	5.00	87	3.45	5.00	69	42-107	24	30
Pentachlorophenol	1.19	5.00	24 *	1.29	5.00	26 *	28-114	8	30
Phenanthrene	4.50	5.00	90	3.70	5.00	74	43-110	20	30
Anthracene	4.29	5.00	86	3.47	5.00	69	40-110	21	30
Di-n-butyl Phthalate	4.72	5.00	94	4.01	5.00	80	45-135	16	30
Fluoranthene	4.64	5.00	93	3.85	5.00	77	42-119	19	30
Pyrene	4.36	5.00	87	3.69	5.00	74	43-118	17	30
Butyl Benzyl Phthalate	4.62	5.00	92	3.96	5.00	79	48-124	15	30
3,3'-Dichlorobenzidine	2.78	5.00	56	2.53	5.00	51	15-108	9	30
Benz(a)anthracene	4.45	5.00	89	3.76	5.00	75	45-112	17	30
Chrysene	4.44	5.00	89	3.80	5.00	76	47-112	16	30
Bis(2-ethylhexyl) Phthalate	4.89	5.00	98	4.09	5.00	82	32-149	18	30
Di-n-octyl Phthalate	4.73	5.00	95	4.09	5.00	82	49-127	14	30
Benzo(b)fluoranthene	4.51	5.00	90	3.71	5.00	74	45-115	20	30
Benzo(k)fluoranthene	4.56	5.00	91	3.77	5.00	75	46-115	19	30
Benzo(a)pyrene	4.44	5.00	89	3.68	5.00	74	40-117	19	30
Indeno(1,2,3-cd)pyrene	4.61	5.00	92	3.84	5.00	77	44-119	18	30
Dibenz(a,h)anthracene	4.52	5.00	90	3.79	5.00	76	45-118	18	30
Benzo(g,h,i)perylene	4.69	5.00	94	3.95	5.00	79	45-116	17	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.

December 12, 2008

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

RE: Portland Harbor

Enclosed are the results of analyses for samples received by the laboratory on 11/20/08 18:10.
The following list is a summary of the Work Orders contained in this report, generated on 12/12/08 15:28.

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

<u>Work Order</u>	<u>Project</u>	<u>ProjectNumber</u>
PRK0762	Portland Harbor	36238

TestAmerica Portland



Howard Holmes, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name:

Portland Harbor

Project Number:

36238

Project Manager:

Jennifer Shackelford

Report Created:

12/12/08 15:28

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FO081408	PRK0762-01	Water	11/20/08 09:32	11/20/08 18:10
FO081409	PRK0762-02	Water	11/20/08 08:54	11/20/08 18:10
FO081410	PRK0762-03	Water	11/20/08 09:11	11/20/08 18:10
FO081411	PRK0762-04	Water	11/20/08 09:41	11/20/08 18:10
FO081412	PRK0762-05	Water	11/20/08 09:56	11/20/08 18:10
FO081413	PRK0762-06	Water	11/20/08 10:06	11/20/08 18:10
FO081414	PRK0762-07	Water	11/20/08 00:00	11/20/08 18:10

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
12/12/08 15:28

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PRK0762-05 (FO081412)		Water				Sampled: 11/20/08 09:56				
Bis(2-ethylhexyl)phthalate	EPA 8270m	1.05	0.511	0.971	ug/l	1x	8110790	11/21/08 17:50	11/26/08 01:15	
Butyl benzyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Diethyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Dimethyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Acenaphthene	"	ND	0.0194	0.0194	"	"	"	"	11/25/08 18:07	
Acenaphthylene	"	0.0380	0.0194	0.0194	"	"	"	"	"	
Anthracene	"	ND	0.0194	0.0194	"	"	"	"	"	
Benzo (a) anthracene	"	ND	0.00971	0.00971	"	"	"	"	"	
Benzo (a) pyrene	"	ND	0.00971	0.00971	"	"	"	"	"	
Benzo (b) fluoranthene	"	ND	0.00971	0.00971	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	0.0194	0.0194	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	0.00971	0.00971	"	"	"	"	"	
Chrysene	"	0.0160	0.00971	0.00971	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	0.00971	0.00971	"	"	"	"	"	
Fluoranthene	"	0.0334	0.0194	0.0194	"	"	"	"	"	
Fluorene	"	ND	0.0194	0.0194	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	ND	0.00971	0.00971	"	"	"	"	"	
Naphthalene	"	0.0648	0.0194	0.0194	"	"	"	"	"	
Phenanthrene	"	0.0342	0.0194	0.0194	"	"	"	"	"	
Pyrene	"	0.0349	0.0194	0.0194	"	"	"	"	"	
<hr/>										
Surrogate(s): Fluorene-d10				94.0%		25 - 125 %	"			"
Pyrene-d10				90.6%		23 - 150 %	"			"
Benzo (a) pyrene-d12				70.9%		10 - 125 %	"			"

PRK0762-06 (FO081413)

Water

Sampled: 11/20/08 10:06

Bis(2-ethylhexyl)phthalate	EPA 8270m	ND	0.521	0.990	ug/l	1x	8110790	11/21/08 17:50	11/26/08 01:46	
Butyl benzyl phthalate	"	ND	0.521	0.990	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	0.521	0.990	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	0.521	0.990	"	"	"	"	"	
Diethyl phthalate	"	ND	0.521	0.990	"	"	"	"	"	
Dimethyl phthalate	"	ND	0.521	0.990	"	"	"	"	"	
Acenaphthene	"	ND	0.0198	0.0198	"	"	"	"	11/25/08 18:37	
Acenaphthylene	"	ND	0.0198	0.0198	"	"	"	"	"	
Anthracene	"	ND	0.0198	0.0198	"	"	"	"	"	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
12/12/08 15:28

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
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PRK0762-06 (FO081413)

Water

Sampled: 11/20/08 10:06

Benzo (a) anthracene	EPA 8270m	ND	0.00990	0.00990	ug/l	1x	8110790	11/21/08 17:50	11/25/08 18:37	
Benzo (a) pyrene	"	ND	0.00990	0.00990	"	"	"	"	"	
Benzo (b) fluoranthene	"	ND	0.00990	0.00990	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	0.0198	0.0198	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	0.00990	0.00990	"	"	"	"	"	
Chrysene	"	ND	0.00990	0.00990	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	0.00990	0.00990	"	"	"	"	"	
Fluoranthene	"	ND	0.0198	0.0198	"	"	"	"	"	
Fluorene	"	ND	0.0198	0.0198	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	ND	0.00990	0.00990	"	"	"	"	"	
Naphthalene	"	ND	0.0198	0.0198	"	"	"	"	"	
Phenanthrene	"	ND	0.0198	0.0198	"	"	"	"	"	
Pyrene	"	ND	0.0198	0.0198	"	"	"	"	"	

Surrogate(s): Fluorene-d10

101%

25 - 125 %

"

"

Pyrene-d10

116%

23 - 150 %

"

"

Benzo (a) pyrene-d12

106%

10 - 125 %

"

"

PRK0762-07 (FO081414)

Water

Sampled: 11/20/08 00:00

Bis(2-ethylhexyl)phthalate	EPA 8270m	2.23	0.516	0.980	ug/l	1x	8110790	11/21/08 17:50	11/26/08 02:17	
Butyl benzyl phthalate	"	0.647	0.516	0.980	"	"	"	"	"	J
Di-n-butyl phthalate	"	ND	0.516	0.980	"	"	"	"	"	
Di-n-octyl phthalate	"	0.516	0.516	0.980	"	"	"	"	"	J
Diethyl phthalate	"	ND	0.516	0.980	"	"	"	"	"	
Dimethyl phthalate	"	ND	0.516	0.980	"	"	"	"	"	
Acenaphthene	"	ND	0.0196	0.0196	"	"	"	"	11/25/08 19:07	
Acenaphthylene	"	ND	0.0196	0.0196	"	"	"	"	"	
Anthracene	"	ND	0.0196	0.0196	"	"	"	"	"	
Benzo (a) anthracene	"	0.0409	0.00980	0.00980	"	"	"	"	"	
Benzo (a) pyrene	"	0.0358	0.00980	0.00980	"	"	"	"	"	
Benzo (b) fluoranthene	"	0.0403	0.00980	0.00980	"	"	"	"	"	
Benzo (ghi) perylene	"	0.0453	0.0196	0.0196	"	"	"	"	"	
Benzo (k) fluoranthene	"	0.0268	0.00980	0.00980	"	"	"	"	"	
Chrysene	"	0.0671	0.00980	0.00980	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	0.00980	0.00980	"	"	"	"	"	
Fluoranthene	"	0.116	0.0196	0.0196	"	"	"	"	"	
Fluorene	"	ND	0.0196	0.0196	"	"	"	"	"	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
12/12/08 15:28

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

TestAmerica Portland

QC Batch: 8110790

Water Preparation Method: 3520B Liq-Liq

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (8110790-BLK1)										Extracted: 11/21/08 17:50				
Bis(2-ethylhexyl)phthalate	EPA 8270m	ND	0.526	1.00	ug/l	1x	--	--	--	--	--	--	11/25/08 18:02	
Butyl benzyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Di-n-butyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Di-n-octyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Diethyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Dimethyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Acenaphthene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	11/25/08 14:07	
Acenaphthylene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Anthracene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (a) anthracene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Benzo (a) pyrene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Benzo (b) fluoranthene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Benzo (ghi) perylene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (k) fluoranthene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Chrysene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Dibenzo (a,h) anthracene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Fluoranthene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Fluorene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Indeno (1,2,3-cd) pyrene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Naphthalene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Phenanthrene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Pyrene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Surrogate(s): Fluorene-d10		Recovery:	96.5%	Limits:	25-125%	"								
Pyrene-d10			129%		23-150%	"								
Benzo (a) pyrene-d12			103%		10-125%	"								

LCS (8110790-BS1)

Extracted: 11/21/08 17:50

Bis(2-ethylhexyl)phthalate	EPA 8270m	2.52	0.526	1.00	ug/l	1x	--	4.00	62.9%	(20-150)	--	--	11/25/08 18:33	
Butyl benzyl phthalate	"	2.44	0.526	1.00	"	"	--	"	61.0%	"	--	--	"	
Di-n-butyl phthalate	"	3.51	0.526	1.00	"	"	--	"	87.9%	"	--	--	"	
Di-n-octyl phthalate	"	2.12	0.526	1.00	"	"	--	"	53.0%	"	--	--	"	
Diethyl phthalate	"	3.35	0.526	1.00	"	"	--	"	83.8%	"	--	--	"	
Dimethyl phthalate	"	3.06	0.526	1.00	"	"	--	"	76.5%	"	--	--	"	
Acenaphthene	"	1.96	0.0200	0.0200	"	"	--	2.50	78.5%	(35-120)	--	--	11/25/08 14:36	
Acenaphthylene	"	2.02	0.0200	0.0200	"	"	--	"	80.7%	(34-116)	--	--	"	
Anthracene	"	2.25	0.0200	0.0200	"	"	--	"	90.2%	(24-119)	--	--	"	
Benzo (a) anthracene	"	2.52	0.0100	0.0100	"	"	--	"	101%	(36-128)	--	--	"	
Benzo (a) pyrene	"	2.14	0.0100	0.0100	"	"	--	"	85.7%	(17-128)	--	--	"	
Benzo (b) fluoranthene	"	2.29	0.0100	0.0100	"	"	--	"	91.6%	(37-131)	--	--	"	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
12/12/08 15:28

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

TestAmerica Portland

QC Batch: 8110790

Water Preparation Method: 3520B Liq-Liq

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
LCS (8110790-BS1)										Extracted: 11/21/08 17:50				
Benzo (ghi) perylene	EPA 8270m	2.07	0.0200	0.0200	ug/l	1x	--	2.50	82.8%	(26-126)	--	--	11/25/08 14:36	
Benzo (k) fluoranthene	"	1.98	0.0100	0.0100	"	"	--	"	79.3%	(18-145)	--	--	"	
Chrysene	"	2.46	0.0100	0.0100	"	"	--	"	98.6%	(16-137)	--	--	"	
Dibenzo (a,h) anthracene	"	2.23	0.0100	0.0100	"	"	--	"	89.2%	(20-141)	--	--	"	
Fluoranthene	"	2.33	0.0200	0.0200	"	"	--	"	93.3%	(31-125)	--	--	"	
Fluorene	"	2.24	0.0200	0.0200	"	"	--	"	89.7%	(27-124)	--	--	"	
Indeno (1,2,3-cd) pyrene	"	2.18	0.0100	0.0100	"	"	--	"	87.0%	(30-135)	--	--	"	
Naphthalene	"	1.96	0.0200	0.0200	"	"	--	"	78.5%	(30-113)	--	--	"	
Phenanthrene	"	1.98	0.0200	0.0200	"	"	--	"	79.1%	(34-126)	--	--	"	
Pyrene	"	2.67	0.0200	0.0200	"	"	--	"	107%	(21-141)	--	--	"	
Surrogate(s): Fluorene-d10	Recovery:	99.0%	Limits:	25-125%	"								11/25/08 14:36	
Pyrene-d10		136%		23-150%	"								"	
Benzo (a) pyrene-d12		101%		10-125%	"								"	

Matrix Spike (8110790-MS1)

QC Source: PRK0765-02

Extracted: 11/21/08 17:50

Bis(2-ethylhexyl)phthalate	EPA 8270m	3.56	0.521	0.990	ug/l	1x	1.15	3.96	61.0%	(10-150)	--	--	11/25/08 19:04	
Butyl benzyl phthalate	"	2.88	0.521	0.990	"	"	ND	"	72.6%	"	--	--	"	
Di-n-butyl phthalate	"	3.40	0.521	0.990	"	"	ND	"	85.7%	"	--	--	"	
Di-n-octyl phthalate	"	3.10	0.521	0.990	"	"	ND	"	78.2%	"	--	--	"	
Diethyl phthalate	"	3.21	0.521	0.990	"	"	ND	"	81.2%	"	--	--	"	
Dimethyl phthalate	"	2.85	0.521	0.990	"	"	ND	"	72.1%	"	--	--	"	
Acenaphthene	"	1.70	0.0198	0.0198	"	"	ND	2.48	68.5%	(35-120)	--	--	11/25/08 15:06	
Acenaphthylene	"	1.67	0.0198	0.0198	"	"	ND	"	67.5%	(34-116)	--	--	"	
Anthracene	"	2.00	0.0198	0.0198	"	"	ND	"	80.8%	(24-119)	--	--	"	
Benzo (a) anthracene	"	1.93	0.00990	0.00990	"	"	ND	"	77.9%	(22-129)	--	--	"	
Benzo (a) pyrene	"	1.44	0.00990	0.00990	"	"	ND	"	58.0%	(4-112)	--	--	"	
Benzo (b) fluoranthene	"	1.57	0.00990	0.00990	"	"	ND	"	63.3%	(0-136)	--	--	"	
Benzo (ghi) perylene	"	1.29	0.0198	0.0198	"	"	0.0210	"	51.3%	(0-126)	--	--	"	
Benzo (k) fluoranthene	"	1.39	0.00990	0.00990	"	"	ND	"	56.3%	(0-145)	--	--	"	
Chrysene	"	1.89	0.00990	0.00990	"	"	0.0226	"	75.6%	(7-137)	--	--	"	
Dibenzo (a,h) anthracene	"	1.36	0.00990	0.00990	"	"	ND	"	54.8%	(0-141)	--	--	"	
Fluoranthene	"	2.13	0.0198	0.0198	"	"	0.0387	"	84.6%	(30-125)	--	--	"	
Fluorene	"	2.13	0.0198	0.0198	"	"	ND	"	86.1%	(27-124)	--	--	"	
Indeno (1,2,3-cd) pyrene	"	1.33	0.00990	0.00990	"	"	ND	"	53.7%	(0-135)	--	--	"	
Naphthalene	"	1.76	0.0198	0.0198	"	"	0.0374	"	69.7%	(30-126)	--	--	"	
Phenanthrene	"	2.16	0.0198	0.0198	"	"	0.0299	"	85.9%	(34-126)	--	--	"	
Pyrene	"	1.84	0.0198	0.0198	"	"	0.0535	"	72.0%	(14-168)	--	--	"	
Surrogate(s): Fluorene-d10	Recovery:	93.2%	Limits:	25-125%	"								11/25/08 15:06	
Pyrene-d10		89.0%		23-150%	"								"	

TestAmerica Portland



Howard Holmes, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
12/12/08 15:28

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

TestAmerica Portland

QC Batch: 8110790

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 (8110790-MS1)

QC Source: PRK0765-02

Extracted: 11/21/08 17:50

Surrogate(s): Benzo (a) pyrene-d12

Recovery: 73.7%

Limits: 10-125% 1x

11/25/08 15:06

Matrix Spike Dup (8110790-MSD1)

QC Source: PRK0765-02

Extracted: 11/21/08 17:50

Bis(2-ethylhexyl)phthalate	EPA 8270m	3.97	0.521	0.990	ug/l	1x	1.15	3.96	71.2%	(10-150)	15.5%	(50)	11/25/08 19:35	
Butyl benzyl phthalate	"	3.13	0.521	0.990	"	"	ND	"	79.0%	"	8.42%	"	"	
Di-n-butyl phthalate	"	3.68	0.521	0.990	"	"	ND	"	92.9%	"	7.98%	"	"	
Di-n-octyl phthalate	"	3.41	0.521	0.990	"	"	ND	"	86.0%	"	9.50%	"	"	
Diethyl phthalate	"	3.39	0.521	0.990	"	"	ND	"	85.5%	"	5.16%	"	"	
Dimethyl phthalate	"	2.97	0.521	0.990	"	"	ND	"	74.9%	"	3.90%	"	"	
Acenaphthene	"	1.69	0.0198	0.0198	"	"	ND	2.48	68.2%	(35-120)	0.406%	(45)	11/25/08 15:36	
Acenaphthylene	"	1.67	0.0198	0.0198	"	"	ND	"	67.3%	(34-116)	0.252%	"	"	
Anthracene	"	2.10	0.0198	0.0198	"	"	ND	"	84.8%	(24-119)	4.92%	"	"	
Benzo (a) anthracene	"	2.19	0.00990	0.00990	"	"	ND	"	88.4%	(22-129)	12.6%	"	"	
Benzo (a) pyrene	"	1.65	0.00990	0.00990	"	"	ND	"	66.7%	(4-112)	14.0%	"	"	
Benzo (b) fluoranthene	"	1.72	0.00990	0.00990	"	"	ND	"	69.3%	(0-136)	9.13%	"	"	
Benzo (ghi) perylene	"	1.54	0.0198	0.0198	"	"	0.0210	"	61.5%	(0-126)	18.1%	"	"	
Benzo (k) fluoranthene	"	1.70	0.00990	0.00990	"	"	ND	"	68.7%	(0-145)	19.8%	"	"	
Chrysene	"	2.11	0.00990	0.00990	"	"	0.0226	"	84.4%	(7-137)	11.0%	"	"	
Dibenzo (a,h) anthracene	"	1.63	0.00990	0.00990	"	"	ND	"	65.8%	(0-141)	18.1%	"	"	
Fluoranthene	"	2.47	0.0198	0.0198	"	"	0.0387	"	98.2%	(30-125)	14.9%	"	"	
Fluorene	"	2.15	0.0198	0.0198	"	"	ND	"	87.0%	(27-124)	1.04%	"	"	
Indeno (1,2,3-cd) pyrene	"	1.59	0.00990	0.00990	"	"	ND	"	64.3%	(0-135)	17.8%	"	"	
Naphthalene	"	1.71	0.0198	0.0198	"	"	0.0374	"	67.7%	(30-126)	2.91%	"	"	
Phenanthrene	"	2.39	0.0198	0.0198	"	"	0.0299	"	95.3%	(34-126)	10.4%	"	"	
Pyrene	"	2.00	0.0198	0.0198	"	"	0.0535	"	78.8%	(14-168)	8.96%	"	"	

Surrogate(s): Fluorene-d10

Recovery: 90.1%

Limits: 25-125% "

11/25/08 15:36

Pyrene-d10

93.4%

23-150% "

"

Benzo (a) pyrene-d12

79.9%

10-125% "

"

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name:

Portland Harbor

Project Number:

36238

Project Manager:

Jennifer Shackelford

Report Created:

12/12/08 15:28

Notes and Definitions

Report Specific Notes:

- J - Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.
- RL1 - Reporting limit raised due to sample matrix effects.

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

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244
11922 E. First Ave. Spokane, WA 99206-5302
9405 SW Nimbus Ave. Beaverton, OR 97008-7145
2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119

425-420-9200 FAX 420-9210
509-924-9200 FAX 924-9290
503-906-9200 FAX 906-9710
907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #: **PRK0762**

CLIENT: City of Portland		INVOICE TO: Charles Lytle		TURNAROUND REQUEST in Business Days * Organic & Inorganic Analyses <input checked="" type="checkbox"/> 7 <input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> <1 STD. Petroleum Hydrocarbon Analyses <input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> <1 STD. <input type="checkbox"/> OTHER Specify: * Turnaround Requests less than standard may incur Rush Charges.					
REPORT TO: Jennifer Shackelford		P.O. NUMBER: 36238							
PHONE: FAX:		PRESERVATIVE							
PROJECT NAME: Portland Harbor		REQUESTED ANALYSES							
PROJECT NUMBER:									
SAMPLED BY: Stormwater									
CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	PCB Congeners (*)	PAHs (*)	PAHs + Phthalates (*)	UIC (*)	MATRIX (W, S, O)	# OF CONT.	LOCATION/ COMMENTS	TA WO ID
1 FO 081408	11/20/08 0932	X	X			W	2		
2 FO 081409	0854	X	X			W	2		
3 FO 081410	0911	X	X			W	2		
4 FO 081411	0941	X	X			W	2		
5 FO 081412	0956	X	X			W	2		
6 FO 081413	1006	X	X			W	2		
7 FO 081414	0000	X	X			W	2		
8									
9									
10									
RELEASED BY: Kristen Whit		DATE: 11/20/08		RECEIVED BY: Bob F		DATE: 11/20/08			
PRINT NAME: Kristen Whit		FIRM: City of Portland		PRINT NAME: Bob F		FIRM: TAP			
RELEASED BY: Bob F		DATE: 11/20/08		RECEIVED BY: Jim M		DATE: 11/20/08			
PRINT NAME: Bob F		FIRM: TAP		PRINT NAME: Jim M		FIRM: TAP			
ADDITIONAL REMARKS:		DATE: 11/20/08		DATE: 11/20/08		TIME: 15:15			
		TIME: 18:10		TIME: 18:10		TIME: 15:15			

(*) Low-level RLs as per UIC projects. Thanks.
(**) PCB congeners to PACE. Thanks

TestAmerica Sample Receipt Checklist

Cooler ID(s):

Received by:

Unpacked by:

Logged-in by:

Work Order No.

(section A)

(section B)

Date:

Date:

Date:

Client:

Time:

Initials:

Initials:

Project:

Temperature out of range:

Initials:

Digi #1

Digi #2

Temperature Blank:

Not enough Ice
No Ice
Ice Melted
W/in 4 Hours
Other:

***ESI Clients (see Section C)

Cooler Temperature (IR): °C plastic (glass) NA (oil/air samples, ESI client)

A

Custody Seals: (#)

Signature: Y N Dated:

None

Container Type:

#Cooler(s)

#Box(s)

None (#Other:)

Coolant Type:

Gel Ice

Loose Ice

None

Packing Material:

Bubble Bags

Styrofoam Cubbies

Peanuts

None (#Other:)

Received from:

TA Courier

Envoy

UPS

Fed Ex

Client

TDP

DHL

SDS

Mid-Valley

GS/TA

GS/Envoy

Other:

B

Sample Status:
(If N circled, see NOD)

General:

Intact?

Y N

Containers Match COC?

Y N

none given

IDs Match COC?

Y N

For Analyses Requested:

Cyanide Checked?

Y N

NA

Correct Type & Preservation?

Y N

Adequate Volume?

Y N

Within Hold Time?

Y N

Volatiles/ Oil Quality:

VOAs/ Syringes free of Headspace?

Y N

NA

TB on COC? not provided

Y N

NA

Metals:

HNO3 Preserved?

Y N

NA

Dissolved Metals Filtered?

Y N

NA

C

***ESI Clients Only:

Temperature Blank: °C not provided Digi: # 1 #2

All preserved bottles checked Y N NA (voas/soils/all unp.)

All preserved accordingly? Y N (see NOD) NA (voas/soils/all unp.)

FED EX/ UPS: Was the tracking paper keepable? YES NO

If circled NO, what is the Tracking number?

FED EX Goldstreak UPS DHL Other:

Project Managers:

Comments:

PM Reviewed: (Initial/Date)

Report Prepared for:

Howard Holmes
Test America
9405 SW Nimbus Avenue
Beaverton OR 97008

**REPORT OF
LABORATORY
ANALYSIS
FOR PCBs**

Report Prepared Date:

December 22, 2008

Report Information:

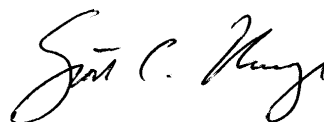
Pace Project #: 1085193
Sample Receipt Date: 11/25/2008
Client Project #: PRK0762
Client Sub PO #: N/A
State Cert #: MN200001-005

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 and prepared by:



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



Report of Laboratory Analysis

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.

DISCUSSION

This report presents the results from the analyses performed on seven samples submitted by a representative of Test America - Portland. The samples were analyzed for the presence or absence of polychlorinated biphenyl (PCB) congeners using USEPA Method 1668A. Reporting limits were set to approximately 0.5 parts-per-trillion and were adjusted for sample volume.

The isotopically-labeled PCB internal standards in the sample extracts were recovered at 52-145%. 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 isotope dilution, 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 a low level of PCB congener #11. This analyte was not present in the field samples. This indicates that the analytical process did not introduce significant levels of PCB congeners to the sample extracts.

Laboratory spike samples were also prepared with the sample batch using reference material that had been fortified with native standards. The results show that the spiked native compounds in the lab spikes were generally recovered at 101-116% with relative percent differences of 0.0-13.8%. Congener #209 in the LCSD was recovered at an elevated level. However, since the samples did not contain this analyte, these results indicate high degrees of accuracy and precision for these determinations. Matrix spikes were not prepared with the sample set.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Appendix A

Sample Management

SUBCONTRACT ORDER

TestAmerica Portland

PRK0762

1154

1085193

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:
Receipt Temperature: °C Ice: Y / N

Analysis	Units	Due	Expires	Comments
Sample ID: PRK0762-01	Water		Sampled: 11/20/08 09:32	001
1668 Coplanar PCBs - SUB	ug/l	12/08/08	05/19/09 09:32	***209 Congeners*** to Pace
Containers Supplied: 1L Amber - Unpres. (B)				
Sample ID: PRK0762-02	Water		Sampled: 11/20/08 08:54	002
1668 Coplanar PCBs - SUB	ug/l	12/08/08	05/19/09 08:54	***209 Congeners*** to Pace
Containers Supplied: 1L Amber - Unpres. (B)				
Sample ID: PRK0762-03	Water		Sampled: 11/20/08 09:11	003
1668 Coplanar PCBs - SUB	ug/l	12/08/08	05/19/09 09:11	***209 Congeners*** to Pace
Containers Supplied: 1L Amber - Unpres. (B)				
Sample ID: PRK0762-04	Water		Sampled: 11/20/08 09:41	004
1668 Coplanar PCBs - SUB	ug/l	12/08/08	05/19/09 09:41	***209 Congeners*** to Pace
Containers Supplied: 1L Amber - Unpres. (B)				
Sample ID: PRK0762-05	Water		Sampled: 11/20/08 09:56	005
1668 Coplanar PCBs - SUB	ug/l	12/08/08	05/19/09 09:56	***209 Congeners*** to Pace
Containers Supplied: 1L Amber - Unpres. (B)				
Sample ID: PRK0762-06	Water		Sampled: 11/20/08 10:06	006
1668 Coplanar PCBs - SUB	ug/l	12/08/08	05/19/09 10:06	***209 Congeners*** to Pace
Containers Supplied: 1L Amber - Unpres. (B)				

Amica Morgan 11/24/08
Released By Date/Time

Mendy Esmy Pace 11/28/08 12:30 T-26
Received By Date/Time

SUBCONTRACT ORDER

TestAmerica Portland

PRK0762

1085193

Analysis	Units	Due	Expires	Comments
<hr/>				
Sample ID: PRK0762-07	Water	Sampled: 11/20/08 00:00		
1668 Coplanar PCBs - SUB	ug/l	12/08/08	05/19/09 00:00	***209 Congeners*** to Pace
<i>Containers Supplied:</i>				
1L Amber - Unpres. (B)				

Sample Condition Upon Receipt

Pace Analytical

Client Name: Test America

Project # 1085193

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

Tracking #: 979687117152

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, 179425

Type of Ice: Wet Blue None

☐ Samples on ice, cooling process has begun

Cooler Temperature 2.10

Biological Tissue is Frozen: Yes No

Temp should be above freezing to 6°C

Comments:

Date and Initials of person examining contents: ME 11-25-08

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

Date: 11/25/08

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

Report No.....1085193_1668A

Page 6 of 66

F-ALLC003rev.5, 5Aug2008

Appendix B

Sample Analysis Summary

Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PRK0762-05		
Lab Sample ID	1085193005		
Filename	P81218A_12		
Injected By	SMT		
Total Amount Extracted	1030 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	11/20/2008
ICAL ID	P81218A03	Received	11/25/2008
CCal Filename(s)	P81218A_02	Extracted	12/02/2008
Method Blank ID	BLANK-18405	Analyzed	12/18/2008 15:45

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	7.157	2.96	2.0	1.32	66
13C-4-MoCB	3	10.213	3.02	2.0	1.47	73
13C-2,2'-DiCB	4	10.548	1.60	2.0	1.33	67
13C-4,4'-DiCB	15	18.431	1.53	2.0	1.68	84
13C-2,2',6-TrCB	19	14.801	1.09	2.0	1.55	77
13C-3,4,4'-TrCB	37	26.711	1.04	2.0	1.86	93
13C-2,2',6,6'-TeCB	54	18.729	0.82	2.0	1.52	76
13C-3,4,4',5-TeCB	81	34.055	0.78	2.0	1.91	95
13C-3,3',4,4'-TeCB	77	34.642	0.79	2.0	1.89	95
13C-2,2',4,6,6'-PeCB	104	25.285	1.61	2.0	1.57	79
13C-2,3,3',4,4'-PeCB	105	38.281	1.59	2.0	1.86	93
13C-2,3,4,4',5-PeCB	114	37.627	1.55	2.0	1.82	91
13C-2,3',4,4',5-PeCB	118	37.091	1.59	2.0	1.86	93
13C-2,3',4,4',5'-PeCB	123	36.755	1.55	2.0	1.89	95
13C-3,3',4,4',5-PeCB	126	41.501	1.55	2.0	1.75	88
13C-2,2',4,4',6,6'-HxCB	155	31.590	1.28	2.0	1.75	88
13C-HxCB (156/157)	156/157	44.570	1.26	4.0	3.56	89
13C-2,3',4,4',5,5'-HxCB	167	43.413	1.28	2.0	1.82	91
13C-3,3',4,4',5,5'-HxCB	169	47.890	1.30	2.0	1.66	83
13C-2,2',3,4',5,6,6'-HpCB	188	37.594	1.07	2.0	2.28	114
13C-2,3,3',4,4',5,5'-HpCB	189	50.424	1.06	2.0	2.12	106
13C-2,2',3,3',5,5',6,6'-OxCB	202	43.111	0.90	2.0	2.11	105
13C-2,3,3',4,4',5,5',6-OxCB	205	52.989	0.89	2.0	1.73	86
13C-2,2',3,3',4,4',5,5',6-NoCB	206	54.713	0.79	2.0	1.68	84
13C-2,2',3,3',4,4',5,5',6-NoCB	208	49.885	0.81	2.0	1.80	90
13C--DeCB	209	56.308	0.69	2.0	1.59	80
Cleanup Standards						
13C-2,4,4'-TrCB	28	22.116	1.06	2.0	1.89	94
13C-2,3,3',5,5'-PeCB	111	34.726	1.60	2.0	1.87	94
13C-2,2',3,3',5,5',6-HpCB	178	40.763	1.07	2.0	1.89	95
Recovery Standards						
13C-2,5-DiCB	9	13.328	1.60	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	24.262	0.80	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	31.842	1.60	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	40.293	1.27	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	52.514	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
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P = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

ND = Not Detected
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REPORT OF LABORATORY ANALYSIS

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRK0762-05
Lab Sample ID 1085193005
Filename P81218A_12

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.485
2		---	---	ND	---	0.485
3		---	---	ND	---	0.485
4		---	---	ND	---	0.485
5		---	---	ND	---	0.485
6		---	---	ND	---	0.485
7		---	---	ND	---	0.485
8		---	---	ND	---	0.485
9		---	---	ND	---	0.485
10		---	---	ND	---	0.485
11		---	---	ND	---	0.581
12	12/13	---	---	ND	---	0.485
13	12/13	---	---	ND	---	0.485
14		---	---	ND	---	0.485
15		---	---	ND	---	0.485
16		---	---	ND	---	0.485
17		---	---	ND	---	0.485
18	18/30	---	---	ND	---	0.485
19		---	---	ND	---	0.485
20	20/28	---	---	ND	---	0.581
21	21/33	---	---	ND	---	0.485
22		---	---	ND	---	0.485
23		---	---	ND	---	0.485
24		---	---	ND	---	0.485
25		---	---	ND	---	0.485
26	26/29	---	---	ND	---	0.485
27		---	---	ND	---	0.485
28	20/28	---	---	ND	---	0.581
29	26/29	---	---	ND	---	0.485
30	18/30	---	---	ND	---	0.485
31		---	---	ND	---	0.485
32		---	---	ND	---	0.485
33	21/33	---	---	ND	---	0.485
34		---	---	ND	---	0.485
35		---	---	ND	---	0.485
36		---	---	ND	---	0.485
37		---	---	ND	---	0.485
38		---	---	ND	---	0.485
39		---	---	ND	---	0.485
40	40/41/71	---	---	ND	---	0.485
41	40/41/71	---	---	ND	---	0.485
42		---	---	ND	---	0.485
43		---	---	ND	---	0.485
44	44/47/65	---	---	ND	---	0.581
45	45/51	---	---	ND	---	0.485
46		---	---	ND	---	0.485
47	44/47/65	---	---	ND	---	0.581
48		---	---	ND	---	0.485

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
P = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

ND = Not Detected
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REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PRK0762-05
Lab Sample ID 1085193005
Filename P81218A_12

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69	---	---	ND	---	0.485
50	50/53	---	---	ND	---	0.485
51	45/51	---	---	ND	---	0.485
52		---	---	ND	---	0.485
53	50/53	---	---	ND	---	0.485
54		---	---	ND	---	0.485
55		---	---	ND	---	0.485
56		---	---	ND	---	0.485
57		---	---	ND	---	0.485
58		---	---	ND	---	0.485
59	59/62/75	---	---	ND	---	0.485
60		---	---	ND	---	0.485
61	61/70/74/76	---	---	ND	---	0.485
62	59/62/75	---	---	ND	---	0.485
63		---	---	ND	---	0.485
64		---	---	ND	---	0.485
65	44/47/65	---	---	ND	---	0.581
66		---	---	ND	---	0.485
67		---	---	ND	---	0.485
68		---	---	ND	---	0.485
69	49/69	---	---	ND	---	0.485
70	61/70/74/76	---	---	ND	---	0.485
71	40/41/71	---	---	ND	---	0.485
72		---	---	ND	---	0.485
73		---	---	ND	---	0.485
74	61/70/74/76	---	---	ND	---	0.485
75	59/62/75	---	---	ND	---	0.485
76	61/70/74/76	---	---	ND	---	0.485
77		---	---	ND	---	0.485
78		---	---	ND	---	0.485
79		---	---	ND	---	0.485
80		---	---	ND	---	0.485
81		---	---	ND	---	0.485
82		---	---	ND	---	0.485
83		---	---	ND	---	0.485
84		---	---	ND	---	0.485
85	85/116/117	---	---	ND	---	0.581
86	86/87/97/108/119/125	---	---	ND	---	0.969
87	86/87/97/108/119/125	---	---	ND	---	0.969
88	88/91	---	---	ND	---	0.485
89		---	---	ND	---	0.485
90	90/101/113	---	---	ND	---	0.485
91	88/91	---	---	ND	---	0.485
92		---	---	ND	---	0.485
93	93/98/100/102	---	---	ND	---	0.727
94		---	---	ND	---	0.485
95		---	---	ND	---	0.485
96		---	---	ND	---	0.485

Conc = Concentration
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REPORT OF LABORATORY ANALYSIS

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Pace AnalyticalTM

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 PRK0762-05
Lab Sample ID 1085193005
Filename P81218A_12

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
97	86/87/97/108/119/125	---	---	ND	---	0.969
98	93/98/100/102	---	---	ND	---	0.727
99		---	---	ND	---	0.485
100	93/98/100/102	---	---	ND	---	0.727
101	90/101/113	---	---	ND	---	0.485
102	93/98/100/102	---	---	ND	---	0.727
103		---	---	ND	---	0.485
104		---	---	ND	---	0.485
105		---	---	ND	---	0.485
106		---	---	ND	---	0.485
107	107/124	---	---	ND	---	0.485
108	86/87/97/108/119/125	---	---	ND	---	0.969
109		---	---	ND	---	0.485
110	110/115	33.938	1.55	0.617	---	0.485
111		---	---	ND	---	0.485
112		---	---	ND	---	0.485
113	90/101/113	---	---	ND	---	0.485
114		---	---	ND	---	0.485
115	110/115	33.938	1.55	(0.617)	---	0.485
116	85/116/117	---	---	ND	---	0.581
117	85/116/117	---	---	ND	---	0.581
118		37.124	1.54	0.542	---	0.485
119	86/87/97/108/119/125	---	---	ND	---	0.969
120		---	---	ND	---	0.485
121		---	---	ND	---	0.485
122		---	---	ND	---	0.485
123		---	---	ND	---	0.485
124	107/124	---	---	ND	---	0.485
125	86/87/97/108/119/125	---	---	ND	---	0.969
126		---	---	ND	---	0.485
127		---	---	ND	---	0.485
128	128/166	---	---	ND	---	0.969
129	129/138/163	40.327	1.27	0.552	---	0.485
130		---	---	ND	---	0.485
131		---	---	ND	---	0.485
132		---	---	ND	---	0.485
133		---	---	ND	---	0.485
134	134/143	---	---	ND	---	0.485
135	135/151	---	---	ND	---	0.494
136		---	---	ND	---	0.485
137		---	---	ND	---	0.485
138	129/138/163	40.327	1.27	(0.552)	---	0.485
139	139/140	---	---	ND	---	0.485
140	139/140	---	---	ND	---	0.485
141		---	---	ND	---	0.485
142		---	---	ND	---	0.485
143	134/143	---	---	ND	---	0.485
144		---	---	ND	---	0.485

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Pace AnalyticalTM

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 PRK0762-05
Lab Sample ID 1085193005
Filename P81218A_12

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
145		---	---	ND	---	0.485
146		---	---	ND	---	0.485
147	147/149	---	---	ND	---	0.485
148		---	---	ND	---	0.485
149	147/149	---	---	ND	---	0.485
150		---	---	ND	---	0.485
151	135/151	---	---	ND	---	0.494
152		---	---	ND	---	0.485
153	153/168	---	---	ND	---	0.581
154		---	---	ND	---	0.485
155		---	---	ND	---	0.485
156	156/157	---	---	ND	---	0.969
157	156/157	---	---	ND	---	0.969
158		---	---	ND	---	0.485
159		---	---	ND	---	0.485
160		---	---	ND	---	0.485
161		---	---	ND	---	0.485
162		---	---	ND	---	0.485
163	129/138/163	40.327	1.27	(0.552)	---	0.485
164		---	---	ND	---	0.485
165		---	---	ND	---	0.485
166	128/166	---	---	ND	---	0.969
167		---	---	ND	---	0.485
168	153/168	---	---	ND	---	0.581
169		---	---	ND	---	0.485
170		---	---	ND	---	0.485
171	171/173	---	---	ND	---	0.485
172		---	---	ND	---	0.485
173	171/173	---	---	ND	---	0.485
174		---	---	ND	---	0.485
175		---	---	ND	---	0.485
176		---	---	ND	---	0.485
177		---	---	ND	---	0.485
178		---	---	ND	---	0.485
179		---	---	ND	---	0.485
180	180/193	---	---	ND	---	0.485
181		---	---	ND	---	0.485
182		---	---	ND	---	0.485
183	183/185	---	---	ND	---	0.485
184		---	---	ND	---	0.485
185	183/185	---	---	ND	---	0.485
186		---	---	ND	---	0.485
187		---	---	ND	---	0.485
188		---	---	ND	---	0.485
189		---	---	ND	---	0.485
190		---	---	ND	---	0.485
191		---	---	ND	---	0.485
192		---	---	ND	---	0.485

Conc = Concentration
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRK0762-05
Lab Sample ID 1085193005
Filename P81218A_12

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193	---	---	ND	---	0.485
194		---	---	ND	---	0.485
195		---	---	ND	---	0.485
196		---	---	ND	---	0.678
197	197/200	---	---	ND	---	2.42
198	198/199	---	---	ND	---	0.485
199	198/199	---	---	ND	---	0.485
200	197/200	---	---	ND	---	2.42
201		---	---	ND	---	0.485
202		---	---	ND	---	0.485
203		---	---	ND	---	0.485
204		---	---	ND	---	0.485
205		---	---	ND	---	0.485
206		---	---	ND	---	0.485
207		---	---	ND	---	0.485
208		---	---	ND	---	0.485
209		---	---	ND	---	0.485

Conc = Concentration
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRK0762-05
Lab Sample ID 1085193005
Filename P81218A_12

Congener Group	Concentration ng/L
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	ND
Total Trichloro Biphenyls	ND
Total Tetrachloro Biphenyls	ND
Total Pentachloro Biphenyls	1.16
Total Hexachloro Biphenyls	0.552
Total Heptachloro Biphenyls	ND
Total Octachloro Biphenyls	ND
Total Nonachloro Biphenyls	ND
Decachloro Biphenyls	ND
Total PCBs	1.71

ND = Not Detected

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PRK0762-06		
Lab Sample ID	1085193006		
Filename	P81218A_13		
Injected By	SMT		
Total Amount Extracted	991 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	11/20/2008
ICAL ID	P81218A03	Received	11/25/2008
CCal Filename(s)	P81218A_02	Extracted	12/02/2008
Method Blank ID	BLANK-18405	Analyzed	12/18/2008 16:46

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	7.145	3.01	2.0	1.42	71
13C-4-MoCB	3	10.201	3.19	2.0	1.55	78
13C-2,2'-DiCB	4	10.524	1.59	2.0	1.40	70
13C-4,4'-DiCB	15	18.409	1.53	2.0	1.75	88
13C-2,2',6-TrCB	19	14.778	1.08	2.0	1.58	79
13C-3,4,4'-TrCB	37	26.684	1.05	2.0	1.98	99
13C-2,2',6,6'-TeCB	54	18.701	0.81	2.0	1.58	79
13C-3,4,4',5-TeCB	81	34.014	0.78	2.0	2.08	104
13C-3,3',4,4'-TeCB	77	34.601	0.79	2.0	2.09	105
13C-2,2',4,6,6'-PeCB	104	25.276	1.65	2.0	1.59	80
13C-2,3,3',4,4'-PeCB	105	38.240	1.57	2.0	2.00	100
13C-2,3,4,4',5-PeCB	114	37.586	1.54	2.0	1.94	97
13C-2,3',4,4',5-PeCB	118	37.049	1.56	2.0	1.97	98
13C-2,3',4,4',5'-PeCB	123	36.714	1.59	2.0	1.96	98
13C-3,3',4,4',5-PeCB	126	41.460	1.55	2.0	1.97	99
13C-2,2',4,4',6,6'-HxCB	155	31.565	1.27	2.0	1.66	83
13C-HxCB (156/157)	156/157	44.530	1.27	4.0	3.85	96
13C-2,3',4,4',5,5'-HxCB	167	43.372	1.26	2.0	1.97	99
13C-3,3',4,4',5,5'-HxCB	169	47.834	1.25	2.0	1.88	94
13C-2,2',3,4',5,6,6'-HpCB	188	37.569	1.05	2.0	2.70	135
13C-2,3,3',4,4',5,5'-HpCB	189	50.371	1.04	2.0	2.82	141
13C-2,2',3,3',5,5',6,6'-OxCB	202	43.071	0.93	2.0	2.57	128
13C-2,3,3',4,4',5,5',6-OxCB	205	52.936	0.90	2.0	2.13	107
13C-2,2',3,3',4,4',5,5',6-NoCB	206	54.660	0.80	2.0	2.00	100
13C-2,2',3,3',4,4',5,5',6-NoCB	208	49.832	0.80	2.0	2.37	118
13C--DeCB	209	56.256	0.73	2.0	1.91	95
Cleanup Standards						
13C-2,4,4'-TrCB	28	22.106	1.08	2.0	2.01	100
13C-2,3,3',5,5'-PeCB	111	34.701	1.57	2.0	1.96	98
13C-2,2',3,3',5,5',6-HpCB	178	40.722	1.06	2.0	1.99	100
Recovery Standards						
13C-2,5-DiCB	9	13.316	1.60	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	24.236	0.80	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	31.816	1.59	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	40.253	1.26	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	52.462	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
P = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
! = Outside QC Limits
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REPORT OF LABORATORY ANALYSIS

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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 PRK0762-06
Lab Sample ID 1085193006
Filename P81218A_13

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.505
2		---	---	ND	---	0.505
3		---	---	ND	---	0.505
4		---	---	ND	---	0.505
5		---	---	ND	---	0.505
6		---	---	ND	---	0.505
7		---	---	ND	---	0.505
8		---	---	ND	---	0.505
9		---	---	ND	---	0.505
10		---	---	ND	---	0.505
11		---	---	ND	---	0.606
12	12/13	---	---	ND	---	0.505
13	12/13	---	---	ND	---	0.505
14		---	---	ND	---	0.505
15		---	---	ND	---	0.505
16		---	---	ND	---	0.505
17		---	---	ND	---	0.505
18	18/30	---	---	ND	---	0.505
19		---	---	ND	---	0.505
20	20/28	---	---	ND	---	0.606
21	21/33	---	---	ND	---	0.505
22		---	---	ND	---	0.505
23		---	---	ND	---	0.505
24		---	---	ND	---	0.505
25		---	---	ND	---	0.505
26	26/29	---	---	ND	---	0.505
27		---	---	ND	---	0.505
28	20/28	---	---	ND	---	0.606
29	26/29	---	---	ND	---	0.505
30	18/30	---	---	ND	---	0.505
31		---	---	ND	---	0.505
32		---	---	ND	---	0.505
33	21/33	---	---	ND	---	0.505
34		---	---	ND	---	0.505
35		---	---	ND	---	0.505
36		---	---	ND	---	0.505
37		---	---	ND	---	0.505
38		---	---	ND	---	0.505
39		---	---	ND	---	0.505
40	40/41/71	---	---	ND	---	0.505
41	40/41/71	---	---	ND	---	0.505
42		---	---	ND	---	0.505
43		---	---	ND	---	0.505
44	44/47/65	---	---	ND	---	0.606
45	45/51	---	---	ND	---	0.505
46		---	---	ND	---	0.505
47	44/47/65	---	---	ND	---	0.606
48		---	---	ND	---	0.505

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
P = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

ND = Not Detected
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RT = Retention Time
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRK0762-06
Lab Sample ID 1085193006
Filename P81218A_13

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69	---	---	ND	---	0.505
50	50/53	---	---	ND	---	0.505
51	45/51	---	---	ND	---	0.505
52		---	---	ND	---	0.505
53	50/53	---	---	ND	---	0.505
54		---	---	ND	---	0.505
55		---	---	ND	---	0.505
56		---	---	ND	---	0.505
57		---	---	ND	---	0.505
58		---	---	ND	---	0.505
59	59/62/75	---	---	ND	---	0.505
60		---	---	ND	---	0.505
61	61/70/74/76	---	---	ND	---	0.505
62	59/62/75	---	---	ND	---	0.505
63		---	---	ND	---	0.505
64		---	---	ND	---	0.505
65	44/47/65	---	---	ND	---	0.606
66		---	---	ND	---	0.505
67		---	---	ND	---	0.505
68		---	---	ND	---	0.505
69	49/69	---	---	ND	---	0.505
70	61/70/74/76	---	---	ND	---	0.505
71	40/41/71	---	---	ND	---	0.505
72		---	---	ND	---	0.505
73		---	---	ND	---	0.505
74	61/70/74/76	---	---	ND	---	0.505
75	59/62/75	---	---	ND	---	0.505
76	61/70/74/76	---	---	ND	---	0.505
77		---	---	ND	---	0.505
78		---	---	ND	---	0.505
79		---	---	ND	---	0.505
80		---	---	ND	---	0.505
81		---	---	ND	---	0.505
82		---	---	ND	---	0.505
83		---	---	ND	---	0.505
84		---	---	ND	---	0.505
85	85/116/117	---	---	ND	---	0.606
86	86/87/97/108/119/125	---	---	ND	---	1.01
87	86/87/97/108/119/125	---	---	ND	---	1.01
88	88/91	---	---	ND	---	0.505
89		---	---	ND	---	0.505
90	90/101/113	---	---	ND	---	0.505
91	88/91	---	---	ND	---	0.505
92		---	---	ND	---	0.505
93	93/98/100/102	---	---	ND	---	0.757
94		---	---	ND	---	0.505
95		---	---	ND	---	0.505
96		---	---	ND	---	0.505

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
P = Recovery outside of Method 1668A control limits
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Pace AnalyticalTM

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 PRK0762-06
Lab Sample ID 1085193006
Filename P81218A_13

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
97	86/87/97/108/119/125	---	---	ND	---	1.01
98	93/98/100/102	---	---	ND	---	0.757
99		---	---	ND	---	0.505
100	93/98/100/102	---	---	ND	---	0.757
101	90/101/113	---	---	ND	---	0.505
102	93/98/100/102	---	---	ND	---	0.757
103		---	---	ND	---	0.505
104		---	---	ND	---	0.505
105		---	---	ND	---	0.505
106		---	---	ND	---	0.505
107	107/124	---	---	ND	---	0.505
108	86/87/97/108/119/125	---	---	ND	---	1.01
109		---	---	ND	---	0.505
110	110/115	---	---	ND	---	0.505
111		---	---	ND	---	0.505
112		---	---	ND	---	0.505
113	90/101/113	---	---	ND	---	0.505
114		---	---	ND	---	0.505
115	110/115	---	---	ND	---	0.505
116	85/116/117	---	---	ND	---	0.606
117	85/116/117	---	---	ND	---	0.606
118		---	---	ND	---	0.505
119	86/87/97/108/119/125	---	---	ND	---	1.01
120		---	---	ND	---	0.505
121		---	---	ND	---	0.505
122		---	---	ND	---	0.505
123		---	---	ND	---	0.505
124	107/124	---	---	ND	---	0.505
125	86/87/97/108/119/125	---	---	ND	---	1.01
126		---	---	ND	---	0.505
127		---	---	ND	---	0.505
128	128/166	---	---	ND	---	1.01
129	129/138/163	---	---	ND	---	0.505
130		---	---	ND	---	0.505
131		---	---	ND	---	0.505
132		---	---	ND	---	0.505
133		---	---	ND	---	0.505
134	134/143	---	---	ND	---	0.505
135	135/151	---	---	ND	---	0.515
136		---	---	ND	---	0.505
137		---	---	ND	---	0.505
138	129/138/163	---	---	ND	---	0.505
139	139/140	---	---	ND	---	0.505
140	139/140	---	---	ND	---	0.505
141		---	---	ND	---	0.505
142		---	---	ND	---	0.505
143	134/143	---	---	ND	---	0.505
144		---	---	ND	---	0.505

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 PRK0762-06
Lab Sample ID 1085193006
Filename P81218A_13

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
145		---	---	ND	---	0.505
146		---	---	ND	---	0.505
147	147/149	---	---	ND	---	0.505
148		---	---	ND	---	0.505
149	147/149	---	---	ND	---	0.505
150		---	---	ND	---	0.505
151	135/151	---	---	ND	---	0.515
152		---	---	ND	---	0.505
153	153/168	---	---	ND	---	0.606
154		---	---	ND	---	0.505
155		---	---	ND	---	0.505
156	156/157	---	---	ND	---	1.01
157	156/157	---	---	ND	---	1.01
158		---	---	ND	---	0.505
159		---	---	ND	---	0.505
160		---	---	ND	---	0.505
161		---	---	ND	---	0.505
162		---	---	ND	---	0.505
163	129/138/163	---	---	ND	---	0.505
164		---	---	ND	---	0.505
165		---	---	ND	---	0.505
166	128/166	---	---	ND	---	1.01
167		---	---	ND	---	0.505
168	153/168	---	---	ND	---	0.606
169		---	---	ND	---	0.505
170		---	---	ND	---	0.505
171	171/173	---	---	ND	---	0.505
172		---	---	ND	---	0.505
173	171/173	---	---	ND	---	0.505
174		---	---	ND	---	0.505
175		---	---	ND	---	0.505
176		---	---	ND	---	0.505
177		---	---	ND	---	0.505
178		---	---	ND	---	0.505
179		---	---	ND	---	0.505
180	180/193	---	---	ND	---	0.505
181		---	---	ND	---	0.505
182		---	---	ND	---	0.505
183	183/185	---	---	ND	---	0.505
184		---	---	ND	---	0.505
185	183/185	---	---	ND	---	0.505
186		---	---	ND	---	0.505
187		---	---	ND	---	0.505
188		---	---	ND	---	0.505
189		---	---	ND	---	0.505
190		---	---	ND	---	0.505
191		---	---	ND	---	0.505
192		---	---	ND	---	0.505

Conc = Concentration
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRK0762-06
Lab Sample ID 1085193006
Filename P81218A_13

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193	---	---	ND	---	0.505
194		---	---	ND	---	0.505
195		---	---	ND	---	0.505
196		---	---	ND	---	0.707
197	197/200	---	---	ND	---	2.52
198	198/199	---	---	ND	---	0.505
199	198/199	---	---	ND	---	0.505
200	197/200	---	---	ND	---	2.52
201		---	---	ND	---	0.505
202		---	---	ND	---	0.505
203		---	---	ND	---	0.505
204		---	---	ND	---	0.505
205		---	---	ND	---	0.505
206		---	---	ND	---	0.505
207		---	---	ND	---	0.505
208		---	---	ND	---	0.505
209		---	---	ND	---	0.505

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
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

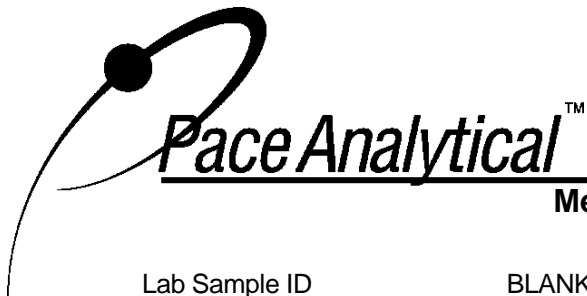
Client Sample ID PRK0762-06
Lab Sample ID 1085193006
Filename P81218A_13

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

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Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID	BLANK-18405		
Filename	P81218A_07		
Injected By	SMT	Matrix	Water
Total Amount Extracted	955 mL	Extracted	12/02/2008
ICAL ID	P81218A03	Analyzed	12/18/2008 10:37
CCal Filename(s)	P81218A_02	Dilution	NA

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
------------	-------	----	-------	------------	------------	------------

Labeled Analytes

13C-2-MoCB	1	7.121	3.21	2.0	0.524	26
13C-4-MoCB	3	10.153	3.07	2.0	0.636	32
13C-2,2'-DiCB	4	10.489	1.61	2.0	0.594	30
13C-4,4'-DiCB	15	18.362	1.57	2.0	0.851	43
13C-2,2',6-TrCB	19	14.731	1.07	2.0	0.690	34
13C-3,4,4'-TrCB	37	26.634	1.07	2.0	1.06	53
13C-2,2',6,6'-TeCB	54	18.669	0.81	2.0	0.725	36
13C-3,4,4',5-TeCB	81	33.962	0.78	2.0	1.13	56
13C-3,3',4,4'-TeCB	77	34.549	0.79	2.0	1.14	57
13C-2,2',4,6,6'-PeCB	104	25.226	1.63	2.0	0.903	45
13C-2,3,3',4,4'-PeCB	105	38.188	1.56	2.0	1.11	56
13C-2,3,4,4',5-PeCB	114	37.534	1.60	2.0	1.10	55
13C-2,3',4,4',5-PeCB	118	36.998	1.56	2.0	1.12	56
13C-2,3',4,4',5'-PeCB	123	36.662	1.57	2.0	1.11	56
13C-3,3',4,4',5-PeCB	126	41.391	1.56	2.0	1.14	57
13C-2,2',4,4',6,6'-HxCB	155	31.514	1.28	2.0	0.981	49
13C-HxCB (156/157)	156/157	44.460	1.24	4.0	2.31	58
13C-2,3',4,4',5,5'-HxCB	167	43.320	1.26	2.0	1.16	58
13C-3,3',4,4',5,5'-HxCB	169	47.780	1.28	2.0	1.19	59
13C-2,2',3,4',5,6,6'-HpCB	188	37.517	1.05	2.0	1.10	55
13C-2,3,3',4,4',5,5'-HpCB	189	50.302	1.04	2.0	1.27	64
13C-2,2',3,3',5,5',6,6'-OxCB	202	43.018	0.90	2.0	1.13	57
13C-2,3,3',4,4',5,5',6-OxCB	205	52.889	0.90	2.0	1.13	56
13C-2,2',3,3',4,4',5,5',6-NoCB	206	54.613	0.78	2.0	1.14	57
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	49.785	0.80	2.0	1.11	55
13C--DeCB	209	56.208	0.72	2.0	1.10	55

Cleanup Standards

13C-2,4,4'-TrCB	28	22.056	1.04	2.0	1.57	78
13C-2,3,3',5,5'-PeCB	111	34.650	1.57	2.0	1.59	79
13C-2,2',3,3',5,5',6-HpCB	178	40.670	1.05	2.0	1.69	84

Recovery Standards

13C-2,5-DiCB	9	13.269	1.57	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	24.186	0.80	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	31.766	1.59	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	40.201	1.28	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	52.415	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
P = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

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RT = Retention Time
I = Interference
ng's = Nanograms

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID
Filename

BLANK-18405
P81218A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.524
2		---	---	ND	---	0.524
3		---	---	ND	---	0.524
4		---	---	ND	---	0.524
5		---	---	ND	---	0.524
6		---	---	ND	---	0.524
7		---	---	ND	---	0.524
8		---	---	ND	---	0.524
9		---	---	ND	---	0.524
10		---	---	ND	---	0.524
11		17.619	1.50	0.667	---	0.628
12	12/13	---	---	ND	---	0.524
13	12/13	---	---	ND	---	0.524
14		---	---	ND	---	0.524
15		---	---	ND	---	0.524
16		---	---	ND	---	0.524
17		---	---	ND	---	0.524
18	18/30	---	---	ND	---	0.524
19		---	---	ND	---	0.524
20	20/28	---	---	ND	---	0.628
21	21/33	---	---	ND	---	0.524
22		---	---	ND	---	0.524
23		---	---	ND	---	0.524
24		---	---	ND	---	0.524
25		---	---	ND	---	0.524
26	26/29	---	---	ND	---	0.524
27		---	---	ND	---	0.524
28	20/28	---	---	ND	---	0.628
29	26/29	---	---	ND	---	0.524
30	18/30	---	---	ND	---	0.524
31		---	---	ND	---	0.524
32		---	---	ND	---	0.524
33	21/33	---	---	ND	---	0.524
34		---	---	ND	---	0.524
35		---	---	ND	---	0.524
36		---	---	ND	---	0.524
37		---	---	ND	---	0.524
38		---	---	ND	---	0.524
39		---	---	ND	---	0.524
40	40/41/71	---	---	ND	---	0.524
41	40/41/71	---	---	ND	---	0.524
42		---	---	ND	---	0.524
43		---	---	ND	---	0.524
44	44/47/65	---	---	ND	---	0.628
45	45/51	---	---	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
P = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

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

REPORT OF LABORATORY ANALYSIS

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-18405
Filename P81218A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
46		---	---	ND	---	0.524
47	44/47/65	---	---	ND	---	0.628
48		---	---	ND	---	0.524
49	49/69	---	---	ND	---	0.524
50	50/53	---	---	ND	---	0.524
51	45/51	---	---	ND	---	0.524
52		---	---	ND	---	0.524
53	50/53	---	---	ND	---	0.524
54		---	---	ND	---	0.524
55		---	---	ND	---	0.524
56		---	---	ND	---	0.524
57		---	---	ND	---	0.524
58		---	---	ND	---	0.524
59	59/62/75	---	---	ND	---	0.524
60		---	---	ND	---	0.524
61	61/70/74/76	---	---	ND	---	0.524
62	59/62/75	---	---	ND	---	0.524
63		---	---	ND	---	0.524
64		---	---	ND	---	0.524
65	44/47/65	---	---	ND	---	0.628
66		---	---	ND	---	0.524
67		---	---	ND	---	0.524
68		---	---	ND	---	0.524
69	49/69	---	---	ND	---	0.524
70	61/70/74/76	---	---	ND	---	0.524
71	40/41/71	---	---	ND	---	0.524
72		---	---	ND	---	0.524
73		---	---	ND	---	0.524
74	61/70/74/76	---	---	ND	---	0.524
75	59/62/75	---	---	ND	---	0.524
76	61/70/74/76	---	---	ND	---	0.524
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		---	---	ND	---	0.524
85	85/116/117	---	---	ND	---	0.628
86	86/87/97/108/119/125	---	---	ND	---	1.05
87	86/87/97/108/119/125	---	---	ND	---	1.05
88	88/91	---	---	ND	---	0.524
89		---	---	ND	---	0.524
90	90/101/113	---	---	ND	---	0.524

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

ND = Not Detected
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*! = See Discussion
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RT = Retention Time
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REPORT OF LABORATORY ANALYSIS

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Pace AnalyticalTM

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-18405
Filename P81218A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
91	88/91	---	---	ND	---	0.524
92		---	---	ND	---	0.524
93	93/98/100/102	---	---	ND	---	0.786
94		---	---	ND	---	0.524
95		---	---	ND	---	0.524
96		---	---	ND	---	0.524
97	86/87/97/108/119/125	---	---	ND	---	1.05
98	93/98/100/102	---	---	ND	---	0.786
99		---	---	ND	---	0.524
100	93/98/100/102	---	---	ND	---	0.786
101	90/101/113	---	---	ND	---	0.524
102	93/98/100/102	---	---	ND	---	0.786
103		---	---	ND	---	0.524
104		---	---	ND	---	0.524
105		---	---	ND	---	0.524
106		---	---	ND	---	0.524
107	107/124	---	---	ND	---	0.524
108	86/87/97/108/119/125	---	---	ND	---	1.05
109		---	---	ND	---	0.524
110	110/115	---	---	ND	---	0.524
111		---	---	ND	---	0.524
112		---	---	ND	---	0.524
113	90/101/113	---	---	ND	---	0.524
114		---	---	ND	---	0.524
115	110/115	---	---	ND	---	0.524
116	85/116/117	---	---	ND	---	0.628
117	85/116/117	---	---	ND	---	0.628
118		---	---	ND	---	0.524
119	86/87/97/108/119/125	---	---	ND	---	1.05
120		---	---	ND	---	0.524
121		---	---	ND	---	0.524
122		---	---	ND	---	0.524
123		---	---	ND	---	0.524
124	107/124	---	---	ND	---	0.524
125	86/87/97/108/119/125	---	---	ND	---	1.05
126		---	---	ND	---	0.524
127		---	---	ND	---	0.524
128	128/166	---	---	ND	---	1.05
129	129/138/163	---	---	ND	---	0.524
130		---	---	ND	---	0.524
131		---	---	ND	---	0.524
132		---	---	ND	---	0.524
133		---	---	ND	---	0.524
134	134/143	---	---	ND	---	0.524
135	135/151	---	---	ND	---	0.534

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
P = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

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! = Outside QC Limits
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REPORT OF LABORATORY ANALYSIS

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID
Filename

BLANK-18405
P81218A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
136		---	---	ND	---	0.524
137		---	---	ND	---	0.524
138	129/138/163	---	---	ND	---	0.524
139	139/140	---	---	ND	---	0.524
140	139/140	---	---	ND	---	0.524
141		---	---	ND	---	0.524
142		---	---	ND	---	0.524
143	134/143	---	---	ND	---	0.524
144		---	---	ND	---	0.524
145		---	---	ND	---	0.524
146		---	---	ND	---	0.524
147	147/149	---	---	ND	---	0.524
148		---	---	ND	---	0.524
149	147/149	---	---	ND	---	0.524
150		---	---	ND	---	0.524
151	135/151	---	---	ND	---	0.534
152		---	---	ND	---	0.524
153	153/168	---	---	ND	---	0.628
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	---	---	ND	---	0.524
164		---	---	ND	---	0.524
165		---	---	ND	---	0.524
166	128/166	---	---	ND	---	1.05
167		---	---	ND	---	0.524
168	153/168	---	---	ND	---	0.628
169		---	---	ND	---	0.524
170		---	---	ND	---	0.524
171	171/173	---	---	ND	---	0.524
172		---	---	ND	---	0.524
173	171/173	---	---	ND	---	0.524
174		---	---	ND	---	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	---	---	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
P = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
*! = See Discussion
! = Outside QC Limits
RT = Retention Time
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REPORT OF LABORATORY ANALYSIS

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-18405
Filename P81218A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
181		---	---	ND	---	0.524
182		---	---	ND	---	0.524
183	183/185	---	---	ND	---	0.524
184		---	---	ND	---	0.524
185	183/185	---	---	ND	---	0.524
186		---	---	ND	---	0.524
187		---	---	ND	---	0.524
188		---	---	ND	---	0.524
189		---	---	ND	---	0.524
190		---	---	ND	---	0.524
191		---	---	ND	---	0.524
192		---	---	ND	---	0.524
193	180/193	---	---	ND	---	0.524
194		---	---	ND	---	0.524
195		---	---	ND	---	0.524
196		---	---	ND	---	0.733
197	197/200	---	---	ND	---	2.62
198	198/199	---	---	ND	---	0.524
199	198/199	---	---	ND	---	0.524
200	197/200	---	---	ND	---	2.62
201		---	---	ND	---	0.524
202		---	---	ND	---	0.524
203		---	---	ND	---	0.524
204		---	---	ND	---	0.524
205		---	---	ND	---	0.524
206		---	---	ND	---	0.524
207		---	---	ND	---	0.524
208		---	---	ND	---	0.524
209		---	---	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
P = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

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REPORT OF LABORATORY ANALYSIS

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Client Sample ID DFBLKBC
Lab Sample ID BLANK-18405
Filename P81218A_07

Congener Group	Concentration ng/L
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	0.667
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	0.667

ND = Not Detected

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID	LCS-18406	
Filename	P81218A_04	Matrix
Total Amount Extracted	965 mL	Water
ICAL ID	P81218A03	Dilution
CCal Filename(s)	P81218A_02	Extracted
Method Blank ID	BLANK-18405	Analyzed
		12/18/2008 07:35
		Injected By
		SMT

PCB Isomer	Native Analytes			Labeled Analytes		
	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recovery
1	1.0	1.13	113	2.0	0.855	43
3	1.0	1.15	115	2.0	0.955	48
4	1.0	1.07	107	2.0	0.902	45
15	1.0	1.15	115	2.0	1.09	54
19	1.0	1.03	103	2.0	1.00	50
37	1.0	1.12	112	2.0	1.28	64
54	1.0	1.06	106	2.0	0.988	49
81	1.0	1.05	105	2.0	1.36	68
77	1.0	1.05	105	2.0	1.37	69
104	1.0	1.03	103	2.0	1.17	58
105	1.0	1.06	106	2.0	1.36	68
114	1.0	1.08	108	2.0	1.34	67
118	1.0	1.11	111	2.0	1.36	68
123	1.0	1.04	104	2.0	1.36	68
126	1.0	1.03	103	2.0	1.39	70
155	1.0	1.05	105	2.0	1.20	60
156/157	2.0	2.15	108	4.0	2.76	69
167	1.0	1.13	113	2.0	1.41	70
169	1.0	1.11	111	2.0	1.43	71
188	1.0	1.02	102	2.0	1.29	65
189	1.0	1.08	108	2.0	1.50	75
202	1.0	1.02	102	2.0	1.35	67
205	1.0	1.04	104	2.0	1.35	67
206	1.0	1.01	101	2.0	1.38	69
208	1.0	1.03	103	2.0	1.31	65
209	1.0	1.04	104	2.0	1.35	67

P = 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-18407	
Filename	P81218A_05	Matrix
Total Amount Extracted	961 mL	Water
ICAL ID	P81218A03	Dilution
CCal Filename(s)	P81218A_02	Extracted
Method Blank ID	BLANK-18405	Analyzed
		12/18/2008 08:34
		Injected By
		SMT

PCB Isomer	Native Analytes			Labeled Analytes		
	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recovery
1	1.0	1.11	111	2.0	0.840	42
3	1.0	1.16	116	2.0	0.909	45
4	1.0	1.06	106	2.0	0.865	43
15	1.0	1.16	116	2.0	1.06	53
19	1.0	1.02	102	2.0	0.963	48
37	1.0	1.12	112	2.0	1.23	61
54	1.0	1.04	104	2.0	0.935	47
81	1.0	1.08	108	2.0	1.30	65
77	1.0	1.05	105	2.0	1.35	68
104	1.0	1.04	104	2.0	1.07	54
105	1.0	1.06	106	2.0	1.35	67
114	1.0	1.09	109	2.0	1.31	66
118	1.0	1.11	111	2.0	1.34	67
123	1.0	1.05	105	2.0	1.32	66
126	1.0	1.03	103	2.0	1.37	68
155	1.0	1.07	107	2.0	1.17	58
156/157	2.0	2.16	108	4.0	2.72	68
167	1.0	1.14	114	2.0	1.38	69
169	1.0	1.07	107	2.0	1.41	71
188	1.0	1.04	104	2.0	1.28	64
189	1.0	1.07	107	2.0	1.47	73
202	1.0	1.000	100	2.0	1.32	66
205	1.0	1.05	105	2.0	1.32	66
206	1.0	1.16	116	2.0	1.30	65
208	1.0	1.10	110	2.0	1.31	65
209	1.0	4.20	420 P	2.0	1.29	65

P = 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-18406
Spike 1 Filename P81218A_04

Spike 2 ID LCSD-18407
Spike 2 Filename P81218A_05

Compound	IUPAC	Spike 1 %REC	Spike 2 %REC	%RPD
2-MoCB	1	113	111	1.8
4-MoCB	3	115	116	0.9
2,2'-DiCB	4	107	106	0.9
4,4'-DiCB	15	115	116	0.9
2,2',6-TrCB	19	103	102	1.0
3,4,4'-TrCB	37	112	112	0.0
2,2',6,6'-TeCB	54	106	104	1.9
3,3',4,4'-TeCB	77	105	105	0.0
3,4,4',5-TeCB	81	105	108	2.8
2,2',4,6,6'-PeCB	104	103	104	1.0
2,3,3',4,4'-PeCB	105	106	106	0.0
2,3,4,4',5-PeCB	114	108	109	0.9
2,3',4,4',5-PeCB	118	111	111	0.0
2,3,4,4',5'-PeCB	123	104	105	1.0
3,3',4,4',5-PeCB	126	103	103	0.0
2,2',4,4',6,6'-HxCB	155	105	107	1.9
(156/157)	156/157	108	108	0.0
2,3',4,4',5,5'-HxCB	167	113	114	0.9
3,3',4,4',5,5'-HxCB	169	111	107	3.7
2,2',3,4',5,6,6'-HpCB	188	102	104	1.9
2,3,3',4,4',5,5'-HpCB	189	108	107	0.9
2,2',3,3',5,5',6,6'-OcCB	202	102	100	2.0
2,3,3',4,4',5,5',6-OcCB	205	104	105	1.0
2,2',3,3',4,4',5,5',6-NoCB	206	101	116	13.8
2,2',3,3',4,5,5',6,6'-NoCB	208	103	110	6.6
Decachlorobiphenyl	209	104	420	120.6

%REC = Percent Recovered

RPD = The difference between the two values divided by the mean value

REPORT OF LABORATORY ANALYSIS

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Event 2: December 12, 2008

Requested Analyses

Sample Time recorded in PST

FY 2008-09 Stormwater Grab Chain-of-custody										General		Organics				Metals		Field			
<input checked="" type="checkbox"/> Sample Time recorded in PST																					
WPCL Sample I.D.	Location	Point Code	Sample Date	Sample Time	Sample Type																
FO 081475	SW 43-ABC290-1208 N ALBINA & RIVER	43_SW1	12/12/08	1157	G	•				•	•	•	•	•	•	•	•	7.8	56	7.9	
FO 081476	SW 43-ABC39-1208 N KERBY & WHEELER	43_SW2	12/12/08	1321	G	•				•	•	•	•	•	•	•	•	7.7	29	7.1	
FO 081477	SW 43-ABC52-1208 N WHEELER PL & KERBY	43_SW3	12/12/08	1332	G	•				•	•	•	•	•	•	•	•	7.9	106	7.2	
FO 081478	SW 43-ABC40-1208 N KERBY & TILLAMOOK	43_SW4	12/12/08	1310	G	•				•	•	•	•	•	•	•	•	7.8	34	7.5	
FO 081479	SW 44-ABC352-1208 N HARDING & RIVER	44_SW1	12/12/08	1144	G	•				•	•	•	•	•	•	•	•	7.1	81	10.1	
FO 081480	SW 44A-ABC311-1208 N LARREE & RANDOLPH	44A_SW1	12/12/08	1120	G	•				•	•	•	•	•	•	•	•	7.2	38	6.2	
FO 081481	FIELD DECON BLANK	FDB	12/12/08	1344	G	•				•	•	•	•	•	•	•	•				
FO 081482	DUPPLICATE	DUP	12/12/08		G	•				•	•	•	•	•	•	•	•				
Relinquished By: 1		Relinquished By: 2		Relinquished By: 3		Relinquished By: 4															
Signature: <i>Anthony Ballin</i> Time: 1445		Signature: _____ Time: _____		Signature: _____ Time: _____		Signature: _____ Time: _____															
Printed Name: <i>Anthony Ballin</i> Date: 12/12/08		Printed Name: _____ Date: _____		Printed Name: _____ Date: _____		Printed Name: _____ Date: _____															
Received By: <i>Ronald Kueh</i> Time: 1425		Received By: _____ Time: _____		Received By: _____ Time: _____		Received By: _____ Time: _____															
Signature: <i>Ronald Kueh</i> Date: 12/12/08		Signature: _____ Date: _____		Signature: _____ Date: _____		Signature: _____ Date: _____															
Printed Name: <i>Ronald Kueh</i> Date: 12/12/08		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: **FO081480**

Sample Collected: 12/12/08 11:20
Sample Received: 12/12/08

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-44A-ABC311-1208
N LARABEE & RANDOLPH
Sample Point Code: 44A_SW1
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 1 of 4

System ID: AM11639
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Some Organochlorine Pesticide compounds are reported as estimates because results from the primary and verification GC columns varied significantly (>40% RPD).

Test Parameter	Result	Units	MRL	Method	Analysis Date
FIELD					
CONDUCTIVITY (FIELD)	38	μ mhos/cm	1	SM 2510 B	12/12/08
pH (FIELD)	6.2	pH Units	0.1	SM 4500-H B	12/12/08
TEMPERATURE	7.2	Deg. C	0.1	SM 2550 B	12/12/08
GENERAL					
TOTAL SUSPENDED SOLIDS	118	mg/L	2	SM 2540 D	12/13/08
METALS					
MERCURY	0.025	μ g/L	0.002	WPCLSOP M-10.02	12/18/08
METALS BY ICP-MS (TOTAL) - 8					
ARSENIC	0.85	μ g/L	0.1	EPA 200.8	12/15/08
CADMIUM	0.54	μ g/L	0.1	EPA 200.8	12/15/08
CHROMIUM	5.13	μ g/L	0.4	EPA 200.8	12/15/08
COPPER	29.2	μ g/L	0.2	EPA 200.8	12/15/08
LEAD	12.5	μ g/L	0.1	EPA 200.8	12/15/08
NICKEL	3.53	μ g/L	0.2	EPA 200.8	12/15/08
SILVER	<0.10	μ g/L	0.1	EPA 200.8	12/15/08
ZINC	190	μ g/L	0.5	EPA 200.8	12/15/08
OUTSIDE ANALYSIS					
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	<3.0	ng/L	3.0	EPA 8081	12/17/08
4,4'-DDE	<0.53	ng/L	0.53	EPA 8081	12/17/08
4,4'-DDT	<1.1	ng/L	1.1	EPA 8081	12/17/08
Aldrin	EST 5.3	ng/L	0.53	EPA 8081	12/17/08
Alpha-BHC	<0.53	ng/L	0.53	EPA 8081	12/17/08
Alpha-Chlordane	<0.53	ng/L	0.53	EPA 8081	12/17/08
Beta-BHC	<1.7	ng/L	1.7	EPA 8081	12/17/08
Delta-BHC	<2.5	ng/L	2.5	EPA 8081	12/17/08
Dieldrin	<0.53	ng/L	0.53	EPA 8081	12/17/08
Endosulfan I	<0.53	ng/L	0.53	EPA 8081	12/17/08
Endosulfan II	<0.53	ng/L	0.53	EPA 8081	12/17/08
Endosulfan Sulfate	<1.1	ng/L	1.1	EPA 8081	12/17/08
Endrin	<0.53	ng/L	0.53	EPA 8081	12/17/08
Endrin Aldehyde	<0.53	ng/L	0.53	EPA 8081	12/17/08

Report Date: 02/02/09

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: FO081480

Sample Collected: 12/12/08 11:20
Sample Received: 12/12/08

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-44A-ABC311-1208
N LARABEE & RANDOLPH
Sample Point Code: 44A_SW1
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 2 of 4

System ID: AM11639
EID File # : 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Some Organochlorine Pesticide compounds are reported as estimates because results from the primary and verification GC columns varied significantly (>40% RPD).

Test Parameter	Result	Units	MRL	Method	Analysis Date
Endrin Ketone	<0.84	ng/L	0.84	EPA 8081	12/17/08
Gamma-BHC(Lindane)	<0.53	ng/L	0.53	EPA 8081	12/17/08
Gamma-Chlordane	<0.63	ng/L	0.63	EPA 8081	12/17/08
Heptachlor	<2.0	ng/L	2.0	EPA 8081	12/17/08
Heptachlor Epoxide	EST 1.7	ng/L	0.53	EPA 8081	12/17/08
Methoxychlor	<0.53	ng/L	0.53	EPA 8081	12/17/08
Toxaphene	<73	ng/L	73	EPA 8081	12/17/08

POLYCHLORINATED BIPHENYL CONGENERS -PACE

Refer to Contract Report	Completed	ng/L		EPA 1668 MOD	01/05/09
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POLYNUCLEAR AROMATICS & PHTHALATES - TA

Acenaphthene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Acenaphthylene	0.0312	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Anthracene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Benzo(a)anthracene	0.0312	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Benzo(a)pyrene	0.0383	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Benzo(b)fluoranthene	0.0516	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Benzo(ghi)perylene	0.0704	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Benzo(k)fluoranthene	0.0372	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Bis(2-ethylhexyl) phthalate	2.24	µg/L	0.971	EPA 8270M-SIM	12/17/08
Butyl benzyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	12/17/08
Chrysene	0.0906	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Dibenzo(a,h)anthracene	0.0104	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Diethyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	12/17/08
Dimethyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	12/17/08
Di-n-butyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	12/17/08
Di-n-octyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	12/17/08
Fluoranthene	0.192	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Fluorene	0.0194	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Indeno(1,2,3-cd)pyrene	0.0326	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Naphthalene	0.781	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Phenanthrene	0.139	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Pyrene	0.0962	µg/L	0.0194	EPA 8270M-SIM	12/17/08

SEMI-VOLATILE ORGANICS - CAS

Report Date: 02/02/09

Validated By: 



LABORATORY ANALYSIS REPORT

Sample ID: **FO081480**

Sample Collected: 12/12/08 11:20
Sample Received: 12/12/08

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-44A-ABC311-1208
N LARABEE & RANDOLPH
Sample Point Code: 44A_SW1
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 3 of 4

System ID: AM11639
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Some Organochlorine Pesticide compounds are reported as estimates because results from the primary and verification GC columns varied significantly (>40% RPD).

Test Parameter	Result	Units	MRL	Method	Analysis Date
1,2,4-Trichlorobenzene	<1.1	µg/L	1.1	EPA 8270	12/18/08
1,2-Dichlorobenzene	<1.1	µg/L	1.1	EPA 8270	12/18/08
1,3-Dichlorobenzene	<1.1	µg/L	1.1	EPA 8270	12/18/08
1,4-Dichlorobenzene	<1.1	µg/L	1.1	EPA 8270	12/18/08
2,4,5-Trichlorophenol	<2.6	µg/L	2.6	EPA 8270	12/18/08
2,4,6-Trichlorophenol	<2.6	µg/L	2.6	EPA 8270	12/18/08
2,4-Dichlorophenol	<2.6	µg/L	2.6	EPA 8270	12/18/08
2,4-Dimethylphenol	<21	µg/L	21	EPA 8270	12/18/08
2,4-Dinitrophenol	<21	µg/L	21	EPA 8270	12/18/08
2,4-Dinitrotoluene	<1.1	µg/L	1.1	EPA 8270	12/18/08
2,6-Dinitrotoluene	<1.1	µg/L	1.1	EPA 8270	12/18/08
2-Chloronaphthalene	<1.1	µg/L	1.1	EPA 8270	12/18/08
2-Chlorophenol	<2.6	µg/L	2.6	EPA 8270	12/18/08
2-Methylnaphthalene	<1.1	µg/L	1.1	EPA 8270	12/18/08
2-Methylphenol	<2.6	µg/L	2.6	EPA 8270	12/18/08
2-Nitroaniline	<1.1	µg/L	1.1	EPA 8270	12/18/08
2-Nitrophenol	<2.6	µg/L	2.6	EPA 8270	12/18/08
3,3'-Dichlorobenzidine	<11	µg/L	11	EPA 8270	12/18/08
3-Nitroaniline	<5.1	µg/L	5.1	EPA 8270	12/18/08
4,6-Dinitro-2-methylphenol	<11	µg/L	11	EPA 8270	12/18/08
4-Bromophenylphenyl ether	<1.1	µg/L	1.1	EPA 8270	12/18/08
4-Chloro-3-methylphenol	<2.6	µg/L	2.6	EPA 8270	12/18/08
4-Chloroaniline	<1.1	µg/L	1.1	EPA 8270	12/18/08
4-Chlorophenylphenyl ether	<1.1	µg/L	1.1	EPA 8270	12/18/08
4-Methylphenol	<2.6	µg/L	2.6	EPA 8270	12/18/08
4-Nitroaniline	<5.1	µg/L	5.1	EPA 8270	12/18/08
4-Nitrophenol	<11	µg/L	11	EPA 8270	12/18/08
Acenaphthene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Acenaphthylene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Anthracene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Benzo(a)anthracene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Benzo(a)pyrene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Benzo(b)fluoranthene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Benzo(g,h,i)perylene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Benzo(k)fluoranthene	<1.1	µg/L	1.1	EPA 8270	12/18/08

Report Date: 02/02/09

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: FO081480

Sample Collected: 12/12/08 11:20
Sample Received: 12/12/08

Sample Status: COMPLETE AND
VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-44A-ABC311-1208
N LARABEE & RANDOLPH
Sample Point Code: 44A_SW1
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 4 of 4

System ID: AM11639
EID File # : 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Some Organochlorine Pesticide compounds are reported as estimates because results from the primary and verification GC columns varied significantly (>40% RPD).

Test Parameter	Result	Units	MRL	Method	Analysis Date
Benzoic acid	<26	µg/L	26	EPA 8270	12/18/08
Benzyl alcohol	<2.6	µg/L	2.6	EPA 8270	12/18/08
Bis(2-chloroethoxy) methane	<1.1	µg/L	1.1	EPA 8270	12/18/08
Bis(2-chloroethyl) ether	<1.1	µg/L	1.1	EPA 8270	12/18/08
Bis(2-chloroisopropyl) ether	<1.1	µg/L	1.1	EPA 8270	12/18/08
Bis(2-ethylhexyl) phthalate	<5.1	µg/L	5.1	EPA 8270	12/18/08
Butyl benzyl phthalate	<1.1	µg/L	1.1	EPA 8270	12/18/08
Chrysene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Dibenzo(a,h)anthracene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Dibenzofuran	<1.1	µg/L	1.1	EPA 8270	12/18/08
Diethyl phthalate	<1.1	µg/L	1.1	EPA 8270	12/18/08
Dimethyl phthalate	<1.1	µg/L	1.1	EPA 8270	12/18/08
Di-n-butyl phthalate	<1.1	µg/L	1.1	EPA 8270	12/18/08
Di-n-octyl phthalate	<1.1	µg/L	1.1	EPA 8270	12/18/08
Fluoranthene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Fluorene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Hexachlorobenzene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Hexachlorobutadiene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Hexachlorocyclopentadiene	<5.1	µg/L	5.1	EPA 8270	12/18/08
Hexachloroethane	<1.1	µg/L	1.1	EPA 8270	12/18/08
Indeno(1,2,3-cd)pyrene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Isophorone	<1.1	µg/L	1.1	EPA 8270	12/18/08
Naphthalene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Nitrobenzene	<1.1	µg/L	1.1	EPA 8270	12/18/08
N-Nitrosodi-n-propylamine	<1.1	µg/L	1.1	EPA 8270	12/18/08
N-Nitrosodiphenylamine	<1.1	µg/L	1.1	EPA 8270	12/18/08
Pentachlorophenol	<5.1	µg/L	5.1	EPA 8270	12/18/08
Phenanthrene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Phenol	<2.6	µg/L	2.6	EPA 8270	12/18/08
Pyrene	<1.1	µg/L	1.1	EPA 8270	12/18/08

End of Report for Sample ID: FO081480

Report Date: 02/02/09

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: FO081481

Sample Collected: 12/12/08 13:44
Sample Received: 12/12/08

Sample Status: COMPLETE AND
VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: FIELD DECON BLANK

Report Page: Page 1 of 4

Sample Point Code: FDBLANK
Sample Type: GRAB
Sample Matrix: STORMWTR

System ID: AM11640
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

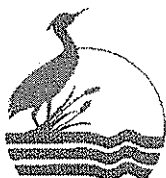
Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date
GENERAL					
TOTAL SUSPENDED SOLIDS	<2	mg/L	2	SM 2540 D	12/13/08
METALS					
MERCURY	<0.0020	µg/L	0.002	WPCLSOP M-10.02	12/18/08
METALS BY ICP-MS (TOTAL) - 8					
ARSENIC	<0.10	µg/L	0.1	EPA 200.8	12/15/08
CADMIUM	<0.10	µg/L	0.1	EPA 200.8	12/15/08
CHROMIUM	<0.40	µg/L	0.4	EPA 200.8	12/15/08
COPPER	<0.20	µg/L	0.2	EPA 200.8	12/15/08
LEAD	<0.10	µg/L	0.1	EPA 200.8	12/15/08
NICKEL	<0.20	µg/L	0.2	EPA 200.8	12/15/08
SILVER	<0.10	µg/L	0.1	EPA 200.8	12/15/08
ZINC	<0.50	µg/L	0.5	EPA 200.8	12/15/08
OUTSIDE ANALYSIS					
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	<0.49	ng/L	0.49	EPA 8081	12/17/08
4,4'-DDE	<0.49	ng/L	0.49	EPA 8081	12/17/08
4,4'-DDT	<0.49	ng/L	0.49	EPA 8081	12/17/08
Aldrin	<0.49	ng/L	0.49	EPA 8081	12/17/08
Alpha-BHC	<0.49	ng/L	0.49	EPA 8081	12/17/08
Alpha-Chlordane	<0.49	ng/L	0.49	EPA 8081	12/17/08
Beta-BHC	<0.49	ng/L	0.49	EPA 8081	12/17/08
Delta-BHC	<0.49	ng/L	0.49	EPA 8081	12/17/08
Dieldrin	<0.49	ng/L	0.49	EPA 8081	12/17/08
Endosulfan I	<0.49	ng/L	0.49	EPA 8081	12/17/08
Endosulfan II	<0.49	ng/L	0.49	EPA 8081	12/17/08
Endosulfan Sulfate	<0.49	ng/L	0.49	EPA 8081	12/17/08
Endrin	<0.49	ng/L	0.49	EPA 8081	12/17/08
Endrin Aldehyde	<0.49	ng/L	0.49	EPA 8081	12/17/08
Endrin Ketone	<0.49	ng/L	0.49	EPA 8081	12/17/08
Gamma-BHC(Lindane)	<0.49	ng/L	0.49	EPA 8081	12/17/08
Gamma-Chlordane	<0.49	ng/L	0.49	EPA 8081	12/17/08
Heptachlor	<0.49	ng/L	0.49	EPA 8081	12/17/08
Heptachlor Epoxide	<0.49	ng/L	0.49	EPA 8081	12/17/08

Report Date: 02/09/09

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: FO081481

Sample Collected: 12/12/08 13:44
Sample Received: 12/12/08

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: FIELD DECON BLANK

Report Page: Page 2 of 4

Sample Point Code: FDBLANK
Sample Type: GRAB
Sample Matrix: STORMWTR

System ID: AM11640
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Methoxychlor	<0.49	ng/L	0.49	EPA 8081	12/17/08
Toxaphene	<25	ng/L	25	EPA 8081	12/17/08
POLYCHLORINATED BIPHENYL CONGENERS - PACE					
Refer to Contract Report	Completed	ng/L		EPA 1668 MOD	01/05/09
POLYNUCLEAR AROMATICS & PHTHALATES - TA					
Acenaphthene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Acenaphthylene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Anthracene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Benzo(a)anthracene	<0.00971	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Benzo(a)pyrene	<0.00971	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Benzo(b)fluoranthene	<0.00971	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Benzo(ghi)perylene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Benzo(k)fluoranthene	<0.00971	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Bis(2-ethylhexyl) phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	12/17/08
Butyl benzyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	12/17/08
Chrysene	<0.00971	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Dibenzo(a,h)anthracene	<0.00971	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Diethyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	12/17/08
Dimethyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	12/17/08
Di-n-butyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	12/17/08
Di-n-octyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	12/17/08
Fluoranthene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Fluorene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Indeno(1,2,3-cd)pyrene	<0.00971	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Naphthalene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Phenanthrene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Pyrene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	12/17/08
SEMI-VOLATILE ORGANICS - CAS					
1,2,4-Trichlorobenzene	<0.20	µg/L	0.20	EPA 8270	12/18/08
1,2-Dichlorobenzene	<0.20	µg/L	0.20	EPA 8270	12/18/08
1,3-Dichlorobenzene	<0.20	µg/L	0.20	EPA 8270	12/18/08
1,4-Dichlorobenzene	<0.20	µg/L	0.20	EPA 8270	12/18/08
2,4,5-Trichlorophenol	<0.50	µg/L	0.50	EPA 8270	12/18/08
2,4,6-Trichlorophenol	<0.50	µg/L	0.50	EPA 8270	12/18/08

Report Date: 02/09/09

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: FO081481

Sample Collected: 12/12/08 13:44
Sample Received: 12/12/08

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: FIELD DECON BLANK

Report Page: Page 3 of 4

Sample Point Code: FDBLANK
Sample Type: GRAB
Sample Matrix: STORMWTR

System ID: AM11640
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date
2,4-Dichlorophenol	<0.50	µg/L	0.50	EPA 8270	12/18/08
2,4-Dimethylphenol	<4.0	µg/L	4.0	EPA 8270	12/18/08
2,4-Dinitrophenol	<4.0	µg/L	4.0	EPA 8270	12/18/08
2,4-Dinitrotoluene	<0.20	µg/L	0.20	EPA 8270	12/18/08
2,6-Dinitrotoluene	<0.20	µg/L	0.20	EPA 8270	12/18/08
2-Chloronaphthalene	<0.20	µg/L	0.20	EPA 8270	12/18/08
2-Chlorophenol	<0.50	µg/L	0.50	EPA 8270	12/18/08
2-Methylnaphthalene	<0.20	µg/L	0.20	EPA 8270	12/18/08
2-Methylphenol	<0.50	µg/L	0.50	EPA 8270	12/18/08
2-Nitroaniline	<0.20	µg/L	0.20	EPA 8270	12/18/08
2-Nitrophenol	<0.50	µg/L	0.50	EPA 8270	12/18/08
3,3'-Dichlorobenzidine	<2.0	µg/L	2.0	EPA 8270	12/18/08
3-Nitroaniline	<1.0	µg/L	1.0	EPA 8270	12/18/08
4,6-Dinitro-2-methylphenol	<2.0	µg/L	2.0	EPA 8270	12/18/08
4-Bromophenylphenyl ether	<0.20	µg/L	0.20	EPA 8270	12/18/08
4-Chloro-3-methylphenol	<0.50	µg/L	0.50	EPA 8270	12/18/08
4-Chloroaniline	<0.20	µg/L	0.20	EPA 8270	12/18/08
4-Chlorophenylphenyl ether	<0.20	µg/L	0.20	EPA 8270	12/18/08
4-Methylphenol	<0.50	µg/L	0.50	EPA 8270	12/18/08
4-Nitroaniline	<1.0	µg/L	1.0	EPA 8270	12/18/08
4-Nitrophenol	<2.0	µg/L	2.0	EPA 8270	12/18/08
Acenaphthene	<0.20	µg/L	0.20	EPA 8270	12/18/08
Acenaphthylene	<0.20	µg/L	0.20	EPA 8270	12/18/08
Anthracene	<0.20	µg/L	0.20	EPA 8270	12/18/08
Benzo(a)anthracene	<0.20	µg/L	0.20	EPA 8270	12/18/08
Benzo(a)pyrene	<1.0	µg/L	1.0	EPA 8270	12/18/08
Benzo(b)fluoranthene	<1.0	µg/L	1.0	EPA 8270	12/18/08
Benzo(g,h,i)perylene	<1.0	µg/L	1.0	EPA 8270	12/18/08
Benzo(k)fluoranthene	<1.0	µg/L	1.0	EPA 8270	12/18/08
Benzoic acid	<5.0	µg/L	5.0	EPA 8270	12/18/08
Benzyl alcohol	<0.50	µg/L	0.50	EPA 8270	12/18/08
Bis(2-chloroethoxy) methane	<0.20	µg/L	0.20	EPA 8270	12/18/08
Bis(2-chloroethyl) ether	<0.20	µg/L	0.20	EPA 8270	12/18/08
Bis(2-chloroisopropyl) ether	<0.20	µg/L	0.20	EPA 8270	12/18/08
Bis(2-ethylhexyl) phthalate	<1.0	µg/L	1.0	EPA 8270	12/18/08
Butyl benzyl phthalate	<0.20	µg/L	0.20	EPA 8270	12/18/08

Report Date: 02/09/09

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: FO081481

Sample Collected: 12/12/08 13:44

Sample Received: 12/12/08

Sample Status: COMPLETE AND
VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: FIELD DECON BLANK

Report Page: Page 4 of 4

Sample Point Code: FDBLANK
Sample Type: GRAB
Sample Matrix: STORMWTR

System ID: AM11640
EID File # : 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Chrysene	<0.20	µg/L	0.20	EPA 8270	12/18/08
Dibenzo(a,h)anthracene	<1.0	µg/L	1.0	EPA 8270	12/18/08
Dibenzofuran	<0.20	µg/L	0.20	EPA 8270	12/18/08
Diethyl phthalate	<0.20	µg/L	0.20	EPA 8270	12/18/08
Dimethyl phthalate	<0.20	µg/L	0.20	EPA 8270	12/18/08
Di-n-butyl phthalate	<0.20	µg/L	0.20	EPA 8270	12/18/08
Di-n-octyl phthalate	<1.0	µg/L	1.0	EPA 8270	12/18/08
Fluoranthene	<0.20	µg/L	0.20	EPA 8270	12/18/08
Fluorene	<0.20	µg/L	0.20	EPA 8270	12/18/08
Hexachlorobenzene	<0.20	µg/L	0.20	EPA 8270	12/18/08
Hexachlorobutadiene	<0.20	µg/L	0.20	EPA 8270	12/18/08
Hexachlorocyclopentadiene	<1.0	µg/L	1.0	EPA 8270	12/18/08
Hexachloroethane	<0.20	µg/L	0.20	EPA 8270	12/18/08
Indeno(1,2,3-cd)pyrene	<1.0	µg/L	1.0	EPA 8270	12/18/08
Isophorone	<0.20	µg/L	0.20	EPA 8270	12/18/08
Naphthalene	<0.20	µg/L	0.20	EPA 8270	12/18/08
Nitrobenzene	<0.20	µg/L	0.20	EPA 8270	12/18/08
N-Nitrosodi-n-propylamine	<0.20	µg/L	0.20	EPA 8270	12/18/08
N-Nitrosodiphenylamine	<0.20	µg/L	0.20	EPA 8270	12/18/08
Pentachlorophenol	<1.0	µg/L	1.0	EPA 8270	12/18/08
Phenanthrene	<0.20	µg/L	0.20	EPA 8270	12/18/08
Phenol	<0.50	µg/L	0.50	EPA 8270	12/18/08
Pyrene	<0.20	µg/L	0.20	EPA 8270	12/18/08

End of Report for Sample ID: FO081481

Report Date: 02/09/09

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: FO081482

Sample Collected: 12/12/08 00:00
Sample Received: 12/12/08

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: FIELD DUPLICATE

Report Page: Page 1 of 4

Sample Point Code: DUP
Sample Type: GRAB
Sample Matrix: STORMWTR

System ID: AM11641
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Semivolatile Organic compound Butylbenzyl phthalate was detected in the Method Blank; the result reported for this sample may be a high estimate. Some Organochlorine Pesticide compounds are reported as estimates because results from the primary and verification GC columns varied significantly (>40% RPD).

Test Parameter	Result	Units	MRL	Method	Analysis Date
GENERAL					
TOTAL SUSPENDED SOLIDS	105	mg/L	2	SM 2540 D	12/13/08
METALS					
MERCURY	0.018	µg/L	0.002	WPCLSOP M-10.02	12/18/08
METALS BY ICP-MS (TOTAL) - 8					
ARSENIC	0.91	µg/L	0.1	EPA 200.8	12/15/08
CADMIUM	0.52	µg/L	0.1	EPA 200.8	12/15/08
CHROMIUM	5.21	µg/L	0.4	EPA 200.8	12/15/08
COPPER	29.0	µg/L	0.2	EPA 200.8	12/15/08
LEAD	12.9	µg/L	0.1	EPA 200.8	12/15/08
NICKEL	3.44	µg/L	0.2	EPA 200.8	12/15/08
SILVER	<0.10	µg/L	0.1	EPA 200.8	12/15/08
ZINC	183	µg/L	0.5	EPA 200.8	12/15/08
OUTSIDE ANALYSIS					
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	<0.76	ng/L	0.76	EPA 8081	12/17/08
4,4'-DDE	<0.55	ng/L	0.55	EPA 8081	12/17/08
4,4'-DDT	<2.5	ng/L	2.5	EPA 8081	12/17/08
Aldrin	EST 5.3	ng/L	0.52	EPA 8081	12/17/08
Alpha-BHC	<0.58	ng/L	0.58	EPA 8081	12/17/08
Alpha-Chlordane	<0.52	ng/L	0.52	EPA 8081	12/17/08
Beta-BHC	<1.8	ng/L	1.8	EPA 8081	12/17/08
Delta-BHC	<3.1	ng/L	3.1	EPA 8081	12/17/08
Dieldrin	<0.52	ng/L	0.52	EPA 8081	12/17/08
Endosulfan I	<0.52	ng/L	0.52	EPA 8081	12/17/08
Endosulfan II	<0.52	ng/L	0.52	EPA 8081	12/17/08
Endosulfan Sulfate	<1.1	ng/L	1.1	EPA 8081	12/17/08
Endrin	<0.52	ng/L	0.52	EPA 8081	12/17/08
Endrin Aldehyde	<0.52	ng/L	0.52	EPA 8081	12/17/08
Endrin Ketone	<0.52	ng/L	0.52	EPA 8081	12/17/08
Gamma-BHC(Lindane)	<0.52	ng/L	0.52	EPA 8081	12/17/08
Gamma-Chlordane	<0.52	ng/L	0.52	EPA 8081	12/17/08
Heptachlor	<1.6	ng/L	1.6	EPA 8081	12/17/08

Report Date: 02/09/09

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: FO081482

Sample Collected: 12/12/08 00:00
Sample Received: 12/12/08

Sample Status: COMPLETE AND
VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: FIELD DUPLICATE

Report Page: Page 2 of 4

Sample Point Code: DUP
Sample Type: GRAB
Sample Matrix: STORMWTR

System ID: AM11641
EID File # : 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Semivolatile Organic compound Butylbenzyl phthalate was detected in the Method Blank; the result reported for this sample may be a high estimate. Some Organochlorine Pesticide compounds are reported as estimates because results from the primary and verification GC columns varied significantly (>40% RPD).

Test Parameter	Result	Units	MRL	Method	Analysis Date
Heptachlor Epoxide	<0.52	ng/L	0.52	EPA 8081	12/17/08
Methoxychlor	<0.52	ng/L	0.52	EPA 8081	12/17/08
Toxaphene	<87	ng/L	87	EPA 8081	12/17/08
POLYCHLORINATED BIPHENYL CONGENERS - PACE					
Refer to Contract Report	Completed	ng/L		EPA 1668 MOD	01/05/09
POLYNUCLEAR AROMATICS & PHTHALATES - TA					
Acenaphthene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Acenaphthylene	0.0287	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Anthracene	0.112	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Benzo(a)anthracene	0.0231	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Benzo(a)pyrene	0.0263	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Benzo(b)fluoranthene	0.0362	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Benzo(ghi)perylene	0.0527	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Benzo(k)fluoranthene	0.0271	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Bis(2-ethylhexyl) phthalate	2.13	µg/L	0.971	EPA 8270M-SIM	12/17/08
Butyl benzyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	12/17/08
Chrysene	0.0468	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Dibenzo(a,h)anthracene	<0.00971	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Diethyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	12/17/08
Dimethyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	12/17/08
Di-n-butyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	12/17/08
Di-n-octyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	12/17/08
Fluoranthene	0.144	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Fluorene	0.0365	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Indeno(1,2,3-cd)pyrene	0.0216	µg/L	0.00971	EPA 8270M-SIM	12/17/08
Naphthalene	0.551	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Phenanthrene	0.163	µg/L	0.0194	EPA 8270M-SIM	12/17/08
Pyrene	0.0523	µg/L	0.0194	EPA 8270M-SIM	12/17/08
SEMI-VOLATILE ORGANICS - CAS					
1,2,4-Trichlorobenzene	<1.1	µg/L	1.1	EPA 8270	12/18/08
1,2-Dichlorobenzene	<0.21	µg/L	0.21	EPA 8270	12/18/08
1,3-Dichlorobenzene	<0.21	µg/L	0.21	EPA 8270	12/18/08
1,4-Dichlorobenzene	<0.21	µg/L	0.21	EPA 8270	12/18/08

Report Date: 02/09/09

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: FO081482

Sample Collected: 12/12/08 00:00
Sample Received: 12/12/08

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: FIELD DUPLICATE

Report Page: Page 3 of 4

Sample Point Code: DUP
Sample Type: GRAB
Sample Matrix: STORMWTR

System ID: AM11641
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Semivolatile Organic compound Butylbenzyl phthalate was detected in the Method Blank; the result reported for this sample may be a high estimate. Some Organochlorine Pesticide compounds are reported as estimates because results from the primary and verification GC columns varied significantly (>40% RPD).

Test Parameter	Result	Units	MRL	Method	Analysis Date
2,4,5-Trichlorophenol	<2.6	µg/L	2.6	EPA 8270	12/18/08
2,4,6-Trichlorophenol	<2.6	µg/L	2.6	EPA 8270	12/18/08
2,4-Dichlorophenol	<2.6	µg/L	2.6	EPA 8270	12/18/08
2,4-Dimethylphenol	<21	µg/L	21	EPA 8270	12/18/08
2,4-Dinitrophenol	<21	µg/L	21	EPA 8270	12/18/08
2,4-Dinitrotoluene	<1.1	µg/L	1.1	EPA 8270	12/18/08
2,6-Dinitrotoluene	<1.1	µg/L	1.1	EPA 8270	12/18/08
2-Chloronaphthalene	<1.1	µg/L	1.1	EPA 8270	12/18/08
2-Chlorophenol	<0.52	µg/L	0.52	EPA 8270	12/18/08
2-Methylnaphthalene	<1.1	µg/L	1.1	EPA 8270	12/18/08
2-Methylphenol	<0.52	µg/L	0.52	EPA 8270	12/18/08
2-Nitroaniline	<1.1	µg/L	1.1	EPA 8270	12/18/08
2-Nitrophenol	<2.6	µg/L	2.6	EPA 8270	12/18/08
3,3'-Dichlorobenzidine	<2.1	µg/L	2.1	EPA 8270	12/18/08
3-Nitroaniline	<5.2	µg/L	5.2	EPA 8270	12/18/08
4,6-Dinitro-2-methylphenol	<11	µg/L	11	EPA 8270	12/18/08
4-Bromophenylphenyl ether	<1.1	µg/L	1.1	EPA 8270	12/18/08
4-Chloro-3-methylphenol	<2.6	µg/L	2.6	EPA 8270	12/18/08
4-Chloroaniline	<1.1	µg/L	1.1	EPA 8270	12/18/08
4-Chlorophenylphenyl ether	<1.1	µg/L	1.1	EPA 8270	12/18/08
4-Methylphenol	0.69	µg/L	0.52	EPA 8270	12/18/08
4-Nitroaniline	<5.2	µg/L	5.2	EPA 8270	12/18/08
4-Nitrophenol	<11	µg/L	11	EPA 8270	12/18/08
Acenaphthene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Acenaphthylene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Anthracene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Benzo(a)anthracene	<0.21	µg/L	0.21	EPA 8270	12/18/08
Benzo(a)pyrene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Benzo(b)fluoranthene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Benzo(g,h,i)perylene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Benzo(k)fluoranthene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Benzoic acid	<26	µg/L	26	EPA 8270	12/18/08
Benzyl alcohol	0.97	µg/L	0.52	EPA 8270	12/18/08
Bis(2-chloroethoxy) methane	<1.1	µg/L	1.1	EPA 8270	12/18/08

Report Date: 02/09/09

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: FO081482

Sample Collected: 12/12/08 00:00
Sample Received: 12/12/08

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: FIELD DUPLICATE

Report Page: Page 4 of 4

Sample Point Code: DUP
Sample Type: GRAB
Sample Matrix: STORMWTR

System ID: AM11641
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. Semivolatile Organic compound Butylbenzyl phthalate was detected in the Method Blank; the result reported for this sample may be a high estimate. Some Organochlorine Pesticide compounds are reported as estimates because results from the primary and verification GC columns varied significantly (>40% RPD).

Test Parameter	Result	Units	MRL	Method	Analysis Date
Bis(2-chloroethyl) ether	<0.21	µg/L	0.21	EPA 8270	12/18/08
Bis(2-chloroisopropyl) ether	<0.21	µg/L	0.21	EPA 8270	12/18/08
Bis(2-ethylhexyl) phthalate	3.9	µg/L	1.1	EPA 8270	12/18/08
Butyl benzyl phthalate	0.43	µg/L	0.21	EPA 8270	12/18/08
Chrysene	<0.21	µg/L	0.21	EPA 8270	12/18/08
Dibenzo(a,h)anthracene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Dibenzofuran	<1.1	µg/L	1.1	EPA 8270	12/18/08
Diethyl phthalate	<1.1	µg/L	1.1	EPA 8270	12/18/08
Dimethyl phthalate	<1.1	µg/L	1.1	EPA 8270	12/18/08
Di-n-butyl phthalate	<1.1	µg/L	1.1	EPA 8270	12/18/08
Di-n-octyl phthalate	<1.1	µg/L	1.1	EPA 8270	12/18/08
Fluoranthene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Fluorene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Hexachlorobenzene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Hexachlorobutadiene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Hexachlorocyclopentadiene	<5.2	µg/L	5.2	EPA 8270	12/18/08
Hexachloroethane	<0.21	µg/L	0.21	EPA 8270	12/18/08
Indeno(1,2,3-cd)pyrene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Isophorone	<1.1	µg/L	1.1	EPA 8270	12/18/08
Naphthalene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Nitrobenzene	<0.21	µg/L	0.21	EPA 8270	12/18/08
N-Nitrosodi-n-propylamine	<0.21	µg/L	0.21	EPA 8270	12/18/08
N-Nitrosodiphenylamine	<1.1	µg/L	1.1	EPA 8270	12/18/08
Pentachlorophenol	<5.2	µg/L	5.2	EPA 8270	12/18/08
Phenanthrene	<1.1	µg/L	1.1	EPA 8270	12/18/08
Phenol	<0.52	µg/L	0.52	EPA 8270	12/18/08
Pyrene	0.24	µg/L	0.21	EPA 8270	12/18/08

End of Report for Sample ID: FO081482

Report Date: 02/09/09

Validated By:

January 22, 2009

Analytical Report for Service Request No: K0812190

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

RE: Portland Harbor Stormwater Samp

Dear Jennifer:


Enclosed are the results of the samples submitted to our laboratory on December 16, 2008. For your reference, these analyses have been assigned our service request number K0812190.

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/lb

Page 1 of 53

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 but greater than or equal to the MDL.
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- i The MRL/MDL has been elevated due to a matrix interference.
- X See case narrative.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- B The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- 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.
- 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 has been elevated due to a matrix interference.
- X See case narrative.
- * The duplicate analysis not within control limits. See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.

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 (25% for CLP Pesticides).
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- i The MRL/MDL has been elevated due to a chromatographic interference.
- X See case narrative.

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)	-

Case Narrative

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Portland, City of
Project: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request No.: K0812190
Date Received: 12/16/2008

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 Control Sample (LCS).

Sample Receipt

Eight water samples were received for analysis at Columbia Analytical Services on 12/16/2008. 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

Continuing Calibration Verification (CCV) Exceptions:

The primary evaluation criterion was exceeded for few analytes in CCV 0102F055, 0102F056, 0102F073 and 0102F074. 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 meets the alternative evaluation criteria.

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 4,4'-DDE in ICAL 8115. The ICV results are reported from the acceptable column. The data quality is not affected. No further corrective action was necessary.

Sample Confirmation Notes:

The confirmation comparison criterion of 40% difference for at least one analyte was exceeded in several samples. The higher of the two values was reported when both peaks were within the expected retention time window for this analysis and Gaussian in shape.

Elevated Method Reporting Limits:

The reporting limit is elevated for at least one analyte in most samples. The chromatogram indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compounds at the reporting limit. The results are flagged to indicate the matrix interference.

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

Approved by _____ Date _____

Semivolatile Organic Compounds by EPA Method 8270C

Lab Control Sample (LCS) Exceptions:

The advisory criteria were exceeded for the following analytes in replicate Laboratory Control Sample (LCS/DLCS) KWG0813479-1 and KWG0813479-2: Benzoic Acid, 2,4-dinitrophenol. 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.

The spike recovery of Pentachlorophenol for LCS KWG0813479-1 was outside the lower control criterion. The analyte in question was not detected at levels greater than the MRL in the associated field samples. The error associated with reduced recovery equates to a potential low bias. Additional analysis of the associated field samples could not be performed because insufficient sample remained for testing. The data is flagged to indicate the problem.

Relative Percent Difference Exceptions:


The Relative Percent Difference (RPD) criterion for the replicate analysis of 2,4-Dinitrophenol in the replicate Laboratory Control Samples (LCS/DLCS) KWG0813479-1 and KWG0813479-2 is 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.

The Relative Percent Difference (RPD) for 4-Chloroaniline in the replicate Laboratory Control Sample (LCS/DLCS) analyses KWG0813479-1 and KWG0813479-2) was outside control criteria. All spike recoveries for the analyte in question were within acceptance limits in the LCS/DLCS, indicating the analytical batch was in control. No further corrective action was appropriate.

Elevated Method Reporting Limits:

The reporting limits are elevated for most samples. The sample extracts were diluted prior to instrumental analysis due to relatively high levels of non-target background components. Clean-up of the extracts was performed within the scope of the method, but did not eliminate enough of the background components to prevent dilutions. Semi-quantitative screens were performed prior to final analysis. The results of the screening indicated the need to perform dilutions.

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

Approved by  Date 01/23/09

Chain of Custody Documentation

CHAIN OF CUSTODY

PROJECT NAME <u>Portland Harbor Stormwater Samp</u>				PROJECT NUMBER				
PROJECT MANAGER <u>Jennifer Shackelford</u>				COMPANY/ADDRESS <u>City of Portland BES-WPCL</u>				
CITY/STATE/ZIP				E-MAIL ADDRESS				
PHONE #				FAX #				
SAMPLER'S SIGNATURE								
SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS			REMARKS
<u>F0081475</u>	<u>12/12/08</u>	<u>1157</u>		<u>Storm water</u>	<input checked="" type="checkbox"/> <u>2</u>			
<u>1476</u>		<u>1321</u>			<input checked="" type="checkbox"/> <u>2</u>			
<u>1477</u>		<u>1332</u>			<input checked="" type="checkbox"/> <u>2</u>			
<u>1478</u>		<u>1310</u>			<input checked="" type="checkbox"/> <u>2</u>			
<u>1479</u>		<u>1144</u>			<input checked="" type="checkbox"/> <u>2</u>			
<u>1480</u>		<u>1120</u>			<input checked="" type="checkbox"/> <u>2</u>			
<u>1481</u>		<u>1344</u>			<input checked="" type="checkbox"/> <u>2</u>			
<u>1482</u>		<u>—</u>			<input checked="" type="checkbox"/> <u>2</u>			

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 _____	
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RELINQUISHED BY: <u>K. White</u> 12/10/08 9:15 Signature _____ Date/Time _____ Printed Name _____ Firm <u>WPCL</u>		RECEIVED BY: <u>B. [Signature]</u> 12/10/08 9:15 Signature _____ Date/Time _____ Printed Name _____ Firm _____		RELINQUISHED BY: <u>B. [Signature]</u> 12/16/08 2:40 Signature _____ Date/Time _____ Printed Name _____ Firm _____		RECEIVED BY: <u>[Signature]</u> 12/16/08 1:40 Signature _____ Date/Time _____ Printed Name _____ Firm _____	
--	--	--	--	--	--	---	--

SPECIAL INSTRUCTIONS/COMMENTS:

Please run Low level Semi-vols 8270 +

Low level pesticides 8081, Thanks

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 Ti 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 Ti Sn V Zn Hg		*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: _____ (CIRCLE ONE)	
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SEMIVOLATILE ORGANICS by GC/MS LOW 625 <input type="checkbox"/> 8270 <input checked="" type="checkbox"/> <u>LOW LEVEL</u>		BTX 8021 <input type="checkbox"/> BTEX <input type="checkbox"/>	
Volatile Organics 624 <input type="checkbox"/> 8260 <input type="checkbox"/>		Gas <input type="checkbox"/> Diesel <input type="checkbox"/> Oil <input type="checkbox"/>	
Hydrocarbons (*see below) <input type="checkbox"/> Fuel Fingerprint (FIQ) <input type="checkbox"/> NW-HCID Screen		Oil & Grease/TRPH 1664 HEM <input type="checkbox"/> 1664 SGT <input type="checkbox"/>	
PCB's Aroclors <input type="checkbox"/> Congeners <input type="checkbox"/>		Pesticides/Herbicides 608 <input type="checkbox"/> 8081A <input checked="" type="checkbox"/> <u>LOW LEVEL</u> 8141A <input type="checkbox"/> 8151A <input type="checkbox"/>	
Chlorophenolics - 8151M Tri <input type="checkbox"/> Tetra <input type="checkbox"/> PCP <input type="checkbox"/>		PAHS 8310 <input type="checkbox"/> SIM <input type="checkbox"/>	
Metals, Total or Dissolved (See list below)		Cyanide <input type="checkbox"/> Hex-Chrom <input type="checkbox"/>	
pH, Cond., Cl, SO₄, PO₄, F, NO₂, NO₃, BOD, TSS, TDS (circle) NH ₃ -N, COD, Total-P, TKN, TOC, DOC (circle) NO ₂ +NO ₃		TOX 9020 <input type="checkbox"/> AOX 1650 <input type="checkbox"/> 506 <input type="checkbox"/>	

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC DS

Client / Project: City of Portland Service Request K08 12/90
Received: 12-16-08 Opened: 12-16-08 By: DS

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): 6.3 _____

Temperature Blank (°C): 4.9 _____

6. If applicable, list Chain of Custody Numbers: _____

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 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 and 1631 Mercury bottles 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	Broken	pH	Reagent	Volume added	Reagent Lot Number	Initials

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

Additional Notes, Discrepancies, & Resolutions: _____

Organochlorine Pesticides

EPA Method 8081

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: 12/12/2008
Date Received: 12/16/2008

Organochlorine Pesticides

Sample Name: FO 081480
Lab Code: K0812190-006
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	Ui	0.53	0.53	1	12/17/08	01/04/09	KWG0813446	
beta-BHC	ND	Ui	1.7	1.7	1	12/17/08	01/04/09	KWG0813446	
gamma-BHC (Lindane)	ND	U	0.53	0.50	1	12/17/08	01/04/09	KWG0813446	
delta-BHC	ND	Ui	2.5	2.5	1	12/17/08	01/04/09	KWG0813446	
Heptachlor	ND	Ui	2.0	2.0	1	12/17/08	01/04/09	KWG0813446	
Aldrin	5.3	P	0.53	0.12	1	12/17/08	01/11/09	KWG0813446	
Heptachlor Epoxide	1.7	P	0.53	0.23	1	12/17/08	01/11/09	KWG0813446	
gamma-Chlordane†	ND	Ui	0.63	0.63	1	12/17/08	01/04/09	KWG0813446	
Endosulfan I	ND	U	0.53	0.27	1	12/17/08	01/04/09	KWG0813446	
alpha-Chlordane	ND	U	0.53	0.29	1	12/17/08	01/04/09	KWG0813446	
Dieldrin	ND	U	0.53	0.39	1	12/17/08	01/04/09	KWG0813446	
4,4'-DDE	ND	Ui	0.53	0.53	1	12/17/08	01/04/09	KWG0813446	
Endrin	ND	U	0.53	0.52	1	12/17/08	01/04/09	KWG0813446	
Endosulfan II	ND	U	0.53	0.37	1	12/17/08	01/04/09	KWG0813446	
4,4'-DDD	ND	Ui	3.0	3.0	1	12/17/08	01/11/09	KWG0813446	
Endrin Aldehyde	ND	U	0.53	0.23	1	12/17/08	01/04/09	KWG0813446	
Endosulfan Sulfate	ND	Ui	1.1	1.1	1	12/17/08	01/04/09	KWG0813446	
4,4'-DDT	ND	Ui	1.1	1.1	1	12/17/08	01/04/09	KWG0813446	
Endrin Ketone	ND	Ui	0.84	0.84	1	12/17/08	01/04/09	KWG0813446	
Methoxychlor	ND	U	0.53	0.30	1	12/17/08	01/04/09	KWG0813446	
Toxaphene	ND	Ui	73	73	1	12/17/08	01/04/09	KWG0813446	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	41	10-121	01/04/09	Acceptable
Decachlorobiphenyl	57	17-150	01/04/09	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: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: 12/12/2008
Date Received: 12/16/2008

Organochlorine Pesticides

Sample Name: FO 081481
Lab Code: K0812190-007
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	0.49	0.21	1	12/17/08	01/04/09	KWG0813446	
beta-BHC	ND	U	0.49	0.41	1	12/17/08	01/04/09	KWG0813446	
gamma-BHC (Lindane)	ND	U	0.49	0.47	1	12/17/08	01/04/09	KWG0813446	
delta-BHC	ND	U	0.49	0.14	1	12/17/08	01/04/09	KWG0813446	
Heptachlor	ND	U	0.49	0.18	1	12/17/08	01/04/09	KWG0813446	
Aldrin	ND	U	0.49	0.11	1	12/17/08	01/04/09	KWG0813446	
Heptachlor Epoxide	ND	U	0.49	0.21	1	12/17/08	01/04/09	KWG0813446	
gamma-Chlordane†	ND	U	0.49	0.31	1	12/17/08	01/04/09	KWG0813446	
Endosulfan I	ND	U	0.49	0.25	1	12/17/08	01/04/09	KWG0813446	
alpha-Chlordane	ND	U	0.49	0.27	1	12/17/08	01/04/09	KWG0813446	
Dieldrin	ND	U	0.49	0.37	1	12/17/08	01/04/09	KWG0813446	
4,4'-DDE	ND	U	0.49	0.19	1	12/17/08	01/04/09	KWG0813446	
Endrin	ND	U	0.49	0.49	1	12/17/08	01/04/09	KWG0813446	
Endosulfan II	ND	U	0.49	0.35	1	12/17/08	01/04/09	KWG0813446	
4,4'-DDD	ND	U	0.49	0.21	1	12/17/08	01/04/09	KWG0813446	
Endrin Aldehyde	ND	U	0.49	0.21	1	12/17/08	01/04/09	KWG0813446	
Endosulfan Sulfate	ND	U	0.49	0.28	1	12/17/08	01/04/09	KWG0813446	
4,4'-DDT	ND	U	0.49	0.17	1	12/17/08	01/04/09	KWG0813446	
Endrin Ketone	ND	U	0.49	0.32	1	12/17/08	01/04/09	KWG0813446	
Methoxychlor	ND	U	0.49	0.28	1	12/17/08	01/04/09	KWG0813446	
Toxaphene	ND	U	25	9.0	1	12/17/08	01/04/09	KWG0813446	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	50	10-121	01/04/09	Acceptable
Decachlorobiphenyl	54	17-150	01/04/09	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: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: 12/12/2008
Date Received: 12/16/2008

Organochlorine Pesticides

Sample Name: FO 081482
Lab Code: K0812190-008
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	Ui	0.58	0.58	1	12/17/08	01/04/09	KWG0813446	
beta-BHC	ND	Ui	1.8	1.8	1	12/17/08	01/04/09	KWG0813446	
gamma-BHC (Lindane)	ND	U	0.52	0.49	1	12/17/08	01/04/09	KWG0813446	
delta-BHC	ND	Ui	3.1	3.1	1	12/17/08	01/04/09	KWG0813446	
Heptachlor	ND	Ui	1.6	1.6	1	12/17/08	01/04/09	KWG0813446	
Aldrin	5.3	P	0.52	0.12	1	12/17/08	01/11/09	KWG0813446	
Heptachlor Epoxide	ND	Ui	0.52	0.52	1	12/17/08	01/04/09	KWG0813446	
gamma-Chlordane†	ND	Ui	0.52	0.52	1	12/17/08	01/04/09	KWG0813446	
Endosulfan I	ND	U	0.52	0.26	1	12/17/08	01/04/09	KWG0813446	
alpha-Chlordane	ND	U	0.52	0.28	1	12/17/08	01/04/09	KWG0813446	
Dieldrin	ND	Ui	0.52	0.52	1	12/17/08	01/04/09	KWG0813446	
4,4'-DDE	ND	Ui	0.55	0.55	1	12/17/08	01/04/09	KWG0813446	
Endrin	ND	U	0.52	0.51	1	12/17/08	01/04/09	KWG0813446	
Endosulfan II	ND	U	0.52	0.36	1	12/17/08	01/04/09	KWG0813446	
4,4'-DDD	ND	Ui	0.76	0.76	1	12/17/08	01/11/09	KWG0813446	
Endrin Aldehyde	ND	U	0.52	0.22	1	12/17/08	01/04/09	KWG0813446	
Endosulfan Sulfate	ND	Ui	1.1	1.1	1	12/17/08	01/04/09	KWG0813446	
4,4'-DDT	ND	Ui	2.5	2.5	1	12/17/08	01/04/09	KWG0813446	
Endrin Ketone	ND	U	0.52	0.33	1	12/17/08	01/04/09	KWG0813446	
Methoxychlor	ND	U	0.52	0.29	1	12/17/08	01/04/09	KWG0813446	
Toxaphene	ND	Ui	87	87	1	12/17/08	01/04/09	KWG0813446	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	43	10-121	01/04/09	Acceptable
Decachlorobiphenyl	56	17-150	01/04/09	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: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: NA
Date Received: NA

Organochlorine Pesticides

Sample Name: Method Blank
Lab Code: KWG0813446-3
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	0.49	0.21	1	12/17/08	01/04/09	KWG0813446	
beta-BHC	ND	U	0.49	0.41	1	12/17/08	01/04/09	KWG0813446	
gamma-BHC (Lindane)	ND	U	0.49	0.47	1	12/17/08	01/04/09	KWG0813446	
delta-BHC	ND	U	0.49	0.14	1	12/17/08	01/04/09	KWG0813446	
Heptachlor	ND	U	0.49	0.18	1	12/17/08	01/04/09	KWG0813446	
Aldrin	ND	U	0.49	0.11	1	12/17/08	01/04/09	KWG0813446	
Heptachlor Epoxide	ND	U	0.49	0.21	1	12/17/08	01/04/09	KWG0813446	
gamma-Chlordane†	ND	U	0.49	0.31	1	12/17/08	01/04/09	KWG0813446	
Endosulfan I	ND	U	0.49	0.25	1	12/17/08	01/04/09	KWG0813446	
alpha-Chlordane	ND	U	0.49	0.27	1	12/17/08	01/04/09	KWG0813446	
Dieldrin	ND	U	0.49	0.37	1	12/17/08	01/04/09	KWG0813446	
4,4'-DDE	ND	U	0.49	0.19	1	12/17/08	01/04/09	KWG0813446	
Endrin	ND	U	0.49	0.49	1	12/17/08	01/04/09	KWG0813446	
Endosulfan II	ND	U	0.49	0.35	1	12/17/08	01/04/09	KWG0813446	
4,4'-DDD	ND	U	0.49	0.21	1	12/17/08	01/04/09	KWG0813446	
Endrin Aldehyde	ND	U	0.49	0.21	1	12/17/08	01/04/09	KWG0813446	
Endosulfan Sulfate	ND	U	0.49	0.28	1	12/17/08	01/04/09	KWG0813446	
4,4'-DDT	ND	U	0.49	0.17	1	12/17/08	01/04/09	KWG0813446	
Endrin Ketone	ND	U	0.49	0.32	1	12/17/08	01/04/09	KWG0813446	
Methoxychlor	ND	U	0.49	0.28	1	12/17/08	01/04/09	KWG0813446	
Toxaphene	ND	U	25	9.0	1	12/17/08	01/04/09	KWG0813446	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	50	10-121	01/04/09	Acceptable
Decachlorobiphenyl	79	17-150	01/04/09	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: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190

Surrogate Recovery Summary
Organochlorine Pesticides

Extraction Method: EPA 3535
Analysis Method: 8081A

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>
FO 081475	K0812190-001	46	64
FO 081476	K0812190-002	48	67
FO 081477	K0812190-003	39	42
FO 081478	K0812190-004	48	53
FO 081479	K0812190-005	44	58
FO 081480	K0812190-006	41	57
FO 081481	K0812190-007	50	54
FO 081482	K0812190-008	43	56
Method Blank	KWG0813446-3	50	79
Lab Control Sample	KWG0813446-1	48	83
Duplicate Lab Control Sample	KWG0813446-2	51	85

Surrogate Recovery Control Limits (%)

Sur1 = Tetrachloro-m-xylene	10-121
Sur2 = Decachlorobiphenyl	17-150

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: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Extracted: 12/17/2008
Date Analyzed: 01/04/2009

**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: KWG0813446

Analyte Name	Lab Control Sample KWG0813446-1 Lab Control Spike			Duplicate Lab Control Sample KWG0813446-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
alpha-BHC	6.73	10.0	67	6.37	10.0	64	43-127	6	30
beta-BHC	7.27	10.0	73	6.83	10.0	68	41-129	6	30
gamma-BHC (Lindane)	7.17	10.0	72	6.71	10.0	67	42-128	7	30
delta-BHC	7.58	10.0	76	7.06	10.0	71	47-141	7	30
Heptachlor	7.23	10.0	72	6.51	10.0	65	34-126	10	30
Aldrin	6.45	10.0	65	5.85	10.0	59	10-125	10	30
Heptachlor Epoxide	7.44	10.0	74	6.98	10.0	70	45-124	6	30
gamma-Chlordane	7.18	10.0	72	6.66	10.0	67	48-119	7	30
Endosulfan I	7.57	10.0	76	7.09	10.0	71	30-115	7	30
alpha-Chlordane	7.36	10.0	74	6.70	10.0	67	48-119	9	30
Dieldrin	7.82	10.0	78	7.26	10.0	73	50-120	7	30
4,4'-DDE	8.79	10.0	88	8.55	10.0	86	36-137	3	30
Endrin	8.10	10.0	81	7.09	10.0	71	53-132	13	30
Endosulfan II	7.85	10.0	78	7.39	10.0	74	32-123	6	30
4,4'-DDD	8.69	10.0	87	7.90	10.0	79	38-140	10	30
Endrin Aldehyde	5.51	10.0	55	5.29	10.0	53	30-114	4	30
Endosulfan Sulfate	7.18	10.0	72	6.89	10.0	69	46-120	4	30
4,4'-DDT	8.17	10.0	82	7.93	10.0	79	45-146	3	30
Endrin Ketone	7.51	10.0	75	7.28	10.0	73	45-127	3	30
Methoxychlor	7.83	10.0	78	7.50	10.0	75	48-140	4	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.

Semi-Volatile Organic Compounds

EPA Method 8270C

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: 12/12/2008
Date Received: 12/16/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081480
Lab Code: K0812190-006
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	1.1	0.18	5	12/18/08	01/02/09	KWG0813479	
Phenol	0.56	JD	2.6	0.32	5	12/18/08	01/02/09	KWG0813479	
2-Chlorophenol	ND	U	2.6	0.28	5	12/18/08	01/02/09	KWG0813479	
1,3-Dichlorobenzene	ND	U	1.1	0.11	5	12/18/08	01/02/09	KWG0813479	
1,4-Dichlorobenzene	ND	U	1.1	0.15	5	12/18/08	01/02/09	KWG0813479	
1,2-Dichlorobenzene	ND	U	1.1	0.12	5	12/18/08	01/02/09	KWG0813479	
Benzyl Alcohol	0.80	JD	2.6	0.37	5	12/18/08	01/02/09	KWG0813479	
Bis(2-chloroisopropyl) Ether	ND	U	1.1	0.14	5	12/18/08	01/02/09	KWG0813479	
2-Methylphenol	ND	U	2.6	0.56	5	12/18/08	01/02/09	KWG0813479	
Hexachloroethane	ND	U	1.1	0.13	5	12/18/08	01/02/09	KWG0813479	
N-Nitrosodi-n-propylamine	ND	U	1.1	0.19	5	12/18/08	01/02/09	KWG0813479	
4-Methylphenol†	0.70	JD	2.6	0.61	5	12/18/08	01/02/09	KWG0813479	
Nitrobenzene	ND	U	1.1	0.15	5	12/18/08	01/02/09	KWG0813479	
Isophorone	ND	U	1.1	0.081	5	12/18/08	01/02/09	KWG0813479	
2-Nitrophenol	ND	U	2.6	0.32	5	12/18/08	01/02/09	KWG0813479	
2,4-Dimethylphenol	ND	U	21	12	5	12/18/08	01/02/09	KWG0813479	
Bis(2-chloroethoxy)methane	ND	U	1.1	0.13	5	12/18/08	01/02/09	KWG0813479	
2,4-Dichlorophenol	ND	U	2.6	0.24	5	12/18/08	01/02/09	KWG0813479	
Benzoic Acid	6.1	JD	26	5.6	5	12/18/08	01/02/09	KWG0813479	
1,2,4-Trichlorobenzene	ND	U	1.1	0.081	5	12/18/08	01/02/09	KWG0813479	
Naphthalene	0.54	JD	1.1	0.12	5	12/18/08	01/02/09	KWG0813479	
4-Chloroaniline	ND	U	1.1	0.13	5	12/18/08	01/02/09	KWG0813479	
Hexachlorobutadiene	ND	U	1.1	0.14	5	12/18/08	01/02/09	KWG0813479	
4-Chloro-3-methylphenol	ND	U	2.6	0.19	5	12/18/08	01/02/09	KWG0813479	
2-Methylnaphthalene	ND	U	1.1	0.14	5	12/18/08	01/02/09	KWG0813479	
Hexachlorocyclopentadiene	ND	U	5.1	0.96	5	12/18/08	01/02/09	KWG0813479	
2,4,6-Trichlorophenol	ND	U	2.6	0.30	5	12/18/08	01/02/09	KWG0813479	
2,4,5-Trichlorophenol	ND	U	2.6	0.16	5	12/18/08	01/02/09	KWG0813479	
2-Chloronaphthalene	ND	U	1.1	0.21	5	12/18/08	01/02/09	KWG0813479	
2-Nitroaniline	ND	U	1.1	0.13	5	12/18/08	01/02/09	KWG0813479	
Acenaphthylene	ND	U	1.1	0.076	5	12/18/08	01/02/09	KWG0813479	
Dimethyl Phthalate	ND	U	1.1	0.11	5	12/18/08	01/02/09	KWG0813479	
2,6-Dinitrotoluene	ND	U	1.1	0.17	5	12/18/08	01/02/09	KWG0813479	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: 12/12/2008
Date Received: 12/16/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081480
Lab Code: K0812190-006
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	1.1	0.14	5	12/18/08	01/02/09	KWG0813479	
3-Nitroaniline	ND	U	5.1	0.15	5	12/18/08	01/02/09	KWG0813479	
2,4-Dinitrophenol	ND	U	21	0.86	5	12/18/08	01/02/09	KWG0813479	
Dibenzofuran	ND	U	1.1	0.091	5	12/18/08	01/02/09	KWG0813479	
4-Nitrophenol	ND	U	11	1.5	5	12/18/08	01/02/09	KWG0813479	
2,4-Dinitrotoluene	ND	U	1.1	0.091	5	12/18/08	01/02/09	KWG0813479	
Fluorene	ND	U	1.1	0.14	5	12/18/08	01/02/09	KWG0813479	
4-Chlorophenyl Phenyl Ether	ND	U	1.1	0.14	5	12/18/08	01/02/09	KWG0813479	
Diethyl Phthalate	ND	U	1.1	0.061	5	12/18/08	01/02/09	KWG0813479	
4-Nitroaniline	ND	U	5.1	0.096	5	12/18/08	01/02/09	KWG0813479	
2-Methyl-4,6-dinitrophenol	ND	U	11	0.13	5	12/18/08	01/02/09	KWG0813479	
N-Nitrosodiphenylamine	ND	U	1.1	0.25	5	12/18/08	01/02/09	KWG0813479	
4-Bromophenyl Phenyl Ether	ND	U	1.1	0.14	5	12/18/08	01/02/09	KWG0813479	
Hexachlorobenzene	ND	U	1.1	0.12	5	12/18/08	01/02/09	KWG0813479	
Pentachlorophenol	ND	U	5.1	1.8	5	12/18/08	01/02/09	KWG0813479	
Phenanthrene	0.19	JD	1.1	0.12	5	12/18/08	01/02/09	KWG0813479	
Anthracene	ND	U	1.1	0.13	5	12/18/08	01/02/09	KWG0813479	
Di-n-butyl Phthalate	0.31	JD	1.1	0.12	5	12/18/08	01/02/09	KWG0813479	
Fluoranthene	0.22	JD	1.1	0.11	5	12/18/08	01/02/09	KWG0813479	
Pyrene	0.28	JD	1.1	0.096	5	12/18/08	01/02/09	KWG0813479	
Butyl Benzyl Phthalate	ND	U	1.1	0.091	5	12/18/08	01/02/09	KWG0813479	
3,3'-Dichlorobenzidine	ND	U	11	2.2	5	12/18/08	01/02/09	KWG0813479	
Benz(a)anthracene	ND	U	1.1	0.091	5	12/18/08	01/02/09	KWG0813479	
Chrysene	ND	U	1.1	0.15	5	12/18/08	01/02/09	KWG0813479	
Bis(2-ethylhexyl) Phthalate	3.6	JD	5.1	0.66	5	12/18/08	01/02/09	KWG0813479	
Di-n-octyl Phthalate	ND	U	1.1	0.091	5	12/18/08	01/02/09	KWG0813479	
Benzo(b)fluoranthene	ND	U	1.1	0.086	5	12/18/08	01/02/09	KWG0813479	
Benzo(k)fluoranthene	ND	U	1.1	0.13	5	12/18/08	01/02/09	KWG0813479	
Benzo(a)pyrene	ND	U	1.1	0.16	5	12/18/08	01/02/09	KWG0813479	
Indeno(1,2,3-cd)pyrene	ND	U	1.1	0.11	5	12/18/08	01/02/09	KWG0813479	
Dibenz(a,h)anthracene	ND	U	1.1	0.086	5	12/18/08	01/02/09	KWG0813479	
Benzo(g,h,i)perylene	ND	U	1.1	0.096	5	12/18/08	01/02/09	KWG0813479	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: 12/12/2008
Date Received: 12/16/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081480
Lab Code: K0812190-006

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	62	21-119	01/02/09	Acceptable
Phenol-d6	61	31-121	01/02/09	Acceptable
Nitrobenzene-d5	68	29-121	01/02/09	Acceptable
2-Fluorobiphenyl	60	25-109	01/02/09	Acceptable
2,4,6-Tribromophenol	74	30-131	01/02/09	Acceptable
Terphenyl-d14	55	20-140	01/02/09	Acceptable

† Analyte Comments

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

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: 12/12/2008
Date Received: 12/16/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081481
Lab Code: K0812190-007
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	12/18/08	12/30/08	KWG0813479	
Phenol	ND	U	0.50	0.063	1	12/18/08	12/30/08	KWG0813479	
2-Chlorophenol	ND	U	0.50	0.054	1	12/18/08	12/30/08	KWG0813479	
1,3-Dichlorobenzene	ND	U	0.20	0.021	1	12/18/08	12/30/08	KWG0813479	
1,4-Dichlorobenzene	ND	U	0.20	0.029	1	12/18/08	12/30/08	KWG0813479	
1,2-Dichlorobenzene	ND	U	0.20	0.022	1	12/18/08	12/30/08	KWG0813479	
Benzyl Alcohol	ND	U	0.50	0.073	1	12/18/08	12/30/08	KWG0813479	
Bis(2-chloroisopropyl) Ether	ND	U	0.20	0.026	1	12/18/08	12/30/08	KWG0813479	
2-Methylphenol	ND	U	0.50	0.11	1	12/18/08	12/30/08	KWG0813479	
Hexachloroethane	ND	U	0.20	0.024	1	12/18/08	12/30/08	KWG0813479	
N-Nitrosodi-n-propylamine	ND	U	0.20	0.037	1	12/18/08	12/30/08	KWG0813479	
4-Methylphenol†	ND	U	0.50	0.12	1	12/18/08	12/30/08	KWG0813479	
Nitrobenzene	ND	U	0.20	0.028	1	12/18/08	12/30/08	KWG0813479	
Isophorone	ND	U	0.20	0.016	1	12/18/08	12/30/08	KWG0813479	
2-Nitrophenol	ND	U	0.50	0.063	1	12/18/08	12/30/08	KWG0813479	
2,4-Dimethylphenol	ND	U	4.0	2.2	1	12/18/08	12/30/08	KWG0813479	
Bis(2-chloroethoxy)methane	ND	U	0.20	0.024	1	12/18/08	12/30/08	KWG0813479	
2,4-Dichlorophenol	ND	U	0.50	0.047	1	12/18/08	12/30/08	KWG0813479	
Benzoic Acid	ND	U	5.0	1.1	1	12/18/08	12/30/08	KWG0813479	
1,2,4-Trichlorobenzene	ND	U	0.20	0.016	1	12/18/08	12/30/08	KWG0813479	
Naphthalene	ND	U	0.20	0.022	1	12/18/08	12/30/08	KWG0813479	
4-Chloroaniline	ND	U	0.20	0.025	1	12/18/08	12/30/08	KWG0813479	
Hexachlorobutadiene	ND	U	0.20	0.027	1	12/18/08	12/30/08	KWG0813479	
4-Chloro-3-methylphenol	ND	U	0.50	0.037	1	12/18/08	12/30/08	KWG0813479	
2-Methylnaphthalene	ND	U	0.20	0.026	1	12/18/08	12/30/08	KWG0813479	
Hexachlorocyclopentadiene	ND	U	1.0	0.19	1	12/18/08	12/30/08	KWG0813479	
2,4,6-Trichlorophenol	ND	U	0.50	0.058	1	12/18/08	12/30/08	KWG0813479	
2,4,5-Trichlorophenol	ND	U	0.50	0.031	1	12/18/08	12/30/08	KWG0813479	
2-Chloronaphthalene	ND	U	0.20	0.041	1	12/18/08	12/30/08	KWG0813479	
2-Nitroaniline	ND	U	0.20	0.024	1	12/18/08	12/30/08	KWG0813479	
Acenaphthylene	ND	U	0.20	0.015	1	12/18/08	12/30/08	KWG0813479	
Dimethyl Phthalate	ND	U	0.20	0.021	1	12/18/08	12/30/08	KWG0813479	
2,6-Dinitrotoluene	ND	U	0.20	0.033	1	12/18/08	12/30/08	KWG0813479	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: 12/12/2008
Date Received: 12/16/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081481
Lab Code: K0812190-007

Units: ug/L

Basis: NA

Extraction Method: EPA 3520C

Level: Low

Analysis Method: 8270C

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Acenaphthene	ND	U	0.20	0.026	1	12/18/08	12/30/08	KWG0813479	
3-Nitroaniline	ND	U	1.0	0.029	1	12/18/08	12/30/08	KWG0813479	
2,4-Dinitrophenol	ND	U	4.0	0.17	1	12/18/08	12/30/08	KWG0813479	
Dibenzofuran	ND	U	0.20	0.018	1	12/18/08	12/30/08	KWG0813479	
4-Nitrophenol	ND	U	2.0	0.28	1	12/18/08	12/30/08	KWG0813479	
2,4-Dinitrotoluene	ND	U	0.20	0.018	1	12/18/08	12/30/08	KWG0813479	
Fluorene	ND	U	0.20	0.027	1	12/18/08	12/30/08	KWG0813479	
4-Chlorophenyl Phenyl Ether	ND	U	0.20	0.027	1	12/18/08	12/30/08	KWG0813479	
Diethyl Phthalate	0.035	J	0.20	0.012	1	12/18/08	12/30/08	KWG0813479	
4-Nitroaniline	ND	U	1.0	0.019	1	12/18/08	12/30/08	KWG0813479	
2-Methyl-4,6-dinitrophenol	ND	U	2.0	0.025	1	12/18/08	12/30/08	KWG0813479	
N-Nitrosodiphenylamine	ND	U	0.20	0.048	1	12/18/08	12/30/08	KWG0813479	
4-Bromophenyl Phenyl Ether	ND	U	0.20	0.026	1	12/18/08	12/30/08	KWG0813479	
Hexachlorobenzene	ND	U	0.20	0.022	1	12/18/08	12/30/08	KWG0813479	
Pentachlorophenol	ND	U	1.0	0.34	1	12/18/08	12/30/08	KWG0813479	
Phenanthrene	ND	U	0.20	0.022	1	12/18/08	12/30/08	KWG0813479	
Anthracene	ND	U	0.20	0.024	1	12/18/08	12/30/08	KWG0813479	
Di-n-butyl Phthalate	0.13	J	0.20	0.023	1	12/18/08	12/30/08	KWG0813479	
Fluoranthene	ND	U	0.20	0.020	1	12/18/08	12/30/08	KWG0813479	
Pyrene	ND	U	0.20	0.019	1	12/18/08	12/30/08	KWG0813479	
Butyl Benzyl Phthalate	ND	U	0.20	0.018	1	12/18/08	12/30/08	KWG0813479	
3,3'-Dichlorobenzidine	ND	U	2.0	0.43	1	12/18/08	12/30/08	KWG0813479	
Benz(a)anthracene	ND	U	0.20	0.018	1	12/18/08	12/30/08	KWG0813479	
Chrysene	ND	U	0.20	0.028	1	12/18/08	12/30/08	KWG0813479	
Bis(2-ethylhexyl) Phthalate	0.33	J	1.0	0.13	1	12/18/08	12/30/08	KWG0813479	
Di-n-octyl Phthalate	ND	U	1.0	0.090	5	12/18/08	01/02/09	KWG0813479	
Benzo(b)fluoranthene	ND	U	1.0	0.085	5	12/18/08	01/02/09	KWG0813479	
Benzo(k)fluoranthene	ND	U	1.0	0.12	5	12/18/08	01/02/09	KWG0813479	
Benzo(a)pyrene	ND	U	1.0	0.16	5	12/18/08	01/02/09	KWG0813479	
Indeno(1,2,3-cd)pyrene	ND	U	1.0	0.11	5	12/18/08	01/02/09	KWG0813479	
Dibenz(a,h)anthracene	ND	U	1.0	0.085	5	12/18/08	01/02/09	KWG0813479	
Benzo(g,h,i)perylene	ND	U	1.0	0.095	5	12/18/08	01/02/09	KWG0813479	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: 12/12/2008
Date Received: 12/16/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081481
Lab Code: K0812190-007

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	79	21-119	12/30/08	Acceptable
Phenol-d6	82	31-121	12/30/08	Acceptable
Nitrobenzene-d5	80	29-121	12/30/08	Acceptable
2-Fluorobiphenyl	76	25-109	12/30/08	Acceptable
2,4,6-Tribromophenol	58	30-131	12/30/08	Acceptable
Terphenyl-d14	96	20-140	12/30/08	Acceptable

† Analyte Comments

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

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: 12/12/2008
Date Received: 12/16/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081482
Lab Code: K0812190-008
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	12/18/08	12/30/08	KWG0813479	
Phenol	0.38	J	0.52	0.065	1	12/18/08	12/30/08	KWG0813479	
2-Chlorophenol	ND	U	0.52	0.056	1	12/18/08	12/30/08	KWG0813479	
1,3-Dichlorobenzene	ND	U	0.21	0.022	1	12/18/08	12/30/08	KWG0813479	
1,4-Dichlorobenzene	ND	U	0.21	0.030	1	12/18/08	12/30/08	KWG0813479	
1,2-Dichlorobenzene	ND	U	0.21	0.023	1	12/18/08	12/30/08	KWG0813479	
Benzyl Alcohol	0.97		0.52	0.075	1	12/18/08	12/30/08	KWG0813479	
Bis(2-chloroisopropyl) Ether	ND	U	0.21	0.027	1	12/18/08	12/30/08	KWG0813479	
2-Methylphenol	0.47	J	0.52	0.12	1	12/18/08	12/30/08	KWG0813479	
Hexachloroethane	ND	U	0.21	0.025	1	12/18/08	12/30/08	KWG0813479	
N-Nitrosodi-n-propylamine	ND	U	0.21	0.038	1	12/18/08	12/30/08	KWG0813479	
4-Methylphenol†	0.69		0.52	0.13	1	12/18/08	12/30/08	KWG0813479	
Nitrobenzene	ND	U	0.21	0.029	1	12/18/08	12/30/08	KWG0813479	
Isophorone	ND	U	1.1	0.082	5	12/18/08	01/02/09	KWG0813479	
2-Nitrophenol	ND	U	2.6	0.33	5	12/18/08	01/02/09	KWG0813479	
2,4-Dimethylphenol	ND	U	21	12	5	12/18/08	01/02/09	KWG0813479	
Bis(2-chloroethoxy)methane	ND	U	1.1	0.13	5	12/18/08	01/02/09	KWG0813479	
2,4-Dichlorophenol	ND	U	2.6	0.24	5	12/18/08	01/02/09	KWG0813479	
Benzoic Acid	5.9	JD	26	5.7	5	12/18/08	01/02/09	KWG0813479	
1,2,4-Trichlorobenzene	ND	U	1.1	0.082	5	12/18/08	01/02/09	KWG0813479	
Naphthalene	0.93	JD	1.1	0.12	5	12/18/08	01/02/09	KWG0813479	
4-Chloroaniline	ND	U	1.1	0.13	5	12/18/08	01/02/09	KWG0813479	
Hexachlorobutadiene	ND	U	1.1	0.14	5	12/18/08	01/02/09	KWG0813479	
4-Chloro-3-methylphenol	ND	U	2.6	0.19	5	12/18/08	01/02/09	KWG0813479	
2-Methylnaphthalene	ND	U	1.1	0.14	5	12/18/08	01/02/09	KWG0813479	
Hexachlorocyclopentadiene	ND	U	5.2	0.97	5	12/18/08	01/02/09	KWG0813479	
2,4,6-Trichlorophenol	ND	U	2.6	0.30	5	12/18/08	01/02/09	KWG0813479	
2,4,5-Trichlorophenol	ND	U	2.6	0.16	5	12/18/08	01/02/09	KWG0813479	
2-Chloronaphthalene	ND	U	1.1	0.21	5	12/18/08	01/02/09	KWG0813479	
2-Nitroaniline	ND	U	1.1	0.13	5	12/18/08	01/02/09	KWG0813479	
Acenaphthylene	ND	U	1.1	0.077	5	12/18/08	01/02/09	KWG0813479	
Dimethyl Phthalate	ND	U	1.1	0.11	5	12/18/08	01/02/09	KWG0813479	
2,6-Dinitrotoluene	ND	U	1.1	0.17	5	12/18/08	01/02/09	KWG0813479	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: 12/12/2008
Date Received: 12/16/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081482
Lab Code: K0812190-008

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	12/18/08	01/02/09	KWG0813479	
3-Nitroaniline	ND	U	5.2	0.15	5	12/18/08	01/02/09	KWG0813479	
2,4-Dinitrophenol	ND	U	21	0.87	5	12/18/08	01/02/09	KWG0813479	
Dibenzofuran	ND	U	1.1	0.092	5	12/18/08	01/02/09	KWG0813479	
4-Nitrophenol	ND	U	11	1.5	5	12/18/08	01/02/09	KWG0813479	
2,4-Dinitrotoluene	ND	U	1.1	0.092	5	12/18/08	01/02/09	KWG0813479	
Fluorene	ND	U	1.1	0.14	5	12/18/08	01/02/09	KWG0813479	
4-Chlorophenyl Phenyl Ether	ND	U	1.1	0.14	5	12/18/08	01/02/09	KWG0813479	
Diethyl Phthalate	ND	U	1.1	0.062	5	12/18/08	01/02/09	KWG0813479	
4-Nitroaniline	ND	U	5.2	0.097	5	12/18/08	01/02/09	KWG0813479	
2-Methyl-4,6-dinitrophenol	ND	U	11	0.13	5	12/18/08	01/02/09	KWG0813479	
N-Nitrosodiphenylamine	ND	U	1.1	0.25	5	12/18/08	01/02/09	KWG0813479	
4-Bromophenyl Phenyl Ether	ND	U	1.1	0.14	5	12/18/08	01/02/09	KWG0813479	
Hexachlorobenzene	ND	U	1.1	0.12	5	12/18/08	01/02/09	KWG0813479	
Pentachlorophenol	ND	U	5.2	1.8	5	12/18/08	01/02/09	KWG0813479	
Phenanthrene	0.24	JD	1.1	0.12	5	12/18/08	01/02/09	KWG0813479	
Anthracene	ND	U	1.1	0.13	5	12/18/08	01/02/09	KWG0813479	
Di-n-butyl Phthalate	0.32	JD	1.1	0.12	5	12/18/08	01/02/09	KWG0813479	
Fluoranthene	0.20	JD	1.1	0.11	5	12/18/08	01/02/09	KWG0813479	
Pyrene	0.24		0.21	0.020	1	12/18/08	12/30/08	KWG0813479	
Butyl Benzyl Phthalate	0.43		0.21	0.019	1	12/18/08	12/30/08	KWG0813479	
3,3'-Dichlorobenzidine	ND	U	2.1	0.44	1	12/18/08	12/30/08	KWG0813479	
Benz(a)anthracene	0.057	J	0.21	0.019	1	12/18/08	12/30/08	KWG0813479	
Chrysene	0.15	J	0.21	0.029	1	12/18/08	12/30/08	KWG0813479	
Bis(2-ethylhexyl) Phthalate	3.9		1.1	0.14	1	12/18/08	12/30/08	KWG0813479	
Di-n-octyl Phthalate	ND	U	1.1	0.092	5	12/18/08	01/02/09	KWG0813479	
Benzo(b)fluoranthene	ND	U	1.1	0.087	5	12/18/08	01/02/09	KWG0813479	
Benzo(k)fluoranthene	ND	U	1.1	0.13	5	12/18/08	01/02/09	KWG0813479	
Benzo(a)pyrene	ND	U	1.1	0.16	5	12/18/08	01/02/09	KWG0813479	
Indeno(1,2,3-cd)pyrene	ND	U	1.1	0.11	5	12/18/08	01/02/09	KWG0813479	
Dibenz(a,h)anthracene	ND	U	1.1	0.087	5	12/18/08	01/02/09	KWG0813479	
Benzo(g,h,i)perylene	ND	U	1.1	0.097	5	12/18/08	01/02/09	KWG0813479	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: 12/12/2008
Date Received: 12/16/2008

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 081482
Lab Code: K0812190-008

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	72	21-119	12/30/08	Acceptable
Phenol-d6	78	31-121	12/30/08	Acceptable
Nitrobenzene-d5	79	29-121	12/30/08	Acceptable
2-Fluorobiphenyl	58	25-109	01/02/09	Acceptable
2,4,6-Tribromophenol	69	30-131	01/02/09	Acceptable
Terphenyl-d14	65	20-140	12/30/08	Acceptable

† Analyte Comments

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

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: NA
Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KWG0813479-3
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	12/18/08	12/30/08	KWG0813479	
Phenol	0.25	J	0.48	0.063	1	12/18/08	12/30/08	KWG0813479	
2-Chlorophenol	ND	U	0.48	0.054	1	12/18/08	12/30/08	KWG0813479	
1,3-Dichlorobenzene	ND	U	0.19	0.021	1	12/18/08	12/30/08	KWG0813479	
1,4-Dichlorobenzene	ND	U	0.19	0.029	1	12/18/08	12/30/08	KWG0813479	
1,2-Dichlorobenzene	ND	U	0.19	0.022	1	12/18/08	12/30/08	KWG0813479	
Benzyl Alcohol	ND	U	0.48	0.073	1	12/18/08	12/30/08	KWG0813479	
Bis(2-chloroisopropyl) Ether	ND	U	0.19	0.026	1	12/18/08	12/30/08	KWG0813479	
2-Methylphenol	ND	U	0.48	0.11	1	12/18/08	12/30/08	KWG0813479	
Hexachloroethane	ND	U	0.19	0.024	1	12/18/08	12/30/08	KWG0813479	
N-Nitrosodi-n-propylamine	ND	U	0.19	0.037	1	12/18/08	12/30/08	KWG0813479	
4-Methylphenol†	ND	U	0.48	0.12	1	12/18/08	12/30/08	KWG0813479	
Nitrobenzene	ND	U	0.19	0.028	1	12/18/08	12/30/08	KWG0813479	
Isophorone	ND	U	0.19	0.016	1	12/18/08	12/30/08	KWG0813479	
2-Nitrophenol	ND	U	0.48	0.063	1	12/18/08	12/30/08	KWG0813479	
2,4-Dimethylphenol	ND	U	3.8	2.2	1	12/18/08	12/30/08	KWG0813479	
Bis(2-chloroethoxy)methane	ND	U	0.19	0.024	1	12/18/08	12/30/08	KWG0813479	
2,4-Dichlorophenol	ND	U	0.48	0.047	1	12/18/08	12/30/08	KWG0813479	
Benzoic Acid	ND	U	4.8	1.1	1	12/18/08	12/30/08	KWG0813479	
1,2,4-Trichlorobenzene	ND	U	0.19	0.016	1	12/18/08	12/30/08	KWG0813479	
Naphthalene	ND	U	0.19	0.022	1	12/18/08	12/30/08	KWG0813479	
4-Chloroaniline	ND	U	0.19	0.025	1	12/18/08	12/30/08	KWG0813479	
Hexachlorobutadiene	ND	U	0.19	0.027	1	12/18/08	12/30/08	KWG0813479	
4-Chloro-3-methylphenol	ND	U	0.48	0.037	1	12/18/08	12/30/08	KWG0813479	
2-Methylnaphthalene	ND	U	0.19	0.026	1	12/18/08	12/30/08	KWG0813479	
Hexachlorocyclopentadiene	ND	U	0.95	0.19	1	12/18/08	12/30/08	KWG0813479	
2,4,6-Trichlorophenol	ND	U	0.48	0.058	1	12/18/08	12/30/08	KWG0813479	
2,4,5-Trichlorophenol	ND	U	0.48	0.031	1	12/18/08	12/30/08	KWG0813479	
2-Chloronaphthalene	ND	U	0.19	0.041	1	12/18/08	12/30/08	KWG0813479	
2-Nitroaniline	ND	U	0.19	0.024	1	12/18/08	12/30/08	KWG0813479	
Acenaphthylene	ND	U	0.19	0.015	1	12/18/08	12/30/08	KWG0813479	
Dimethyl Phthalate	ND	U	0.19	0.021	1	12/18/08	12/30/08	KWG0813479	
2,6-Dinitrotoluene	ND	U	0.19	0.033	1	12/18/08	12/30/08	KWG0813479	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: NA
Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KWG0813479-3
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	12/18/08	12/30/08	KWG0813479	
3-Nitroaniline	ND	U	0.95	0.029	1	12/18/08	12/30/08	KWG0813479	
2,4-Dinitrophenol	ND	U	3.8	0.17	1	12/18/08	12/30/08	KWG0813479	
Dibenzofuran	ND	U	0.19	0.018	1	12/18/08	12/30/08	KWG0813479	
4-Nitrophenol	ND	U	1.9	0.28	1	12/18/08	12/30/08	KWG0813479	
2,4-Dinitrotoluene	ND	U	0.19	0.018	1	12/18/08	12/30/08	KWG0813479	
Fluorene	ND	U	0.19	0.027	1	12/18/08	12/30/08	KWG0813479	
4-Chlorophenyl Phenyl Ether	ND	U	0.19	0.027	1	12/18/08	12/30/08	KWG0813479	
Diethyl Phthalate	0.024	J	0.19	0.012	1	12/18/08	12/30/08	KWG0813479	
4-Nitroaniline	ND	U	0.95	0.019	1	12/18/08	12/30/08	KWG0813479	
2-Methyl-4,6-dinitrophenol	ND	U	1.9	0.025	1	12/18/08	12/30/08	KWG0813479	
N-Nitrosodiphenylamine	ND	U	0.19	0.048	1	12/18/08	12/30/08	KWG0813479	
4-Bromophenyl Phenyl Ether	ND	U	0.19	0.026	1	12/18/08	12/30/08	KWG0813479	
Hexachlorobenzene	ND	U	0.19	0.022	1	12/18/08	12/30/08	KWG0813479	
Pentachlorophenol	ND	U	0.95	0.34	1	12/18/08	12/30/08	KWG0813479	
Phenanthrene	ND	U	0.19	0.022	1	12/18/08	12/30/08	KWG0813479	
Anthracene	ND	U	0.19	0.024	1	12/18/08	12/30/08	KWG0813479	
Di-n-butyl Phthalate	0.15	J	0.19	0.023	1	12/18/08	12/30/08	KWG0813479	
Fluoranthene	ND	U	0.19	0.020	1	12/18/08	12/30/08	KWG0813479	
Pyrene	ND	U	0.19	0.019	1	12/18/08	12/30/08	KWG0813479	
Butyl Benzyl Phthalate	0.066	J	0.19	0.018	1	12/18/08	12/30/08	KWG0813479	
3,3'-Dichlorobenzidine	ND	U	1.9	0.43	1	12/18/08	12/30/08	KWG0813479	
Benz(a)anthracene	ND	U	0.19	0.018	1	12/18/08	12/30/08	KWG0813479	
Chrysene	ND	U	0.19	0.028	1	12/18/08	12/30/08	KWG0813479	
Bis(2-ethylhexyl) Phthalate	ND	U	0.95	0.13	1	12/18/08	12/30/08	KWG0813479	
Di-n-octyl Phthalate	ND	U	0.19	0.018	1	12/18/08	12/30/08	KWG0813479	
Benzo(b)fluoranthene	ND	U	0.19	0.017	1	12/18/08	12/30/08	KWG0813479	
Benzo(k)fluoranthene	ND	U	0.19	0.024	1	12/18/08	12/30/08	KWG0813479	
Benzo(a)pyrene	ND	U	0.19	0.031	1	12/18/08	12/30/08	KWG0813479	
Indeno(1,2,3-cd)pyrene	ND	U	0.19	0.021	1	12/18/08	12/30/08	KWG0813479	
Dibenz(a,h)anthracene	ND	U	0.19	0.017	1	12/18/08	12/30/08	KWG0813479	
Benzo(g,h,i)perylene	ND	U	0.19	0.019	1	12/18/08	12/30/08	KWG0813479	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Collected: NA
Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KWG0813479-3

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	71	21-119	12/30/08	Acceptable
Phenol-d6	73	31-121	12/30/08	Acceptable
Nitrobenzene-d5	85	29-121	12/30/08	Acceptable
2-Fluorobiphenyl	77	25-109	12/30/08	Acceptable
2,4,6-Tribromophenol	85	30-131	12/30/08	Acceptable
Terphenyl-d14	101	20-140	12/30/08	Acceptable

† Analyte Comments

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

Comments:

Client: Portland, City of
Project: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190

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

Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>	<u>Sur3</u>	<u>Sur4</u>	<u>Sur5</u>	<u>Sur6</u>
FO 081475	K0812190-001	68	71	77	62 D	86	81
FO 081476	K0812190-002	65	72	77	57 D	71 D	62 D
FO 081477	K0812190-003	69 D	67 D	69 D	59 D	82 D	44 D
FO 081478	K0812190-004	51 D	53 D	57 D	58 D	68 D	55 D
FO 081479	K0812190-005	55 D	59 D	63 D	58 D	69 D	53 D
FO 081480	K0812190-006	62 D	61 D	68 D	60 D	74 D	55 D
FO 081481	K0812190-007	79	82	80	76	58	96
FO 081482	K0812190-008	72	78	79	58 D	69 D	65
Method Blank	KWG0813479-3	71	73	85	77	85	101
Lab Control Sample	KWG0813479-1	69	68	79	72	89	94
Duplicate Lab Control Sample	KWG0813479-2	67	70	79	74	87	98

Surrogate Recovery Control Limits (%)

Sur1 = 2-Fluorophenol	21-119	Sur5 = 2,4,6-Tribromophenol	30-131
Sur2 = Phenol-d6	31-121	Sur6 = Terphenyl-d14	20-140
Sur3 = Nitrobenzene-d5	29-121		
Sur4 = 2-Fluorobiphenyl	25-109		

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
 Project: Portland Harbor Stormwater Samp
 Sample Matrix: Water

Service Request: K0812190
 Date Extracted: 12/18/2008
 Date Analyzed: 12/30/2008

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: KWG0813479

Analyte Name	Lab Control Sample KWG0813479-1 Lab Control Spike			Duplicate Lab Control Sample KWG0813479-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
Bis(2-chloroethyl) Ether	3.49	5.00	70	3.64	5.00	73	39-115	4	30
Phenol	3.35	5.00	67	3.69	5.00	74	39-117	10	30
2-Chlorophenol	3.63	5.00	73	3.78	5.00	76	40-113	4	30
1,3-Dichlorobenzene	2.05	5.00	41	2.07	5.00	41	18-71	1	30
1,4-Dichlorobenzene	2.13	5.00	43	2.23	5.00	45	19-73	4	30
1,2-Dichlorobenzene	2.42	5.00	48	2.37	5.00	47	22-78	2	30
Benzyl Alcohol	3.56	5.00	71	3.82	5.00	76	37-119	7	30
Bis(2-chloroisopropyl) Ether	3.58	5.00	72	3.60	5.00	72	35-113	1	30
2-Methylphenol	3.62	5.00	72	3.59	5.00	72	26-113	1	30
Hexachloroethane	1.74	5.00	35	1.64	5.00	33	11-62	6	30
N-Nitrosodi-n-propylamine	3.72	5.00	74	3.74	5.00	75	32-117	1	30
4-Methylphenol	3.46	5.00	69	3.76	5.00	75	25-118	8	30
Nitrobenzene	3.97	5.00	79	3.97	5.00	79	37-116	0	30
Isophorone	3.96	5.00	79	4.19	5.00	84	39-112	5	30
2-Nitrophenol	3.83	5.00	77	4.16	5.00	83	42-116	8	30
2,4-Dimethylphenol	3.43	5.00	69	3.78	5.00	76	10-113	10	30
Bis(2-chloroethoxy)methane	3.76	5.00	75	3.95	5.00	79	40-113	5	30
2,4-Dichlorophenol	3.90	5.00	78	4.16	5.00	83	39-115	6	30
Benzoic Acid	ND	15.0	0 *	ND	15.0	0 *	10-102		30
1,2,4-Trichlorobenzene	2.46	5.00	49	2.56	5.00	51	21-78	4	30
Naphthalene	2.90	5.00	58	3.30	5.00	66	33-98	13	30
4-Chloroaniline	1.48	5.00	30	2.57	5.00	51	10-119	54 *	30
Hexachlorobutadiene	1.63	5.00	33	1.77	5.00	35	10-61	8	30
4-Chloro-3-methylphenol	3.96	5.00	79	4.39	5.00	88	37-119	10	30
2-Methylnaphthalene	2.86	5.00	57	3.38	5.00	68	32-95	17	30
Hexachlorocyclopentadiene	0.739	5.00	15	0.932	5.00	19	10-39	23	30
2,4,6-Trichlorophenol	3.82	5.00	76	4.41	5.00	88	40-117	14	30
2,4,5-Trichlorophenol	3.92	5.00	78	4.18	5.00	84	44-116	6	30
2-Chloronaphthalene	3.06	5.00	61	3.42	5.00	68	21-115	11	30
2-Nitroaniline	4.18	5.00	84	4.47	5.00	89	43-124	7	30
Acenaphthylene	3.42	5.00	68	3.99	5.00	80	41-114	15	30
Dimethyl Phthalate	4.08	5.00	82	4.36	5.00	87	47-117	7	30
2,6-Dinitrotoluene	4.09	5.00	82	4.50	5.00	90	45-120	9	30
Acenaphthene	3.23	5.00	65	3.67	5.00	73	38-106	13	30
3-Nitroaniline	3.65	5.00	73	4.60	5.00	92	31-125	23	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: Portland Harbor Stormwater Samp
Sample Matrix: Water

Service Request: K0812190
Date Extracted: 12/18/2008
Date Analyzed: 12/30/2008

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: KWG0813479

Analyte Name	Lab Control Sample KWG0813479-1 Lab Control Spike			Duplicate Lab Control Sample KWG0813479-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
2,4-Dinitrophenol	0.131	5.00	3 *	0.254	5.00	5 *	10-121	64 *	30
Dibenzofuran	3.37	5.00	67	3.84	5.00	77	40-107	13	30
4-Nitrophenol	3.33	5.00	67	4.21	5.00	84	43-133	23	30
2,4-Dinitrotoluene	4.29	5.00	86	4.50	5.00	90	47-125	5	30
Fluorene	3.44	5.00	69	4.00	5.00	80	40-112	15	30
4-Chlorophenyl Phenyl Ether	3.32	5.00	66	3.67	5.00	73	39-108	10	30
Diethyl Phthalate	4.15	5.00	83	4.51	5.00	90	47-120	9	30
4-Nitroaniline	4.07	5.00	81	4.33	5.00	87	36-128	6	30
2-Methyl-4,6-dinitrophenol	1.28	5.00	26	1.50	5.00	30	19-127	16	30
N-Nitrosodiphenylamine	4.06	5.00	81	4.45	5.00	89	36-114	9	30
4-Bromophenyl Phenyl Ether	3.55	5.00	71	4.17	5.00	83	43-110	16	30
Hexachlorobenzene	3.34	5.00	67	3.80	5.00	76	42-107	13	30
Pentachlorophenol	1.08	5.00	22 *	1.39	5.00	28	28-114	25	30
Phenanthrene	3.56	5.00	71	4.03	5.00	81	43-110	12	30
Anthracene	3.44	5.00	69	3.86	5.00	77	40-110	12	30
Di-n-butyl Phthalate	3.87	5.00	77	4.32	5.00	86	45-135	11	30
Fluoranthene	3.64	5.00	73	4.10	5.00	82	42-119	12	30
Pyrene	3.72	5.00	74	4.13	5.00	83	43-118	10	30
Butyl Benzyl Phthalate	3.82	5.00	76	4.33	5.00	87	48-124	12	30
3,3'-Dichlorobenzidine	3.48	5.00	70	3.66	5.00	73	15-108	5	30
Benz(a)anthracene	3.50	5.00	70	4.01	5.00	80	45-112	14	30
Chrysene	3.60	5.00	72	4.04	5.00	81	47-112	12	30
Bis(2-ethylhexyl) Phthalate	3.81	5.00	76	4.19	5.00	84	32-149	9	30
Di-n-octyl Phthalate	3.54	5.00	71	4.06	5.00	81	49-127	14	30
Benzo(b)fluoranthene	3.50	5.00	70	4.02	5.00	80	45-115	14	30
Benzo(k)fluoranthene	3.53	5.00	71	4.05	5.00	81	46-115	14	30
Benzo(a)pyrene	3.36	5.00	67	3.86	5.00	77	40-117	14	30
Indeno(1,2,3-cd)pyrene	3.49	5.00	70	3.98	5.00	80	44-119	13	30
Dibenz(a,h)anthracene	3.40	5.00	68	3.94	5.00	79	45-118	15	30
Benzo(g,h,i)perylene	3.44	5.00	69	3.90	5.00	78	45-116	13	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.

January 21, 2009

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

RE: Portland Harbor

Enclosed are the results of analyses for samples received by the laboratory on 12/16/08 16:50.
The following list is a summary of the Work Orders contained in this report, generated on 01/21/09 13:37.

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

<u>Work Order</u>	<u>Project</u>	<u>ProjectNumber</u>
PRL0548	Portland Harbor	36238

TestAmerica Portland



Howard Holmes, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name:

Portland Harbor

Project Number:

36238

Project Manager:

Jennifer Shackelford

Report Created:

01/21/09 13:37

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FO081475	PRL0548-01	Water	12/12/08 11:57	12/16/08 16:50
FO081476	PRL0548-02	Water	12/12/08 13:21	12/16/08 16:50
FO081477	PRL0548-03	Water	12/12/08 13:32	12/16/08 16:50
FO081478	PRL0548-04	Water	12/12/08 13:10	12/16/08 16:50
FO081479	PRL0548-05	Water	12/12/08 11:44	12/16/08 16:50
FO081480	PRL0548-06	Water	12/12/08 11:20	12/16/08 16:50
FO081481	PRL0548-07	Water	12/12/08 13:44	12/16/08 16:50
FO081482	PRL0548-08	Water	12/12/08 00:00	12/16/08 16:50

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
01/21/09 13:37

Polynuclear Aromatic Compounds per EPA 8270M-SIM
TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PRL0548-05 (FO081479)		Water				Sampled: 12/12/08 11:44				
Bis(2-ethylhexyl)phthalate	EPA 8270m	0.992	0.511	0.971	ug/l	1x	8120560	12/17/08 10:20	12/29/08 18:36	
Butyl benzyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Diethyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Dimethyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Acenaphthene	"	ND	0.0194	0.0194	"	"	"	"	12/29/08 23:25	
Acenaphthylene	"	ND	0.0194	0.0194	"	"	"	"	"	
Anthracene	"	ND	0.0194	0.0194	"	"	"	"	"	
Benzo (a) anthracene	"	0.0113	0.00971	0.00971	"	"	"	"	"	
Benzo (a) pyrene	"	0.0123	0.00971	0.00971	"	"	"	"	"	
Benzo (b) fluoranthene	"	0.0217	0.00971	0.00971	"	"	"	"	"	
Benzo (ghi) perylene	"	0.0252	0.0194	0.0194	"	"	"	"	"	
Benzo (k) fluoranthene	"	0.0133	0.00971	0.00971	"	"	"	"	"	
Chrysene	"	0.0410	0.00971	0.00971	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	0.00971	0.00971	"	"	"	"	"	
Fluoranthene	"	0.0883	0.0194	0.0194	"	"	"	"	"	
Fluorene	"	0.0204	0.0194	0.0194	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	0.0119	0.00971	0.00971	"	"	"	"	"	
Naphthalene	"	0.187	0.0194	0.0194	"	"	"	"	"	
Phenanthrene	"	0.102	0.0194	0.0194	"	"	"	"	"	
Pyrene	"	0.0611	0.0194	0.0194	"	"	"	"	"	
<hr/>										
Surrogate(s): Fluorene-d10			91.9%			25 - 125 %	"			"
Pyrene-d10			41.6%			23 - 150 %	"			"
Benzo (a) pyrene-d12			41.1%			10 - 125 %	"			"

PRL0548-06 (FO081480)

Water

Sampled: 12/12/08 11:20

Bis(2-ethylhexyl)phthalate	EPA 8270m	2.24	0.511	0.971	ug/l	1x	8120560	12/17/08 10:20	12/29/08 19:07	
Butyl benzyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Di-n-octyl phthalate	"	0.579	0.511	0.971	"	"	"	"	"	J
Diethyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Dimethyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Acenaphthene	"	ND	0.0194	0.0194	"	"	"	"	12/29/08 23:55	
Acenaphthylene	"	0.0312	0.0194	0.0194	"	"	"	"	"	
Anthracene	"	ND	0.0194	0.0194	"	"	"	"	"	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
01/21/09 13:37

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PRL0548-06 (FO081480)		Water				Sampled: 12/12/08 11:20				
Benzo (a) anthracene	EPA 8270m	0.0312	0.00971	0.00971	ug/l	1x	8120560	12/17/08 10:20	12/29/08 23:55	
Benzo (a) pyrene	"	0.0383	0.00971	0.00971	"	"	"	"	"	
Benzo (b) fluoranthene	"	0.0516	0.00971	0.00971	"	"	"	"	"	
Benzo (ghi) perylene	"	0.0704	0.0194	0.0194	"	"	"	"	"	
Benzo (k) fluoranthene	"	0.0372	0.00971	0.00971	"	"	"	"	"	
Chrysene	"	0.0906	0.00971	0.00971	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	0.0104	0.00971	0.00971	"	"	"	"	"	
Fluoranthene	"	0.192	0.0194	0.0194	"	"	"	"	"	
Fluorene	"	0.0194	0.0194	0.0194	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	0.0326	0.00971	0.00971	"	"	"	"	"	
Naphthalene	"	0.781	0.0194	0.0194	"	"	"	"	"	
Phenanthrene	"	0.139	0.0194	0.0194	"	"	"	"	"	
Pyrene	"	0.0962	0.0194	0.0194	"	"	"	"	"	

Surrogate(s): Fluorene-d10 95.3% 25 - 125 % "
Pyrene-d10 46.6% 23 - 150 % "
Benzo (a) pyrene-d12 68.1% 10 - 125 % "

PRL0548-07 (FO081481)		Water				Sampled: 12/12/08 13:44				
Bis(2-ethylhexyl)phthalate	EPA 8270m	ND	0.511	0.971	ug/l	1x	8120560	12/17/08 10:20	12/29/08 19:37	
Butyl benzyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Diethyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Dimethyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Acenaphthene	"	ND	0.0194	0.0194	"	"	"	"	12/30/08 00:25	
Acenaphthylene	"	ND	0.0194	0.0194	"	"	"	"	"	
Anthracene	"	ND	0.0194	0.0194	"	"	"	"	"	
Benzo (a) anthracene	"	ND	0.00971	0.00971	"	"	"	"	"	
Benzo (a) pyrene	"	ND	0.00971	0.00971	"	"	"	"	"	
Benzo (b) fluoranthene	"	ND	0.00971	0.00971	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	0.0194	0.0194	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	0.00971	0.00971	"	"	"	"	"	
Chrysene	"	ND	0.00971	0.00971	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	0.00971	0.00971	"	"	"	"	"	
Fluoranthene	"	ND	0.0194	0.0194	"	"	"	"	"	
Fluorene	"	ND	0.0194	0.0194	"	"	"	"	"	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
01/21/09 13:37

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PRL0548-07 (FO081481)		Water				Sampled: 12/12/08 13:44				
Indeno (1,2,3-cd) pyrene	EPA 8270m	ND	0.00971	0.00971	ug/l	1x	8120560	12/17/08 10:20	12/30/08 00:25	
Naphthalene	"	ND	0.0194	0.0194	"	"	"	"	"	
Phenanthrene	"	ND	0.0194	0.0194	"	"	"	"	"	
Pyrene	"	ND	0.0194	0.0194	"	"	"	"	"	
Surrogate(s): Fluorene-d10				97.2%		25 - 125 %	"			"
Pyrene-d10				56.4%		23 - 150 %	"			"
Benzo (a) pyrene-d12				83.0%		10 - 125 %	"			"
PRL0548-08 (FO081482)		Water				Sampled: 12/12/08 00:00				
Bis(2-ethylhexyl)phthalate	EPA 8270m	2.13	0.511	0.971	ug/l	1x	8120560	12/17/08 10:20	12/29/08 20:08	
Butyl benzyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Diethyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Dimethyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Acenaphthene	"	ND	0.0194	0.0194	"	"	"	"	12/30/08 00:55	
Acenaphthylene	"	0.0287	0.0194	0.0194	"	"	"	"	"	
Anthracene	"	0.112	0.0194	0.0194	"	"	"	"	"	
Benzo (a) anthracene	"	0.0231	0.0194	0.0194	"	2x	"	"	12/30/08 17:18	
Benzo (a) pyrene	"	0.0263	0.00971	0.00971	"	1x	"	"	12/30/08 00:55	
Benzo (b) fluoranthene	"	0.0362	0.00971	0.00971	"	"	"	"	"	
Benzo (ghi) perylene	"	0.0527	0.0194	0.0194	"	"	"	"	"	
Benzo (k) fluoranthene	"	0.0271	0.00971	0.00971	"	"	"	"	"	
Chrysene	"	0.0468	0.0194	0.0194	"	2x	"	"	12/30/08 17:18	
Dibenzo (a,h) anthracene	"	ND	0.00971	0.00971	"	1x	"	"	12/30/08 00:55	
Fluoranthene	"	0.144	0.0194	0.0194	"	"	"	"	"	
Fluorene	"	0.0365	0.0194	0.0194	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	0.0216	0.00971	0.00971	"	"	"	"	"	
Naphthalene	"	0.551	0.0194	0.0194	"	"	"	"	"	
Phenanthrene	"	0.163	0.0194	0.0194	"	"	"	"	"	
Pyrene	"	0.0523	0.0388	0.0388	"	2x	"	"	12/30/08 17:18	
Surrogate(s): Fluorene-d10				93.6%		25 - 125 %	1x		12/30/08 00:55	
Pyrene-d10				29.2%		23 - 150 %	2x		12/30/08 17:18	
Benzo (a) pyrene-d12				63.6%		10 - 125 %	1x		12/30/08 00:55	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
01/21/09 13:37

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

TestAmerica Portland

QC Batch: 8120560

Water Preparation Method: 3520B Liq-Liq

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (8120560-BLK1)										Extracted: 12/17/08 10:20				
Bis(2-ethylhexyl)phthalate	EPA 8270m	ND	0.526	1.00	ug/l	1x	--	--	--	--	--	--	12/29/08 14:59	
Butyl benzyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Di-n-butyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Di-n-octyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Diethyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Dimethyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Acenaphthene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	12/30/08 01:25	
Acenaphthylene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Anthracene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (a) anthracene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Benzo (a) pyrene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Benzo (b) fluoranthene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Benzo (ghi) perylene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (k) fluoranthene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Chrysene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Dibenzo (a,h) anthracene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Fluoranthene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Fluorene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Indeno (1,2,3-cd) pyrene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Naphthalene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Phenanthrene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Pyrene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
<hr/>														
Surrogate(s): Fluorene-d10		Recovery:	92.2%	Limits: 25-125%									12/30/08 01:25	
Pyrene-d10			54.5%	23-150%									"	
Benzo (a) pyrene-d12			81.5%	10-125%									"	

LCS (8120560-BS1)

Extracted: 12/17/08 10:20

Bis(2-ethylhexyl)phthalate	EPA 8270m	2.39	0.526	1.00	ug/l	1x	--	4.00	59.8%	(20-150)	--	--	12/29/08 15:30	
Butyl benzyl phthalate	"	2.25	0.526	1.00	"	"	--	"	56.3%	"	--	--	"	
Di-n-butyl phthalate	"	3.60	0.526	1.00	"	"	--	"	89.9%	"	--	--	"	
Di-n-octyl phthalate	"	2.20	0.526	1.00	"	"	--	"	55.0%	"	--	--	"	
Diethyl phthalate	"	3.48	0.526	1.00	"	"	--	"	86.9%	"	--	--	"	
Dimethyl phthalate	"	3.16	0.526	1.00	"	"	--	"	78.9%	"	--	--	"	
Acenaphthene	"	2.60	0.0200	0.0200	"	"	--	2.50	104%	(35-120)	--	--	12/29/08 17:21	
Acenaphthylene	"	2.53	0.0200	0.0200	"	"	--	"	101%	(34-116)	--	--	"	
Anthracene	"	2.57	0.0200	0.0200	"	"	--	"	103%	(24-119)	--	--	"	
Benzo (a) anthracene	"	2.12	0.0100	0.0100	"	"	--	"	84.9%	(36-128)	--	--	"	
Benzo (a) pyrene	"	2.23	0.0100	0.0100	"	"	--	"	89.2%	(17-128)	--	--	"	
Benzo (b) fluoranthene	"	2.10	0.0100	0.0100	"	"	--	"	83.9%	(37-131)	--	--	"	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
01/21/09 13:37

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

TestAmerica Portland

QC Batch: 8120560

Water Preparation Method: 3520B Liq-Liq

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
LCS (8120560-BS1)										Extracted: 12/17/08 10:20				
Benzo (ghi) perylene	EPA 8270m	2.26	0.0200	0.0200	ug/l	1x	--	2.50	90.4%	(26-126)	--	--	12/29/08 17:21	
Benzo (k) fluoranthene	"	2.32	0.0100	0.0100	"	"	--	"	92.8%	(18-145)	--	--	"	
Chrysene	"	2.20	0.0100	0.0100	"	"	--	"	88.1%	(16-137)	--	--	"	
Dibenzo (a,h) anthracene	"	2.28	0.0100	0.0100	"	"	--	"	91.2%	(20-141)	--	--	"	
Fluoranthene	"	2.69	0.0200	0.0200	"	"	--	"	108%	(31-125)	--	--	"	
Fluorene	"	2.56	0.0200	0.0200	"	"	--	"	102%	(27-124)	--	--	"	
Indeno (1,2,3-cd) pyrene	"	2.29	0.0100	0.0100	"	"	--	"	91.4%	(30-135)	--	--	"	
Naphthalene	"	2.44	0.0200	0.0200	"	"	--	"	97.7%	(30-113)	--	--	"	
Phenanthrene	"	2.55	0.0200	0.0200	"	"	--	"	102%	(34-126)	--	--	"	
Pyrene	"	2.16	0.0200	0.0200	"	"	--	"	86.6%	(21-141)	--	--	"	
Surrogate(s): Fluorene-d10		Recovery:	96.5%	Limits:	25-125%	"							12/29/08 17:21	
Pyrene-d10			84.6%		23-150%	"							"	
Benzo (a) pyrene-d12			88.4%		10-125%	"							"	

LCS Dup (8120560-BSD1)

										Extracted: 12/17/08 10:20				
Bis(2-ethylhexyl)phthalate	EPA 8270m	1.68	0.526	1.00	ug/l	1x	--	4.00	42.0%	(20-150)	34.8%	(50)	12/29/08 16:00	
Butyl benzyl phthalate	"	2.37	0.526	1.00	"	"	--	"	59.3%	"	5.12%	"	"	
Di-n-butyl phthalate	"	3.75	0.526	1.00	"	"	--	"	93.8%	"	4.29%	"	"	
Di-n-octyl phthalate	"	1.49	0.526	1.00	"	"	--	"	37.3%	"	38.4%	"	"	
Diethyl phthalate	"	3.77	0.526	1.00	"	"	--	"	94.2%	"	8.04%	"	"	
Dimethyl phthalate	"	3.36	0.526	1.00	"	"	--	"	84.1%	"	6.35%	"	"	
Acenaphthene	"	2.73	0.0200	0.0200	"	"	--	2.50	109%	(35-120)	5.05%	(35)	12/29/08 17:53	
Acenaphthylene	"	2.64	0.0200	0.0200	"	"	--	"	106%	(34-116)	4.33%	"	"	
Anthracene	"	2.73	0.0200	0.0200	"	"	--	"	109%	(24-119)	6.22%	"	"	
Benzo (a) anthracene	"	2.14	0.0100	0.0100	"	"	--	"	85.8%	(36-128)	1.07%	"	"	
Benzo (a) pyrene	"	2.34	0.0100	0.0100	"	"	--	"	93.8%	(17-128)	5.06%	"	"	
Benzo (b) fluoranthene	"	2.60	0.0100	0.0100	"	"	--	"	104%	(37-131)	21.2%	"	"	
Benzo (ghi) perylene	"	2.31	0.0200	0.0200	"	"	--	"	92.3%	(26-126)	2.03%	"	"	
Benzo (k) fluoranthene	"	2.13	0.0100	0.0100	"	"	--	"	85.1%	(18-145)	8.72%	"	"	
Chrysene	"	2.32	0.0100	0.0100	"	"	--	"	93.0%	(16-137)	5.34%	"	"	
Dibenzo (a,h) anthracene	"	2.32	0.0100	0.0100	"	"	--	"	92.6%	(20-141)	1.56%	"	"	
Fluoranthene	"	2.89	0.0200	0.0200	"	"	--	"	116%	(31-125)	7.07%	"	"	
Fluorene	"	2.69	0.0200	0.0200	"	"	--	"	108%	(27-124)	5.24%	"	"	
Indeno (1,2,3-cd) pyrene	"	2.32	0.0100	0.0100	"	"	--	"	92.9%	(30-135)	1.59%	"	"	
Naphthalene	"	2.54	0.0200	0.0200	"	"	--	"	102%	(30-113)	4.03%	"	"	
Phenanthrene	"	2.71	0.0200	0.0200	"	"	--	"	108%	(34-126)	5.96%	"	"	
Pyrene	"	2.05	0.0200	0.0200	"	"	--	"	82.2%	(21-141)	5.20%	"	"	
Surrogate(s): Fluorene-d10		Recovery:	99.3%	Limits:	25-125%	"							12/29/08 17:53	
Pyrene-d10			79.1%		23-150%	"							"	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name:

Portland Harbor

Project Number:

36238

Project Manager:

Jennifer Shackelford

Report Created:

01/21/09 13:37

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

TestAmerica Portland

QC Batch: 8120560

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 (8120560-BSD1)

Extracted: 12/17/08 10:20

Surrogate(s): Benzo (a) pyrene-d12

Recovery: 91.8%

Limits: 10-125% 1x

12/29/08 17:53

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name:

Portland Harbor

Project Number:

36238

Project Manager:

Jennifer Shackelford

Report Created:

01/21/09 13:37

Notes and Definitions

Report Specific Notes:

- J - Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.
- RL1 - Reporting limit raised due to sample matrix effects.

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

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244
11922 E. First Ave. Spokane, WA 99206-5302
9405 SW Nimbus Ave. Beaverton, OR 97008-7145
2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119

425-420-9200 FAX 420-9210
509-924-9200 FAX 924-9290
503-906-9200 FAX 906-9210
907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #:

PR10548

[illegible]

* Please use custom PAH/phthalate list as for UIC project w/ Low DLs.
 ** PCB 209 Congeners to Pace Analytical. Thanks

TEMP:	103	0
1-3	PAGE	1 OF 1
2-7	TAI-1000(0408)	

TestAmerica Sample Receipt Checklist

Received by:

Unpacked by:

Logged-in by:

Work Order No.

PR10548

Cooler ID(s):

(section A)

(section B)

Date: 12/16/08

Date: 12/16/08

Date: 12/16/08

Time: 1:52

Initials: JV

Initials: JM

Initials: JM

Client: C&F

Project: Portland Harbor

Temperature out of range:

***ESI Clients (see Section C)

Cooler Temperature (IR): 132.7 °C plastic glass NA (oil/air samples, ESI client)

Digi #1

Digi #2

Temperature Blank: °C

Not enough Ice

No Ice

Ice Melted

W/in 4 Hours

Other:

A

Custody Seals: (#)

Signature: Y N Dated:

None

Container Type:

2 #Cooler(s)

#Box(s)

None (#Other:)

Coolant Type:

✓ Gel Ice

✓ Loose Ice

None

Packing Material:

Bubble Bags

Styrofoam Cubbies

Peanuts

✓ None (#Other:)

Received from:

✓ TA Courier

Senvoy

UPS

Fed Ex

Client

TDP

DHL

SDS

Mid-Valley

GS/TA

GS/Senvoy

Other:

B

Sample Status:
(If N circled, see NOD)

General:

Intact?

Y

N

Containers Match COC?

Y

N

none given

IDs Match COC?

Y

N

For Analyses Requested:

Cyanide Checked?

Y

N

NA

Correct Type & Preservation?

Y

N

Adequate Volume?

Y

N

Within Hold Time?

Y

N

Volatiles/ Oil Quality:

VOAs/ Syringes free of Headspace? Y

N

NA

TB on COC? not provided Y

N

NA

Metals:

HNO3 Preserved?

Y

N

NA

Dissolved Metals Filtered?

Y

N

NA

FED EX/ UPS:

Was the tracking paper keepable?

YES

NO

If circled NO, what is the Tracking number?

FED EX

Goldstreak

UPS

DHL

Other:

Temperature Blank: °C

not provided

Digi: #1 #2

All preserved bottles checked Y N

NA

(voas/soils/all unp.)

All preserved accordingly? Y N

(see NOD)

NA

(voas/soils/all unp.)

Project Managers:

Comments:

PM Reviewed:

(Initial/Date)

Report Prepared for:

Howard Holmes
Test America
9405 SW Nimbus Avenue
Beaverton OR 97008

**REPORT OF
LABORATORY
ANALYSIS
FOR PCBs**

Report Prepared Date:

January 20, 2009

Report Information:

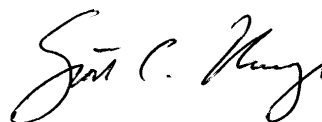
Pace Project #: 1086550
Sample Receipt Date: 12/18/2008
Client Project #: PRL0548
Client Sub PO #: N/A
State Cert #: MN200001-005

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 and prepared by:



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



Report of Laboratory Analysis

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.

DISCUSSION

This report presents the results from the analyses performed on eight samples submitted by a representative of Test America - Portland. The samples were analyzed for the presence or absence of polychlorinated biphenyl (PCB) congeners using USEPA Method 1668A. Reporting limits were set to approximately 0.5 parts-per-trillion and were adjusted for sample volume.

The isotopically-labeled PCB internal standards in the sample extracts were recovered at 46-235%. With fourteen exceptions, 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 isotope dilution, 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 analytical process did not introduce significant levels of PCB congeners to the sample extracts.

Laboratory spike samples were also prepared with the sample batch using reference material that had been fortified with native standards. The results show that the spiked native compounds in the lab spikes were recovered at 87-116% with relative percent differences of 11.9-18.8%. These results indicate high degrees of accuracy and precision for these determinations. Matrix spikes were not prepared with the sample set.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
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Appendix A

Sample Management

1054 SUBCONTRACT ORDER

TestAmerica Portland

PRL0548

1086550


SENDING LABORATORY:

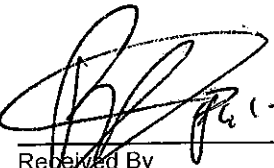
TestAmerica Portland
9405 SW Nimbus Ave.
Beaverton, OR 97008
Phone: (503) 906-9200
Fax: (503) 906-9210
Project Manager: Howard Holmes

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:
Receipt Temperature: °C Ice: Y / N

Analysis	Units	Due	Expires	Comments
Sample ID: PRL0548-01	Water		Sampled: 12/12/08 11:57	1086550001 FO 081475
1668 Coplanar PCBs - SUB	ug/l	12/31/08	06/10/09 11:57	***209 Congeners*** to Pace
Containers Supplied: 1L Amber - Unpres. (B)				
Sample ID: PRL0548-02	Water		Sampled: 12/12/08 13:21	FO 081476 002
1668 Coplanar PCBs - SUB	ug/l	12/31/08	06/10/09 13:21	***209 Congeners*** to Pace
Containers Supplied: 1L Amber - Unpres. (B)				
Sample ID: PRL0548-03	Water		Sampled: 12/12/08 13:32	FO 081477 003
1668 Coplanar PCBs - SUB	ug/l	12/31/08	06/10/09 13:32	***209 Congeners*** to Pace
Containers Supplied: 1L Amber - Unpres. (B)				
Sample ID: PRL0548-04	Water		Sampled: 12/12/08 13:10	FO 081478 004
1668 Coplanar PCBs - SUB	ug/l	12/31/08	06/10/09 13:10	***209 Congeners*** to Pace
Containers Supplied: 1L Amber - Unpres. (B)				
Sample ID: PRL0548-05	Water		Sampled: 12/12/08 11:44	FO 081479 005
1668 Coplanar PCBs - SUB	ug/l	12/31/08	06/10/09 11:44	***209 Congeners*** to Pace
Containers Supplied: 1L Amber - Unpres. (B)				
Sample ID: PRL0548-06	Water		Sampled: 12/12/08 11:20	FO 081480 006
1668 Coplanar PCBs - SUB	ug/l	12/31/08	06/10/09 11:20	***209 Congeners*** to Pace
Containers Supplied: 1L Amber - Unpres. (B)				

Released By  Date/Time 12/17/08 CRSS

Received By  Date/Time 12/18/08 0937 T=1.4'

SUBCONTRACT ORDER

TestAmerica Portland

PRL0548

Analysis	Units	Due	Expires	Comments
Sample ID: PRL0548-07	Water		Sampled: 12/12/08 13:44	1086550007 FD 081481
1668 Coplanar PCBs - SUB	ug/l	12/31/08	06/10/09 13:44	***209 Congeners*** to Pace
Containers Supplied:				
1L Amber - Unpres. (B)				
Sample ID: PRL0548-08	Water		Sampled: 12/12/08 00:00	FD 081482 008
1668 Coplanar PCBs - SUB	ug/l	12/31/08	06/10/09 00:00	***209 Congeners*** to Pace
Containers Supplied:				
1L Amber - Unpres. (B)				

Sample Condition Upon Receipt

Pace Analytical

Client Name:

Test America

Project #

1086550

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

Tracking #: 971637118457

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 80344042/179425

Type of Ice: ☒ Wet ☐ Blue ☐ None

☐ Samples on ice, cooling process has begun

Cooler Temperature

1.4°C

Biological Tissue is Frozen: Yes No

Date and initials of person examining contents:

12/18/08

Temp should be above freezing to 6°C

Comments:

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix:	WT	
All containers needing acid/base preservation have been checked. Noncompliance are noted in 13.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Exceptions: VOA, Coliform, TOC, Oil and Grease, WI-DRO (water)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
		Lot # of added preservative
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> 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: 12/19/08

Appendix B

Sample Analysis Summary



Pace AnalyticalTM

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	PRL0548-06;FO081480		
Lab Sample ID	1086550006		
Filename	P90118A_08		
Injected By	BAL		
Total Amount Extracted	990 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	12/12/2008
ICAL ID	P90118A01	Received	12/18/2008
CCal Filename(s)	P90118A_02	Extracted	01/05/2009
Method Blank ID	BLANK-18669	Analyzed	01/18/2009 22:04

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery	
Labeled Analytes							
13C-2-MoCB	1	7.121	3.14	2.0	1.58	79	
13C-4-MoCB	3	10.189	3.11	2.0	1.59	80	
13C-2,2'-DiCB	4	10.500	1.54	2.0	1.81	91	
13C-4,4'-DiCB	15	18.444	1.54	2.0	1.74	87	
13C-2,2',6-TrCB	19	14.778	1.06	2.0	1.93	96	
13C-3,4,4'-TrCB	37	26.759	1.02	2.0	1.56	78	
13C-2,2',6,6'-TeCB	54	18.744	0.79	2.0	1.62	81	
13C-3,4,4',5-TeCB	81	34.121	0.77	2.0	1.47	73	
13C-3,3',4,4'-TeCB	77	34.707	0.78	2.0	1.53	77	
13C-2,2',4,6,6'-PeCB	104	25.334	1.61	2.0	1.91	96	
13C-2,3,3',4,4'-PeCB	105	38.363	1.51	2.0	1.27	64	
13C-2,3,4,4',5-PeCB	114	37.709	1.54	2.0	1.23	62	
13C-2,3',4,4',5-PeCB	118	37.173	1.59	2.0	1.29	64	
13C-2,3',4,4',5'-PeCB	123	36.820	1.57	2.0	1.27	64	
13C-3,3',4,4',5-PeCB	126	41.600	1.50	2.0	1.10	55	
13C-2,2',4,4',6,6'-HxCB	155	31.639	1.27	2.0	2.44	122	
13C-HxCB (156/157)	156/157	44.668	1.23	4.0	2.40	60	
13C-2,3',4,4',5,5'-HxCB	167	43.511	1.26	2.0	1.28	64	
13C-3,3',4,4',5,5'-HxCB	169	48.005	1.22	2.0	1.11	56	
13C-2,2',3,4',5,6,6'-HpCB	188	37.676	1.03	2.0	4.69	235	P
13C-2,3,3',4,4',5,5'-HpCB	189	50.535	1.04	2.0	1.88	94	
13C-2,2',3,3',5,5',6,6'-OxCB	202	43.193	0.90	2.0	3.87	193	P
13C-2,3,3',4,4',5,5',6-OxCB	205	53.121	0.91	2.0	1.79	90	
13C-2,2',3,3',4,4',5,5',6-NoCB	206	54.846	0.77	2.0	2.14	107	
13C-2,2',3,3',4,4',5,5',6-NoCB	208	49.996	0.80	2.0	2.58	129	
13C--DeCB	209	56.419	0.69	2.0	2.07	104	
Cleanup Standards							
13C-2,4,4'-TrCB	28	22.148	1.03	2.0	1.56	78	
13C-2,3,3',5,5'-PeCB	111	34.791	1.57	2.0	1.75	88	
13C-2,2',3,3',5,5',6-HpCB	178	40.845	1.07	2.0	2.10	105	
Recovery Standards							
13C-2,5-DiCB	9	13.316	1.54	2.0	NA	NA	
13C-2,2',5,5'-TeCB	52	24.294	0.80	2.0	NA	NA	
13C-2,2',4,5,5'-PeCB	101	31.890	1.62	2.0	NA	NA	
13C-2,2',3,4,4',5'-HxCB	138	40.375	1.28	2.0	NA	NA	
13C-2,2',3,3',4,4',5,5'-OxCB	194	52.626	0.94	2.0	NA	NA	

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
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Nn = Value obtained from additional analyses

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
! = Outside QC Limits
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ng's = Nanograms

REPORT OF LABORATORY ANALYSIS

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Pace AnalyticalTM

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 PRL0548-06;FO081480
Lab Sample ID 1086550006
Filename P90118A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.505
2		---	---	ND	---	0.505
3		---	---	ND	---	0.505
4		---	---	ND	---	0.505
5		---	---	ND	---	0.505
6		---	---	ND	---	0.505
7		---	---	ND	---	0.505
8		---	---	ND	---	0.505
9		---	---	ND	---	0.505
10		---	---	ND	---	0.505
11		17.701	1.61	0.653	---	0.606
12	12/13	---	---	ND	---	0.505
13	12/13	---	---	ND	---	0.505
14		---	---	ND	---	0.505
15		---	---	ND	---	0.505
16		---	---	ND	---	0.505
17		---	---	ND	---	0.505
18	18/30	---	---	ND	---	0.505
19		---	---	ND	---	0.505
20	20/28	---	---	ND	---	0.606
21	21/33	---	---	ND	---	0.505
22		---	---	ND	---	0.505
23		---	---	ND	---	0.505
24		---	---	ND	---	0.505
25		---	---	ND	---	0.505
26	26/29	---	---	ND	---	0.505
27		---	---	ND	---	0.505
28	20/28	---	---	ND	---	0.606
29	26/29	---	---	ND	---	0.505
30	18/30	---	---	ND	---	0.505
31		---	---	ND	---	0.505
32		---	---	ND	---	0.505
33	21/33	---	---	ND	---	0.505
34		---	---	ND	---	0.505
35		---	---	ND	---	0.505
36		---	---	ND	---	0.505
37		---	---	ND	---	0.505
38		---	---	ND	---	0.505
39		---	---	ND	---	0.505
40	40/41/71	---	---	ND	---	0.505
41	40/41/71	---	---	ND	---	0.505
42		---	---	ND	---	0.505
43		---	---	ND	---	0.505
44	44/47/65	---	---	ND	---	0.606
45	45/51	---	---	ND	---	0.505
46		---	---	ND	---	0.505
47	44/47/65	---	---	ND	---	0.606
48		---	---	ND	---	0.505

Conc = Concentration
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRL0548-06;FO081480
Lab Sample ID 1086550006
Filename P90118A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69	---	---	ND	---	0.505
50	50/53	---	---	ND	---	0.505
51	45/51	---	---	ND	---	0.505
52		24.328	0.78	0.614	---	0.505
53	50/53	---	---	ND	---	0.505
54		---	---	ND	---	0.505
55		---	---	ND	---	0.505
56		---	---	ND	---	0.505
57		---	---	ND	---	0.505
58		---	---	ND	---	0.505
59	59/62/75	---	---	ND	---	0.505
60		---	---	ND	---	0.505
61	61/70/74/76	29.694	0.75	0.634	---	0.505
62	59/62/75	---	---	ND	---	0.505
63		---	---	ND	---	0.505
64		---	---	ND	---	0.505
65	44/47/65	---	---	ND	---	0.606
66		---	---	ND	---	0.505
67		---	---	ND	---	0.505
68		---	---	ND	---	0.505
69	49/69	---	---	ND	---	0.505
70	61/70/74/76	29.694	0.75	(0.634)	---	0.505
71	40/41/71	---	---	ND	---	0.505
72		---	---	ND	---	0.505
73		---	---	ND	---	0.505
74	61/70/74/76	29.694	0.75	(0.634)	---	0.505
75	59/62/75	---	---	ND	---	0.505
76	61/70/74/76	29.694	0.75	(0.634)	---	0.505
77		---	---	ND	---	0.505
78		---	---	ND	---	0.505
79		---	---	ND	---	0.505
80		---	---	ND	---	0.505
81		---	---	ND	---	0.505
82		---	---	ND	---	0.505
83		---	---	ND	---	0.505
84		---	---	ND	---	0.505
85	85/116/117	---	---	ND	---	0.606
86	86/87/97/108/119/125	---	---	ND	---	1.01
87	86/87/97/108/119/125	---	---	ND	---	1.01
88	88/91	---	---	ND	---	0.505
89		---	---	ND	---	0.505
90	90/101/113	31.924	1.54	1.31	---	0.505
91	88/91	---	---	ND	---	0.505
92		---	---	ND	---	0.505
93	93/98/100/102	---	---	ND	---	0.757
94		---	---	ND	---	0.505
95		28.687	1.51	0.971	---	0.505
96		---	---	ND	---	0.505

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1700 Elm Street - Suite 200
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Tel: 612-607-1700
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRL0548-06;FO081480
Lab Sample ID 1086550006
Filename P90118A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
97	86/87/97/108/119/125	---	---	ND	---	1.01
98	93/98/100/102	---	---	ND	---	0.757
99		---	---	ND	---	0.505
100	93/98/100/102	---	---	ND	---	0.757
101	90/101/113	31.924	1.54	(1.31)	---	0.505
102	93/98/100/102	---	---	ND	---	0.757
103		---	---	ND	---	0.505
104		---	---	ND	---	0.505
105		---	---	ND	---	0.505
106		---	---	ND	---	0.505
107	107/124	---	---	ND	---	0.505
108	86/87/97/108/119/125	---	---	ND	---	1.01
109		---	---	ND	---	0.505
110	110/115	33.986	1.55	1.25	---	0.505
111		---	---	ND	---	0.505
112		---	---	ND	---	0.505
113	90/101/113	31.924	1.54	(1.31)	---	0.505
114		---	---	ND	---	0.505
115	110/115	33.986	1.55	(1.25)	---	0.505
116	85/116/117	---	---	ND	---	0.606
117	85/116/117	---	---	ND	---	0.606
118		37.189	1.54	0.761	---	0.505
119	86/87/97/108/119/125	---	---	ND	---	1.01
120		---	---	ND	---	0.505
121		---	---	ND	---	0.505
122		---	---	ND	---	0.505
123		---	---	ND	---	0.505
124	107/124	---	---	ND	---	0.505
125	86/87/97/108/119/125	---	---	ND	---	1.01
126		---	---	ND	---	0.505
127		---	---	ND	---	0.505
128	128/166	---	---	ND	---	1.01
129	129/138/163	40.409	1.23	2.38	---	0.505
130		---	---	ND	---	0.505
131		---	---	ND	---	0.505
132		37.240	1.26	0.747	---	0.505
133		---	---	ND	---	0.505
134	134/143	---	---	ND	---	0.505
135	135/151	34.992	1.23	1.02	---	0.515
136		---	---	ND	---	0.505
137		---	---	ND	---	0.505
138	129/138/163	40.409	1.23	(2.38)	---	0.505
139	139/140	---	---	ND	---	0.505
140	139/140	---	---	ND	---	0.505
141		---	---	ND	---	0.505
142		---	---	ND	---	0.505
143	134/143	---	---	ND	---	0.505
144		---	---	ND	---	0.505

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRL0548-06;FO081480
Lab Sample ID 1086550006
Filename P90118A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
145		---	---	ND	---	0.505
146		---	---	ND	---	0.505
147	147/149	35.948	1.21	2.08	---	0.505
148		---	---	ND	---	0.505
149	147/149	35.948	1.21	(2.08)	---	0.505
150		---	---	ND	---	0.505
151	135/151	34.992	1.23	(1.02)	---	0.515
152		---	---	ND	---	0.505
153	153/168	39.151	1.28	2.29	---	0.606
154		---	---	ND	---	0.505
155		---	---	ND	---	0.505
156	156/157	---	---	ND	---	1.01
157	156/157	---	---	ND	---	1.01
158		---	---	ND	---	0.505
159		---	---	ND	---	0.505
160		---	---	ND	---	0.505
161		---	---	ND	---	0.505
162		---	---	ND	---	0.505
163	129/138/163	40.409	1.23	(2.38)	---	0.505
164		---	---	ND	---	0.505
165		---	---	ND	---	0.505
166	128/166	---	---	ND	---	1.01
167		---	---	ND	---	0.505
168	153/168	39.151	1.28	(2.29)	---	0.606
169		---	---	ND	---	0.505
170		47.351	0.97	0.774	---	0.505
171	171/173	---	---	ND	---	0.505
172		---	---	ND	---	0.505
173	171/173	---	---	ND	---	0.505
174		42.656	1.04	0.719	---	0.505
175		---	---	ND	---	0.505
176		---	---	ND	---	0.505
177		---	---	ND	---	0.505
178		---	---	ND	---	0.505
179		---	---	ND	---	0.505
180	180/193	46.110	1.04	1.66	---	0.505
181		---	---	ND	---	0.505
182		---	---	ND	---	0.505
183	183/185	42.455	1.04	0.533	---	0.505
184		---	---	ND	---	0.505
185	183/185	42.455	1.04	(0.533)	---	0.505
186		---	---	ND	---	0.505
187		41.818	1.07	0.946	---	0.505
188		---	---	ND	---	0.505
189		---	---	ND	---	0.505
190		---	---	ND	---	0.505
191		---	---	ND	---	0.505
192		---	---	ND	---	0.505

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B = Less than 10 times higher than method blank level
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Nn = Value obtained from additional analyses

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

REPORT OF LABORATORY ANALYSIS

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRL0548-06;FO081480
Lab Sample ID 1086550006
Filename P90118A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193	46.110	1.04	(1.66)	---	0.505
194		---	---	ND	---	0.505
195		---	---	ND	---	0.505
196		---	---	ND	---	0.707
197	197/200	---	---	ND	---	2.52
198	198/199	---	---	ND	---	0.505
199	198/199	---	---	ND	---	0.505
200	197/200	---	---	ND	---	2.52
201		---	---	ND	---	0.505
202		---	---	ND	---	0.505
203		---	---	ND	---	0.505
204		---	---	ND	---	0.505
205		---	---	ND	---	0.505
206		---	---	ND	---	0.505
207		---	---	ND	---	0.505
208		---	---	ND	---	0.505
209		---	---	ND	---	0.505

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
P = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

ND = Not Detected
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRL0548-06;FO081480
Lab Sample ID 1086550006
Filename P90118A_08

Congener Group	Concentration ng/L
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	0.653
Total Trichloro Biphenyls	ND
Total Tetrachloro Biphenyls	1.25
Total Pentachloro Biphenyls	4.30
Total Hexachloro Biphenyls	8.52
Total Heptachloro Biphenyls	4.63
Total Octachloro Biphenyls	ND
Total Nonachloro Biphenyls	ND
Decachloro Biphenyls	ND
Total PCBs	19.3

ND = Not Detected

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PRL0548-07;FO081481		
Lab Sample ID	1086550007		
Filename	P90118A_09		
Injected By	BAL		
Total Amount Extracted	999 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	12/12/2008
ICAL ID	P90118A01	Received	12/18/2008
CCal Filename(s)	P90118A_02	Extracted	01/05/2009
Method Blank ID	BLANK-18669	Analyzed	01/18/2009 23:05

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery	
Labeled Analytes							
13C-2-MoCB	1	7.145	3.18	2.0	1.55	78	
13C-4-MoCB	3	10.201	3.23	2.0	1.57	79	
13C-2,2'-DiCB	4	10.524	1.56	2.0	1.80	90	
13C-4,4'-DiCB	15	18.457	1.54	2.0	1.63	82	
13C-2,2',6-TrCB	19	14.790	1.07	2.0	1.85	93	
13C-3,4,4'-TrCB	37	26.760	1.02	2.0	1.52	76	
13C-2,2',6,6'-TeCB	54	18.744	0.81	2.0	1.42	71	
13C-3,4,4',5-TeCB	81	34.105	0.77	2.0	1.63	82	
13C-3,3',4,4'-TeCB	77	34.692	0.77	2.0	1.79	89	
13C-2,2',4,6,6'-PeCB	104	25.318	1.60	2.0	1.55	77	
13C-2,3,3',4,4'-PeCB	105	38.331	1.57	2.0	1.47	73	
13C-2,3,4,4',5-PeCB	114	37.677	1.55	2.0	1.39	70	
13C-2,3',4,4',5-PeCB	118	37.140	1.57	2.0	1.46	73	
13C-2,3',4,4',5'-PeCB	123	36.805	1.53	2.0	1.43	71	
13C-3,3',4,4',5-PeCB	126	41.568	1.56	2.0	1.35	67	
13C-2,2',4,4',6,6'-HxCB	155	31.623	1.27	2.0	1.77	89	
13C-HxCB (156/157)	156/157	44.636	1.21	4.0	2.45	61	
13C-2,3',4,4',5,5'-HxCB	167	43.479	1.24	2.0	1.32	66	
13C-3,3',4,4',5,5'-HxCB	169	47.957	1.23	2.0	1.13	56	
13C-2,2',3,4',5,6,6'-HpCB	188	37.643	1.06	2.0	3.38	169	P
13C-2,3,3',4,4',5,5'-HpCB	189	50.477	1.01	2.0	1.66	83	
13C-2,2',3,3',5,5',6,6'-OxCB	202	43.161	0.92	2.0	3.24	162	P
13C-2,3,3',4,4',5,5',6-OxCB	205	53.042	0.89	2.0	1.71	86	
13C-2,2',3,3',4,4',5,5',6-NoCB	206	54.766	0.77	2.0	1.81	90	
13C-2,2',3,3',4,4',5,5',6-NoCB	208	49.938	0.77	2.0	2.36	118	
13C--DeCB	209	56.361	0.72	2.0	1.93	96	
Cleanup Standards							
13C-2,4,4'-TrCB	28	22.148	1.06	2.0	1.41	71	
13C-2,3,3',5,5'-PeCB	111	34.776	1.59	2.0	1.73	86	
13C-2,2',3,3',5,5',6-HpCB	178	40.813	1.08	2.0	1.98	99	
Recovery Standards							
13C-2,5-DiCB	9	13.328	1.53	2.0	NA	NA	
13C-2,2',5,5'-TeCB	52	24.295	0.78	2.0	NA	NA	
13C-2,2',4,5,5'-PeCB	101	31.891	1.57	2.0	NA	NA	
13C-2,2',3,4,4',5'-HxCB	138	40.343	1.27	2.0	NA	NA	
13C-2,2',3,3',4,4',5,5'-OxCB	194	52.567	0.96	2.0	NA	NA	

Conc = Concentration
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Pace AnalyticalTM

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 PRL0548-07;FO081481
Lab Sample ID 1086550007
Filename P90118A_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.501
2		---	---	ND	---	0.501
3		---	---	ND	---	0.501
4		---	---	ND	---	0.501
5		---	---	ND	---	0.501
6		---	---	ND	---	0.501
7		---	---	ND	---	0.501
8		---	---	ND	---	0.501
9		---	---	ND	---	0.501
10		---	---	ND	---	0.501
11		---	---	ND	---	0.601
12	12/13	---	---	ND	---	0.501
13	12/13	---	---	ND	---	0.501
14		---	---	ND	---	0.501
15		---	---	ND	---	0.501
16		---	---	ND	---	0.501
17		---	---	ND	---	0.501
18	18/30	---	---	ND	---	0.501
19		---	---	ND	---	0.501
20	20/28	---	---	ND	---	0.601
21	21/33	---	---	ND	---	0.501
22		---	---	ND	---	0.501
23		---	---	ND	---	0.501
24		---	---	ND	---	0.501
25		---	---	ND	---	0.501
26	26/29	---	---	ND	---	0.501
27		---	---	ND	---	0.501
28	20/28	---	---	ND	---	0.601
29	26/29	---	---	ND	---	0.501
30	18/30	---	---	ND	---	0.501
31		---	---	ND	---	0.501
32		---	---	ND	---	0.501
33	21/33	---	---	ND	---	0.501
34		---	---	ND	---	0.501
35		---	---	ND	---	0.501
36		---	---	ND	---	0.501
37		---	---	ND	---	0.501
38		---	---	ND	---	0.501
39		---	---	ND	---	0.501
40	40/41/71	---	---	ND	---	0.501
41	40/41/71	---	---	ND	---	0.501
42		---	---	ND	---	0.501
43		---	---	ND	---	0.501
44	44/47/65	---	---	ND	---	0.601
45	45/51	---	---	ND	---	0.501
46		---	---	ND	---	0.501
47	44/47/65	---	---	ND	---	0.601
48		---	---	ND	---	0.501

Conc = Concentration
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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 PRL0548-07;FO081481
Lab Sample ID 1086550007
Filename P90118A_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69	---	---	ND	---	0.501
50	50/53	---	---	ND	---	0.501
51	45/51	---	---	ND	---	0.501
52		---	---	ND	---	0.501
53	50/53	---	---	ND	---	0.501
54		---	---	ND	---	0.501
55		---	---	ND	---	0.501
56		---	---	ND	---	0.501
57		---	---	ND	---	0.501
58		---	---	ND	---	0.501
59	59/62/75	---	---	ND	---	0.501
60		---	---	ND	---	0.501
61	61/70/74/76	---	---	ND	---	0.501
62	59/62/75	---	---	ND	---	0.501
63		---	---	ND	---	0.501
64		---	---	ND	---	0.501
65	44/47/65	---	---	ND	---	0.601
66		---	---	ND	---	0.501
67		---	---	ND	---	0.501
68		---	---	ND	---	0.501
69	49/69	---	---	ND	---	0.501
70	61/70/74/76	---	---	ND	---	0.501
71	40/41/71	---	---	ND	---	0.501
72		---	---	ND	---	0.501
73		---	---	ND	---	0.501
74	61/70/74/76	---	---	ND	---	0.501
75	59/62/75	---	---	ND	---	0.501
76	61/70/74/76	---	---	ND	---	0.501
77		---	---	ND	---	0.501
78		---	---	ND	---	0.501
79		---	---	ND	---	0.501
80		---	---	ND	---	0.501
81		---	---	ND	---	0.501
82		---	---	ND	---	0.501
83		---	---	ND	---	0.501
84		---	---	ND	---	0.501
85	85/116/117	---	---	ND	---	0.601
86	86/87/97/108/119/125	---	---	ND	---	1.00
87	86/87/97/108/119/125	---	---	ND	---	1.00
88	88/91	---	---	ND	---	0.501
89		---	---	ND	---	0.501
90	90/101/113	---	---	ND	---	0.501
91	88/91	---	---	ND	---	0.501
92		---	---	ND	---	0.501
93	93/98/100/102	---	---	ND	---	0.751
94		---	---	ND	---	0.501
95		---	---	ND	---	0.501
96		---	---	ND	---	0.501

Conc = Concentration
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRL0548-07;FO081481
Lab Sample ID 1086550007
Filename P90118A_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
97	86/87/97/108/119/125	---	---	ND	---	1.00
98	93/98/100/102	---	---	ND	---	0.751
99		---	---	ND	---	0.501
100	93/98/100/102	---	---	ND	---	0.751
101	90/101/113	---	---	ND	---	0.501
102	93/98/100/102	---	---	ND	---	0.751
103		---	---	ND	---	0.501
104		---	---	ND	---	0.501
105		---	---	ND	---	0.501
106		---	---	ND	---	0.501
107	107/124	---	---	ND	---	0.501
108	86/87/97/108/119/125	---	---	ND	---	1.00
109		---	---	ND	---	0.501
110	110/115	---	---	ND	---	0.501
111		---	---	ND	---	0.501
112		---	---	ND	---	0.501
113	90/101/113	---	---	ND	---	0.501
114		---	---	ND	---	0.501
115	110/115	---	---	ND	---	0.501
116	85/116/117	---	---	ND	---	0.601
117	85/116/117	---	---	ND	---	0.601
118		---	---	ND	---	0.501
119	86/87/97/108/119/125	---	---	ND	---	1.00
120		---	---	ND	---	0.501
121		---	---	ND	---	0.501
122		---	---	ND	---	0.501
123		---	---	ND	---	0.501
124	107/124	---	---	ND	---	0.501
125	86/87/97/108/119/125	---	---	ND	---	1.00
126		---	---	ND	---	0.501
127		---	---	ND	---	0.501
128	128/166	---	---	ND	---	1.00
129	129/138/163	---	---	ND	---	0.501
130		---	---	ND	---	0.501
131		---	---	ND	---	0.501
132		---	---	ND	---	0.501
133		---	---	ND	---	0.501
134	134/143	---	---	ND	---	0.501
135	135/151	---	---	ND	---	0.511
136		---	---	ND	---	0.501
137		---	---	ND	---	0.501
138	129/138/163	---	---	ND	---	0.501
139	139/140	---	---	ND	---	0.501
140	139/140	---	---	ND	---	0.501
141		---	---	ND	---	0.501
142		---	---	ND	---	0.501
143	134/143	---	---	ND	---	0.501
144		---	---	ND	---	0.501

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRL0548-07;FO081481
Lab Sample ID 1086550007
Filename P90118A_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
145		---	---	ND	---	0.501
146		---	---	ND	---	0.501
147	147/149	---	---	ND	---	0.501
148		---	---	ND	---	0.501
149	147/149	---	---	ND	---	0.501
150		---	---	ND	---	0.501
151	135/151	---	---	ND	---	0.511
152		---	---	ND	---	0.501
153	153/168	---	---	ND	---	0.601
154		---	---	ND	---	0.501
155		---	---	ND	---	0.501
156	156/157	---	---	ND	---	1.00
157	156/157	---	---	ND	---	1.00
158		---	---	ND	---	0.501
159		---	---	ND	---	0.501
160		---	---	ND	---	0.501
161		---	---	ND	---	0.501
162		---	---	ND	---	0.501
163	129/138/163	---	---	ND	---	0.501
164		---	---	ND	---	0.501
165		---	---	ND	---	0.501
166	128/166	---	---	ND	---	1.00
167		---	---	ND	---	0.501
168	153/168	---	---	ND	---	0.601
169		---	---	ND	---	0.501
170		---	---	ND	---	0.501
171	171/173	---	---	ND	---	0.501
172		---	---	ND	---	0.501
173	171/173	---	---	ND	---	0.501
174		---	---	ND	---	0.501
175		---	---	ND	---	0.501
176		---	---	ND	---	0.501
177		---	---	ND	---	0.501
178		---	---	ND	---	0.501
179		---	---	ND	---	0.501
180	180/193	---	---	ND	---	0.501
181		---	---	ND	---	0.501
182		---	---	ND	---	0.501
183	183/185	---	---	ND	---	0.501
184		---	---	ND	---	0.501
185	183/185	---	---	ND	---	0.501
186		---	---	ND	---	0.501
187		---	---	ND	---	0.501
188		---	---	ND	---	0.501
189		---	---	ND	---	0.501
190		---	---	ND	---	0.501
191		---	---	ND	---	0.501
192		---	---	ND	---	0.501

Conc = Concentration
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRL0548-07;FO081481
Lab Sample ID 1086550007
Filename P90118A_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193	---	---	ND	---	0.501
194		---	---	ND	---	0.501
195		---	---	ND	---	0.501
196		---	---	ND	---	0.701
197	197/200	---	---	ND	---	2.50
198	198/199	---	---	ND	---	0.501
199	198/199	---	---	ND	---	0.501
200	197/200	---	---	ND	---	2.50
201		---	---	ND	---	0.501
202		---	---	ND	---	0.501
203		---	---	ND	---	0.501
204		---	---	ND	---	0.501
205		---	---	ND	---	0.501
206		---	---	ND	---	0.501
207		---	---	ND	---	0.501
208		---	---	ND	---	0.501
209		---	---	ND	---	0.501

Conc = Concentration
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRL0548-07;FO081481
Lab Sample ID 1086550007
Filename P90118A_09

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 Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PRL0548-08;FO081482		
Lab Sample ID	1086550008		
Filename	P90118A_07		
Injected By	BAL		
Total Amount Extracted	992 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	12/12/2008
ICAL ID	P90118A01	Received	12/18/2008
CCal Filename(s)	P90118A_02	Extracted	01/05/2009
Method Blank ID	BLANK-18669	Analyzed	01/18/2009 21:03

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery	
Labeled Analytes							
13C-2-MoCB	1	7.145	3.17	2.0	1.43	71	
13C-4-MoCB	3	10.201	2.82	2.0	1.52	76	
13C-2,2'-DiCB	4	10.525	1.58	2.0	1.66	83	
13C-4,4'-DiCB	15	18.457	1.55	2.0	1.63	81	
13C-2,2',6-TrCB	19	14.790	1.07	2.0	1.76	88	
13C-3,4,4'-TrCB	37	26.760	1.02	2.0	1.45	73	
13C-2,2',6,6'-TeCB	54	18.744	0.80	2.0	1.49	75	
13C-3,4,4',5-TeCB	81	34.122	0.77	2.0	1.34	67	
13C-3,3',4,4'-TeCB	77	34.726	0.77	2.0	1.41	71	
13C-2,2',4,6,6'-PeCB	104	25.335	1.62	2.0	1.78	89	
13C-2,3,3',4,4'-PeCB	105	38.365	1.52	2.0	1.16	58	
13C-2,3,4,4',5-PeCB	114	37.711	1.55	2.0	1.11	56	
13C-2,3',4,4',5-PeCB	118	37.174	1.54	2.0	1.19	59	
13C-2,3',4,4',5'-PeCB	123	36.822	1.53	2.0	1.18	59	
13C-3,3',4,4',5-PeCB	126	41.601	1.50	2.0	1.01	51	
13C-2,2',4,4',6,6'-HxCB	155	31.640	1.28	2.0	2.30	115	
13C-HxCB (156/157)	156/157	44.670	1.23	4.0	2.22	56	
13C-2,3',4,4',5,5'-HxCB	167	43.513	1.23	2.0	1.22	61	
13C-3,3',4,4',5,5'-HxCB	169	48.007	1.24	2.0	1.06	53	
13C-2,2',3,4',5,6,6'-HpCB	188	37.677	1.06	2.0	4.25	213	P
13C-2,3,3',4,4',5,5'-HpCB	189	50.541	1.02	2.0	1.72	86	
13C-2,2',3,3',5,5',6,6'-OxCB	202	43.211	0.89	2.0	3.57	178	P
13C-2,3,3',4,4',5,5',6-OxCB	205	53.128	0.89	2.0	1.65	83	
13C-2,2',3,3',4,4',5,5',6-NoCB	206	54.831	0.82	2.0	1.98	99	
13C-2,2',3,3',4,4',5,5',6-NoCB	208	49.981	0.81	2.0	2.47	124	
13C--DeCB	209	56.426	0.68	2.0	1.93	97	
Cleanup Standards							
13C-2,4,4'-TrCB	28	22.165	1.04	2.0	1.58	79	
13C-2,3,3',5,5'-PeCB	111	34.809	1.57	2.0	1.78	89	
13C-2,2',3,3',5,5',6-HpCB	178	40.863	1.03	2.0	2.15	107	
Recovery Standards							
13C-2,5-DiCB	9	13.329	1.55	2.0	NA	NA	
13C-2,2',5,5'-TeCB	52	24.295	0.78	2.0	NA	NA	
13C-2,2',4,5,5'-PeCB	101	31.908	1.56	2.0	NA	NA	
13C-2,2',3,4,4',5'-HxCB	138	40.377	1.29	2.0	NA	NA	
13C-2,2',3,3',4,4',5,5'-OxCB	194	52.632	0.93	2.0	NA	NA	

Conc = Concentration
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P = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

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NC = Not Calculated
* = See Discussion
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RT = Retention Time
I = Interference
ng's = Nanograms

REPORT OF LABORATORY ANALYSIS

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Pace AnalyticalTM

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 PRL0548-08;FO081482
Lab Sample ID 1086550008
Filename P90118A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.504
2		---	---	ND	---	0.504
3		---	---	ND	---	0.504
4		---	---	ND	---	0.504
5		---	---	ND	---	0.504
6		---	---	ND	---	0.504
7		---	---	ND	---	0.504
8		---	---	ND	---	0.504
9		---	---	ND	---	0.504
10		---	---	ND	---	0.504
11		17.714	1.47	0.778	---	0.605
12	12/13	---	---	ND	---	0.504
13	12/13	---	---	ND	---	0.504
14		---	---	ND	---	0.504
15		---	---	ND	---	0.504
16		---	---	ND	---	0.504
17		---	---	ND	---	0.504
18	18/30	---	---	ND	---	0.504
19		---	---	ND	---	0.504
20	20/28	---	---	ND	---	0.605
21	21/33	---	---	ND	---	0.504
22		---	---	ND	---	0.504
23		---	---	ND	---	0.504
24		---	---	ND	---	0.504
25		---	---	ND	---	0.504
26	26/29	---	---	ND	---	0.504
27		---	---	ND	---	0.504
28	20/28	---	---	ND	---	0.605
29	26/29	---	---	ND	---	0.504
30	18/30	---	---	ND	---	0.504
31		---	---	ND	---	0.504
32		---	---	ND	---	0.504
33	21/33	---	---	ND	---	0.504
34		---	---	ND	---	0.504
35		---	---	ND	---	0.504
36		---	---	ND	---	0.504
37		---	---	ND	---	0.504
38		---	---	ND	---	0.504
39		---	---	ND	---	0.504
40	40/41/71	---	---	ND	---	0.504
41	40/41/71	---	---	ND	---	0.504
42		---	---	ND	---	0.504
43		---	---	ND	---	0.504
44	44/47/65	---	---	ND	---	0.605
45	45/51	---	---	ND	---	0.504
46		---	---	ND	---	0.504
47	44/47/65	---	---	ND	---	0.605
48		---	---	ND	---	0.504

Conc = Concentration
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Nn = Value obtained from additional analyses

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1700 Elm Street - Suite 200
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Fax: 612- 607-6444

**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRL0548-08;FO081482
Lab Sample ID 1086550008
Filename P90118A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69	---	---	ND	---	0.504
50	50/53	---	---	ND	---	0.504
51	45/51	---	---	ND	---	0.504
52		24.329	0.77	0.730	---	0.504
53	50/53	---	---	ND	---	0.504
54		---	---	ND	---	0.504
55		---	---	ND	---	0.504
56		---	---	ND	---	0.504
57		---	---	ND	---	0.504
58		---	---	ND	---	0.504
59	59/62/75	---	---	ND	---	0.504
60		---	---	ND	---	0.504
61	61/70/74/76	29.695	0.74	0.713	---	0.504
62	59/62/75	---	---	ND	---	0.504
63		---	---	ND	---	0.504
64		---	---	ND	---	0.504
65	44/47/65	---	---	ND	---	0.605
66		---	---	ND	---	0.504
67		---	---	ND	---	0.504
68		---	---	ND	---	0.504
69	49/69	---	---	ND	---	0.504
70	61/70/74/76	29.695	0.74	(0.713)	---	0.504
71	40/41/71	---	---	ND	---	0.504
72		---	---	ND	---	0.504
73		---	---	ND	---	0.504
74	61/70/74/76	29.695	0.74	(0.713)	---	0.504
75	59/62/75	---	---	ND	---	0.504
76	61/70/74/76	29.695	0.74	(0.713)	---	0.504
77		---	---	ND	---	0.504
78		---	---	ND	---	0.504
79		---	---	ND	---	0.504
80		---	---	ND	---	0.504
81		---	---	ND	---	0.504
82		---	---	ND	---	0.504
83		---	---	ND	---	0.504
84		---	---	ND	---	0.504
85	85/116/117	---	---	ND	---	0.605
86	86/87/97/108/119/125	---	---	ND	---	1.01
87	86/87/97/108/119/125	---	---	ND	---	1.01
88	88/91	---	---	ND	---	0.504
89		---	---	ND	---	0.504
90	90/101/113	31.925	1.61	1.80	---	0.504
91	88/91	---	---	ND	---	0.504
92		---	---	ND	---	0.504
93	93/98/100/102	---	---	ND	---	0.756
94		---	---	ND	---	0.504
95		28.689	1.55	1.38	---	0.504
96		---	---	ND	---	0.504

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRL0548-08;FO081482
Lab Sample ID 1086550008
Filename P90118A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
97	86/87/97/108/119/125	---	---	ND	---	1.01
98	93/98/100/102	---	---	ND	---	0.756
99		---	---	ND	---	0.504
100	93/98/100/102	---	---	ND	---	0.756
101	90/101/113	31.925	1.61	(1.80)	---	0.504
102	93/98/100/102	---	---	ND	---	0.756
103		---	---	ND	---	0.504
104		---	---	ND	---	0.504
105		---	---	ND	---	0.504
106		---	---	ND	---	0.504
107	107/124	---	---	ND	---	0.504
108	86/87/97/108/119/125	---	---	ND	---	1.01
109		---	---	ND	---	0.504
110	110/115	34.005	1.55	1.55	---	0.504
111		---	---	ND	---	0.504
112		---	---	ND	---	0.504
113	90/101/113	31.925	1.61	(1.80)	---	0.504
114		---	---	ND	---	0.504
115	110/115	34.005	1.55	(1.55)	---	0.504
116	85/116/117	---	---	ND	---	0.605
117	85/116/117	---	---	ND	---	0.605
118		37.208	1.53	0.900	---	0.504
119	86/87/97/108/119/125	---	---	ND	---	1.01
120		---	---	ND	---	0.504
121		---	---	ND	---	0.504
122		---	---	ND	---	0.504
123		---	---	ND	---	0.504
124	107/124	---	---	ND	---	0.504
125	86/87/97/108/119/125	---	---	ND	---	1.01
126		---	---	ND	---	0.504
127		---	---	ND	---	0.504
128	128/166	---	---	ND	---	1.01
129	129/138/163	40.411	1.25	3.21	---	0.504
130		---	---	ND	---	0.504
131		---	---	ND	---	0.504
132		37.241	1.24	1.08	---	0.504
133		---	---	ND	---	0.504
134	134/143	---	---	ND	---	0.504
135	135/151	34.994	1.28	1.50	---	0.514
136		32.378	1.23	0.545	---	0.504
137		---	---	ND	---	0.504
138	129/138/163	40.411	1.25	(3.21)	---	0.504
139	139/140	---	---	ND	---	0.504
140	139/140	---	---	ND	---	0.504
141		39.337	1.26	0.697	---	0.504
142		---	---	ND	---	0.504
143	134/143	---	---	ND	---	0.504
144		---	---	ND	---	0.504

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRL0548-08;FO081482
Lab Sample ID 1086550008
Filename P90118A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
145		---	---	ND	---	0.504
146		---	---	ND	---	0.504
147	147/149	35.950	1.23	2.97	---	0.504
148		---	---	ND	---	0.504
149	147/149	35.950	1.23	(2.97)	---	0.504
150		---	---	ND	---	0.504
151	135/151	34.994	1.28	(1.50)	---	0.514
152		---	---	ND	---	0.504
153	153/168	39.153	1.22	3.00	---	0.605
154		---	---	ND	---	0.504
155		---	---	ND	---	0.504
156	156/157	---	---	ND	---	1.01
157	156/157	---	---	ND	---	1.01
158		---	---	ND	---	0.504
159		---	---	ND	---	0.504
160		---	---	ND	---	0.504
161		---	---	ND	---	0.504
162		---	---	ND	---	0.504
163	129/138/163	40.411	1.25	(3.21)	---	0.504
164		---	---	ND	---	0.504
165		---	---	ND	---	0.504
166	128/166	---	---	ND	---	1.01
167		---	---	ND	---	0.504
168	153/168	39.153	1.22	(3.00)	---	0.605
169		---	---	ND	---	0.504
170		47.353	1.03	1.06	---	0.504
171	171/173	---	---	ND	---	0.504
172		---	---	ND	---	0.504
173	171/173	---	---	ND	---	0.504
174		42.658	1.10	0.998	---	0.504
175		---	---	ND	---	0.504
176		---	---	ND	---	0.504
177		43.110	1.01	0.584	---	0.504
178		---	---	ND	---	0.504
179		---	---	ND	---	0.504
180	180/193	46.112	1.05	2.17	---	0.504
181		---	---	ND	---	0.504
182		---	---	ND	---	0.504
183	183/185	42.457	0.94	0.718	---	0.504
184		---	---	ND	---	0.504
185	183/185	42.457	0.94	(0.718)	---	0.504
186		---	---	ND	---	0.504
187		41.819	1.04	1.21	---	0.504
188		---	---	ND	---	0.504
189		---	---	ND	---	0.504
190		---	---	ND	---	0.504
191		---	---	ND	---	0.504
192		---	---	ND	---	0.504

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRL0548-08;FO081482
Lab Sample ID 1086550008
Filename P90118A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193	46.112	1.05	(2.17)	---	0.504
194		---	---	ND	---	0.504
195		---	---	ND	---	0.504
196		---	---	ND	---	0.705
197	197/200	---	---	ND	---	2.52
198	198/199	48.074	0.88	0.516	---	0.504
199	198/199	48.074	0.88	(0.516)	---	0.504
200	197/200	---	---	ND	---	2.52
201		---	---	ND	---	0.504
202		---	---	ND	---	0.504
203		---	---	ND	---	0.504
204		---	---	ND	---	0.504
205		---	---	ND	---	0.504
206		---	---	ND	---	0.504
207		---	---	ND	---	0.504
208		---	---	ND	---	0.504
209		---	---	ND	---	0.504

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PRL0548-08;FO081482
Lab Sample ID 1086550008
Filename P90118A_07

Congener Group	Concentration ng/L
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	0.778
Total Trichloro Biphenyls	ND
Total Tetrachloro Biphenyls	1.44
Total Pentachloro Biphenyls	5.63
Total Hexachloro Biphenyls	13.0
Total Heptachloro Biphenyls	6.74
Total Octachloro Biphenyls	0.516
Total Nonachloro Biphenyls	ND
Decachloro Biphenyls	ND
Total PCBs	28.1

ND = Not Detected

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID	BLANK-18669		
Filename	P90116C_08		
Injected By	BAL	Matrix	Water
Total Amount Extracted	960 mL	Extracted	01/05/2009
ICAL ID	P90116C04	Analyzed	01/17/2009 01:00
CCal Filename(s)	P90116C_03	Dilution	NA

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
------------	-------	----	-------	------------	------------	------------

Labeled Analytes

13C-2-MoCB	1	7.109	3.03	2.0	1.22	61
13C-4-MoCB	3	10.141	3.20	2.0	1.22	61
13C-2,2'-DiCB	4	10.464	1.53	2.0	1.40	70
13C-4,4'-DiCB	15	18.384	1.57	2.0	1.15	58
13C-2,2',6-TrCB	19	14.730	1.08	2.0	1.37	69
13C-3,4,4'-TrCB	37	26.687	1.11	2.0	1.25	62
13C-2,2',6,6'-TeCB	54	18.688	0.81	2.0	1.26	63
13C-3,4,4',5-TeCB	81	34.032	0.78	2.0	1.21	60
13C-3,3',4,4'-TeCB	77	34.619	0.77	2.0	1.36	68
13C-2,2',4,6,6'-PeCB	104	25.262	1.59	2.0	1.45	72
13C-2,3,3',4,4'-PeCB	105	38.275	1.57	2.0	1.43	72
13C-2,3,4,4',5-PeCB	114	37.621	1.50	2.0	1.31	66
13C-2,3',4,4',5-PeCB	118	37.084	1.56	2.0	1.39	69
13C-2,3',4,4',5'-PeCB	123	36.732	1.57	2.0	1.30	65
13C-3,3',4,4',5-PeCB	126	41.495	1.52	2.0	1.40	70
13C-2,2',4,4',6,6'-HxCB	155	31.584	1.25	2.0	1.71	85
13C-HxCB (156/157)	156/157	44.564	1.26	4.0	3.29	82
13C-2,3',4,4',5,5'-HxCB	167	43.423	1.29	2.0	1.69	84
13C-3,3',4,4',5,5'-HxCB	169	47.884	1.28	2.0	1.71	85
13C-2,2',3,4',5,6,6'-HpCB	188	37.604	1.04	2.0	1.94	97
13C-2,3,3',4,4',5,5'-HpCB	189	50.423	1.05	2.0	1.85	93
13C-2,2',3,3',5,5',6,6'-OxCB	202	43.121	0.93	2.0	2.05	102
13C-2,3,3',4,4',5,5',6-OxCB	205	53.010	0.86	2.0	1.61	80
13C-2,2',3,3',4,4',5,5',6-NoCB	206	54.734	0.83	2.0	1.79	90
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	49.906	0.82	2.0	1.86	93
13C--DeCB	209	56.329	0.72	2.0	1.83	92

Cleanup Standards

13C-2,4,4'-TrCB	28	22.092	1.06	2.0	1.27	64
13C-2,3,3',5,5'-PeCB	111	34.720	1.59	2.0	1.48	74
13C-2,2',3,3',5,5',6-HpCB	178	40.774	1.03	2.0	1.98	99

Recovery Standards

13C-2,5-DiCB	9	13.268	1.54	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	24.222	0.80	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	31.819	1.59	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	40.287	1.28	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	52.514	0.94	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
P = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

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

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-18669
Filename P90116C_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.521
2		---	---	ND	---	0.521
3		---	---	ND	---	0.521
4		---	---	ND	---	0.521
5		---	---	ND	---	0.521
6		---	---	ND	---	0.521
7		---	---	ND	---	0.521
8		---	---	ND	---	0.521
9		---	---	ND	---	0.521
10		---	---	ND	---	0.521
11		---	---	ND	---	0.625
12	12/13	---	---	ND	---	0.521
13	12/13	---	---	ND	---	0.521
14		---	---	ND	---	0.521
15		---	---	ND	---	0.521
16		---	---	ND	---	0.521
17		---	---	ND	---	0.521
18	18/30	---	---	ND	---	0.521
19		---	---	ND	---	0.521
20	20/28	---	---	ND	---	0.625
21	21/33	---	---	ND	---	0.521
22		---	---	ND	---	0.521
23		---	---	ND	---	0.521
24		---	---	ND	---	0.521
25		---	---	ND	---	0.521
26	26/29	---	---	ND	---	0.521
27		---	---	ND	---	0.521
28	20/28	---	---	ND	---	0.625
29	26/29	---	---	ND	---	0.521
30	18/30	---	---	ND	---	0.521
31		---	---	ND	---	0.521
32		---	---	ND	---	0.521
33	21/33	---	---	ND	---	0.521
34		---	---	ND	---	0.521
35		---	---	ND	---	0.521
36		---	---	ND	---	0.521
37		---	---	ND	---	0.521
38		---	---	ND	---	0.521
39		---	---	ND	---	0.521
40	40/41/71	---	---	ND	---	0.521
41	40/41/71	---	---	ND	---	0.521
42		---	---	ND	---	0.521
43		---	---	ND	---	0.521
44	44/47/65	---	---	ND	---	0.625
45	45/51	---	---	ND	---	0.521

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
P = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

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

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-18669
Filename P90116C_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
46		---	---	ND	---	0.521
47	44/47/65	---	---	ND	---	0.625
48		---	---	ND	---	0.521
49	49/69	---	---	ND	---	0.521
50	50/53	---	---	ND	---	0.521
51	45/51	---	---	ND	---	0.521
52		---	---	ND	---	0.521
53	50/53	---	---	ND	---	0.521
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	---	0.521
60		---	---	ND	---	0.521
61	61/70/74/76	---	---	ND	---	0.521
62	59/62/75	---	---	ND	---	0.521
63		---	---	ND	---	0.521
64		---	---	ND	---	0.521
65	44/47/65	---	---	ND	---	0.625
66		---	---	ND	---	0.521
67		---	---	ND	---	0.521
68		---	---	ND	---	0.521
69	49/69	---	---	ND	---	0.521
70	61/70/74/76	---	---	ND	---	0.521
71	40/41/71	---	---	ND	---	0.521
72		---	---	ND	---	0.521
73		---	---	ND	---	0.521
74	61/70/74/76	---	---	ND	---	0.521
75	59/62/75	---	---	ND	---	0.521
76	61/70/74/76	---	---	ND	---	0.521
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	---	0.625
86	86/87/97/108/119/125	---	---	ND	---	1.04
87	86/87/97/108/119/125	---	---	ND	---	1.04
88	88/91	---	---	ND	---	0.521
89		---	---	ND	---	0.521
90	90/101/113	---	---	ND	---	0.521

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
P = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
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*! = See Discussion
! = Outside QC Limits
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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-18669
Filename P90116C_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
91	88/91	---	---	ND	---	0.521
92		---	---	ND	---	0.521
93	93/98/100/102	---	---	ND	---	0.782
94		---	---	ND	---	0.521
95		---	---	ND	---	0.521
96		---	---	ND	---	0.521
97	86/87/97/108/119/125	---	---	ND	---	1.04
98	93/98/100/102	---	---	ND	---	0.782
99		---	---	ND	---	0.521
100	93/98/100/102	---	---	ND	---	0.782
101	90/101/113	---	---	ND	---	0.521
102	93/98/100/102	---	---	ND	---	0.782
103		---	---	ND	---	0.521
104		---	---	ND	---	0.521
105		---	---	ND	---	0.521
106		---	---	ND	---	0.521
107	107/124	---	---	ND	---	0.521
108	86/87/97/108/119/125	---	---	ND	---	1.04
109		---	---	ND	---	0.521
110	110/115	---	---	ND	---	0.521
111		---	---	ND	---	0.521
112		---	---	ND	---	0.521
113	90/101/113	---	---	ND	---	0.521
114		---	---	ND	---	0.521
115	110/115	---	---	ND	---	0.521
116	85/116/117	---	---	ND	---	0.625
117	85/116/117	---	---	ND	---	0.625
118		---	---	ND	---	0.521
119	86/87/97/108/119/125	---	---	ND	---	1.04
120		---	---	ND	---	0.521
121		---	---	ND	---	0.521
122		---	---	ND	---	0.521
123		---	---	ND	---	0.521
124	107/124	---	---	ND	---	0.521
125	86/87/97/108/119/125	---	---	ND	---	1.04
126		---	---	ND	---	0.521
127		---	---	ND	---	0.521
128	128/166	---	---	ND	---	1.04
129	129/138/163	---	---	ND	---	0.521
130		---	---	ND	---	0.521
131		---	---	ND	---	0.521
132		---	---	ND	---	0.521
133		---	---	ND	---	0.521
134	134/143	---	---	ND	---	0.521
135	135/151	---	---	ND	---	0.532

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
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ng/L = Nanograms per liter

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*! = See Discussion
! = Outside QC Limits
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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-18669
Filename P90116C_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
136		---	---	ND	---	0.521
137		---	---	ND	---	0.521
138	129/138/163	---	---	ND	---	0.521
139	139/140	---	---	ND	---	0.521
140	139/140	---	---	ND	---	0.521
141		---	---	ND	---	0.521
142		---	---	ND	---	0.521
143	134/143	---	---	ND	---	0.521
144		---	---	ND	---	0.521
145		---	---	ND	---	0.521
146		---	---	ND	---	0.521
147	147/149	---	---	ND	---	0.521
148		---	---	ND	---	0.521
149	147/149	---	---	ND	---	0.521
150		---	---	ND	---	0.521
151	135/151	---	---	ND	---	0.532
152		---	---	ND	---	0.521
153	153/168	---	---	ND	---	0.625
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	---	---	ND	---	0.521
164		---	---	ND	---	0.521
165		---	---	ND	---	0.521
166	128/166	---	---	ND	---	1.04
167		---	---	ND	---	0.521
168	153/168	---	---	ND	---	0.625
169		---	---	ND	---	0.521
170		---	---	ND	---	0.521
171	171/173	---	---	ND	---	0.521
172		---	---	ND	---	0.521
173	171/173	---	---	ND	---	0.521
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	---	0.521

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
P = Recovery outside of Method 1668A control limits
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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-18669
Filename P90116C_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
181		---	---	ND	---	0.521
182		---	---	ND	---	0.521
183	183/185	---	---	ND	---	0.521
184		---	---	ND	---	0.521
185	183/185	---	---	ND	---	0.521
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
193	180/193	---	---	ND	---	0.521
194		---	---	ND	---	0.521
195		---	---	ND	---	0.521
196		---	---	ND	---	0.730
197	197/200	---	---	ND	---	2.61
198	198/199	---	---	ND	---	0.521
199	198/199	---	---	ND	---	0.521
200	197/200	---	---	ND	---	2.61
201		---	---	ND	---	0.521
202		---	---	ND	---	0.521
203		---	---	ND	---	0.521
204		---	---	ND	---	0.521
205		---	---	ND	---	0.521
206		---	---	ND	---	0.521
207		---	---	ND	---	0.521
208		---	---	ND	---	0.521
209		---	---	ND	---	0.521

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
P = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
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Pace AnalyticalTM

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 DFBLKEB
Lab Sample ID BLANK-18669
Filename P90116C_08

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-18670	
Filename	P90116C_05	Matrix
Total Amount Extracted	903 mL	Water
ICAL ID	P90116C04	Dilution
CCal Filename(s)	P90116C_03	Extracted
Method Blank ID	BLANK-18669	Analyzed
		01/16/2009 21:56
		Injected By
		BAL

PCB Isomer	Native Analytes			Labeled Analytes		
	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recovery
1	1.0	1.09	109	2.0	1.55	77
3	1.0	1.15	115	2.0	1.55	78
4	1.0	1.07	107	2.0	1.74	87
15	1.0	1.16	116	2.0	1.54	77
19	1.0	1.05	105	2.0	1.64	82
37	1.0	1.15	115	2.0	1.56	78
54	1.0	1.02	102	2.0	1.64	82
81	1.0	1.10	110	2.0	1.44	72
77	1.0	1.05	105	2.0	1.60	80
104	1.0	1.05	105	2.0	1.82	91
105	1.0	1.11	111	2.0	1.50	75
114	1.0	1.14	114	2.0	1.41	70
118	1.0	1.12	112	2.0	1.54	77
123	1.0	1.13	113	2.0	1.42	71
126	1.0	1.07	107	2.0	1.49	75
155	1.0	1.07	107	2.0	1.95	97
156/157	2.0	2.22	111	4.0	3.34	83
167	1.0	1.10	110	2.0	1.74	87
169	1.0	1.14	114	2.0	1.75	88
188	1.0	1.05	105	2.0	2.11	106
189	1.0	1.13	113	2.0	1.99	99
202	1.0	1.06	106	2.0	2.12	106
205	1.0	1.09	109	2.0	1.71	86
206	1.0	1.03	103	2.0	1.87	94
208	1.0	1.07	107	2.0	1.96	98
209	1.0	1.04	104	2.0	1.92	96

P = 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-18671	
Filename	P90116C_06	Matrix
Total Amount Extracted	947 mL	Water
ICAL ID	P90116C04	Dilution
CCal Filename(s)	P90116C_03	Extracted
Method Blank ID	BLANK-18669	Analyzed
		01/16/2009 22:57
		Injected By
		BAL

PCB Isomer	Native Analytes			Labeled Analytes		
	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recovery
1	1.0	0.963	96	2.0	1.68	84
3	1.0	0.994	99	2.0	1.68	84
4	1.0	0.919	92	2.0	1.94	97
15	1.0	1.03	103	2.0	1.65	82
19	1.0	0.870	87	2.0	1.91	95
37	1.0	1.01	101	2.0	1.70	85
54	1.0	0.889	89	2.0	1.78	89
81	1.0	0.962	96	2.0	1.60	80
77	1.0	0.921	92	2.0	1.79	90
104	1.0	0.913	91	2.0	2.12	106
105	1.0	0.952	95	2.0	1.76	88
114	1.0	0.995	100	2.0	1.66	83
118	1.0	0.992	99	2.0	1.79	90
123	1.0	0.960	96	2.0	1.64	82
126	1.0	0.932	93	2.0	1.75	88
155	1.0	0.919	92	2.0	2.17	108
156/157	2.0	1.96	98	4.0	3.72	93
167	1.0	0.961	96	2.0	1.93	96
169	1.0	0.986	99	2.0	1.93	96
188	1.0	0.923	92	2.0	2.48	124
189	1.0	0.991	99	2.0	2.24	112
202	1.0	0.892	89	2.0	2.49	124
205	1.0	0.932	93	2.0	1.93	97
206	1.0	0.894	89	2.0	2.07	103
208	1.0	0.922	92	2.0	2.24	112
209	1.0	0.900	90	2.0	2.18	109

P = 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

Spike 1 ID LCS-18670
Spike 1 Filename P90116C_05

Spike 2 ID LCSD-18671
Spike 2 Filename P90116C_06

Compound	IUPAC	Spike 1 %REC	Spike 2 %REC	%RPD
2-MoCB	1	109	96	12.7
4-MoCB	3	115	99	15.0
2,2'-DiCB	4	107	92	15.1
4,4'-DiCB	15	116	103	11.9
2,2',6-TrCB	19	105	87	18.8
3,4,4'-TrCB	37	115	101	13.0
2,2',6,6'-TeCB	54	102	89	13.6
3,3',4,4'-TeCB	77	105	92	13.2
3,4,4',5-TeCB	81	110	96	13.6
2,2',4,6,6'-PeCB	104	105	91	14.3
2,3,3',4,4'-PeCB	105	111	95	15.5
2,3,4,4',5-PeCB	114	114	100	13.1
2,3',4,4',5-PeCB	118	112	99	12.3
2,3,4,4',5'-PeCB	123	113	96	16.3
3,3',4,4',5-PeCB	126	107	93	14.0
2,2',4,4',6,6'-HxCB	155	107	92	15.1
(156/157)	156/157	111	98	12.4
2,3',4,4',5,5'-HxCB	167	110	96	13.6
3,3',4,4',5,5'-HxCB	169	114	99	14.1
2,2',3,4',5,6,6'-HpCB	188	105	92	13.2
2,3,3',4,4',5,5'-HpCB	189	113	99	13.2
2,2',3,3',5,5',6,6'-OcCB	202	106	89	17.4
2,3,3',4,4',5,5',6-OcCB	205	109	93	15.8
2,2',3,3',4,4',5,5',6-NoCB	206	103	89	14.6
2,2',3,3',4,5,5',6,6'-NoCB	208	107	92	15.1
Decachlorobiphenyl	209	104	90	14.4

%REC = Percent Recovered

RPD = The difference between the two values divided by the mean value

REPORT OF LABORATORY ANALYSIS

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Event 4: February 23, 2009

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: 2/23/09
Page: 1 of 1
Collected By: M35, JMB

Project Name: PORTLAND HARBOR STORMWATER SAMP

File Number: 1020.005

Matrix: STORMWTR

Requested Analyses

FY 2008-09 Stormwater Grab Chain-of-custody

☐ Sample Time recorded in PST

WPCL Sample I.D.	Location	Point Code	Sample Date	Sample Time	Sample Type	General				Organics				Metals		Field		
						TSS				PCB Congeners (All 209)	PAH + Phthalates (TA)	SVOC's (CAS)	Pesticides (CAS)	Total Metals (As, Cd, Cr, Cu, Pb, Ni, Ag, Zn)	Total Mercury	Temperature (Deg C)	Conductivity (umhos/cm)	pH (pH units)
FO095216	SW-43-ABC290-MMYY N ALBINA & RIVER	43_SW1	2/23/09	1442	G	•				•	•	•	•	•	•	9.0	41	7.1
FO095217	SW-43-ABC539-MMYY N KERBY & WHEELER	43_SW2	2/23/09	1410	G	•				•	•	•	•	•	•	9.1	31	7.2
FO095218	SW-43-ABC552-MMYY N WHEELER PL & KERBY	43_SW3	2/23/09	1518	G	•				•	•	•	•	•	•	9.8	60	7.2
FO095219	SW-43-ABC499-MMYY N KERBY & TILLAMOOK	43_SW4	2/23/09	1358	G	•				•	•	•	•	•	•	9.4	24	7.5
FO095220	SW-44-ABC352-MMYY N HARDING & RIVER	44_SW1	2/23/09	1422	G	•				•	•	•	•	•	•	9.1	40	7.2
FO095221	SW-44A-ABC311-MMYY N LARABEE & RANDOLPH	44A_SW1	2/23/09	1455	G	•				•	•	•	•	•	•	9.1	37	7.3
FO095222	FIELD DECON BLANK	FDB	2/23/09	1530	G	•				•	•	•	•	•	•			
FO095223	DUPLICATE	DUP	2/23/09		G	•				•	•	•	•	•	•			

Signature: <u>Matt Sullivan</u>	Time: <u>1621</u>	Signature: _____	Time: _____	Signature: _____	Time: _____	Signature: _____	Time: _____
Printed Name: <u>Matt Sullivan</u>	Date: <u>2/23/09</u>	Printed Name: _____	Date: _____	Printed Name: _____	Date: _____	Printed Name: _____	Date: _____
Received By: <u>1</u>	Signature: _____	Received By: <u>2</u>	Signature: _____	Received By: <u>3</u>	Signature: _____	Received By: <u>4</u>	Signature: _____
Printed Name: <u>Kristen Wilson</u>	Date: <u>2/23/09</u>	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: FO095221

Sample Collected: 02/23/09 14:55
Sample Received: 02/23/09

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-44A-ABC311-0209
N LARABEE & RANDOLPH
Sample Point Code: 44A_SW1
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 1 of 4

System ID: AN02162
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. For pesticide results flagged as estimates, the primary and verification results varied significantly.

Test Parameter	Result	Units	MRL	Method	Analysis Date
FIELD					
CONDUCTIVITY (FIELD)	37	µmhos/cm	1	SM 2510 B	02/23/09
pH (FIELD)	7.3	pH Units	0.1	SM 4500-H B	02/23/09
TEMPERATURE	9.1	Deg. C	0.1	SM 2550 B	02/23/09
GENERAL					
TOTAL SUSPENDED SOLIDS	209	mg/L	2	SM 2540 D	02/24/09
METALS					
MERCURY	0.023	µg/L	0.002	WPCLSOP M-10.02	02/27/09
METALS BY ICP-MS (TOTAL) - 8					
ARSENIC	1.36	µg/L	0.1	EPA 200.8	02/26/09
CADMIUM	0.54	µg/L	0.1	EPA 200.8	02/26/09
CHROMIUM	8.68	µg/L	0.4	EPA 200.8	02/26/09
COPPER	31.7	µg/L	0.2	EPA 200.8	02/26/09
LEAD	30.0	µg/L	0.1	EPA 200.8	02/26/09
NICKEL	6.05	µg/L	0.2	EPA 200.8	02/26/09
SILVER	<0.10	µg/L	0.1	EPA 200.8	02/26/09
ZINC	205	µg/L	0.5	EPA 200.8	02/26/09
OUTSIDE ANALYSIS					
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	EST 16	ng/L	5.0	EPA 8081	02/26/09
4,4'-DDE	<5.0	ng/L	5.0	EPA 8081	02/26/09
4,4'-DDT	<11	ng/L	11	EPA 8081	02/26/09
Aldrin	<5.0	ng/L	5.0	EPA 8081	02/26/09
Alpha-BHC	<5.0	ng/L	5.0	EPA 8081	02/26/09
Alpha-Chlordane	<5.0	ng/L	5.0	EPA 8081	02/26/09
Beta-BHC	<5.6	ng/L	5.6	EPA 8081	02/26/09
Delta-BHC	<5.0	ng/L	5.0	EPA 8081	02/26/09
Dieldrin	<5.0	ng/L	5.0	EPA 8081	02/26/09
Endosulfan I	13	ng/L	5.0	EPA 8081	02/26/09
Endosulfan II	<5.0	ng/L	5.0	EPA 8081	02/26/09
Endosulfan Sulfate	<5.0	ng/L	5.0	EPA 8081	02/26/09
Endrin	<5.0	ng/L	5.0	EPA 8081	02/26/09
Endrin Aldehyde	<5.0	ng/L	5.0	EPA 8081	02/26/09
Endrin Ketone	EST 6.4	ng/L	5.0	EPA 8081	02/26/09

Report Date: 04/01/09

Validated By: 



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LABORATORY ANALYSIS REPORT

Sample ID: FO095221

Sample Collected: 02/23/09 14:55
Sample Received: 02/23/09

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-44A-ABC311-0209
N LARABEE & RANDOLPH
Sample Point Code: 44A_SW1
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 2 of 4

System ID: AN02162
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. For pesticide results flagged as estimates, the primary and verification results varied significantly.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Gamma-BHC(Lindane)	<58	ng/L	58	EPA 8081	02/26/09
Gamma-Chlordane	<5.0	ng/L	5.0	EPA 8081	02/26/09
Heptachlor	<5.0	ng/L	5.0	EPA 8081	02/26/09
Heptachlor Epoxide	<5.0	ng/L	5.0	EPA 8081	02/26/09
Methoxychlor	<5.0	ng/L	5.0	EPA 8081	02/26/09
Toxaphene	<250	ng/L	250	EPA 8081	02/26/09
POLYCHLORINATED BIPHENYL CONGENERS - PACE					
Refer to Contract Report	Completed	ng/L		EPA 1668 MOD	02/25/09
POLYNUCLEAR AROMATICS & PHTHALATES - TA					
Acenaphthene	<0.0777	µg/L	0.0777	EPA 8270M-SIM	02/25/09
Acenaphthylene	<0.0777	µg/L	0.0777	EPA 8270M-SIM	02/25/09
Anthracene	<0.0777	µg/L	0.0777	EPA 8270M-SIM	02/25/09
Benzo(a)anthracene	0.0553	µg/L	0.0388	EPA 8270M-SIM	02/25/09
Benzo(a)pyrene	0.0556	µg/L	0.0388	EPA 8270M-SIM	02/25/09
Benzo(b)fluoranthene	0.0790	µg/L	0.0388	EPA 8270M-SIM	02/25/09
Benzo(ghi)perylene	0.0878	µg/L	0.0777	EPA 8270M-SIM	02/25/09
Benzo(k)fluoranthene	0.0572	µg/L	0.0388	EPA 8270M-SIM	02/25/09
Bis(2-ethylhexyl) phthalate	4.38	µg/L	1.94	EPA 8270M-SIM	02/25/09
Butyl benzyl phthalate	<1.94	µg/L	1.94	EPA 8270M-SIM	02/25/09
Chrysene	0.158	µg/L	0.0388	EPA 8270M-SIM	02/25/09
Dibenzo(a,h)anthracene	<0.0388	µg/L	0.0388	EPA 8270M-SIM	02/25/09
Diethyl phthalate	<1.94	µg/L	1.94	EPA 8270M-SIM	02/25/09
Dimethyl phthalate	<1.94	µg/L	1.94	EPA 8270M-SIM	02/25/09
Di-n-butyl phthalate	<1.94	µg/L	1.94	EPA 8270M-SIM	02/25/09
Di-n-octyl phthalate	<1.94	µg/L	1.94	EPA 8270M-SIM	02/25/09
Fluoranthene	0.233	µg/L	0.0777	EPA 8270M-SIM	02/25/09
Fluorene	<0.0777	µg/L	0.0777	EPA 8270M-SIM	02/25/09
Indeno(1,2,3-cd)pyrene	0.0458	µg/L	0.0388	EPA 8270M-SIM	02/25/09
Naphthalene	0.358	µg/L	0.0777	EPA 8270M-SIM	02/25/09
Phenanthrene	0.169	µg/L	0.0777	EPA 8270M-SIM	02/25/09
Pyrene	0.160	µg/L	0.0777	EPA 8270M-SIM	02/25/09
SEMI-VOLATILE ORGANICS - CAS					
1,2,4-Trichlorobenzene	<2.1	µg/L	2.1	EPA 8270	03/02/09
1,2-Dichlorobenzene	<2.1	µg/L	2.1	EPA 8270	03/02/09

Report Date: 04/01/09

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: FO095221

Sample Collected: 02/23/09 14:55
Sample Received: 02/23/09

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-44A-ABC311-0209
N LARABEE & RANDOLPH
Sample Point Code: 44A_SW1
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 3 of 4

System ID: AN02162
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. For pesticide results flagged as estimates, the primary and verification results varied significantly.

Test Parameter	Result	Units	MRL	Method	Analysis Date
1,3-Dichlorobenzene	<2.1	µg/L	2.1	EPA 8270	03/02/09
1,4-Dichlorobenzene	<2.1	µg/L	2.1	EPA 8270	03/02/09
2,4,5-Trichlorophenol	<5.1	µg/L	5.1	EPA 8270	03/02/09
2,4,6-Trichlorophenol	<5.1	µg/L	5.1	EPA 8270	03/02/09
2,4-Dichlorophenol	<5.1	µg/L	5.1	EPA 8270	03/02/09
2,4-Dimethylphenol	<41	µg/L	41	EPA 8270	03/02/09
2,4-Dinitrophenol	<41	µg/L	41	EPA 8270	03/02/09
2,4-Dinitrotoluene	<2.1	µg/L	2.1	EPA 8270	03/02/09
2,6-Dinitrotoluene	<2.1	µg/L	2.1	EPA 8270	03/02/09
2-Chloronaphthalene	<2.1	µg/L	2.1	EPA 8270	03/02/09
2-Chlorophenol	<5.1	µg/L	5.1	EPA 8270	03/02/09
2-Methylnaphthalene	<2.1	µg/L	2.1	EPA 8270	03/02/09
2-Methylphenol	<5.1	µg/L	5.1	EPA 8270	03/02/09
2-Nitroaniline	<2.1	µg/L	2.1	EPA 8270	03/02/09
2-Nitrophenol	<5.1	µg/L	5.1	EPA 8270	03/02/09
3,3'-Dichlorobenzidine	<21	µg/L	21	EPA 8270	03/02/09
3-Nitroaniline	<11	µg/L	11	EPA 8270	03/02/09
4,6-Dinitro-2-methylphenol	<21	µg/L	21	EPA 8270	03/02/09
4-Bromophenylphenyl ether	<2.1	µg/L	2.1	EPA 8270	03/02/09
4-Chloro-3-methylphenol	<5.1	µg/L	5.1	EPA 8270	03/02/09
4-Chloroaniline	<2.1	µg/L	2.1	EPA 8270	03/02/09
4-Chlorophenylphenyl ether	<2.1	µg/L	2.1	EPA 8270	03/02/09
4-Methylphenol	<5.1	µg/L	5.1	EPA 8270	03/02/09
4-Nitroaniline	<11	µg/L	11	EPA 8270	03/02/09
4-Nitrophenol	<21	µg/L	21	EPA 8270	03/02/09
Acenaphthene	<2.1	µg/L	2.1	EPA 8270	03/02/09
Acenaphthylene	<2.1	µg/L	2.1	EPA 8270	03/02/09
Anthracene	<2.1	µg/L	2.1	EPA 8270	03/02/09
Benzo(a)anthracene	<2.1	µg/L	2.1	EPA 8270	03/02/09
Benzo(a)pyrene	<2.1	µg/L	2.1	EPA 8270	03/02/09
Benzo(b)fluoranthene	<2.1	µg/L	2.1	EPA 8270	03/02/09
Benzo(g,h,i)perylene	<2.1	µg/L	2.1	EPA 8270	03/02/09
Benzo(k)fluoranthene	<2.1	µg/L	2.1	EPA 8270	03/02/09
Benzoic acid	<51	µg/L	51	EPA 8270	03/02/09
Benzyl alcohol	<5.1	µg/L	5.1	EPA 8270	03/02/09
Bis(2-chloroethoxy) methane	<2.1	µg/L	2.1	EPA 8270	03/02/09

Report Date: 04/01/09

Validated By: 



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



LABORATORY ANALYSIS REPORT

Sample ID: FO095221

Sample Collected: 02/23/09 14:55
Sample Received: 02/23/09

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-44A-ABC311-0209
N LARABEE & RANDOLPH
Sample Point Code: 44A_SW1
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 4 of 4

System ID: AN02162
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. For pesticide results flagged as estimates, the primary and verification results varied significantly.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Bis(2-chloroethyl) ether	<2.1	µg/L	2.1	EPA 8270	03/02/09
Bis(2-chloroisopropyl) ether	<2.1	µg/L	2.1	EPA 8270	03/02/09
Bis(2-ethylhexyl) phthalate	<11	µg/L	11	EPA 8270	03/02/09
Butyl benzyl phthalate	<2.1	µg/L	2.1	EPA 8270	03/02/09
Chrysene	<2.1	µg/L	2.1	EPA 8270	03/02/09
Dibenzo(a,h)anthracene	<2.1	µg/L	2.1	EPA 8270	03/02/09
Dibenzofuran	<2.1	µg/L	2.1	EPA 8270	03/02/09
Diethyl phthalate	<2.1	µg/L	2.1	EPA 8270	03/02/09
Dimethyl phthalate	<2.1	µg/L	2.1	EPA 8270	03/02/09
Di-n-butyl phthalate	<2.1	µg/L	2.1	EPA 8270	03/02/09
Di-n-octyl phthalate	<2.1	µg/L	2.1	EPA 8270	03/02/09
Fluoranthene	<2.1	µg/L	2.1	EPA 8270	03/02/09
Fluorene	<2.1	µg/L	2.1	EPA 8270	03/02/09
Hexachlorobenzene	<2.1	µg/L	2.1	EPA 8270	03/02/09
Hexachlorobutadiene	<2.1	µg/L	2.1	EPA 8270	03/02/09
Hexachlorocyclopentadiene	<11	µg/L	11	EPA 8270	03/02/09
Hexachloroethane	<2.1	µg/L	2.1	EPA 8270	03/02/09
Indeno(1,2,3-cd)pyrene	<2.1	µg/L	2.1	EPA 8270	03/02/09
Isophorone	<2.1	µg/L	2.1	EPA 8270	03/02/09
Naphthalene	<2.1	µg/L	2.1	EPA 8270	03/02/09
Nitrobenzene	<2.1	µg/L	2.1	EPA 8270	03/02/09
N-Nitrosodi-n-propylamine	<2.1	µg/L	2.1	EPA 8270	03/02/09
N-Nitrosodiphenylamine	<2.1	µg/L	2.1	EPA 8270	03/02/09
Pentachlorophenol	<11	µg/L	11	EPA 8270	03/02/09
Phenanthrene	<2.1	µg/L	2.1	EPA 8270	03/02/09
Phenol	<5.1	µg/L	5.1	EPA 8270	03/02/09
Pyrene	<2.1	µg/L	2.1	EPA 8270	03/02/09

End of Report for Sample ID: FO095221

Report Date: 04/01/09

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: FO095222

Sample Collected: 02/23/09 15:30

**Sample Status: COMPLETE AND
VALIDATED**

Sample Received: 02/23/09

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: FIELD DECON BLANK

Report Page: Page 1 of 4

Sample Point Code: FDBLANK
Sample Type: GRAB
Sample Matrix: STORMWTR

System ID: AN02163
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date
GENERAL					
TOTAL SUSPENDED SOLIDS	<2	mg/L	2	SM 2540 D	02/24/09
METALS					
MERCURY	<0.0020	µg/L	0.002	WPCLSOP M-10.02	02/27/09
METALS BY ICP-MS (TOTAL) - 8					
ARSENIC	<0.10	µg/L	0.1	EPA 200.8	02/26/09
CADMIUM	<0.10	µg/L	0.1	EPA 200.8	02/26/09
CHROMIUM	<0.40	µg/L	0.4	EPA 200.8	02/26/09
COPPER	<0.20	µg/L	0.2	EPA 200.8	02/26/09
LEAD	<0.10	µg/L	0.1	EPA 200.8	02/26/09
NICKEL	<0.20	µg/L	0.2	EPA 200.8	02/26/09
SILVER	<0.10	µg/L	0.1	EPA 200.8	02/26/09
ZINC	0.65	µg/L	0.5	EPA 200.8	02/26/09
OUTSIDE ANALYSIS					
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	<0.52	ng/L	0.52	EPA 8081	02/26/09
4,4'-DDE	<0.52	ng/L	0.52	EPA 8081	02/26/09
4,4'-DDT	<0.52	ng/L	0.52	EPA 8081	02/26/09
Aldrin	<0.52	ng/L	0.52	EPA 8081	02/26/09
Alpha-BHC	<0.52	ng/L	0.52	EPA 8081	02/26/09
Alpha-Chlordane	<0.52	ng/L	0.52	EPA 8081	02/26/09
Beta-BHC	<0.52	ng/L	0.52	EPA 8081	02/26/09
Delta-BHC	<0.52	ng/L	0.52	EPA 8081	02/26/09
Dieldrin	<0.52	ng/L	0.52	EPA 8081	02/26/09
Endosulfan I	<0.52	ng/L	0.52	EPA 8081	02/26/09
Endosulfan II	<0.52	ng/L	0.52	EPA 8081	02/26/09
Endosulfan Sulfate	<0.52	ng/L	0.52	EPA 8081	02/26/09
Endrin	<0.52	ng/L	0.52	EPA 8081	02/26/09
Endrin Aldehyde	<0.52	ng/L	0.52	EPA 8081	02/26/09
Endrin Ketone	<0.52	ng/L	0.52	EPA 8081	02/26/09
Gamma-BHC(Lindane)	<0.52	ng/L	0.52	EPA 8081	02/26/09
Gamma-Chlordane	<0.52	ng/L	0.52	EPA 8081	02/26/09
Heptachlor	<0.52	ng/L	0.52	EPA 8081	02/26/09
Heptachlor Epoxide	<0.52	ng/L	0.52	EPA 8081	02/26/09

Report Date: 04/01/09

Validated By:



LABORATORY ANALYSIS REPORT

Sample ID: **FO095222**

Sample Collected: 02/23/09 15:30

Sample Received: 02/23/09

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: FIELD DECON BLANK

Report Page: Page 2 of 4

Sample Point Code: FDBLANK
Sample Type: GRAB
Sample Matrix: STORMWTR

System ID: AN02163
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Methoxychlor	<0.52	ng/L	0.52	EPA 8081	02/26/09
Toxaphene	<26	ng/L	26	EPA 8081	02/26/09
POLYCHLORINATED BIPHENYL CONGENERS -PAC					
Refer to Contract Report	Completed	ng/L		EPA 1668 MOD	02/25/09
POLYNUCLEAR AROMATICS & PHTHALATES - TA					
Acenaphthene	<0.0190	µg/L	0.019	EPA 8270M-SIM	02/25/09
Acenaphthylene	<0.0190	µg/L	0.019	EPA 8270M-SIM	02/25/09
Anthracene	<0.0190	µg/L	0.019	EPA 8270M-SIM	02/25/09
Benzo(a)anthracene	<0.00952	µg/L	0.00952	EPA 8270M-SIM	02/25/09
Benzo(a)pyrene	<0.00952	µg/L	0.00952	EPA 8270M-SIM	02/25/09
Benzo(b)fluoranthene	<0.00952	µg/L	0.00952	EPA 8270M-SIM	02/25/09
Benzo(ghi)perylene	<0.0190	µg/L	0.019	EPA 8270M-SIM	02/25/09
Benzo(k)fluoranthene	<0.00952	µg/L	0.00952	EPA 8270M-SIM	02/25/09
Bis(2-ethylhexyl) phthalate	<0.952	µg/L	0.952	EPA 8270M-SIM	02/25/09
Butyl benzyl phthalate	<0.952	µg/L	0.952	EPA 8270M-SIM	02/25/09
Chrysene	<0.00952	µg/L	0.00952	EPA 8270M-SIM	02/25/09
Dibenzo(a,h)anthracene	<0.00952	µg/L	0.00952	EPA 8270M-SIM	02/25/09
Diethyl phthalate	<0.952	µg/L	0.952	EPA 8270M-SIM	02/25/09
Dimethyl phthalate	<0.952	µg/L	0.952	EPA 8270M-SIM	02/25/09
Di-n-butyl phthalate	<0.952	µg/L	0.952	EPA 8270M-SIM	02/25/09
Di-n-octyl phthalate	<0.952	µg/L	0.952	EPA 8270M-SIM	02/25/09
Fluoranthene	<0.0190	µg/L	0.019	EPA 8270M-SIM	02/25/09
Fluorene	<0.0190	µg/L	0.019	EPA 8270M-SIM	02/25/09
Indeno(1,2,3-cd)pyrene	<0.00952	µg/L	0.00952	EPA 8270M-SIM	02/25/09
Naphthalene	<0.0190	µg/L	0.019	EPA 8270M-SIM	02/25/09
Phenanthrene	<0.0190	µg/L	0.019	EPA 8270M-SIM	02/25/09
Pyrene	<0.0190	µg/L	0.019	EPA 8270M-SIM	02/25/09
SEMI-VOLATILE ORGANICS - CAS					
1,2,4-Trichlorobenzene	<0.22	µg/L	0.22	EPA 8270	03/02/09
1,2-Dichlorobenzene	<0.22	µg/L	0.22	EPA 8270	03/02/09
1,3-Dichlorobenzene	<0.22	µg/L	0.22	EPA 8270	03/02/09
1,4-Dichlorobenzene	<0.22	µg/L	0.22	EPA 8270	03/02/09
2,4,5-Trichlorophenol	<0.54	µg/L	0.54	EPA 8270	03/02/09
2,4,6-Trichlorophenol	<0.54	µg/L	0.54	EPA 8270	03/02/09

Report Date: 04/01/09

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: **FO095222**

Sample Collected: 02/23/09 15:30

Sample Received: 02/23/09

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: FIELD DECON BLANK

Report Page: Page 3 of 4

Sample Point Code: FDBLANK
Sample Type: GRAB
Sample Matrix: STORMWTR

System ID: AN02163
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date
2,4-Dichlorophenol	<0.54	µg/L	0.54	EPA 8270	03/02/09
2,4-Dimethylphenol	<4.3	µg/L	4.3	EPA 8270	03/02/09
2,4-Dinitrophenol	<4.3	µg/L	4.3	EPA 8270	03/02/09
2,4-Dinitrotoluene	<0.22	µg/L	0.22	EPA 8270	03/02/09
2,6-Dinitrotoluene	<0.22	µg/L	0.22	EPA 8270	03/02/09
2-Chloronaphthalene	<0.22	µg/L	0.22	EPA 8270	03/02/09
2-Chlorophenol	<0.54	µg/L	0.54	EPA 8270	03/02/09
2-Methylnaphthalene	<0.22	µg/L	0.22	EPA 8270	03/02/09
2-Methylphenol	<0.54	µg/L	0.54	EPA 8270	03/02/09
2-Nitroaniline	<0.22	µg/L	0.22	EPA 8270	03/02/09
2-Nitrophenol	<0.54	µg/L	0.54	EPA 8270	03/02/09
3,3'-Dichlorobenzidine	<2.2	µg/L	2.2	EPA 8270	03/02/09
3-Nitroaniline	<1.1	µg/L	1.1	EPA 8270	03/02/09
4,6-Dinitro-2-methylphenol	<2.2	µg/L	2.2	EPA 8270	03/02/09
4-Bromophenylphenyl ether	<0.22	µg/L	0.22	EPA 8270	03/02/09
4-Chloro-3-methylphenol	<0.54	µg/L	0.54	EPA 8270	03/02/09
4-Chloroaniline	<0.22	µg/L	0.22	EPA 8270	03/02/09
4-Chlorophenylphenyl ether	<0.22	µg/L	0.22	EPA 8270	03/02/09
4-Methylphenol	<0.54	µg/L	0.54	EPA 8270	03/02/09
4-Nitroaniline	<1.1	µg/L	1.1	EPA 8270	03/02/09
4-Nitrophenol	<2.2	µg/L	2.2	EPA 8270	03/02/09
Acenaphthene	<0.22	µg/L	0.22	EPA 8270	03/02/09
Acenaphthylene	<0.22	µg/L	0.22	EPA 8270	03/02/09
Anthracene	<0.22	µg/L	0.22	EPA 8270	03/02/09
Benzo(a)anthracene	<0.22	µg/L	0.22	EPA 8270	03/02/09
Benzo(a)pyrene	<0.22	µg/L	0.22	EPA 8270	03/02/09
Benzo(b)fluoranthene	<0.22	µg/L	0.22	EPA 8270	03/02/09
Benzo(g,h,i)perylene	<0.22	µg/L	0.22	EPA 8270	03/02/09
Benzo(k)fluoranthene	<0.22	µg/L	0.22	EPA 8270	03/02/09
Benzoic acid	<5.4	µg/L	5.4	EPA 8270	03/02/09
Benzyl alcohol	<0.54	µg/L	0.54	EPA 8270	03/02/09
Bis(2-chloroethoxy) methane	<0.22	µg/L	0.22	EPA 8270	03/02/09
Bis(2-chloroethyl) ether	<0.22	µg/L	0.22	EPA 8270	03/02/09
Bis(2-chloroisopropyl) ether	<0.22	µg/L	0.22	EPA 8270	03/02/09
Bis(2-ethylhexyl) phthalate	<1.1	µg/L	1.1	EPA 8270	03/02/09
Butyl benzyl phthalate	<0.22	µg/L	0.22	EPA 8270	03/02/09

Report Date: 04/01/09

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: FO095222

Sample Collected: 02/23/09 15:30

**Sample Status: COMPLETE AND
VALIDATED**

Sample Received: 02/23/09

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: FIELD DECON BLANK

Report Page: Page 4 of 4

Sample Point Code: FDBLANK
Sample Type: GRAB
Sample Matrix: STORMWTR

System ID: AN02163
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Chrysene	<0.22	µg/L	0.22	EPA 8270	03/02/09
Dibenzo(a,h)anthracene	<0.22	µg/L	0.22	EPA 8270	03/02/09
Dibenzofuran	<0.22	µg/L	0.22	EPA 8270	03/02/09
Diethyl phthalate	<0.22	µg/L	0.22	EPA 8270	03/02/09
Dimethyl phthalate	<0.22	µg/L	0.22	EPA 8270	03/02/09
Di-n-butyl phthalate	<0.22	µg/L	0.22	EPA 8270	03/02/09
Di-n-octyl phthalate	<0.22	µg/L	0.22	EPA 8270	03/02/09
Fluoranthene	<0.22	µg/L	0.22	EPA 8270	03/02/09
Fluorene	<0.22	µg/L	0.22	EPA 8270	03/02/09
Hexachlorobenzene	<0.22	µg/L	0.22	EPA 8270	03/02/09
Hexachlorobutadiene	<0.22	µg/L	0.22	EPA 8270	03/02/09
Hexachlorocyclopentadiene	<1.1	µg/L	1.1	EPA 8270	03/02/09
Hexachloroethane	<0.22	µg/L	0.22	EPA 8270	03/02/09
Indeno(1,2,3-cd)pyrene	<0.22	µg/L	0.22	EPA 8270	03/02/09
Isophorone	<0.22	µg/L	0.22	EPA 8270	03/02/09
Naphthalene	<0.22	µg/L	0.22	EPA 8270	03/02/09
Nitrobenzene	<0.22	µg/L	0.22	EPA 8270	03/02/09
N-Nitrosodi-n-propylamine	<0.22	µg/L	0.22	EPA 8270	03/02/09
N-Nitrosodiphenylamine	<0.22	µg/L	0.22	EPA 8270	03/02/09
Pentachlorophenol	<1.1	µg/L	1.1	EPA 8270	03/02/09
Phenanthrene	<0.22	µg/L	0.22	EPA 8270	03/02/09
Phenol	<0.54	µg/L	0.54	EPA 8270	03/02/09
Pyrene	<0.22	µg/L	0.22	EPA 8270	03/02/09

End of Report for Sample ID: FO095222

Report Date: 04/01/09

Validated By:

March 19, 2009

Analytical Report for Service Request No: K0901535

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

RE: Portland Harbor

Dear Jennifer:

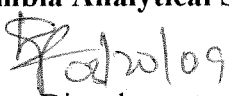
Enclosed are the results of the samples submitted to our laboratory on February 24, 2009. For your reference, these analyses have been assigned our service request number K0901535.

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/lb

Page 1 of 45

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 but greater than or equal to the MDL.
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- i The MRL/MDL has been elevated due to a matrix interference.
- X See case narrative.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- B The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- 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.
- 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 has been elevated due to a matrix interference.
- X See case narrative.
- * The duplicate analysis not within control limits. See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.

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 (25% for CLP Pesticides).
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- i The MRL/MDL has been elevated due to a chromatographic interference.
- X See case narrative.

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
Project: Portland Harbor
Sample Matrix: Water

Service Request No.: K0901535
Date Received: 02/24/2009

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

Seven water samples were received for analysis at Columbia Analytical Services on 02/24/2009. 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. The ICV results are reported from the acceptable column. The data quality is not affected. No further corrective action was necessary.

Continuing Calibration Verification (CCV) Exceptions:

The primary evaluation criterion was exceeded for the following analytes in CCV 0303F023, 0303F034, 0304F006 and 0304F019: Toxaphene; 0304F007 and 0304F020: Hexachlorobutadiene. 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 meets the alternative evaluation criteria.

Sample Confirmation Notes:

The confirmation comparison criteria of 40% difference for at least one analyte was exceeded in a few samples. The higher of the two values is reported because no evidence of a peak anomaly was observed.

The JP qualifier indicates that the confirmation comparison criteria are not applicable because at least one of the values is below the Method Reporting Limit (MRL).

Elevated Method Reporting Limits:

The reporting limit is elevated for all analytes in a few samples. 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 semiquantitative screen was performed prior to final analysis. The results of the screening indicated the need to perform a dilution. The results are flagged to indicate the matrix interference.

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

Approved by  Date 03/20/09

Semivolatile Organic Compounds by EPA Method 8270C LL

Elevated Method Reporting Limits:

The reporting limits are elevated for all samples. The sample extracts were diluted prior to instrumental analysis due to relatively high levels of non-target background components. The extracts were highly colored and viscous, which indicated the need to perform dilutions prior to injection into the instrument. Clean-up of the extracts was performed within the scope of the method, but did not eliminate enough of the background components to prevent dilutions. Semi-quantitative screens were performed prior to final analysis. The results of the screening indicated the need to perform dilutions.

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

Approved by  Date 03/20/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor
 Sample Matrix: Water

Service Request: K0901535
 Date Collected: 02/23/2009
 Date Received: 02/24/2009

Organochlorine Pesticides

Sample Name: F0095221
 Lab Code: K0901535-006
 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	5.0	2.1	10	02/26/09	03/04/09	KWG0901589	
beta-BHC	ND	Ui	5.6	5.6	10	02/26/09	03/04/09	KWG0901589	
gamma-BHC (Lindane)	ND	Ui	58	58	10	02/26/09	03/04/09	KWG0901589	
delta-BHC	ND	Ui	5.0	4.1	10	02/26/09	03/04/09	KWG0901589	
Heptachlor	ND	U	5.0	1.8	10	02/26/09	03/04/09	KWG0901589	
Aldrin	ND	U	5.0	1.1	10	02/26/09	03/04/09	KWG0901589	
Heptachlor Epoxide	ND	U	5.0	2.1	10	02/26/09	03/04/09	KWG0901589	
gamma-Chlordane†	ND	Ui	5.0	5.0	10	02/26/09	03/04/09	KWG0901589	
Endosulfan I	13	D	5.0	2.5	10	02/26/09	03/04/09	KWG0901589	
alpha-Chlordane	ND	U	5.0	2.7	10	02/26/09	03/04/09	KWG0901589	
Dieldrin	ND	U	5.0	3.7	10	02/26/09	03/04/09	KWG0901589	
4,4'-DDE	ND	Ui	5.0	4.2	10	02/26/09	03/04/09	KWG0901589	
Endrin	ND	U	5.0	4.9	10	02/26/09	03/04/09	KWG0901589	
Endosulfan II	ND	U	5.0	3.5	10	02/26/09	03/04/09	KWG0901589	
4,4'-DDD	16	PD	5.0	2.1	10	02/26/09	03/04/09	KWG0901589	
Endrin Aldehyde	3.2	JPD	5.0	2.1	10	02/26/09	03/04/09	KWG0901589	
Endosulfan Sulfate	ND	Ui	5.0	5.0	10	02/26/09	03/04/09	KWG0901589	
4,4'-DDT	ND	Ui	11	11	10	02/26/09	03/04/09	KWG0901589	
Endrin Ketone	6.4	PD	5.0	3.2	10	02/26/09	03/04/09	KWG0901589	
Methoxychlor	ND	U	5.0	2.8	10	02/26/09	03/04/09	KWG0901589	
Toxaphene	ND	U	250	90	10	02/26/09	03/04/09	KWG0901589	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	119	10-121	03/04/09	Acceptable
Decachlorobiphenyl	109	17-150	03/04/09	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: Portland Harbor
 Sample Matrix: Water

Service Request: K0901535
 Date Collected: 02/23/2009
 Date Received: 02/24/2009

Organochlorine Pesticides

Sample Name: F0095222
 Lab Code: K0901535-007
 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	0.52	0.22	1	02/26/09	03/04/09	KWG0901589	
beta-BHC	ND	U	0.52	0.43	1	02/26/09	03/04/09	KWG0901589	
gamma-BHC (Lindane)	ND	U	0.52	0.49	1	02/26/09	03/04/09	KWG0901589	
delta-BHC	ND	U	0.52	0.15	1	02/26/09	03/04/09	KWG0901589	
Heptachlor	ND	U	0.52	0.19	1	02/26/09	03/04/09	KWG0901589	
Aldrin	ND	U	0.52	0.12	1	02/26/09	03/04/09	KWG0901589	
Heptachlor Epoxide	ND	U	0.52	0.22	1	02/26/09	03/04/09	KWG0901589	
gamma-Chlordane†	ND	U	0.52	0.32	1	02/26/09	03/04/09	KWG0901589	
Endosulfan I	ND	U	0.52	0.26	1	02/26/09	03/04/09	KWG0901589	
alpha-Chlordane	ND	U	0.52	0.28	1	02/26/09	03/04/09	KWG0901589	
Dieldrin	ND	U	0.52	0.38	1	02/26/09	03/04/09	KWG0901589	
4,4'-DDE	ND	Ui	0.52	0.46	1	02/26/09	03/04/09	KWG0901589	
Endrin	ND	U	0.52	0.51	1	02/26/09	03/04/09	KWG0901589	
Endosulfan II	ND	U	0.52	0.36	1	02/26/09	03/04/09	KWG0901589	
4,4'-DDD	ND	U	0.52	0.22	1	02/26/09	03/04/09	KWG0901589	
Endrin Aldehyde	ND	U	0.52	0.22	1	02/26/09	03/04/09	KWG0901589	
Endosulfan Sulfate	ND	U	0.52	0.29	1	02/26/09	03/04/09	KWG0901589	
4,4'-DDT	ND	Ui	0.52	0.52	1	02/26/09	03/04/09	KWG0901589	
Endrin Ketone	ND	U	0.52	0.33	1	02/26/09	03/04/09	KWG0901589	
Methoxychlor	ND	U	0.52	0.29	1	02/26/09	03/04/09	KWG0901589	
Toxaphene	ND	U	26	9.3	1	02/26/09	03/04/09	KWG0901589	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	66	10-121	03/04/09	Acceptable
Decachlorobiphenyl	96	17-150	03/04/09	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: Portland Harbor
 Sample Matrix: Water

Service Request: K0901535
 Date Collected: NA
 Date Received: NA

Organochlorine Pesticides

Sample Name: Method Blank
 Lab Code: KWG0901589-5
 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	0.49	0.21	1	02/26/09	02/28/09	KWG0901589	
beta-BHC	ND	U	0.49	0.41	1	02/26/09	02/28/09	KWG0901589	
gamma-BHC (Lindane)	ND	U	0.49	0.47	1	02/26/09	02/28/09	KWG0901589	
delta-BHC	ND	U	0.49	0.14	1	02/26/09	02/28/09	KWG0901589	
Heptachlor	ND	U	0.49	0.18	1	02/26/09	02/28/09	KWG0901589	
Aldrin	ND	U	0.49	0.11	1	02/26/09	02/28/09	KWG0901589	
Heptachlor Epoxide	ND	U	0.49	0.21	1	02/26/09	02/28/09	KWG0901589	
gamma-Chlordane†	ND	U	0.49	0.31	1	02/26/09	02/28/09	KWG0901589	
Endosulfan I	ND	U	0.49	0.25	1	02/26/09	02/28/09	KWG0901589	
alpha-Chlordane	ND	U	0.49	0.27	1	02/26/09	02/28/09	KWG0901589	
Dieldrin	ND	U	0.49	0.37	1	02/26/09	02/28/09	KWG0901589	
4,4'-DDE	0.24	J	0.49	0.19	1	02/26/09	02/28/09	KWG0901589	
Endrin	ND	U	0.49	0.49	1	02/26/09	02/28/09	KWG0901589	
Endosulfan II	ND	U	0.49	0.35	1	02/26/09	02/28/09	KWG0901589	
4,4'-DDD	ND	U	0.49	0.21	1	02/26/09	02/28/09	KWG0901589	
Endrin Aldehyde	ND	U	0.49	0.21	1	02/26/09	02/28/09	KWG0901589	
Endosulfan Sulfate	ND	U	0.49	0.28	1	02/26/09	02/28/09	KWG0901589	
4,4'-DDT	ND	U	0.49	0.17	1	02/26/09	02/28/09	KWG0901589	
Endrin Ketone	ND	U	0.49	0.32	1	02/26/09	02/28/09	KWG0901589	
Methoxychlor	ND	U	0.49	0.28	1	02/26/09	02/28/09	KWG0901589	
Toxaphene	ND	U	25	9.0	1	02/26/09	02/28/09	KWG0901589	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	50	10-121	02/28/09	Acceptable
Decachlorobiphenyl	78	17-150	02/28/09	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: Portland Harbor
Sample Matrix: Water

Service Request: K0901535

Surrogate Recovery Summary
Organochlorine Pesticides

Extraction Method: EPA 3535
Analysis Method: 8081A

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>
F0095216	K0901535-001	92 D	111 D
F0095217	K0901535-002	92 D	146 D
F0095218	K0901535-003	66 D	95 D
F0095219	K0901535-004	98 D	129 D
F0095220	K0901535-005	81 D	111 D
F0095221	K0901535-006	119 D	109 D
F0095222	K0901535-007	66	96
Method Blank	KWG0901589-5	50	78
Lab Control Sample	KWG0901589-1	44	72
Duplicate Lab Control Sample	KWG0901589-2	41	76

Surrogate Recovery Control Limits (%)

Sur1 = Tetrachloro-m-xylene	10-121
Sur2 = Decachlorobiphenyl	17-150

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
 Project: Portland Harbor
 Sample Matrix: Water

Service Request: K0901535
 Date Extracted: 02/26/2009
 Date Analyzed: 02/28/2009

**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: KWG0901589

Analyte Name	Lab Control Sample KWG0901589-1 Lab Control Spike			Duplicate Lab Control Sample KWG0901589-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
alpha-BHC	8.48	10.0	85	9.10	10.0	91	43-127	7	30
beta-BHC	9.93	10.0	99	10.9	10.0	109	41-129	9	30
gamma-BHC (Lindane)	9.07	10.0	91	9.81	10.0	98	42-128	8	30
delta-BHC	9.08	10.0	91	10.3	10.0	103	47-141	12	30
Heptachlor	8.92	10.0	89	9.35	10.0	94	34-126	5	30
Aldrin	6.84	10.0	68	7.31	10.0	73	10-125	7	30
Heptachlor Epoxide	8.41	10.0	84	9.11	10.0	91	45-124	8	30
gamma-Chlordane	9.12	10.0	91	10.1	10.0	101	48-119	10	30
Endosulfan I	8.50	10.0	85	8.88	10.0	89	30-115	4	30
alpha-Chlordane	9.22	10.0	92	10.1	10.0	101	48-119	9	30
Dieldrin	9.23	10.0	92	10.2	10.0	102	50-120	10	30
4,4'-DDE	9.53	10.0	95	10.5	10.0	105	36-137	9	30
Endrin	9.90	10.0	99	11.3	10.0	113	53-132	13	30
Endosulfan II	8.86	10.0	89	9.73	10.0	97	32-123	9	30
4,4'-DDD	9.19	10.0	92	10.2	10.0	102	38-140	11	30
Endrin Aldehyde	6.74	10.0	67	7.86	10.0	79	30-114	15	30
Endosulfan Sulfate	8.87	10.0	89	9.83	10.0	98	46-120	10	30
4,4'-DDT	11.1	10.0	111	12.5	10.0	125	45-146	12	30
Endrin Ketone	8.76	10.0	88	9.91	10.0	99	45-127	12	30
Methoxychlor	11.5	10.0	115	12.9	10.0	129	48-140	11	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.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor
 Sample Matrix: Water

Service Request: K0901535
 Date Collected: 02/23/2009
 Date Received: 02/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: F0095221
 Lab Code: K0901535-006
 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	2.1	0.36	10	03/02/09	03/11/09	KWG0901700	
Phenol	ND	U	5.1	0.64	10	03/02/09	03/11/09	KWG0901700	
2-Chlorophenol	ND	U	5.1	0.55	10	03/02/09	03/11/09	KWG0901700	
1,3-Dichlorobenzene	ND	U	2.1	0.22	10	03/02/09	03/11/09	KWG0901700	
1,4-Dichlorobenzene	ND	U	2.1	0.30	10	03/02/09	03/11/09	KWG0901700	
1,2-Dichlorobenzene	ND	U	2.1	0.23	10	03/02/09	03/11/09	KWG0901700	
Benzyl Alcohol	ND	U	5.1	0.74	10	03/02/09	03/11/09	KWG0901700	
Bis(2-chloroisopropyl) Ether	ND	U	2.1	0.27	10	03/02/09	03/11/09	KWG0901700	
2-Methylphenol	ND	U	5.1	1.2	10	03/02/09	03/11/09	KWG0901700	
Hexachloroethane	ND	U	2.1	0.25	10	03/02/09	03/11/09	KWG0901700	
N-Nitrosodi-n-propylamine	ND	U	2.1	0.38	10	03/02/09	03/11/09	KWG0901700	
4-Methylphenol†	ND	U	5.1	1.3	10	03/02/09	03/11/09	KWG0901700	
Nitrobenzene	ND	U	2.1	0.29	10	03/02/09	03/11/09	KWG0901700	
Isophorone	ND	U	2.1	0.17	10	03/02/09	03/11/09	KWG0901700	
2-Nitrophenol	ND	U	5.1	0.64	10	03/02/09	03/11/09	KWG0901700	
2,4-Dimethylphenol	ND	U	41	23	10	03/02/09	03/11/09	KWG0901700	
Bis(2-chloroethoxy)methane	ND	U	2.1	0.25	10	03/02/09	03/11/09	KWG0901700	
2,4-Dichlorophenol	ND	U	5.1	0.48	10	03/02/09	03/11/09	KWG0901700	
Benzoic Acid	ND	U	51	12	10	03/02/09	03/11/09	KWG0901700	
1,2,4-Trichlorobenzene	ND	U	2.1	0.17	10	03/02/09	03/11/09	KWG0901700	
Naphthalene	0.93	JD	2.1	0.23	10	03/02/09	03/11/09	KWG0901700	
4-Chloroaniline	ND	U	2.1	0.26	10	03/02/09	03/11/09	KWG0901700	
Hexachlorobutadiene	ND	U	2.1	0.28	10	03/02/09	03/11/09	KWG0901700	
4-Chloro-3-methylphenol	ND	U	5.1	0.38	10	03/02/09	03/11/09	KWG0901700	
2-Methylnaphthalene	ND	U	2.1	0.27	10	03/02/09	03/11/09	KWG0901700	
Hexachlorocyclopentadiene	ND	U	11	2.0	10	03/02/09	03/11/09	KWG0901700	
2,4,6-Trichlorophenol	ND	U	5.1	0.59	10	03/02/09	03/11/09	KWG0901700	
2,4,5-Trichlorophenol	ND	U	5.1	0.32	10	03/02/09	03/11/09	KWG0901700	
2-Chloronaphthalene	ND	U	2.1	0.42	10	03/02/09	03/11/09	KWG0901700	
2-Nitroaniline	ND	U	2.1	0.25	10	03/02/09	03/11/09	KWG0901700	
Acenaphthylene	ND	U	2.1	0.16	10	03/02/09	03/11/09	KWG0901700	
Dimethyl Phthalate	ND	U	2.1	0.22	10	03/02/09	03/11/09	KWG0901700	
2,6-Dinitrotoluene	ND	U	2.1	0.34	10	03/02/09	03/11/09	KWG0901700	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor
 Sample Matrix: Water

Service Request: K0901535
 Date Collected: 02/23/2009
 Date Received: 02/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: F0095221
 Lab Code: K0901535-006
 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	2.1	0.27	10	03/02/09	03/11/09	KWG0901700	
3-Nitroaniline	ND	U	11	0.30	10	03/02/09	03/11/09	KWG0901700	
2,4-Dinitrophenol	ND	U	41	1.8	10	03/02/09	03/11/09	KWG0901700	
Dibenzofuran	ND	U	2.1	0.19	10	03/02/09	03/11/09	KWG0901700	
4-Nitrophenol	ND	U	21	2.9	10	03/02/09	03/11/09	KWG0901700	
2,4-Dinitrotoluene	ND	U	2.1	0.19	10	03/02/09	03/11/09	KWG0901700	
Fluorene	ND	U	2.1	0.28	10	03/02/09	03/11/09	KWG0901700	
4-Chlorophenyl Phenyl Ether	ND	U	2.1	0.28	10	03/02/09	03/11/09	KWG0901700	
Diethyl Phthalate	ND	U	2.1	0.13	10	03/02/09	03/11/09	KWG0901700	
4-Nitroaniline	ND	U	11	0.20	10	03/02/09	03/11/09	KWG0901700	
2-Methyl-4,6-dinitrophenol	ND	U	21	0.26	10	03/02/09	03/11/09	KWG0901700	
N-Nitrosodiphenylamine	ND	U	2.1	0.49	10	03/02/09	03/11/09	KWG0901700	
4-Bromophenyl Phenyl Ether	ND	U	2.1	0.27	10	03/02/09	03/11/09	KWG0901700	
Hexachlorobenzene	ND	U	2.1	0.23	10	03/02/09	03/11/09	KWG0901700	
Pentachlorophenol	ND	U	11	3.5	10	03/02/09	03/11/09	KWG0901700	
Phenanthrene	0.26	JD	2.1	0.23	10	03/02/09	03/11/09	KWG0901700	
Anthracene	ND	U	2.1	0.25	10	03/02/09	03/11/09	KWG0901700	
Di-n-butyl Phthalate	ND	U	2.1	0.24	10	03/02/09	03/11/09	KWG0901700	
Fluoranthene	0.44	JD	2.1	0.21	10	03/02/09	03/11/09	KWG0901700	
Pyrene	0.57	JD	2.1	0.20	10	03/02/09	03/11/09	KWG0901700	
Butyl Benzyl Phthalate	ND	U	2.1	0.19	10	03/02/09	03/11/09	KWG0901700	
3,3'-Dichlorobenzidine	ND	U	21	4.4	10	03/02/09	03/11/09	KWG0901700	
Benz(a)anthracene	ND	U	2.1	0.19	10	03/02/09	03/11/09	KWG0901700	
Chrysene	ND	U	2.1	0.29	10	03/02/09	03/11/09	KWG0901700	
Bis(2-ethylhexyl) Phthalate	5.8	JD	11	1.4	10	03/02/09	03/11/09	KWG0901700	
Di-n-octyl Phthalate	ND	U	2.1	0.19	10	03/02/09	03/11/09	KWG0901700	
Benzo(b)fluoranthene	ND	U	2.1	0.18	10	03/02/09	03/11/09	KWG0901700	
Benzo(k)fluoranthene	ND	U	2.1	0.25	10	03/02/09	03/11/09	KWG0901700	
Benzo(a)pyrene	ND	U	2.1	0.32	10	03/02/09	03/11/09	KWG0901700	
Indeno(1,2,3-cd)pyrene	ND	U	2.1	0.22	10	03/02/09	03/11/09	KWG0901700	
Dibenz(a,h)anthracene	ND	U	2.1	0.18	10	03/02/09	03/11/09	KWG0901700	
Benzo(g,h,i)perylene	ND	U	2.1	0.20	10	03/02/09	03/11/09	KWG0901700	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor
Sample Matrix: Water

Service Request: K0901535
Date Collected: 02/23/2009
Date Received: 02/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: F0095221
Lab Code: K0901535-006

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	68	21-119	03/11/09	Acceptable
Phenol-d6	76	31-121	03/11/09	Acceptable
Nitrobenzene-d5	76	29-121	03/11/09	Acceptable
2-Fluorobiphenyl	77	25-109	03/11/09	Acceptable
2,4,6-Tribromophenol	87	30-131	03/11/09	Acceptable
Terphenyl-d14	87	20-140	03/11/09	Acceptable

† Analyte Comments

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

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor
 Sample Matrix: Water

Service Request: K0901535
 Date Collected: 02/23/2009
 Date Received: 02/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: F0095222
 Lab Code: K0901535-007
 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	0.22	0.038	1	03/02/09	03/11/09	KWG0901700	
Phenol	ND	U	0.54	0.068	1	03/02/09	03/11/09	KWG0901700	
2-Chlorophenol	ND	U	0.54	0.058	1	03/02/09	03/11/09	KWG0901700	
1,3-Dichlorobenzene	ND	U	0.22	0.023	1	03/02/09	03/11/09	KWG0901700	
1,4-Dichlorobenzene	ND	U	0.22	0.031	1	03/02/09	03/11/09	KWG0901700	
1,2-Dichlorobenzene	ND	U	0.22	0.024	1	03/02/09	03/11/09	KWG0901700	
Benzyl Alcohol	ND	U	0.54	0.078	1	03/02/09	03/11/09	KWG0901700	
Bis(2-chloroisopropyl) Ether	ND	U	0.22	0.028	1	03/02/09	03/11/09	KWG0901700	
2-Methylphenol	ND	U	0.54	0.12	1	03/02/09	03/11/09	KWG0901700	
Hexachloroethane	ND	U	0.22	0.026	1	03/02/09	03/11/09	KWG0901700	
N-Nitrosodi-n-propylamine	ND	U	0.22	0.040	1	03/02/09	03/11/09	KWG0901700	
4-Methylphenol†	ND	U	0.54	0.13	1	03/02/09	03/11/09	KWG0901700	
Nitrobenzene	ND	U	0.22	0.030	1	03/02/09	03/11/09	KWG0901700	
Isophorone	ND	U	0.22	0.018	1	03/02/09	03/11/09	KWG0901700	
2-Nitrophenol	ND	U	0.54	0.068	1	03/02/09	03/11/09	KWG0901700	
2,4-Dimethylphenol	ND	U	4.3	2.4	1	03/02/09	03/11/09	KWG0901700	
Bis(2-chloroethoxy)methane	ND	U	0.22	0.026	1	03/02/09	03/11/09	KWG0901700	
2,4-Dichlorophenol	ND	U	0.54	0.050	1	03/02/09	03/11/09	KWG0901700	
Benzoic Acid	ND	U	5.4	1.2	1	03/02/09	03/11/09	KWG0901700	
1,2,4-Trichlorobenzene	ND	U	0.22	0.018	1	03/02/09	03/11/09	KWG0901700	
Naphthalene	ND	U	0.22	0.024	1	03/02/09	03/11/09	KWG0901700	
4-Chloroaniline	ND	U	0.22	0.027	1	03/02/09	03/11/09	KWG0901700	
Hexachlorobutadiene	ND	U	0.22	0.029	1	03/02/09	03/11/09	KWG0901700	
4-Chloro-3-methylphenol	ND	U	0.54	0.040	1	03/02/09	03/11/09	KWG0901700	
2-Methylnaphthalene	ND	U	0.22	0.028	1	03/02/09	03/11/09	KWG0901700	
Hexachlorocyclopentadiene	ND	U	1.1	0.21	1	03/02/09	03/11/09	KWG0901700	
2,4,6-Trichlorophenol	ND	U	0.54	0.062	1	03/02/09	03/11/09	KWG0901700	
2,4,5-Trichlorophenol	ND	U	0.54	0.033	1	03/02/09	03/11/09	KWG0901700	
2-Chloronaphthalene	ND	U	0.22	0.044	1	03/02/09	03/11/09	KWG0901700	
2-Nitroaniline	ND	U	0.22	0.026	1	03/02/09	03/11/09	KWG0901700	
Acenaphthylene	ND	U	0.22	0.016	1	03/02/09	03/11/09	KWG0901700	
Dimethyl Phthalate	ND	U	0.22	0.023	1	03/02/09	03/11/09	KWG0901700	
2,6-Dinitrotoluene	ND	U	0.22	0.036	1	03/02/09	03/11/09	KWG0901700	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor
 Sample Matrix: Water

Service Request: K0901535
 Date Collected: 02/23/2009
 Date Received: 02/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: F0095222
 Lab Code: K0901535-007
 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	0.22	0.028	1	03/02/09	03/11/09	KWG0901700	
3-Nitroaniline	ND	U	1.1	0.031	1	03/02/09	03/11/09	KWG0901700	
2,4-Dinitrophenol	ND	U	4.3	0.19	1	03/02/09	03/11/09	KWG0901700	
Dibenzofuran	ND	U	0.22	0.020	1	03/02/09	03/11/09	KWG0901700	
4-Nitrophenol	ND	U	2.2	0.30	1	03/02/09	03/11/09	KWG0901700	
2,4-Dinitrotoluene	ND	U	0.22	0.020	1	03/02/09	03/11/09	KWG0901700	
Fluorene	ND	U	0.22	0.029	1	03/02/09	03/11/09	KWG0901700	
4-Chlorophenyl Phenyl Ether	ND	U	0.22	0.029	1	03/02/09	03/11/09	KWG0901700	
Diethyl Phthalate	0.038	J	0.22	0.013	1	03/02/09	03/11/09	KWG0901700	
4-Nitroaniline	ND	U	1.1	0.021	1	03/02/09	03/11/09	KWG0901700	
2-Methyl-4,6-dinitrophenol	ND	U	2.2	0.027	1	03/02/09	03/11/09	KWG0901700	
N-Nitrosodiphenylamine	ND	U	0.22	0.052	1	03/02/09	03/11/09	KWG0901700	
4-Bromophenyl Phenyl Ether	ND	U	0.22	0.028	1	03/02/09	03/11/09	KWG0901700	
Hexachlorobenzene	ND	U	0.22	0.024	1	03/02/09	03/11/09	KWG0901700	
Pentachlorophenol	ND	U	1.1	0.37	1	03/02/09	03/11/09	KWG0901700	
Phenanthrene	ND	U	0.22	0.024	1	03/02/09	03/11/09	KWG0901700	
Anthracene	ND	U	0.22	0.026	1	03/02/09	03/11/09	KWG0901700	
Di-n-butyl Phthalate	0.039	J	0.22	0.025	1	03/02/09	03/11/09	KWG0901700	
Fluoranthene	ND	U	0.22	0.022	1	03/02/09	03/11/09	KWG0901700	
Pyrene	ND	U	0.22	0.021	1	03/02/09	03/11/09	KWG0901700	
Butyl Benzyl Phthalate	ND	U	0.22	0.020	1	03/02/09	03/11/09	KWG0901700	
3,3'-Dichlorobenzidine	ND	U	2.2	0.46	1	03/02/09	03/11/09	KWG0901700	
Benz(a)anthracene	ND	U	0.22	0.020	1	03/02/09	03/11/09	KWG0901700	
Chrysene	ND	U	0.22	0.030	1	03/02/09	03/11/09	KWG0901700	
Bis(2-ethylhexyl) Phthalate	0.15	J	1.1	0.14	1	03/02/09	03/11/09	KWG0901700	
Di-n-octyl Phthalate	ND	U	0.22	0.020	1	03/02/09	03/11/09	KWG0901700	
Benzo(b)fluoranthene	ND	U	0.22	0.019	1	03/02/09	03/11/09	KWG0901700	
Benzo(k)fluoranthene	ND	U	0.22	0.026	1	03/02/09	03/11/09	KWG0901700	
Benzo(a)pyrene	ND	U	0.22	0.033	1	03/02/09	03/11/09	KWG0901700	
Indeno(1,2,3-cd)pyrene	ND	U	0.22	0.023	1	03/02/09	03/11/09	KWG0901700	
Dibenz(a,h)anthracene	ND	U	0.22	0.019	1	03/02/09	03/11/09	KWG0901700	
Benzo(g,h,i)perylene	ND	U	0.22	0.021	1	03/02/09	03/11/09	KWG0901700	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor
Sample Matrix: Water

Service Request: K0901535
Date Collected: 02/23/2009
Date Received: 02/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: F0095222
Lab Code: K0901535-007

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	61	21-119	03/11/09	Acceptable
Phenol-d6	63	31-121	03/11/09	Acceptable
Nitrobenzene-d5	65	29-121	03/11/09	Acceptable
2-Fluorobiphenyl	60	25-109	03/11/09	Acceptable
2,4,6-Tribromophenol	51	30-131	03/11/09	Acceptable
Terphenyl-d14	85	20-140	03/11/09	Acceptable

† Analyte Comments

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

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor
 Sample Matrix: Water

Service Request: K0901535
 Date Collected: NA
 Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
 Lab Code: KWG0901700-3
 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	03/02/09	03/10/09	KWG0901700	
Phenol	0.10	J	0.48	0.063	1	03/02/09	03/10/09	KWG0901700	
2-Chlorophenol	ND	U	0.48	0.054	1	03/02/09	03/10/09	KWG0901700	
1,3-Dichlorobenzene	ND	U	0.19	0.021	1	03/02/09	03/10/09	KWG0901700	
1,4-Dichlorobenzene	ND	U	0.19	0.029	1	03/02/09	03/10/09	KWG0901700	
1,2-Dichlorobenzene	ND	U	0.19	0.022	1	03/02/09	03/10/09	KWG0901700	
Benzyl Alcohol	ND	U	0.48	0.073	1	03/02/09	03/10/09	KWG0901700	
Bis(2-chloroisopropyl) Ether	ND	U	0.19	0.026	1	03/02/09	03/10/09	KWG0901700	
2-Methylphenol	ND	U	0.48	0.11	1	03/02/09	03/10/09	KWG0901700	
Hexachloroethane	ND	U	0.19	0.024	1	03/02/09	03/10/09	KWG0901700	
N-Nitrosodi-n-propylamine	ND	U	0.19	0.037	1	03/02/09	03/10/09	KWG0901700	
4-Methylphenol†	ND	U	0.48	0.12	1	03/02/09	03/10/09	KWG0901700	
Nitrobenzene	ND	U	0.19	0.028	1	03/02/09	03/10/09	KWG0901700	
Isophorone	ND	U	0.19	0.016	1	03/02/09	03/10/09	KWG0901700	
2-Nitrophenol	ND	U	0.48	0.063	1	03/02/09	03/10/09	KWG0901700	
2,4-Dimethylphenol	ND	U	3.8	2.2	1	03/02/09	03/10/09	KWG0901700	
Bis(2-chloroethoxy)methane	ND	U	0.19	0.024	1	03/02/09	03/10/09	KWG0901700	
2,4-Dichlorophenol	ND	U	0.48	0.047	1	03/02/09	03/10/09	KWG0901700	
Benzoic Acid	ND	U	4.8	1.1	1	03/02/09	03/10/09	KWG0901700	
1,2,4-Trichlorobenzene	ND	U	0.19	0.016	1	03/02/09	03/10/09	KWG0901700	
Naphthalene	ND	U	0.19	0.022	1	03/02/09	03/10/09	KWG0901700	
4-Chloroaniline	ND	U	0.19	0.025	1	03/02/09	03/10/09	KWG0901700	
Hexachlorobutadiene	ND	U	0.19	0.027	1	03/02/09	03/10/09	KWG0901700	
4-Chloro-3-methylphenol	ND	U	0.48	0.037	1	03/02/09	03/10/09	KWG0901700	
2-Methylnaphthalene	ND	U	0.19	0.026	1	03/02/09	03/10/09	KWG0901700	
Hexachlorocyclopentadiene	ND	U	0.95	0.19	1	03/02/09	03/10/09	KWG0901700	
2,4,6-Trichlorophenol	ND	U	0.48	0.058	1	03/02/09	03/10/09	KWG0901700	
2,4,5-Trichlorophenol	ND	U	0.48	0.031	1	03/02/09	03/10/09	KWG0901700	
2-Chloronaphthalene	ND	U	0.19	0.041	1	03/02/09	03/10/09	KWG0901700	
2-Nitroaniline	ND	U	0.19	0.024	1	03/02/09	03/10/09	KWG0901700	
Acenaphthylene	ND	U	0.19	0.015	1	03/02/09	03/10/09	KWG0901700	
Dimethyl Phthalate	ND	U	0.19	0.021	1	03/02/09	03/10/09	KWG0901700	
2,6-Dinitrotoluene	ND	U	0.19	0.033	1	03/02/09	03/10/09	KWG0901700	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor
 Sample Matrix: Water

Service Request: K0901535
 Date Collected: NA
 Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
 Lab Code: KWG0901700-3
 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	03/02/09	03/10/09	KWG0901700	
3-Nitroaniline	ND	U	0.95	0.029	1	03/02/09	03/10/09	KWG0901700	
2,4-Dinitrophenol	ND	U	3.8	0.17	1	03/02/09	03/10/09	KWG0901700	
Dibenzofuran	ND	U	0.19	0.018	1	03/02/09	03/10/09	KWG0901700	
4-Nitrophenol	ND	U	1.9	0.28	1	03/02/09	03/10/09	KWG0901700	
2,4-Dinitrotoluene	ND	U	0.19	0.018	1	03/02/09	03/10/09	KWG0901700	
Fluorene	ND	U	0.19	0.027	1	03/02/09	03/10/09	KWG0901700	
4-Chlorophenyl Phenyl Ether	ND	U	0.19	0.027	1	03/02/09	03/10/09	KWG0901700	
Diethyl Phthalate	0.019	J	0.19	0.012	1	03/02/09	03/10/09	KWG0901700	
4-Nitroaniline	ND	U	0.95	0.019	1	03/02/09	03/10/09	KWG0901700	
2-Methyl-4,6-dinitrophenol	ND	U	1.9	0.025	1	03/02/09	03/10/09	KWG0901700	
N-Nitrosodiphenylamine	ND	U	0.19	0.048	1	03/02/09	03/10/09	KWG0901700	
4-Bromophenyl Phenyl Ether	ND	U	0.19	0.026	1	03/02/09	03/10/09	KWG0901700	
Hexachlorobenzene	ND	U	0.19	0.022	1	03/02/09	03/10/09	KWG0901700	
Pentachlorophenol	ND	U	0.95	0.34	1	03/02/09	03/10/09	KWG0901700	
Phenanthrene	ND	U	0.19	0.022	1	03/02/09	03/10/09	KWG0901700	
Anthracene	ND	U	0.19	0.024	1	03/02/09	03/10/09	KWG0901700	
Di-n-butyl Phthalate	0.066	J	0.19	0.023	1	03/02/09	03/10/09	KWG0901700	
Fluoranthene	ND	U	0.19	0.020	1	03/02/09	03/10/09	KWG0901700	
Pyrene	ND	U	0.19	0.019	1	03/02/09	03/10/09	KWG0901700	
Butyl Benzyl Phthalate	0.040	J	0.19	0.018	1	03/02/09	03/10/09	KWG0901700	
3,3'-Dichlorobenzidine	ND	U	1.9	0.43	1	03/02/09	03/10/09	KWG0901700	
Benz(a)anthracene	ND	U	0.19	0.018	1	03/02/09	03/10/09	KWG0901700	
Chrysene	ND	U	0.19	0.028	1	03/02/09	03/10/09	KWG0901700	
Bis(2-ethylhexyl) Phthalate	ND	U	0.95	0.13	1	03/02/09	03/10/09	KWG0901700	
Di-n-octyl Phthalate	ND	U	0.19	0.018	1	03/02/09	03/10/09	KWG0901700	
Benzo(b)fluoranthene	ND	U	0.19	0.017	1	03/02/09	03/10/09	KWG0901700	
Benzo(k)fluoranthene	ND	U	0.19	0.024	1	03/02/09	03/10/09	KWG0901700	
Benzo(a)pyrene	ND	U	0.19	0.031	1	03/02/09	03/10/09	KWG0901700	
Indeno(1,2,3-cd)pyrene	ND	U	0.19	0.021	1	03/02/09	03/10/09	KWG0901700	
Dibenz(a,h)anthracene	ND	U	0.19	0.017	1	03/02/09	03/10/09	KWG0901700	
Benzo(g,h,i)perylene	ND	U	0.19	0.019	1	03/02/09	03/10/09	KWG0901700	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor
Sample Matrix: Water

Service Request: K0901535
Date Collected: NA
Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KWG0901700-3

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	76	21-119	03/10/09	Acceptable
Phenol-d6	78	31-121	03/10/09	Acceptable
Nitrobenzene-d5	79	29-121	03/10/09	Acceptable
2-Fluorobiphenyl	70	25-109	03/10/09	Acceptable
2,4,6-Tribromophenol	60	30-131	03/10/09	Acceptable
Terphenyl-d14	94	20-140	03/10/09	Acceptable

† Analyte Comments

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

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Portland, City of
 Project: Portland Harbor
 Sample Matrix: Water

Service Request: K0901535

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

Extraction Method: EPA 3520C
 Analysis Method: 8270C

Units: PERCENT
 Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>	<u>Sur3</u>	<u>Sur4</u>	<u>Sur5</u>	<u>Sur6</u>
F0095216	K0901535-001	56 D	62 D	57 D	61 D	69 D	81 D
F0095217	K0901535-002	64 D	68 D	62 D	72 D	71 D	88 D
F0095218	K0901535-003	66 D	68 D	67 D	58 D	73 D	43 D
F0095219	K0901535-004	65 D	70 D	66 D	71 D	85 D	90 D
F0095220	K0901535-005	62 D	63 D	58 D	60 D	70 D	83 D
F0095221	K0901535-006	68 D	76 D	76 D	77 D	87 D	87 D
F0095222	K0901535-007	61	63	65	60	51	85
Method Blank	KWG0901700-3	76	78	79	70	60	94
Lab Control Sample	KWG0901700-1	78	77	75	65	71	85
Duplicate Lab Control Sample	KWG0901700-2	72	73	71	61	67	82

Surrogate Recovery Control Limits (%)

Sur1 = 2-Fluorophenol	21-119	Sur5 = 2,4,6-Tribromophenol	30-131
Sur2 = Phenol-d6	31-121	Sur6 = Terphenyl-d14	20-140
Sur3 = Nitrobenzene-d5	29-121		
Sur4 = 2-Fluorobiphenyl	25-109		

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
 Project: Portland Harbor
 Sample Matrix: Water

Service Request: K0901535
 Date Extracted: 03/02/2009
 Date Analyzed: 03/10/2009

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: KWG0901700

Analyte Name	Lab Control Sample KWG0901700-1 Lab Control Spike			Duplicate Lab Control Sample KWG0901700-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
Bis(2-chloroethyl) Ether	4.11	5.00	82	3.68	5.00	74	39-115	11	30
Phenol	4.13	5.00	83	3.79	5.00	76	39-117	9	30
2-Chlorophenol	4.26	5.00	85	3.74	5.00	75	40-113	13	30
1,3-Dichlorobenzene	2.35	5.00	47	2.18	5.00	44	18-71	7	30
1,4-Dichlorobenzene	2.32	5.00	46	2.14	5.00	43	19-73	8	30
1,2-Dichlorobenzene	2.71	5.00	54	2.36	5.00	47	22-78	14	30
Benzyl Alcohol	4.29	5.00	86	3.90	5.00	78	37-119	10	30
Bis(2-chloroisopropyl) Ether	4.17	5.00	83	3.80	5.00	76	35-113	9	30
2-Methylphenol	3.54	5.00	71	3.27	5.00	65	26-113	8	30
Hexachloroethane	1.88	5.00	38	1.65	5.00	33	11-62	13	30
N-Nitrosodi-n-propylamine	3.91	5.00	78	3.53	5.00	71	32-117	10	30
4-Methylphenol	3.85	5.00	77	3.53	5.00	71	25-118	9	30
Nitrobenzene	3.91	5.00	78	3.60	5.00	72	37-116	8	30
Isophorone	3.56	5.00	71	3.25	5.00	65	39-112	9	30
2-Nitrophenol	3.79	5.00	76	3.30	5.00	66	42-116	14	30
2,4-Dimethylphenol	2.29	5.00	46	1.99	5.00	40	10-113	14	30
Bis(2-chloroethoxy)methane	3.68	5.00	74	3.31	5.00	66	40-113	11	30
2,4-Dichlorophenol	3.69	5.00	74	3.17	5.00	63	39-115	15	30
Benzoic Acid	3.64	15.0	24	3.17	15.0	21	10-102	14	30
1,2,4-Trichlorobenzene	2.37	5.00	47	2.17	5.00	43	21-78	9	30
Naphthalene	3.23	5.00	65	2.93	5.00	59	33-98	10	30
4-Chloroaniline	2.78	5.00	56	2.69	5.00	54	10-119	3	30
Hexachlorobutadiene	1.67	5.00	33	1.43	5.00	29	10-61	15	30
4-Chloro-3-methylphenol	3.67	5.00	73	3.39	5.00	68	37-119	8	30
2-Methylnaphthalene	2.94	5.00	59	2.78	5.00	56	32-95	6	30
Hexachlorocyclopentadiene	0.755	5.00	15	0.721	5.00	14	10-39	5	30
2,4,6-Trichlorophenol	3.75	5.00	75	3.30	5.00	66	40-117	13	30
2,4,5-Trichlorophenol	3.86	5.00	77	3.42	5.00	68	44-116	12	30
2-Chloronaphthalene	3.05	5.00	61	2.86	5.00	57	21-115	7	30
2-Nitroaniline	3.78	5.00	76	3.49	5.00	70	43-124	8	30
Acenaphthylene	3.55	5.00	71	3.48	5.00	70	41-114	2	30
Dimethyl Phthalate	3.81	5.00	76	3.53	5.00	71	47-117	8	30
2,6-Dinitrotoluene	4.06	5.00	81	3.70	5.00	74	45-120	9	30
Acenaphthene	3.48	5.00	70	3.33	5.00	67	38-106	4	30
3-Nitroaniline	3.89	5.00	78	3.43	5.00	69	31-125	13	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
 Project: Portland Harbor
 Sample Matrix: Water

Service Request: K0901535
 Date Extracted: 03/02/2009
 Date Analyzed: 03/10/2009

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: KWG0901700

Analyte Name	Lab Control Sample KWG0901700-1 Lab Control Spike			Duplicate Lab Control Sample KWG0901700-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
2,4-Dinitrophenol	1.90	5.00	38	1.74	5.00	35	10-121	9	30
Dibenzofuran	3.53	5.00	71	3.35	5.00	67	40-107	5	30
4-Nitrophenol	3.84	5.00	77	3.28	5.00	66	43-133	16	30
2,4-Dinitrotoluene	3.83	5.00	77	3.63	5.00	73	47-125	6	30
Fluorene	3.59	5.00	72	3.43	5.00	69	40-112	5	30
4-Chlorophenyl Phenyl Ether	3.32	5.00	66	3.12	5.00	62	39-108	6	30
Diethyl Phthalate	4.01	5.00	80	3.59	5.00	72	47-120	11	30
4-Nitroaniline	4.26	5.00	85	3.73	5.00	75	36-128	13	30
2-Methyl-4,6-dinitrophenol	3.31	5.00	66	3.04	5.00	61	19-127	8	30
N-Nitrosodiphenylamine	3.83	5.00	77	3.39	5.00	68	36-114	12	30
4-Bromophenyl Phenyl Ether	3.46	5.00	69	3.21	5.00	64	43-110	7	30
Hexachlorobenzene	3.55	5.00	71	3.26	5.00	65	42-107	8	30
Pentachlorophenol	3.31	5.00	66	3.12	5.00	62	28-114	6	30
Phenanthrene	3.87	5.00	77	3.55	5.00	71	43-110	9	30
Anthracene	3.50	5.00	70	3.32	5.00	66	40-110	5	30
Di-n-butyl Phthalate	3.90	5.00	78	3.64	5.00	73	45-135	7	30
Fluoranthene	3.80	5.00	76	3.60	5.00	72	42-119	5	30
Pyrene	3.89	5.00	78	3.73	5.00	75	43-118	4	30
Butyl Benzyl Phthalate	3.95	5.00	79	3.75	5.00	75	48-124	5	30
3,3'-Dichlorobenzidine	3.56	5.00	71	3.18	5.00	64	15-108	11	30
Benz(a)anthracene	3.74	5.00	75	3.51	5.00	70	45-112	6	30
Chrysene	3.98	5.00	80	3.80	5.00	76	47-112	5	30
Bis(2-ethylhexyl) Phthalate	3.84	5.00	77	3.77	5.00	75	32-149	2	30
Di-n-octyl Phthalate	3.83	5.00	77	3.63	5.00	73	49-127	5	30
Benzo(b)fluoranthene	3.77	5.00	75	3.62	5.00	72	45-115	4	30
Benzo(k)fluoranthene	3.91	5.00	78	3.68	5.00	74	46-115	6	30
Benzo(a)pyrene	3.23	5.00	65	3.11	5.00	62	40-117	4	30
Indeno(1,2,3-cd)pyrene	3.81	5.00	76	3.64	5.00	73	44-119	5	30
Dibenz(a,h)anthracene	3.80	5.00	76	3.44	5.00	69	45-118	10	30
Benzo(g,h,i)perylene	3.84	5.00	77	3.65	5.00	73	45-116	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.

CHAIN OF CUSTODY

PROJECT NAME: <u>Portland Harbor</u>				PROJECT NUMBER: _____			
PROJECT MANAGER: <u>Jennifer MacCallister</u>				COMPANY ADDRESS: _____			
CITY/STATE/ZIP: <u>City of Portland</u>				E-MAIL ADDRESS: _____			
PHONE # _____				FAX # _____			
SAMPLE'S SIGNATURE: _____				DATE: _____			
SAMPLE I.D.:				DATE:			
TIME:				LAB I.D.:			
MATRIX:				NUMBER OF CONTAINERS:			
Semivolatile Organics by GC/MS 625 <input type="checkbox"/> 8270 <input type="checkbox"/> 8270LL <input checked="" type="checkbox"/>				Volatile Organics 624 <input type="checkbox"/> 8260 <input type="checkbox"/> 8021 <input type="checkbox"/> BTEX <input type="checkbox"/>			
Hydrocarbons (*see below) Gas <input type="checkbox"/> Diesel <input type="checkbox"/> Oil <input type="checkbox"/>				Fuel Fingerprint (FIQ) <input type="checkbox"/> NW-HCID Screen			
Oil & Grease/TRPH 1664 HEM <input type="checkbox"/> 1664 SGT <input type="checkbox"/>				PCB's Aroclors <input type="checkbox"/> Congeners <input type="checkbox"/>			
Pesticides/Herbicides 608 <input type="checkbox"/> 8081A <input checked="" type="checkbox"/> 8141A <input type="checkbox"/> 8151A <input type="checkbox"/>				Chlorophenolics - 8151M Tri <input type="checkbox"/> Tetra <input type="checkbox"/> PCP <input type="checkbox"/>			
PAHS 8310 <input type="checkbox"/> SIM <input type="checkbox"/>				Metals, Total or Dissolved (See list below)			
Cyanide <input type="checkbox"/> Hex-Chrom <input type="checkbox"/>				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 <input type="checkbox"/> AOX 1650 <input type="checkbox"/> 506 <input type="checkbox"/>			
REMARKS:							

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS	Volatile Organics	Hydrocarbons (*see below)	Fuel Fingerprint (FIQ)	Oil & Grease/TRPH	PCB's	Pesticides/Herbicides	Chlorophenolics - 8151M	PAHS	Metals, Total or Dissolved	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	
FO095216	2/23/09	1442		W	2	X						X										
FO095217		1410		W	2	X						X										
FO095218		1518		W	2	X						X										
FO095219		1358		W	2	X						X										
FO095220		1428		W	2	X						X										
FO095221		1455		W	2	X						X										
FO095222		1530		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	
RELINQUISHED BY: Signature: <u>[Signature]</u> Date/Time: <u>2/24/09 12:10</u> Printed Name: <u>Kristen M. City of Portland</u> Firm		RECEIVED BY: Signature: <u>[Signature]</u> Date/Time: <u>2/24/09 12:10</u> Printed Name: <u>[Signature]</u> Firm	

Please run low-level 8270 analysis. Thanks.

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

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC PID

Client / Project: City of Portland Service Request K09 01535
Received: 2-24-09 Opened: 2-24-09 By: SW

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): 11.1
Temperature Blank (°C): 8.6
Thermometer ID: SMO237
6. If applicable, list Chain of Custody Numbers: _____
7. Packing material used. Inserts Baggies Bubble Wrap Gel Packs Wet Ice Sleeves Other NO ICE
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 and 1631 Mercury bottles 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	Broken	pH	Reagent	Volume added	Reagent Lot Number	Initials
<u>All Samples</u>			<u>✓</u>							<u>SW</u>

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

Additional Notes, Discrepancies, & Resolutions: Nothing major Shuckelford 2/25/09
SW

March 17, 2009

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

RE: Portland Harbor

Enclosed are the results of analyses for samples received by the laboratory on 02/24/09 14:55.
The following list is a summary of the Work Orders contained in this report, generated on 03/17/09 21:08.

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

<u>Work Order</u>	<u>Project</u>	<u>ProjectNumber</u>
PSB0692	Portland Harbor	36238

TestAmerica Portland



Howard Holmes, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name:

Portland Harbor

Project Number:

36238

Project Manager:

Jennifer Shackelford

Report Created:

03/17/09 21:08

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FO095216	PSB0692-01	Water	02/23/09 14:42	02/24/09 14:55
FO095217	PSB0692-02	Water	02/23/09 14:10	02/24/09 14:55
FO095218	PSB0692-03	Water	02/23/09 15:18	02/24/09 14:55
FO095219	PSB0692-04	Water	02/23/09 13:58	02/24/09 14:55
FO095220	PSB0692-05	Water	02/23/09 14:28	02/24/09 14:55
FO095221	PSB0692-06	Water	02/23/09 14:55	02/24/09 14:55
FO095222	PSB0692-07	Water	02/23/09 15:30	02/24/09 14:55
FO095223	PSB0692-08	Water	02/23/09 00:00	02/24/09 14:55

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
03/17/09 21:08

Polynuclear Aromatic Compounds per EPA 8270M-SIM
TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSB0692-05 (FO095220)		Water			Sampled: 02/23/09 14:28				RL3	
Bis(2-ethylhexyl)phthalate	EPA 8270m	3.15	1.01	1.92	ug/l	2x	9020785	02/25/09 13:00	03/14/09 02:41	
Butyl benzyl phthalate	"	ND	1.01	1.92	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	1.01	1.92	"	"	"	"	"	
Di-n-octyl phthalate	"	1.30	1.01	1.92	"	"	"	"	"	J
Diethyl phthalate	"	ND	1.01	1.92	"	"	"	"	"	
Dimethyl phthalate	"	ND	1.01	1.92	"	"	"	"	"	
Acenaphthene	"	ND	0.0577	0.0577	"	3x	"	"	03/07/09 01:00	RL1
Acenaphthylene	"	ND	0.0577	0.0577	"	"	"	"	"	RL1
Anthracene	"	ND	0.0577	0.0577	"	"	"	"	"	RL1
Benzo (a) anthracene	"	0.0353	0.0288	0.0288	"	"	"	"	"	
Benzo (a) pyrene	"	0.0423	0.0288	0.0288	"	"	"	"	"	
Benzo (b) fluoranthene	"	0.0795	0.0288	0.0288	"	"	"	"	"	
Benzo (ghi) perylene	"	0.0890	0.0577	0.0577	"	"	"	"	"	
Benzo (k) fluoranthene	"	0.0510	0.0288	0.0288	"	"	"	"	"	
Chrysene	"	0.138	0.0288	0.0288	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	0.0288	0.0288	"	"	"	"	"	RL1
Fluoranthene	"	0.204	0.0577	0.0577	"	"	"	"	"	
Fluorene	"	ND	0.0577	0.0577	"	"	"	"	"	RL1
Indeno (1,2,3-cd) pyrene	"	0.0433	0.0288	0.0288	"	"	"	"	"	
Naphthalene	"	0.0638	0.0577	0.0577	"	"	"	"	"	
Phenanthrene	"	0.143	0.0577	0.0577	"	"	"	"	"	
Pyrene	"	0.113	0.0577	0.0577	"	"	"	"	"	
<i>Surrogate(s): Fluorene-d10</i>				92.2%		25 - 125 %	"			"
<i>Pyrene-d10</i>				60.4%		23 - 150 %	"			"
<i>Benzo (a) pyrene-d12</i>				89.8%		10 - 125 %	"			"

PSB0692-06 (FO095221)		Water			Sampled: 02/23/09 14:55				RL3	
Bis(2-ethylhexyl)phthalate	EPA 8270m	4.38	1.02	1.94	ug/l	2x	9020785	02/25/09 13:00	03/14/09 03:18	
Butyl benzyl phthalate	"	ND	1.02	1.94	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	1.02	1.94	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	1.94	1.94	"	"	"	"	"	
Diethyl phthalate	"	ND	1.02	1.94	"	"	"	"	"	
Dimethyl phthalate	"	ND	1.02	1.94	"	"	"	"	"	
Acenaphthene	"	ND	0.0777	0.0777	"	4x	"	"	03/09/09 20:17	RL1
Acenaphthylene	"	ND	0.0777	0.0777	"	"	"	"	"	RL1
Anthracene	"	ND	0.0777	0.0777	"	"	"	"	"	RL1

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
03/17/09 21:08

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSB0692-06 (FO095221)		Water				Sampled: 02/23/09 14:55				RL3
Benzo (a) anthracene	EPA 8270m	0.0553	0.0388	0.0388	ug/l	4x	9020785	02/25/09 13:00	03/09/09 20:17	
Benzo (a) pyrene	"	0.0556	0.0388	0.0388	"	"	"	"	"	
Benzo (b) fluoranthene	"	0.0790	0.0388	0.0388	"	"	"	"	"	
Benzo (ghi) perylene	"	0.0878	0.0777	0.0777	"	"	"	"	"	
Benzo (k) fluoranthene	"	0.0572	0.0388	0.0388	"	"	"	"	"	
Chrysene	"	0.158	0.0388	0.0388	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	0.0388	0.0388	"	"	"	"	"	RL1
Fluoranthene	"	0.233	0.0777	0.0777	"	"	"	"	"	
Fluorene	"	ND	0.0777	0.0777	"	"	"	"	"	RL1
Indeno (1,2,3-cd) pyrene	"	0.0458	0.0388	0.0388	"	"	"	"	"	
Naphthalene	"	0.358	0.0777	0.0777	"	"	"	"	"	
Phenanthrene	"	0.169	0.0777	0.0777	"	"	"	"	"	
Pyrene	"	0.160	0.0777	0.0777	"	"	"	"	"	

Surrogate(s): Fluorene-d10 71.2% 25 - 125 % "

Pyrene-d10 46.3% 23 - 150 % "

Benzo (a) pyrene-d12 64.6% 10 - 125 % "

PSB0692-07 (FO095222)		Water				Sampled: 02/23/09 15:30				
Bis(2-ethylhexyl)phthalate	EPA 8270m	ND	0.501	0.952	ug/l	1x	9020785	02/25/09 13:00	03/04/09 19:49	
Butyl benzyl phthalate	"	ND	0.501	0.952	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	0.501	0.952	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	0.501	0.952	"	"	"	"	"	
Diethyl phthalate	"	ND	0.501	0.952	"	"	"	"	"	
Dimethyl phthalate	"	ND	0.501	0.952	"	"	"	"	"	
Acenaphthene	"	ND	0.0190	0.0190	"	"	"	"	03/06/09 22:44	
Acenaphthylene	"	ND	0.0190	0.0190	"	"	"	"	"	
Anthracene	"	ND	0.0190	0.0190	"	"	"	"	"	
Benzo (a) anthracene	"	ND	0.00952	0.00952	"	"	"	"	"	
Benzo (a) pyrene	"	ND	0.00952	0.00952	"	"	"	"	"	
Benzo (b) fluoranthene	"	ND	0.00952	0.00952	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	0.0190	0.0190	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	0.00952	0.00952	"	"	"	"	"	
Chrysene	"	ND	0.00952	0.00952	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	0.00952	0.00952	"	"	"	"	"	
Fluoranthene	"	ND	0.0190	0.0190	"	"	"	"	"	
Fluorene	"	ND	0.0190	0.0190	"	"	"	"	"	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
03/17/09 21:08

Polynuclear Aromatic Compounds per EPA 8270M-SIM
TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSB0692-07 (FO095222)		Water		Sampled: 02/23/09 15:30						
Indeno (1,2,3-cd) pyrene	EPA 8270m	ND	0.00952	0.00952	ug/l	1x	9020785	02/25/09 13:00	03/06/09 22:44	
Naphthalene	"	ND	0.0190	0.0190	"	"	"	"	"	
Phenanthrene	"	ND	0.0190	0.0190	"	"	"	"	"	
Pyrene	"	ND	0.0190	0.0190	"	"	"	"	"	
<i>Surrogate(s): Fluorene-d10</i>				76.8%		25 - 125 %	"			"
<i>Pyrene-d10</i>				70.9%		23 - 150 %	"			"
<i>Benzo (a) pyrene-d12</i>				95.7%		10 - 125 %	"			"

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
03/17/09 21:08

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

TestAmerica Portland

QC Batch: 9020785

Water Preparation Method: 3520B Liq-Liq

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (9020785-BLK1)										Extracted: 02/25/09 13:00				
Bis(2-ethylhexyl)phthalate	EPA 8270m	ND	0.526	1.00	ug/l	1x	--	--	--	--	--	--	03/03/09 11:07	
Butyl benzyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Di-n-butyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Di-n-octyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Diethyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Dimethyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Acenaphthene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	03/02/09 14:41	
Acenaphthylene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Anthracene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (a) anthracene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Benzo (a) pyrene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Benzo (b) fluoranthene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Benzo (ghi) perylene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (k) fluoranthene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Chrysene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Dibenzo (a,h) anthracene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Fluoranthene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Fluorene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Indeno (1,2,3-cd) pyrene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Naphthalene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Phenanthrene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Pyrene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
<hr/>														
Surrogate(s): Fluorene-d10		Recovery:	114%	Limits:	25-125%	"								
Pyrene-d10			115%		23-150%	"								
Benzo (a) pyrene-d12			114%		10-125%	"								

LCS (9020785-BS1)

Extracted: 02/25/09 13:00

Bis(2-ethylhexyl)phthalate	EPA 8270m	4.31	0.526	1.00	ug/l	1x	--	4.00	108%	(20-150)	--	--	03/03/09 11:44	
Butyl benzyl phthalate	"	4.09	0.526	1.00	"	"	--	"	102%	"	--	--	"	
Di-n-butyl phthalate	"	5.21	0.526	1.00	"	"	--	"	130%	"	--	--	"	
Di-n-octyl phthalate	"	2.78	0.526	1.00	"	"	--	"	69.5%	"	--	--	"	
Diethyl phthalate	"	4.23	0.526	1.00	"	"	--	"	106%	"	--	--	"	
Dimethyl phthalate	"	3.74	0.526	1.00	"	"	--	"	93.4%	"	--	--	"	
Acenaphthene	"	2.64	0.0200	0.0200	"	"	--	2.50	105%	(35-120)	--	--	03/02/09 15:15	
Acenaphthylene	"	2.49	0.0200	0.0200	"	"	--	"	99.8%	(34-116)	--	--	"	
Anthracene	"	2.62	0.0200	0.0200	"	"	--	"	105%	(24-119)	--	--	"	
Benzo (a) anthracene	"	2.85	0.0100	0.0100	"	"	--	"	114%	(36-128)	--	--	"	
Benzo (a) pyrene	"	2.82	0.0100	0.0100	"	"	--	"	113%	(17-128)	--	--	"	
Benzo (b) fluoranthene	"	2.88	0.0100	0.0100	"	"	--	"	115%	(37-131)	--	--	"	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
03/17/09 21:08

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

TestAmerica Portland

QC Batch: 9020785

Water Preparation Method: 3520B Liq-Liq

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
LCS (9020785-BS1)										Extracted: 02/25/09 13:00				
Benzo (ghi) perylene	EPA 8270m	2.50	0.0200	0.0200	ug/l	1x	--	2.50	99.8%	(26-126)	--	--	03/02/09 15:15	
Benzo (k) fluoranthene	"	2.59	0.0100	0.0100	"	"	--	"	104%	(18-145)	--	--	"	
Chrysene	"	3.14	0.0100	0.0100	"	"	--	"	126%	(16-137)	--	--	"	
Dibenzo (a,h) anthracene	"	2.76	0.0100	0.0100	"	"	--	"	110%	(20-141)	--	--	"	
Fluoranthene	"	2.86	0.0200	0.0200	"	"	--	"	115%	(31-125)	--	--	"	
Fluorene	"	2.64	0.0200	0.0200	"	"	--	"	106%	(27-124)	--	--	"	
Indeno (1,2,3-cd) pyrene	"	2.71	0.0100	0.0100	"	"	--	"	108%	(30-135)	--	--	"	
Naphthalene	"	2.82	0.0200	0.0200	"	"	--	"	113%	(30-113)	--	--	"	
Phenanthrene	"	2.65	0.0200	0.0200	"	"	--	"	106%	(34-126)	--	--	"	
Pyrene	"	2.62	0.0200	0.0200	"	"	--	"	105%	(21-141)	--	--	"	
Surrogate(s): Fluorene-d10	Recovery:	116%	Limits:	25-125%	"								03/02/09 15:15	
Pyrene-d10		115%		23-150%	"								"	
Benzo (a) pyrene-d12		117%		10-125%	"								"	

Matrix Spike (9020785-MS1)

QC Source: PSB0693-11

Extracted: 02/25/09 13:00

Bis(2-ethylhexyl)phthalate	EPA 8270m	6.44	2.58	4.90	ug/l	5x	2.77	3.92	93.7%	(10-150)	--	--	03/03/09 12:21	
Butyl benzyl phthalate	"	4.81	2.58	4.90	"	"	0.709	"	105%	"	--	--	"	J
Di-n-butyl phthalate	"	4.57	2.58	4.90	"	"	ND	"	116%	"	--	--	"	J
Di-n-octyl phthalate	"	4.54	2.58	4.90	"	"	ND	"	116%	"	--	--	"	J
Diethyl phthalate	"	3.72	2.58	4.90	"	"	ND	"	94.7%	"	--	--	"	J
Dimethyl phthalate	"	3.05	2.58	4.90	"	"	ND	"	77.9%	"	--	--	"	J
Acenaphthene	"	1.54	0.0980	0.0980	"	"	ND	2.45	62.6%	(35-120)	--	--	03/02/09 17:52	
Acenaphthylene	"	1.56	0.0980	0.0980	"	"	ND	"	63.5%	(34-116)	--	--	"	
Anthracene	"	1.13	0.0980	0.0980	"	"	0.0318	"	44.7%	(24-119)	--	--	"	
Benzo (a) anthracene	"	0.740	0.0490	0.0490	"	"	0.0417	"	28.5%	(22-129)	--	--	"	
Benzo (a) pyrene	"	0.569	0.0490	0.0490	"	"	0.0350	"	21.8%	(4-112)	--	--	"	
Benzo (b) fluoranthene	"	0.691	0.0490	0.0490	"	"	0.0609	"	25.7%	(0-136)	--	--	"	
Benzo (ghi) perylene	"	0.464	0.0980	0.0980	"	"	0.0569	"	16.6%	(0-126)	--	--	"	
Benzo (k) fluoranthene	"	0.549	0.0490	0.0490	"	"	0.0419	"	20.7%	(0-145)	--	--	"	
Chrysene	"	0.869	0.0490	0.0490	"	"	0.110	"	31.0%	(7-137)	--	--	"	
Dibenzo (a,h) anthracene	"	0.464	0.0490	0.0490	"	"	0.0105	"	18.5%	(0-141)	--	--	"	
Fluoranthene	"	1.36	0.0980	0.0980	"	"	0.366	"	40.4%	(30-125)	--	--	"	
Fluorene	"	1.52	0.0980	0.0980	"	"	0.0252	"	61.0%	(27-124)	--	--	"	
Indeno (1,2,3-cd) pyrene	"	0.460	0.0490	0.0490	"	"	0.0304	"	17.5%	(0-135)	--	--	"	
Naphthalene	"	1.91	0.0980	0.0980	"	"	0.105	"	73.7%	(30-126)	--	--	"	
Phenanthrene	"	1.62	0.0980	0.0980	"	"	0.237	"	56.5%	(34-126)	--	--	"	
Pyrene	"	0.742	0.0980	0.0980	"	"	0.143	"	24.4%	(14-168)	--	--	"	
Surrogate(s): Fluorene-d10	Recovery:	71.0%	Limits:	25-125%	"								03/02/09 17:52	
Pyrene-d10		38.9%		23-150%	"								"	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
03/17/09 21:08

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

TestAmerica Portland

QC Batch: 9020785

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 (9020785-MS1)

QC Source: PSB0693-11

Extracted: 02/25/09 13:00

Surrogate(s): Benzo (a) pyrene-d12

Recovery: 57.2%

Limits: 10-125% 5x

03/02/09 17:52

Matrix Spike Dup (9020785-MSD1)

QC Source: PSB0693-11

Extracted: 02/25/09 13:00

Bis(2-ethylhexyl)phthalate	EPA 8270m	6.84	2.58	4.90	ug/l	5x	2.77	3.92	104%	(10-150)	10.3% (50)	03/03/09 12:57	
Butyl benzyl phthalate	"	4.98	2.58	4.90	"	"	0.709	"	109%	"	4.16% "	"	
Di-n-butyl phthalate	"	4.93	2.58	4.90	"	"	ND	"	126%	"	7.61% "	"	
Di-n-octyl phthalate	"	4.68	2.58	4.90	"	"	ND	"	119%	"	3.07% "	"	J
Diethyl phthalate	"	4.07	2.58	4.90	"	"	ND	"	104%	"	9.17% "	"	J
Dimethyl phthalate	"	3.29	2.58	4.90	"	"	ND	"	83.9%	"	7.41% "	"	J
Acenaphthene	"	1.69	0.0980	0.0980	"	"	ND	2.45	69.0%	(35-120)	9.60% (45)	03/02/09 18:26	
Acenaphthylene	"	1.71	0.0980	0.0980	"	"	ND	"	69.9%	(34-116)	9.62% "	"	
Anthracene	"	1.33	0.0980	0.0980	"	"	0.0318	"	52.8%	(24-119)	16.6% "	"	
Benzo (a) anthracene	"	0.882	0.0490	0.0490	"	"	0.0417	"	34.3%	(22-129)	18.5% "	"	
Benzo (a) pyrene	"	0.700	0.0490	0.0490	"	"	0.0350	"	27.1%	(4-112)	21.8% "	"	
Benzo (b) fluoranthene	"	0.740	0.0490	0.0490	"	"	0.0609	"	27.7%	(0-136)	7.45% "	"	
Benzo (ghi) perylene	"	0.576	0.0980	0.0980	"	"	0.0569	"	21.2%	(0-126)	24.2% "	"	
Benzo (k) fluoranthene	"	0.653	0.0490	0.0490	"	"	0.0419	"	25.0%	(0-145)	18.7% "	"	
Chrysene	"	1.02	0.0490	0.0490	"	"	0.110	"	37.0%	(7-137)	17.6% "	"	
Dibenzo (a,h) anthracene	"	0.581	0.0490	0.0490	"	"	0.0105	"	23.3%	(0-141)	22.9% "	"	
Fluoranthene	"	1.27	0.0980	0.0980	"	"	0.366	"	36.9%	(30-125)	8.92% "	"	
Fluorene	"	1.70	0.0980	0.0980	"	"	0.0252	"	68.4%	(27-124)	11.4% "	"	
Indeno (1,2,3-cd) pyrene	"	0.585	0.0490	0.0490	"	"	0.0304	"	22.6%	(0-135)	25.2% "	"	
Naphthalene	"	2.02	0.0980	0.0980	"	"	0.105	"	77.9%	(30-126)	5.54% "	"	
Phenanthrene	"	1.83	0.0980	0.0980	"	"	0.237	"	64.9%	(34-126)	13.9% "	"	
Pyrene	"	0.890	0.0980	0.0980	"	"	0.143	"	30.5%	(14-168)	22.0% "	"	

Surrogate(s): Fluorene-d10

Recovery: 78.1%

Limits: 25-125% "

03/02/09 18:26

Pyrene-d10

46.4%

23-150% "

"

Benzo (a) pyrene-d12

74.0%

10-125% "

"

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name:

Portland Harbor

Project Number:

36238

Project Manager:

Jennifer Shackelford

Report Created:

03/17/09 21:08

Notes and Definitions

Report Specific Notes:

- J - Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.
- RL1 - Reporting limit raised due to sample matrix effects.
- RL3 - Reporting limit raised due to high concentrations of non-target analytes.

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

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244
11922 E. First Ave, Spokane, WA 99206-5302
9405 SW Nimbus Ave. Beaverton, OR 97008-7145
2000 W International Airport Rd Ste A10, Anchorage, AK 99502 1119

425-420-9200 FAX 420-9210
509-924-9200 FAX 924-9290
503-906-9200 FAX 906-9210
907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #: **PSB0692**

CLIENT: City of Portland		INVOICE TO: Charles Lytle		TURNAROUND REQUEST in Business Days * Organic & Inorganic Analyses <input checked="" type="checkbox"/> 7 <input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> <1 STD. Petroleum Hydrocarbon Analyses <input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> <1 OTHER Specify: * Turnaround Requests less than standard may incur Rush Charges.			
REPORT TO: Jennifer Shackelford		P.O. NUMBER: 36238					
PHONE: FAX:		PRESERVATIVE					
PROJECT NAME: Portland Harbor		PROJECT NUMBER:		REQUESTED ANALYSES			
SAMPLED BY: Stormwater Samp							
CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	PCBs - 209	PAH + PAHs				
1 F0095216	2/23/09 1442	X	X				W 2
2 F0095217	1410	X	X				W 2
3 F0095218	1518	X	X				W 2
4 F0095219	1358	X	X				W 2
5 F0095220	1428	X	X				W 2 (*)
6 F0095221	1455	X	X				W 2
7 F0095222	1530	X	X				W 2
8 F0095223	—	X					W 18 Kew
9							
10							
RELEASED BY: Kristen White		DATE: 2/24/09		RECEIVED BY: Bob F		DATE: 2/24/09	
PRINT NAME: Kristen White		FIRM: City of Portland		PRINT NAME: Bob F		FIRM: TAP	
RELEASED BY: Bob F		DATE: 2/24/09		RECEIVED BY: Jenica Moy		DATE: 2/24/09	
PRINT NAME: Bob F		FIRM: TAP		PRINT NAME: Jenica Moy		FIRM: TAP	
ADDITIONAL REMARKS:		TEMP:		PAGE		OF	

(*) Please use custom UIC list w/ low MKIs. Thanks.
 (***) Please use labelled bottle for PCB analysis. Thanks.
 (marked "PCB" on cap)

TestAmerica Sample Receipt Checklist

Received by:

Unpacked by:

Logged-in by:

Work Order No.

(section A)

(section B)

Date: 2/24/09

Date: 2/24/09

Date: 2/24/09

Time: 1455

Initials: pm

Initials: pm

Initials: pm

Client: COFP

Project: Portland Harbor

Temperature out of range:

***ESI Clients (see Section C)

Cooler Temperature (IR): 3.6, 5.1, 2.3, 4.8, 1.2, 4.1 °C plastic glass NA (oil/air samples, ESI client)

Digi #1

Digi #2

Temperature Blank: °C

Not enough Ice
No Ice
Ice Melted
W/in 4 Hours
Other:

A

Custody Seals: (#)

Signature: Y N Dated:

V None

Received from:

V TA Courier

Senvoy

UPS

Fed Ex

Client

TDP

DHL

SDS

Mid-Valley

GS/TA

GS/Senvoy

Other:

Container Type:

6 #Cooler(s)

#Box(s)

None (#Other:)

Coolant Type:

Gel Ice

V Loose Ice

None

Packing Material:

Bubble Bags

Styrofoam Cubbies

Peanuts

V None (#Other:)

B

Sample Status:
(If N circled, see NOD)

General:

Intact?

Y N

Containers Match COC?

Y N none given

IDs Match COC?

Y N

For Analyses Requested:

Cyanide Checked?

Y N NA

Correct Type & Preservation?

Y N

Adequate Volume?

Y N

Within Hold Time?

Y N

HF Dilution Required?

Y N

Volatiles/ Oil Quality:

VOAs/ Syringes free of Headspace?

Y N NA

TB on COC? not provided

Y N NA

Metals:

HNO3 Preserved?

Y N NA

Dissolved Metals Filtered?

Y N NA

C

***ESI Clients Only:

Temperature Blank: °C not provided Digi: #1 #2

All preserved bottles checked Y N NA (voas/soils/all unp.)

All preserved accordingly? Y N (see NOD) NA (voas/soils/all unp.)

FED EX/ UPS: Was the tracking paper keepable? YES NO

If circled NO, what is the Tracking number?

FED EX Goldstreak UPS DHL Other:

Project Managers:

Comments:

PM Reviewed: (Initial/Date)

Report Prepared for:

Howard Holmes
Test America
9405 SW Nimbus Avenue
Beaverton OR 97008

**REPORT OF
LABORATORY
ANALYSIS
FOR PCBs**

Report Information:

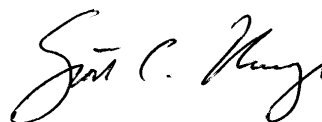
Pace Project #: 1090080
Sample Receipt Date: 02/26/2009
Client Project #: PSB0692
Client Sub PO #: N/A
State Cert #: MN200001-005

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 and prepared by:



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

Report Prepared Date:

March 13, 2009



Report of Laboratory Analysis

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.

DISCUSSION

This report presents the results from the analyses performed on eight samples submitted by a representative of Test America - Portland. The samples were analyzed for the presence or absence of polychlorinated biphenyl (PCB) congeners using USEPA Method 1668A. Reporting limits were set to approximately 0.5 parts-per-trillion and were adjusted for sample volume.

The isotopically-labeled PCB internal standards in the sample extracts were recovered at 34-131%. 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 isotope dilution, 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 analytical process did not introduce significant levels of PCB congeners to the sample extracts.

Laboratory spike samples were also prepared with the sample batch using reference material that had been fortified with native standards. The results show that the spiked native compounds in the lab spikes were recovered at 98-113% with relative percent differences of 0.0-8.5%. These results indicate high degrees of accuracy and precision for these determinations. Matrix spikes were not prepared with the sample set.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Appendix A

Sample Management

SUBCONTRACT ORDER

TestAmerica Portland

PSB0692

1090080

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: 4.2 °C

Ice: (Y) N

needs Excel EDD

Analysis	Units	Due	Expires	Comments
Sample ID: PSB0692-01	Water		Sampled: 02/23/09 14:42	
1668 Coplanar PCBs - SUB	ug/l	03/17/09	08/22/09 14:42	***209 Congeners*** to Pace
Containers Supplied:				FO 095216
1L Amber - Unpres. (A)				
Sample ID: PSB0692-02	Water		Sampled: 02/23/09 14:10	
1668 Coplanar PCBs - SUB	ug/l	03/17/09	08/22/09 14:10	***209 Congeners*** to Pace
Containers Supplied:				FO 095217
1L Amber - Unpres. (A)				
Sample ID: PSB0692-03	Water		Sampled: 02/23/09 15:18	
1668 Coplanar PCBs - SUB	ug/l	03/17/09	08/22/09 15:18	***209 Congeners*** to Pace
Containers Supplied:				FO 095218
1L Amber - Unpres. (A)				
Sample ID: PSB0692-04	Water		Sampled: 02/23/09 13:58	
1668 Coplanar PCBs - SUB	ug/l	03/17/09	08/22/09 13:58	***209 Congeners*** to Pace
Containers Supplied:				FO 095219
1L Amber - Unpres. (A)				
Sample ID: PSB0692-05	Water		Sampled: 02/23/09 14:28	
1668 Coplanar PCBs - SUB	ug/l	03/17/09	08/22/09 14:28	***209 Congeners*** to Pace
Containers Supplied:				FO 095220
1L Amber - Unpres. (A)				
Sample ID: PSB0692-06	Water		Sampled: 02/23/09 14:55	
1668 Coplanar PCBs - SUB	ug/l	03/17/09	08/22/09 14:55	***209 Congeners*** to Pace
Containers Supplied:				FO 095221
1L Amber - Unpres. (A)				

Jessica Moyz
Released By

2/25/09
Date/Time

Received By

Date/Time

Received By

Date/Time

Report No.....1090080_1668A

2/26/09 09:12

Page 4 of 2

SUBCONTRACT ORDER

TestAmerica Portland

PSB0692

1090080

Analysis	Units	Due	Expires	Comments
Sample ID: PSB0692-07				
Water			Sampled: 02/23/09 15:30	
1668 Coplanar PCBs - SUB	ug/l	03/17/09	08/22/09 15:30	***209 Congeners*** to Pace
Containers Supplied:				Fo 095222
1L Amber - Unpres. (A)				
Sample ID: PSB0692-08				
Water			Sampled: 02/23/09 00:00	
1668 Coplanar PCBs - SUB	ug/l	03/17/09	08/22/09 00:00	***209 Congeners*** to Pace
Containers Supplied:				Fo 095223
1L Amber - Unpres. (A)				

Sample Condition Upon Receipt

Pace Analytical

Client Name: TEST AMERICA

Project # 1090080

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

Tracking #: 9796 8712 1361

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, 179425

Type of Ice: Wet Blue None

☐ Samples on ice, cooling process has begun

Cooler Temperature 4.2°C

Biological Tissue is Frozen: Yes No

Date and initials of person examining contents: 2/26/09

Temp should be above freezing to 6°C

Comments:

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix:		
All containers needing acid/base preservation have been checked. Noncompliance are noted in 13.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Exceptions: VOA, Colliform, TOC, Oil and Grease, WI-DRO (water)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
		Lot # of added preservative
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> 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: 02/27/09

Appendix B

Sample Analysis Summary

Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PSB0692-06;FO 095221		
Lab Sample ID	1090080006		
Filename	P90312B_10		
Injected By	BAL		
Total Amount Extracted	1000 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	02/23/2009
ICAL ID	P90312B01	Received	02/26/2009
CCal Filename(s)	P90312B_02	Extracted	02/27/2009
Method Blank ID	BLANK-19082	Analyzed	03/13/2009 09:28

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	6.635	2.83	2.0	0.685	34
13C-4-MoCB	3	9.522	3.07	2.0	1.14	57
13C-2,2'-DiCB	4	9.834	1.63	2.0	1.24	62
13C-4,4'-DiCB	15	17.658	1.49	2.0	1.40	70
13C-2,2',6-TrCB	19	14.039	1.08	2.0	1.67	84
13C-3,4,4'-TrCB	37	25.957	1.01	2.0	1.61	80
13C-2,2',6,6'-TeCB	54	17.958	0.80	2.0	1.56	78
13C-3,4,4',5-TeCB	81	33.336	0.74	2.0	1.67	84
13C-3,3',4,4'-TeCB	77	33.939	0.80	2.0	1.76	88
13C-2,2',4,6,6'-PeCB	104	24.515	1.60	2.0	1.80	90
13C-2,3,3',4,4'-PeCB	105	37.595	1.51	2.0	1.53	76
13C-2,3,4,4',5-PeCB	114	36.941	1.55	2.0	1.51	75
13C-2,3',4,4',5-PeCB	118	36.405	1.51	2.0	1.56	78
13C-2,3',4,4',5'-PeCB	123	36.069	1.56	2.0	1.60	80
13C-3,3',4,4',5-PeCB	126	40.849	1.52	2.0	1.40	70
13C-2,2',4,4',6,6'-HxCB	155	30.854	1.29	2.0	2.16	108
13C-HxCB (156/157)	156/157	43.935	1.22	4.0	3.22	81
13C-2,3',4,4',5,5'-HxCB	167	42.777	1.18	2.0	1.66	83
13C-3,3',4,4',5,5'-HxCB	169	47.305	1.23	2.0	1.51	75
13C-2,2',3,4',5,6,6'-HpCB	188	36.908	1.05	2.0	2.62	131
13C-2,3,3',4,4',5,5'-HpCB	189	49.849	1.05	2.0	2.00	100
13C-2,2',3,3',5,5',6,6'-OxCB	202	42.459	0.86	2.0	2.32	116
13C-2,3,3',4,4',5,5',6-OxCB	205	52.436	0.90	2.0	1.58	79
13C-2,2',3,3',4,4',5,5',6-NoCB	206	54.160	0.80	2.0	1.66	83
13C-2,2',3,3',4,4',5,5',6-NoCB	208	49.267	0.80	2.0	1.81	91
13C--DeCB	209	55.734	0.72	2.0	1.55	78
Cleanup Standards						
13C-2,4,4'-TrCB	28	21.362	0.99	2.0	1.78	89
13C-2,3,3',5,5'-PeCB	111	34.040	1.67	2.0	1.68	84
13C-2,2',3,3',5,5',6-HpCB	178	40.111	1.04	2.0	1.84	92
Recovery Standards						
13C-2,5-DiCB	9	12.589	1.54	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	23.492	0.79	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	31.122	1.56	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	39.625	1.27	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	51.940	0.88	2.0	NA	NA

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
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P = Recovery outside of Method 1668A control limits
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REPORT OF LABORATORY ANALYSIS

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Pace AnalyticalTM

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 PSB0692-06;FO 095221
Lab Sample ID 1090080006
Filename P90312B_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.249
2		---	---	ND	---	0.249
3		---	---	ND	---	0.249
4		---	---	ND	---	0.249
5		---	---	ND	---	0.249
6		---	---	ND	---	0.249
7		---	---	ND	---	0.249
8		13.716	1.56	0.364	---	0.249
9		---	---	ND	---	0.249
10		---	---	ND	---	0.249
11		16.927	1.45	2.93	---	1.49
12	12/13	---	---	ND	---	0.498
13	12/13	---	---	ND	---	0.498
14		---	---	ND	---	0.249
15		---	---	ND	---	0.249
16		17.575	0.97	0.250	---	0.249
17		17.035	0.96	0.269	---	0.249
18	18/30	16.520	1.08	0.530	---	0.498
19		---	---	ND	---	0.249
20	20/28	21.379	0.97	0.916	---	0.498
21	21/33	21.647	1.00	0.522	---	0.498
22		22.100	1.02	0.399	---	0.249
23		---	---	ND	---	0.249
24		---	---	ND	---	0.249
25		---	---	ND	---	0.249
26	26/29	---	---	ND	---	0.498
27		---	---	ND	---	0.249
28	20/28	21.379	0.97	(0.916)	---	0.498
29	26/29	---	---	ND	---	0.498
30	18/30	16.520	1.08	(0.530)	---	0.498
31		21.044	0.96	0.775	---	0.249
32		---	---	ND	---	0.249
33	21/33	21.647	1.00	(0.522)	---	0.498
34		---	---	ND	---	0.249
35		---	---	ND	---	0.249
36		---	---	ND	---	0.249
37		25.974	1.01	0.284	---	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	---	0.498
43		---	---	ND	---	0.498
44	44/47/65	---	---	ND	---	1.49
45	45/51	---	---	ND	---	0.997
46		---	---	ND	---	0.498
47	44/47/65	---	---	ND	---	1.49
48		---	---	ND	---	0.498

Conc = Concentration
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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 PSB0692-06;FO 095221
Lab Sample ID 1090080006
Filename P90312B_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69	---	---	ND	---	0.997
50	50/53	---	---	ND	---	0.997
51	45/51	---	---	ND	---	0.997
52		23.525	0.80	1.22	---	0.498
53	50/53	---	---	ND	---	0.997
54		---	---	ND	---	0.498
55		---	---	ND	---	0.498
56		---	---	ND	---	0.498
57		---	---	ND	---	0.498
58		---	---	ND	---	0.498
59	59/62/75	---	---	ND	---	1.49
60		---	---	ND	---	0.498
61	61/70/74/76	---	---	ND	---	1.99
62	59/62/75	---	---	ND	---	1.49
63		---	---	ND	---	0.498
64		---	---	ND	---	0.498
65	44/47/65	---	---	ND	---	1.49
66		29.244	0.75	0.862	---	0.498
67		---	---	ND	---	0.498
68		---	---	ND	---	0.498
69	49/69	---	---	ND	---	0.997
70	61/70/74/76	---	---	ND	---	1.99
71	40/41/71	---	---	ND	---	1.49
72		---	---	ND	---	0.498
73		---	---	ND	---	0.498
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	---	0.498
78		---	---	ND	---	0.498
79		---	---	ND	---	0.498
80		---	---	ND	---	0.498
81		---	---	ND	---	0.498
82		---	---	ND	---	0.498
83		---	---	ND	---	0.498
84		29.043	1.62	0.516	---	0.498
85	85/116/117	---	---	ND	---	1.49
86	86/87/97/108/119/125	---	---	ND	---	2.99
87	86/87/97/108/119/125	---	---	ND	---	2.99
88	88/91	---	---	ND	---	0.997
89		---	---	ND	---	0.498
90	90/101/113	31.156	1.61	2.08	---	1.49
91	88/91	---	---	ND	---	0.997
92		---	---	ND	---	0.498
93	93/98/100/102	---	---	ND	---	1.99
94		---	---	ND	---	0.498
95		27.886	1.54	1.66	---	0.498
96		---	---	ND	---	0.498

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PSB0692-06;FO 095221
Lab Sample ID 1090080006
Filename P90312B_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
97	86/87/97/108/119/125	---	---	ND	---	2.99
98	93/98/100/102	---	---	ND	---	1.99
99		31.759	1.60	0.646	---	0.498
100	93/98/100/102	---	---	ND	---	1.99
101	90/101/113	31.156	1.61	(2.08)	---	1.49
102	93/98/100/102	---	---	ND	---	1.99
103		---	---	ND	---	0.498
104		---	---	ND	---	0.498
105		37.629	1.54	0.765	---	0.498
106		---	---	ND	---	0.498
107	107/124	---	---	ND	---	0.997
108	86/87/97/108/119/125	---	---	ND	---	2.99
109		---	---	ND	---	0.498
110	110/115	33.218	1.56	2.26	---	0.997
111		---	---	ND	---	0.498
112		---	---	ND	---	0.498
113	90/101/113	31.156	1.61	(2.08)	---	1.49
114		---	---	ND	---	0.498
115	110/115	33.218	1.56	(2.26)	---	0.997
116	85/116/117	---	---	ND	---	1.49
117	85/116/117	---	---	ND	---	1.49
118		36.438	1.52	1.67	---	0.498
119	86/87/97/108/119/125	---	---	ND	---	2.99
120		---	---	ND	---	0.498
121		---	---	ND	---	0.498
122		---	---	ND	---	0.498
123		---	---	ND	---	0.498
124	107/124	---	---	ND	---	0.997
125	86/87/97/108/119/125	---	---	ND	---	2.99
126		---	---	ND	---	0.498
127		---	---	ND	---	0.498
128	128/166	---	---	ND	---	0.997
129	129/138/163	39.658	1.23	3.19	---	1.49
130		---	---	ND	---	0.498
131		---	---	ND	---	0.498
132		36.455	1.29	1.09	---	0.498
133		---	---	ND	---	0.498
134	134/143	---	---	ND	---	0.997
135	135/151	---	---	ND	---	0.997
136		---	---	ND	---	0.498
137		---	---	ND	---	0.498
138	129/138/163	39.658	1.23	(3.19)	---	1.49
139	139/140	---	---	ND	---	0.997
140	139/140	---	---	ND	---	0.997
141		38.568	1.38	0.521	---	0.498
142		---	---	ND	---	0.498
143	134/143	---	---	ND	---	0.997
144		---	---	ND	---	0.498

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSB0692-06;FO 095221
Lab Sample ID 1090080006
Filename P90312B_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
145		---	---	ND	---	0.498
146		---	---	ND	---	0.498
147	147/149	35.181	1.23	2.34	---	0.997
148		---	---	ND	---	0.498
149	147/149	35.181	1.23	(2.34)	---	0.997
150		---	---	ND	---	0.498
151	135/151	---	---	ND	---	0.997
152		---	---	ND	---	0.498
153	153/168	38.400	1.23	2.57	---	0.997
154		---	---	ND	---	0.498
155		---	---	ND	---	0.498
156	156/157	---	---	ND	---	0.997
157	156/157	---	---	ND	---	0.997
158		---	---	ND	---	0.498
159		---	---	ND	---	0.498
160		---	---	ND	---	0.498
161		---	---	ND	---	0.498
162		---	---	ND	---	0.498
163	129/138/163	39.658	1.23	(3.19)	---	1.49
164		---	---	ND	---	0.498
165		---	---	ND	---	0.498
166	128/166	---	---	ND	---	0.997
167		---	---	ND	---	0.498
168	153/168	38.400	1.23	(2.57)	---	0.997
169		---	---	ND	---	0.498
170		46.635	1.04	0.859	---	0.498
171	171/173	---	---	ND	---	0.997
172		---	---	ND	---	0.498
173	171/173	---	---	ND	---	0.997
174		41.905	1.02	1.02	---	0.498
175		---	---	ND	---	0.498
176		---	---	ND	---	0.498
177		42.358	1.17	0.535	---	0.498
178		---	---	ND	---	0.498
179		---	---	ND	---	0.498
180	180/193	45.394	0.99	1.96	---	0.997
181		---	---	ND	---	0.498
182		---	---	ND	---	0.498
183	183/185	---	---	ND	---	0.997
184		---	---	ND	---	0.498
185	183/185	---	---	ND	---	0.997
186		---	---	ND	---	0.498
187		41.067	0.99	1.04	---	0.498
188		---	---	ND	---	0.498
189		---	---	ND	---	0.498
190		---	---	ND	---	0.498
191		---	---	ND	---	0.498
192		---	---	ND	---	0.498

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSB0692-06;FO 095221
Lab Sample ID 1090080006
Filename P90312B_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193	45.394	0.99	(1.96)	---	0.997
194		---	---	ND	---	0.747
195		---	---	ND	---	0.747
196		---	---	ND	---	0.747
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	---	0.747
202		---	---	ND	---	0.747
203		---	---	ND	---	0.747
204		---	---	ND	---	0.747
205		---	---	ND	---	0.747
206		---	---	ND	---	0.747
207		---	---	ND	---	0.747
208		---	---	ND	---	0.747
209		---	---	ND	---	0.747

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
P = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

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

REPORT OF LABORATORY ANALYSIS

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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 PSB0692-06;FO 095221
Lab Sample ID 1090080006
Filename P90312B_10

Congener Group	Concentration ng/L
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	3.29
Total Trichloro Biphenyls	3.94
Total Tetrachloro Biphenyls	2.08
Total Pentachloro Biphenyls	9.60
Total Hexachloro Biphenyls	9.71
Total Heptachloro Biphenyls	5.42
Total Octachloro Biphenyls	ND
Total Nonachloro Biphenyls	ND
Decachloro Biphenyls	ND
 Total PCBs	 34.1

ND = Not Detected

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PSB0692-07;FO 095222		
Lab Sample ID	1090080007		
Filename	P90312B_11		
Injected By	BAL		
Total Amount Extracted	987 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	02/23/2009
ICAL ID	P90312B01	Received	02/26/2009
CCal Filename(s)	P90312B_02	Extracted	02/27/2009
Method Blank ID	BLANK-19082	Analyzed	03/13/2009 10:29

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	6.647	2.83	2.0	1.24	62
13C-4-MoCB	3	9.534	2.69	2.0	1.25	63
13C-2,2'-DiCB	4	9.846	1.64	2.0	1.47	74
13C-4,4'-DiCB	15	17.669	1.53	2.0	0.945	47
13C-2,2',6-TrCB	19	14.051	1.04	2.0	1.42	71
13C-3,4,4'-TrCB	37	25.954	1.04	2.0	1.30	65
13C-2,2',6,6'-TeCB	54	17.957	0.76	2.0	1.10	55
13C-3,4,4',5-TeCB	81	33.298	0.78	2.0	1.39	70
13C-3,3',4,4'-TeCB	77	33.885	0.74	2.0	1.54	77
13C-2,2',4,6,6'-PeCB	104	24.512	1.57	2.0	1.27	64
13C-2,3,3',4,4'-PeCB	105	37.524	1.56	2.0	1.36	68
13C-2,3,4,4',5-PeCB	114	36.870	1.49	2.0	1.24	62
13C-2,3',4,4',5-PeCB	118	36.333	1.55	2.0	1.35	67
13C-2,3',4,4',5'-PeCB	123	35.998	1.52	2.0	1.35	67
13C-3,3',4,4',5-PeCB	126	40.743	1.50	2.0	1.28	64
13C-2,2',4,4',6,6'-HxCB	155	30.817	1.30	2.0	1.74	87
13C-HxCB (156/157)	156/157	43.811	1.25	4.0	2.92	73
13C-2,3',4,4',5,5'-HxCB	167	42.671	1.20	2.0	1.51	75
13C-3,3',4,4',5,5'-HxCB	169	47.148	1.27	2.0	1.43	71
13C-2,2',3,4',5,6,6'-HpCB	188	36.836	1.06	2.0	2.27	114
13C-2,3,3',4,4',5,5'-HpCB	189	49.670	1.04	2.0	1.75	87
13C-2,2',3,3',5,5',6,6'-OxCB	202	42.352	0.91	2.0	2.04	102
13C-2,3,3',4,4',5,5',6-OxCB	205	52.256	0.89	2.0	1.54	77
13C-2,2',3,3',4,4',5,5',6-NoCB	206	53.980	0.81	2.0	1.49	74
13C-2,2',3,3',4,4',5,5',6-NoCB	208	49.131	0.80	2.0	1.68	84
13C--DeCB	209	55.554	0.73	2.0	1.47	74
Cleanup Standards						
13C-2,4,4'-TrCB	28	21.360	0.97	2.0	1.33	66
13C-2,3,3',5,5'-PeCB	111	33.986	1.63	2.0	1.54	77
13C-2,2',3,3',5,5',6-HpCB	178	40.022	1.06	2.0	1.86	93
Recovery Standards						
13C-2,5-DiCB	9	12.601	1.53	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	23.490	0.83	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	31.085	1.64	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	39.536	1.22	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	51.782	0.88	2.0	NA	NA

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
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Nn = Value obtained from additional analyses

ND = Not Detected
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Minneapolis, MN 55414

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

**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSB0692-07;FO 095222
Lab Sample ID 1090080007
Filename P90312B_11

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	---	0.507
13	12/13	---	---	ND	---	0.507
14		---	---	ND	---	0.253
15		---	---	ND	---	0.253
16		---	---	ND	---	0.253
17		---	---	ND	---	0.253
18	18/30	---	---	ND	---	0.507
19		---	---	ND	---	0.253
20	20/28	---	---	ND	---	0.507
21	21/33	---	---	ND	---	0.507
22		---	---	ND	---	0.253
23		---	---	ND	---	0.253
24		---	---	ND	---	0.253
25		---	---	ND	---	0.253
26	26/29	---	---	ND	---	0.507
27		---	---	ND	---	0.253
28	20/28	---	---	ND	---	0.507
29	26/29	---	---	ND	---	0.507
30	18/30	---	---	ND	---	0.507
31		---	---	ND	---	0.253
32		---	---	ND	---	0.253
33	21/33	---	---	ND	---	0.507
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	---	0.507
43		---	---	ND	---	0.507
44	44/47/65	---	---	ND	---	1.52
45	45/51	---	---	ND	---	1.01
46		---	---	ND	---	0.507
47	44/47/65	---	---	ND	---	1.52
48		---	---	ND	---	0.507

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
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P = Recovery outside of Method 1668A control limits
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSB0692-07;FO 095222
Lab Sample ID 1090080007
Filename P90312B_11

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	---	0.507
53	50/53	---	---	ND	---	1.01
54		---	---	ND	---	0.507
55		---	---	ND	---	0.507
56		---	---	ND	---	0.507
57		---	---	ND	---	0.507
58		---	---	ND	---	0.507
59	59/62/75	---	---	ND	---	1.52
60		---	---	ND	---	0.507
61	61/70/74/76	---	---	ND	---	2.03
62	59/62/75	---	---	ND	---	1.52
63		---	---	ND	---	0.507
64		---	---	ND	---	0.507
65	44/47/65	---	---	ND	---	1.52
66		---	---	ND	---	0.507
67		---	---	ND	---	0.507
68		---	---	ND	---	0.507
69	49/69	---	---	ND	---	1.01
70	61/70/74/76	---	---	ND	---	2.03
71	40/41/71	---	---	ND	---	1.52
72		---	---	ND	---	0.507
73		---	---	ND	---	0.507
74	61/70/74/76	---	---	ND	---	2.03
75	59/62/75	---	---	ND	---	1.52
76	61/70/74/76	---	---	ND	---	2.03
77		---	---	ND	---	0.507
78		---	---	ND	---	0.507
79		---	---	ND	---	0.507
80		---	---	ND	---	0.507
81		---	---	ND	---	0.507
82		---	---	ND	---	0.507
83		---	---	ND	---	0.507
84		---	---	ND	---	0.507
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	---	0.507
90	90/101/113	---	---	ND	---	1.52
91	88/91	---	---	ND	---	1.01
92		---	---	ND	---	0.507
93	93/98/100/102	---	---	ND	---	2.03
94		---	---	ND	---	0.507
95		---	---	ND	---	0.507
96		---	---	ND	---	0.507

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSB0692-07;FO 095222
Lab Sample ID 1090080007
Filename P90312B_11

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	---	2.03
99		---	---	ND	---	0.507
100	93/98/100/102	---	---	ND	---	2.03
101	90/101/113	---	---	ND	---	1.52
102	93/98/100/102	---	---	ND	---	2.03
103		---	---	ND	---	0.507
104		---	---	ND	---	0.507
105		---	---	ND	---	0.507
106		---	---	ND	---	0.507
107	107/124	---	---	ND	---	1.01
108	86/87/97/108/119/125	---	---	ND	---	3.04
109		---	---	ND	---	0.507
110	110/115	---	---	ND	---	1.01
111		---	---	ND	---	0.507
112		---	---	ND	---	0.507
113	90/101/113	---	---	ND	---	1.52
114		---	---	ND	---	0.507
115	110/115	---	---	ND	---	1.01
116	85/116/117	---	---	ND	---	1.52
117	85/116/117	---	---	ND	---	1.52
118		---	---	ND	---	0.507
119	86/87/97/108/119/125	---	---	ND	---	3.04
120		---	---	ND	---	0.507
121		---	---	ND	---	0.507
122		---	---	ND	---	0.507
123		---	---	ND	---	0.507
124	107/124	---	---	ND	---	1.01
125	86/87/97/108/119/125	---	---	ND	---	3.04
126		---	---	ND	---	0.507
127		---	---	ND	---	0.507
128	128/166	---	---	ND	---	1.01
129	129/138/163	---	---	ND	---	1.52
130		---	---	ND	---	0.507
131		---	---	ND	---	0.507
132		---	---	ND	---	0.507
133		---	---	ND	---	0.507
134	134/143	---	---	ND	---	1.01
135	135/151	---	---	ND	---	1.01
136		---	---	ND	---	0.507
137		---	---	ND	---	0.507
138	129/138/163	---	---	ND	---	1.52
139	139/140	---	---	ND	---	1.01
140	139/140	---	---	ND	---	1.01
141		---	---	ND	---	0.507
142		---	---	ND	---	0.507
143	134/143	---	---	ND	---	1.01
144		---	---	ND	---	0.507

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSB0692-07;FO 095222
Lab Sample ID 1090080007
Filename P90312B_11

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
145		---	---	ND	---	0.507
146		---	---	ND	---	0.507
147	147/149	---	---	ND	---	1.01
148		---	---	ND	---	0.507
149	147/149	---	---	ND	---	1.01
150		---	---	ND	---	0.507
151	135/151	---	---	ND	---	1.01
152		---	---	ND	---	0.507
153	153/168	---	---	ND	---	1.01
154		---	---	ND	---	0.507
155		---	---	ND	---	0.507
156	156/157	---	---	ND	---	1.01
157	156/157	---	---	ND	---	1.01
158		---	---	ND	---	0.507
159		---	---	ND	---	0.507
160		---	---	ND	---	0.507
161		---	---	ND	---	0.507
162		---	---	ND	---	0.507
163	129/138/163	---	---	ND	---	1.52
164		---	---	ND	---	0.507
165		---	---	ND	---	0.507
166	128/166	---	---	ND	---	1.01
167		---	---	ND	---	0.507
168	153/168	---	---	ND	---	1.01
169		---	---	ND	---	0.507
170		---	---	ND	---	0.507
171	171/173	---	---	ND	---	1.01
172		---	---	ND	---	0.507
173	171/173	---	---	ND	---	1.01
174		---	---	ND	---	0.507
175		---	---	ND	---	0.507
176		---	---	ND	---	0.507
177		---	---	ND	---	0.507
178		---	---	ND	---	0.507
179		---	---	ND	---	0.507
180	180/193	---	---	ND	---	1.01
181		---	---	ND	---	0.507
182		---	---	ND	---	0.507
183	183/185	---	---	ND	---	1.01
184		---	---	ND	---	0.507
185	183/185	---	---	ND	---	1.01
186		---	---	ND	---	0.507
187		---	---	ND	---	0.507
188		---	---	ND	---	0.507
189		---	---	ND	---	0.507
190		---	---	ND	---	0.507
191		---	---	ND	---	0.507
192		---	---	ND	---	0.507

Conc = Concentration
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSB0692-07;FO 095222
Lab Sample ID 1090080007
Filename P90312B_11

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193	---	---	ND	---	1.01
194		---	---	ND	---	0.760
195		---	---	ND	---	0.760
196		---	---	ND	---	0.760
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	---	0.760
202		---	---	ND	---	0.760
203		---	---	ND	---	0.760
204		---	---	ND	---	0.760
205		---	---	ND	---	0.760
206		---	---	ND	---	0.760
207		---	---	ND	---	0.760
208		---	---	ND	---	0.760
209		---	---	ND	---	0.760

Conc = Concentration
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

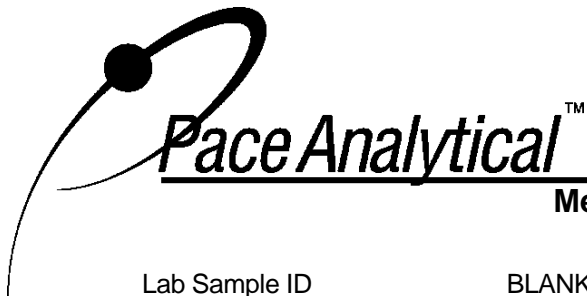
Client Sample ID PSB0692-07;FO 095222
Lab Sample ID 1090080007
Filename P90312B_11

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

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID	BLANK-19082		
Filename	P90312A_07		
Injected By	SMT	Matrix	Water
Total Amount Extracted	1900 mL	Extracted	02/27/2009
ICAL ID	P90312A03	Analyzed	03/12/2009 17:05
CCal Filename(s)	P90312A_02	Dilution	NA

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
------------	-------	----	-------	------------	------------	------------

Labeled Analytes

13C-2-MoCB	1	6.587	2.75	2.0	0.944	47
13C-4-MoCB	3	9.438	3.14	2.0	0.897	45
13C-2,2'-DiCB	4	9.750	1.59	2.0	1.05	52
13C-4,4'-DiCB	15	17.537	1.54	2.0	0.853	43
13C-2,2',6-TrCB	19	13.943	1.12	2.0	0.889	44
13C-3,4,4'-TrCB	37	25.803	1.05	2.0	0.987	49
13C-2,2',6,6'-TeCB	54	17.839	0.83	2.0	0.772	39
13C-3,4,4',5-TeCB	81	33.129	0.74	2.0	1.06	53
13C-3,3',4,4'-TeCB	77	33.733	0.74	2.0	1.22	61
13C-2,2',4,6,6'-PeCB	104	24.378	1.58	2.0	0.978	49
13C-2,3,3',4,4'-PeCB	105	37.371	1.51	2.0	1.29	64
13C-2,3,4,4',5-PeCB	114	36.701	1.48	2.0	1.27	64
13C-2,3',4,4',5-PeCB	118	36.181	1.60	2.0	1.24	62
13C-2,3',4,4',5'-PeCB	123	35.846	1.49	2.0	1.14	57
13C-3,3',4,4',5-PeCB	126	40.590	1.52	2.0	1.29	65
13C-2,2',4,4',6,6'-HxCB	155	30.682	1.34	2.0	1.14	57
13C-HxCB (156/157)	156/157	43.658	1.20	4.0	2.77	69
13C-2,3',4,4',5,5'-HxCB	167	42.502	1.24	2.0	1.34	67
13C-3,3',4,4',5,5'-HxCB	169	46.978	1.20	2.0	1.42	71
13C-2,2',3,4',5,6,6'-HpCB	188	36.701	1.09	2.0	1.35	68
13C-2,3,3',4,4',5,5'-HpCB	189	49.517	0.96	2.0	1.45	72
13C-2,2',3,3',5,5',6,6'-OxCB	202	42.217	0.90	2.0	1.39	70
13C-2,3,3',4,4',5,5',6-OxCB	205	52.081	0.89	2.0	1.40	70
13C-2,2',3,3',4,4',5,5',6-NoCB	206	53.827	0.82	2.0	1.41	70
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	48.978	0.82	2.0	1.42	71
13C--DeCB	209	55.400	0.71	2.0	1.43	72

Cleanup Standards

13C-2,4,4'-TrCB	28	21.225	0.98	2.0	1.40	70
13C-2,3,3',5,5'-PeCB	111	33.834	1.59	2.0	1.69	84
13C-2,2',3,3',5,5',6-HpCB	178	39.869	1.08	2.0	1.89	94

Recovery Standards

13C-2,5-DiCB	9	12.493	1.61	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	23.355	0.80	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	30.933	1.61	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	39.383	1.29	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	51.607	0.87	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
P = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

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

REPORT OF LABORATORY ANALYSIS

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID
Filename

BLANK-19082
P90312A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.132
2		---	---	ND	---	0.132
3		---	---	ND	---	0.132
4		---	---	ND	---	0.132
5		---	---	ND	---	0.132
6		---	---	ND	---	0.132
7		---	---	ND	---	0.132
8		---	---	ND	---	0.132
9		---	---	ND	---	0.132
10		---	---	ND	---	0.132
11		---	---	ND	---	0.790
12	12/13	---	---	ND	---	0.263
13	12/13	---	---	ND	---	0.263
14		---	---	ND	---	0.132
15		---	---	ND	---	0.132
16		---	---	ND	---	0.132
17		---	---	ND	---	0.132
18	18/30	---	---	ND	---	0.263
19		---	---	ND	---	0.132
20	20/28	---	---	ND	---	0.263
21	21/33	---	---	ND	---	0.263
22		---	---	ND	---	0.132
23		---	---	ND	---	0.132
24		---	---	ND	---	0.132
25		---	---	ND	---	0.132
26	26/29	---	---	ND	---	0.263
27		---	---	ND	---	0.132
28	20/28	---	---	ND	---	0.263
29	26/29	---	---	ND	---	0.263
30	18/30	---	---	ND	---	0.263
31		---	---	ND	---	0.132
32		---	---	ND	---	0.132
33	21/33	---	---	ND	---	0.263
34		---	---	ND	---	0.132
35		---	---	ND	---	0.132
36		---	---	ND	---	0.132
37		---	---	ND	---	0.132
38		---	---	ND	---	0.132
39		---	---	ND	---	0.132
40	40/41/71	---	---	ND	---	0.790
41	40/41/71	---	---	ND	---	0.790
42		---	---	ND	---	0.263
43		---	---	ND	---	0.263
44	44/47/65	---	---	ND	---	0.790
45	45/51	---	---	ND	---	0.527

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
P = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

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

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-19082
Filename P90312A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
46		---	---	ND	---	0.263
47	44/47/65	---	---	ND	---	0.790
48		---	---	ND	---	0.263
49	49/69	---	---	ND	---	0.527
50	50/53	---	---	ND	---	0.527
51	45/51	---	---	ND	---	0.527
52		---	---	ND	---	0.263
53	50/53	---	---	ND	---	0.527
54		---	---	ND	---	0.263
55		---	---	ND	---	0.263
56		---	---	ND	---	0.263
57		---	---	ND	---	0.263
58		---	---	ND	---	0.263
59	59/62/75	---	---	ND	---	0.790
60		---	---	ND	---	0.263
61	61/70/74/76	---	---	ND	---	1.05
62	59/62/75	---	---	ND	---	0.790
63		---	---	ND	---	0.263
64		---	---	ND	---	0.263
65	44/47/65	---	---	ND	---	0.790
66		---	---	ND	---	0.263
67		---	---	ND	---	0.263
68		---	---	ND	---	0.263
69	49/69	---	---	ND	---	0.527
70	61/70/74/76	---	---	ND	---	1.05
71	40/41/71	---	---	ND	---	0.790
72		---	---	ND	---	0.263
73		---	---	ND	---	0.263
74	61/70/74/76	---	---	ND	---	1.05
75	59/62/75	---	---	ND	---	0.790
76	61/70/74/76	---	---	ND	---	1.05
77		---	---	ND	---	0.263
78		---	---	ND	---	0.263
79		---	---	ND	---	0.263
80		---	---	ND	---	0.263
81		---	---	ND	---	0.263
82		---	---	ND	---	0.263
83		---	---	ND	---	0.263
84		---	---	ND	---	0.263
85	85/116/117	---	---	ND	---	0.790
86	86/87/97/108/119/125	---	---	ND	---	1.58
87	86/87/97/108/119/125	---	---	ND	---	1.58
88	88/91	---	---	ND	---	0.527
89		---	---	ND	---	0.263
90	90/101/113	---	---	ND	---	0.790

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
P = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-19082
Filename P90312A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
91	88/91	---	---	ND	---	0.527
92		---	---	ND	---	0.263
93	93/98/100/102	---	---	ND	---	1.05
94		---	---	ND	---	0.263
95		---	---	ND	---	0.263
96		---	---	ND	---	0.263
97	86/87/97/108/119/125	---	---	ND	---	1.58
98	93/98/100/102	---	---	ND	---	1.05
99		---	---	ND	---	0.263
100	93/98/100/102	---	---	ND	---	1.05
101	90/101/113	---	---	ND	---	0.790
102	93/98/100/102	---	---	ND	---	1.05
103		---	---	ND	---	0.263
104		---	---	ND	---	0.263
105		---	---	ND	---	0.263
106		---	---	ND	---	0.263
107	107/124	---	---	ND	---	0.527
108	86/87/97/108/119/125	---	---	ND	---	1.58
109		---	---	ND	---	0.263
110	110/115	---	---	ND	---	0.527
111		---	---	ND	---	0.263
112		---	---	ND	---	0.263
113	90/101/113	---	---	ND	---	0.790
114		---	---	ND	---	0.263
115	110/115	---	---	ND	---	0.527
116	85/116/117	---	---	ND	---	0.790
117	85/116/117	---	---	ND	---	0.790
118		---	---	ND	---	0.263
119	86/87/97/108/119/125	---	---	ND	---	1.58
120		---	---	ND	---	0.263
121		---	---	ND	---	0.263
122		---	---	ND	---	0.263
123		---	---	ND	---	0.263
124	107/124	---	---	ND	---	0.527
125	86/87/97/108/119/125	---	---	ND	---	1.58
126		---	---	ND	---	0.263
127		---	---	ND	---	0.263
128	128/166	---	---	ND	---	0.527
129	129/138/163	---	---	ND	---	0.790
130		---	---	ND	---	0.263
131		---	---	ND	---	0.263
132		---	---	ND	---	0.263
133		---	---	ND	---	0.263
134	134/143	---	---	ND	---	0.527
135	135/151	---	---	ND	---	0.527

Conc = Concentration
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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID
Filename

BLANK-19082
P90312A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
136		---	---	ND	---	0.263
137		---	---	ND	---	0.263
138	129/138/163	---	---	ND	---	0.790
139	139/140	---	---	ND	---	0.527
140	139/140	---	---	ND	---	0.527
141		---	---	ND	---	0.263
142		---	---	ND	---	0.263
143	134/143	---	---	ND	---	0.527
144		---	---	ND	---	0.263
145		---	---	ND	---	0.263
146		---	---	ND	---	0.263
147	147/149	---	---	ND	---	0.527
148		---	---	ND	---	0.263
149	147/149	---	---	ND	---	0.527
150		---	---	ND	---	0.263
151	135/151	---	---	ND	---	0.527
152		---	---	ND	---	0.263
153	153/168	---	---	ND	---	0.527
154		---	---	ND	---	0.263
155		---	---	ND	---	0.263
156	156/157	---	---	ND	---	0.527
157	156/157	---	---	ND	---	0.527
158		---	---	ND	---	0.263
159		---	---	ND	---	0.263
160		---	---	ND	---	0.263
161		---	---	ND	---	0.263
162		---	---	ND	---	0.263
163	129/138/163	---	---	ND	---	0.790
164		---	---	ND	---	0.263
165		---	---	ND	---	0.263
166	128/166	---	---	ND	---	0.527
167		---	---	ND	---	0.263
168	153/168	---	---	ND	---	0.527
169		---	---	ND	---	0.263
170		---	---	ND	---	0.263
171	171/173	---	---	ND	---	0.527
172		---	---	ND	---	0.263
173	171/173	---	---	ND	---	0.527
174		---	---	ND	---	0.263
175		---	---	ND	---	0.263
176		---	---	ND	---	0.263
177		---	---	ND	---	0.263
178		---	---	ND	---	0.263
179		---	---	ND	---	0.263
180	180/193	---	---	ND	---	0.527

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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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-19082
Filename P90312A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
181		---	---	ND	---	0.263
182		---	---	ND	---	0.263
183	183/185	---	---	ND	---	0.527
184		---	---	ND	---	0.263
185	183/185	---	---	ND	---	0.527
186		---	---	ND	---	0.263
187		---	---	ND	---	0.263
188		---	---	ND	---	0.263
189		---	---	ND	---	0.263
190		---	---	ND	---	0.263
191		---	---	ND	---	0.263
192		---	---	ND	---	0.263
193	180/193	---	---	ND	---	0.527
194		---	---	ND	---	0.395
195		---	---	ND	---	0.395
196		---	---	ND	---	0.395
197	197/200	---	---	ND	---	0.790
198	198/199	---	---	ND	---	0.790
199	198/199	---	---	ND	---	0.790
200	197/200	---	---	ND	---	0.790
201		---	---	ND	---	0.395
202		---	---	ND	---	0.395
203		---	---	ND	---	0.395
204		---	---	ND	---	0.395
205		---	---	ND	---	0.395
206		---	---	ND	---	0.395
207		---	---	ND	---	0.395
208		---	---	ND	---	0.395
209		---	---	ND	---	0.395

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
P = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Client Sample ID
Lab Sample ID BLANK-19082
Filename P90312A_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

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Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID	LCS-19083	
Filename	P90312A_04	Matrix
Total Amount Extracted	1920 mL	Water
ICAL ID	P90312A03	Dilution
CCal Filename(s)	P90312A_02	Extracted
Method Blank ID	BLANK-19082	Analyzed
		03/12/2009 14:01
		Injected By
		SMT

PCB Isomer	Native Analytes			Labeled Analytes		
	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recovery
1	1.0	1.04	104	2.0	1.01	50
3	1.0	1.03	103	2.0	1.03	51
4	1.0	0.992	99	2.0	1.16	58
15	1.0	1.06	106	2.0	0.959	48
19	1.0	0.994	99	2.0	1.04	52
37	1.0	1.10	110	2.0	1.18	59
54	1.0	1.01	101	2.0	0.920	46
81	1.0	1.01	101	2.0	1.35	68
77	1.0	1.01	101	2.0	1.50	75
104	1.0	0.978	98	2.0	1.16	58
105	1.0	0.995	99	2.0	1.57	79
114	1.0	1.07	107	2.0	1.50	75
118	1.0	1.06	106	2.0	1.51	76
123	1.0	1.05	105	2.0	1.44	72
126	1.0	1.02	102	2.0	1.51	75
155	1.0	0.994	99	2.0	1.49	75
156/157	2.0	2.06	103	4.0	3.40	85
167	1.0	1.06	106	2.0	1.65	82
169	1.0	1.02	102	2.0	1.68	84
188	1.0	1.05	105	2.0	1.69	84
189	1.0	1.04	104	2.0	1.70	85
202	1.0	1.01	101	2.0	1.69	84
205	1.0	1.11	111	2.0	1.58	79
206	1.0	1.13	113	2.0	1.57	78
208	1.0	1.13	113	2.0	1.57	79
209	1.0	1.10	110	2.0	1.61	81

P = 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-19084	Matrix	Water
Filename	P90312A_05	Dilution	NA
Total Amount Extracted	1920 mL	Extracted	02/27/2009
ICAL ID	P90312A03	Analyzed	03/12/2009 15:02
CCal Filename(s)	P90312A_02	Injected By	SMT
Method Blank ID	BLANK-19082		

PCB Isomer	Native Analytes			Labeled Analytes		
	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recovery
1	1.0	0.976	98	2.0	0.859	43
3	1.0	1.02	102	2.0	0.842	42
4	1.0	1.01	101	2.0	0.967	48
15	1.0	1.07	107	2.0	0.842	42
19	1.0	0.977	98	2.0	0.884	44
37	1.0	1.01	101	2.0	1.09	55
54	1.0	0.979	98	2.0	0.863	43
81	1.0	1.01	101	2.0	1.28	64
77	1.0	0.978	98	2.0	1.43	72
104	1.0	1.03	103	2.0	1.14	57
105	1.0	1.02	102	2.0	1.45	73
114	1.0	1.03	103	2.0	1.46	73
118	1.0	1.05	105	2.0	1.43	72
123	1.0	0.997	100	2.0	1.35	68
126	1.0	0.997	100	2.0	1.46	73
155	1.0	1.05	105	2.0	1.32	66
156/157	2.0	2.10	105	4.0	3.08	77
167	1.0	1.09	109	2.0	1.53	76
169	1.0	1.06	106	2.0	1.54	77
188	1.0	1.07	107	2.0	1.59	79
189	1.0	1.10	110	2.0	1.61	81
202	1.0	1.03	103	2.0	1.57	78
205	1.0	1.04	104	2.0	1.56	78
206	1.0	1.05	105	2.0	1.54	77
208	1.0	1.06	106	2.0	1.56	78
209	1.0	1.04	104	2.0	1.53	77

P = 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-19083
Spike 1 Filename P90312A_04

Spike 2 ID LCSD-19084
Spike 2 Filename P90312A_05

Compound	IUPAC	Spike 1 %REC	Spike 2 %REC	%RPD
2-MoCB	1	104	98	5.9
4-MoCB	3	103	102	1.0
2,2'-DiCB	4	99	101	2.0
4,4'-DiCB	15	106	107	0.9
2,2',6-TrCB	19	99	98	1.0
3,4,4'-TrCB	37	110	101	8.5
2,2',6,6'-TeCB	54	101	98	3.0
3,3',4,4'-TeCB	77	101	98	3.0
3,4,4',5-TeCB	81	101	101	0.0
2,2',4,6,6'-PeCB	104	98	103	5.0
2,3,3',4,4'-PeCB	105	99	102	3.0
2,3,4,4',5-PeCB	114	107	103	3.8
2,3',4,4',5-PeCB	118	106	105	0.9
2,3,4,4',5'-PeCB	123	105	100	4.9
3,3',4,4',5-PeCB	126	102	100	2.0
2,2',4,4',6,6'-HxCB	155	99	105	5.9
(156/157)	156/157	103	105	1.9
2,3',4,4',5,5'-HxCB	167	106	109	2.8
3,3',4,4',5,5'-HxCB	169	102	106	3.8
2,2',3,4',5,6,6'-HpCB	188	105	107	1.9
2,3,3',4,4',5,5'-HpCB	189	104	110	5.6
2,2',3,3',5,5',6,6'-OcCB	202	101	103	2.0
2,3,3',4,4',5,5',6-OcCB	205	111	104	6.5
2,2',3,3',4,4',5,5',6-NoCB	206	113	105	7.3
2,2',3,3',4,5,5',6,6'-NoCB	208	113	106	6.4
Decachlorobiphenyl	209	110	104	5.6

%REC = Percent Recovered

RPD = The difference between the two values divided by the mean value

REPORT OF LABORATORY ANALYSIS

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Event 5: March 23, 2009

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: 3/23/04
Page: 1 of 1
Collected By: MSJ, JKB

Project Name: PORTLAND HARBOR STORMWATER SAMP

File Number: 1020.005

Matrix: STORMWTR

Requested Analyses

FY 2008-09 Stormwater Grab Chain-of-custody

☒ Sample Time recorded in PST

WPCL Sample I.D.

Location

Point Code

Sample Date

Sample Time

Sample Type

TSS

PCB Congeners (All 209)

PAH + Phthalates (TA)

SVOC's (CAS)

Pesticides (CAS)

Total Metals (As, Cd, Cr, Cu, Pb, Ni, Ag, Zn)

Total Mercury

Temperature (Deg C)

Conductivity (umhos/cm)

pH (pH units)

FO095371

SW-43-ABC290-AMNY
N ALBINA & RIVER

43_SW1

3/23/04

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FO095372

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N KERBY & WHEELER

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FO095373

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N WHEELER PL & KERBY

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FO095374

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N KERBY & TILLAMOOK

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FO095375

SW-44-ABC352-AMNY
N HARDING & RIVER

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FO095376

SW-44A-ABC311-AMNY
N LARABEE & RANDOLPH

44A_SW1

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Signature: *Paul Sullivan* Time: 10:47
Printed Name: Paul Sullivan Date: 3/23/04

Signature: _____ Time: _____
Printed Name: _____ Date: _____

Signature: _____ Time: _____
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Signature: _____ Time: _____
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Signature: _____ Time: _____
Printed Name: _____ Date: _____

Signature: *Paul Sullivan* Time: 10:47
Printed Name: Paul Sullivan Date: 3/23/04

Signature: _____ Time: _____
Printed Name: _____ Date: _____

Signature: _____ Time: _____
Printed Name: _____ Date: _____

Signature: _____ Time: _____
Printed Name: _____ Date: _____

Signature: _____ Time: _____
Printed Name: _____ Date: _____

Signature: *Paul Sullivan* Time: 10:47
Printed Name: Paul Sullivan Date: 3/23/04

Signature: _____ Time: _____
Printed Name: _____ Date: _____

Signature: _____ Time: _____
Printed Name: _____ Date: _____

Signature: _____ Time: _____
Printed Name: _____ Date: _____

Signature: _____ Time: _____
Printed Name: _____ Date: _____

S:\EID\10001020.005 - Portland Harbor Stormwater Sample\SampleDoc\Portland Harbor Stormwater Of Grab COC FY08-09.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: FO095376

Sample Collected: 03/23/09 14:14
Sample Received: 03/23/09

Sample Status: COMPLETE AND
VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-44A-ABC311-0309
N LARABEE & RANDOLPH
Sample Point Code: 44A_SW1
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 1 of 5

System ID: AN03343
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. The result for PAH compound Naphthalene is flagged as an estimate because this compound was also detected in the Method Blank. One of 6 surrogate recoveries for Semivolatile Organics analysis was low; some results for late-eluting compounds could be low estimates.

Test Parameter	Result	Units	MRL	Method	Analysis Date
FIELD					
CONDUCTIVITY (FIELD)	97	µmhos/cm	1	SM 2510 B	03/23/09
pH (FIELD)	7.5	pH Units	0.1	SM 4500-H B	03/23/09
TEMPERATURE	10.0	Deg. C	0.1	SM 2550 B	03/23/09
GENERAL					
TOTAL SUSPENDED SOLIDS	140	mg/L	2	SM 2540 D	03/25/09
METALS					
MERCURY	0.019	µg/L	0.002	WPCLSOP M-10.02	03/26/09
METALS BY ICP-MS (TOTAL) - 8					
ARSENIC	1.19	µg/L	0.1	EPA 200.8	03/24/09
CADMIUM	0.61	µg/L	0.1	EPA 200.8	03/24/09
CHROMIUM	6.96	µg/L	0.4	EPA 200.8	03/24/09
COPPER	44.8	µg/L	0.2	EPA 200.8	03/24/09
LEAD	11.6	µg/L	0.1	EPA 200.8	03/24/09
NICKEL	11.8	µg/L	0.2	EPA 200.8	03/24/09
SILVER	0.67	µg/L	0.1	EPA 200.8	03/24/09
ZINC	365	µg/L	0.5	EPA 200.8	03/24/09
OUTSIDE ANALYSIS					
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	<2.5	ng/L	2.5	EPA 8081	03/25/09
4,4'-DDE	2.5	ng/L	2.5	EPA 8081	03/25/09
4,4'-DDT	<2.5	ng/L	2.5	EPA 8081	03/25/09
Aldrin	<2.5	ng/L	2.5	EPA 8081	03/25/09
Alpha-BHC	<2.5	ng/L	2.5	EPA 8081	03/25/09
Alpha-Chlordane	<38	ng/L	38	EPA 8081	03/25/09
Beta-BHC	<2.5	ng/L	2.5	EPA 8081	03/25/09
Delta-BHC	<2.5	ng/L	2.5	EPA 8081	03/25/09
Dieldrin	<2.5	ng/L	2.5	EPA 8081	03/25/09
Endosulfan I	<2.5	ng/L	2.5	EPA 8081	03/25/09
Endosulfan II	<2.5	ng/L	2.5	EPA 8081	03/25/09
Endosulfan Sulfate	<2.5	ng/L	2.5	EPA 8081	03/25/09
Endrin	<2.5	ng/L	2.5	EPA 8081	03/25/09

Report Date: 04/30/09

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: FO095376

Sample Collected: 03/23/09 14:14

**Sample Status: COMPLETE AND
VALIDATED**

Sample Received: 03/23/09

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: SW-44A-ABC311-0309
N LARABEE & RANDOLPH
Sample Point Code: 44A_SW1
Sample Type: GRAB
Sample Matrix: STORMWTR

Report Page: Page 2 of 5

System ID: AN03343
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. The result for PAH compound Naphthalene is flagged as an estimate because this compound was also detected in the Method Blank. One of 6 surrogate recoveries for Semivolatile Organics analysis was low; some results for late-eluting compounds could be low estimates.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Endrin Aldehyde	<2.5	ng/L	2.5	EPA 8081	03/25/09
Endrin Ketone	<2.5	ng/L	2.5	EPA 8081	03/25/09
Gamma-BHC(Lindane)	<2.5	ng/L	2.5	EPA 8081	03/25/09
Gamma-Chlordane	<2.5	ng/L	2.5	EPA 8081	03/25/09
Heptachlor	<2.5	ng/L	2.5	EPA 8081	03/25/09
Heptachlor Epoxide	<2.5	ng/L	2.5	EPA 8081	03/25/09
Methoxychlor	<2.5	ng/L	2.5	EPA 8081	03/25/09
Toxaphene	<130	ng/L	130	EPA 8081	03/25/09
POLYCHLORINATED BIPHENYL CONGENERS -PACE					
Refer to Contract Report	COMPLETED	ng/L		EPA 1668 MOD	04/03/09
POLYNUCLEAR AROMATICS & PHTHALATES - TA					
Acenaphthene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	03/26/09
Acenaphthylene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	03/26/09
Anthracene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	03/26/09
Benzo(a)anthracene	<0.00971	µg/L	0.00971	EPA 8270M-SIM	03/26/09
Benzo(a)pyrene	<0.00971	µg/L	0.00971	EPA 8270M-SIM	03/26/09
Benzo(b)fluoranthene	<0.00971	µg/L	0.00971	EPA 8270M-SIM	03/26/09
Benzo(ghi)perylene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	03/26/09
Benzo(k)fluoranthene	<0.00971	µg/L	0.00971	EPA 8270M-SIM	03/26/09
Bis(2-ethylhexyl) phthalate	1.34	µg/L	0.971	EPA 8270M-SIM	03/26/09
Butyl benzyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	03/26/09
Chrysene	0.0288	µg/L	0.00971	EPA 8270M-SIM	03/26/09
Dibenzo(a,h)anthracene	<0.00971	µg/L	0.00971	EPA 8270M-SIM	03/26/09
Diethyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	03/26/09
Dimethyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	03/26/09
Di-n-butyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	03/26/09
Di-n-octyl phthalate	<0.971	µg/L	0.971	EPA 8270M-SIM	03/26/09
Fluoranthene	0.0536	µg/L	0.0194	EPA 8270M-SIM	03/26/09
Fluorene	<0.0194	µg/L	0.0194	EPA 8270M-SIM	03/26/09
Indeno(1,2,3-cd)pyrene	<0.00971	µg/L	0.00971	EPA 8270M-SIM	03/26/09
Naphthalene	EST 0.0488	µg/L	0.0194	EPA 8270M-SIM	03/26/09
Phenanthrene	0.0533	µg/L	0.0194	EPA 8270M-SIM	03/26/09
Pyrene	0.0843	µg/L	0.0194	EPA 8270M-SIM	03/26/09

Report Date: 04/30/09

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: FO095376

Sample Collected: 03/23/09 14:14

**Sample Status: COMPLETE AND
VALIDATED**

Sample Received: 03/23/09

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP

Report Page: Page 3 of 5

**Address/Location: SW-44A-ABC311-0309
N LARABEE & RANDOLPH**

System ID: AN03343

Sample Point Code: 44A_SW1

EID File #: 1020.005

Sample Type: GRAB

LocCode: PORTHASW

Sample Matrix: STORMWTR

Collected By: MJS/JXB

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. The result for PAH compound Naphthalene is flagged as an estimate because this compound was also detected in the Method Blank. One of 6 surrogate recoveries for Semivolatile Organics analysis was low; some results for late-eluting compounds could be low estimates.

Test Parameter	Result	Units	MRL	Method	Analysis Date
SEMI-VOLATILE ORGANICS - CAS					
1,2,4-Trichlorobenzene	<0.20	µg/L	0.20	EPA 8270	03/30/09
1,2-Dichlorobenzene	<0.20	µg/L	0.20	EPA 8270	03/30/09
1,3-Dichlorobenzene	<0.20	µg/L	0.20	EPA 8270	03/30/09
1,4-Dichlorobenzene	<0.20	µg/L	0.20	EPA 8270	03/30/09
2,4,5-Trichlorophenol	<0.50	µg/L	0.50	EPA 8270	03/30/09
2,4,6-Trichlorophenol	<0.50	µg/L	0.50	EPA 8270	03/30/09
2,4-Dichlorophenol	<0.50	µg/L	0.50	EPA 8270	03/30/09
2,4-Dimethylphenol	<4.0	µg/L	4.0	EPA 8270	03/30/09
2,4-Dinitrophenol	<4.0	µg/L	4.0	EPA 8270	03/30/09
2,4-Dinitrotoluene	<0.20	µg/L	0.20	EPA 8270	03/30/09
2,6-Dinitrotoluene	<0.20	µg/L	0.20	EPA 8270	03/30/09
2-Chloronaphthalene	<0.20	µg/L	0.20	EPA 8270	03/30/09
2-Chlorophenol	<0.50	µg/L	0.50	EPA 8270	03/30/09
2-Methylnaphthalene	<0.20	µg/L	0.20	EPA 8270	03/30/09
2-Methylphenol	<0.50	µg/L	0.50	EPA 8270	03/30/09
2-Nitroaniline	<0.20	µg/L	0.20	EPA 8270	03/30/09
2-Nitrophenol	<0.50	µg/L	0.50	EPA 8270	03/30/09
3,3'-Dichlorobenzidine	<2.0	µg/L	2.0	EPA 8270	03/30/09
3-Nitroaniline	<1.0	µg/L	1.0	EPA 8270	03/30/09
4,6-Dinitro-2-methylphenol	<2.0	µg/L	2.0	EPA 8270	03/30/09
4-Bromophenylphenyl ether	<0.20	µg/L	0.20	EPA 8270	03/30/09
4-Chloro-3-methylphenol	<0.50	µg/L	0.50	EPA 8270	03/30/09
4-Chloroaniline	<0.20	µg/L	0.20	EPA 8270	03/30/09
4-Chlorophenylphenyl ether	<0.20	µg/L	0.20	EPA 8270	03/30/09
4-Methylphenol	<0.50	µg/L	0.50	EPA 8270	03/30/09
4-Nitroaniline	<1.0	µg/L	1.0	EPA 8270	03/30/09
4-Nitrophenol	<2.0	µg/L	2.0	EPA 8270	03/30/09
Acenaphthene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Acenaphthylene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Anthracene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Benzo(a)anthracene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Benzo(a)pyrene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Benzo(b)fluoranthene	<0.20	µg/L	0.20	EPA 8270	03/30/09

Report Date: 04/30/09

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: FO095376

Sample Collected: 03/23/09 14:14

**Sample Status: COMPLETE AND
VALIDATED**

Sample Received: 03/23/09

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP

Report Page: Page 4 of 5

**Address/Location: SW-44A-ABC311-0309
N LARABEE & RANDOLPH**

System ID: AN03343

Sample Point Code: 44A_SW1

EID File #: 1020.005

Sample Type: GRAB

LocCode: PORTHASW

Sample Matrix: STORMWTR

Collected By: MJS/JXB

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. The result for PAH compound Naphthalene is flagged as an estimate because this compound was also detected in the Method Blank. One of 6 surrogate recoveries for Semivolatile Organics analysis was low; some results for late-eluting compounds could be low estimates.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Benzo(g,h,i)perylene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Benzo(k)fluoranthene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Benzoic acid	<5.0	µg/L	5.0	EPA 8270	03/30/09
Benzyl alcohol	<5.0	µg/L	5.0	EPA 8270	03/30/09
Bis(2-chloroethoxy) methane	<0.20	µg/L	0.20	EPA 8270	03/30/09
Bis(2-chloroethyl) ether	<0.20	µg/L	0.20	EPA 8270	03/30/09
Bis(2-chloroisopropyl) ether	<0.20	µg/L	0.20	EPA 8270	03/30/09
Bis(2-ethylhexyl) phthalate	1.1	µg/L	1.0	EPA 8270	03/30/09
Butyl benzyl phthalate	<0.20	µg/L	0.20	EPA 8270	03/30/09
Chrysene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Dibenzo(a,h)anthracene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Dibenzofuran	<0.20	µg/L	0.20	EPA 8270	03/30/09
Diethyl phthalate	0.23	µg/L	0.20	EPA 8270	03/30/09
Dimethyl phthalate	<0.20	µg/L	0.20	EPA 8270	03/30/09
Di-n-butyl phthalate	<0.20	µg/L	0.20	EPA 8270	03/30/09
Di-n-octyl phthalate	<0.20	µg/L	0.20	EPA 8270	03/30/09
Fluoranthene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Fluorene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Hexachlorobenzene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Hexachlorobutadiene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Hexachlorocyclopentadiene	<1.0	µg/L	1.0	EPA 8270	03/30/09
Hexachloroethane	<0.20	µg/L	0.20	EPA 8270	03/30/09
Indeno(1,2,3-cd)pyrene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Isophorone	<0.20	µg/L	0.20	EPA 8270	03/30/09
Naphthalene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Nitrobenzene	<0.20	µg/L	0.20	EPA 8270	03/30/09
N-Nitrosodi-n-propylamine	<0.20	µg/L	0.20	EPA 8270	03/30/09
N-Nitrosodiphenylamine	<0.20	µg/L	0.20	EPA 8270	03/30/09
Pentachlorophenol	<1.0	µg/L	1.0	EPA 8270	03/30/09
Phenanthrene	<0.20	µg/L	0.20	EPA 8270	03/30/09
Phenol	0.76	µg/L	0.50	EPA 8270	03/30/09
Pyrene	<0.20	µg/L	0.20	EPA 8270	03/30/09

Report Date: 04/30/09

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: FO095376

Sample Collected: 03/23/09 14:14

Sample Received: 03/23/09

**Sample Status: COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP

Report Page: Page 5 of 5

Address/Location: SW-44A-ABC311-0309

N LARABEE & RANDOLPH

System ID: AN03343

Sample Point Code: 44A_SW1

EID File # : 1020.005

Sample Type: GRAB

LocCode: PORTHASW

Sample Matrix: STORMWTR

Collected By: MJS/JXB

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. The result for PAH compound Naphthalene is flagged as an estimate because this compound was also detected in the Method Blank. One of 6 surrogate recoveries for Semivolatile Organics analysis was low; some results for late-eluting compounds could be low estimates.

Test Parameter	Result	Units	MRL	Method	Analysis Date
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End of Report for Sample ID: FO095376

Report Date: 04/30/09

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: FO095377

Sample Collected: 03/23/09 14:32

Sample Received: 03/23/09

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: FIELD DECON BLANK

Report Page: Page 1 of 4

Sample Point Code: FDBLANK
Sample Type: GRAB
Sample Matrix: STORMWTR

System ID: AN03344
EID File # : 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date
GENERAL					
TOTAL SUSPENDED SOLIDS	<2	mg/L	2	SM 2540 D	03/25/09
METALS					
MERCURY	<0.0020	µg/L	0.002	WPCLSOP M-10.02	03/26/09
METALS BY ICP-MS (TOTAL) - 8					
ARSENIC	<0.10	µg/L	0.1	EPA 200.8	03/24/09
CADMIUM	<0.10	µg/L	0.1	EPA 200.8	03/24/09
CHROMIUM	<0.40	µg/L	0.4	EPA 200.8	03/24/09
COPPER	0.42	µg/L	0.2	EPA 200.8	03/24/09
LEAD	<0.10	µg/L	0.1	EPA 200.8	03/24/09
NICKEL	<0.20	µg/L	0.2	EPA 200.8	03/24/09
SILVER	<0.10	µg/L	0.1	EPA 200.8	03/24/09
ZINC	0.58	µg/L	0.5	EPA 200.8	03/24/09
OUTSIDE ANALYSIS					
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	<0.50	ng/L	0.50	EPA 8081	03/25/09
4,4'-DDE	1.4	ng/L	0.50	EPA 8081	03/25/09
4,4'-DDT	<0.50	ng/L	0.50	EPA 8081	03/25/09
Aldrin	<0.50	ng/L	0.50	EPA 8081	03/25/09
Alpha-BHC	<0.50	ng/L	0.50	EPA 8081	03/25/09
Alpha-Chlordane	<0.50	ng/L	0.50	EPA 8081	03/25/09
Beta-BHC	<0.50	ng/L	0.50	EPA 8081	03/25/09
Delta-BHC	<0.50	ng/L	0.50	EPA 8081	03/25/09
Dieldrin	<0.50	ng/L	0.50	EPA 8081	03/25/09
Endosulfan I	<0.50	ng/L	0.50	EPA 8081	03/25/09
Endosulfan II	<0.50	ng/L	0.50	EPA 8081	03/25/09
Endosulfan Sulfate	<0.50	ng/L	0.50	EPA 8081	03/25/09
Endrin	<0.50	ng/L	0.50	EPA 8081	03/25/09
Endrin Aldehyde	<0.50	ng/L	0.50	EPA 8081	03/25/09
Endrin Ketone	<0.50	ng/L	0.50	EPA 8081	03/25/09
Gamma-BHC(Lindane)	<0.50	ng/L	0.50	EPA 8081	03/25/09
Gamma-Chlordane	<0.50	ng/L	0.50	EPA 8081	03/25/09
Heptachlor	<0.50	ng/L	0.50	EPA 8081	03/25/09
Heptachlor Epoxide	<0.50	ng/L	0.50	EPA 8081	03/25/09

Report Date: 04/30/09

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: **FO095377**

Sample Collected: 03/23/09 14:32

Sample Status: **COMPLETE AND
VALIDATED**

Sample Received: 03/23/09

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: FIELD DECON BLANK

Report Page: Page 2 of 4

Sample Point Code: FDBLANK
Sample Type: GRAB
Sample Matrix: STORMWTR

System ID: AN03344
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Methoxychlor	<0.50	ng/L	0.50	EPA 8081	03/25/09
Toxaphene	<25	ng/L	25	EPA 8081	03/25/09
POLYCHLORINATED BIPHENYL CONGENERS -PAC					
Refer to Contract Report	COMPLETED	ng/L		EPA 1668 MOD	04/03/09
POLYNUCLEAR AROMATICS & PHTHALATES - TA					
Acenaphthene	<0.0192	µg/L	0.0192	EPA 8270M-SIM	03/26/09
Acenaphthylene	<0.0192	µg/L	0.0192	EPA 8270M-SIM	03/26/09
Anthracene	<0.0192	µg/L	0.0192	EPA 8270M-SIM	03/26/09
Benzo(a)anthracene	<0.00962	µg/L	0.00962	EPA 8270M-SIM	03/26/09
Benzo(a)pyrene	<0.00962	µg/L	0.00962	EPA 8270M-SIM	03/26/09
Benzo(b)fluoranthene	<0.00962	µg/L	0.00962	EPA 8270M-SIM	03/26/09
Benzo(ghi)perylene	<0.0192	µg/L	0.0192	EPA 8270M-SIM	03/26/09
Benzo(k)fluoranthene	<0.00962	µg/L	0.00962	EPA 8270M-SIM	03/26/09
Bis(2-ethylhexyl) phthalate	<0.962	µg/L	0.962	EPA 8270M-SIM	03/26/09
Butyl benzyl phthalate	<0.962	µg/L	0.962	EPA 8270M-SIM	03/26/09
Chrysene	<0.00962	µg/L	0.00962	EPA 8270M-SIM	03/26/09
Dibenzo(a,h)anthracene	<0.00962	µg/L	0.00962	EPA 8270M-SIM	03/26/09
Diethyl phthalate	<0.962	µg/L	0.962	EPA 8270M-SIM	03/26/09
Dimethyl phthalate	<0.962	µg/L	0.962	EPA 8270M-SIM	03/26/09
Di-n-butyl phthalate	<0.962	µg/L	0.962	EPA 8270M-SIM	03/26/09
Di-n-octyl phthalate	<0.962	µg/L	0.962	EPA 8270M-SIM	03/26/09
Fluoranthene	<0.0192	µg/L	0.0192	EPA 8270M-SIM	03/26/09
Fluorene	<0.0192	µg/L	0.0192	EPA 8270M-SIM	03/26/09
Indeno(1,2,3-cd)pyrene	<0.00962	µg/L	0.00962	EPA 8270M-SIM	03/26/09
Naphthalene	<0.0192	µg/L	0.0192	EPA 8270M-SIM	03/26/09
Phenanthrene	<0.0192	µg/L	0.0192	EPA 8270M-SIM	03/26/09
Pyrene	<0.0192	µg/L	0.0192	EPA 8270M-SIM	03/26/09
SEMI-VOLATILE ORGANICS - CAS					
1,2,4-Trichlorobenzene	<0.21	µg/L	0.21	EPA 8270	03/30/09
1,2-Dichlorobenzene	<0.21	µg/L	0.21	EPA 8270	03/30/09
1,3-Dichlorobenzene	<0.21	µg/L	0.21	EPA 8270	03/30/09
1,4-Dichlorobenzene	<0.21	µg/L	0.21	EPA 8270	03/30/09
2,4,5-Trichlorophenol	<0.53	µg/L	0.53	EPA 8270	03/30/09
2,4,6-Trichlorophenol	<0.53	µg/L	0.53	EPA 8270	03/30/09

Report Date: 04/30/09

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: FO095377

Sample Collected: 03/23/09 14:32

**Sample Status: COMPLETE AND
VALIDATED**

Sample Received: 03/23/09

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: FIELD DECON BLANK

Report Page: Page 3 of 4

Sample Point Code: FDBLANK
Sample Type: GRAB
Sample Matrix: STORMWTR

System ID: AN03344
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date
2,4-Dichlorophenol	<0.53	µg/L	0.53	EPA 8270	03/30/09
2,4-Dimethylphenol	<4.2	µg/L	4.2	EPA 8270	03/30/09
2,4-Dinitrophenol	<4.2	µg/L	4.2	EPA 8270	03/30/09
2,4-Dinitrotoluene	<0.21	µg/L	0.21	EPA 8270	03/30/09
2,6-Dinitrotoluene	<0.21	µg/L	0.21	EPA 8270	03/30/09
2-Chloronaphthalene	<0.21	µg/L	0.21	EPA 8270	03/30/09
2-Chlorophenol	<0.53	µg/L	0.53	EPA 8270	03/30/09
2-Methylnaphthalene	<0.21	µg/L	0.21	EPA 8270	03/30/09
2-Methylphenol	<0.53	µg/L	0.53	EPA 8270	03/30/09
2-Nitroaniline	<0.21	µg/L	0.21	EPA 8270	03/30/09
2-Nitrophenol	<0.53	µg/L	0.53	EPA 8270	03/30/09
3,3'-Dichlorobenzidine	<2.1	µg/L	2.1	EPA 8270	03/30/09
3-Nitroaniline	<1.1	µg/L	1.1	EPA 8270	03/30/09
4,6-Dinitro-2-methylphenol	<2.1	µg/L	2.1	EPA 8270	03/30/09
4-Bromophenylphenyl ether	<0.21	µg/L	0.21	EPA 8270	03/30/09
4-Chloro-3-methylphenol	<0.53	µg/L	0.53	EPA 8270	03/30/09
4-Chloroaniline	<0.21	µg/L	0.21	EPA 8270	03/30/09
4-Chlorophenylphenyl ether	<0.21	µg/L	0.21	EPA 8270	03/30/09
4-Methylphenol	<0.53	µg/L	0.53	EPA 8270	03/30/09
4-Nitroaniline	<1.1	µg/L	1.1	EPA 8270	03/30/09
4-Nitrophenol	<2.1	µg/L	2.1	EPA 8270	03/30/09
Acenaphthene	<0.21	µg/L	0.21	EPA 8270	03/30/09
Acenaphthylene	<0.21	µg/L	0.21	EPA 8270	03/30/09
Anthracene	<0.21	µg/L	0.21	EPA 8270	03/30/09
Benzo(a)anthracene	<0.21	µg/L	0.21	EPA 8270	03/30/09
Benzo(a)pyrene	<0.21	µg/L	0.21	EPA 8270	03/30/09
Benzo(b)fluoranthene	<0.21	µg/L	0.21	EPA 8270	03/30/09
Benzo(g,h,i)perylene	<0.21	µg/L	0.21	EPA 8270	03/30/09
Benzo(k)fluoranthene	<0.21	µg/L	0.21	EPA 8270	03/30/09
Benzoic acid	<5.3	µg/L	5.3	EPA 8270	03/30/09
Benzyl alcohol	<0.53	µg/L	0.53	EPA 8270	03/30/09
Bis(2-chloroethoxy) methane	<0.21	µg/L	0.21	EPA 8270	03/30/09
Bis(2-chloroethyl) ether	<0.21	µg/L	0.21	EPA 8270	03/30/09
Bis(2-chloroisopropyl) ether	<0.21	µg/L	0.21	EPA 8270	03/30/09
Bis(2-ethylhexyl) phthalate	<1.1	µg/L	1.1	EPA 8270	03/30/09
Butyl benzyl phthalate	<0.21	µg/L	0.21	EPA 8270	03/30/09

Report Date: 04/30/09

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: FO095377

Sample Collected: 03/23/09 14:32

**Sample Status: COMPLETE AND
VALIDATED**

Sample Received: 03/23/09

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: FIELD DECON BLANK

Report Page: Page 4 of 4

Sample Point Code: FDBLANK
Sample Type: GRAB
Sample Matrix: STORMWTR

System ID: AN03344
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Chrysene	<0.21	µg/L	0.21	EPA 8270	03/30/09
Dibenzo(a,h)anthracene	<0.21	µg/L	0.21	EPA 8270	03/30/09
Dibenzofuran	<0.21	µg/L	0.21	EPA 8270	03/30/09
Diethyl phthalate	<0.21	µg/L	0.21	EPA 8270	03/30/09
Dimethyl phthalate	<0.21	µg/L	0.21	EPA 8270	03/30/09
Di-n-butyl phthalate	<0.21	µg/L	0.21	EPA 8270	03/30/09
Di-n-octyl phthalate	<0.21	µg/L	0.21	EPA 8270	03/30/09
Fluoranthene	<0.21	µg/L	0.21	EPA 8270	03/30/09
Fluorene	<0.21	µg/L	0.21	EPA 8270	03/30/09
Hexachlorobenzene	<0.21	µg/L	0.21	EPA 8270	03/30/09
Hexachlorobutadiene	<0.21	µg/L	0.21	EPA 8270	03/30/09
Hexachlorocyclopentadiene	<1.1	µg/L	1.1	EPA 8270	03/30/09
Hexachloroethane	<0.21	µg/L	0.21	EPA 8270	03/30/09
Indeno(1,2,3-cd)pyrene	<0.21	µg/L	0.21	EPA 8270	03/30/09
Isophorone	<0.21	µg/L	0.21	EPA 8270	03/30/09
Naphthalene	<0.21	µg/L	0.21	EPA 8270	03/30/09
Nitrobenzene	<0.21	µg/L	0.21	EPA 8270	03/30/09
N-Nitrosodi-n-propylamine	<0.21	µg/L	0.21	EPA 8270	03/30/09
N-Nitrosodiphenylamine	<0.21	µg/L	0.21	EPA 8270	03/30/09
Pentachlorophenol	<1.1	µg/L	1.1	EPA 8270	03/30/09
Phenanthrene	<0.21	µg/L	0.21	EPA 8270	03/30/09
Phenol	<0.53	µg/L	0.53	EPA 8270	03/30/09
Pyrene	<0.21	µg/L	0.21	EPA 8270	03/30/09

End of Report for Sample ID: FO095377

Report Date: 04/30/09

Validated By:

April 13, 2009

Analytical Report for Service Request No: K0902522

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

RE: Portland Harbor Stormwater

Dear Jennifer:

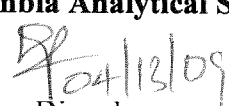
Enclosed are the results of the samples submitted to our laboratory on March 24, 2009. For your reference, these analyses have been assigned our service request number K0902522.

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/lb

Page 1 of 45

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 but greater than or equal to the MDL.
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- i The MRL/MDL has been elevated due to a matrix interference.
- X See case narrative.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- B The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- 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.
- 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 has been elevated due to a matrix interference.
- X See case narrative.
- * The duplicate analysis not within control limits. See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.

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 (25% for CLP Pesticides).
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- i The MRL/MDL has been elevated due to a chromatographic interference.
- X See case narrative.

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: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request No.: K0902522
Date Received: 03/24/2009

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

Seven water samples were received for analysis at Columbia Analytical Services on 03/24/2009. The temperatures of the cooler and blank were 8.0C and 6.7C respectively upon receipt. 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

Continuing Calibration Verification (CCV) Exceptions:

The primary evaluation criterion was exceeded for 4,4'-DDD in CCV 0401F034. 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 meets the alternative evaluation criteria.

Matrix Spike Recovery Exceptions:

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.

Sample Confirmation Notes:

The JP qualifier indicates that the confirmation comparison criteria are not applicable because at least one of the values is below the Method Reporting Limit (MRL).

Elevated Method Reporting Limits:

The reporting limit is elevated for all analytes in most of the samples. The sample extracts were 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. The results are flagged to indicate the matrix interference.

The reporting limit is further elevated for at least one analyte in most of the samples. The chromatogram indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compounds at the reporting limit. The results are flagged to indicate the matrix interference.

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

Approved by  Date 04/12/09

Semivolatile Organic Compounds by EPA Method 8270C LL

Surrogate Exceptions:

The control criteria were exceeded for Terphenyl-d14 in FO 095376. A reanalysis was not performed because insufficient sample was available. No further corrective action was possible.

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  Date 04/13/09

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Collected: 03/23/2009
Date Received: 03/24/2009

Organochlorine Pesticides

Sample Name: FO 095376
Lab Code: K0902522-006
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	2.5	1.1	5	03/25/09	04/02/09	KWG0902494	
beta-BHC	ND	U	2.5	2.1	5	03/25/09	04/02/09	KWG0902494	
gamma-BHC (Lindane)	ND	U	2.5	2.4	5	03/25/09	04/02/09	KWG0902494	
delta-BHC	ND	U	2.5	0.70	5	03/25/09	04/02/09	KWG0902494	
Heptachlor	ND	U	2.5	0.90	5	03/25/09	04/02/09	KWG0902494	
Aldrin	ND	U	2.5	0.55	5	03/25/09	04/02/09	KWG0902494	
Heptachlor Epoxide	ND	U	2.5	1.1	5	03/25/09	04/02/09	KWG0902494	
gamma-Chlordane†	ND	U	2.5	1.6	5	03/25/09	04/02/09	KWG0902494	
Endosulfan I	ND	U	2.5	1.3	5	03/25/09	04/02/09	KWG0902494	
alpha-Chlordane	ND	Ui	38	38	5	03/25/09	04/02/09	KWG0902494	
Dieldrin	ND	U	2.5	1.9	5	03/25/09	04/02/09	KWG0902494	
4,4'-DDE	2.5	JD	2.5	0.95	5	03/25/09	04/02/09	KWG0902494	
Endrin	ND	U	2.5	2.5	5	03/25/09	04/02/09	KWG0902494	
Endosulfan II	ND	U	2.5	1.8	5	03/25/09	04/02/09	KWG0902494	
4,4'-DDD	1.2	JPD	2.5	1.1	5	03/25/09	04/02/09	KWG0902494	
Endrin Aldehyde	ND	U	2.5	1.1	5	03/25/09	04/02/09	KWG0902494	
Endosulfan Sulfate	1.9	JPD	2.5	1.4	5	03/25/09	04/02/09	KWG0902494	
4,4'-DDT	ND	U	2.5	0.85	5	03/25/09	04/02/09	KWG0902494	
Endrin Ketone	ND	U	2.5	1.6	5	03/25/09	04/02/09	KWG0902494	
Methoxychlor	ND	U	2.5	1.4	5	03/25/09	04/02/09	KWG0902494	
Toxaphene	ND	U	130	45	5	03/25/09	04/02/09	KWG0902494	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	44	10-121	04/02/09	Acceptable
Decachlorobiphenyl	45	17-150	04/02/09	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: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Collected: 03/23/2009
Date Received: 03/24/2009

Organochlorine Pesticides

Sample Name: FO 095377
Lab Code: K0902522-007
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	03/25/09	04/02/09	KWG0902494	
beta-BHC	ND	U	0.50	0.41	1	03/25/09	04/02/09	KWG0902494	
gamma-BHC (Lindane)	ND	U	0.50	0.47	1	03/25/09	04/02/09	KWG0902494	
delta-BHC	ND	U	0.50	0.14	1	03/25/09	04/02/09	KWG0902494	
Heptachlor	ND	U	0.50	0.18	1	03/25/09	04/02/09	KWG0902494	
Aldrin	ND	U	0.50	0.11	1	03/25/09	04/02/09	KWG0902494	
Heptachlor Epoxide	ND	U	0.50	0.21	1	03/25/09	04/02/09	KWG0902494	
gamma-Chlordane†	ND	U	0.50	0.31	1	03/25/09	04/02/09	KWG0902494	
Endosulfan I	ND	U	0.50	0.25	1	03/25/09	04/02/09	KWG0902494	
alpha-Chlordane	ND	U	0.50	0.27	1	03/25/09	04/02/09	KWG0902494	
Dieldrin	ND	U	0.50	0.37	1	03/25/09	04/02/09	KWG0902494	
4,4'-DDE	1.4		0.50	0.19	1	03/25/09	04/02/09	KWG0902494	
Endrin	ND	U	0.50	0.49	1	03/25/09	04/02/09	KWG0902494	
Endosulfan II	ND	U	0.50	0.35	1	03/25/09	04/02/09	KWG0902494	
4,4'-DDD	ND	Ui	0.50	0.50	1	03/25/09	04/02/09	KWG0902494	
Endrin Aldehyde	ND	U	0.50	0.21	1	03/25/09	04/02/09	KWG0902494	
Endosulfan Sulfate	ND	U	0.50	0.28	1	03/25/09	04/02/09	KWG0902494	
4,4'-DDT	ND	U	0.50	0.17	1	03/25/09	04/02/09	KWG0902494	
Endrin Ketone	ND	U	0.50	0.32	1	03/25/09	04/02/09	KWG0902494	
Methoxychlor	ND	U	0.50	0.28	1	03/25/09	04/02/09	KWG0902494	
Toxaphene	ND	U	25	9.0	1	03/25/09	04/02/09	KWG0902494	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	59	10-121	04/02/09	Acceptable
Decachlorobiphenyl	77	17-150	04/02/09	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: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Collected: NA
Date Received: NA

Organochlorine Pesticides

Sample Name: Method Blank
Lab Code: KWG0902494-3
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	0.49	0.21	1	03/25/09	04/02/09	KWG0902494	
beta-BHC	ND	U	0.49	0.41	1	03/25/09	04/02/09	KWG0902494	
gamma-BHC (Lindane)	ND	U	0.49	0.47	1	03/25/09	04/02/09	KWG0902494	
delta-BHC	ND	U	0.49	0.14	1	03/25/09	04/02/09	KWG0902494	
Heptachlor	ND	U	0.49	0.18	1	03/25/09	04/02/09	KWG0902494	
Aldrin	ND	U	0.49	0.11	1	03/25/09	04/02/09	KWG0902494	
Heptachlor Epoxide	ND	U	0.49	0.21	1	03/25/09	04/02/09	KWG0902494	
gamma-Chlordane†	ND	U	0.49	0.31	1	03/25/09	04/02/09	KWG0902494	
Endosulfan I	ND	U	0.49	0.25	1	03/25/09	04/02/09	KWG0902494	
alpha-Chlordane	ND	U	0.49	0.27	1	03/25/09	04/02/09	KWG0902494	
Dieldrin	ND	U	0.49	0.37	1	03/25/09	04/02/09	KWG0902494	
4,4'-DDE	ND	U	0.49	0.19	1	03/25/09	04/02/09	KWG0902494	
Endrin	ND	U	0.49	0.49	1	03/25/09	04/02/09	KWG0902494	
Endosulfan II	ND	U	0.49	0.35	1	03/25/09	04/02/09	KWG0902494	
4,4'-DDD	ND	U	0.49	0.21	1	03/25/09	04/02/09	KWG0902494	
Endrin Aldehyde	ND	U	0.49	0.21	1	03/25/09	04/02/09	KWG0902494	
Endosulfan Sulfate	ND	U	0.49	0.28	1	03/25/09	04/02/09	KWG0902494	
4,4'-DDT	ND	U	0.49	0.17	1	03/25/09	04/02/09	KWG0902494	
Endrin Ketone	ND	U	0.49	0.32	1	03/25/09	04/02/09	KWG0902494	
Methoxychlor	ND	U	0.49	0.28	1	03/25/09	04/02/09	KWG0902494	
Toxaphene	ND	U	25	9.0	1	03/25/09	04/02/09	KWG0902494	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	51	10-121	04/02/09	Acceptable
Decachlorobiphenyl	76	17-150	04/02/09	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: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0902522

Surrogate Recovery Summary
Organochlorine Pesticides

Extraction Method: EPA 3535
Analysis Method: 8081A

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>
FO 095371	K0902522-001	60 D	74 D
FO 095372	K0902522-002	55 D	67 D
FO 095373	K0902522-003	73 D	78 D
FO 095374	K0902522-004	64 D	78 D
FO 095375	K0902522-005	55 D	74 D
FO 095376	K0902522-006	44 D	45 D
FO 095377	K0902522-007	59	77
Method Blank	KWG0902494-3	51	76
Lab Control Sample	KWG0902494-1	52	77
Duplicate Lab Control Sample	KWG0902494-2	50	79

Surrogate Recovery Control Limits (%)

Sur1 = Tetrachloro-m-xylene	10-121
Sur2 = Decachlorobiphenyl	17-150

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
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Extracted: 03/25/2009
Date Analyzed: 04/02/2009

**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: KWG0902494

Analyte Name	Lab Control Sample KWG0902494-1 Lab Control Spike			Duplicate Lab Control Sample KWG0902494-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
alpha-BHC	8.49	10.0	85	8.02	10.0	80	43-127	6	30
beta-BHC	9.34	10.0	93	9.22	10.0	92	41-129	1	30
gamma-BHC (Lindane)	8.82	10.0	88	8.08	10.0	81	42-128	9	30
delta-BHC	8.66	10.0	87	8.57	10.0	86	47-141	1	30
Heptachlor	8.65	10.0	86	8.25	10.0	83	34-126	5	30
Aldrin	7.35	10.0	74	6.96	10.0	70	10-125	5	30
Heptachlor Epoxide	8.17	10.0	82	7.96	10.0	80	45-124	3	30
gamma-Chlordane	8.72	10.0	87	8.35	10.0	84	48-119	4	30
Endosulfan I	7.96	10.0	80	7.64	10.0	76	30-115	4	30
alpha-Chlordane	8.43	10.0	84	7.97	10.0	80	48-119	6	30
Dieldrin	8.86	10.0	89	8.50	10.0	85	50-120	4	30
4,4'-DDE	9.89	10.0	99	9.45	10.0	95	36-137	4	30
Endrin	9.57	10.0	96	9.42	10.0	94	53-132	2	30
Endosulfan II	8.38	10.0	84	8.57	10.0	86	32-123	2	30
4,4'-DDD	9.93	10.0	99	9.82	10.0	98	38-140	1	30
Endrin Aldehyde	7.39	10.0	74	7.22	10.0	72	30-114	2	30
Endosulfan Sulfate	9.00	10.0	90	8.80	10.0	88	46-120	2	30
4,4'-DDT	10.3	10.0	103	9.96	10.0	100	45-146	3	30
Endrin Ketone	9.00	10.0	90	8.71	10.0	87	45-127	3	30
Methoxychlor	11.4	10.0	114	11.0	10.0	110	48-140	4	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.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Collected: 03/23/2009
Date Received: 03/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 095376
Lab Code: K0902522-006
Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: µg/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	03/30/09	04/02/09	KWG0902636	
Phenol	0.76		0.50	0.063	1	03/30/09	04/02/09	KWG0902636	
2-Chlorophenol	ND	U	0.50	0.054	1	03/30/09	04/02/09	KWG0902636	
1,3-Dichlorobenzene	ND	U	0.20	0.021	1	03/30/09	04/02/09	KWG0902636	
1,4-Dichlorobenzene	ND	U	0.20	0.029	1	03/30/09	04/02/09	KWG0902636	
1,2-Dichlorobenzene	ND	U	0.20	0.022	1	03/30/09	04/02/09	KWG0902636	
Benzyl Alcohol	ND	U	0.50	0.073	1	03/30/09	04/02/09	KWG0902636	
Bis(2-chloroisopropyl) Ether	ND	U	0.20	0.026	1	03/30/09	04/02/09	KWG0902636	
2-Methylphenol	ND	U	0.50	0.11	1	03/30/09	04/02/09	KWG0902636	
Hexachloroethane	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
N-Nitrosodi-n-propylamine	ND	U	0.20	0.037	1	03/30/09	04/02/09	KWG0902636	
4-Methylphenol†	ND	U	0.50	0.12	1	03/30/09	04/02/09	KWG0902636	
Nitrobenzene	ND	U	0.20	0.028	1	03/30/09	04/02/09	KWG0902636	
Isophorone	ND	U	0.20	0.016	1	03/30/09	04/02/09	KWG0902636	
2-Nitrophenol	ND	U	0.50	0.063	1	03/30/09	04/02/09	KWG0902636	
2,4-Dimethylphenol	ND	U	4.0	2.2	1	03/30/09	04/02/09	KWG0902636	
Bis(2-chloroethoxy)methane	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
2,4-Dichlorophenol	ND	U	0.50	0.047	1	03/30/09	04/02/09	KWG0902636	
Benzoic Acid	2.7	J	5.0	1.1	1	03/30/09	04/02/09	KWG0902636	
1,2,4-Trichlorobenzene	ND	U	0.20	0.016	1	03/30/09	04/02/09	KWG0902636	
Naphthalene	ND	U	0.20	0.022	1	03/30/09	04/02/09	KWG0902636	
4-Chloroaniline	ND	U	0.20	0.025	1	03/30/09	04/02/09	KWG0902636	
Hexachlorobutadiene	ND	U	0.20	0.027	1	03/30/09	04/02/09	KWG0902636	
4-Chloro-3-methylphenol	ND	U	0.50	0.037	1	03/30/09	04/02/09	KWG0902636	
2-Methylnaphthalene	ND	U	0.20	0.026	1	03/30/09	04/02/09	KWG0902636	
Hexachlorocyclopentadiene	ND	U	1.0	0.19	1	03/30/09	04/02/09	KWG0902636	
2,4,6-Trichlorophenol	ND	U	0.50	0.058	1	03/30/09	04/02/09	KWG0902636	
2,4,5-Trichlorophenol	ND	U	0.50	0.031	1	03/30/09	04/02/09	KWG0902636	
2-Chloronaphthalene	ND	U	0.20	0.041	1	03/30/09	04/02/09	KWG0902636	
2-Nitroaniline	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
Acenaphthylene	ND	U	0.20	0.015	1	03/30/09	04/02/09	KWG0902636	
Dimethyl Phthalate	0.097	J	0.20	0.021	1	03/30/09	04/02/09	KWG0902636	
2,6-Dinitrotoluene	ND	U	0.20	0.033	1	03/30/09	04/02/09	KWG0902636	
Acenaphthene	ND	U	0.20	0.026	1	03/30/09	04/02/09	KWG0902636	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Collected: 03/23/2009
Date Received: 03/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 095376
Lab Code: K0902522-006
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
3-Nitroaniline	ND	U	1.0	0.029	1	03/30/09	04/02/09	KWG0902636	
2,4-Dinitrophenol	ND	U	4.0	0.17	1	03/30/09	04/02/09	KWG0902636	
Dibenzofuran	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
4-Nitrophenol	ND	U	2.0	0.28	1	03/30/09	04/02/09	KWG0902636	
2,4-Dinitrotoluene	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
Fluorene	ND	U	0.20	0.027	1	03/30/09	04/02/09	KWG0902636	
4-Chlorophenyl Phenyl Ether	ND	U	0.20	0.027	1	03/30/09	04/02/09	KWG0902636	
Diethyl Phthalate	0.23		0.20	0.012	1	03/30/09	04/02/09	KWG0902636	
4-Nitroaniline	ND	U	1.0	0.019	1	03/30/09	04/02/09	KWG0902636	
2-Methyl-4,6-dinitrophenol	ND	U	2.0	0.025	1	03/30/09	04/02/09	KWG0902636	
N-Nitrosodiphenylamine	ND	U	0.20	0.048	1	03/30/09	04/02/09	KWG0902636	
4-Bromophenyl Phenyl Ether	ND	U	0.20	0.026	1	03/30/09	04/02/09	KWG0902636	
Hexachlorobenzene	ND	U	0.20	0.022	1	03/30/09	04/02/09	KWG0902636	
Pentachlorophenol	0.86	J	1.0	0.34	1	03/30/09	04/02/09	KWG0902636	
Phenanthrene	ND	U	0.20	0.022	1	03/30/09	04/02/09	KWG0902636	
Anthracene	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
Di-n-butyl Phthalate	ND	U	0.20	0.023	1	03/30/09	04/02/09	KWG0902636	
Fluoranthene	ND	U	0.20	0.020	1	03/30/09	04/02/09	KWG0902636	
Pyrene	ND	U	0.20	0.019	1	03/30/09	04/02/09	KWG0902636	
Butyl Benzyl Phthalate	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
3,3'-Dichlorobenzidine	ND	U	2.0	0.43	1	03/30/09	04/02/09	KWG0902636	
Benz(a)anthracene	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
Chrysene	ND	U	0.20	0.028	1	03/30/09	04/02/09	KWG0902636	
Bis(2-ethylhexyl) Phthalate	1.1		1.0	0.13	1	03/30/09	04/02/09	KWG0902636	
Di-n-octyl Phthalate	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
Benzo(b)fluoranthene	ND	U	0.20	0.017	1	03/30/09	04/02/09	KWG0902636	
Benzo(k)fluoranthene	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
Benzo(a)pyrene	ND	U	0.20	0.031	1	03/30/09	04/02/09	KWG0902636	
Indeno(1,2,3-cd)pyrene	ND	U	0.20	0.021	1	03/30/09	04/02/09	KWG0902636	
Dibenz(a,h)anthracene	ND	U	0.20	0.017	1	03/30/09	04/02/09	KWG0902636	
Benzo(g,h,i)perylene	ND	U	0.20	0.019	1	03/30/09	04/02/09	KWG0902636	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Collected: 03/23/2009
Date Received: 03/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 095376
Lab Code: K0902522-006

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	69	21-119	04/02/09	Acceptable
Phenol-d6	71	31-121	04/02/09	Acceptable
Nitrobenzene-d5	75	29-121	04/02/09	Acceptable
2-Fluorobiphenyl	64	25-109	04/02/09	Acceptable
2,4,6-Tribromophenol	91	30-131	04/02/09	Acceptable
Terphenyl-d14	16	20-140	04/02/09	Outside Control Limits

† Analyte Comments

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

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Collected: 03/23/2009
Date Received: 03/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 095377
Lab Code: K0902522-007
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	0.037	1	03/30/09	04/08/09	KWG0902636	
Phenol	ND	U	0.53	0.066	1	03/30/09	04/08/09	KWG0902636	
2-Chlorophenol	ND	U	0.53	0.057	1	03/30/09	04/08/09	KWG0902636	
1,3-Dichlorobenzene	ND	U	0.21	0.022	1	03/30/09	04/08/09	KWG0902636	
1,4-Dichlorobenzene	ND	U	0.21	0.031	1	03/30/09	04/08/09	KWG0902636	
1,2-Dichlorobenzene	ND	U	0.21	0.023	1	03/30/09	04/08/09	KWG0902636	
Benzyl Alcohol	ND	U	0.53	0.077	1	03/30/09	04/08/09	KWG0902636	
Bis(2-chloroisopropyl) Ether	ND	U	0.21	0.028	1	03/30/09	04/08/09	KWG0902636	
2-Methylphenol	ND	U	0.53	0.12	1	03/30/09	04/08/09	KWG0902636	
Hexachloroethane	ND	U	0.21	0.025	1	03/30/09	04/08/09	KWG0902636	
N-Nitrosodi-n-propylamine	ND	U	0.21	0.039	1	03/30/09	04/08/09	KWG0902636	
4-Methylphenol†	ND	U	0.53	0.13	1	03/30/09	04/08/09	KWG0902636	
Nitrobenzene	ND	U	0.21	0.030	1	03/30/09	04/08/09	KWG0902636	
Isophorone	ND	U	0.21	0.017	1	03/30/09	04/08/09	KWG0902636	
2-Nitrophenol	ND	U	0.53	0.066	1	03/30/09	04/08/09	KWG0902636	
2,4-Dimethylphenol	ND	U	4.2	2.3	1	03/30/09	04/08/09	KWG0902636	
Bis(2-chloroethoxy)methane	ND	U	0.21	0.025	1	03/30/09	04/08/09	KWG0902636	
2,4-Dichlorophenol	ND	U	0.53	0.049	1	03/30/09	04/08/09	KWG0902636	
Benzoic Acid	ND	U	5.3	1.2	1	03/30/09	04/08/09	KWG0902636	
1,2,4-Trichlorobenzene	ND	U	0.21	0.017	1	03/30/09	04/08/09	KWG0902636	
Naphthalene	ND	U	0.21	0.023	1	03/30/09	04/08/09	KWG0902636	
4-Chloroaniline	ND	U	0.21	0.027	1	03/30/09	04/08/09	KWG0902636	
Hexachlorobutadiene	ND	U	0.21	0.029	1	03/30/09	04/08/09	KWG0902636	
4-Chloro-3-methylphenol	ND	U	0.53	0.039	1	03/30/09	04/08/09	KWG0902636	
2-Methylnaphthalene	ND	U	0.21	0.028	1	03/30/09	04/08/09	KWG0902636	
Hexachlorocyclopentadiene	ND	U	1.1	0.20	1	03/30/09	04/08/09	KWG0902636	
2,4,6-Trichlorophenol	ND	U	0.53	0.061	1	03/30/09	04/08/09	KWG0902636	
2,4,5-Trichlorophenol	ND	U	0.53	0.033	1	03/30/09	04/08/09	KWG0902636	
2-Chloronaphthalene	ND	U	0.21	0.043	1	03/30/09	04/08/09	KWG0902636	
2-Nitroaniline	ND	U	0.21	0.025	1	03/30/09	04/08/09	KWG0902636	
Acenaphthylene	ND	U	0.21	0.016	1	03/30/09	04/08/09	KWG0902636	
Dimethyl Phthalate	ND	U	0.21	0.022	1	03/30/09	04/08/09	KWG0902636	
2,6-Dinitrotoluene	ND	U	0.21	0.035	1	03/30/09	04/08/09	KWG0902636	
Acenaphthene	ND	U	0.21	0.028	1	03/30/09	04/08/09	KWG0902636	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Collected: 03/23/2009
Date Received: 03/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 095377
Lab Code: K0902522-007
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
3-Nitroaniline	ND	U	1.1	0.031	1	03/30/09	04/08/09	KWG0902636	
2,4-Dinitrophenol	ND	U	4.2	0.18	1	03/30/09	04/08/09	KWG0902636	
Dibenzofuran	ND	U	0.21	0.019	1	03/30/09	04/08/09	KWG0902636	
4-Nitrophenol	ND	U	2.1	0.30	1	03/30/09	04/08/09	KWG0902636	
2,4-Dinitrotoluene	ND	U	0.21	0.019	1	03/30/09	04/08/09	KWG0902636	
Fluorene	ND	U	0.21	0.029	1	03/30/09	04/08/09	KWG0902636	
4-Chlorophenyl Phenyl Ether	ND	U	0.21	0.029	1	03/30/09	04/08/09	KWG0902636	
Diethyl Phthalate	0.041	J	0.21	0.013	1	03/30/09	04/08/09	KWG0902636	
4-Nitroaniline	ND	U	1.1	0.020	1	03/30/09	04/08/09	KWG0902636	
2-Methyl-4,6-dinitrophenol	ND	U	2.1	0.027	1	03/30/09	04/08/09	KWG0902636	
N-Nitrosodiphenylamine	ND	U	0.21	0.050	1	03/30/09	04/08/09	KWG0902636	
4-Bromophenyl Phenyl Ether	ND	U	0.21	0.028	1	03/30/09	04/08/09	KWG0902636	
Hexachlorobenzene	ND	U	0.21	0.023	1	03/30/09	04/08/09	KWG0902636	
Pentachlorophenol	ND	U	1.1	0.36	1	03/30/09	04/08/09	KWG0902636	
Phenanthrene	ND	U	0.21	0.023	1	03/30/09	04/08/09	KWG0902636	
Anthracene	ND	U	0.21	0.025	1	03/30/09	04/08/09	KWG0902636	
Di-n-butyl Phthalate	0.034	J	0.21	0.024	1	03/30/09	04/08/09	KWG0902636	
Fluoranthene	ND	U	0.21	0.021	1	03/30/09	04/08/09	KWG0902636	
Pyrene	ND	U	0.21	0.020	1	03/30/09	04/08/09	KWG0902636	
Butyl Benzyl Phthalate	ND	U	0.21	0.019	1	03/30/09	04/08/09	KWG0902636	
3,3'-Dichlorobenzidine	ND	U	2.1	0.45	1	03/30/09	04/08/09	KWG0902636	
Benz(a)anthracene	ND	U	0.21	0.019	1	03/30/09	04/08/09	KWG0902636	
Chrysene	ND	U	0.21	0.030	1	03/30/09	04/08/09	KWG0902636	
Bis(2-ethylhexyl) Phthalate	ND	U	1.1	0.14	1	03/30/09	04/08/09	KWG0902636	
Di-n-octyl Phthalate	ND	U	0.21	0.019	1	03/30/09	04/08/09	KWG0902636	
Benzo(b)fluoranthene	ND	U	0.21	0.018	1	03/30/09	04/08/09	KWG0902636	
Benzo(k)fluoranthene	ND	U	0.21	0.025	1	03/30/09	04/08/09	KWG0902636	
Benzo(a)pyrene	ND	U	0.21	0.033	1	03/30/09	04/08/09	KWG0902636	
Indeno(1,2,3-cd)pyrene	ND	U	0.21	0.022	1	03/30/09	04/08/09	KWG0902636	
Dibenz(a,h)anthracene	ND	U	0.21	0.018	1	03/30/09	04/08/09	KWG0902636	
Benzo(g,h,i)perylene	ND	U	0.21	0.020	1	03/30/09	04/08/09	KWG0902636	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Collected: 03/23/2009
Date Received: 03/24/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO 095377
Lab Code: K0902522-007

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	68	21-119	04/08/09	Acceptable
Phenol-d6	75	31-121	04/08/09	Acceptable
Nitrobenzene-d5	92	29-121	04/08/09	Acceptable
2-Fluorobiphenyl	80	25-109	04/08/09	Acceptable
2,4,6-Tribromophenol	80	30-131	04/08/09	Acceptable
Terphenyl-d14	99	20-140	04/08/09	Acceptable

Analyte Comments

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

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Collected: NA
Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KWG0902636-3
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	03/30/09	04/02/09	KWG0902636	
Phenol	0.27	J	0.49	0.063	1	03/30/09	04/02/09	KWG0902636	
2-Chlorophenol	ND	U	0.49	0.054	1	03/30/09	04/02/09	KWG0902636	
1,3-Dichlorobenzene	ND	U	0.20	0.021	1	03/30/09	04/02/09	KWG0902636	
1,4-Dichlorobenzene	ND	U	0.20	0.029	1	03/30/09	04/02/09	KWG0902636	
1,2-Dichlorobenzene	ND	U	0.20	0.022	1	03/30/09	04/02/09	KWG0902636	
Benzyl Alcohol	ND	U	0.49	0.073	1	03/30/09	04/02/09	KWG0902636	
Bis(2-chloroisopropyl) Ether	ND	U	0.20	0.026	1	03/30/09	04/02/09	KWG0902636	
2-Methylphenol	ND	U	0.49	0.11	1	03/30/09	04/02/09	KWG0902636	
Hexachloroethane	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
N-Nitrosodi-n-propylamine	ND	U	0.20	0.037	1	03/30/09	04/02/09	KWG0902636	
4-Methylphenol†	ND	U	0.49	0.12	1	03/30/09	04/02/09	KWG0902636	
Nitrobenzene	ND	U	0.20	0.028	1	03/30/09	04/02/09	KWG0902636	
Isophorone	ND	U	0.20	0.016	1	03/30/09	04/02/09	KWG0902636	
2-Nitrophenol	ND	U	0.49	0.063	1	03/30/09	04/02/09	KWG0902636	
2,4-Dimethylphenol	ND	U	3.9	2.2	1	03/30/09	04/02/09	KWG0902636	
Bis(2-chloroethoxy)methane	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
2,4-Dichlorophenol	ND	U	0.49	0.047	1	03/30/09	04/02/09	KWG0902636	
Benzoic Acid	ND	U	4.9	1.1	1	03/30/09	04/02/09	KWG0902636	
1,2,4-Trichlorobenzene	ND	U	0.20	0.016	1	03/30/09	04/02/09	KWG0902636	
Naphthalene	ND	U	0.20	0.022	1	03/30/09	04/02/09	KWG0902636	
4-Chloroaniline	ND	U	0.20	0.025	1	03/30/09	04/02/09	KWG0902636	
Hexachlorobutadiene	ND	U	0.20	0.027	1	03/30/09	04/02/09	KWG0902636	
4-Chloro-3-methylphenol	ND	U	0.49	0.037	1	03/30/09	04/02/09	KWG0902636	
2-Methylnaphthalene	ND	U	0.20	0.026	1	03/30/09	04/02/09	KWG0902636	
Hexachlorocyclopentadiene	ND	U	0.98	0.19	1	03/30/09	04/02/09	KWG0902636	
2,4,6-Trichlorophenol	ND	U	0.49	0.058	1	03/30/09	04/02/09	KWG0902636	
2,4,5-Trichlorophenol	ND	U	0.49	0.031	1	03/30/09	04/02/09	KWG0902636	
2-Chloronaphthalene	ND	U	0.20	0.041	1	03/30/09	04/02/09	KWG0902636	
2-Nitroaniline	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
Acenaphthylene	ND	U	0.20	0.015	1	03/30/09	04/02/09	KWG0902636	
Dimethyl Phthalate	ND	U	0.20	0.021	1	03/30/09	04/02/09	KWG0902636	
2,6-Dinitrotoluene	ND	U	0.20	0.033	1	03/30/09	04/02/09	KWG0902636	
Acenaphthene	ND	U	0.20	0.026	1	03/30/09	04/02/09	KWG0902636	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Collected: NA
Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KWG0902636-3
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
3-Nitroaniline	ND	U	0.98	0.029	1	03/30/09	04/02/09	KWG0902636	
2,4-Dinitrophenol	ND	U	3.9	0.17	1	03/30/09	04/02/09	KWG0902636	
Dibenzofuran	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
4-Nitrophenol	ND	U	2.0	0.28	1	03/30/09	04/02/09	KWG0902636	
2,4-Dinitrotoluene	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
Fluorene	ND	U	0.20	0.027	1	03/30/09	04/02/09	KWG0902636	
4-Chlorophenyl Phenyl Ether	ND	U	0.20	0.027	1	03/30/09	04/02/09	KWG0902636	
Diethyl Phthalate	ND	U	0.20	0.012	1	03/30/09	04/02/09	KWG0902636	
4-Nitroaniline	ND	U	0.98	0.019	1	03/30/09	04/02/09	KWG0902636	
2-Methyl-4,6-dinitrophenol	ND	U	2.0	0.025	1	03/30/09	04/02/09	KWG0902636	
N-Nitrosodiphenylamine	ND	U	0.20	0.048	1	03/30/09	04/02/09	KWG0902636	
4-Bromophenyl Phenyl Ether	ND	U	0.20	0.026	1	03/30/09	04/02/09	KWG0902636	
Hexachlorobenzene	ND	U	0.20	0.022	1	03/30/09	04/02/09	KWG0902636	
Pentachlorophenol	ND	U	0.98	0.34	1	03/30/09	04/02/09	KWG0902636	
Phenanthrene	ND	U	0.20	0.022	1	03/30/09	04/02/09	KWG0902636	
Anthracene	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
Di-n-butyl Phthalate	0.025	J	0.20	0.023	1	03/30/09	04/02/09	KWG0902636	
Fluoranthene	ND	U	0.20	0.020	1	03/30/09	04/02/09	KWG0902636	
Pyrene	ND	U	0.20	0.019	1	03/30/09	04/02/09	KWG0902636	
Butyl Benzyl Phthalate	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
3,3'-Dichlorobenzidine	ND	U	2.0	0.43	1	03/30/09	04/02/09	KWG0902636	
Benz(a)anthracene	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
Chrysene	ND	U	0.20	0.028	1	03/30/09	04/02/09	KWG0902636	
Bis(2-ethylhexyl) Phthalate	ND	U	0.98	0.13	1	03/30/09	04/02/09	KWG0902636	
Di-n-octyl Phthalate	ND	U	0.20	0.018	1	03/30/09	04/02/09	KWG0902636	
Benzo(b)fluoranthene	ND	U	0.20	0.017	1	03/30/09	04/02/09	KWG0902636	
Benzo(k)fluoranthene	ND	U	0.20	0.024	1	03/30/09	04/02/09	KWG0902636	
Benzo(a)pyrene	ND	U	0.20	0.031	1	03/30/09	04/02/09	KWG0902636	
Indeno(1,2,3-cd)pyrene	ND	U	0.20	0.021	1	03/30/09	04/02/09	KWG0902636	
Dibenz(a,h)anthracene	ND	U	0.20	0.017	1	03/30/09	04/02/09	KWG0902636	
Benzo(g,h,i)perylene	ND	U	0.20	0.019	1	03/30/09	04/02/09	KWG0902636	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Collected: NA
Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KWG0902636-3

Units: ug/L
Basis: NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	79	21-119	04/02/09	Acceptable
Phenol-d6	77	31-121	04/02/09	Acceptable
Nitrobenzene-d5	84	29-121	04/02/09	Acceptable
2-Fluorobiphenyl	79	25-109	04/02/09	Acceptable
2,4,6-Tribromophenol	88	30-131	04/02/09	Acceptable
Terphenyl-d14	104	20-140	04/02/09	Acceptable

† Analyte Comments

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

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Portland, City of
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0902522

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

Extraction Method: EPA 3520C
Analysis Method: 8270C

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>	<u>Sur3</u>	<u>Sur4</u>	<u>Sur5</u>	<u>Sur6</u>
FO 095371	K0902522-001	72	80	79	83	119	62
FO 095372	K0902522-002	74	70	79	73	97	63
FO 095373	K0902522-003	67	71	73	58	88	33
FO 095374	K0902522-004	79	87	87	72	96	55
FO 095375	K0902522-005	62	66	70	68	93	51
FO 095376	K0902522-006	69	71	75	64	91	16 *
FO 095377	K0902522-007	68	75	92	80	80	99
Method Blank	KWG0902636-3	79	77	84	79	88	104
Lab Control Sample	KWG0902636-1	72	75	80	76	92	99
Duplicate Lab Control Sample	KWG0902636-2	75	75	79	78	94	101

Surrogate Recovery Control Limits (%)

Sur1 = 2-Fluorophenol	21-119	Sur5 = 2,4,6-Tribromophenol	30-131
Sur2 = Phenol-d6	31-121	Sur6 = Terphenyl-d14	20-140
Sur3 = Nitrobenzene-d5	29-121		
Sur4 = 2-Fluorobiphenyl	25-109		

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
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Extracted: 03/30/2009
Date Analyzed: 04/02/2009

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: KWG0902636

Analyte Name	Lab Control Sample KWG0902636-1 Lab Control Spike			Duplicate Lab Control Sample KWG0902636-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
Bis(2-chloroethyl) Ether	3.80	5.00	76	3.79	5.00	76	39-115	0	30
Phenol	3.89	5.00	78	3.95	5.00	79	39-117	2	30
2-Chlorophenol	4.00	5.00	80	3.93	5.00	79	40-113	2	30
1,3-Dichlorobenzene	2.41	5.00	48	2.42	5.00	48	18-71	1	30
1,4-Dichlorobenzene	2.39	5.00	48	2.44	5.00	49	19-73	2	30
1,2-Dichlorobenzene	2.59	5.00	52	2.52	5.00	50	22-78	3	30
Benzyl Alcohol	4.41	5.00	88	4.28	5.00	86	37-119	3	30
Bis(2-chloroisopropyl) Ether	3.43	5.00	69	3.29	5.00	66	35-113	4	30
2-Methylphenol	3.88	5.00	78	3.50	5.00	70	26-113	10	30
Hexachloroethane	1.77	5.00	35	2.02	5.00	40	11-62	13	30
N-Nitrosodi-n-propylamine	4.06	5.00	81	3.83	5.00	77	32-117	6	30
4-Methylphenol	3.88	5.00	78	3.72	5.00	74	25-118	4	30
Nitrobenzene	3.97	5.00	79	3.82	5.00	76	37-116	4	30
Isophorone	4.07	5.00	81	3.95	5.00	79	39-112	3	30
2-Nitrophenol	4.48	5.00	90	4.50	5.00	90	42-116	0	30
2,4-Dimethylphenol	3.67	5.00	73	2.85	5.00	57	10-113	25	30
Bis(2-chloroethoxy)methane	4.07	5.00	81	3.92	5.00	78	40-113	4	30
2,4-Dichlorophenol	4.66	5.00	93	4.49	5.00	90	39-115	4	30
Benzoic Acid	7.99	15.0	53	6.74	15.0	45	10-102	17	30
1,2,4-Trichlorobenzene	2.81	5.00	56	2.84	5.00	57	21-78	1	30
Naphthalene	3.55	5.00	71	3.46	5.00	69	33-98	3	30
4-Chloroaniline	4.08	5.00	82	4.02	5.00	80	10-119	1	30
Hexachlorobutadiene	2.05	5.00	41	2.14	5.00	43	10-61	4	30
4-Chloro-3-methylphenol	4.19	5.00	84	4.18	5.00	84	37-119	0	30
2-Methylnaphthalene	3.57	5.00	71	3.45	5.00	69	32-95	4	30
Hexachlorocyclopentadiene	1.01	5.00	20	0.998	5.00	20	10-39	1	30
2,4,6-Trichlorophenol	4.40	5.00	88	4.51	5.00	90	40-117	3	30
2,4,5-Trichlorophenol	4.53	5.00	91	4.52	5.00	90	44-116	0	30
2-Chloronaphthalene	3.56	5.00	71	3.46	5.00	69	21-115	3	30
2-Nitroaniline	4.06	5.00	81	4.22	5.00	84	43-124	4	30
Acenaphthylene	4.02	5.00	80	4.19	5.00	84	41-114	4	30
Dimethyl Phthalate	4.27	5.00	85	4.52	5.00	90	47-117	6	30
2,6-Dinitrotoluene	4.54	5.00	91	4.59	5.00	92	45-120	1	30
Acenaphthene	3.93	5.00	79	4.14	5.00	83	38-106	5	30
3-Nitroaniline	4.30	5.00	86	4.61	5.00	92	31-125	7	30
2,4-Dinitrophenol	2.82	5.00	56	2.61	5.00	52	10-121	8	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
Project: Portland Harbor Stormwater
Sample Matrix: Water

Service Request: K0902522
Date Extracted: 03/30/2009
Date Analyzed: 04/02/2009

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: KWG0902636

Analyte Name	Lab Control Sample KWG0902636-1 Lab Control Spike			Duplicate Lab Control Sample KWG0902636-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
Dibenzofuran	3.84	5.00	77	4.10	5.00	82	40-107	6	30
4-Nitrophenol	4.19	5.00	84	4.43	5.00	89	43-133	6	30
2,4-Dinitrotoluene	4.39	5.00	88	4.67	5.00	93	47-125	6	30
Fluorene	4.07	5.00	81	4.35	5.00	87	40-112	7	30
4-Chlorophenyl Phenyl Ether	3.83	5.00	77	3.97	5.00	79	39-108	4	30
Diethyl Phthalate	4.44	5.00	89	4.49	5.00	90	47-120	1	30
4-Nitroaniline	4.33	5.00	87	4.53	5.00	91	36-128	5	30
2-Methyl-4,6-dinitrophenol	3.72	5.00	74	3.46	5.00	69	19-127	7	30
N-Nitrosodiphenylamine	4.12	5.00	82	4.30	5.00	86	36-114	4	30
4-Bromophenyl Phenyl Ether	4.33	5.00	87	4.21	5.00	84	43-110	3	30
Hexachlorobenzene	4.15	5.00	83	4.18	5.00	84	42-107	1	30
Pentachlorophenol	4.37	5.00	87	4.33	5.00	87	28-114	1	30
Phenanthrene	4.07	5.00	81	4.11	5.00	82	43-110	1	30
Anthracene	4.10	5.00	82	4.16	5.00	83	40-110	2	30
Di-n-butyl Phthalate	4.44	5.00	89	4.49	5.00	90	45-135	1	30
Fluoranthene	4.36	5.00	87	4.43	5.00	89	42-119	2	30
Pyrene	4.15	5.00	83	4.21	5.00	84	43-118	2	30
Butyl Benzyl Phthalate	4.30	5.00	86	4.29	5.00	86	48-124	0	30
3,3'-Dichlorobenzidine	4.10	5.00	82	3.99	5.00	80	15-108	3	30
Benz(a)anthracene	4.15	5.00	83	4.19	5.00	84	45-112	1	30
Chrysene	4.03	5.00	81	4.12	5.00	82	47-112	2	30
Bis(2-ethylhexyl) Phthalate	4.27	5.00	85	4.27	5.00	85	32-149	0	30
Di-n-octyl Phthalate	4.20	5.00	84	4.22	5.00	84	49-127	1	30
Benzo(b)fluoranthene	4.16	5.00	83	4.22	5.00	84	45-115	1	30
Benzo(k)fluoranthene	3.97	5.00	79	4.18	5.00	84	46-115	5	30
Benzo(a)pyrene	3.86	5.00	77	3.92	5.00	78	40-117	1	30
Indeno(1,2,3-cd)pyrene	4.24	5.00	85	4.31	5.00	86	44-119	1	30
Dibenz(a,h)anthracene	4.13	5.00	83	4.13	5.00	83	45-118	0	30
Benzo(g,h,i)perylene	4.07	5.00	81	4.16	5.00	83	45-116	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.

CHAIN OF CUSTODY

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

PAGE 1 OF 1 SR#: K0402522
COC # _____

PROJECT NAME <u>Portland Harbor Stormwater</u> PROJECT NUMBER _____ PROJECT MANAGER <u>Jennifer Shackelford</u> COMPANY ADDRESS <u>City of Portland</u> CITY/STATE/ZIP _____ E-MAIL ADDRESS _____ PHONE # _____ FAX# _____ SAMPLER'S SIGNATURE _____						
SAMPLE I.D. FO 095371 FO 095372 FO 095373 FO 095374 FO 095375 FO 095376 FO 095377	DATE 3/23/09 	TIME 1348 1330 1459 1322 1402 1414 1432	LAB I.D. W W W W W W W	MATRIX 2 2 2 2 2 2 2	NUMBER OF CONTAINERS Semivolatile Organics by GC/MS <input checked="" type="checkbox"/> 625 <input type="checkbox"/> 8270 <input type="checkbox"/> 8270LL <input checked="" type="checkbox"/> Volatile Organics <input type="checkbox"/> 624 <input type="checkbox"/> 8260 <input type="checkbox"/> 8021 <input type="checkbox"/> BTEX <input type="checkbox"/> Hydrocarbons (*see below) <input type="checkbox"/> Gas <input type="checkbox"/> Diesel <input type="checkbox"/> Oil <input type="checkbox"/> Fuel Fingerprint (FIQ) <input type="checkbox"/> NW-HCID Screen <input type="checkbox"/> Oil & Grease/TRPH <input type="checkbox"/> 1664 HEM <input type="checkbox"/> 1664 SGT <input type="checkbox"/> PCB's <input type="checkbox"/> Aroclors <input type="checkbox"/> Congeners <input type="checkbox"/> Pesticides/Herbicides - <u>low level</u> <input checked="" type="checkbox"/> 608 <input type="checkbox"/> 8081A <input type="checkbox"/> 8141A <input type="checkbox"/> 8151A <input type="checkbox"/> Chlorophenolics - 8151M <input type="checkbox"/> Tri <input type="checkbox"/> Tetra <input type="checkbox"/> PCP <input type="checkbox"/> PAHS 8310 <input type="checkbox"/> SIM <input type="checkbox"/> Metals, Total or Dissolved (See list below) <input type="checkbox"/> Cyanide <input type="checkbox"/> Hex-Chrom <input type="checkbox"/> pH, Cond., Cl, SO ₄ , PO ₄ , F, NO ₂ , NO ₃ , BOD, TSS, TDS (circle) <input type="checkbox"/> NH ₃ -N, COD, Total-P, TKN, TOC, DOC (circle) NO ₂ +NO ₃ <input type="checkbox"/> TOX 9020 <input type="checkbox"/> AOX 1650 <input type="checkbox"/> 506 <input type="checkbox"/> REMARKS	
REPORT REQUIREMENTS <input checked="" type="checkbox"/> I. Routine Report: Method Blank, Surrogate, as required <input type="checkbox"/> II. Report Dup., MS, MSD as required <input type="checkbox"/> III. Data Validation Report (includes all raw data) <input type="checkbox"/> IV. CLP Deliverable Report <input type="checkbox"/> V. EDD						
INVOICE INFORMATION P.O. # _____ Bill To: _____ TURNAROUND REQUIREMENTS 24 hr. _____ 48 hr. _____ 5 Day _____ Standard (10-15 working days) <input checked="" type="checkbox"/> Provide FAX Results _____ Requested Report Date _____						
RELINQUISHED BY: Signature <u>Kens Klueh</u> Date/Time <u>3/24/09 1110</u> Printed Name <u>Kens Klueh</u> Firm <u>RES</u>						
RECEIVED BY: Signature <u>[Signature]</u> Date/Time <u>3/24/09 1110</u> Printed Name _____ Firm _____						
RELINQUISHED BY: Signature <u>[Signature]</u> Date/Time <u>3/24/09 1100</u> Printed Name _____ Firm _____						
RECEIVED BY: Signature <u>[Signature]</u> Date/Time <u>3/24/09 1300</u> Printed Name <u>Patricia Bin</u> Firm <u>RES</u>						
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 Ti 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 Ti Sn V Zn Hg *INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: _____ (CIRCLE ONE) SPECIAL INSTRUCTIONS/COMMENTS: <p style="font-size: 1.2em;">Please run low-level 8270 + 8081 analysis.</p> <p style="font-size: 1.2em;">Thanks.</p>						

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC P.D

Client / Project: City of Portland Service Request K09 02522

Received: 3-24-09 Opened: 3-24-09 By: bu

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): 8.0

Temperature Blank (°C): 6.7

Thermometer ID: _____

6. If applicable, list Chain of Custody Numbers: _____

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 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 and 1631 Mercury bottles 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	Broken	pH	Reagent	Volume added	Reagent Lot Number	Initials
<u>All Samples</u>			<u>✓</u>							<u>bu</u>

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

Additional Notes, Discrepancies, & Resolutions: left a VM to the client re: temp @ 9:30AM 03/25/09

April 17, 2009

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

RE: Portland Harbor

Enclosed are the results of analyses for samples received by the laboratory on 03/24/09 12:30.
The following list is a summary of the Work Orders contained in this report, generated on 04/17/09 16:45.

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

<u>Work Order</u>	<u>Project</u>	<u>ProjectNumber</u>
PSC0751	Portland Harbor	36238

TestAmerica Portland



Howard Holmes, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name:

Portland Harbor

Project Number:

36238

Project Manager:

Jennifer Shackelford

Report Created:

04/17/09 16:45

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FO095371	PSC0751-01	Water	03/23/09 13:48	03/24/09 12:30
FO095372	PSC0751-02	Water	03/23/09 13:30	03/24/09 12:30
FO095373	PSC0751-03	Water	03/23/09 14:59	03/24/09 12:30
FO095374	PSC0751-04	Water	03/23/09 13:22	03/24/09 12:30
FO095375	PSC0751-05	Water	03/23/09 14:02	03/24/09 12:30
FO095376	PSC0751-06	Water	03/23/09 14:14	03/24/09 12:30
FO095377	PSC0751-07	Water	03/23/09 14:32	03/24/09 12:30
FO095378	PSC0751-08	Water	03/23/09 00:00	03/24/09 12:30

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name:

Portland Harbor

Project Number:

36238

Project Manager:

Jennifer Shackelford

Report Created:

04/17/09 16:45

Analytical Case Narrative

TestAmerica - Portland, OR

PSC0751

8270 SIM PDX-UIC

Naphthalene was detected in the Method Blank at a level $> 1/2$ the MRL. The save vial was analyzed with a similar result. There was no additional sample to re-extract. The data was flagged and reported.

For sample PSC0751-04 the surrgate recoveries were all above the acceptance limits. Evidence indicates that the sample was accidentlally double spiked. There was no additional sample to re-extract. The data was flagged and reported.

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
04/17/09 16:45

Polynuclear Aromatic Compounds per EPA 8270M-SIM
TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSC0751-05 (FO095375)		Water				Sampled: 03/23/09 14:02				
Bis(2-ethylhexyl)phthalate	EPA 8270m	1.41	0.506	0.962	ug/l	1x	9030837	03/26/09 11:55	03/31/09 03:39	
Butyl benzyl phthalate	"	ND	0.506	0.962	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	0.506	0.962	"	"	"	"	"	
Di-n-octyl phthalate	"	1.78	0.506	0.962	"	"	"	"	"	
Diethyl phthalate	"	ND	0.506	0.962	"	"	"	"	"	
Dimethyl phthalate	"	ND	0.506	0.962	"	"	"	"	"	
Acenaphthene	"	ND	0.0192	0.0192	"	"	"	"	04/04/09 07:47	
Acenaphthylene	"	ND	0.0192	0.0192	"	"	"	"	"	
Anthracene	"	ND	0.0192	0.0192	"	"	"	"	"	
Benzo (a) anthracene	"	0.0120	0.00962	0.00962	"	"	"	"	"	
Benzo (a) pyrene	"	0.0121	0.00962	0.00962	"	"	"	"	"	
Benzo (b) fluoranthene	"	0.0212	0.00962	0.00962	"	"	"	"	"	
Benzo (ghi) perylene	"	0.0309	0.0192	0.0192	"	"	"	"	"	
Benzo (k) fluoranthene	"	0.0135	0.00962	0.00962	"	"	"	"	"	
Chrysene	"	0.0474	0.00962	0.00962	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	0.00962	0.00962	"	"	"	"	"	
Fluoranthene	"	0.0759	0.0192	0.0192	"	"	"	"	"	
Fluorene	"	ND	0.0192	0.0192	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	0.0135	0.00962	0.00962	"	"	"	"	"	
Naphthalene	"	0.0309	0.0192	0.0192	"	"	"	"	"	B, N1
Phenanthrene	"	0.0781	0.0192	0.0192	"	"	"	"	"	
Pyrene	"	0.0945	0.0192	0.0192	"	"	"	"	"	
<hr/>										
Surrogate(s): Fluorene-d10			82.7%			25 - 125 %	"			"
Pyrene-d10			72.4%			23 - 150 %	"			"
Benzo (a) pyrene-d12			68.7%			10 - 125 %	"			"

PSC0751-06 (FO095376)

Water

Sampled: 03/23/09 14:14

Bis(2-ethylhexyl)phthalate	EPA 8270m	1.34	0.511	0.971	ug/l	1x	9030837	03/26/09 11:55	03/31/09 04:16	
Butyl benzyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Diethyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Dimethyl phthalate	"	ND	0.511	0.971	"	"	"	"	"	
Acenaphthene	"	ND	0.0194	0.0194	"	"	"	"	04/04/09 10:13	
Acenaphthylene	"	ND	0.0194	0.0194	"	"	"	"	"	
Anthracene	"	ND	0.0194	0.0194	"	"	"	"	"	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
04/17/09 16:45

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSC0751-06 (FO095376)		Water				Sampled: 03/23/09 14:14				
Benzo (a) anthracene	EPA 8270m	ND	0.00971	0.00971	ug/l	1x	9030837	03/26/09 11:55	04/04/09 10:13	
Benzo (a) pyrene	"	ND	0.00971	0.00971	"	"	"	"	"	
Benzo (b) fluoranthene	"	ND	0.00971	0.00971	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	0.0194	0.0194	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	0.00971	0.00971	"	"	"	"	"	
Chrysene	"	0.0288	0.00971	0.00971	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	0.00971	0.00971	"	"	"	"	"	
Fluoranthene	"	0.0536	0.0194	0.0194	"	"	"	"	"	
Fluorene	"	ND	0.0194	0.0194	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	ND	0.00971	0.00971	"	"	"	"	"	
Naphthalene	"	0.0488	0.0194	0.0194	"	"	"	"	"	B, N1
Phenanthrene	"	0.0533	0.0194	0.0194	"	"	"	"	"	
Pyrene	"	0.0843	0.0194	0.0194	"	"	"	"	"	

Surrogate(s): Fluorene-d10 77.5% 25 - 125 % "

Pyrene-d10 80.1% 23 - 150 % "

Benzo (a) pyrene-d12 74.0% 10 - 125 % "

PSC0751-07 (FO095377)		Water				Sampled: 03/23/09 14:32				
Bis(2-ethylhexyl)phthalate	EPA 8270m	0.549	0.506	0.962	ug/l	1x	9030837	03/26/09 11:55	03/30/09 22:12	J
Butyl benzyl phthalate	"	ND	0.506	0.962	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	0.506	0.962	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	0.506	0.962	"	"	"	"	"	
Diethyl phthalate	"	ND	0.506	0.962	"	"	"	"	"	
Dimethyl phthalate	"	ND	0.506	0.962	"	"	"	"	"	
Acenaphthene	"	ND	0.0192	0.0192	"	"	"	"	03/28/09 21:49	
Acenaphthylene	"	ND	0.0192	0.0192	"	"	"	"	"	
Anthracene	"	ND	0.0192	0.0192	"	"	"	"	"	
Benzo (a) anthracene	"	ND	0.00962	0.00962	"	"	"	"	"	
Benzo (a) pyrene	"	ND	0.00962	0.00962	"	"	"	"	"	
Benzo (b) fluoranthene	"	ND	0.00962	0.00962	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	0.0192	0.0192	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	0.00962	0.00962	"	"	"	"	"	
Chrysene	"	ND	0.00962	0.00962	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	0.00962	0.00962	"	"	"	"	"	
Fluoranthene	"	ND	0.0192	0.0192	"	"	"	"	"	
Fluorene	"	ND	0.0192	0.0192	"	"	"	"	"	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
04/17/09 16:45

Polynuclear Aromatic Compounds per EPA 8270M-SIM
TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSC0751-07 (FO095377)		Water		Sampled: 03/23/09 14:32						
Indeno (1,2,3-cd) pyrene	EPA 8270m	ND	0.00962	0.00962	ug/l	1x	9030837	03/26/09 11:55	03/28/09 21:49	
Naphthalene	"	ND	0.0192	0.0192	"	"	"	"	"	
Phenanthrene	"	ND	0.0192	0.0192	"	"	"	"	"	
Pyrene	"	ND	0.0192	0.0192	"	"	"	"	"	
<i>Surrogate(s): Fluorene-d10</i>				89.7%		25 - 125 %	"			"
<i>Pyrene-d10</i>				111%		23 - 150 %	"			"
<i>Benzo (a) pyrene-d12</i>				99.3%		10 - 125 %	"			"

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Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
04/17/09 16:45

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

TestAmerica Portland

QC Batch: 9030837

Water Preparation Method: 3520B Liq-Liq

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (9030837-BLK1)										Extracted: 03/26/09 11:55				
Bis(2-ethylhexyl)phthalate	EPA 8270m	ND	0.526	1.00	ug/l	1x	--	--	--	--	--	--	03/30/09 19:47	
Butyl benzyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Di-n-butyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Di-n-octyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Diethyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Dimethyl phthalate	"	ND	0.526	1.00	"	"	--	--	--	--	--	--	"	
Acenaphthene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	03/28/09 20:50	
Acenaphthylene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Anthracene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (a) anthracene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Benzo (a) pyrene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Benzo (b) fluoranthene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Benzo (ghi) perylene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Benzo (k) fluoranthene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Chrysene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Dibenzo (a,h) anthracene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Fluoranthene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Fluorene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Indeno (1,2,3-cd) pyrene	"	ND	0.0100	0.0100	"	"	--	--	--	--	--	--	"	
Naphthalene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	N1
Phenanthrene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Pyrene	"	ND	0.0200	0.0200	"	"	--	--	--	--	--	--	"	
Surrogate(s): Fluorene-d10		Recovery:	86.0%	Limits: 25-125%		"						03/28/09 20:50		
Pyrene-d10			98.3%	23-150%		"						"		
Benzo (a) pyrene-d12			97.8%	10-125%		"						"		

LCS (9030837-BS1)

Extracted: 03/26/09 11:55

Bis(2-ethylhexyl)phthalate	EPA 8270m	4.75	0.526	1.00	ug/l	1x	--	4.00	119%	(20-150)	--	--	03/30/09 20:23	
Butyl benzyl phthalate	"	4.53	0.526	1.00	"	"	--	"	113%	"	--	--	"	
Di-n-butyl phthalate	"	3.59	0.526	1.00	"	"	--	"	89.9%	"	--	--	"	
Di-n-octyl phthalate	"	5.23	0.526	1.00	"	"	--	"	131%	"	--	--	"	
Diethyl phthalate	"	3.25	0.526	1.00	"	"	--	"	81.3%	"	--	--	"	
Dimethyl phthalate	"	3.27	0.526	1.00	"	"	--	"	81.8%	"	--	--	"	
Acenaphthene	"	2.54	0.0200	0.0200	"	"	--	2.50	102%	(35-120)	--	--	03/28/09 21:20	
Acenaphthylene	"	2.53	0.0200	0.0200	"	"	--	"	101%	(34-116)	--	--	"	
Anthracene	"	2.42	0.0200	0.0200	"	"	--	"	96.9%	(24-119)	--	--	"	
Benzo (a) anthracene	"	2.53	0.0100	0.0100	"	"	--	"	101%	(36-128)	--	--	"	
Benzo (a) pyrene	"	2.59	0.0100	0.0100	"	"	--	"	104%	(17-128)	--	--	"	
Benzo (b) fluoranthene	"	2.41	0.0100	0.0100	"	"	--	"	96.3%	(37-131)	--	--	"	

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
04/17/09 16:45

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

TestAmerica Portland

QC Batch: 9030837

Water Preparation Method: 3520B Liq-Liq

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
LCS (9030837-BS1)										Extracted: 03/26/09 11:55				
Benzo (ghi) perylene	EPA 8270m	2.48	0.0200	0.0200	ug/l	1x	--	2.50	99.4%	(26-126)	--	--	03/28/09 21:20	
Benzo (k) fluoranthene	"	2.31	0.0100	0.0100	"	"	--	"	92.6%	(18-145)	--	--	"	
Chrysene	"	2.59	0.0100	0.0100	"	"	--	"	104%	(16-137)	--	--	"	
Dibenzo (a,h) anthracene	"	2.67	0.0100	0.0100	"	"	--	"	107%	(20-141)	--	--	"	
Fluoranthene	"	2.41	0.0200	0.0200	"	"	--	"	96.5%	(31-125)	--	--	"	
Fluorene	"	2.47	0.0200	0.0200	"	"	--	"	98.9%	(27-124)	--	--	"	
Indeno (1,2,3-cd) pyrene	"	2.60	0.0100	0.0100	"	"	--	"	104%	(30-135)	--	--	"	
Naphthalene	"	2.45	0.0200	0.0200	"	"	--	"	97.8%	(30-113)	--	--	"	B1
Phenanthrene	"	2.45	0.0200	0.0200	"	"	--	"	98.1%	(34-126)	--	--	"	
Pyrene	"	2.68	0.0200	0.0200	"	"	--	"	107%	(21-141)	--	--	"	
<i>Surrogate(s): Fluorene-d10 Recovery: 92.6% Limits: 25-125% "</i>														
<i>Pyrene-d10 109% 23-150% "</i>														
<i>Benzo (a) pyrene-d12 105% 10-125% "</i>														

Matrix Spike (9030837-MS1)

QC Source: PSC0752-03

Extracted: 03/26/09 11:55

Bis(2-ethylhexyl)phthalate	EPA 8270m	5.77	2.53	4.81	ug/l	5x	1.15	3.85	120%	(10-150)	--	--	03/30/09 20:59	
Butyl benzyl phthalate	"	4.82	2.53	4.81	"	"	ND	"	125%	"	--	--	"	
Di-n-butyl phthalate	"	3.64	2.53	4.81	"	"	ND	"	94.6%	"	--	--	"	J
Di-n-octyl phthalate	"	5.51	2.53	4.81	"	"	ND	"	143%	"	--	--	"	
Diethyl phthalate	"	3.25	2.53	4.81	"	"	ND	"	84.5%	"	--	--	"	J
Dimethyl phthalate	"	3.12	2.53	4.81	"	"	ND	"	81.0%	"	--	--	"	J
Acenaphthene	"	2.08	0.0962	0.0962	"	"	ND	2.40	86.5%	(35-120)	--	--	04/04/09 04:47	
Acenaphthylene	"	2.13	0.0962	0.0962	"	"	ND	"	88.7%	(34-116)	--	--	"	
Anthracene	"	2.15	0.0962	0.0962	"	"	ND	"	89.4%	(24-119)	--	--	"	
Benzo (a) anthracene	"	1.86	0.0481	0.0481	"	"	ND	"	77.2%	(22-129)	--	--	"	
Benzo (a) pyrene	"	1.40	0.0481	0.0481	"	"	ND	"	58.3%	(4-112)	--	--	"	
Benzo (b) fluoranthene	"	1.51	0.0481	0.0481	"	"	ND	"	62.9%	(0-136)	--	--	"	
Benzo (ghi) perylene	"	1.42	0.0962	0.0962	"	"	ND	"	59.1%	(0-126)	--	--	"	
Benzo (k) fluoranthene	"	1.45	0.0481	0.0481	"	"	ND	"	60.4%	(0-145)	--	--	"	
Chrysene	"	1.92	0.0481	0.0481	"	"	0.0137	"	79.3%	(7-137)	--	--	"	
Dibenzo (a,h) anthracene	"	1.39	0.0481	0.0481	"	"	ND	"	57.9%	(0-141)	--	--	"	
Fluoranthene	"	2.03	0.0962	0.0962	"	"	ND	"	84.5%	(30-125)	--	--	"	
Fluorene	"	2.21	0.0962	0.0962	"	"	ND	"	91.9%	(27-124)	--	--	"	
Indeno (1,2,3-cd) pyrene	"	1.37	0.0481	0.0481	"	"	ND	"	57.0%	(0-135)	--	--	"	
Naphthalene	"	2.15	0.0962	0.0962	"	"	ND	"	89.5%	(30-126)	--	--	"	B1
Phenanthrene	"	2.24	0.0962	0.0962	"	"	ND	"	93.2%	(34-126)	--	--	"	
Pyrene	"	2.80	0.0962	0.0962	"	"	0.0242	"	115%	(14-168)	--	--	"	
<i>Surrogate(s): Fluorene-d10 Recovery: 87.2% Limits: 25-125% "</i>														
<i>Pyrene-d10 119% 23-150% "</i>														

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: **36238**
Project Manager: **Jennifer Shackelford**

Report Created:
04/17/09 16:45

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

TestAmerica Portland

QC Batch: **9030837**

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 (9030837-MS1)

QC Source: **PSC0752-03**

Extracted: **03/26/09 11:55**

Surrogate(s): *Benzo (a) pyrene-d12*

Recovery: *84.9%*

Limits: *10-125% 5x*

04/04/09 04:47

Matrix Spike Dup (9030837-MSD1)

QC Source: **PSC0752-03**

Extracted: **03/26/09 11:55**

Bis(2-ethylhexyl)phthalate	EPA 8270m	5.92	2.53	4.81	ug/l	5x	1.15	3.85	124%	(10-150)	3.10% (50)	03/30/09 21:36	
Butyl benzyl phthalate	"	4.90	2.53	4.81	"	"	ND	"	127%	"	1.65% "	"	
Di-n-butyl phthalate	"	3.69	2.53	4.81	"	"	ND	"	96.0%	"	1.48% "	"	J
Di-n-octyl phthalate	"	5.57	2.53	4.81	"	"	ND	"	145%	"	1.10% "	"	
Diethyl phthalate	"	3.24	2.53	4.81	"	"	ND	"	84.3%	"	0.280% "	"	J
Dimethyl phthalate	"	3.12	2.53	4.81	"	"	ND	"	81.0%	"	0.0262% "	"	J
Acenaphthene	"	2.05	0.0962	0.0962	"	"	ND	2.40	85.3%	(35-120)	1.37% (45)	04/04/09 05:16	
Acenaphthylene	"	2.03	0.0962	0.0962	"	"	ND	"	84.5%	(34-116)	4.90% "	"	
Anthracene	"	2.14	0.0962	0.0962	"	"	ND	"	89.0%	(24-119)	0.473% "	"	
Benzo (a) anthracene	"	1.87	0.0481	0.0481	"	"	ND	"	77.8%	(22-129)	0.748% "	"	
Benzo (a) pyrene	"	1.36	0.0481	0.0481	"	"	ND	"	56.8%	(4-112)	2.67% "	"	
Benzo (b) fluoranthene	"	1.49	0.0481	0.0481	"	"	ND	"	62.2%	(0-136)	1.15% "	"	
Benzo (ghi) perylene	"	1.37	0.0962	0.0962	"	"	ND	"	56.9%	(0-126)	3.92% "	"	
Benzo (k) fluoranthene	"	1.43	0.0481	0.0481	"	"	ND	"	59.3%	(0-145)	1.83% "	"	
Chrysene	"	1.93	0.0481	0.0481	"	"	0.0137	"	79.7%	(7-137)	0.516% "	"	
Dibenzo (a,h) anthracene	"	1.30	0.0481	0.0481	"	"	ND	"	54.2%	(0-141)	6.65% "	"	
Fluoranthene	"	1.93	0.0962	0.0962	"	"	ND	"	80.4%	(30-125)	4.97% "	"	
Fluorene	"	2.21	0.0962	0.0962	"	"	ND	"	92.0%	(27-124)	0.0849% "	"	
Indeno (1,2,3-cd) pyrene	"	1.30	0.0481	0.0481	"	"	ND	"	54.0%	(0-135)	5.34% "	"	
Naphthalene	"	2.05	0.0962	0.0962	"	"	ND	"	85.4%	(30-126)	4.80% "	"	B1
Phenanthrene	"	2.22	0.0962	0.0962	"	"	ND	"	92.3%	(34-126)	0.925% "	"	
Pyrene	"	2.49	0.0962	0.0962	"	"	0.0242	"	103%	(14-168)	11.7% "	"	

Surrogate(s): *Fluorene-d10*

Recovery: *87.3%*

Limits: *25-125% "*

04/04/09 05:16

Pyrene-d10

108%

23-150% "

"

Benzo (a) pyrene-d12

82.8%

10-125% "

"

TestAmerica Portland



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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name:

Portland Harbor

Project Number:

36238

Project Manager:

Jennifer Shackelford

Report Created:

04/17/09 16:45

Notes and Definitions

Report Specific Notes:

- B - Analyte was detected in the associated Method Blank.
- B1 - Analyte was detected in the associated method blank. Analyte concentration in the sample is greater than 10x the concentration found in the method blank.
- J - Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.
- N1 - See case narrative.
- RL1 - Reporting limit raised due to sample matrix effects.

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



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TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244
11922 E. First Ave. Spokane, WA 99206-5302
9405 SW Nimbus Ave. Beaverton, OR 97008-7145
2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119

425-420-9200 FAX 420-9210
509-924-9200 FAX 924-9290
503-906-9200 FAX 906-9210
907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #: **PSC0751**

CLIENT: City of Portland		INVOICE TO: Charles Lytle	
REPORT TO: Jennifer Shackelford		P.O. NUMBER: 30235	
PHONE:	FAX:	PRESERVATIVE	
PROJECT NAME: Portland Harbor		REQUESTED ANALYSES	
PROJECT NUMBER:			
SAMPLED BY: Stormwater Samp			
CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	PCBs-209 Congeners *	PAH-SIM-NIC *
1 F0095371	3/23/09 1348	X	X
2 F0095372	1330	X	X
3 F0095373	1459	X	X
4 F0095374	1322	X	X
5 F0095375	1402	X	X
6 F0095376	1414	X	X
7 F0095377	1432	X	X
8 F0095378	—	X	
9			
10			
RELEASED BY: Rona Kluch	FIRM: City of Portland	DATE: 3/24/09	RECEIVED BY: Bob
PRINT NAME: Bob	FIRM: TAP	DATE: 3/24/09	PRINT NAME: Bob
RELEASED BY: Bob	FIRM: TAP	DATE: 3/24/09	RECEIVED BY: Julica
PRINT NAME: Bob	FIRM: TAP	DATE: 3/24/09	PRINT NAME: Julica
ADDITIONAL REMARKS:		TEMP: 23	PAGE 1 OF 1

TURNAROUND REQUEST

in Business Days *

Organic & Inorganic Analyses

☒ 7 ☐ 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ <1

Petroleum Hydrocarbon Analyses

☐ 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ <1

STD.

OTHER Specify:

* Turnaround Requests less than standard may incur Rush Charges.

MATRIX (W, S, O)	# OF CONT.	LOCATION/ COMMENTS	IA WO ID
W	2		
W	2		
W	2		
W	2		
W	2	(*) (*) (*)	
W	2		
W	2		
W	1	*	

* PCB-209 Congeners to Pace Analytical. Thanks.

* * Please use custom NIC analyte list w/ low MRLs.

* * * Please use bottle marked "PCB" for PCB analysis. Thanks.

0.7
2.8
0.9

TAL-1000(0408)

TestAmerica Portland
Sample Receiving Checklist

Work Order #: PSC0751 Date/Time Received: 3/24/09 1230
Client Name and Project: City of Portland / Portland Harbor

PM to Complete This Section: Yes No
Residual Chlorine Check Required: ☐ ☐ Quarantined: ☐ ☐
Quote #:
Special Instructions:

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

Unpacking Checks:

Cooler #(s): 1 1 1 1
Temperatures: 23 07 28 09
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: _____

N/A Yes No

Initials: K

- ☒ ☐ ☐ 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. Were VOA/Oil Syringe samples without headspace?
- ☒ ☐ ☐ 13. Were VOA vials preserved? ☐ HCL ☐ Sodium Thiosulfate ☐ Ascorbic Acid
- ☐ ☒ ☐ 14. Did samples require preservation with sodium thiosulfate?
- ☒ ☐ ☐ 15. If yes to #14, was the residual chlorine test negative? If no, document on NOD.
- ☒ ☐ ☐ 16. Are dissolved/field filtered metals bottles sediment-free? If no, document on NOD.
- ☒ ☐ ☐ 17. Is sufficient volume provided for client requested MS/MSD or matrix duplicates? If no, document on NOD and contact PM before proceeding.
- ☒ ☐ ☐ 18. Are analyses with short holding times received in hold?
- ☒ ☐ ☐ 19. Was Standard Turn Around (TAT) requested?
- ☒ ☐ ☐ 20. Receipt date(s) < 48 hours past the collection date(s)? If no, notify PM.

TestAmerica Portland
Sample Receiving Checklist

Work Order #: PSC0751

Login Checks:

Initials: pm

- | N/A | Yes | No | |
|-------------------------------------|-------------------------------------|--------------------------|---|
| | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 21. Sufficient volume provided for all analysis? If no, document on NOD & contact PM. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 22. Sufficient volume provided for client requested MS/MSD or matrix duplicates? If no, document on NOD and contact PM. |
| | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 23. Did the chain of custody include "received by" and "relinquished by" signatures, dates and times? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 24. Were special log in instructions read and followed? |
| | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 25. Were tests logged checked against the COC? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 26. Were rush notices printed and delivered? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 27. Were short hold notices printed and delivered? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 28. Were subcontract COCs printed? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 29. Was HF dilution logged? |

Labeling and Storage Checks:

Initials: PS

- | N/A | Yes | No | |
|-------------------------------------|-------------------------------------|--------------------------|---|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 30. Were the subcontracted samples/containers put in Sx fridge? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 31. Were sample bottles and COC double checked for dissolved/filtered metals? |
| | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 32. Did the sample ID, Date, and Time from label match what was logged? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 33. Were Foreign sample stickers affixed to each container and containers stored in foreign fridge? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 34. Were HF stickers affixed to each container, and containers stored in Sx fridge? |
- Document any problems or discrepancies and the actions taken to resolve them on a Notice of Discrepancy form (NOD).

Report Prepared for:

Howard Holmes
Test America
9405 SW Nimbus Avenue
Beaverton OR 97008

**REPORT OF
LABORATORY
ANALYSIS
FOR PCBs**

Report Information:

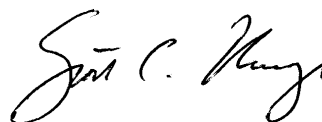
Pace Project #: 1091808
Sample Receipt Date: 03/26/2009
Client Project #: PSC0751
Client Sub PO #: N/A
State Cert #: MN200001-005

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 and prepared by:



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

Report Prepared Date:

April 15, 2009



Report of Laboratory Analysis

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The results relate only to the samples included in this report.

DISCUSSION

This report presents the results from the analyses performed on eight samples submitted by a representative of Test America - Portland. The samples were 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 sample volume. The samples were received within the temperature range specified in the method.

All of the internal standards for this project were recovered within the acceptable ranges for Method 1668A with the exception of three congeners in LCS-19531. Since the quantification of the native PCB congeners was based on internal standards/isotope dilution, 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 contaminants at the reporting limits.

Laboratory spike samples were also prepared with the sample batch using reference material that had been fortified with native standards. The results show that the spiked native congeners in the lab spikes were recovered at 91-129% with relative percent differences of 1.0-16.4%. These results indicate high degrees of accuracy and precision for these congeners. Matrix spikes were not prepared with the sample set.

REPORT OF LABORATORY ANALYSIS

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Appendix A

Sample Management

1129

SUBCONTRACT ORDER

1091808

TestAmerica Portland

PSC0751

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: 1.4 °C Ice: (Y) / N

needs Excel EDD

Analysis	Units	Due	Expires	Comments
Sample ID: PSC0751-01	Water		Sampled: 03/23/09 13:48	1091808001
1668 Coplanar PCBs - SUB	ug/l	04/07/09	09/19/09 13:48	***209 Congeners*** to Pace
Containers Supplied:				FO 095371
1L Amber - Unpres. (A)				
Sample ID: PSC0751-02	Water		Sampled: 03/23/09 13:30	002
1668 Coplanar PCBs - SUB	ug/l	04/07/09	09/19/09 13:30	***209 Congeners*** to Pace
Containers Supplied:				FO 095372
1L Amber - Unpres. (A)				
Sample ID: PSC0751-03	Water		Sampled: 03/23/09 14:59	003
1668 Coplanar PCBs - SUB	ug/l	04/07/09	09/19/09 14:59	***209 Congeners*** to Pace
Containers Supplied:				FO 095373
1L Amber - Unpres. (A)				
Sample ID: PSC0751-04	Water		Sampled: 03/23/09 13:22	004
1668 Coplanar PCBs - SUB	ug/l	04/07/09	09/19/09 13:22	***209 Congeners*** to Pace
Containers Supplied:				FO 095374
1L Amber - Unpres. (A)				
Sample ID: PSC0751-05	Water		Sampled: 03/23/09 14:02	005
1668 Coplanar PCBs - SUB	ug/l	04/07/09	09/19/09 14:02	***209 Congeners*** to Pace
Containers Supplied:				FO 095375
1L Amber - Unpres. (A)				
Sample ID: PSC0751-06	Water		Sampled: 03/23/09 14:14	006
1668 Coplanar PCBs - SUB	ug/l	04/07/09	09/19/09 14:14	***209 Congeners*** to Pace
Containers Supplied:				FO 095376
1L Amber - Unpres. (A)				

Amia Mja
Released By

3/25/09
Date/Time

S/E Pace T=1.42 3-26-09 9:22
Received By Date/Time

SUBCONTRACT ORDER

1091808

TestAmerica Portland

PSC0751

Analysis	Units	Due	Expires	Comments
Sample ID: PSC0751-07	Water		Sampled: 03/23/09 14:32	1091808007
1668 Coplanar PCBs - SUB	ug/l	04/07/09	09/19/09 14:32	***209 Congeners*** to Pace
Containers Supplied:				FO 095377
1L Amber - Unpres. (A)				
Sample ID: PSC0751-08	Water		Sampled: 03/23/09 00:00	008
1668 Coplanar PCBs - SUB	ug/l	04/07/09	09/19/09 00:00	***209 Congeners*** to Pace
Containers Supplied:				FO 095378
1L Amber - Unpres. (A)				

Sample Condition Upon Receipt

Pace Analytical

Client Name: Test America

Project # 1091808

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

Tracking #: 9796 8712 2655

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

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other

Thermometer Used 86344042 179425

Type of Ice: Wet Blue None

Temp Blank: Yes ☒ No

Cooler Temperature 1.4°C

Biological Tissue is Frozen: Yes No

☐ Samples on ice, cooling process has begun

Temp should be above freezing to 6°C

Comments:

Date and initials of person examining contents: 3-26-09

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

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____

Field Data Required? Y / N

Comments/ Resolution: _____

Project Manager Review: _____

Date: 03/26/09

Appendix B

Sample Analysis Summary

Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PSC0751-06;FO 095376		
Lab Sample ID	1091808006		
Filename	U90405B_09		
Injected By	BAL		
Total Amount Extracted	996 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	03/23/2009
ICAL ID	U90405B02	Received	03/26/2009
CCal Filename(s)	U90405B_01	Extracted	04/03/2009
Method Blank ID	BLANK-19530	Analyzed	04/06/2009 12:05

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	6.576	3.44	2.0	0.952	48
13C-4-MoCB	3	9.451	3.31	2.0	1.12	56
13C-2,2'-DiCB	4	9.762	1.62	2.0	1.01	51
13C-4,4'-DiCB	15	17.705	1.58	2.0	1.59	79
13C-2,2',6-TrCB	19	14.015	1.00	2.0	1.16	58
13C-3,4,4'-TrCB	37	26.225	1.08	2.0	2.12	106
13C-2,2',6,6'-TeCB	54	17.993	0.82	2.0	1.24	62
13C-3,4,4',5-TeCB	81	33.887	0.78	2.0	1.83	91
13C-3,3',4,4'-TeCB	77	34.490	0.83	2.0	1.83	91
13C-2,2',4,6,6'-PeCB	104	24.749	1.61	2.0	1.46	73
13C-2,3,3',4,4'-PeCB	105	38.296	1.60	2.0	1.76	88
13C-2,3,4,4',5-PeCB	114	37.609	1.59	2.0	1.76	88
13C-2,3',4,4',5-PeCB	118	37.055	1.61	2.0	1.77	89
13C-2,3',4,4',5'-PeCB	123	36.703	1.57	2.0	1.85	93
13C-3,3',4,4',5-PeCB	126	41.700	1.53	2.0	1.65	82
13C-2,2',4,4',6,6'-HxCB	155	31.305	1.26	2.0	1.76	88
13C-HxCB (156/157)	156/157	44.902	1.24	4.0	3.41	85
13C-2,3',4,4',5,5'-HxCB	167	43.712	1.25	2.0	1.77	89
13C-3,3',4,4',5,5'-HxCB	169	48.423	1.23	2.0	1.61	80
13C-2,2',3,4',5,6,6'-HpCB	188	37.592	1.04	2.0	2.18	109
13C-2,3,3',4,4',5,5'-HpCB	189	51.072	1.02	2.0	2.22	111
13C-2,2',3,3',5,5',6,6'-OxCB	202	43.359	0.92	2.0	2.09	105
13C-2,3,3',4,4',5,5',6-OxCB	205	53.765	0.92	2.0	1.72	86
13C-2,2',3,3',4,4',5,5',6-NoCB	206	55.576	0.75	2.0	1.68	84
13C-2,2',3,3',4,4',5,5',6-NoCB	208	50.468	0.79	2.0	1.84	92
13C--DeCB	209	57.214	0.70	2.0	1.57	79
Cleanup Standards						
13C-2,4,4'-TrCB	28	21.480	1.03	2.0	2.15	108
13C-2,3,3',5,5'-PeCB	111	34.608	1.56	2.0	1.77	89
13C-2,2',3,3',5,5',6-HpCB	178	40.912	1.04	2.0	1.79	90
Recovery Standards						
13C-2,5-DiCB	9	12.542	1.58	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	23.693	0.79	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	31.573	1.62	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	40.409	1.35	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	53.270	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
P = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

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

REPORT OF LABORATORY ANALYSIS

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Pace AnalyticalTM

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 PSC0751-06;FO 095376
Lab Sample ID 1091808006
Filename U90405B_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.251
2		---	---	ND	---	0.251
3		---	---	ND	---	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		---	---	ND	---	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		---	---	ND	---	0.502
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

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
P = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

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

REPORT OF LABORATORY ANALYSIS

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSC0751-06;FO 095376
Lab Sample ID 1091808006
Filename U90405B_09

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		---	---	ND	---	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		---	---	ND	---	0.502
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		---	---	ND	---	0.502
96		---	---	ND	---	0.502

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
P = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

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! = Outside QC Limits
RT = Retention Time
I = Interference
ng's = Nanograms

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Pace AnalyticalTM

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 PSC0751-06;FO 095376
Lab Sample ID 1091808006
Filename U90405B_09

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	---	---	ND	---	1.00
111		---	---	ND	---	0.502
112		---	---	ND	---	0.502
113	90/101/113	---	---	ND	---	1.51
114		---	---	ND	---	0.502
115	110/115	---	---	ND	---	1.00
116	85/116/117	---	---	ND	---	1.51
117	85/116/117	---	---	ND	---	1.51
118		---	---	ND	---	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

Conc = Concentration
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Pace AnalyticalTM

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 PSC0751-06;FO 095376
Lab Sample ID 1091808006
Filename U90405B_09

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 PSC0751-06;FO 095376
Lab Sample ID 1091808006
Filename U90405B_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193	---	---	ND	---	1.00
194		---	---	ND	---	0.753
195		---	---	ND	---	0.753
196		---	---	ND	---	0.753
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	---	0.753
202		---	---	ND	---	0.753
203		---	---	ND	---	0.753
204		---	---	ND	---	0.753
205		---	---	ND	---	0.753
206		---	---	ND	---	0.753
207		---	---	ND	---	0.753
208		---	---	ND	---	0.753
209		---	---	ND	---	0.753

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSC0751-06;FO 095376
Lab Sample ID 1091808006
Filename U90405B_09

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

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PSC0751-07;FO 095377		
Lab Sample ID	1091808007		
Filename	U90405B_10		
Injected By	BAL		
Total Amount Extracted	1030 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	03/23/2009
ICAL ID	U90405B02	Received	03/26/2009
CCal Filename(s)	U90405B_01	Extracted	04/03/2009
Method Blank ID	BLANK-19530	Analyzed	04/06/2009 13:09

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	6.576	3.39	2.0	0.860	43
13C-4-MoCB	3	9.451	3.15	2.0	0.971	49
13C-2,2'-DiCB	4	9.762	1.61	2.0	0.885	44
13C-4,4'-DiCB	15	17.693	1.56	2.0	1.33	67
13C-2,2',6-TrCB	19	13.991	1.01	2.0	1.04	52
13C-3,4,4'-TrCB	37	26.191	1.13	2.0	1.83	91
13C-2,2',6,6'-TeCB	54	17.992	0.80	2.0	1.04	52
13C-3,4,4',5-TeCB	81	33.820	0.80	2.0	1.89	95
13C-3,3',4,4'-TeCB	77	34.440	0.85	2.0	1.87	94
13C-2,2',4,6,6'-PeCB	104	24.716	1.59	2.0	1.20	60
13C-2,3,3',4,4'-PeCB	105	38.212	1.59	2.0	1.97	99
13C-2,3,4,4',5-PeCB	114	37.525	1.57	2.0	1.99	99
13C-2,3',4,4',5-PeCB	118	36.972	1.56	2.0	2.01	100
13C-2,3',4,4',5'-PeCB	123	36.620	1.61	2.0	2.00	100
13C-3,3',4,4',5-PeCB	126	41.582	1.60	2.0	1.96	98
13C-2,2',4,4',6,6'-HxCB	155	31.254	1.27	2.0	1.42	71
13C-HxCB (156/157)	156/157	44.768	1.25	4.0	3.90	97
13C-2,3',4,4',5,5'-HxCB	167	43.578	1.30	2.0	2.02	101
13C-3,3',4,4',5,5'-HxCB	169	48.238	1.29	2.0	1.87	94
13C-2,2',3,4',5,6,6'-HpCB	188	37.508	1.04	2.0	1.79	89
13C-2,3,3',4,4',5,5'-HpCB	189	50.878	1.04	2.0	2.35	118
13C-2,2',3,3',5,5',6'-OxCB	202	43.242	0.89	2.0	1.86	93
13C-2,3,3',4,4',5,5',6-OxCB	205	53.571	0.90	2.0	1.66	83
13C-2,2',3,3',4,4',5,5',6-NoCB	206	55.382	0.83	2.0	1.56	78
13C-2,2',3,3',4,4',5,5',6-NoCB	208	50.317	0.79	2.0	1.80	90
13C--DeCB	209	57.019	0.72	2.0	1.44	72
Cleanup Standards						
13C-2,4,4'-TrCB	28	21.463	1.02	2.0	1.72	86
13C-2,3,3',5,5'-PeCB	111	34.524	1.58	2.0	1.58	79
13C-2,2',3,3',5,5',6-HpCB	178	40.811	1.06	2.0	1.65	82
Recovery Standards						
13C-2,5-DiCB	9	12.529	1.58	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	23.659	0.80	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	31.523	1.57	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	40.308	1.30	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	53.076	0.95	2.0	NA	NA

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSC0751-07;FO 095377
Lab Sample ID 1091808007
Filename U90405B_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.242
2		---	---	ND	---	0.242
3		---	---	ND	---	0.242
4		---	---	ND	---	0.242
5		---	---	ND	---	0.242
6		---	---	ND	---	0.242
7		---	---	ND	---	0.242
8		---	---	ND	---	0.242
9		---	---	ND	---	0.242
10		---	---	ND	---	0.242
11		---	---	ND	---	1.45
12	12/13	---	---	ND	---	0.483
13	12/13	---	---	ND	---	0.483
14		---	---	ND	---	0.242
15		---	---	ND	---	0.242
16		---	---	ND	---	0.242
17		---	---	ND	---	0.242
18	18/30	---	---	ND	---	0.483
19		---	---	ND	---	0.242
20	20/28	---	---	ND	---	0.483
21	21/33	---	---	ND	---	0.483
22		---	---	ND	---	0.242
23		---	---	ND	---	0.242
24		---	---	ND	---	0.242
25		---	---	ND	---	0.242
26	26/29	---	---	ND	---	0.483
27		---	---	ND	---	0.242
28	20/28	---	---	ND	---	0.483
29	26/29	---	---	ND	---	0.483
30	18/30	---	---	ND	---	0.483
31		---	---	ND	---	0.242
32		---	---	ND	---	0.242
33	21/33	---	---	ND	---	0.483
34		---	---	ND	---	0.242
35		---	---	ND	---	0.242
36		---	---	ND	---	0.242
37		---	---	ND	---	0.242
38		---	---	ND	---	0.242
39		---	---	ND	---	0.242
40	40/41/71	---	---	ND	---	1.45
41	40/41/71	---	---	ND	---	1.45
42		---	---	ND	---	0.483
43		---	---	ND	---	0.483
44	44/47/65	---	---	ND	---	1.45
45	45/51	---	---	ND	---	0.967
46		---	---	ND	---	0.483
47	44/47/65	---	---	ND	---	1.45
48		---	---	ND	---	0.483

Conc = Concentration
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSC0751-07;FO 095377
Lab Sample ID 1091808007
Filename U90405B_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69	---	---	ND	---	0.967
50	50/53	---	---	ND	---	0.967
51	45/51	---	---	ND	---	0.967
52		---	---	ND	---	0.483
53	50/53	---	---	ND	---	0.967
54		---	---	ND	---	0.483
55		---	---	ND	---	0.483
56		---	---	ND	---	0.483
57		---	---	ND	---	0.483
58		---	---	ND	---	0.483
59	59/62/75	---	---	ND	---	1.45
60		---	---	ND	---	0.483
61	61/70/74/76	---	---	ND	---	1.93
62	59/62/75	---	---	ND	---	1.45
63		---	---	ND	---	0.483
64		---	---	ND	---	0.483
65	44/47/65	---	---	ND	---	1.45
66		---	---	ND	---	0.483
67		---	---	ND	---	0.483
68		---	---	ND	---	0.483
69	49/69	---	---	ND	---	0.967
70	61/70/74/76	---	---	ND	---	1.93
71	40/41/71	---	---	ND	---	1.45
72		---	---	ND	---	0.483
73		---	---	ND	---	0.483
74	61/70/74/76	---	---	ND	---	1.93
75	59/62/75	---	---	ND	---	1.45
76	61/70/74/76	---	---	ND	---	1.93
77		---	---	ND	---	0.483
78		---	---	ND	---	0.483
79		---	---	ND	---	0.483
80		---	---	ND	---	0.483
81		---	---	ND	---	0.483
82		---	---	ND	---	0.483
83		---	---	ND	---	0.483
84		---	---	ND	---	0.483
85	85/116/117	---	---	ND	---	1.45
86	86/87/97/108/119/125	---	---	ND	---	2.90
87	86/87/97/108/119/125	---	---	ND	---	2.90
88	88/91	---	---	ND	---	0.967
89		---	---	ND	---	0.483
90	90/101/113	---	---	ND	---	1.45
91	88/91	---	---	ND	---	0.967
92		---	---	ND	---	0.483
93	93/98/100/102	---	---	ND	---	1.93
94		---	---	ND	---	0.483
95		---	---	ND	---	0.483
96		---	---	ND	---	0.483

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSC0751-07;FO 095377
Lab Sample ID 1091808007
Filename U90405B_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
97	86/87/97/108/119/125	---	---	ND	---	2.90
98	93/98/100/102	---	---	ND	---	1.93
99		---	---	ND	---	0.483
100	93/98/100/102	---	---	ND	---	1.93
101	90/101/113	---	---	ND	---	1.45
102	93/98/100/102	---	---	ND	---	1.93
103		---	---	ND	---	0.483
104		---	---	ND	---	0.483
105		---	---	ND	---	0.483
106		---	---	ND	---	0.483
107	107/124	---	---	ND	---	0.967
108	86/87/97/108/119/125	---	---	ND	---	2.90
109		---	---	ND	---	0.483
110	110/115	---	---	ND	---	0.967
111		---	---	ND	---	0.483
112		---	---	ND	---	0.483
113	90/101/113	---	---	ND	---	1.45
114		---	---	ND	---	0.483
115	110/115	---	---	ND	---	0.967
116	85/116/117	---	---	ND	---	1.45
117	85/116/117	---	---	ND	---	1.45
118		---	---	ND	---	0.483
119	86/87/97/108/119/125	---	---	ND	---	2.90
120		---	---	ND	---	0.483
121		---	---	ND	---	0.483
122		---	---	ND	---	0.483
123		---	---	ND	---	0.483
124	107/124	---	---	ND	---	0.967
125	86/87/97/108/119/125	---	---	ND	---	2.90
126		---	---	ND	---	0.483
127		---	---	ND	---	0.483
128	128/166	---	---	ND	---	0.967
129	129/138/163	---	---	ND	---	1.45
130		---	---	ND	---	0.483
131		---	---	ND	---	0.483
132		---	---	ND	---	0.483
133		---	---	ND	---	0.483
134	134/143	---	---	ND	---	0.967
135	135/151	---	---	ND	---	0.967
136		---	---	ND	---	0.483
137		---	---	ND	---	0.483
138	129/138/163	---	---	ND	---	1.45
139	139/140	---	---	ND	---	0.967
140	139/140	---	---	ND	---	0.967
141		---	---	ND	---	0.483
142		---	---	ND	---	0.483
143	134/143	---	---	ND	---	0.967
144		---	---	ND	---	0.483

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Sample Analysis Results**

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Lab Sample ID 1091808007
Filename U90405B_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
145		---	---	ND	---	0.483
146		---	---	ND	---	0.483
147	147/149	---	---	ND	---	0.967
148		---	---	ND	---	0.483
149	147/149	---	---	ND	---	0.967
150		---	---	ND	---	0.483
151	135/151	---	---	ND	---	0.967
152		---	---	ND	---	0.483
153	153/168	---	---	ND	---	0.967
154		---	---	ND	---	0.483
155		---	---	ND	---	0.483
156	156/157	---	---	ND	---	0.967
157	156/157	---	---	ND	---	0.967
158		---	---	ND	---	0.483
159		---	---	ND	---	0.483
160		---	---	ND	---	0.483
161		---	---	ND	---	0.483
162		---	---	ND	---	0.483
163	129/138/163	---	---	ND	---	1.45
164		---	---	ND	---	0.483
165		---	---	ND	---	0.483
166	128/166	---	---	ND	---	0.967
167		---	---	ND	---	0.483
168	153/168	---	---	ND	---	0.967
169		---	---	ND	---	0.483
170		---	---	ND	---	0.483
171	171/173	---	---	ND	---	0.967
172		---	---	ND	---	0.483
173	171/173	---	---	ND	---	0.967
174		---	---	ND	---	0.483
175		---	---	ND	---	0.483
176		---	---	ND	---	0.483
177		---	---	ND	---	0.483
178		---	---	ND	---	0.483
179		---	---	ND	---	0.483
180	180/193	---	---	ND	---	0.967
181		---	---	ND	---	0.483
182		---	---	ND	---	0.483
183	183/185	---	---	ND	---	0.967
184		---	---	ND	---	0.483
185	183/185	---	---	ND	---	0.967
186		---	---	ND	---	0.483
187		---	---	ND	---	0.483
188		---	---	ND	---	0.483
189		---	---	ND	---	0.483
190		---	---	ND	---	0.483
191		---	---	ND	---	0.483
192		---	---	ND	---	0.483

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
P = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

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

REPORT OF LABORATORY ANALYSIS

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSC0751-07;FO 095377
Lab Sample ID 1091808007
Filename U90405B_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193	---	---	ND	---	0.967
194		---	---	ND	---	0.725
195		---	---	ND	---	0.725
196		---	---	ND	---	0.725
197	197/200	---	---	ND	---	1.45
198	198/199	---	---	ND	---	1.45
199	198/199	---	---	ND	---	1.45
200	197/200	---	---	ND	---	1.45
201		---	---	ND	---	0.725
202		---	---	ND	---	0.725
203		---	---	ND	---	0.725
204		---	---	ND	---	0.725
205		---	---	ND	---	0.725
206		---	---	ND	---	0.725
207		---	---	ND	---	0.725
208		---	---	ND	---	0.725
209		---	---	ND	---	0.725

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
P = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
*= See Discussion
!= Outside QC Limits
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REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PSC0751-07;FO 095377
Lab Sample ID 1091808007
Filename U90405B_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 Polychlorobiphenyl Blank Analysis Results

Lab Sample ID	BLANK-19530	Matrix	Water
Filename	U90405A_06	Extracted	04/03/2009
Injected By	BAL	Analyzed	04/05/2009 19:00
Total Amount Extracted	1040 mL	Dilution	NA
ICAL ID	U90405A02		
CCal Filename(s)	U90405A_01		

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
------------	-------	----	-------	------------	------------	------------

Labeled Analytes

13C-2-MoCB	1	6.564	3.23	2.0	0.684	34
13C-4-MoCB	3	9.439	3.16	2.0	0.756	38
13C-2,2'-DiCB	4	9.750	1.58	2.0	0.682	34
13C-4,4'-DiCB	15	17.669	1.57	2.0	1.13	57
13C-2,2',6-TrCB	19	13.979	1.15	2.0	0.819	41
13C-3,4,4'-TrCB	37	26.174	1.06	2.0	1.69	85
13C-2,2',6,6'-TeCB	54	17.976	0.79	2.0	0.860	43
13C-3,4,4',5-TeCB	81	33.786	0.81	2.0	1.80	90
13C-3,3',4,4'-TeCB	77	34.406	0.80	2.0	1.87	93
13C-2,2',4,6,6'-PeCB	104	24.699	1.63	2.0	1.14	57
13C-2,3,3',4,4'-PeCB	105	38.179	1.58	2.0	2.03	101
13C-2,3,4,4',5-PeCB	114	37.491	1.57	2.0	2.00	100
13C-2,3',4,4',5-PeCB	118	36.955	1.56	2.0	1.93	97
13C-2,3',4,4',5'-PeCB	123	36.603	1.60	2.0	1.98	99
13C-3,3',4,4',5-PeCB	126	41.548	1.56	2.0	1.96	98
13C-2,2',4,4',6,6'-HxCB	155	31.221	1.28	2.0	1.31	66
13C-HxCB (156/157)	156/157	44.734	1.27	4.0	3.95	99
13C-2,3',4,4',5,5'-HxCB	167	43.544	1.26	2.0	2.02	101
13C-3,3',4,4',5,5'-HxCB	169	48.205	1.29	2.0	1.86	93
13C-2,2',3,4',5,6,6'-HpCB	188	37.474	1.06	2.0	1.67	83
13C-2,3,3',4,4',5,5'-HpCB	189	50.856	1.03	2.0	2.34	117
13C-2,2',3,3',5,5',6,6'-OxCB	202	43.225	0.93	2.0	1.76	88
13C-2,3,3',4,4',5,5',6-OxCB	205	53.550	0.93	2.0	1.61	81
13C-2,2',3,3',4,4',5,5',6-NoCB	206	55.360	0.79	2.0	1.47	73
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	50.295	0.80	2.0	1.67	84
13C--DeCB	209	57.019	0.68	2.0	1.30	65

Cleanup Standards

13C-2,4,4'-TrCB	28	21.446	1.02	2.0	1.70	85
13C-2,3,3',5,5'-PeCB	111	34.507	1.55	2.0	1.55	77
13C-2,2',3,3',5,5',6-HpCB	178	40.777	1.06	2.0	1.51	75

Recovery Standards

13C-2,5-DiCB	9	12.518	1.59	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	23.643	0.78	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	31.506	1.64	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	40.274	1.26	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	53.054	0.94	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
P = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

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

REPORT OF LABORATORY ANALYSIS

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-19530
Filename U90405A_06

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.240
2		---	---	ND	---	0.240
3		---	---	ND	---	0.240
4		---	---	ND	---	0.240
5		---	---	ND	---	0.240
6		---	---	ND	---	0.240
7		---	---	ND	---	0.240
8		---	---	ND	---	0.240
9		---	---	ND	---	0.240
10		---	---	ND	---	0.240
11		---	---	ND	---	1.44
12	12/13	---	---	ND	---	0.481
13	12/13	---	---	ND	---	0.481
14		---	---	ND	---	0.240
15		---	---	ND	---	0.240
16		---	---	ND	---	0.240
17		---	---	ND	---	0.240
18	18/30	---	---	ND	---	0.481
19		---	---	ND	---	0.240
20	20/28	---	---	ND	---	0.481
21	21/33	---	---	ND	---	0.481
22		---	---	ND	---	0.240
23		---	---	ND	---	0.240
24		---	---	ND	---	0.240
25		---	---	ND	---	0.240
26	26/29	---	---	ND	---	0.481
27		---	---	ND	---	0.240
28	20/28	---	---	ND	---	0.481
29	26/29	---	---	ND	---	0.481
30	18/30	---	---	ND	---	0.481
31		---	---	ND	---	0.240
32		---	---	ND	---	0.240
33	21/33	---	---	ND	---	0.481
34		---	---	ND	---	0.240
35		---	---	ND	---	0.240
36		---	---	ND	---	0.240
37		---	---	ND	---	0.240
38		---	---	ND	---	0.240
39		---	---	ND	---	0.240
40	40/41/71	---	---	ND	---	1.44
41	40/41/71	---	---	ND	---	1.44
42		---	---	ND	---	0.481
43		---	---	ND	---	0.481
44	44/47/65	---	---	ND	---	1.44
45	45/51	---	---	ND	---	0.961

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
P = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
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REPORT OF LABORATORY ANALYSIS

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Pace AnalyticalTM

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-19530
Filename U90405A_06

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
46		---	---	ND	---	0.481
47	44/47/65	---	---	ND	---	1.44
48		---	---	ND	---	0.481
49	49/69	---	---	ND	---	0.961
50	50/53	---	---	ND	---	0.961
51	45/51	---	---	ND	---	0.961
52		---	---	ND	---	0.481
53	50/53	---	---	ND	---	0.961
54		---	---	ND	---	0.481
55		---	---	ND	---	0.481
56		---	---	ND	---	0.481
57		---	---	ND	---	0.481
58		---	---	ND	---	0.481
59	59/62/75	---	---	ND	---	1.44
60		---	---	ND	---	0.481
61	61/70/74/76	---	---	ND	---	1.92
62	59/62/75	---	---	ND	---	1.44
63		---	---	ND	---	0.481
64		---	---	ND	---	0.481
65	44/47/65	---	---	ND	---	1.44
66		---	---	ND	---	0.481
67		---	---	ND	---	0.481
68		---	---	ND	---	0.481
69	49/69	---	---	ND	---	0.961
70	61/70/74/76	---	---	ND	---	1.92
71	40/41/71	---	---	ND	---	1.44
72		---	---	ND	---	0.481
73		---	---	ND	---	0.481
74	61/70/74/76	---	---	ND	---	1.92
75	59/62/75	---	---	ND	---	1.44
76	61/70/74/76	---	---	ND	---	1.92
77		---	---	ND	---	0.481
78		---	---	ND	---	0.481
79		---	---	ND	---	0.481
80		---	---	ND	---	0.481
81		---	---	ND	---	0.481
82		---	---	ND	---	0.481
83		---	---	ND	---	0.481
84		---	---	ND	---	0.481
85	85/116/117	---	---	ND	---	1.44
86	86/87/97/108/119/125	---	---	ND	---	2.88
87	86/87/97/108/119/125	---	---	ND	---	2.88
88	88/91	---	---	ND	---	0.961
89		---	---	ND	---	0.481
90	90/101/113	---	---	ND	---	1.44

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
P = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

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*! = See Discussion
! = Outside QC Limits
RT = Retention Time
I = Interference

REPORT OF LABORATORY ANALYSIS

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-19530
Filename U90405A_06

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
91	88/91	---	---	ND	---	0.961
92		---	---	ND	---	0.481
93	93/98/100/102	---	---	ND	---	1.92
94		---	---	ND	---	0.481
95		---	---	ND	---	0.481
96		---	---	ND	---	0.481
97	86/87/97/108/119/125	---	---	ND	---	2.88
98	93/98/100/102	---	---	ND	---	1.92
99		---	---	ND	---	0.481
100	93/98/100/102	---	---	ND	---	1.92
101	90/101/113	---	---	ND	---	1.44
102	93/98/100/102	---	---	ND	---	1.92
103		---	---	ND	---	0.481
104		---	---	ND	---	0.481
105		---	---	ND	---	0.481
106		---	---	ND	---	0.481
107	107/124	---	---	ND	---	0.961
108	86/87/97/108/119/125	---	---	ND	---	2.88
109		---	---	ND	---	0.481
110	110/115	---	---	ND	---	0.961
111		---	---	ND	---	0.481
112		---	---	ND	---	0.481
113	90/101/113	---	---	ND	---	1.44
114		---	---	ND	---	0.481
115	110/115	---	---	ND	---	0.961
116	85/116/117	---	---	ND	---	1.44
117	85/116/117	---	---	ND	---	1.44
118		---	---	ND	---	0.481
119	86/87/97/108/119/125	---	---	ND	---	2.88
120		---	---	ND	---	0.481
121		---	---	ND	---	0.481
122		---	---	ND	---	0.481
123		---	---	ND	---	0.481
124	107/124	---	---	ND	---	0.961
125	86/87/97/108/119/125	---	---	ND	---	2.88
126		---	---	ND	---	0.481
127		---	---	ND	---	0.481
128	128/166	---	---	ND	---	0.961
129	129/138/163	---	---	ND	---	1.44
130		---	---	ND	---	0.481
131		---	---	ND	---	0.481
132		---	---	ND	---	0.481
133		---	---	ND	---	0.481
134	134/143	---	---	ND	---	0.961
135	135/151	---	---	ND	---	0.961

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
P = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

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*! = See Discussion
! = Outside QC Limits
RT = Retention Time
I = Interference

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID
Filename

BLANK-19530
U90405A_06

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
136		---	---	ND	---	0.481
137		---	---	ND	---	0.481
138	129/138/163	---	---	ND	---	1.44
139	139/140	---	---	ND	---	0.961
140	139/140	---	---	ND	---	0.961
141		---	---	ND	---	0.481
142		---	---	ND	---	0.481
143	134/143	---	---	ND	---	0.961
144		---	---	ND	---	0.481
145		---	---	ND	---	0.481
146		---	---	ND	---	0.481
147	147/149	---	---	ND	---	0.961
148		---	---	ND	---	0.481
149	147/149	---	---	ND	---	0.961
150		---	---	ND	---	0.481
151	135/151	---	---	ND	---	0.961
152		---	---	ND	---	0.481
153	153/168	---	---	ND	---	0.961
154		---	---	ND	---	0.481
155		---	---	ND	---	0.481
156	156/157	---	---	ND	---	0.961
157	156/157	---	---	ND	---	0.961
158		---	---	ND	---	0.481
159		---	---	ND	---	0.481
160		---	---	ND	---	0.481
161		---	---	ND	---	0.481
162		---	---	ND	---	0.481
163	129/138/163	---	---	ND	---	1.44
164		---	---	ND	---	0.481
165		---	---	ND	---	0.481
166	128/166	---	---	ND	---	0.961
167		---	---	ND	---	0.481
168	153/168	---	---	ND	---	0.961
169		---	---	ND	---	0.481
170		---	---	ND	---	0.481
171	171/173	---	---	ND	---	0.961
172		---	---	ND	---	0.481
173	171/173	---	---	ND	---	0.961
174		---	---	ND	---	0.481
175		---	---	ND	---	0.481
176		---	---	ND	---	0.481
177		---	---	ND	---	0.481
178		---	---	ND	---	0.481
179		---	---	ND	---	0.481
180	180/193	---	---	ND	---	0.961

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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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-19530
Filename U90405A_06

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
181		---	---	ND	---	0.481
182		---	---	ND	---	0.481
183	183/185	---	---	ND	---	0.961
184		---	---	ND	---	0.481
185	183/185	---	---	ND	---	0.961
186		---	---	ND	---	0.481
187		---	---	ND	---	0.481
188		---	---	ND	---	0.481
189		---	---	ND	---	0.481
190		---	---	ND	---	0.481
191		---	---	ND	---	0.481
192		---	---	ND	---	0.481
193	180/193	---	---	ND	---	0.961
194		---	---	ND	---	0.721
195		---	---	ND	---	0.721
196		---	---	ND	---	0.721
197	197/200	---	---	ND	---	1.44
198	198/199	---	---	ND	---	1.44
199	198/199	---	---	ND	---	1.44
200	197/200	---	---	ND	---	1.44
201		---	---	ND	---	0.721
202		---	---	ND	---	0.721
203		---	---	ND	---	0.721
204		---	---	ND	---	0.721
205		---	---	ND	---	0.721
206		---	---	ND	---	0.721
207		---	---	ND	---	0.721
208		---	---	ND	---	0.721
209		---	---	ND	---	0.721

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
P = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

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

REPORT OF LABORATORY ANALYSIS

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Pace AnalyticalTM

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 DFBLKNE
Lab Sample ID BLANK-19530
Filename U90405A_06

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-19531	
Filename	U90406A_03	Matrix
Total Amount Extracted	1030 mL	Dilution
ICAL ID	U90406A02	Extracted
CCal Filename(s)	U90406A_01	Analyzed
Method Blank ID	BLANK-19530	Injected By
		Water
		NA
		04/03/2009
		04/07/2009 12:38
		SMT

PCB Isomer	Native Analytes			Labeled Analytes			
	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recovery	
1	1.0	1.23	123	2.0	0.517	26	P
3	1.0	1.29	129	2.0	0.560	28	P
4	1.0	1.21	121	2.0	0.477	24	P
15	1.0	1.01	101	2.0	0.827	41	
19	1.0	0.979	98	2.0	0.633	32	
37	1.0	1.04	104	2.0	1.29	64	
54	1.0	1.03	103	2.0	0.768	38	
81	1.0	1.07	107	2.0	1.30	65	
77	1.0	1.03	103	2.0	1.40	70	
104	1.0	1.10	110	2.0	0.922	46	
105	1.0	1.11	111	2.0	1.49	75	
114	1.0	1.11	111	2.0	1.55	78	
118	1.0	1.15	115	2.0	1.48	74	
123	1.0	1.14	114	2.0	1.49	75	
126	1.0	0.996	100	2.0	1.53	76	
155	1.0	1.12	112	2.0	1.01	51	
156/157	2.0	2.03	101	4.0	3.23	81	
167	1.0	1.21	121	2.0	1.63	81	
169	1.0	0.986	99	2.0	1.54	77	
188	1.0	1.05	105	2.0	1.21	61	
189	1.0	0.920	92	2.0	1.80	90	
202	1.0	1.06	106	2.0	1.29	65	
205	1.0	1.03	103	2.0	1.30	65	
206	1.0	1.01	101	2.0	1.21	61	
208	1.0	1.01	101	2.0	1.32	66	
209	1.0	0.953	95	2.0	1.07	54	

P = 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-19532	
Filename	U90406A_04	Matrix
Total Amount Extracted	1040 mL	Water
ICAL ID	U90406A02	Dilution
CCal Filename(s)	U90406A_01	Extracted
Method Blank ID	BLANK-19530	Analyzed
		04/07/2009 13:42
		Injected By
		SMT

PCB Isomer	Native Analytes			Labeled Analytes		
	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recovery
1	1.0	1.15	115	2.0	0.833	42
3	1.0	1.11	111	2.0	0.919	46
4	1.0	1.11	111	2.0	0.781	39
15	1.0	1.07	107	2.0	1.30	65
19	1.0	0.942	94	2.0	1.00	50
37	1.0	0.950	95	2.0	1.92	96
54	1.0	0.991	99	2.0	1.14	57
81	1.0	1.01	101	2.0	1.74	87
77	1.0	1.02	102	2.0	1.79	89
104	1.0	1.02	102	2.0	1.30	65
105	1.0	0.972	97	2.0	2.02	101
114	1.0	1.01	101	2.0	2.06	103
118	1.0	1.05	105	2.0	1.96	98
123	1.0	0.968	97	2.0	2.10	105
126	1.0	0.939	94	2.0	2.03	101
155	1.0	0.945	95	2.0	1.43	72
156/157	2.0	1.87	94	4.0	4.26	106
167	1.0	1.10	110	2.0	2.17	109
169	1.0	0.925	92	2.0	2.05	102
188	1.0	0.973	97	2.0	1.51	76
189	1.0	0.898	90	2.0	2.29	114
202	1.0	0.978	98	2.0	1.57	79
205	1.0	0.965	96	2.0	1.64	82
206	1.0	0.979	98	2.0	1.49	75
208	1.0	0.948	95	2.0	1.64	82
209	1.0	0.915	91	2.0	1.43	71

P = 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-19531
Spike 1 Filename U90406A_03

Spike 2 ID LCSD-19532
Spike 2 Filename U90406A_04

Compound	IUPAC	Spike 1 %REC	Spike 2 %REC	%RPD
2-MoCB	1	123	115	6.7
4-MoCB	3	129	111	15.0
2,2'-DiCB	4	121	111	8.6
4,4'-DiCB	15	101	107	5.8
2,2',6-TrCB	19	98	94	4.2
3,4,4'-TrCB	37	104	95	9.0
2,2',6,6'-TeCB	54	103	99	4.0
3,3',4,4'-TeCB	77	103	102	1.0
3,4,4',5-TeCB	81	107	101	5.8
2,2',4,6,6'-PeCB	104	110	102	7.5
2,3,3',4,4'-PeCB	105	111	97	13.5
2,3,4,4',5-PeCB	114	111	101	9.4
2,3',4,4',5-PeCB	118	115	105	9.1
2,3,4,4',5'-PeCB	123	114	97	16.1
3,3',4,4',5-PeCB	126	100	94	6.2
2,2',4,4',6,6'-HxCB	155	112	95	16.4
(156/157)	156/157	101	94	7.2
2,3',4,4',5,5'-HxCB	167	121	110	9.5
3,3',4,4',5,5'-HxCB	169	99	92	7.3
2,2',3,4',5,6,6'-HpCB	188	105	97	7.9
2,3,3',4,4',5,5'-HpCB	189	92	90	2.2
2,2',3,3',5,5',6,6'-OcCB	202	106	98	7.8
2,3,3',4,4',5,5',6-OcCB	205	103	96	7.0
2,2',3,3',4,4',5,5',6-NoCB	206	101	98	3.0
2,2',3,3',4,5,5',6,6'-NoCB	208	101	95	6.1
Decachlorobiphenyl	209	95	91	4.3

%REC = Percent Recovered

RPD = The difference between the two values divided by the mean value

REPORT OF LABORATORY ANALYSIS

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Sediment Trap Samples



ASA/CAR

[illegible]



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: **FO095662**

Sample Collected: 06/02/09 11:51
Sample Received: 06/02/09

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: ST-44A-ABC311-0609
N LARABEE & RANDOLPH
Sample Point Code: 44A_ST1
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 1 of 3

System ID: AN05761
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB/AJA/LAP

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. For pesticide results flagged as estimates, results from the primary and verification columns varied by more than 40%. The presence of PCBs may have affected pesticide quantitations and reporting limits.

Test Parameter	Result	Units	MRL	Method	Analysis Date
GENERAL					
TOTAL SOLIDS	51.3	% W/W	0.01	SM 2540 G	06/03/09
METALS					
ARSENIC	2.47	mg/Kg dry wt	0.50	EPA 6020	06/10/09
CADMIUM	1.41	mg/Kg dry wt	0.10	EPA 6020	06/10/09
CHROMIUM	34.4	mg/Kg dry wt	0.50	EPA 6020	06/10/09
COPPER	103	mg/Kg dry wt	0.25	EPA 6020	06/10/09
LEAD	71.3	mg/Kg dry wt	0.10	EPA 6020	06/10/09
MERCURY	0.108	mg/Kg dry wt	0.010	EPA 6020	06/10/09
NICKEL	28.1	mg/Kg dry wt	0.25	EPA 6020	06/10/09
SILVER	0.65	mg/Kg dry wt	0.10	EPA 6020	06/10/09
ZINC	574	mg/Kg dry wt	0.50	EPA 6020	06/10/09
GC ANALYSIS					
POLYCHLORINATED BIPHENYLS (PCB)					
Aroclor 1016/1242	<10	µg/Kg dry wt	10	EPA 8082	06/09/09
Aroclor 1221	<20	µg/Kg dry wt	20	EPA 8082	06/09/09
Aroclor 1232	<10	µg/Kg dry wt	10	EPA 8082	06/09/09
Aroclor 1248	<10	µg/Kg dry wt	10	EPA 8082	06/09/09
Aroclor 1254	11	µg/Kg dry wt	10	EPA 8082	06/09/09
Aroclor 1260	20	µg/Kg dry wt	10	EPA 8082	06/09/09
Aroclor 1262	<10	µg/Kg dry wt	10	EPA 8082	06/09/09
Aroclor 1268	<10	µg/Kg dry wt	10	EPA 8082	06/09/09
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	68000	mg/Kg dry wt	100	EPA 9060 MOD	06/22/09
GRAIN SIZE BY ASTM - ARI					
Clay (<3.2 µm)	5.4	Fract %	0.1	ASTM D421/422	06/10/09
Coarse Sand (4750-2000 µm)	3.5	Fract %	0.1	ASTM D421/422	06/10/09
Fine Sand (150-75 µm)	10.1	Fract %	0.1	ASTM D421/422	06/10/09
Fine Sand (250-150 µm)	10.0	Fract %	0.1	ASTM D421/422	06/10/09
Fine Sand (425-250 µm)	14.8	Fract %	0.1	ASTM D421/422	06/10/09
Gravel (>4750 µm)	1.1	Fract %	0.1	ASTM D421/422	06/10/09
Medium Sand (2000-850 µm)	9.4	Fract %	0.1	ASTM D421/422	06/10/09
Medium Sand (850-425 µm)	16.1	Fract %	0.1	ASTM D421/422	06/10/09

Report Date: 07/08/09

Validated By: 



City of Portland
Water Pollution Control Laboratory
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LABORATORY ANALYSIS REPORT

Sample ID: **FO095662**

Sample Collected: 06/02/09 11:51
Sample Received: 06/02/09

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP

Report Page: Page 2 of 3

Address/Location: ST-44A-ABC311-0609
N LARABEE & RANDOLPH

System ID: AN05761

Sample Point Code: 44A_ST1

EID File #: 1020.005

Sample Type: COMPOSITE

LocCode: PORTHASW

Sample Matrix: SEDIMENT

Collected By: MJS/JXB/AJA/LAP

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. For pesticide results flagged as estimates, results from the primary and verification columns varied by more than 40%. The presence of PCBs may have affected pesticide quantitations and reporting limits.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Silt (13-9 μ m)	2.7	Fract %	0.1	ASTM D421/422	06/10/09
Silt (22-13 μ m)	4.3	Fract %	0.1	ASTM D421/422	06/10/09
Silt (32-22 μ m)	4.9	Fract %	0.1	ASTM D421/422	06/10/09
Silt (7-3.2 μ m)	2.7	Fract %	0.1	ASTM D421/422	06/10/09
Silt (75-32 μ m)	13.5	Fract %	0.1	ASTM D421/422	06/10/09
Silt (9-7 μ m)	1.6	Fract %	0.1	ASTM D421/422	06/10/09
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	<2.2	μ g/Kg dry wt	2.2	EPA 8081A	06/09/09
4,4'-DDE	<1.0	μ g/Kg dry wt	1.0	EPA 8081A	06/09/09
4,4'-DDT	<8.1	μ g/Kg dry wt	8.1	EPA 8081A	06/09/09
Aldrin	<1.7	μ g/Kg dry wt	1.7	EPA 8081A	06/09/09
Alpha-BHC	<1.0	μ g/Kg dry wt	1.0	EPA 8081A	06/09/09
Alpha-Chlordane	<1.4	μ g/Kg dry wt	1.4	EPA 8081A	06/09/09
Beta-BHC	<1.0	μ g/Kg dry wt	1.0	EPA 8081A	06/09/09
Delta-BHC	<1.0	μ g/Kg dry wt	1.0	EPA 8081A	06/09/09
Dieldrin	<1.0	μ g/Kg dry wt	1.0	EPA 8081A	06/09/09
Endosulfan I	<1.0	μ g/Kg dry wt	1.0	EPA 8081A	06/09/09
Endosulfan II	<2.9	μ g/Kg dry wt	2.9	EPA 8081A	06/09/09
Endosulfan Sulfate	<1.0	μ g/Kg dry wt	1.0	EPA 8081A	06/09/09
Endrin	<1.0	μ g/Kg dry wt	1.0	EPA 8081A	06/09/09
Endrin Aldehyde	<1.0	μ g/Kg dry wt	1.0	EPA 8081A	06/09/09
Endrin Ketone	<1.0	μ g/Kg dry wt	1.0	EPA 8081A	06/09/09
Gamma-BHC(Lindane)	EST 9.7	μ g/Kg dry wt	1.0	EPA 8081A	06/09/09
Gamma-Chlordane	<1.2	μ g/Kg dry wt	1.2	EPA 8081A	06/09/09
Heptachlor	14	μ g/Kg dry wt	1.0	EPA 8081A	06/09/09
Heptachlor Epoxide	2.6	μ g/Kg dry wt	1.0	EPA 8081A	06/09/09
Methoxychlor	12	μ g/Kg dry wt	1.0	EPA 8081A	06/09/09
Toxaphene	<190	μ g/Kg dry wt	190	EPA 8081A	06/09/09
POLYCHLORINATED BIPHENYL CONGENERS -PACE					
Refer to Contract Report	Completed	ng/Kg dry wt		EPA 1668 MOD	06/11/09
POLYNUCLEAR AROMATICS & PHTHALATES - TA					
Acenaphthene	<103	μ g/Kg dry wt	103	EPA8270M-SIM	06/09/09
Acenaphthylene	<103	μ g/Kg dry wt	103	EPA8270M-SIM	06/09/09

Report Date: 07/08/09

Validated By:



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



LABORATORY ANALYSIS REPORT

Sample ID: **FO095662**

Sample Collected: 06/02/09 11:51
Sample Received: 06/02/09

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: ST-44A-ABC311-0609
N LARABEE & RANDOLPH
Sample Point Code: 44A_ST1
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 3 of 3

System ID: AN05761
EID File #: 1020.005
LocCode: PORTHASW
Collected By: MJS/JXB/AJA/LAP

Comments:

QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. For pesticide results flagged as estimates, results from the primary and verification columns varied by more than 40%. The presence of PCBs may have affected pesticide quantitations and reporting limits.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Anthracene	<103	µg/Kg dry wt	103	EPA8270M-SIM	06/09/09
Benzo(a)anthracene	159	µg/Kg dry wt	103	EPA8270M-SIM	06/09/09
Benzo(a)pyrene	175	µg/Kg dry wt	103	EPA8270M-SIM	06/09/09
Benzo(b)fluoranthene	254	µg/Kg dry wt	103	EPA8270M-SIM	06/09/09
Benzo(ghi)perylene	283	µg/Kg dry wt	103	EPA8270M-SIM	06/09/09
Benzo(k)fluoranthene	165	µg/Kg dry wt	103	EPA8270M-SIM	06/09/09
Bis(2-ethylhexyl) phthalate	26600	µg/Kg dry wt	5160	EPA8270M-SIM	06/09/09
Butyl benzyl phthalate	<5160	µg/Kg dry wt	5160	EPA8270M-SIM	06/09/09
Chrysene	355	µg/Kg dry wt	103	EPA8270M-SIM	06/09/09
Dibenzo(a,h)anthracene	<103	µg/Kg dry wt	103	EPA8270M-SIM	06/09/09
Diethyl phthalate	<5160	µg/Kg dry wt	5160	EPA8270M-SIM	06/09/09
Dimethyl phthalate	<5160	µg/Kg dry wt	5160	EPA8270M-SIM	06/09/09
Di-n-butyl phthalate	<5160	µg/Kg dry wt	5160	EPA8270M-SIM	06/09/09
Di-n-octyl phthalate	<7740	µg/Kg dry wt	7740	EPA8270M-SIM	06/09/09
Fluoranthene	532	µg/Kg dry wt	103	EPA8270M-SIM	06/09/09
Fluorene	<103	µg/Kg dry wt	103	EPA8270M-SIM	06/09/09
Indeno(1,2,3-cd)pyrene	161	µg/Kg dry wt	103	EPA8270M-SIM	06/09/09
Naphthalene	8240	µg/Kg dry wt	103	EPA8270M-SIM	06/09/09
Phenanthrene	285	µg/Kg dry wt	103	EPA8270M-SIM	06/09/09
Pyrene	400	µg/Kg dry wt	103	EPA8270M-SIM	06/09/09

End of Report for Sample ID: FO095662

Report Date: 07/08/09

Validated By: 



City of Portland
Water Pollution Control Laboratory
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LABORATORY ANALYSIS REPORT

Sample ID: **FO095677**

Sample Collected: 06/02/09 11:51
Sample Received: 06/02/09

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: FIELD DUPLICATE

Report Page: Page 1 of 2

Sample Point Code: DUP
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

System ID: AN05869
EID File #: 1020.005
LocCode: PORTHASW
Collected By: JXB/MJS/AJA/LAP

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. LAB: In addition to Aroclor 1260, trace level of 1254 was evident at concentration below the MRL.

Test Parameter	Result	Units	MRL	Method	Analysis Date
GENERAL					
TOTAL SOLIDS	51.3	% W/W	0.01	SM 2540 G	06/03/09
METALS					
ARSENIC	2.73	mg/Kg dry wt	0.50	EPA 6020	06/10/09
CADMIUM	1.65	mg/Kg dry wt	0.10	EPA 6020	06/10/09
CHROMIUM	37.5	mg/Kg dry wt	0.50	EPA 6020	06/10/09
COPPER	104	mg/Kg dry wt	0.25	EPA 6020	06/10/09
LEAD	113	mg/Kg dry wt	0.10	EPA 6020	06/10/09
MERCURY	0.546	mg/Kg dry wt	0.010	EPA 6020	06/10/09
NICKEL	25.2	mg/Kg dry wt	0.25	EPA 6020	06/10/09
SILVER	0.30	mg/Kg dry wt	0.10	EPA 6020	06/10/09
ZINC	488	mg/Kg dry wt	0.50	EPA 6020	06/10/09
GC ANALYSIS					
POLYCHLORINATED BIPHENYLS (PCB)					
Aroclor 1016/1242	<10	µg/Kg dry wt	10	EPA 8082	06/09/09
Aroclor 1221	<20	µg/Kg dry wt	20	EPA 8082	06/09/09
Aroclor 1232	<10	µg/Kg dry wt	10	EPA 8082	06/09/09
Aroclor 1248	<10	µg/Kg dry wt	10	EPA 8082	06/09/09
Aroclor 1254	<10	µg/Kg dry wt	10	EPA 8082	06/09/09
Aroclor 1260	15	µg/Kg dry wt	10	EPA 8082	06/09/09
Aroclor 1262	<10	µg/Kg dry wt	10	EPA 8082	06/09/09
Aroclor 1268	<10	µg/Kg dry wt	10	EPA 8082	06/09/09
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	74000	mg/Kg dry wt	100	EPA 9060 MOD	06/22/09
POLYCHLORINATED BIPHENYL CONGENERS -PACE					
Refer to Contract Report	Completed	ng/Kg dry wt		EPA 1668 MOD	06/11/09
POLYNUCLEAR AROMATICS & PHTHALATES - TA					
Acenaphthene	<104	µg/Kg dry wt	104	EPA8270M-SIM	06/09/09
Acenaphthylene	<104	µg/Kg dry wt	104	EPA8270M-SIM	06/09/09
Anthracene	<104	µg/Kg dry wt	104	EPA8270M-SIM	06/09/09
Benzo(a)anthracene	159	µg/Kg dry wt	104	EPA8270M-SIM	06/09/09
Benzo(a)pyrene	194	µg/Kg dry wt	104	EPA8270M-SIM	06/09/09
Benzo(b)fluoranthene	254	µg/Kg dry wt	104	EPA8270M-SIM	06/09/09

Report Date: 07/08/09

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: FO095677

Sample Collected: 06/02/09 11:51
Sample Received: 06/02/09

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR STORMWATER SAMP
Address/Location: FIELD DUPLICATE

Report Page: Page 2 of 2

Sample Point Code: DUP
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

System ID: AN05869
EID File # : 1020.005
LocCode: PORTHASW
Collected By: JXB/MJS/AJA/LAP

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. LAB: In addition to Aroclor 1260, trace level of 1254 was evident at concentration below the MRL.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Benzo(ghi)perylene	290	µg/Kg dry wt	104	EPA8270M-SIM	06/09/09
Benzo(k)fluoranthene	175	µg/Kg dry wt	104	EPA8270M-SIM	06/09/09
Bis(2-ethylhexyl) phthalate	19700	µg/Kg dry wt	5200	EPA8270M-SIM	06/09/09
Butyl benzyl phthalate	<5200	µg/Kg dry wt	5200	EPA8270M-SIM	06/09/09
Chrysene	351	µg/Kg dry wt	104	EPA8270M-SIM	06/09/09
Dibenzo(a,h)anthracene	<104	µg/Kg dry wt	104	EPA8270M-SIM	06/09/09
Diethyl phthalate	<5200	µg/Kg dry wt	5200	EPA8270M-SIM	06/09/09
Dimethyl phthalate	<5200	µg/Kg dry wt	5200	EPA8270M-SIM	06/09/09
Di-n-butyl phthalate	<5200	µg/Kg dry wt	5200	EPA8270M-SIM	06/09/09
Di-n-octyl phthalate	<5200	µg/Kg dry wt	5200	EPA8270M-SIM	06/09/09
Fluoranthene	497	µg/Kg dry wt	104	EPA8270M-SIM	06/09/09
Fluorene	<104	µg/Kg dry wt	104	EPA8270M-SIM	06/09/09
Indeno(1,2,3-cd)pyrene	166	µg/Kg dry wt	104	EPA8270M-SIM	06/09/09
Naphthalene	3750	µg/Kg dry wt	104	EPA8270M-SIM	06/09/09
Phenanthrene	328	µg/Kg dry wt	104	EPA8270M-SIM	06/09/09
Pyrene	383	µg/Kg dry wt	104	EPA8270M-SIM	06/09/09

End of Report for Sample ID: FO095677

Report Date: 07/08/09

Validated By:



Analytical Resources, Incorporated
Analytical Chemists and Consultants

June 19, 2009

Mr. Howard Holmes
Test America, Inc.
9405 SW Nimbus Ave.
Beaverton, OR 97008

Subject: Project No.: PSF0274
ARI Project No.: PC04

Dear Mr. Holmes,

The following pages provide the information you requested. Please call me to discuss any questions or comments you may have on the data or its presentation.

Best Regards,
Analytical Resources Incorporated

Guenna Smith
Geotechnical Division Manager
206-695-6246
guennas@arilabs.com

Enclosures

cc: File PC04

SUBCONTRACT ORDER

TestAmerica Portland

PSF0274

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:

Analytical Resources, Inc. (ARI)
4611 S 134th Place, Suite 100
Tukwilla, WA 98168
Phone: (206) 621-6490
Fax: 206-621-7523
Project Location: OR - OREGON
Receipt Temperature: 14.1 °C

Ice: ☒ Y ☐ N

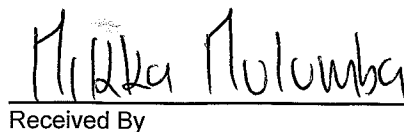
needs Excel EDD

Analysis	Units	Due	Expires	Comments
<hr/>				
Sample ID: PSF0274-03	Other dry	Sampled: 05/29/09 14:28		
Grain Size (ASTM) - SUB	ug/l	06/22/09	11/25/09 14:28	sub to Analytical Resources Inc (ARI)
Containers Supplied: 8 oz. jar (A)				
<hr/>				
Sample ID: PSF0274-05	Other dry	Sampled: 06/02/09 11:51		
Grain Size (ASTM) - SUB	ug/l	06/22/09	11/29/09 11:51	sub to Analytical Resources Inc (ARI)
Containers Supplied: 8 oz. jar (A)				
<hr/>				

Please do the best you can with
these two samples, as this is
all the volume they could
get.

Thanks
Howard Holmes
503-906-9231


Released By _____ Date/Time 6/9/09 1400


Received By _____ Date/Time 6/10/09 1020

Released By _____ Date/Time _____

Received By _____ Date/Time _____

Page 1 of 1



Analytical Resources, Incorporated
Analytical Chemists and Consultants

Client: Test America, Inc.

ARI Project No.: PC04

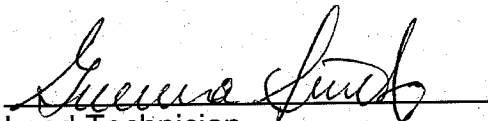
Client Project: PSF0274

Case Narrative

1. Two samples were received on June 10, 2009, and were in good condition.
2. The samples were submitted for grain size distribution, according to ASTM D422. The samples were prepared according to ASTM D421.
3. An assumed specific gravity of 2.65 was used in the calculations.
4. A standard milkshake mixer type device was used to disperse the sample.
5. The data is provided in summary tables and plots.
6. There were no further anomalies in the samples or test method.

Approved by:

Title:


Lead Technician

Date:

6/19/09

Test America, Inc.
PSF0274

Percent Finer (Passing) Than the Indicated Size

Sieve Size (microns)	3"	2"	1 1/2"	1"	3/4"	1/2"	3/8"	#4 (4750)	#10 (2000)	#20 (850)	#40 (425)	#60 (250)	#100 (150)	#200 (75)	32	22	13	9	7	3.2	1.3
PSF0274-03	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.4	97.6	90.6	75.0	56.8	42.6	28.3	13.8	12.0	10.1	9.2	8.3	6.9	5.5
PSF0274-05	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.9	95.4	86.1	70.0	55.2	45.3	35.2	21.7	16.8	12.5	9.8	8.1	5.4	5.4

Testing performed according to ASTM D421/D422

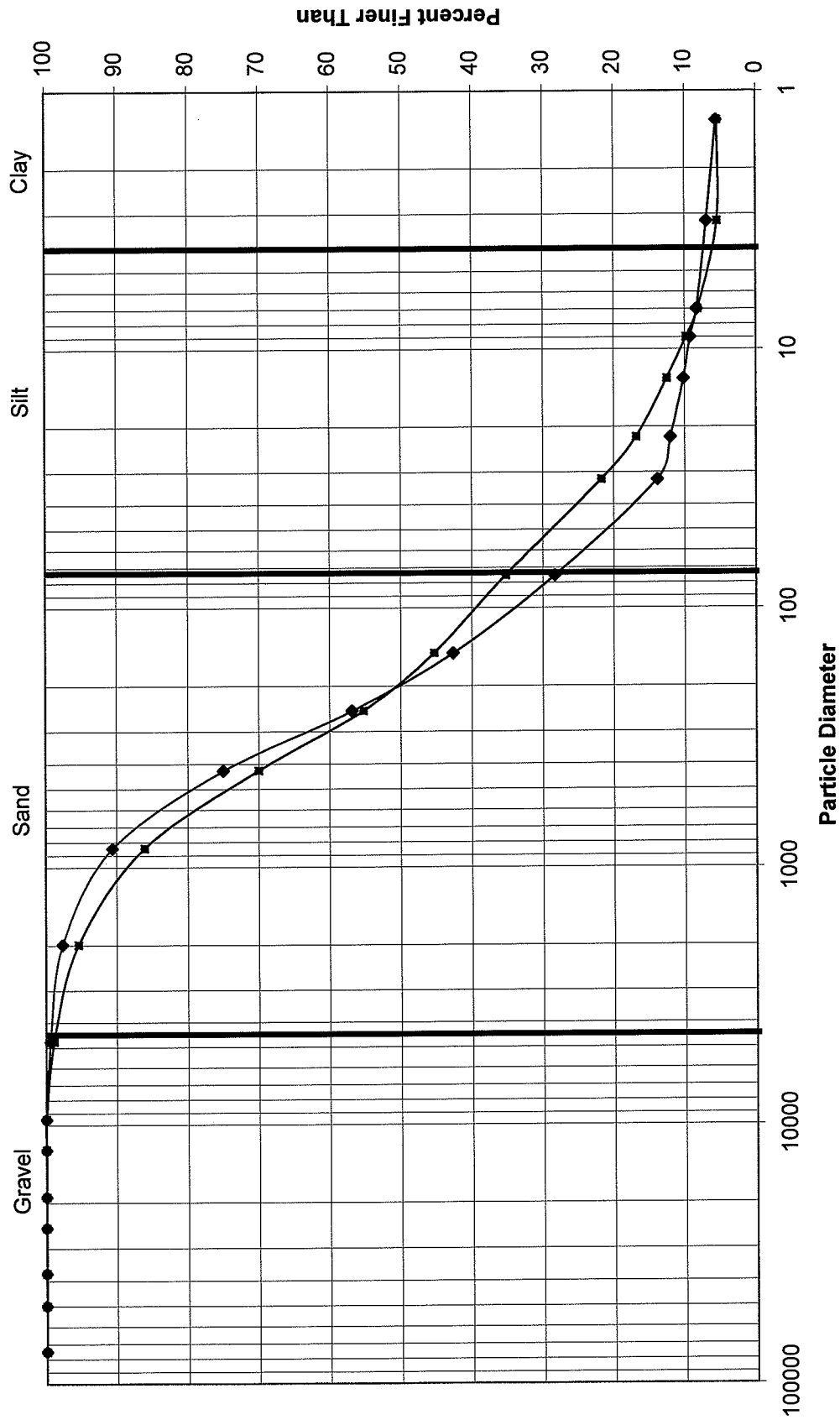
PC04

Test America, Inc.
PSF0274

Percent Retained in Each Size Fraction

Description	% Coarse Gravel				% Gravel			% Coarse Sand	% Medium Sand			% Fine Sand			% Very Coarse Silt	% Coarse Silt	% Medium Silt	% Fine Silt	% Very Fine Silt	% Clay
	3-2"	2-1 1/2"	1 1/2"-1"	1-3/4"	3/4-1/2"	1/2-3/8"	3/8"-4/750		4750-2000	2000-850	850-425	425-250	250-150	150-75						
Particle Size (microns)																				
PSF0274-03	0.0	0.0	0.0	0.0	0.0	0.0	0.6	1.8	7.0	15.6	18.1	14.2	14.3	14.5	1.8	4.9	1.8	0.9	1.4	6.9
PSF0274-05	0.0	0.0	0.0	0.0	0.0	0.0	1.1	3.5	9.4	16.1	14.8	10.0	10.1	13.5	4.9	4.3	4.3	2.7	2.7	5.4

Grain Size Distribution by Hydrometer



—◆— PSF0274-03

—■— PSF0274-05

June 23, 2009

Analytical Report for Service Request No: K0905119

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

RE: Portland Harbor Stormwater Samp

Dear Jennifer:

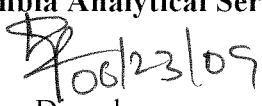
Enclosed are the results of the samples submitted to our laboratory on June 08, 2009. For your reference, these analyses have been assigned our service request number K0905119.

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/lg

Page 1 of 19

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 but greater than or equal to the MDL.
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- i The MRL/MDL has been elevated due to a matrix interference.
- X See case narrative.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- B The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- 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.
- 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 has been elevated due to a matrix interference.
- X See case narrative.
- * The duplicate analysis not within control limits. See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.

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 (25% for CLP Pesticides).
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- i The MRL/MDL has been elevated due to a chromatographic interference.
- X See case narrative.

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: Portland, City of
Project: Portland Harbor Stormwater Samp
Sample Matrix: Sediment

Service Request No.: K0905119
Date Received: 06/08/09

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 (DUP), Matrix Spike (MS), Laboratory Control Sample (LCS), and Laboratory/Duplicate Laboratory Control Sample (LCS/DLCS).

Sample Receipt

Five sediment samples were received for analysis at Columbia Analytical Services on 06/08/09. 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.

General Chemistry Parameters

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

Organochlorine Pesticides by EPA Method 8081A – LL

Sample Confirmation Notes:

The confirmation comparison criteria of 40% difference for at least one analyte was exceeded in some samples. The higher of the two values was reported when no evidence of a matrix interference was observed. The lower of the two values was reported when there was an apparent interference on the alternate column that produced the higher value.

Elevated Detection Limits:

The detection limit was elevated several analytes in all 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.

Few samples required dilution due to the presence of elevated levels of target analyte. The reporting limits were adjusted to reflect the dilution.

Sample Notes and Discussion:

Most samples appeared to have one or more Aroclor patterns present, in varying concentrations, which are known to interfere with several target compounds in the pesticide analysis. Some analytes may have a high bias because of this interference.

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



06/23/09

Approved by _____ Date _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client : Portland, City of
Project Name : Portland Harbor Stormwater Samp
Project Number : NA
Sample Matrix : SEDIMENT

Service Request : K0905119
Date Collected : 06/01/09
Date Received : 06/08/09

Carbon, Total Organic (TOC)

Prep Method : SOP
Analysis Method : ASTM D4129-82M
Test Notes :

Units : Percent
Basis : NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Result	Result Notes
FO 095661	K0905119-004	0.05	0.02	1	6/16/2009	06/18/09	8.35	
Method Blank	K0905119-MB	0.05	0.02	1	NA	06/18/09	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : Portland, City of
Project Name : Portland Harbor Stormwater Samp
Project Number : NA
Sample Matrix : SEDIMENT

Service Request : K0905119
Date Collected : NA
Date Received : NA
Date Prepared : NA
Date Analyzed : 06/18/09

Duplicate Summary Inorganic Parameters

Sample Name : Batch QC
Lab Code : K0904541-001DUP
Test Notes :

Units : Percent
Basis : NA

Analyte	Prep Method	Analysis Method	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
Carbon, Total Organic (TOC)	SOP	ASTM D4129-82M	0.05	6.26	6.28	6.27	<1	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : Portland, City of
Project Name : Portland Harbor Stormwater Samp
Project Number : NA
Sample Matrix : SEDIMENT

Service Request : K0905119
Date Collected : NA
Date Received : NA
Date Prepared : NA
Date Analyzed : 06/18/09

Matrix Spike Summary Inorganic Parameters

Sample Name : Batch QC
Lab Code : K0904541-001MS
Test Notes :

Units : Percent
Basis : NA

Analyte	Prep Method	Analysis Method	MRL	Spike Level	Sample Result	Spiked Sample Result	Percent Recovery	CAS	Result Notes
								Percent Recovery Acceptance Limits	
Carbon, Total Organic (TOC)	SOP	ASTM D4129-82M	0.05	12.8	6.26	18.5	96	75-114	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client : Portland, City of
Project Name : Portland Harbor Stormwater Samp
Project Number : NA
Sample Matrix : SEDIMENT

Service Request : K0905119
Date Collected : NA
Date Received : NA
Date Prepared : NA
Date Analyzed : 06/18/09

Laboratory Control Sample Summary Inorganic Parameters

Sample Name : Lab Control Sample
Lab Code : K0905119-LCS
Test Notes :

Units : Percent
Basis : Dry

Analyte	Prep Method	Analysis Method	True Value	Result	Percent Recovery	CAS	Result Notes
						Percent Recovery Acceptance Limits	
Carbon, Total Organic (TOC)	SOP	ASTM D4129-82M	0.42	0.46	110	74-123	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor Stormwater Samp
 Sample Matrix: Sediment

Service Request: K0905119
 Date Collected: 06/02/2009
 Date Received: 06/08/2009

Organochlorine Pesticides

Sample Name: FO 095662
 Lab Code: K0905119-005
 Extraction Method: EPA 3541
 Analysis Method: 8081A

Units: ug/Kg
 Basis: Dry
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	1.0	0.11	1	06/09/09	06/19/09	KWG0904936	
beta-BHC	ND	Ui	1.0	1.0	1	06/09/09	06/19/09	KWG0904936	
gamma-BHC (Lindane)	9.7	P	1.0	0.080	1	06/09/09	06/19/09	KWG0904936	
delta-BHC	ND	Ui	1.0	1.0	1	06/09/09	06/19/09	KWG0904936	
Heptachlor	14		1.0	0.12	1	06/09/09	06/19/09	KWG0904936	
Aldrin	ND	Ui	1.7	1.7	1	06/09/09	06/19/09	KWG0904936	
Heptachlor Epoxide	2.6		1.0	0.084	1	06/09/09	06/19/09	KWG0904936	
gamma-Chlordane†	ND	Ui	1.2	1.2	1	06/09/09	06/19/09	KWG0904936	
Endosulfan I	ND	Ui	1.0	1.0	1	06/09/09	06/19/09	KWG0904936	
alpha-Chlordane	ND	Ui	1.4	1.4	1	06/09/09	06/19/09	KWG0904936	
Dieldrin	ND	Ui	1.0	1.0	1	06/09/09	06/19/09	KWG0904936	
4,4'-DDE	ND	Ui	1.0	1.0	1	06/09/09	06/19/09	KWG0904936	
Endrin	ND	U	1.0	0.094	1	06/09/09	06/19/09	KWG0904936	
Endosulfan II	ND	Ui	2.9	2.9	1	06/09/09	06/19/09	KWG0904936	
4,4'-DDD	ND	Ui	2.2	2.2	1	06/09/09	06/19/09	KWG0904936	
Endrin Aldehyde	ND	U	1.0	0.12	1	06/09/09	06/19/09	KWG0904936	
Endosulfan Sulfate	ND	Ui	1.0	1.0	1	06/09/09	06/19/09	KWG0904936	
4,4'-DDT	ND	Ui	8.1	8.1	1	06/09/09	06/19/09	KWG0904936	
Endrin Ketone	ND	Ui	1.0	0.95	1	06/09/09	06/19/09	KWG0904936	
Methoxychlor	12		1.0	0.19	1	06/09/09	06/19/09	KWG0904936	
Toxaphene	ND	Ui	190	190	1	06/09/09	06/19/09	KWG0904936	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	69	25-125	06/19/09	Acceptable
Decachlorobiphenyl	72	22-142	06/19/09	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: Portland Harbor Stormwater Samp
 Sample Matrix: Sediment

Service Request: K0905119
 Date Collected: NA
 Date Received: NA

Organochlorine Pesticides

Sample Name: Method Blank
 Lab Code: KWG0904936-5
 Extraction Method: EPA 3541
 Analysis Method: 8081A

Units: ug/Kg
 Basis: Dry
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
alpha-BHC	ND	U	0.50	0.11	1	06/09/09	06/19/09	KWG0904936	
beta-BHC	ND	U	0.50	0.18	1	06/09/09	06/19/09	KWG0904936	
gamma-BHC (Lindane)	ND	U	0.50	0.080	1	06/09/09	06/19/09	KWG0904936	
delta-BHC	ND	U	0.50	0.074	1	06/09/09	06/19/09	KWG0904936	
Heptachlor	ND	U	0.50	0.12	1	06/09/09	06/19/09	KWG0904936	
Aldrin	ND	U	0.50	0.16	1	06/09/09	06/19/09	KWG0904936	
Heptachlor Epoxide	ND	U	0.50	0.084	1	06/09/09	06/19/09	KWG0904936	
gamma-Chlordane†	ND	U	0.50	0.090	1	06/09/09	06/19/09	KWG0904936	
Endosulfan I	ND	U	0.50	0.063	1	06/09/09	06/19/09	KWG0904936	
alpha-Chlordane	ND	U	0.50	0.10	1	06/09/09	06/19/09	KWG0904936	
Dieldrin	ND	U	0.50	0.14	1	06/09/09	06/19/09	KWG0904936	
4,4'-DDE	ND	U	0.50	0.11	1	06/09/09	06/19/09	KWG0904936	
Endrin	ND	U	0.50	0.094	1	06/09/09	06/19/09	KWG0904936	
Endosulfan II	ND	U	0.50	0.14	1	06/09/09	06/19/09	KWG0904936	
4,4'-DDD	ND	U	0.50	0.11	1	06/09/09	06/19/09	KWG0904936	
Endrin Aldehyde	ND	U	0.50	0.12	1	06/09/09	06/19/09	KWG0904936	
Endosulfan Sulfate	ND	U	0.50	0.11	1	06/09/09	06/19/09	KWG0904936	
4,4'-DDT	ND	U	0.50	0.17	1	06/09/09	06/19/09	KWG0904936	
Endrin Ketone	ND	U	0.50	0.093	1	06/09/09	06/19/09	KWG0904936	
Methoxychlor	ND	U	0.50	0.19	1	06/09/09	06/19/09	KWG0904936	
Toxaphene	ND	U	25	4.8	1	06/09/09	06/19/09	KWG0904936	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	82	25-125	06/19/09	Acceptable
Decachlorobiphenyl	85	22-142	06/19/09	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: Portland Harbor Stormwater Samp
Sample Matrix: Sediment

Service Request: K0905119

Surrogate Recovery Summary
Organochlorine Pesticides

Extraction Method: EPA 3541
Analysis Method: 8081A

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>
FO 095657	K0905119-001	74	71
FO 095658	K0905119-002	71	59
FO 095659	K0905119-003	71	87
FO 095661	K0905119-004	80	67
FO 095662	K0905119-005	69	72
Method Blank	KWG0904936-5	82	85
Lab Control Sample	KWG0904936-1	81	81
Duplicate Lab Control Sample	KWG0904936-2	85	86

Surrogate Recovery Control Limits (%)

Sur1 = Tetrachloro-m-xylene	25-125
Sur2 = Decachlorobiphenyl	22-142

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
 Project: Portland Harbor Stormwater Samp
 Sample Matrix: Sediment

Service Request: K0905119
 Date Extracted: 06/09/2009
 Date Analyzed: 06/19/2009

Lab Control Spike/Duplicate Lab Control Spike Summary
 Organochlorine Pesticides

Extraction Method: EPA 3541
 Analysis Method: 8081A

Units: ug/Kg
 Basis: Dry
 Level: Low
 Extraction Lot: KWG0904936

Analyte Name	Lab Control Sample KWG0904936-1 Lab Control Spike			Duplicate Lab Control Sample KWG0904936-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
alpha-BHC	19.4	20.0	97	21.2	20.0	106	45-150	9	40
beta-BHC	19.8	20.0	99	20.9	20.0	105	47-149	6	40
gamma-BHC (Lindane)	19.5	20.0	97	21.2	20.0	106	48-146	9	40
delta-BHC	21.1	20.0	106	23.1	20.0	116	59-162	9	40
Heptachlor	18.6	20.0	93	20.2	20.0	101	47-142	8	40
Aldrin	17.4	20.0	87	19.0	20.0	95	43-141	9	40
Heptachlor Epoxide	16.8	20.0	84	18.5	20.0	93	48-140	10	40
gamma-Chlordane	18.7	20.0	93	20.4	20.0	102	42-145	9	40
Endosulfan I	12.5	20.0	62	13.5	20.0	67	36-124	8	40
alpha-Chlordane	18.2	20.0	91	20.4	20.0	102	42-145	11	40
Dieldrin	18.9	20.0	94	20.9	20.0	105	50-142	10	40
4,4'-DDE	18.9	20.0	95	21.3	20.0	107	51-149	12	40
Endrin	21.3	20.0	106	23.5	20.0	118	54-155	10	40
Endosulfan II	15.1	20.0	75	16.3	20.0	82	42-130	8	40
4,4'-DDD	20.4	20.0	102	22.3	20.0	112	51-152	9	40
Endrin Aldehyde	6.52	20.0	33	8.50	20.0	43	31-139	26	40
Endosulfan Sulfate	18.8	20.0	94	20.9	20.0	105	48-143	11	40
4,4'-DDT	20.2	20.0	101	22.5	20.0	112	59-151	11	40
Endrin Ketone	17.5	20.0	88	19.5	20.0	97	41-158	11	40
Methoxychlor	20.9	20.0	105	23.6	20.0	118	55-153	12	40

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.



CHAIN OF CUSTODY

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

SR#: W0405119

PAGE 1 OF 1 COC #

PROJECT NAME <u>Portland Harbor Stormwater Samp</u>		PROJECT NUMBER <u> </u>			
PROJECT MANAGER <u>Jennifer Shackelford</u>		COMPANY ADDRESS <u> </u>			
CITY/STATE/ZIP <u> </u>		E-MAIL ADDRESS <u> </u>			
PHONE # <u> </u>		FAX # <u> </u>			
SAMPLER'S SIGNATURE <u> </u>		NUMBER OF CONTAINERS <u> </u>			
SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	REMARKS
F0095657	5/29/09	1235		Sediment	TS=51.6%
5658	5/29/09	1133			TS=44.7%
5659	5/29/09	1428			TS=49.9%
5661	6/1/09	1450			TS=67.2%
5662	6/2/09	1151			TS=51.3%

REPORT REQUIREMENTS <input checked="" type="checkbox"/> I. Routine Report: Method Blank, Surrogate, as required <input type="checkbox"/> II. Report Dup., MS, MSD as required <input type="checkbox"/> III. Data Validation Report (includes all raw data) <input type="checkbox"/> IV. CLP Deliverable Report <input type="checkbox"/> V. EDD		INVOICE INFORMATION P.O. # <u> </u> Bill To: <u> </u>	
TURNAROUND REQUIREMENTS 24 hr. <u> </u> 48 hr. <u> </u> 5 Day <u> </u> Standard (10-15 working days) Provide FAX Results <u> </u> Requested Report Date <u> </u>		SPECIAL INSTRUCTIONS/COMMENTS: <u>Please run low-level pesticides 8081.</u> <u>Limited sample size - TS results provided above.</u>	
RELINQUISHED BY: Signature <u>Sing of Portland</u> Date/Time <u>6-8-09 11:45</u> Printed Name <u>BES</u> Firm <u>BES</u>		RELINQUISHED BY: Signature <u> </u> Date/Time <u> </u> Printed Name <u> </u> Firm <u> </u>	
RECEIVED BY: Signature <u> </u> Date/Time <u>6-8-09 11:45</u> Printed Name <u> </u> Firm <u> </u>		RECEIVED BY: Signature <u> </u> Date/Time <u> </u> Printed Name <u> </u> Firm <u> </u>	

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC PD

Client / Project: City of Portland Service Request **K09** 05119
 Received: 6-8-09 Opened: 6-8-09 By: [Signature]

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 _____
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: _____

June 30, 2009

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

RE: Portland Harbor

Enclosed are the results of analyses for samples received by the laboratory on 06/08/09 17:00.
The following list is a summary of the Work Orders contained in this report, generated on 06/30/09 12:12.

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

<u>Work Order</u>	<u>Project</u>	<u>ProjectNumber</u>
PSF0274	Portland Harbor	36238

TestAmerica Portland



Howard Holmes, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name:

Portland Harbor

Project Number:

36238

Project Manager:

Jennifer Shackelford

Report Created:

06/30/09 12:12

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FO095657	PSF0274-01	Other dry	05/29/09 12:35	06/08/09 17:00
FO095658	PSF0274-02	Other dry	05/29/09 11:33	06/08/09 17:00
FO095659	PSF0274-03	Other dry	05/29/09 14:28	06/08/09 17:00
FO095660	PSF0274-04	Other dry	06/01/09 11:35	06/08/09 17:00
FO095662	PSF0274-05	Other dry	06/02/09 11:51	06/08/09 17:00
FO095677	PSF0274-06	Other dry	06/02/09 11:51	06/08/09 17:00

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
06/30/09 12:12

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSF0274-04 (FO095660)		Other dry			Sampled: 06/01/09 11:35					RL7
Dibenzo (a,h) anthracene	EPA 8270m	ND	----	209	ug/kg dry	5x	9060313	06/09/09 12:00	06/15/09 19:21	
Fluoranthene	"	1440	----	209	"	"	"	"	"	
Fluorene	"	ND	----	209	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	347	----	209	"	"	"	"	"	
Naphthalene	"	7900	----	209	"	"	"	"	"	
Phenanthrene	"	1390	----	209	"	"	"	"	"	
Pyrene	"	1310	----	209	"	"	"	"	"	
<hr/>										
<i>Surrogate(s): Fluorene-d10</i>				87.9%		24 - 125 %	"			"
<i>Pyrene-d10</i>				68.2%		41 - 141 %	"			"
<i>Benzo (a) pyrene-d12</i>				80.4%		38 - 143 %	"			"
<hr/>										
PSF0274-05 (FO095662)		Other dry			Sampled: 06/02/09 11:51					RL7
Acenaphthene	EPA 8270m	ND	----	103	ug/kg dry	2x	9060313	06/09/09 12:00	06/15/09 19:58	
Acenaphthylene	"	ND	----	103	"	"	"	"	"	
Anthracene	"	ND	----	103	"	"	"	"	"	
Benzo (a) anthracene	"	159	----	103	"	"	"	"	"	
Benzo (a) pyrene	"	175	----	103	"	"	"	"	"	
Benzo (b) fluoranthene	"	254	----	103	"	"	"	"	"	
Benzo (ghi) perylene	"	283	----	103	"	"	"	"	"	
Benzo (k) fluoranthene	"	165	----	103	"	"	"	"	"	
Chrysene	"	355	----	103	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	----	103	"	"	"	"	"	
Fluoranthene	"	532	----	103	"	"	"	"	"	
Fluorene	"	ND	----	103	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	161	----	103	"	"	"	"	"	
Naphthalene	"	8240	----	2580	"	50x	"	"	06/11/09 23:19	
Phenanthrene	"	285	----	103	"	2x	"	"	06/15/09 19:58	
Pyrene	"	400	----	103	"	"	"	"	"	
<hr/>										
<i>Surrogate(s): Fluorene-d10</i>				82.5%		24 - 125 %	"			"
<i>Pyrene-d10</i>				61.7%		41 - 141 %	"			"
<i>Benzo (a) pyrene-d12</i>				77.0%		38 - 143 %	"			"

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
06/30/09 12:12

Polynuclear Aromatic Compounds per EPA 8270M-SIM
TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSF0274-06 (FO095677)				Other dry			Sampled: 06/02/09 11:51			RL7
Acenaphthene	EPA 8270m	ND	----	104	ug/kg dry	2x	9060313	06/09/09 12:00	06/15/09 20:34	
Acenaphthylene	"	ND	----	104	"	"	"	"	"	
Anthracene	"	ND	----	104	"	"	"	"	"	
Benzo (a) anthracene	"	159	----	104	"	"	"	"	"	
Benzo (a) pyrene	"	194	----	104	"	"	"	"	"	
Benzo (b) fluoranthene	"	254	----	104	"	"	"	"	"	
Benzo (ghi) perylene	"	290	----	104	"	"	"	"	"	
Benzo (k) fluoranthene	"	175	----	104	"	"	"	"	"	
Chrysene	"	351	----	104	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	----	104	"	"	"	"	"	
Fluoranthene	"	497	----	104	"	"	"	"	"	
Fluorene	"	ND	----	104	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	166	----	104	"	"	"	"	"	
Naphthalene	"	3750	----	104	"	"	"	"	"	
Phenanthrene	"	328	----	104	"	"	"	"	"	
Pyrene	"	383	----	104	"	"	"	"	"	
<hr/>										
Surrogate(s): Fluorene-d10				81.3%		24 - 125 %	"			"
Pyrene-d10				62.7%		41 - 141 %	"			"
Benzo (a) pyrene-d12				78.9%		38 - 143 %	"			"

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
06/30/09 12:12

Phthalates per EPA 8270-SIM

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSF0274-04 (FO095660)				Other dry			Sampled: 06/01/09 11:35			RL3
Surrogate(s): 2-Fluorobiphenyl				NR		10 - 150 %	"			" Z3
p-Terphenyl-d14				NR		10 - 150 %	"			" Z3
PSF0274-05 (FO095662)				Other dry			Sampled: 06/02/09 11:51			RL3
Dimethyl phthalate	EPA 8270m	ND	----	5160	ug/kg dry	50x	9060313	06/09/09 12:00	06/25/09 04:49	
Diethyl phthalate	"	ND	----	5160	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	----	5160	"	"	"	"	"	
Butyl benzyl phthalate	"	ND	----	5160	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	"	26600	----	5160	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	----	7740	"	"	"	"	"	RL1
Surrogate(s): 2-Fluorobiphenyl				NR		10 - 150 %	"			" Z3
p-Terphenyl-d14				NR		10 - 150 %	"			" Z3
PSF0274-06 (FO095677)				Other dry			Sampled: 06/02/09 11:51			RL3
Dimethyl phthalate	EPA 8270m	ND	----	5200	ug/kg dry	50x	9060313	06/09/09 12:00	06/25/09 05:25	
Diethyl phthalate	"	ND	----	5200	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	----	5200	"	"	"	"	"	
Butyl benzyl phthalate	"	ND	----	5200	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	"	19700	----	5200	"	"	"	"	"	
Di-n-octyl phthalate	"	ND	----	5200	"	"	"	"	"	
Surrogate(s): 2-Fluorobiphenyl				NR		10 - 150 %	"			" Z3
p-Terphenyl-d14				NR		10 - 150 %	"			" Z3

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name:

Portland Harbor

Project Number:

36238

Project Manager:

Jennifer Shackelford

Report Created:

06/30/09 12:12

Percent Dry Weight (Solids) per ASTM D2216-80
TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSF0274-01 (FO095657)					Other dry			Sampled: 05/29/09 12:35		
% Solids	NCA SOP	51.6	-----	0.0100	% by Weight	1x	9060315	06/09/09 07:56	06/09/09 07:56	
PSF0274-02 (FO095658)					Other dry			Sampled: 05/29/09 11:33		
% Solids	NCA SOP	44.7	-----	0.0100	% by Weight	1x	9060315	06/09/09 07:56	06/09/09 07:56	
PSF0274-03 (FO095659)					Other dry			Sampled: 05/29/09 14:28		
% Solids	NCA SOP	49.9	-----	0.0100	% by Weight	1x	9060315	06/09/09 07:56	06/09/09 07:56	
PSF0274-04 (FO095660)					Other dry			Sampled: 06/01/09 11:35		
% Solids	NCA SOP	63.9	-----	0.0100	% by Weight	1x	9060315	06/09/09 07:56	06/09/09 07:56	
PSF0274-05 (FO095662)					Other dry			Sampled: 06/02/09 11:51		
% Solids	NCA SOP	51.3	-----	0.0100	% by Weight	1x	9060315	06/09/09 07:56	06/09/09 07:56	
PSF0274-06 (FO095677)					Other dry			Sampled: 06/02/09 11:51		
% Solids	NCA SOP	51.3	-----	0.0100	% by Weight	1x	9060315	06/09/09 07:56	06/09/09 07:56	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
06/30/09 12:12

Organic Carbon, Total (TOC) TestAmerica Connecticut

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSF0274-01 (FO095657)										Other dry Sampled: 05/29/09 12:35
Total Organic Carbon - Duplicates	9060	77800	10.4	100	mg/Kg	1x	28522	06/22/09 13:50	06/22/09 13:50	
PSF0274-02 (FO095658)										Other dry Sampled: 05/29/09 11:33
Total Organic Carbon - Duplicates	9060	104000	10.4	100	mg/Kg	1x	28522	06/22/09 14:05	06/22/09 14:05	
PSF0274-03 (FO095659)										Other dry Sampled: 05/29/09 14:28
Total Organic Carbon - Duplicates	9060	62800	10.4	100	mg/Kg	1x	28522	06/22/09 14:19	06/22/09 14:19	
PSF0274-04 (FO095660)										Other dry Sampled: 06/01/09 11:35
Total Organic Carbon - Duplicates	9060	76000	10.4	100	mg/Kg	1x	28522	06/22/09 14:34	06/22/09 14:34	
PSF0274-05 (FO095662)										Other dry Sampled: 06/02/09 11:51
Total Organic Carbon - Duplicates	9060	68000	10.4	100	mg/Kg	1x	28522	06/22/09 15:02	06/22/09 15:02	
PSF0274-06 (FO095677)										Other dry Sampled: 06/02/09 11:51
Total Organic Carbon - Duplicates	9060	74000	10.4	100	mg/Kg	1x	28522	06/22/09 15:37	06/22/09 15:37	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
06/30/09 12:12

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

TestAmerica Portland

QC Batch: 9060313

Soil Preparation Method: EPA 3550

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (9060313-BLK1)										Extracted: 06/09/09 12:00				
Acenaphthene	EPA 8270m	ND	---	13.4	ug/kg wet	1x	--	--	--	--	--	--	06/10/09 17:49	
Acenaphthylene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Anthracene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Benzo (a) anthracene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Benzo (a) pyrene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Benzo (b) fluoranthene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Benzo (ghi) perylene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Benzo (k) fluoranthene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Chrysene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Dibenzo (a,h) anthracene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Fluoranthene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Fluorene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Indeno (1,2,3-cd) pyrene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Naphthalene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Phenanthrene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Pyrene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
<hr/>														
Surrogate(s): Fluorene-d10		Recovery:	93.1%	Limits:	24-125%	"								
Pyrene-d10			86.1%		41-141%	"								
Benzo (a) pyrene-d12			89.7%		38-143%	"								

LCS (9060313-BS1)

Extracted: 06/09/09 12:00

Acenaphthene	EPA 8270m	162	---	13.3	ug/kg wet	1x	--	165	98.1%	(33-139)	--	--	06/10/09 17:18	
Benzo (a) pyrene	"	160	---	13.3	"	"	--	"	96.8%	(45-149)	--	--	"	
Pyrene	"	146	---	13.3	"	"	--	"	88.2%	(39-138)	--	--	"	
<hr/>														
Surrogate(s): Fluorene-d10		Recovery:	102%	Limits:	24-125%	"								
Pyrene-d10			92.4%		41-141%	"								
Benzo (a) pyrene-d12			100%		38-143%	"								

Matrix Spike (9060313-MS1)

QC Source: PSF0201-01

Extracted: 06/09/09 12:00

Acenaphthene	EPA 8270m	221	---	105	ug/kg dry	5x	5.24	260	82.8%	(33-139)	--	--	06/10/09 16:15	
Benzo (a) pyrene	"	219	---	105	"	"	23.7	"	75.1%	(45-149)	--	--	"	
Pyrene	"	193	---	105	"	"	55.4	"	52.7%	(39-138)	--	--	"	
<hr/>														
Surrogate(s): Fluorene-d10		Recovery:	87.1%	Limits:	24-125%	"								
Pyrene-d10			72.6%		41-141%	"								
Benzo (a) pyrene-d12			84.9%		38-143%	"								

TestAmerica Portland



Howard Holmes, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
06/30/09 12:12

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

TestAmerica Portland

QC Batch: 9060313

Soil Preparation Method: EPA 3550

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Matrix Spike Dup (9060313-MSD1)			QC Source: PSF0201-01					Extracted: 06/09/09 12:00						
Acenaphthene	EPA 8270m	226	---	103	ug/kg dry	5x	5.24	257	85.9%	(33-139)	2.54%	(60)	06/10/09 16:46	
Benzo (a) pyrene	"	234	---	103	"	"	23.7	"	81.9%	(45-149)	6.79%	"	"	
Pyrene	"	231	---	103	"	"	55.4	"	68.1%	(39-138)	18.0%	"	"	
<i>Surrogate(s): Fluorene-d10</i>														
		<i>Recovery:</i>	85.7%	<i>Limits:</i> 24-125%		"								06/10/09 16:46
		<i>Pyrene-d10</i>	76.8%	41-141%		"								"
		<i>Benzo (a) pyrene-d12</i>	86.7%	38-143%		"								"

TestAmerica Portland



Howard Holmes, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
06/30/09 12:12

Phthalates per EPA 8270-SIM - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 9060313

Soil Preparation Method: EPA 3550

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
---------	--------	--------	------	-----	-------	-----	---------------	-----------	-------	----------	-------	----------	----------	-------

Blank (9060313-BLK1)

Extracted: 06/09/09 12:00

Dimethyl phthalate	EPA 8270m	ND	---	26.8	ug/kg wet	1x	--	--	--	--	--	--	06/10/09 15:58	
Diethyl phthalate	"	ND	---	26.8	"	"	--	--	--	--	--	--	"	
Di-n-butyl phthalate	"	ND	---	26.8	"	"	--	--	--	--	--	--	"	
Butyl benzyl phthalate	"	ND	---	26.8	"	"	--	--	--	--	--	--	"	
Bis(2-ethylhexyl)phthalate	"	ND	---	26.8	"	"	--	--	--	--	--	--	"	
Di-n-octyl phthalate	"	ND	---	26.8	"	"	--	--	--	--	--	--	"	
Surrogate(s): 2-Fluorobiphenyl		Recovery: 88.1%		Limits: 10-150%	"								06/10/09 15:58	
p-Terphenyl-d14		105%		10-150%	"								"	

LCS (9060313-BS1)

Extracted: 06/09/09 12:00

Dimethyl phthalate	EPA 8270m	116	---	26.6	ug/kg wet	1x	--	132	88.0%	(20-150)	--	--	06/24/09 20:23	
Diethyl phthalate	"	128	---	26.6	"	"	--	"	96.9%	"	--	--	"	
Di-n-butyl phthalate	"	142	---	26.6	"	"	--	"	108%	"	--	--	"	
Butyl benzyl phthalate	"	155	---	26.6	"	"	--	"	117%	"	--	--	"	
Bis(2-ethylhexyl)phthalate	"	136	---	26.6	"	"	--	"	103%	"	--	--	"	
Di-n-octyl phthalate	"	121	---	26.6	"	"	--	"	91.7%	"	--	--	"	
Surrogate(s): 2-Fluorobiphenyl		Recovery: 85.0%		Limits: 10-150%	"								06/24/09 20:23	
p-Terphenyl-d14		91.3%		10-150%	"								"	

Matrix Spike (9060313-MS1)

QC Source: PSF0201-01

Extracted: 06/09/09 12:00

Dimethyl phthalate	EPA 8270m	189	---	209	ug/kg dry	5x	ND	208	90.8%	(10-150)	--	--	06/25/09 19:43	
Diethyl phthalate	"	196	---	209	"	"	ND	"	94.0%	"	--	--	"	
Di-n-butyl phthalate	"	205	---	209	"	"	ND	"	98.4%	"	--	--	"	
Butyl benzyl phthalate	"	231	---	209	"	"	ND	"	111%	"	--	--	"	
Bis(2-ethylhexyl)phthalate	"	301	---	209	"	"	68.9	"	112%	"	--	--	"	
Di-n-octyl phthalate	"	194	---	209	"	"	ND	"	93.1%	"	--	--	"	
Surrogate(s): 2-Fluorobiphenyl		Recovery: 65.6%		Limits: 10-150%	"								06/25/09 19:43	
p-Terphenyl-d14		87.3%		10-150%	"								"	

Matrix Spike Dup (9060313-MSD1)

QC Source: PSF0201-01

Extracted: 06/09/09 12:00

Dimethyl phthalate	EPA 8270m	181	---	207	ug/kg dry	5x	ND	206	88.0%	(10-150)	4.21% (50)		06/25/09 20:19	
Diethyl phthalate	"	194	---	207	"	"	ND	"	94.3%	"	0.833%	"	"	
Di-n-butyl phthalate	"	203	---	207	"	"	ND	"	98.7%	"	0.810%	"	"	
Butyl benzyl phthalate	"	208	---	207	"	"	ND	"	101%	"	10.5%	"	"	
Bis(2-ethylhexyl)phthalate	"	284	---	207	"	"	68.9	"	104%	"	6.05%	"	"	
Di-n-octyl phthalate	"	184	---	207	"	"	ND	"	89.5%	"	5.01%	"	"	
Surrogate(s): 2-Fluorobiphenyl		Recovery: 66.4%		Limits: 10-150%	"								06/25/09 20:19	
p-Terphenyl-d14		87.7%		10-150%	"								"	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
06/30/09 12:12

Organic Carbon, Total (TOC) - Laboratory Quality Control Results

TestAmerica Connecticut

QC Batch: 28522

Soil Preparation Method: NA

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
LCS (220-28522-6)			QC Source:						Extracted: 06/22/09 13:36					
Total Organic Carbon - Duplicates	9060	4028	10.4	100	mg/Kg	1x	--	3530	114%	(28-172)	--	--	06/22/09 13:36	
Blank (220-28522-7)			QC Source:						Extracted: 06/22/09 13:43					
Total Organic Carbon - Duplicates	9060	ND	10.4	100	mg/Kg	1x	--	--	--	--	--	--	06/22/09 13:43	
Matrix Spike (93055S)			QC Source: PSF0274-05						Extracted: 06/22/09 15:30					
Total Organic Carbon - Duplicates	9060	192400	10.4	100	mg/Kg	1x	68000	127000	98%	(75-125)	--	--	06/22/09 15:30	
Duplicate (93055X)			QC Source: PSF0274-05						Extracted: 06/22/09 15:16					
Total Organic Carbon - Duplicates	9060	68320	10.4	100	mg/Kg	1x	68000	--	--	--	0%	(20)	06/22/09 15:16	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name:

Portland Harbor

Project Number:

36238

Project Manager:

Jennifer Shackelford

Report Created:

06/30/09 12:12

Notes and Definitions

Report Specific Notes:

- RL1 - Reporting limit raised due to sample matrix effects.
- RL3 - Reporting limit raised due to high concentrations of non-target analytes.
- RL7 - Sample required dilution due to high concentrations of target analyte.
- Z3 - The sample required a dilution due to the nature of the sample matrix. Because of this dilution, the surrogate spike concentration in the sample was reduced to a level where the recovery calculation does not provide useful information.

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

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244
 11922 E. First Ave, Spokane, WA 99206-5302
 9405 SW Nimbus Ave Beaverton, OR 97008-7145
 2000 W International Airport Rd Ste A10, Anchorage, AK 99502 1119

425-420-9200 FAX 420-9210
 509-924-9200 FAX 924-9200
 503-906-9200 FAX 906-9210
 907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #: **PSF0274**

CLIENT: <u>City of Portland</u>		INVOICE TO: <u>Charles Lytle</u>		TURNAROUND REQUEST	
REPORT TO: <u>Jennifer Shackelford</u>		ADDRESS:		in Business Days *	
PHONE:		P.O. NUMBER: <u>36238</u>		<input checked="" type="checkbox"/> STD <input type="checkbox"/> Organic & Inorganic Analyses <input type="checkbox"/> Petroleum Hydrocarbon Analyses	
PROJECT NAME: <u>Portland Harbor Stormwater Samp</u>		PRESERVATIVE:		<input type="checkbox"/> OTHER Specify:	
PROJECT NUMBER:		REQUESTED ANALYSES		* Turnaround Requests less than standard may incur Rush Charges.	
SAMPLED BY:		TOC		MATRIX (W, S, O) # OF CONT. LOCATION/ COMMENTS TA WO ID	
1 <u>F0095657</u>		5/29/09 1235		0 2 (Sediment)	
2 <u>5658</u>		5/29/09 1133		0 2 "	
3 <u>5659</u>		5/29/09 1428		0 3 t_1	
4 <u>5660</u>		6/1/09 1135		0 2 t_1	
5 <u>5662</u>		6/2/09 1151		0 3 t_1	
6 <u>5677</u>		6/2/09 1151		0 2 "	
7					
8					
9					
10					
RELEASED BY: <u>Kristen Lytle</u>		DATE: <u>6/8/09</u>		DATE: <u>6/8/09</u>	
PRINT NAME: <u>Kristen Lytle</u>		FIRM: <u>City of Portland</u>		FIRM: <u>TAP</u>	
RELEASED BY: <u>Robert E. [Signature]</u>		DATE: <u>6/8/09</u>		DATE: <u>6/8/09</u>	
PRINT NAME: <u>Robert E. [Signature]</u>		FIRM: <u>TAP</u>		FIRM: <u>TAP</u>	
ADDITIONAL REMARKS:		Note: Sample size is limited - TS already done + given above.		TEMP: <u>1700</u>	

* Send out to Pace Analytical for PCB - all 209 congeners.

* Please run PAH + phthalates, 8270-SIM as for UIC project w/ low detection limits.

TestAmerica Portland
Sample Receiving Checklist

Work Order #: PSFO274 Date/Time Received: 6/18/09 1700
Client Name and Project: City of Portland
Portland Harbor

Time Zone:

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

Unpacking Checks:

Cooler #(s): 1
Temperatures: 4.6 C
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: _____

N/A Yes No

Initials: BLE

- ☒ ☐ ☐ 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.

jm

TestAmerica Portland
Sample Receiving Checklist

Work Order #: PSFO274

Login Checks:

- 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: jm

- 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).

Report Prepared for:

Howard Holmes
Test America
9405 SW Nimbus Avenue
Beaverton OR 97008

**REPORT OF
LABORATORY
ANALYSIS
FOR PCBs**

Report Prepared Date:

June 29, 2009

Report Information:

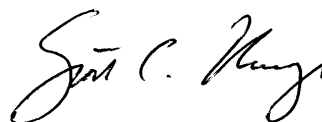
Pace Project #: 1096886
Sample Receipt Date: 06/10/2009
Client Project #: PSF0274
Client Sub PO #: N/A
State Cert #: MN200001-005

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 and prepared by:



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



Report of Laboratory Analysis

This report should not be reproduced, except in full, without the written consent of Pace Analytical Services, Inc.

The results relate only to the samples included in this report.

DISCUSSION

This report presents the results from the analyses performed on six samples submitted by a representative of Test America - Portland. The samples were 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 the sample extracted.

The isotopically-labeled PCB internal standards in the sample extract were recovered at 39-137%. 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 or isotope dilution methods, the data were automatically corrected for variation in recovery and accurate values were obtained. It should be noted that two internal standards and one native analyte exhibited isotope ratios that were outside the target ranges for this method and were flagged "I" on the results tables.

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, with the exception of a low level of congener #31, to be free of PCB congeners at the reporting limits. One sample extract was found to contain a similar level of this congener and was flagged "B" on the results table. In general, levels less than ten times the background are not considered significantly different from the background.

A laboratory spike sample was 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 in the lab spike were recovered at 91-105%. This indicates a high level of accuracy for this analysis. Matrix spikes were also prepared with the sample batch using a sample from another project in the batch. Results are available upon request.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc.

Appendix A

Sample Management

SUBCONTRACT ORDER

TestAmerica Portland

PSF0274

1129

1096886

SENDING LABORATORY:

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

503-906-9231

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: 3.2 °C

Ice: (Y) / N

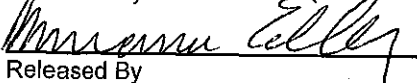
needs Excel EDD

Analysis	Units	Due	Expires	Comments
Sample ID: PSF0274-01	Other dry		Sampled: 05/29/09 12:35	% Solids CoFP ID
1668 Coplanar PCBs - SUB	ug/l	06/22/09	11/25/09 12:35	51.6 F0095657 00
Containers Supplied:				
4 oz. jar (B)				
Sample ID: PSF0274-02	Other dry		Sampled: 05/29/09 11:33	44.7 F0095658 00
1668 Coplanar PCBs - SUB	ug/l	06/22/09	11/25/09 11:33	***209 Congeners*** to Pace
Containers Supplied:				
4 oz. jar (B)				
Sample ID: PSF0274-03	Other dry		Sampled: 05/29/09 14:28	49.9 F0095659 00
1668 Coplanar PCBs - SUB	ug/l	06/22/09	11/25/09 14:28	***209 Congeners*** to Pace
Containers Supplied:				
4 oz. jar (C)				
Sample ID: PSF0274-04	Other dry		Sampled: 06/01/09 11:35	63.9 F0095660 00
1668 Coplanar PCBs - SUB	ug/l	06/22/09	11/28/09 11:35	***209 Congeners*** to Pace
Containers Supplied:				
4 oz. jar (B)				
Sample ID: PSF0274-05	Other dry		Sampled: 06/02/09 11:51	51.3 F0095662 00
1668 Coplanar PCBs - SUB	ug/l	06/22/09	11/29/09 11:51	***209 Congeners*** to Pace
Containers Supplied:				
4 oz. jar (C)				
Sample ID: PSF0274-06	Other dry		Sampled: 06/02/09 11:51	51.3 F0095677 00
1668 Coplanar PCBs - SUB	ug/l	06/22/09	11/29/09 11:51	***209 Congeners*** to Pace
Containers Supplied:				
4 oz. jar (B)				

Client would like the 209 PCB list.

Client provided the % Solids data, as there was very limited sample available for analysis. Need results on dry wt. basis

Released By



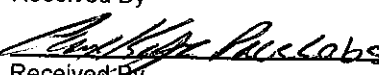
Released By

Date/Time

6/9/09 noon

Date/Time

Received By



Received By

Date/Time

6/10/09 09:16

Date/Time

Page 1 of 1

Page 4 of 56

Report No.....1096886_1668A

Sample Condition Upon Receipt

Pace Analytical

Client Name: Test America

Project # 1096886

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

Tracking #: 9796-8712-6087

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 8024462, 179425

Type of Ice: Wet ☒ Blue ☐ None

☐ Samples on ice, cooling process has begun

Cooler Temperature 3.2

Biological Tissue is Frozen: Yes ☐ No ☐

Temp should be above freezing to 6°C

Comments:

Date and Initials of person examining contents: 6/16/09

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

Date: 06/10/09

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

Report No.....1096886_1668A

61004 Page 5 of 56
F-ALLC003rev 08 Aug 2006

Appendix B

Sample Analysis Summary

Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PSF0274-05;F0095662		
Lab Sample ID	1096886005		
Filename	P90623A_07		
Injected By	BAL		
Total Amount Extracted	16.6 g	Matrix	Solid
% Moisture	48.7	Dilution	20
Dry Weight Extracted	8.50 g	Collected	06/02/2009
ICAL ID	P90623A02	Received	06/10/2009
CCal Filename(s)	P90623A_01	Extracted	06/11/2009
Method Blank ID	BLANK-20249	Analyzed	06/23/2009 21:42

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	5.409	2.69	2.0	1.04	52
13C-4-MoCB	3	7.745	2.85	2.0	1.12	56
13C-2,2'-DiCB	4	8.009	1.64	2.0	0.953	48
13C-4,4'-DiCB	15	15.450	1.53	2.0	1.39	70
13C-2,2',6-TrCB	19	11.963	1.04	2.0	1.14	57
13C-3,4,4'-TrCB	37	23.571	1.03	2.0	1.50	75
13C-2,2',6,6'-TeCB	54	15.740	0.77	2.0	1.11	55
13C-3,4,4',5-TeCB	81	30.866	0.82	2.0	1.34	67
13C-3,3',4,4'-TeCB	77	31.470	0.80	2.0	1.29	65
13C-2,2',4,6,6'-PeCB	104	22.146	1.54	2.0	1.39	69
13C-2,3,3',4,4'-PeCB	105	35.075	1.59	2.0	1.20	60
13C-2,3,4,4',5-PeCB	114	34.421	1.66	2.0	1.17	58
13C-2,3',4,4',5-PeCB	118	33.918	1.66	2.0	1.26	63
13C-2,3',4,4',5'-PeCB	123	33.566	1.57	2.0	1.27	64
13C-3,3',4,4',5-PeCB	126	38.329	1.55	2.0	1.06	53
13C-2,2',4,4',6,6'-HxCB	155	28.418	1.25	2.0	1.66	83
13C-HxCB (156/157)	156/157	41.381	1.28	4.0	2.26	56
13C-2,3',4,4',5,5'-HxCB	167	40.257	1.21	2.0	1.20	60
13C-3,3',4,4',5,5'-HxCB	169	44.718	1.27	2.0	0.962	48
13C-2,2',3,4',5,6,6'-HpCB	188	34.405	1.06	2.0	2.73	137
13C-2,3,3',4,4',5,5'-HpCB	189	47.245	1.06	2.0	1.46	73
13C-2,2',3,3',5,5',6,6'-OxCB	202	39.922	0.89	2.0	2.43	121
13C-2,3,3',4,4',5,5',6-OxCB	205	49.810	0.89	2.0	1.29	64
13C-2,2',3,3',4,4',5,5',6-NoCB	206	51.513	0.76	2.0	1.23	61
13C-2,2',3,3',4,4',5,5',6-NoCB	208	46.663	0.82	2.0	1.66	83
13C--DeCB	209	53.065	0.72	2.0	1.14	57
Cleanup Standards						
13C-2,4,4'-TrCB	28	19.044	1.01	2.0	1.64	82
13C-2,3,3',5,5'-PeCB	111	31.587	1.59	2.0	1.42	71
13C-2,2',3,3',5,5',6-HpCB	178	37.591	1.04	2.0	1.53	77
Recovery Standards						
13C-2,5-DiCB	9	10.573	1.64	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	21.157	0.79	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	28.686	1.60	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	37.105	1.27	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	49.336	0.92	2.0	NA	NA

Conc = Concentration
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P = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

Results reported on a dry weight basis

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NA = Not Applicable
NC = Not Calculated
* = See Discussion
! = Outside QC Limits
RT = Retention Time
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ng's = Nanograms

REPORT OF LABORATORY ANALYSIS

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Pace AnalyticalTM

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 PSF0274-05;F0095662
Lab Sample ID 1096886005
Filename P90623A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
1		---	---	ND	---	29.4
2		---	---	ND	---	29.4
3		---	---	ND	---	29.4
4		8.021	1.54	279	---	29.4
5		---	---	ND	---	29.4
6		11.101	1.67	88.2	---	29.4
7		---	---	ND	---	29.4
8		11.652	1.56	466	---	29.4
9		---	---	ND	---	29.4
10		---	---	ND	---	29.4
11		14.743	1.54	1820	---	176
12	12/13	---	---	ND	---	58.8
13	12/13	---	---	ND	---	58.8
14		---	---	ND	---	29.4
15		15.474	1.46	377	---	29.4
16		15.355	1.03	940	---	29.4
17		14.851	1.08	730	---	29.4
18	18/30	14.348	1.05	1590	---	58.8
19		11.987	1.00	208	---	29.4
20	20/28	19.077	1.00	2200	---	58.8
21	21/33	19.329	1.00	1340	---	58.8
22		19.765	1.02	912	---	29.4
23		---	---	ND	---	29.4
24		---	---	ND	---	29.4
25		18.373	0.98	142	---	29.4
26	26/29	18.105	1.02	366	---	58.8
27		15.103	1.09	115	---	29.4
28	20/28	19.077	1.00	(2200)	---	58.8
29	26/29	18.105	1.02	(366)	---	58.8
30	18/30	14.348	1.05	(1590)	---	58.8
31		18.742	1.01	1860	---	29.4
32		16.025	1.04	538	---	29.4
33	21/33	19.329	1.00	(1340)	---	58.8
34		---	---	ND	---	29.4
35		23.152	0.98	65.1	---	29.4
36		---	---	ND	---	29.4
37		23.588	1.00	922	---	29.4
38		---	---	ND	---	29.4
39		---	---	ND	---	29.4
40	40/41/71	23.370	0.79	1300	---	176
41	40/41/71	23.370	0.79	(1300)	---	176
42		22.834	0.79	555	---	58.8
43		21.408	0.82	87.0	---	58.8
44	44/47/65	22.297	0.78	3230	---	176
45	45/51	19.195	0.79	1060	---	118
46		19.446	0.80	161	---	58.8
47	44/47/65	22.297	0.78	(3230)	---	176
48		22.029	0.76	439	---	58.8

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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 PSF0274-05;F0095662
Lab Sample ID 1096886005
Filename P90623A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
49	49/69	21.727	0.78	1630	---	118
50	50/53	18.356	0.79	579	---	118
51	45/51	19.195	0.79	(1060)	---	118
52		21.190	0.78	2590	---	58.8
53	50/53	18.356	0.79	(579)	---	118
54		---	---	ND	---	58.8
55		---	---	ND	---	58.8
56		27.529	0.76	1050	---	58.8
57		25.483	0.77	117	---	58.8
58		---	---	ND	---	58.8
59	59/62/75	22.632	0.81	221	---	176
60		27.747	0.77	566	---	58.8
61	61/70/74/76	26.489	0.77	3620	---	235
62	59/62/75	22.632	0.81	(221)	---	176
63		26.120	0.70	75.8	---	58.8
64		23.639	0.84	833	---	58.8
65	44/47/65	22.297	0.78	(3230)	---	176
66		26.825	0.75	1770	---	58.8
67		25.835	0.76	67.4	---	58.8
68		---	---	ND	---	58.8
69	49/69	21.727	0.78	(1630)	---	118
70	61/70/74/76	26.489	0.77	(3620)	---	235
71	40/41/71	23.370	0.79	(1300)	---	176
72		---	---	ND	---	58.8
73		---	---	ND	---	58.8
74	61/70/74/76	26.489	0.77	(3620)	---	235
75	59/62/75	22.632	0.81	(221)	---	176
76	61/70/74/76	26.489	0.77	(3620)	---	235
77		31.487	0.75	344	---	58.8
78		---	---	ND	---	58.8
79		---	---	ND	---	58.8
80		---	---	ND	---	58.8
81		---	---	ND	---	58.8
82		31.034	1.58	472	---	58.8
83		29.156	1.71	194	---	58.8
84		26.607	1.58	966	---	58.8
85	85/116/117	30.548	1.60	681	---	176
86	86/87/97/108/119/125	29.877	1.50	2880	---	353
87	86/87/97/108/119/125	29.877	1.50	(2880)	---	353
88	88/91	26.422	1.59	700	---	118
89		---	---	ND	---	58.8
90	90/101/113	28.703	1.57	6270	---	176
91	88/91	26.422	1.59	(700)	---	118
92		28.099	1.59	935	---	58.8
93	93/98/100/102	25.785	1.58	347	---	235
94		24.997	1.75	85.0	---	58.8
95		25.483	1.57	4100	---	58.8
96		---	---	ND	---	58.8

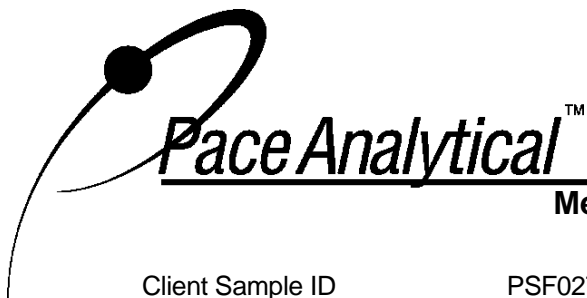
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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PSF0274-05;F0095662
Lab Sample ID 1096886005
Filename P90623A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
97	86/87/97/108/119/125	29.877	1.50	(2880)	---	353
98	93/98/100/102	25.785	1.58	(347)	---	235
99		29.323	1.56	1700	---	58.8
100	93/98/100/102	25.785	1.58	(347)	---	235
101	90/101/113	28.703	1.57	(6270)	---	176
102	93/98/100/102	25.785	1.58	(347)	---	235
103		24.812	1.78	77.8	---	58.8
104		---	---	ND	---	58.8
105		35.109	1.56	1520	---	58.8
106		---	---	ND	---	58.8
107	107/124	33.231	1.58	139	---	118
108	86/87/97/108/119/125	29.877	1.50	(2880)	---	353
109		33.482	1.55	217	---	58.8
110	110/115	30.749	1.58	5560	---	118
111		---	---	ND	---	58.8
112		---	---	ND	---	58.8
113	90/101/113	28.703	1.57	(6270)	---	176
114		34.455	1.48	77.0	---	58.8
115	110/115	30.749	1.58	(5560)	---	118
116	85/116/117	30.548	1.60	(681)	---	176
117	85/116/117	30.548	1.60	(681)	---	176
118		33.935	1.55	3620	---	58.8
119	86/87/97/108/119/125	29.877	1.50	(2880)	---	353
120		---	---	ND	---	58.8
121		---	---	ND	---	58.8
122		---	---	ND	---	58.8
123		---	---	ND	---	58.8
124	107/124	33.231	1.58	(139)	---	118
125	86/87/97/108/119/125	29.877	1.50	(2880)	---	353
126		38.362	1.55	89.2	---	58.8
127		---	---	ND	---	58.8
128	128/166	38.379	1.25	1220	---	118
129	129/138/163	37.138	1.25	12600	---	176
130		36.467	1.24	529	---	58.8
131		33.482	1.19	108	---	58.8
132		33.952	1.25	4170	---	58.8
133		34.606	1.27	164	---	58.8
134	134/143	32.879	1.27	514	---	118
135	135/151	31.738	1.26	6280	---	118
136		29.122	1.26	1970	---	58.8
137		36.685	1.15	206	---	58.8
138	129/138/163	37.138	1.25	(12600)	---	176
139	139/140	---	---	ND	---	118
140	139/140	---	---	ND	---	118
141		36.065	1.25	2670	---	58.8
142		---	---	ND	---	58.8
143	134/143	32.879	1.27	(514)	---	118
144		32.325	1.27	687	---	58.8

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

Client Sample ID PSF0274-05;F0095662
Lab Sample ID 1096886005
Filename P90623A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
145		---	---	ND	---	58.8
146		35.260	1.25	1620	---	58.8
147	147/149	32.694	1.26	12000	---	118
148		---	---	ND	---	58.8
149	147/149	32.694	1.26	(12000)	---	118
150		---	---	ND	---	58.8
151	135/151	31.738	1.26	(6280)	---	118
152		---	---	ND	---	58.8
153	153/168	35.897	1.25	11700	---	118
154		32.040	1.24	114	---	58.8
155		---	---	ND	---	58.8
156	156/157	41.381	1.23	954	---	118
157	156/157	41.381	1.23	(954)	---	118
158		37.541	1.19	1090	---	58.8
159		---	---	ND	---	58.8
160		---	---	ND	---	58.8
161		---	---	ND	---	58.8
162		39.821	1.24	146	---	58.8
163	129/138/163	37.138	1.25	(12600)	---	176
164		36.820	1.23	867	---	58.8
165		---	---	ND	---	58.8
166	128/166	38.379	1.25	(1220)	---	118
167		40.291	1.20	320	---	58.8
168	153/168	35.897	1.25	(11700)	---	118
169		---	---	ND	---	58.8
170		44.047	1.03	3830	---	58.8
171	171/173	40.459	1.02	1210	---	118
172		42.169	1.04	634	---	58.8
173	171/173	40.459	1.02	(1210)	---	118
174		39.369	1.05	4040	---	58.8
175		38.262	1.13	183	---	58.8
176		35.646	1.05	639	---	58.8
177		39.821	1.04	2510	---	58.8
178		37.625	1.03	960	---	58.8
179		34.740	1.03	2220	---	58.8
180	180/193	42.823	1.03	8720	---	118
181		---	---	ND	---	58.8
182		---	---	ND	---	58.8
183	183/185	39.167	1.03	2900	---	118
184		---	---	ND	---	58.8
185	183/185	39.167	1.03	(2900)	---	118
186		---	---	ND	---	58.8
187		38.547	1.05	6060	---	58.8
188		---	---	ND	---	58.8
189		47.267	0.96	166	---	58.8
190		44.601	1.01	764	---	58.8
191		43.192	1.00	143	---	58.8
192		---	---	ND	---	58.8

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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P = 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 PSF0274-05;F0095662
Lab Sample ID 1096886005
Filename P90623A_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
193	180/193	42.823	1.03	(8720)	---	118
194		49.358	0.86	1500	---	88.2
195		46.944	0.90	734	---	88.2
196		45.439	0.89	1050	---	88.2
197	197/200	41.851	0.90	384	---	176
198	198/199	44.785	0.89	2240	---	176
199	198/199	44.785	0.89	(2240)	---	176
200	197/200	41.851	0.90	(384)	---	176
201		40.895	0.93	270	---	88.2
202		39.956	0.91	324	---	88.2
203		45.640	0.89	1070	---	88.2
204		---	---	ND	---	88.2
205		49.832	0.99	105	---	88.2
206		51.535	0.82	547	---	88.2
207		---	---	ND	---	88.2
208		46.707	0.88	167	---	88.2
209		53.087	0.74	95.9	---	88.2

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSF0274-05;F0095662
Lab Sample ID 1096886005
Filename P90623A_07

Congener Group	Concentration ng/Kg
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	3030
Total Trichloro Biphenyls	11900
Total Tetrachloro Biphenyls	20300
Total Pentachloro Biphenyls	30600
Total Hexachloro Biphenyls	59900
Total Heptachloro Biphenyls	35000
Total Octachloro Biphenyls	7680
Total Nonachloro Biphenyls	714
Decachloro Biphenyls	95.9
Total PCBs	169000

ND = Not Detected

Results reported on a dry weight basis

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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 - Test America

Client's Sample ID	PSF0274-06;F0095677		
Lab Sample ID	1096886006		
Filename	P90622A_04		
Injected By	BAL		
Total Amount Extracted	17.0 g	Matrix	Solid
% Moisture	48.7	Dilution	5
Dry Weight Extracted	8.70 g	Collected	06/02/2009
ICAL ID	P90622A02	Received	06/10/2009
CCal Filename(s)	P90622A_01	Extracted	06/11/2009
Method Blank ID	BLANK-20249	Analyzed	06/22/2009 18:37

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
------------	-------	----	-------	------------	------------	------------

Labeled Analytes

13C-2-MoCB	1	5.408	3.36	2.0	0.899	45
13C-4-MoCB	3	7.756	2.44	2.0	1.04	56
13C-2,2'-DiCB	4	8.020	1.60	2.0	0.928	46
13C-4,4'-DiCB	15	15.401	1.59	2.0	1.51	76
13C-2,2',6-TrCB	19	11.926	1.07	2.0	1.10	55
13C-3,4,4'-TrCB	37	23.496	1.08	2.0	1.61	80
13C-2,2',6,6'-TeCB	54	15.681	0.77	2.0	1.27	64
13C-3,4,4',5-TeCB	81	30.774	0.78	2.0	1.59	80
13C-3,3',4,4'-TeCB	77	31.361	0.78	2.0	1.55	78
13C-2,2',4,6,6'-PeCB	104	22.087	1.64	2.0	1.07	54
13C-2,3,3',4,4'-PeCB	105	34.983	1.62	2.0	1.46	73
13C-2,3,4,4',5-PeCB	114	34.329	1.63	2.0	1.41	71
13C-2,3',4,4',5-PeCB	118	33.826	1.63	2.0	1.40	70
13C-2,3',4,4',5'-PeCB	123	33.474	1.59	2.0	1.41	70
13C-3,3',4,4',5-PeCB	126	38.186	1.55	2.0	1.34	67
13C-2,2',4,4',6,6'-HxCB	155	28.342	1.25	2.0	1.35	68
13C-HxCB (156/157)	156/157	41.238	1.31	4.0	2.76	69
13C-2,3',4,4',5,5'-HxCB	167	40.115	1.28	2.0	1.48	74
13C-3,3',4,4',5,5'-HxCB	169	44.542	1.26	2.0	1.36	68
13C-2,2',3,4',5,6,6'-HpCB	188	34.329	1.09	2.0	1.67	83
13C-2,3,3',4,4',5,5'-HpCB	189	47.064	0.99	2.0	1.49	74
13C-2,2',3,3',5,5',6,6'-OxCB	202	39.796	0.94	2.0	1.50	75
13C-2,3,3',4,4',5,5',6-OxCB	205	49.629	0.88	2.0	1.39	70
13C-2,2',3,3',4,4',5,5',6-NoCB	206	51.353	0.80	2.0	1.22	61
13C-2,2',3,3',4,4',5,5',6'-NoCB	208	46.525	0.81	2.0	1.54	77
13C--DeCB	209	52.927	0.68	2.0	1.16	58

Cleanup Standards

13C-2,4,4'-TrCB	28	18.985	1.05	2.0	1.58	79
13C-2,3,3',5,5'-PeCB	111	31.478	1.60	2.0	1.51	75
13C-2,2',3,3',5,5',6-HpCB	178	37.482	1.09	2.0	1.56	78

Recovery Standards

13C-2,5-DiCB	9	10.548	1.59	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	21.098	0.80	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	28.594	1.67	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	36.995	1.25	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	49.155	0.90	2.0	NA	NA

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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 PSF0274-06;F0095677
Lab Sample ID 1096886006
Filename P90622A_04

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
1		---	---	ND	---	28.7
2		---	---	ND	---	28.7
3		---	---	ND	---	28.7
4		8.044	1.77	70.7	---	28.7
5		---	---	ND	---	28.7
6		---	---	ND	---	28.7
7		---	---	ND	---	28.7
8		11.614	1.62	136	---	28.7
9		---	---	ND	---	28.7
10		---	---	ND	---	28.7
11		14.694	1.57	474	---	172
12	12/13	---	---	ND	---	57.5
13	12/13	---	---	ND	---	57.5
14		---	---	ND	---	28.7
15		15.425	1.47	84.8	---	28.7
16		15.317	1.17	150	---	28.7
17		14.802	1.12	119	---	28.7
18	18/30	14.299	1.05	263	---	57.5
19		11.938	1.16	45.0	---	28.7
20	20/28	19.019	1.06	398	---	57.5
21	21/33	19.270	1.04	250	---	57.5
22		19.706	1.01	173	---	28.7
23		---	---	ND	---	28.7
24		---	---	ND	---	28.7
25		---	---	ND	---	28.7
26	26/29	18.046	1.02	62.7	---	57.5
27		---	---	ND	---	28.7
28	20/28	19.019	1.06	(398)	---	57.5
29	26/29	18.046	1.02	(62.7)	---	57.5
30	18/30	14.299	1.05	(263)	---	57.5
31		18.683	1.07	326	---	28.7
32		15.983	1.08	96.0	---	28.7
33	21/33	19.270	1.04	(250)	---	57.5
34		---	---	ND	---	28.7
35		---	---	ND	---	28.7
36		---	---	ND	---	28.7
37		23.513	1.03	156	---	28.7
38		---	---	ND	---	28.7
39		---	---	ND	---	28.7
40	40/41/71	23.295	0.80	175	---	172
41	40/41/71	23.295	0.80	(175)	---	172
42		22.775	0.76	73.7	---	57.5
43		---	---	ND	---	57.5
44	44/47/65	22.188	0.82	210	---	172
45	45/51	19.136	0.79	119	---	115
46		---	---	ND	---	57.5
47	44/47/65	22.188	0.82	(210)	---	172
48		---	---	ND	---	57.5

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PSF0274-06;F0095677
Lab Sample ID 1096886006
Filename P90622A_04

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
49	49/69	21.668	0.79	195	---	115
50	50/53	---	---	ND	---	115
51	45/51	19.136	0.79	(119)	---	115
52		21.132	0.79	346	---	57.5
53	50/53	---	---	ND	---	115
54		---	---	ND	---	57.5
55		---	---	ND	---	57.5
56		27.437	0.75	190	---	57.5
57		---	---	ND	---	57.5
58		---	---	ND	---	57.5
59	59/62/75	---	---	ND	---	172
60		27.655	0.77	101	---	57.5
61	61/70/74/76	26.414	0.77	635	---	230
62	59/62/75	---	---	ND	---	172
63		---	---	ND	---	57.5
64		23.563	0.78	118	---	57.5
65	44/47/65	22.188	0.82	(210)	---	172
66		26.749	0.76	319	---	57.5
67		---	---	ND	---	57.5
68		---	---	ND	---	57.5
69	49/69	21.668	0.79	(195)	---	115
70	61/70/74/76	26.414	0.77	(635)	---	230
71	40/41/71	23.295	0.80	(175)	---	172
72		---	---	ND	---	57.5
73		---	---	ND	---	57.5
74	61/70/74/76	26.414	0.77	(635)	---	230
75	59/62/75	---	---	ND	---	172
76	61/70/74/76	26.414	0.77	(635)	---	230
77		---	---	ND	---	57.5
78		---	---	ND	---	57.5
79		---	---	ND	---	57.5
80		---	---	ND	---	57.5
81		---	---	ND	---	57.5
82		30.942	1.65	111	---	57.5
83		---	---	ND	---	57.5
84		26.548	1.57	181	---	57.5
85	85/116/117	---	---	ND	---	172
86	86/87/97/108/119/125	29.801	1.54	600	---	345
87	86/87/97/108/119/125	29.801	1.54	(600)	---	345
88	88/91	---	---	ND	---	115
89		---	---	ND	---	57.5
90	90/101/113	28.627	1.59	1220	---	172
91	88/91	---	---	ND	---	115
92		28.024	1.64	172	---	57.5
93	93/98/100/102	---	---	ND	---	230
94		---	---	ND	---	57.5
95		25.424	1.59	762	---	57.5
96		---	---	ND	---	57.5

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSF0274-06;F0095677
Lab Sample ID 1096886006
Filename P90622A_04

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
97	86/87/97/108/119/125	29.801	1.54	(600)	---	345
98	93/98/100/102	---	---	ND	---	230
99		29.231	1.55	388	---	57.5
100	93/98/100/102	---	---	ND	---	230
101	90/101/113	28.627	1.59	(1220)	---	172
102	93/98/100/102	---	---	ND	---	230
103		---	---	ND	---	57.5
104		---	---	ND	---	57.5
105		35.000	1.54	461	---	57.5
106		---	---	ND	---	57.5
107	107/124	---	---	ND	---	115
108	86/87/97/108/119/125	29.801	1.54	(600)	---	345
109		33.390	1.68	70.0	---	57.5
110	110/115	30.656	1.57	1170	---	115
111		---	---	ND	---	57.5
112		---	---	ND	---	57.5
113	90/101/113	28.627	1.59	(1220)	---	172
114		---	---	ND	---	57.5
115	110/115	30.656	1.57	(1170)	---	115
116	85/116/117	---	---	ND	---	172
117	85/116/117	---	---	ND	---	172
118		33.843	1.59	1040	---	57.5
119	86/87/97/108/119/125	29.801	1.54	(600)	---	345
120		---	---	ND	---	57.5
121		---	---	ND	---	57.5
122		---	---	ND	---	57.5
123		---	---	ND	---	57.5
124	107/124	---	---	ND	---	115
125	86/87/97/108/119/125	29.801	1.54	(600)	---	345
126		---	---	ND	---	57.5
127		---	---	ND	---	57.5
128	128/166	38.253	1.26	327	---	115
129	129/138/163	37.029	1.26	3390	---	172
130		36.358	1.37	129	---	57.5
131		---	---	ND	---	57.5
132		33.876	1.27	1040	---	57.5
133		---	---	ND	---	57.5
134	134/143	---	---	ND	---	115
135	135/151	31.646	1.29	1190	---	115
136		29.030	1.28	397	---	57.5
137		36.576	1.32	58.9	---	57.5
138	129/138/163	37.029	1.26	(3390)	---	172
139	139/140	---	---	ND	---	115
140	139/140	---	---	ND	---	115
141		35.956	1.26	811	---	57.5
142		---	---	ND	---	57.5
143	134/143	---	---	ND	---	115
144		32.233	1.23	155	---	57.5

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSF0274-06;F0095677
Lab Sample ID 1096886006
Filename P90622A_04

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
145		---	---	ND	---	57.5
146		35.151	1.25	404	---	57.5
147	147/149	32.618	1.25	2820	---	115
148		---	---	ND	---	57.5
149	147/149	32.618	1.25	(2820)	---	115
150		---	---	ND	---	57.5
151	135/151	31.646	1.29	(1190)	---	115
152		---	---	ND	---	57.5
153	153/168	35.788	1.26	3100	---	115
154		---	---	ND	---	57.5
155		---	---	ND	---	57.5
156	156/157	41.238	1.22	288	---	115
157	156/157	41.238	1.22	(288)	---	115
158		37.431	1.29	306	---	57.5
159		---	---	ND	---	57.5
160		---	---	ND	---	57.5
161		---	---	ND	---	57.5
162		---	---	ND	---	57.5
163	129/138/163	37.029	1.26	(3390)	---	172
164		36.727	1.33	247	---	57.5
165		---	---	ND	---	57.5
166	128/166	38.253	1.26	(327)	---	115
167		40.131	1.29	105	---	57.5
168	153/168	35.788	1.26	(3100)	---	115
169		---	---	ND	---	57.5
170		43.904	1.04	1400	---	57.5
171	171/173	40.316	1.03	420	---	115
172		42.026	1.09	223	---	57.5
173	171/173	40.316	1.03	(420)	---	115
174		39.243	1.03	1530	---	57.5
175		---	---	ND	---	57.5
176		35.553	1.02	179	---	57.5
177		39.695	1.07	839	---	57.5
178		37.515	1.04	257	---	57.5
179		34.648	1.04	585	---	57.5
180	180/193	42.680	1.05	3190	---	115
181		---	---	ND	---	57.5
182		---	---	ND	---	57.5
183	183/185	39.058	1.06	1020	---	115
184		---	---	ND	---	57.5
185	183/185	39.058	1.06	(1020)	---	115
186		---	---	ND	---	57.5
187		38.421	1.06	1710	---	57.5
188		---	---	ND	---	57.5
189		---	---	ND	---	57.5
190		44.441	1.04	283	---	57.5
191		---	---	ND	---	57.5
192		---	---	ND	---	57.5

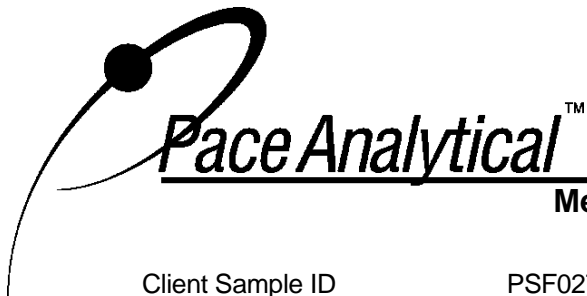
Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
P = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional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

Results reported on a dry weight basis

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

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PSF0274-06;F0095677
Lab Sample ID 1096886006
Filename P90622A_04

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
193	180/193	42.680	1.05	(3190)	---	115
194		49.176	0.93	658	---	86.2
195		46.784	0.89	293	---	86.2
196		45.296	0.89	359	---	86.2
197	197/200	---	---	ND	---	172
198	198/199	44.642	0.90	736	---	172
199	198/199	44.642	0.90	(736)	---	172
200	197/200	---	---	ND	---	172
201		---	---	ND	---	86.2
202		39.829	0.91	117	---	86.2
203		45.498	0.88	420	---	86.2
204		---	---	ND	---	86.2
205		---	---	ND	---	86.2
206		51.375	0.78	173	---	86.2
207		---	---	ND	---	86.2
208		---	---	ND	---	86.2
209		---	---	ND	---	86.2

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
P = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

Results reported on a dry weight basis

ND = Not Detected
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NC = Not Calculated
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!= Outside QC Limits
RT = Retention Time
I = Interference
ng's = Nanograms

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PSF0274-06;F0095677
Lab Sample ID 1096886006
Filename P90622A_04

Congener Group	Concentration ng/Kg
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	766
Total Trichloro Biphenyls	2040
Total Tetrachloro Biphenyls	2480
Total Pentachloro Biphenyls	6180
Total Hexachloro Biphenyls	14800
Total Heptachloro Biphenyls	11600
Total Octachloro Biphenyls	2580
Total Nonachloro Biphenyls	173
Decachloro Biphenyls	ND
Total PCBs	40600

ND = Not Detected

Results reported on a dry weight basis

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID	BLANK-20249		
Filename	P90621B_07		
Injected By	BAL	Matrix	Solid
Total Amount Extracted	11.0 g	Extracted	06/11/2009
ICAL ID	P90621B02	Analyzed	06/22/2009 08:14
CCal Filename(s)	P90621B_01	Dilution	3

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
------------	-------	----	-------	------------	------------	------------

Labeled Analytes

13C-2-MoCB	1	5.384	3.56	2.0	0.875	44
13C-4-MoCB	3	7.720	3.02	2.0	1.09	54
13C-2,2'-DiCB	4	8.008	1.55	2.0	0.944	47
13C-4,4'-DiCB	15	15.401	1.58	2.0	1.43	72
13C-2,2',6-TrCB	19	11.938	1.04	2.0	1.09	55
13C-3,4,4'-TrCB	37	23.479	1.06	2.0	1.49	74
13C-2,2',6,6'-TeCB	54	15.665	0.79	2.0	1.29	65
13C-3,4,4',5-TeCB	81	30.757	0.78	2.0	1.61	81
13C-3,3',4,4'-TeCB	77	31.344	0.79	2.0	1.60	80
13C-2,2',4,6,6'-PeCB	104	22.087	1.67	2.0	1.07	54
13C-2,3,3',4,4'-PeCB	105	34.949	1.59	2.0	1.50	75
13C-2,3,4,4',5-PeCB	114	34.295	1.65	2.0	1.41	71
13C-2,3',4,4',5-PeCB	118	33.775	1.61	2.0	1.50	75
13C-2,3',4,4',5'-PeCB	123	33.440	1.61	2.0	1.46	73
13C-3,3',4,4',5-PeCB	126	38.152	1.53	2.0	1.41	71
13C-2,2',4,4',6,6'-HxCB	155	28.325	1.21	2.0	1.39	69
13C-HxCB (156/157)	156/157	41.188	1.28	4.0	3.00	75
13C-2,3',4,4',5,5'-HxCB	167	40.064	1.30	2.0	1.55	77
13C-3,3',4,4',5,5'-HxCB	169	44.491	1.26	2.0	1.48	74
13C-2,2',3,4',5,6,6'-HpCB	188	34.295	1.06	2.0	1.60	80
13C-2,3,3',4,4',5,5'-HpCB	189	46.999	1.02	2.0	1.59	80
13C-2,2',3,3',5,5',6-OcCB	202	39.762	0.94	2.0	1.48	74
13C-2,3,3',4,4',5,5',6-OcCB	205	49.564	0.91	2.0	1.56	78
13C-2,2',3,3',4,4',5,5',6-NoCB	206	51.288	0.77	2.0	1.49	75
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	46.482	0.82	2.0	1.61	81
13C--DeCB	209	52.840	0.70	2.0	1.40	70

Cleanup Standards

13C-2,4,4'-TrCB	28	18.985	1.04	2.0	1.43	72
13C-2,3,3',5,5'-PeCB	111	31.461	1.58	2.0	1.59	79
13C-2,2',3,3',5,5',6-HpCB	178	37.448	1.08	2.0	1.68	84

Recovery Standards

13C-2,5-DiCB	9	10.668	1.61	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	21.081	0.83	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	28.577	1.66	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	36.962	1.27	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OcCB	194	49.090	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
P = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

Results reported on a dry weight basis

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

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-20249
Filename P90621B_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
1		---	---	ND	---	22.8
2		---	---	ND	---	22.8
3		---	---	ND	---	22.8
4		---	---	ND	---	22.8
5		---	---	ND	---	22.8
6		---	---	ND	---	22.8
7		---	---	ND	---	22.8
8		---	---	ND	---	22.8
9		---	---	ND	---	22.8
10		---	---	ND	---	22.8
11		---	---	ND	---	137
12	12/13	---	---	ND	---	45.5
13	12/13	---	---	ND	---	45.5
14		---	---	ND	---	22.8
15		---	---	ND	---	22.8
16		---	---	ND	---	22.8
17		---	---	ND	---	22.8
18	18/30	---	---	ND	---	45.5
19		---	---	ND	---	22.8
20	20/28	---	---	ND	---	45.5
21	21/33	---	---	ND	---	45.5
22		---	---	ND	---	22.8
23		---	---	ND	---	22.8
24		---	---	ND	---	22.8
25		---	---	ND	---	22.8
26	26/29	---	---	ND	---	45.5
27		---	---	ND	---	22.8
28	20/28	---	---	ND	---	45.5
29	26/29	---	---	ND	---	45.5
30	18/30	---	---	ND	---	45.5
31		18.666	1.04	24.2	---	22.8
32		---	---	ND	---	22.8
33	21/33	---	---	ND	---	45.5
34		---	---	ND	---	22.8
35		---	---	ND	---	22.8
36		---	---	ND	---	22.8
37		---	---	ND	---	22.8
38		---	---	ND	---	22.8
39		---	---	ND	---	22.8
40	40/41/71	---	---	ND	---	137
41	40/41/71	---	---	ND	---	137
42		---	---	ND	---	45.5
43		---	---	ND	---	45.5
44	44/47/65	---	---	ND	---	137
45	45/51	---	---	ND	---	91.1

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
P = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

ND = Not Detected
NA = Not Applicable
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Results reported on a dry weight basis

REPORT OF LABORATORY ANALYSIS

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID
Filename

BLANK-20249
P90621B_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
46		---	---	ND	---	45.5
47	44/47/65	---	---	ND	---	137
48		---	---	ND	---	45.5
49	49/69	---	---	ND	---	91.1
50	50/53	---	---	ND	---	91.1
51	45/51	---	---	ND	---	91.1
52		---	---	ND	---	45.5
53	50/53	---	---	ND	---	91.1
54		---	---	ND	---	45.5
55		---	---	ND	---	45.5
56		---	---	ND	---	45.5
57		---	---	ND	---	45.5
58		---	---	ND	---	45.5
59	59/62/75	---	---	ND	---	137
60		---	---	ND	---	45.5
61	61/70/74/76	---	---	ND	---	182
62	59/62/75	---	---	ND	---	137
63		---	---	ND	---	45.5
64		---	---	ND	---	45.5
65	44/47/65	---	---	ND	---	137
66		---	---	ND	---	45.5
67		---	---	ND	---	45.5
68		---	---	ND	---	45.5
69	49/69	---	---	ND	---	91.1
70	61/70/74/76	---	---	ND	---	182
71	40/41/71	---	---	ND	---	137
72		---	---	ND	---	45.5
73		---	---	ND	---	45.5
74	61/70/74/76	---	---	ND	---	182
75	59/62/75	---	---	ND	---	137
76	61/70/74/76	---	---	ND	---	182
77		---	---	ND	---	45.5
78		---	---	ND	---	45.5
79		---	---	ND	---	45.5
80		---	---	ND	---	45.5
81		---	---	ND	---	45.5
82		---	---	ND	---	45.5
83		---	---	ND	---	45.5
84		---	---	ND	---	45.5
85	85/116/117	---	---	ND	---	137
86	86/87/97/108/119/125	---	---	ND	---	273
87	86/87/97/108/119/125	---	---	ND	---	273
88	88/91	---	---	ND	---	91.1
89		---	---	ND	---	45.5
90	90/101/113	---	---	ND	---	137

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
P = Recovery outside of Method 1668A control limits
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Results reported on a dry weight basis

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Pace AnalyticalTM

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-20249
Filename P90621B_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
91	88/91	---	---	ND	---	91.1
92		---	---	ND	---	45.5
93	93/98/100/102	---	---	ND	---	182
94		---	---	ND	---	45.5
95		---	---	ND	---	45.5
96		---	---	ND	---	45.5
97	86/87/97/108/119/125	---	---	ND	---	273
98	93/98/100/102	---	---	ND	---	182
99		---	---	ND	---	45.5
100	93/98/100/102	---	---	ND	---	182
101	90/101/113	---	---	ND	---	137
102	93/98/100/102	---	---	ND	---	182
103		---	---	ND	---	45.5
104		---	---	ND	---	45.5
105		---	---	ND	---	45.5
106		---	---	ND	---	45.5
107	107/124	---	---	ND	---	91.1
108	86/87/97/108/119/125	---	---	ND	---	273
109		---	---	ND	---	45.5
110	110/115	---	---	ND	---	91.1
111		---	---	ND	---	45.5
112		---	---	ND	---	45.5
113	90/101/113	---	---	ND	---	137
114		---	---	ND	---	45.5
115	110/115	---	---	ND	---	91.1
116	85/116/117	---	---	ND	---	137
117	85/116/117	---	---	ND	---	137
118		---	---	ND	---	45.5
119	86/87/97/108/119/125	---	---	ND	---	273
120		---	---	ND	---	45.5
121		---	---	ND	---	45.5
122		---	---	ND	---	45.5
123		---	---	ND	---	45.5
124	107/124	---	---	ND	---	91.1
125	86/87/97/108/119/125	---	---	ND	---	273
126		---	---	ND	---	45.5
127		---	---	ND	---	45.5
128	128/166	---	---	ND	---	91.1
129	129/138/163	---	---	ND	---	137
130		---	---	ND	---	45.5
131		---	---	ND	---	45.5
132		---	---	ND	---	45.5
133		---	---	ND	---	45.5
134	134/143	---	---	ND	---	91.1
135	135/151	---	---	ND	---	91.1

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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P = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

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Results reported on a dry weight basis

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Pace AnalyticalTM

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
Filename

BLANK-20249
P90621B_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
136		---	---	ND	---	45.5
137		---	---	ND	---	45.5
138	129/138/163	---	---	ND	---	137
139	139/140	---	---	ND	---	91.1
140	139/140	---	---	ND	---	91.1
141		---	---	ND	---	45.5
142		---	---	ND	---	45.5
143	134/143	---	---	ND	---	91.1
144		---	---	ND	---	45.5
145		---	---	ND	---	45.5
146		---	---	ND	---	45.5
147	147/149	---	---	ND	---	91.1
148		---	---	ND	---	45.5
149	147/149	---	---	ND	---	91.1
150		---	---	ND	---	45.5
151	135/151	---	---	ND	---	91.1
152		---	---	ND	---	45.5
153	153/168	---	---	ND	---	91.1
154		---	---	ND	---	45.5
155		---	---	ND	---	45.5
156	156/157	---	---	ND	---	91.1
157	156/157	---	---	ND	---	91.1
158		---	---	ND	---	45.5
159		---	---	ND	---	45.5
160		---	---	ND	---	45.5
161		---	---	ND	---	45.5
162		---	---	ND	---	45.5
163	129/138/163	---	---	ND	---	137
164		---	---	ND	---	45.5
165		---	---	ND	---	45.5
166	128/166	---	---	ND	---	91.1
167		---	---	ND	---	45.5
168	153/168	---	---	ND	---	91.1
169		---	---	ND	---	45.5
170		---	---	ND	---	45.5
171	171/173	---	---	ND	---	91.1
172		---	---	ND	---	45.5
173	171/173	---	---	ND	---	91.1
174		---	---	ND	---	45.5
175		---	---	ND	---	45.5
176		---	---	ND	---	45.5
177		---	---	ND	---	45.5
178		---	---	ND	---	45.5
179		---	---	ND	---	45.5
180	180/193	---	---	ND	---	91.1

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
P = Recovery outside of Method 1668A control limits
ng/L = Nanograms per liter

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Results reported on a dry weight basis

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-20249
Filename P90621B_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
181		---	---	ND	---	45.5
182		---	---	ND	---	45.5
183	183/185	---	---	ND	---	91.1
184		---	---	ND	---	45.5
185	183/185	---	---	ND	---	91.1
186		---	---	ND	---	45.5
187		---	---	ND	---	45.5
188		---	---	ND	---	45.5
189		---	---	ND	---	45.5
190		---	---	ND	---	45.5
191		---	---	ND	---	45.5
192		---	---	ND	---	45.5
193	180/193	---	---	ND	---	91.1
194		---	---	ND	---	68.3
195		---	---	ND	---	68.3
196		---	---	ND	---	68.3
197	197/200	---	---	ND	---	137
198	198/199	---	---	ND	---	137
199	198/199	---	---	ND	---	137
200	197/200	---	---	ND	---	137
201		---	---	ND	---	68.3
202		---	---	ND	---	68.3
203		---	---	ND	---	68.3
204		---	---	ND	---	68.3
205		---	---	ND	---	68.3
206		---	---	ND	---	68.3
207		---	---	ND	---	68.3
208		---	---	ND	---	68.3
209		---	---	ND	---	68.3

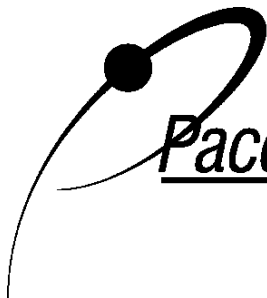
Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
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A = Limit of Detection based on signal to noise
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ng/L = Nanograms per liter

Results reported on a dry weight basis

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NC = Not Calculated
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I = Interference

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Client Sample ID DFBLKVB
Lab Sample ID BLANK-20249
Filename P90621B_07

Congener Group	Concentration ng/Kg
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	ND
Total Trichloro Biphenyls	24.2
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	 24.2

ND = Not Detected

Results reported on a dry weight basis

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Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID	LCS-20250		
Filename	P90621B_05	Matrix	Solid
Total Amount Extracted	10.2 g	Dilution	3
ICAL ID	P90621B02	Extracted	06/11/2009
CCal Filename(s)	P90621B_01	Analyzed	06/22/2009 06:12
Method Blank ID	BLANK-20249	Injected By	BAL

PCB Isomer	Native Analytes			Labeled Analytes		
	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recovery
1	1.0	0.983	98	2.0	1.17	58
3	1.0	0.987	99	2.0	1.31	66
4	1.0	1.05	105	2.0	1.14	57
15	1.0	1.05	105	2.0	1.55	78
19	1.0	1.05	105	2.0	1.25	63
37	1.0	1.00	100	2.0	1.56	78
54	1.0	0.934	93	2.0	1.49	74
81	1.0	0.928	93	2.0	1.61	80
77	1.0	0.932	93	2.0	1.62	81
104	1.0	1.04	104	2.0	1.10	55
105	1.0	0.941	94	2.0	1.58	79
114	1.0	0.908	91	2.0	1.44	72
118	1.0	0.997	100	2.0	1.47	73
123	1.0	0.927	93	2.0	1.50	75
126	1.0	0.911	91	2.0	1.45	72
155	1.0	1.02	102	2.0	1.35	68
156/157	2.0	1.91	95	4.0	2.94	74
167	1.0	1.01	101	2.0	1.52	76
169	1.0	0.952	95	2.0	1.47	74
188	1.0	0.963	96	2.0	1.57	78
189	1.0	0.948	95	2.0	1.55	77
202	1.0	1.02	102	2.0	1.47	73
205	1.0	0.957	96	2.0	1.47	74
206	1.0	1.01	101	2.0	1.46	73
208	1.0	0.998	100	2.0	1.57	78
209	1.0	0.974	97	2.0	1.29	64

P = 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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without the written consent of Pace Analytical Services, Inc.

Catch Basin Solids Samples



City of Portland
Chain-of-Custody
Bureau of Environmental Services



Date: 4/10/09
Page: 1 of 1
Collected By: DXB/JMS/PTA
LAS

Project Name: PORTLAND HARBOR INLINE SAMP

File Number: 1020.001

Matrix: SEDIMENT

Requested Analyses

Field Comments

OUTFALLS 44 (Albina River Lots)

ALL SAMPLES WERE SIEVED BY #10 SIEVE

*FO 0095476 - Note ID = ABC 348 - per PHT 4/28/09

WPCL Sample I.D.

Location

Point Code Sample Date Sample Time Sample Type

PCB Aroclors - LL
PAHs + Phthalates (TA)
SVOCs (CAS)
NWT PH-Dx
TOC
Total Solids
Grain Size
Total Metals (As, Cd, Cr, Cu, Pb, Hg, Ni, Ag, Zn)

FO095467
FO095468
FO095469
FO095470
FO095471
FO095472
FO095473
FO095474
FO095475
FO095476

IL-44-ABC343-0409
N LORING & RANDOLPH
IL-44-ABC345-0409
N RIVER & RANDOLPH
IL-44-ABC335-0409
N HARDING & RR TRACKS
IL-44-ABC259-CBION-0409
N CLARK & RR TRACKS
IL-44-ABC261-0409
N LEWIS & RR TRACKS
IL-44-NLORING-CBOS-0409
N LORING & CLARK
IL-44-NLORING-CBION-0409
N LORING & CLARK
IL-44-ABC352-CBION-0409
N RIVER, CB NEAR ABC352
IL-44-AMQ287-0409
N LORING & CLARK
IL-44-ABC348-CBOS-0409
N LORING & HARDING

44_1 4/7/09 848 C
44_2 4/7/09 948 C
44_3 4/7/09 1147 C
44_4 4/7/09 1311 C
44_6 4/7/09 1348 C
44_7 4/8/09 752 C
44_8 4/8/09 818 C
44_9 4/8/09 921 C
44_10 4/8/09 1331 C
44_12 4/8/09 1213 C

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Code corrected 6/5/09 - PHT

Signature: [Signature] Time: 1504

Printed Name: Peremichauden Date: 4/10/09

Received By: 1 Time: 1504

Signature: [Signature] Time: 1504

Printed Name: Kuma Kluh Date: 4/10/09

Relinquished By: 2

Signature: [Signature] Time: 1504

Printed Name: Peremichauden Date: 4/10/09

Received By: 2

Signature: [Signature] Time: 1504

Relinquished By: 3

Signature: [Signature] Time: 1504

Printed Name: Peremichauden Date: 4/10/09

Received By: 3

Signature: [Signature] Time: 1504

Relinquished By: 4

Signature: [Signature] Time: 1504

Printed Name: Peremichauden Date: 4/10/09

Received By: 4

Signature: [Signature] Time: 1504

[illegible]



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: FO095477

Sample Collected: 04/08/09 10:01
Sample Received: 04/10/09

Sample Status: COMPLETE AND
VALIDATED

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-44A-ADZ315-0409 #10 SIEVED
CB ON NE RUSSELL ST
Sample Point Code: 44A_1
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 1 of 4

System ID: AN04134
EID File #: 1020.001
LocCode: PORTHARI
Collected By: JXB/MJS

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. LAB: Precision of the PCB Aroclor quantifications may have been affected by overlapping components of the mixed Aroclors.

Test Parameter	Result	Units	MRL	Method	Analysis Date
GENERAL					
TOTAL SOLIDS	89.2	% W/W	0.01	SM 2540 G	04/14/09
METALS					
ARSENIC	8.20	mg/Kg dry wt	0.50	EPA 6020	04/22/09
CADMIUM	1.08	mg/Kg dry wt	0.10	EPA 6020	04/22/09
CHROMIUM	67.3	mg/Kg dry wt	0.50	EPA 6020	04/22/09
COPPER	293	mg/Kg dry wt	0.25	EPA 6020	04/22/09
LEAD	176	mg/Kg dry wt	0.10	EPA 6020	04/22/09
MERCURY	0.064	mg/Kg dry wt	0.010	EPA 6020	04/22/09
NICKEL	77.8	mg/Kg dry wt	0.25	EPA 6020	04/22/09
SILVER	0.28	mg/Kg dry wt	0.10	EPA 6020	04/22/09
ZINC	308	mg/Kg dry wt	0.50	EPA 6020	04/22/09
GC ANALYSIS					
NWTPH-Dx					
DIESEL RANGE HYDROCARBONS (C12-C24)	<250	mg/Kg dry wt	250	NWTPH-Dx	04/16/09
OIL RANGE HYDROCARBONS (>C24)	1180	mg/Kg dry wt	500	NWTPH-Dx	04/16/09
POLYCHLORINATED BIPHENYLS (PCB)					
Aroclor 1016/1242	<10	µg/Kg dry wt	10	EPA 8082	04/29/09
Aroclor 1221	<20	µg/Kg dry wt	20	EPA 8082	04/29/09
Aroclor 1232	<10	µg/Kg dry wt	10	EPA 8082	04/29/09
Aroclor 1248	<10	µg/Kg dry wt	10	EPA 8082	04/29/09
Aroclor 1254	25	µg/Kg dry wt	10	EPA 8082	04/29/09
Aroclor 1260	51	µg/Kg dry wt	10	EPA 8082	04/29/09
Aroclor 1262	<10	µg/Kg dry wt	10	EPA 8082	04/29/09
Aroclor 1268	<10	µg/Kg dry wt	10	EPA 8082	04/29/09
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	54800	mg/Kg dry wt	50	EPA 9060 MOD	04/21/09
GRAIN SIZE BY ASTM - ARI					
Clay (<3.2 µm)	1.5	Fract %	0.1	ASTM D421/422	04/15/09
Coarse Sand (4750-2000 µm)	0.1	Fract %	0.1	ASTM D421/422	04/15/09
Fine Sand (150-75 µm)	12.9	Fract %	0.1	ASTM D421/422	04/15/09
Fine Sand (250-150 µm)	12.1	Fract %	0.1	ASTM D421/422	04/15/09
Fine Sand (425-250 µm)	14.8	Fract %	0.1	ASTM D421/422	04/15/09

Report Date: 05/21/09

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: **FO095477**

Sample Collected: 04/08/09 10:01
Sample Received: 04/10/09

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-44A-ADZ315-0409 #10 SIEVED
CB ON NE RUSSELL ST
Sample Point Code: 44A_1
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 2 of 4

System ID: AN04134
EID File #: 1020.001
LocCode: PORTHARI
Collected By: JXB/MJS

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. LAB: Precision of the PCB Aroclor quantifications may have been affected by overlapping components of the mixed Aroclors.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Gravel (>4750 μ m)	<0.1	Fract %	0.1	ASTM D421/422	04/15/09
Medium Sand (2000-850 μ m)	13.7	Fract %	0.1	ASTM D421/422	04/15/09
Medium Sand (850-425 μ m)	14.3	Fract %	0.1	ASTM D421/422	04/15/09
Silt (13-9 μ m)	3.7	Fract %	0.1	ASTM D421/422	04/15/09
Silt (22-13 μ m)	7.5	Fract %	0.1	ASTM D421/422	04/15/09
Silt (32-22 μ m)	3.0	Fract %	0.1	ASTM D421/422	04/15/09
Silt (7-3.2 μ m)	4.5	Fract %	0.1	ASTM D421/422	04/15/09
Silt (75-32 μ m)	9.6	Fract %	0.1	ASTM D421/422	04/15/09
Silt (9-7 μ m)	2.2	Fract %	0.1	ASTM D421/422	04/15/09

POLYNUCLEAR AROMATICS & PHTHALATES - TA

Acenaphthene	<75.3	μ g/Kg dry wt	75.3	EPA8270M-SIM	04/17/09
Acenaphthylene	<75.3	μ g/Kg dry wt	75.3	EPA8270M-SIM	04/17/09
Anthracene	<75.3	μ g/Kg dry wt	75.3	EPA8270M-SIM	04/17/09
Benzo(a)anthracene	92.3	μ g/Kg dry wt	75.3	EPA8270M-SIM	04/17/09
Benzo(a)pyrene	131	μ g/Kg dry wt	75.3	EPA8270M-SIM	04/17/09
Benzo(b)fluoranthene	180	μ g/Kg dry wt	75.3	EPA8270M-SIM	04/17/09
Benzo(ghi)perylene	224	μ g/Kg dry wt	75.3	EPA8270M-SIM	04/17/09
Benzo(k)fluoranthene	123	μ g/Kg dry wt	75.3	EPA8270M-SIM	04/17/09
Bis(2-ethylhexyl) phthalate	3000	μ g/Kg dry wt	1510	EPA8270M-SIM	04/17/09
Butyl benzyl phthalate	<1510	μ g/Kg dry wt	1510	EPA8270M-SIM	04/17/09
Chrysene	211	μ g/Kg dry wt	75.3	EPA8270M-SIM	04/17/09
Dibenzo(a,h)anthracene	<75.3	μ g/Kg dry wt	75.3	EPA8270M-SIM	04/17/09
Diethyl phthalate	<1510	μ g/Kg dry wt	1510	EPA8270M-SIM	04/17/09
Dimethyl phthalate	<1510	μ g/Kg dry wt	1510	EPA8270M-SIM	04/17/09
Di-n-butyl phthalate	<1510	μ g/Kg dry wt	1510	EPA8270M-SIM	04/17/09
Di-n-octyl phthalate	<1510	μ g/Kg dry wt	1510	EPA8270M-SIM	04/17/09
Fluoranthene	223	μ g/Kg dry wt	75.3	EPA8270M-SIM	04/17/09
Fluorene	<75.3	μ g/Kg dry wt	75.3	EPA8270M-SIM	04/17/09
Indeno(1,2,3-cd)pyrene	126	μ g/Kg dry wt	75.3	EPA8270M-SIM	04/17/09
Naphthalene	<75.3	μ g/Kg dry wt	75.3	EPA8270M-SIM	04/17/09
Phenanthrene	114	μ g/Kg dry wt	75.3	EPA8270M-SIM	04/17/09
Pyrene	233	μ g/Kg dry wt	75.3	EPA8270M-SIM	04/17/09

SEMI-VOLATILE ORGANICS - CAS

1,2,4-Trichlorobenzene	<290	μ g/Kg dry wt	290	EPA 8270 LV	04/16/09
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Report Date: 05/21/09

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: **FO095477**

Sample Collected: 04/08/09 10:01
Sample Received: 04/10/09

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-44A-ADZ315-0409 #10 SIEVED
CB ON NE RUSSELL ST
Sample Point Code: 44A_1
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 3 of 4

System ID: AN04134
EID File #: 1020.001
LocCode: PORTHARI
Collected By: JXB/MJS

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. LAB: Precision of the PCB Aroclor quantifications may have been affected by overlapping components of the mixed Aroclors.

Test Parameter	Result	Units	MRL	Method	Analysis Date
1,2-Dichlorobenzene	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
1,3-Dichlorobenzene	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
1,4-Dichlorobenzene	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
2,4,5-Trichlorophenol	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
2,4,6-Trichlorophenol	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
2,4-Dichlorophenol	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
2,4-Dimethylphenol	<1500	µg/Kg dry wt	1500	EPA 8270 LV	04/16/09
2,4-Dinitrophenol	<5700	µg/Kg dry wt	5700	EPA 8270 LV	04/16/09
2,4-Dinitrotoluene	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
2,6-Dinitrotoluene	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
2-Chloronaphthalene	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
2-Chlorophenol	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
2-Methylnaphthalene	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
2-Methylphenol	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
2-Nitroaniline	<570	µg/Kg dry wt	570	EPA 8270 LV	04/16/09
2-Nitrophenol	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
3,3'-Dichlorobenzidine	<2900	µg/Kg dry wt	2900	EPA 8270 LV	04/16/09
3-Nitroaniline	<570	µg/Kg dry wt	570	EPA 8270 LV	04/16/09
4,6-Dinitro-2-methylphenol	<2900	µg/Kg dry wt	2900	EPA 8270 LV	04/16/09
4-Bromophenylphenyl ether	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
4-Chloro-3-methylphenol	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
4-Chloroaniline	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
4-Chlorophenylphenyl ether	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
4-Methylphenol	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
4-Nitroaniline	<570	µg/Kg dry wt	570	EPA 8270 LV	04/16/09
4-Nitrophenol	<2900	µg/Kg dry wt	2900	EPA 8270 LV	04/16/09
Acenaphthene	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
Acenaphthylene	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
Anthracene	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
Benzo(a)anthracene	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
Benzo(a)pyrene	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
Benzo(b)fluoranthene	320	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
Benzo(g,h,i)perylene	340	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
Benzo(k)fluoranthene	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
Benzoic acid	<5700	µg/Kg dry wt	5700	EPA 8270 LV	04/16/09

Report Date: 05/21/09

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: FO095477

Sample Collected: 04/08/09 10:01
Sample Received: 04/10/09

Sample Status: COMPLETE AND
VALIDATED

Proj./Company Name: PORTLAND HARBOR INLINE SAMP

Report Page: Page 4 of 4

Address/Location: IL-44A-ADZ315-0409 #10 SIEVED
CB ON NE RUSSELL ST

System ID: AN04134

Sample Point Code: 44A_1

EID File # : 1020.001

Sample Type: COMPOSITE

LocCode: PORTHARI

Sample Matrix: SEDIMENT

Collected By: JXB/MJS

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. LAB: Precision of the PCB Aroclor quantifications may have been affected by overlapping components of the mixed Aroclors.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Benzyl alcohol	<570	µg/Kg dry wt	570	EPA 8270 LV	04/16/09
Bis(2-chloroethoxy) methane	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
Bis(2-chloroethyl) ether	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
Bis(2-chloroisopropyl) ether	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
Bis(2-ethylhexyl) phthalate	<2900	µg/Kg dry wt	2900	EPA 8270 LV	04/16/09
Butyl benzyl phthalate	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
Chrysene	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
Dibenzo(a,h)anthracene	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
Dibenzofuran	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
Diethyl phthalate	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
Dimethyl phthalate	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
Di-n-butyl phthalate	<570	µg/Kg dry wt	570	EPA 8270 LV	04/16/09
Di-n-octyl phthalate	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
Fluoranthene	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
Fluorene	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
Hexachlorobenzene	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
Hexachlorobutadiene	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
Hexachlorocyclopentadiene	<1500	µg/Kg dry wt	1500	EPA 8270 LV	04/16/09
Hexachloroethane	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
Indeno(1,2,3-cd)pyrene	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
Isophorone	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
Naphthalene	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
Nitrobenzene	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
N-Nitrosodi-n-propylamine	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
N-Nitrosodiphenylamine	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
Pentachlorophenol	<2900	µg/Kg dry wt	2900	EPA 8270 LV	04/16/09
Phenanthrene	<290	µg/Kg dry wt	290	EPA 8270 LV	04/16/09
Phenol	<850	µg/Kg dry wt	850	EPA 8270 LV	04/16/09
Pyrene	300	µg/Kg dry wt	290	EPA 8270 LV	04/16/09

End of Report for Sample ID: FO095477

Report Date: 05/21/09

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: **FO095478**

Sample Collected: 04/08/09 10:36
Sample Received: 04/10/09

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-44A-NERODNEY-CBtoNE-0409 #10 SIEVED
NE RODNEY AT NE RUSSELL
Sample Point Code: 44A_2
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 1 of 4

System ID: AN04135
EID File #: 1020.001
LocCode: PORTHARI
Collected By: JXB/MJS

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. LAB: Reporting limits are raised for PCB Aroclor results because of the low solids content of the sample.

Test Parameter	Result	Units	MRL	Method	Analysis Date
GENERAL					
TOTAL SOLIDS	30.9	% W/W	0.01	SM 2540 G	04/14/09
METALS					
ARSENIC	2.05	mg/Kg dry wt	0.50	EPA 6020	04/22/09
CADMIUM	0.81	mg/Kg dry wt	0.10	EPA 6020	04/22/09
CHROMIUM	28.8	mg/Kg dry wt	0.50	EPA 6020	04/22/09
COPPER	62.4	mg/Kg dry wt	0.25	EPA 6020	04/22/09
LEAD	76.0	mg/Kg dry wt	0.10	EPA 6020	04/22/09
MERCURY	0.049	mg/Kg dry wt	0.010	EPA 6020	04/22/09
NICKEL	20.6	mg/Kg dry wt	0.25	EPA 6020	04/22/09
SILVER	0.21	mg/Kg dry wt	0.10	EPA 6020	04/22/09
ZINC	346	mg/Kg dry wt	0.50	EPA 6020	04/22/09
GC ANALYSIS					
NWTPH-Dx					
DIESEL RANGE HYDROCARBONS (C12-C24)	<750	mg/Kg dry wt	750	NWTPH-Dx	04/16/09
OIL RANGE HYDROCARBONS (>C24)	7710	mg/Kg dry wt	1500	NWTPH-Dx	04/16/09
POLYCHLORINATED BIPHENYLS (PCB)					
Aroclor 1016/1242	<30	µg/Kg dry wt	30	EPA 8082	04/29/09
Aroclor 1221	<60	µg/Kg dry wt	60	EPA 8082	04/29/09
Aroclor 1232	<30	µg/Kg dry wt	30	EPA 8082	04/29/09
Aroclor 1248	<30	µg/Kg dry wt	30	EPA 8082	04/29/09
Aroclor 1254	<30	µg/Kg dry wt	30	EPA 8082	04/29/09
Aroclor 1260	72	µg/Kg dry wt	30	EPA 8082	04/29/09
Aroclor 1262	<30	µg/Kg dry wt	30	EPA 8082	04/29/09
Aroclor 1268	<30	µg/Kg dry wt	30	EPA 8082	04/29/09
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	113000	mg/Kg dry wt	50	EPA 9060 MOD	04/21/09
GRAIN SIZE BY ASTM - ARI					
Clay (<3.2 µm)	1.7	Fract %	0.1	ASTM D421/422	04/15/09
Coarse Sand (4750-2000 µm)	0.9	Fract %	0.1	ASTM D421/422	04/15/09
Fine Sand (150-75 µm)	6.2	Fract %	0.1	ASTM D421/422	04/15/09
Fine Sand (250-150 µm)	6.4	Fract %	0.1	ASTM D421/422	04/15/09
Fine Sand (425-250 µm)	10.8	Fract %	0.1	ASTM D421/422	04/15/09

Report Date: 05/21/09

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: FO095478

Sample Collected: 04/08/09 10:36
Sample Received: 04/10/09

Sample Status: COMPLETE AND
VALIDATED

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-44A-NERODNEY-CBtoNE-0409 #10 SIEVED
NE RODNEY AT NE RUSSELL
Sample Point Code: 44A_2
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 2 of 4

System ID: AN04135
EID File #: 1020.001
LocCode: PORTHARI
Collected By: JXB/MJS

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. LAB: Reporting limits are raised for PCB Aroclor results because of the low solids content of the sample.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Gravel (>4750 μ m)	<0.1	Fract %	0.1	ASTM D421/422	04/15/09
Medium Sand (2000-850 μ m)	18.8	Fract %	0.1	ASTM D421/422	04/15/09
Medium Sand (850-425 μ m)	16.7	Fract %	0.1	ASTM D421/422	04/15/09
Silt (13-9 μ m)	6.0	Fract %	0.1	ASTM D421/422	04/15/09
Silt (22-13 μ m)	8.6	Fract %	0.1	ASTM D421/422	04/15/09
Silt (32-22 μ m)	6.9	Fract %	0.1	ASTM D421/422	04/15/09
Silt (7-3.2 μ m)	5.2	Fract %	0.1	ASTM D421/422	04/15/09
Silt (75-32 μ m)	9.1	Fract %	0.1	ASTM D421/422	04/15/09
Silt (9-7 μ m)	2.6	Fract %	0.1	ASTM D421/422	04/15/09

POLYNUCLEAR AROMATICS & PHTHALATES - TA

Acenaphthene	<234	μ g/Kg dry wt	234	EPA8270M-SIM	04/17/09
Acenaphthylene	<234	μ g/Kg dry wt	234	EPA8270M-SIM	04/17/09
Anthracene	<234	μ g/Kg dry wt	234	EPA8270M-SIM	04/17/09
Benzo(a)anthracene	<234	μ g/Kg dry wt	234	EPA8270M-SIM	04/17/09
Benzo(a)pyrene	<234	μ g/Kg dry wt	234	EPA8270M-SIM	04/17/09
Benzo(b)fluoranthene	254	μ g/Kg dry wt	234	EPA8270M-SIM	04/17/09
Benzo(ghi)perylene	297	μ g/Kg dry wt	234	EPA8270M-SIM	04/17/09
Benzo(k)fluoranthene	<234	μ g/Kg dry wt	234	EPA8270M-SIM	04/17/09
Bis(2-ethylhexyl) phthalate	26100	μ g/Kg dry wt	11700	EPA8270M-SIM	04/17/09
Butyl benzyl phthalate	<11700	μ g/Kg dry wt	11700	EPA8270M-SIM	04/17/09
Chrysene	455	μ g/Kg dry wt	234	EPA8270M-SIM	04/17/09
Dibenzo(a,h)anthracene	<234	μ g/Kg dry wt	234	EPA8270M-SIM	04/17/09
Diethyl phthalate	<11700	μ g/Kg dry wt	11700	EPA8270M-SIM	04/17/09
Dimethyl phthalate	<11700	μ g/Kg dry wt	11700	EPA8270M-SIM	04/17/09
Di-n-butyl phthalate	<11700	μ g/Kg dry wt	11700	EPA8270M-SIM	04/17/09
Di-n-octyl phthalate	<11700	μ g/Kg dry wt	11700	EPA8270M-SIM	04/17/09
Fluoranthene	588	μ g/Kg dry wt	234	EPA8270M-SIM	04/17/09
Fluorene	<234	μ g/Kg dry wt	234	EPA8270M-SIM	04/17/09
Indeno(1,2,3-cd)pyrene	<234	μ g/Kg dry wt	234	EPA8270M-SIM	04/17/09
Naphthalene	<234	μ g/Kg dry wt	234	EPA8270M-SIM	04/17/09
Phenanthrene	427	μ g/Kg dry wt	234	EPA8270M-SIM	04/17/09
Pyrene	648	μ g/Kg dry wt	234	EPA8270M-SIM	04/17/09

SEMI-VOLATILE ORGANICS - CAS

1,2,4-Trichlorobenzene	<450	μ g/Kg dry wt	450	EPA 8270 LV	04/16/09
1,2-Dichlorobenzene	<450	μ g/Kg dry wt	450	EPA 8270 LV	04/16/09

Report Date: 05/21/09

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: **FO095478**

Sample Collected: 04/08/09 10:36
Sample Received: 04/10/09

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-44A-NERODNEY-CBtoNE-0409 #10 SIEVED
NE RODNEY AT NE RUSSELL
Sample Point Code: 44A_2
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 3 of 4

System ID: AN04135
EID File #: 1020.001
LocCode: PORTHARI
Collected By: JXB/MJS

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. LAB: Reporting limits are raised for PCB Aroclor results because of the low solids content of the sample.

Test Parameter	Result	Units	MRL	Method	Analysis Date
1,3-Dichlorobenzene	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
1,4-Dichlorobenzene	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
2,4,5-Trichlorophenol	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
2,4,6-Trichlorophenol	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
2,4-Dichlorophenol	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
2,4-Dimethylphenol	<2300	µg/Kg dry wt	2300	EPA 8270 LV	04/16/09
2,4-Dinitrophenol	<9000	µg/Kg dry wt	9000	EPA 8270 LV	04/16/09
2,4-Dinitrotoluene	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
2,6-Dinitrotoluene	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
2-Chloronaphthalene	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
2-Chlorophenol	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
2-Methylnaphthalene	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
2-Methylphenol	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
2-Nitroaniline	<900	µg/Kg dry wt	900	EPA 8270 LV	04/16/09
2-Nitrophenol	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
3,3'-Dichlorobenzidine	<4500	µg/Kg dry wt	4500	EPA 8270 LV	04/16/09
3-Nitroaniline	<900	µg/Kg dry wt	900	EPA 8270 LV	04/16/09
4,6-Dinitro-2-methylphenol	<4500	µg/Kg dry wt	4500	EPA 8270 LV	04/16/09
4-Bromophenylphenyl ether	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
4-Chloro-3-methylphenol	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
4-Chloroaniline	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
4-Chlorophenylphenyl ether	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
4-Methylphenol	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
4-Nitroaniline	<900	µg/Kg dry wt	900	EPA 8270 LV	04/16/09
4-Nitrophenol	<4500	µg/Kg dry wt	4500	EPA 8270 LV	04/16/09
Acenaphthene	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
Acenaphthylene	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
Anthracene	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
Benzo(a)anthracene	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
Benzo(a)pyrene	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
Benzo(b)fluoranthene	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
Benzo(g,h,i)perylene	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
Benzo(k)fluoranthene	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
Benzoic acid	<9000	µg/Kg dry wt	9000	EPA 8270 LV	04/16/09
Benzyl alcohol	<900	µg/Kg dry wt	900	EPA 8270 LV	04/16/09
Bis(2-chloroethoxy) methane	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09

Report Date: 05/21/09

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: **FO095478**

Sample Collected: 04/08/09 10:36
Sample Received: 04/10/09

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-44A-NERODNEY-CBtoNE-0409 #10 SIEVED
NE RODNEY AT NE RUSSELL
Sample Point Code: 44A_2
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 4 of 4

System ID: AN04135
EID File #: 1020.001
LocCode: PORTHARI
Collected By: JXB/MJS

Comments:

QA/QC: Unless otherwise noted, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. LAB: Reporting limits are raised for PCB Aroclor results because of the low solids content of the sample.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Bis(2-chloroethyl) ether	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
Bis(2-chloroisopropyl) ether	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
Bis(2-ethylhexyl) phthalate	13000	µg/Kg dry wt	4500	EPA 8270 LV	04/16/09
Butyl benzyl phthalate	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
Chrysene	450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
Dibenzo(a,h)anthracene	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
Dibenzofuran	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
Diethyl phthalate	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
Dimethyl phthalate	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
Di-n-butyl phthalate	<900	µg/Kg dry wt	900	EPA 8270 LV	04/16/09
Di-n-octyl phthalate	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
Fluoranthene	570	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
Fluorene	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
Hexachlorobenzene	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
Hexachlorobutadiene	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
Hexachlorocyclopentadiene	<2300	µg/Kg dry wt	2300	EPA 8270 LV	04/16/09
Hexachloroethane	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
Indeno(1,2,3-cd)pyrene	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
Isophorone	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
Naphthalene	470	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
Nitrobenzene	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
N-Nitrosodi-n-propylamine	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
N-Nitrosodiphenylamine	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
Pentachlorophenol	<4500	µg/Kg dry wt	4500	EPA 8270 LV	04/16/09
Phenanthrene	<450	µg/Kg dry wt	450	EPA 8270 LV	04/16/09
Phenol	<1400	µg/Kg dry wt	1400	EPA 8270 LV	04/16/09
Pyrene	750	µg/Kg dry wt	450	EPA 8270 LV	04/16/09

End of Report for Sample ID: FO095478

Report Date: 05/21/09

Validated By:



Analytical Resources, Incorporated
Analytical Chemists and Consultants

April 24, 2009

Mr. Howard Holmes
Test America, Inc.
9405 SW Nimbus Ave.
Beaverton, OR 97008

**Subject: Project No.: PSD0460;
ARI Project No.: OV47**

Dear Mr. Holmes,

The following pages provide the grain size data you requested. Please call me to discuss any questions or comments you may have on the data or its presentation.

Best Regards,
Analytical Resources Incorporated

Guenna Smith
Geotechnical Laboratory Manager
206-695-6246
guennas@arilabs.com

Enclosures

cc: File OV47

SUBCONTRACT ORDER**TestAmerica Portland****PSD0460****SENDING LABORATORY:**

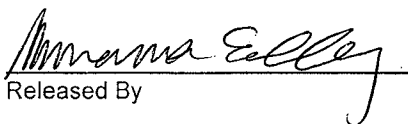
TestAmerica Portland
9405 SW Nimbus Ave.
Beaverton, OR 97008
Phone: (503) 906-9200
Fax: (503) 906-9210
Project Manager: Howard Holmes

RECEIVING LABORATORY:

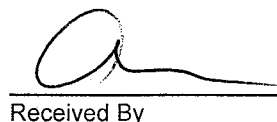
Analytical Resources, Inc. (ARI)
4611 S 134th Place, Suite 100
Tukwilla, WA 98168
Phone: (206) 621-6490
Fax: 206-621-7523
Project Location: OR - OREGON
Receipt Temperature: _____ °C Ice: Y / N

needs Excel EDD

Analysis	Units	Due	Expires	Comments
Sample ID: PSD0460-01				
Soil			Sampled: 04/07/09 08:48	
Grain Size (ASTM) - SUB	ug/l	04/27/09	10/04/09 08:48	sub to Analytical Resources Inc (ARI)
Containers Supplied:				
8 oz. jar (A)				
Sample ID: PSD0460-02				
Soil			Sampled: 04/07/09 09:48	
Grain Size (ASTM) - SUB	ug/l	04/27/09	10/04/09 09:48	sub to Analytical Resources Inc (ARI)
Containers Supplied:				
8 oz. jar (A)				
Sample ID: PSD0460-03				
Soil			Sampled: 04/07/09 11:47	
Grain Size (ASTM) - SUB	ug/l	04/27/09	10/04/09 11:47	sub to Analytical Resources Inc (ARI)
Containers Supplied:				
8 oz. jar (A)				
Sample ID: PSD0460-04				
Soil			Sampled: 04/07/09 13:11	
Grain Size (ASTM) - SUB	ug/l	04/27/09	10/04/09 13:11	sub to Analytical Resources Inc (ARI)
Containers Supplied:				
8 oz. jar (A)				
Sample ID: PSD0460-05				
Soil			Sampled: 04/07/09 13:48	
Grain Size (ASTM) - SUB	ug/l	04/27/09	10/04/09 13:48	sub to Analytical Resources Inc (ARI)
Containers Supplied:				
8 oz. jar (A)				
Sample ID: PSD0460-06				
Soil			Sampled: 04/08/09 07:52	
Grain Size (ASTM) - SUB	ug/l	04/27/09	10/05/09 07:52	sub to Analytical Resources Inc (ARI)
Containers Supplied:				
8 oz. jar (A)				


Released By

4/14/09 1240
Date/Time


Received By

4/15/09 930
Date/Time

Released By

Date/Time

Received By

Date/Time

Page 1 of 2

SUBCONTRACT ORDER

TestAmerica Portland

PSD0460

Analysis	Units	Due	Expires	Comments
Sample ID: PSD0460-07	Soil		Sampled: 04/08/09 08:18	
Grain Size (ASTM) - SUB	ug/l	04/27/09	10/05/09 08:18	sub to Analytical Resources Inc (ARI)
Containers Supplied: 8 oz. jar (A)				
Sample ID: PSD0460-08	Soil		Sampled: 04/08/09 09:21	
Grain Size (ASTM) - SUB	ug/l	04/27/09	10/05/09 09:21	sub to Analytical Resources Inc (ARI)
Containers Supplied: 8 oz. jar (A)				
Sample ID: PSD0460-09	Soil		Sampled: 04/08/09 13:31	
Grain Size (ASTM) - SUB	ug/l	04/27/09	10/05/09 13:31	sub to Analytical Resources Inc (ARI)
Containers Supplied: 8 oz. jar (A)				
Sample ID: PSD0460-10	Soil		Sampled: 04/08/09 12:13	
Grain Size (ASTM) - SUB	ug/l	04/27/09	10/05/09 12:13	sub to Analytical Resources Inc (ARI)
Containers Supplied: 8 oz. jar (A)				
Sample ID: PSD0460-11	Soil		Sampled: 04/08/09 10:01	
Grain Size (ASTM) - SUB	ug/l	04/27/09	10/05/09 10:01	sub to Analytical Resources Inc (ARI)
Containers Supplied: 8 oz. jar (A)				
Sample ID: PSD0460-12	Soil		Sampled: 04/08/09 10:36	
Grain Size (ASTM) - SUB	ug/l	04/27/09	10/05/09 10:36	sub to Analytical Resources Inc (ARI)
Containers Supplied: 8 oz. jar (A)				



Client: Test America, Inc.

ARI Project No.: OV47

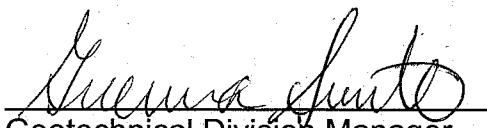
Client Project: PSD0460

Case Narrative

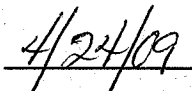
1. Twelve samples were received on April 15, 2009, and were in good condition.
2. The samples were submitted for grain size distribution, according to ASTM D422. The samples were prepared according to ASTM D421.
3. An assumed specific gravity of 2.65 was used in the calculations.
4. A standard milkshake mixer type device was used to disperse the sample.
5. The samples contained organic debris that may have broken down during the sieving process, affecting the grain size data.
6. The samples displayed an oily sheen and a fuel odor, which may have affected the grain size.
7. The data is provided in summary tables and plots.
8. There were no further anomalies in the samples or test method.

Approved by:

Title:


Geotechnical Division Manager

Date:



Test America, Inc.
PSD0460

Percent Finer (Passing) Than the Indicated Size

Sieve Size (microns)	3"	2"	1 1/2"	1"	3/4"	1/2"	3/8"	#4 (4750)	#10 (2000)	#20 (850)	#40 (425)	#60 (250)	#100 (150)	#200 (75)	32	22	13	9	7	3.2	1.3
PSD0460-01	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	90.4	78.9	66.3	56.2	45.9	35.2	28.2	22.5	15.5	11.3	7.0	4.2
PSD0460-02	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.8	93.7	86.3	75.1	62.8	45.5	28.4	18.5	14.2	11.4	7.1	4.3	1.4
PSD0460-03	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.7	82.6	64.6	52.6	45.0	38.4	25.1	22.8	6.8	5.7	2.3	1.1	0.0
PSD0460-04	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	87.7	68.8	52.5	40.9	29.5	18.7	14.0	10.9	7.8	4.7	1.6	0.8
PSD0460-05	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	74.3	52.8	37.5	28.2	20.3	12.4	10.8	9.3	7.7	4.6	1.5	1.5
PSD0460-06	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	90.6	72.8	52.9	37.5	23.0	14.5	11.6	8.7	7.2	5.8	3.6	2.2
PSD0460-07	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	91.0	76.2	57.6	42.2	27.0	18.0	15.0	10.5	8.2	6.7	4.5	3.0
PSD0460-08	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	91.8	74.0	52.5	37.0	24.3	18.6	16.3	14.0	12.4	9.3	6.2	4.7
PSD0460-09	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	91.0	75.3	58.6	44.3	30.1	23.4	19.0	11.7	8.8	5.9	4.4	2.9
PSD0460-10	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.8	88.1	71.9	55.0	41.3	27.7	21.6	18.5	15.4	8.5	6.2	4.6	2.3
PSD0460-11	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	86.2	71.8	57.1	44.9	32.0	22.4	19.4	11.9	8.2	6.0	1.5	0.0
PSD0460-12	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.1	80.3	63.6	52.8	46.4	40.2	31.1	24.2	15.5	9.5	6.9	1.7	0.9

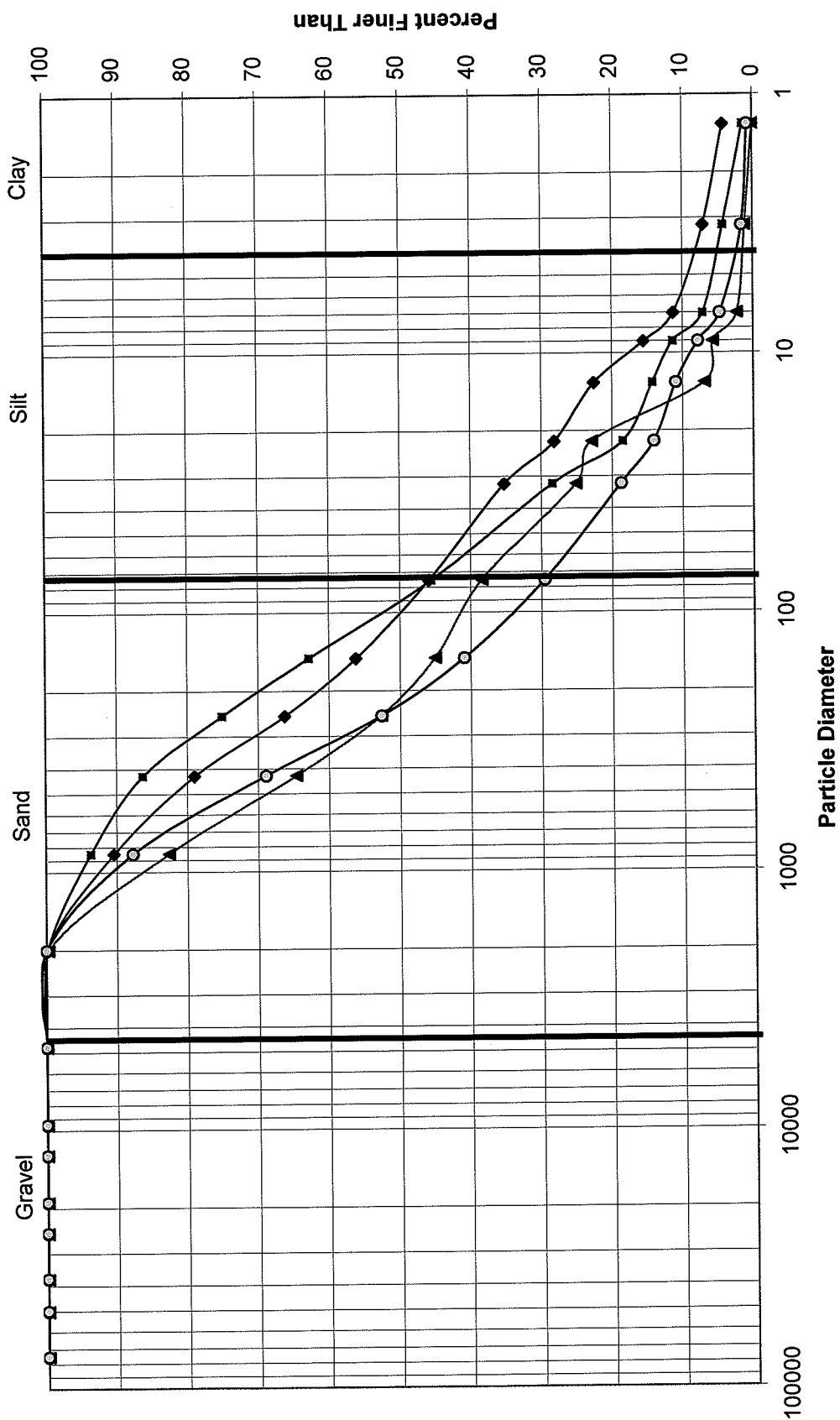
Testing performed according to ASTM D421/D422

Test America, Inc.
PSD0460

Percent Retained in Each Size Fraction

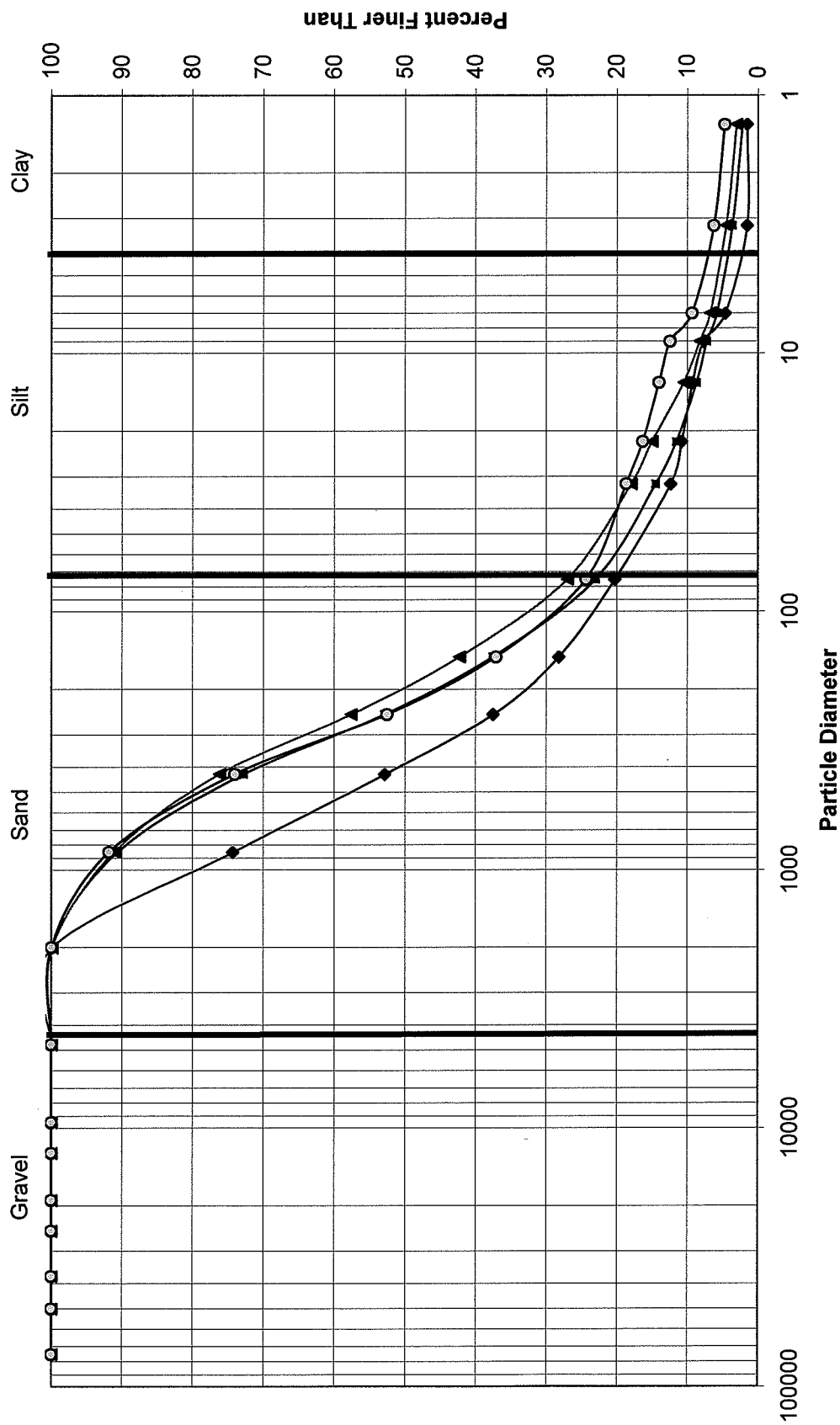
Description	%Coarse Gravel				% Gravel			% Coarse Sand	% Medium Sand		% Fine Sand			% Very Coarse Silt	% Coarse Silt	% Medium Silt	% Fine Silt	% Very Fine Silt	% Clay
	3-2"	2-1 1/2"	1 1/2"-1"	1-3/4"	3/4-1/2"	1/2-3/8"	3/8"-4/750		2000-850	850-425	425-250	250-150	150-75						
Particle Size (microns)	3-2"	2-1 1/2"	1 1/2"-1"	1-3/4"	3/4-1/2"	1/2-3/8"	3/8"-4/750	4750-2000	2000-850	850-425	425-250	250-150	150-75	75-32	32-22	22-13	13-9	7-3.2	<3.2
PSD0460-01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.6	11.5	12.7	10.1	10.3	10.7	7.0	5.6	7.0	4.2	7.0
PSD0460-02	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	6.1	7.4	11.2	12.2	17.3	17.1	10.0	4.3	2.8	4.3	4.3
PSD0460-03	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	17.1	18.0	11.9	7.6	6.6	13.3	2.3	16.0	1.1	3.4	1.1
PSD0460-04	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.3	18.9	16.3	11.7	11.4	10.8	4.7	3.1	3.1	3.1	3.1
PSD0460-05	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	25.6	21.5	15.4	9.3	7.9	7.9	1.5	1.5	1.5	3.1	1.5
PSD0460-06	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	9.3	17.8	19.9	15.4	14.6	8.5	2.9	2.9	1.4	2.2	3.6
PSD0460-07	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	8.8	14.9	18.6	15.4	15.2	9.0	3.0	4.5	2.2	2.2	4.5
PSD0460-08	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.2	17.8	21.5	15.5	12.7	5.7	2.3	2.3	1.6	3.1	6.2
PSD0460-09	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.0	15.7	16.7	14.3	14.2	6.7	4.4	7.3	2.9	1.5	4.4
PSD0460-10	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	11.6	16.3	16.9	13.7	13.5	6.2	3.1	3.1	6.9	2.3	4.6
PSD0460-11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	13.7	14.3	14.8	12.1	12.9	9.6	3.0	7.5	3.7	2.2	1.5
PSD0460-12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	18.8	16.7	10.8	6.4	6.2	9.1	6.9	8.6	6.0	2.6	1.7

Grain Size Distribution by Hydrometer



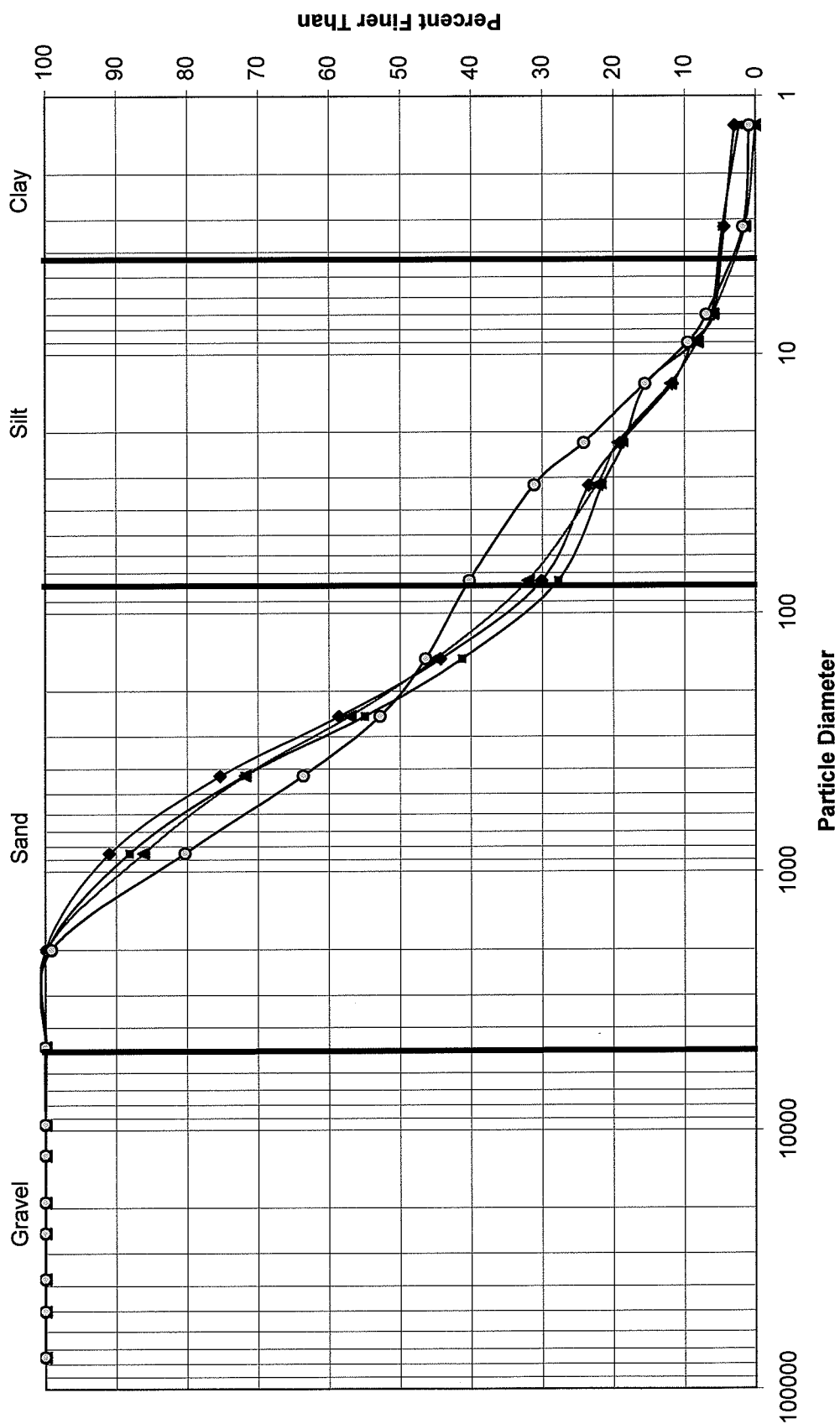
—◆— PSD0460-01 —■— PSD0460-02 —▲— PSD0460-03 —○— PSD0460-04

Grain Size Distribution by Hydrometer



PSD0460-05 PSD0460-06 PSD0460-07 PSD0460-08

Grain Size Distribution by Hydrometer



◆ PSD0460-09
 ■ PSD0460-10
 ▲ PSD0460-11
 ○ PSD0460-12

June 4, 2009

Analytical Report for Service Request No: K0903237

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

RE: Portland Harbor - Inline Samp

Dear Jennifer:

Enclosed are the results of the samples submitted to our laboratory on April 14, 2009. For your reference, these analyses have been assigned our service request number K0903237.

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/cb

Page 1 of 54

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 but greater than or equal to the MDL.
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- i The MRL/MDL has been elevated due to a matrix interference.
- X See case narrative.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- B The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
- 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.
- 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 has been elevated due to a matrix interference.
- X See case narrative.
- * The duplicate analysis not within control limits. See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.

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 (25% for CLP Pesticides).
- U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
- i The MRL/MDL has been elevated due to a chromatographic interference.
- X See case narrative.

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: Portland, City of
Project: Portland Harbor - Inline Samp
Sample Matrix: Sediment

Service Request No.: K0903237
Date Received: 04/14/09

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/Duplicate Matrix Spike (MS/DMS), and Laboratory/Duplicate Laboratory Control Sample (LCS/DLCS).

Sample Receipt

Twelve sediment samples were received for analysis at Columbia Analytical Services on 04/14/09. 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.

Semivolatile Organic Compounds by EPA Method 8270C

Surrogate Exceptions:

The control criteria for all surrogates in sample FO095470 were not applicable. The analysis of the sample required a dilution, which resulted in a surrogate concentration below the reporting limit. No further corrective action was appropriate.

The control criteria for Terpehnnyl-d14 in few samples were not applicable. The analysis of the samples required dilutions, which resulted in surrogate concentrations below the reporting limit. No further corrective action was appropriate.

Relative Percent Difference (RPD) Exceptions:

The RPD criterion for 2,4-Dimethylphenol in the replicate Laboratory Control Samples (LCS/DLCS) KWG0903189-3 and KWG0903189-4 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 Method Reporting Limits:

The detection limits were elevated for all samples. The sample extracts were diluted prior to instrumental analysis due to relatively high levels of non-target background components. The extracts were highly colored and viscous, which indicated the need to perform dilutions prior to injection into the instrument. Clean-up of the extracts was performed within the scope of the method, but did not eliminate enough of the background components to prevent dilution. Semi-quantitative screens were performed prior to final analysis. The results of the screening indicated the need to perform dilutions.

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

Approved by  Date 

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor - In
 Sample Matrix: Sediment

Service Request: K0903237

Total Solids

Prep Method: NONE
 Analysis Method: 160.3M
 Test Notes:

Units: PERCENT
 Basis: Wet

Sample Name	Lab Code	Date Collected	Date Received	Date Analyzed	Result	Result Notes
F0095467	K0903237-001	04/07/2009	04/14/2009	04/15/2009	63.7	
F0095468	K0903237-002	04/07/2009	04/14/2009	04/15/2009	77.0	
F0095469	K0903237-003	04/07/2009	04/14/2009	04/15/2009	68.5	
F0095470	K0903237-004	04/07/2009	04/14/2009	04/15/2009	80.8	
F0095471	K0903237-005	04/07/2009	04/14/2009	04/15/2009	59.9	
F0095472	K0903237-006	04/08/2009	04/14/2009	04/15/2009	72.2	
F0095473	K0903237-007	04/08/2009	04/14/2009	04/15/2009	68.2	
F0095474	K0903237-008	04/08/2009	04/14/2009	04/15/2009	68.4	
F0095475	K0903237-009	04/08/2009	04/14/2009	04/15/2009	49.0	
F0095476	K0903237-010	04/08/2009	04/14/2009	04/15/2009	56.5	
F0095477	K0903237-011	04/08/2009	04/14/2009	04/15/2009	88.9	
F0095478	K0903237-012	04/08/2009	04/14/2009	04/15/2009	22.2	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Portland, City of
Project: Portland Harbor - In
Sample Matrix: Sediment

Service Request: K0903237
Date Collected: 04/08/2009
Date Received: 04/14/2009
Date Analyzed: 04/15/2009

Duplicate Sample Summary
Total Solids

Prep Method: NONE
Analysis Method: 160.3M
Test Notes:

Units: PERCENT
Basis: Wet

Sample Name	Lab Code	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
F0095478	K0903237-012	22.2	23.8	23.0	7	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor - Inline Samp
 Sample Matrix: Sediment

Service Request: K0903237
 Date Collected: 04/08/2009
 Date Received: 04/14/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO095477
 Lab Code: K0903237-011
 Extraction Method: EPA 3541
 Analysis Method: 8270C

Units: ug/Kg
 Basis: Dry
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	290	54	25	04/16/09	04/28/09	KWG0903189	
Phenol	ND	U	850	57	25	04/16/09	04/28/09	KWG0903189	
2-Chlorophenol	ND	U	290	57	25	04/16/09	04/28/09	KWG0903189	
1,3-Dichlorobenzene	ND	U	290	85	25	04/16/09	04/28/09	KWG0903189	
1,4-Dichlorobenzene	ND	U	290	82	25	04/16/09	04/28/09	KWG0903189	
1,2-Dichlorobenzene	ND	U	290	82	25	04/16/09	04/28/09	KWG0903189	
Benzyl Alcohol	ND	U	570	60	25	04/16/09	04/28/09	KWG0903189	
Bis(2-chloroisopropyl) Ether	ND	U	290	74	25	04/16/09	04/28/09	KWG0903189	
2-Methylphenol	ND	U	290	43	25	04/16/09	04/28/09	KWG0903189	
Hexachloroethane	ND	U	290	88	25	04/16/09	04/28/09	KWG0903189	
N-Nitrosodi-n-propylamine	ND	U	290	68	25	04/16/09	04/28/09	KWG0903189	
4-Methylphenol†	ND	U	290	43	25	04/16/09	04/28/09	KWG0903189	
Nitrobenzene	ND	U	290	62	25	04/16/09	04/28/09	KWG0903189	
Isophorone	ND	U	290	29	25	04/16/09	04/28/09	KWG0903189	
2-Nitrophenol	ND	U	290	43	25	04/16/09	04/28/09	KWG0903189	
2,4-Dimethylphenol	ND	U	1500	160	25	04/16/09	04/28/09	KWG0903189	
Bis(2-chloroethoxy)methane	ND	U	290	43	25	04/16/09	04/28/09	KWG0903189	
2,4-Dichlorophenol	ND	U	290	29	25	04/16/09	04/28/09	KWG0903189	
Benzoic Acid	ND	U	5700	2700	25	04/16/09	04/28/09	KWG0903189	
1,2,4-Trichlorobenzene	ND	U	290	74	25	04/16/09	04/28/09	KWG0903189	
Naphthalene	ND	U	290	65	25	04/16/09	04/28/09	KWG0903189	
4-Chloroaniline	ND	U	290	54	25	04/16/09	04/28/09	KWG0903189	
Hexachlorobutadiene	ND	U	290	71	25	04/16/09	04/28/09	KWG0903189	
4-Chloro-3-methylphenol	ND	U	290	40	25	04/16/09	04/28/09	KWG0903189	
2-Methylnaphthalene	ND	U	290	62	25	04/16/09	04/28/09	KWG0903189	
Hexachlorocyclopentadiene	ND	U	1500	820	25	04/16/09	04/28/09	KWG0903189	
2,4,6-Trichlorophenol	ND	U	290	40	25	04/16/09	04/28/09	KWG0903189	
2,4,5-Trichlorophenol	ND	U	290	43	25	04/16/09	04/28/09	KWG0903189	
2-Chloronaphthalene	ND	U	290	45	25	04/16/09	04/28/09	KWG0903189	
2-Nitroaniline	ND	U	570	90	25	04/16/09	04/28/09	KWG0903189	
Acenaphthylene	ND	U	290	34	25	04/16/09	04/28/09	KWG0903189	
Dimethyl Phthalate	87	JD	290	29	25	04/16/09	04/28/09	KWG0903189	
2,6-Dinitrotoluene	ND	U	290	57	25	04/16/09	04/28/09	KWG0903189	
Acenaphthene	ND	U	290	40	25	04/16/09	04/28/09	KWG0903189	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor - Inline Samp
 Sample Matrix: Sediment

Service Request: K0903237
 Date Collected: 04/08/2009
 Date Received: 04/14/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO095477
 Lab Code: K0903237-011
 Extraction Method: EPA 3541
 Analysis Method: 8270C

Units: ug/Kg
 Basis: Dry
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
3-Nitroaniline	ND	U	570	71	25	04/16/09	04/28/09	KWG0903189	
2,4-Dinitrophenol	ND	U	5700	480	25	04/16/09	04/28/09	KWG0903189	
Dibenzofuran	ND	U	290	34	25	04/16/09	04/28/09	KWG0903189	
4-Nitrophenol	ND	U	2900	510	25	04/16/09	04/28/09	KWG0903189	
2,4-Dinitrotoluene	ND	U	290	43	25	04/16/09	04/28/09	KWG0903189	
Fluorene	ND	U	290	31	25	04/16/09	04/28/09	KWG0903189	
4-Chlorophenyl Phenyl Ether	ND	U	290	40	25	04/16/09	04/28/09	KWG0903189	
Diethyl Phthalate	ND	U	290	37	25	04/16/09	04/28/09	KWG0903189	
4-Nitroaniline	ND	U	570	51	25	04/16/09	04/28/09	KWG0903189	
2-Methyl-4,6-dinitrophenol	ND	U	2900	40	25	04/16/09	04/28/09	KWG0903189	
N-Nitrosodiphenylamine	ND	U	290	45	25	04/16/09	04/28/09	KWG0903189	
4-Bromophenyl Phenyl Ether	ND	U	290	45	25	04/16/09	04/28/09	KWG0903189	
Hexachlorobenzene	ND	U	290	34	25	04/16/09	04/28/09	KWG0903189	
Pentachlorophenol	ND	U	2900	570	25	04/16/09	04/28/09	KWG0903189	
Phenanthrene	130	JD	290	40	25	04/16/09	04/28/09	KWG0903189	
Anthracene	ND	U	290	45	25	04/16/09	04/28/09	KWG0903189	
Di-n-butyl Phthalate	280	JD	570	230	25	04/16/09	04/28/09	KWG0903189	
Fluoranthene	280	JD	290	45	25	04/16/09	04/28/09	KWG0903189	
Pyrene	300	D	290	43	25	04/16/09	04/28/09	KWG0903189	
Butyl Benzyl Phthalate	150	JD	290	90	25	04/16/09	04/28/09	KWG0903189	
3,3'-Dichlorobenzidine	ND	U	2900	110	25	04/16/09	04/28/09	KWG0903189	
Benz(a)anthracene	130	JD	290	48	25	04/16/09	04/28/09	KWG0903189	
Chrysene	160	JD	290	43	25	04/16/09	04/28/09	KWG0903189	
Bis(2-ethylhexyl) Phthalate	2000	JD	2900	200	25	04/16/09	04/28/09	KWG0903189	
Di-n-octyl Phthalate	ND	U	290	48	25	04/16/09	04/28/09	KWG0903189	
Benzo(b)fluoranthene	320	D	290	34	25	04/16/09	04/28/09	KWG0903189	
Benzo(k)fluoranthene	81	JD	290	40	25	04/16/09	04/28/09	KWG0903189	
Benzo(a)pyrene	170	JD	290	48	25	04/16/09	04/28/09	KWG0903189	
Indeno(1,2,3-cd)pyrene	240	JD	290	43	25	04/16/09	04/28/09	KWG0903189	
Dibenz(a,h)anthracene	ND	U	290	43	25	04/16/09	04/28/09	KWG0903189	
Benzo(g,h,i)perylene	340	D	290	43	25	04/16/09	04/28/09	KWG0903189	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor - Inline Samp
Sample Matrix: Sediment

Service Request: K0903237
Date Collected: 04/08/2009
Date Received: 04/14/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO095477
Lab Code: K0903237-011

Units: ug/Kg
Basis: Dry

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	27	10-89	04/28/09	Acceptable
Phenol-d6	47	15-103	04/28/09	Acceptable
Nitrobenzene-d5	76	10-108	04/28/09	Acceptable
2-Fluorobiphenyl	75	10-105	04/28/09	Acceptable
2,4,6-Tribromophenol	74	16-122	04/28/09	Acceptable
Terphenyl-d14	99	31-126	04/28/09	Acceptable

† Analyte Comments

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

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor - Inline Samp
 Sample Matrix: Sediment

Service Request: K0903237
 Date Collected: 04/08/2009
 Date Received: 04/14/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO095478
 Lab Code: K0903237-012
 Extraction Method: EPA 3541
 Analysis Method: 8270C

Units: ug/Kg
 Basis: Dry
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	450	85	20	04/16/09	04/29/09	KWG0903189	
Phenol	230	JD	1400	90	20	04/16/09	04/29/09	KWG0903189	
2-Chlorophenol	ND	U	450	90	20	04/16/09	04/29/09	KWG0903189	
1,3-Dichlorobenzene	ND	U	450	140	20	04/16/09	04/29/09	KWG0903189	
1,4-Dichlorobenzene	ND	U	450	130	20	04/16/09	04/29/09	KWG0903189	
1,2-Dichlorobenzene	ND	U	450	130	20	04/16/09	04/29/09	KWG0903189	
Benzyl Alcohol	ND	U	900	94	20	04/16/09	04/29/09	KWG0903189	
Bis(2-chloroisopropyl) Ether	ND	U	450	120	20	04/16/09	04/29/09	KWG0903189	
2-Methylphenol	ND	U	450	68	20	04/16/09	04/29/09	KWG0903189	
Hexachloroethane	ND	U	450	140	20	04/16/09	04/29/09	KWG0903189	
N-Nitrosodi-n-propylamine	ND	U	450	110	20	04/16/09	04/29/09	KWG0903189	
4-Methylphenol†	290	JD	450	68	20	04/16/09	04/29/09	KWG0903189	
Nitrobenzene	ND	U	450	99	20	04/16/09	04/29/09	KWG0903189	
Isophorone	ND	U	450	45	20	04/16/09	04/29/09	KWG0903189	
2-Nitrophenol	ND	U	450	68	20	04/16/09	04/29/09	KWG0903189	
2,4-Dimethylphenol	ND	U	2300	250	20	04/16/09	04/29/09	KWG0903189	
Bis(2-chloroethoxy)methane	ND	U	450	68	20	04/16/09	04/29/09	KWG0903189	
2,4-Dichlorophenol	ND	U	450	45	20	04/16/09	04/29/09	KWG0903189	
Benzoic Acid	ND	U	9000	4300	20	04/16/09	04/29/09	KWG0903189	
1,2,4-Trichlorobenzene	ND	U	450	120	20	04/16/09	04/29/09	KWG0903189	
Naphthalene	470	D	450	110	20	04/16/09	04/29/09	KWG0903189	
4-Chloroaniline	ND	U	450	85	20	04/16/09	04/29/09	KWG0903189	
Hexachlorobutadiene	ND	U	450	120	20	04/16/09	04/29/09	KWG0903189	
4-Chloro-3-methylphenol	ND	U	450	63	20	04/16/09	04/29/09	KWG0903189	
2-Methylnaphthalene	ND	U	450	99	20	04/16/09	04/29/09	KWG0903189	
Hexachlorocyclopentadiene	ND	U	2300	1300	20	04/16/09	04/29/09	KWG0903189	
2,4,6-Trichlorophenol	ND	U	450	63	20	04/16/09	04/29/09	KWG0903189	
2,4,5-Trichlorophenol	ND	U	450	68	20	04/16/09	04/29/09	KWG0903189	
2-Chloronaphthalene	ND	U	450	72	20	04/16/09	04/29/09	KWG0903189	
2-Nitroaniline	ND	U	900	150	20	04/16/09	04/29/09	KWG0903189	
Acenaphthylene	ND	U	450	54	20	04/16/09	04/29/09	KWG0903189	
Dimethyl Phthalate	350	JD	450	45	20	04/16/09	04/29/09	KWG0903189	
2,6-Dinitrotoluene	ND	U	450	90	20	04/16/09	04/29/09	KWG0903189	
Acenaphthene	ND	U	450	63	20	04/16/09	04/29/09	KWG0903189	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor - Inline Samp
 Sample Matrix: Sediment

Service Request: K0903237
 Date Collected: 04/08/2009
 Date Received: 04/14/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO095478
 Lab Code: K0903237-012
 Extraction Method: EPA 3541
 Analysis Method: 8270C

Units: ug/Kg
 Basis: Dry
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
3-Nitroaniline	ND	U	900	120	20	04/16/09	04/29/09	KWG0903189	
2,4-Dinitrophenol	ND	U	9000	770	20	04/16/09	04/29/09	KWG0903189	
Dibenzofuran	ND	U	450	54	20	04/16/09	04/29/09	KWG0903189	
4-Nitrophenol	ND	U	4500	810	20	04/16/09	04/29/09	KWG0903189	
2,4-Dinitrotoluene	ND	U	450	68	20	04/16/09	04/29/09	KWG0903189	
Fluorene	ND	U	450	50	20	04/16/09	04/29/09	KWG0903189	
4-Chlorophenyl Phenyl Ether	ND	U	450	63	20	04/16/09	04/29/09	KWG0903189	
Diethyl Phthalate	ND	U	450	59	20	04/16/09	04/29/09	KWG0903189	
4-Nitroaniline	ND	U	900	81	20	04/16/09	04/29/09	KWG0903189	
2-Methyl-4,6-dinitrophenol	ND	U	4500	63	20	04/16/09	04/29/09	KWG0903189	
N-Nitrosodiphenylamine	ND	U	450	72	20	04/16/09	04/29/09	KWG0903189	
4-Bromophenyl Phenyl Ether	ND	U	450	72	20	04/16/09	04/29/09	KWG0903189	
Hexachlorobenzene	ND	U	450	54	20	04/16/09	04/29/09	KWG0903189	
Pentachlorophenol	2800	JD	4500	900	20	04/16/09	04/29/09	KWG0903189	
Phenanthrene	320	JD	450	63	20	04/16/09	04/29/09	KWG0903189	
Anthracene	ND	U	450	72	20	04/16/09	04/29/09	KWG0903189	
Di-n-butyl Phthalate	ND	U	900	360	20	04/16/09	04/29/09	KWG0903189	
Fluoranthene	570	D	450	72	20	04/16/09	04/29/09	KWG0903189	
Pyrene	750	D	450	68	20	04/16/09	04/29/09	KWG0903189	
Butyl Benzyl Phthalate	ND	U	450	150	20	04/16/09	04/29/09	KWG0903189	
3,3'-Dichlorobenzidine	ND	U	4500	170	20	04/16/09	04/29/09	KWG0903189	
Benz(a)anthracene	160	JD	450	77	20	04/16/09	04/29/09	KWG0903189	
Chrysene	450	D	450	68	20	04/16/09	04/29/09	KWG0903189	
Bis(2-ethylhexyl) Phthalate	13000	D	4500	320	20	04/16/09	04/29/09	KWG0903189	
Di-n-octyl Phthalate	ND	U	450	77	20	04/16/09	04/29/09	KWG0903189	
Benzo(b)fluoranthene	340	JD	450	54	20	04/16/09	04/29/09	KWG0903189	
Benzo(k)fluoranthene	130	JD	450	63	20	04/16/09	04/29/09	KWG0903189	
Benzo(a)pyrene	ND	U	450	77	20	04/16/09	04/29/09	KWG0903189	
Indeno(1,2,3-cd)pyrene	210	JD	450	68	20	04/16/09	04/29/09	KWG0903189	
Dibenz(a,h)anthracene	ND	U	450	68	20	04/16/09	04/29/09	KWG0903189	
Benzo(g,h,i)perylene	420	JD	450	68	20	04/16/09	04/29/09	KWG0903189	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor - Inline Samp
Sample Matrix: Sediment

Service Request: K0903237
Date Collected: 04/08/2009
Date Received: 04/14/2009

Semi-Volatile Organic Compounds by GC/MS

Sample Name: FO095478
Lab Code: K0903237-012

Units: ug/Kg
Basis: Dry

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	33	10-89	04/29/09	Acceptable
Phenol-d6	47	15-103	04/29/09	Acceptable
Nitrobenzene-d5	57	10-108	04/29/09	Acceptable
2-Fluorobiphenyl	56	10-105	04/29/09	Acceptable
2,4,6-Tribromophenol	51	16-122	04/29/09	Acceptable
Terphenyl-d14	71	31-126	04/29/09	Acceptable

† Analyte Comments

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

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor - Inline Samp
Sample Matrix: Sediment

Service Request: K0903237
Date Collected: NA
Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KWG0903189-5
Extraction Method: EPA 3541
Analysis Method: 8270C

Units: ug/Kg
Basis: Dry
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Bis(2-chloroethyl) Ether	ND	U	5.0	1.9	1	04/16/09	04/28/09	KWG0903189	
Phenol	ND	U	15	2.0	1	04/16/09	04/28/09	KWG0903189	
2-Chlorophenol	ND	U	5.0	2.0	1	04/16/09	04/28/09	KWG0903189	
1,3-Dichlorobenzene	ND	U	5.0	3.0	1	04/16/09	04/28/09	KWG0903189	
1,4-Dichlorobenzene	ND	U	5.0	2.9	1	04/16/09	04/28/09	KWG0903189	
1,2-Dichlorobenzene	ND	U	5.0	2.9	1	04/16/09	04/28/09	KWG0903189	
Benzyl Alcohol	ND	U	10	2.1	1	04/16/09	04/28/09	KWG0903189	
Bis(2-chloroisopropyl) Ether	ND	U	5.0	2.6	1	04/16/09	04/28/09	KWG0903189	
2-Methylphenol	ND	U	5.0	1.5	1	04/16/09	04/28/09	KWG0903189	
Hexachloroethane	ND	U	5.0	3.1	1	04/16/09	04/28/09	KWG0903189	
N-Nitrosodi-n-propylamine	ND	U	5.0	2.4	1	04/16/09	04/28/09	KWG0903189	
4-Methylphenol†	ND	U	5.0	1.5	1	04/16/09	04/28/09	KWG0903189	
Nitrobenzene	ND	U	5.0	2.2	1	04/16/09	04/28/09	KWG0903189	
Isophorone	ND	U	5.0	1.0	1	04/16/09	04/28/09	KWG0903189	
2-Nitrophenol	ND	U	5.0	1.5	1	04/16/09	04/28/09	KWG0903189	
2,4-Dimethylphenol	ND	U	25	5.5	1	04/16/09	04/28/09	KWG0903189	
Bis(2-chloroethoxy)methane	ND	U	5.0	1.5	1	04/16/09	04/28/09	KWG0903189	
2,4-Dichlorophenol	ND	U	5.0	1.0	1	04/16/09	04/28/09	KWG0903189	
Benzoic Acid	ND	U	100	96	1	04/16/09	04/28/09	KWG0903189	
1,2,4-Trichlorobenzene	ND	U	5.0	2.6	1	04/16/09	04/28/09	KWG0903189	
Naphthalene	ND	U	5.0	2.3	1	04/16/09	04/28/09	KWG0903189	
4-Chloroaniline	ND	U	5.0	1.9	1	04/16/09	04/28/09	KWG0903189	
Hexachlorobutadiene	ND	U	5.0	2.5	1	04/16/09	04/28/09	KWG0903189	
4-Chloro-3-methylphenol	ND	U	5.0	1.4	1	04/16/09	04/28/09	KWG0903189	
2-Methylnaphthalene	ND	U	5.0	2.2	1	04/16/09	04/28/09	KWG0903189	
Hexachlorocyclopentadiene	ND	U	29	29	1	04/16/09	04/28/09	KWG0903189	
2,4,6-Trichlorophenol	ND	U	5.0	1.4	1	04/16/09	04/28/09	KWG0903189	
2,4,5-Trichlorophenol	ND	U	5.0	1.5	1	04/16/09	04/28/09	KWG0903189	
2-Chloronaphthalene	ND	U	5.0	1.6	1	04/16/09	04/28/09	KWG0903189	
2-Nitroaniline	ND	U	10	3.2	1	04/16/09	04/28/09	KWG0903189	
Acenaphthylene	ND	U	5.0	1.2	1	04/16/09	04/28/09	KWG0903189	
Dimethyl Phthalate	ND	U	5.0	1.0	1	04/16/09	04/28/09	KWG0903189	
2,6-Dinitrotoluene	ND	U	5.0	2.0	1	04/16/09	04/28/09	KWG0903189	
Acenaphthene	ND	U	5.0	1.4	1	04/16/09	04/28/09	KWG0903189	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor - Inline Samp
 Sample Matrix: Sediment

Service Request: K0903237
 Date Collected: NA
 Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
 Lab Code: KWG0903189-5
 Extraction Method: EPA 3541
 Analysis Method: 8270C

Units: ug/Kg
 Basis: Dry
 Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
3-Nitroaniline	ND	U	10	2.5	1	04/16/09	04/28/09	KWG0903189	
2,4-Dinitrophenol	ND	U	100	17	1	04/16/09	04/28/09	KWG0903189	
Dibenzofuran	ND	U	5.0	1.2	1	04/16/09	04/28/09	KWG0903189	
4-Nitrophenol	ND	U	50	18	1	04/16/09	04/28/09	KWG0903189	
2,4-Dinitrotoluene	ND	U	5.0	1.5	1	04/16/09	04/28/09	KWG0903189	
Fluorene	ND	U	5.0	1.1	1	04/16/09	04/28/09	KWG0903189	
4-Chlorophenyl Phenyl Ether	ND	U	5.0	1.4	1	04/16/09	04/28/09	KWG0903189	
Diethyl Phthalate	ND	U	5.0	1.3	1	04/16/09	04/28/09	KWG0903189	
4-Nitroaniline	ND	U	10	1.8	1	04/16/09	04/28/09	KWG0903189	
2-Methyl-4,6-dinitrophenol	ND	U	50	1.4	1	04/16/09	04/28/09	KWG0903189	
N-Nitrosodiphenylamine	ND	U	5.0	1.6	1	04/16/09	04/28/09	KWG0903189	
4-Bromophenyl Phenyl Ether	ND	U	5.0	1.6	1	04/16/09	04/28/09	KWG0903189	
Hexachlorobenzene	ND	U	5.0	1.2	1	04/16/09	04/28/09	KWG0903189	
Pentachlorophenol	ND	U	50	20	1	04/16/09	04/28/09	KWG0903189	
Phenanthrene	ND	U	5.0	1.4	1	04/16/09	04/28/09	KWG0903189	
Anthracene	ND	U	5.0	1.6	1	04/16/09	04/28/09	KWG0903189	
Di-n-butyl Phthalate	ND	U	10	7.9	1	04/16/09	04/28/09	KWG0903189	
Fluoranthene	ND	U	5.0	1.6	1	04/16/09	04/28/09	KWG0903189	
Pyrene	ND	U	5.0	1.5	1	04/16/09	04/28/09	KWG0903189	
Butyl Benzyl Phthalate	ND	U	5.0	3.2	1	04/16/09	04/28/09	KWG0903189	
3,3'-Dichlorobenzidine	ND	U	50	3.7	1	04/16/09	04/28/09	KWG0903189	
Benz(a)anthracene	ND	U	5.0	1.7	1	04/16/09	04/28/09	KWG0903189	
Chrysene	ND	U	5.0	1.5	1	04/16/09	04/28/09	KWG0903189	
Bis(2-ethylhexyl) Phthalate	ND	U	50	7.0	1	04/16/09	04/28/09	KWG0903189	
Di-n-octyl Phthalate	ND	U	5.0	1.7	1	04/16/09	04/28/09	KWG0903189	
Benzo(b)fluoranthene	ND	U	5.0	1.2	1	04/16/09	04/28/09	KWG0903189	
Benzo(k)fluoranthene	ND	U	5.0	1.4	1	04/16/09	04/28/09	KWG0903189	
Benzo(a)pyrene	ND	U	5.0	1.7	1	04/16/09	04/28/09	KWG0903189	
Indeno(1,2,3-cd)pyrene	ND	U	5.0	1.5	1	04/16/09	04/28/09	KWG0903189	
Dibenz(a,h)anthracene	ND	U	5.0	1.5	1	04/16/09	04/28/09	KWG0903189	
Benzo(g,h,i)perylene	ND	U	5.0	1.5	1	04/16/09	04/28/09	KWG0903189	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor - Inline Samp
Sample Matrix: Sediment

Service Request: K0903237
Date Collected: NA
Date Received: NA

Semi-Volatile Organic Compounds by GC/MS

Sample Name: Method Blank
Lab Code: KWG0903189-5

Units: ug/Kg
Basis: Dry

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
2-Fluorophenol	57	10-89	04/28/09	Acceptable
Phenol-d6	63	15-103	04/28/09	Acceptable
Nitrobenzene-d5	65	10-108	04/28/09	Acceptable
2-Fluorobiphenyl	68	10-105	04/28/09	Acceptable
2,4,6-Tribromophenol	74	16-122	04/28/09	Acceptable
Terphenyl-d14	96	31-126	04/28/09	Acceptable

† Analyte Comments

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

Comments:

Client: Portland, City of
 Project: Portland Harbor - Inline Samp
 Sample Matrix: Sediment

Service Request: K0903237

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

Extraction Method: EPA 3541
 Analysis Method: 8270C

Units: PERCENT
 Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>	<u>Sur3</u>	<u>Sur4</u>	<u>Sur5</u>	<u>Sur6</u>
FO095467	K0903237-001	36 D	51 D	53 D	66 D	52 D	87 D
FO095468	K0903237-002	44 D	56 D	57 D	69 D	65 D	92 D
FO095469	K0903237-003	33 D	51 D	64 D	75 D	66 D	104 D
FO095470	K0903237-004	0 D #	45 D #	82 D #	78 D #	57 D #	123 D #
FO095471	K0903237-005	49 D	60 D	65 D	75 D	87 D	106 D #
FO095472	K0903237-006	47 D	58 D	65 D	74 D	78 D	93 D
FO095473	K0903237-007	47 D	55 D	63 D	66 D	71 D	88 D
FO095474	K0903237-008	22 D	43 D	71 D	72 D	39 D	95 D #
FO095475	K0903237-009	47 D	61 D	66 D	67 D	78 D	93 D #
FO095476	K0903237-010	52 D	64 D	73 D	71 D	77 D	90 D #
FO095477	K0903237-011	27 D	47 D	76 D	75 D	74 D	99 D #
FO095478	K0903237-012	33 D	47 D	57 D	56 D	51 D	71 D
Method Blank	KWG0903189-5	57	63	65	68	74	96
FO095468MS	KWG0903189-1	52 D	62 D	67 D	73 D	76 D	93 D
FO095468DMS	KWG0903189-2	46 D	60 D	65 D	75 D	70 D	92 D
Lab Control Sample	KWG0903189-3	52	57	57	58	65	80
Duplicate Lab Control Sample	KWG0903189-4	52	57	58	59	65	75

Surrogate Recovery Control Limits (%)

Sur1 = 2-Fluorophenol	10-89	Sur5 = 2,4,6-Tribromophenol	16-122
Sur2 = Phenol-d6	15-103	Sur6 = Terphenyl-d14	31-126
Sur3 = Nitrobenzene-d5	10-108		
Sur4 = 2-Fluorobiphenyl	10-105		

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
 Project: Portland Harbor - Inline Samp
 Sample Matrix: Sediment

Service Request: K0903237
 Date Extracted: 04/16/2009
 Date Analyzed: 04/28/2009

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

Sample Name: FO095468
 Lab Code: K0903237-002
 Extraction Method: EPA 3541
 Analysis Method: 8270C

Units: ug/Kg
 Basis: Dry
 Level: Low
 Extraction Lot: KWG0903189

Analyte Name	Sample Result	FO095468MS KWG0903189-1 Matrix Spike			FO095468DMS KWG0903189-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
Phenol	ND	119	162	73	107	162	66	10-120	11	40
2-Chlorophenol	ND	103	162	64	97.8	162	60	12-105	5	40
1,4-Dichlorobenzene	ND	101	162	62	102	162	63	10-105	1	40
N-Nitrosodi-n-propylamine	ND	125	162	77	138	162	85	10-111	10	40
1,2,4-Trichlorobenzene	ND	109	162	67	111	162	69	10-102	2	40
4-Chloro-3-methylphenol	ND	114	162	71	94.0	162	58	10-119	20	40
Acenaphthene	ND	130	162	80	130	162	80	23-106	0	40
4-Nitrophenol	ND	89.4	162	55	123	162	76	11-143	31	40
2,4-Dinitrotoluene	ND	125	162	77	114	162	70	22-125	9	40
Pentachlorophenol	ND	94.0	162	58	104	162	64	10-146	10	40
Pyrene	130	240	162	67	260	162	79	10-146	8	40

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: Portland Harbor - Inline Samp
 Sample Matrix: Sediment

Service Request: K0903237
 Date Extracted: 04/16/2009
 Date Analyzed: 04/28/2009

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

Extraction Method: EPA 3541
 Analysis Method: 8270C

Units: ug/Kg
 Basis: Dry
 Level: Low
 Extraction Lot: KWG0903189

Analyte Name	Lab Control Sample KWG0903189-3 Lab Control Spike			Duplicate Lab Control Sample KWG0903189-4 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
Bis(2-chloroethyl) Ether	114	250	45	138	250	55	22-98	20	40
Phenol	113	250	45	145	250	58	34-101	25	40
2-Chlorophenol	113	250	45	143	250	57	30-91	23	40
1,3-Dichlorobenzene	107	250	43	139	250	56	10-97	26	40
1,4-Dichlorobenzene	110	250	44	139	250	56	10-98	24	40
1,2-Dichlorobenzene	111	250	44	141	250	56	10-98	24	40
Benzyl Alcohol	117	250	47	153	250	61	30-101	27	40
Bis(2-chloroisopropyl) Ether	103	250	41	134	250	53	17-100	26	40
2-Methylphenol	96.8	250	39	128	250	51	10-93	27	40
Hexachloroethane	110	250	44	139	250	56	10-99	23	40
N-Nitrosodi-n-propylamine	111	250	44	145	250	58	10-103	26	40
4-Methylphenol	99.8	250	40	134	250	54	10-98	30	40
Nitrobenzene	112	250	45	145	250	58	22-99	26	40
Isophorone	105	250	42	137	250	55	35-91	26	40
2-Nitrophenol	115	250	46	153	250	61	30-98	28	40
2,4-Dimethylphenol	39.3	250	16	71.9	250	29	10-81	59 *	40
Bis(2-chloroethoxy)methane	110	250	44	144	250	58	34-93	28	40
2,4-Dichlorophenol	108	250	43	147	250	59	35-91	31	40
Benzoic Acid	267	750	36	271	750	36	10-50	1	40
1,2,4-Trichlorobenzene	109	250	44	141	250	56	18-96	25	40
Naphthalene	112	250	45	148	250	59	23-95	28	40
4-Chloroaniline	99.7	250	40	130	250	52	10-95	26	40
Hexachlorobutadiene	106	250	42	139	250	56	14-100	27	40
4-Chloro-3-methylphenol	106	250	43	140	250	56	28-98	27	40
2-Methylnaphthalene	112	250	45	146	250	58	30-92	27	40
Hexachlorocyclopentadiene	92.6	250	37	115	250	46	10-81	22	40
2,4,6-Trichlorophenol	114	250	46	148	250	59	31-96	26	40
2,4,5-Trichlorophenol	118	250	47	150	250	60	38-95	24	40
2-Chloronaphthalene	113	250	45	146	250	58	33-95	25	40
2-Nitroaniline	118	250	47	152	250	61	40-104	25	40
Acenaphthylene	119	250	47	154	250	62	38-99	26	40
Dimethyl Phthalate	123	250	49	153	250	61	44-99	22	40
2,6-Dinitrotoluene	124	250	50	158	250	63	42-100	24	40
Acenaphthene	115	250	46	149	250	60	39-90	26	40
3-Nitroaniline	127	250	51	158	250	63	28-100	22	40
2,4-Dinitrophenol	135	250	54	163	250	65	14-104	19	40

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: Portland Harbor - Inline Samp
 Sample Matrix: Sediment

Service Request: K0903237
 Date Extracted: 04/16/2009
 Date Analyzed: 04/28/2009

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

Extraction Method: EPA 3541
 Analysis Method: 8270C

Units: ug/Kg
 Basis: Dry
 Level: Low
 Extraction Lot: KWG0903189

Analyte Name	Lab Control Sample KWG0903189-3 Lab Control Spike			Duplicate Lab Control Sample KWG0903189-4 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
Dibenzofuran	116	250	46	148	250	59	40-91	24	40
4-Nitrophenol	131	250	52	161	250	64	42-115	21	40
2,4-Dinitrotoluene	138	250	55	172	250	69	43-106	22	40
Fluorene	120	250	48	154	250	62	41-94	25	40
4-Chlorophenyl Phenyl Ether	116	250	46	149	250	60	41-93	25	40
Diethyl Phthalate	128	250	51	155	250	62	46-104	19	40
4-Nitroaniline	134	250	53	160	250	64	29-107	18	40
2-Methyl-4,6-dinitrophenol	148	250	59	177	250	71	30-107	18	40
N-Nitrosodiphenylamine	117	250	47	149	250	60	20-100	24	40
4-Bromophenyl Phenyl Ether	118	250	47	151	250	60	42-97	24	40
Hexachlorobenzene	121	250	48	152	250	61	42-98	22	40
Pentachlorophenol	104	250	42	141	250	57	28-100	30	40
Phenanthrene	127	250	51	156	250	62	44-97	20	40
Anthracene	127	250	51	156	250	62	31-104	20	40
Di-n-butyl Phthalate	140	250	56	159	250	64	47-129	13	40
Fluoranthene	138	250	55	160	250	64	45-111	14	40
Pyrene	135	250	54	162	250	65	46-112	18	40
Butyl Benzyl Phthalate	136	250	55	162	250	65	50-119	17	40
3,3'-Dichlorobenzidine	112	250	45	145	250	58	10-112	26	40
Benz(a)anthracene	136	250	54	160	250	64	45-110	17	40
Chrysene	138	250	55	164	250	66	50-108	17	40
Bis(2-ethylhexyl) Phthalate	140	250	56	166	250	67	48-127	17	40
Di-n-octyl Phthalate	145	250	58	172	250	69	52-126	17	40
Benzo(b)fluoranthene	136	250	55	163	250	65	51-111	18	40
Benzo(k)fluoranthene	141	250	57	169	250	67	52-109	18	40
Benzo(a)pyrene	128	250	51	155	250	62	26-125	19	40
Indeno(1,2,3-cd)pyrene	142	250	57	172	250	69	47-119	19	40
Dibenz(a,h)anthracene	144	250	58	171	250	68	50-115	17	40
Benzo(g,h,i)perylene	139	250	56	166	250	67	43-115	18	40

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.

CHAIN OF CUSTODY

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

PAGE 1 OF 2 SR#: _____ COC # _____

PROJECT NAME: <u>Portland Harbor - In-line Samp</u>				PROJECT NUMBER: _____																
PROJECT MANAGER: <u>Jennifer Shackelford</u>				COMPANY ADDRESS: <u>City of Portland - WPC</u>																
CITY/STATE/ZIP: _____				E-MAIL ADDRESS: _____																
PHONE #: _____				FAX #: _____																
SAMPLER'S SIGNATURE: _____				NUMBER OF CONTAINERS: _____																
SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	REMARKS															
F0095467	4/7/07	0848	501	Soil																
468		0948																		
469		1147																		
470		1311																		
471		1348																		
472	4/8/07	0752																		
473		0818																		
474		0921																		
475		1331																		
476		1213																		

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 _____

SPECIAL INSTRUCTIONS/COMMENTS:

Please run Low-level Semi-Vols analysis.

RECEIVED BY: [Signature] 4/14/07 10:35 10:35

RELINQUISHED BY: [Signature] 4/14/07 12:30 12:30

RECEIVED BY: [Signature] 4-14-07 1230

RELINQUISHED BY: [Signature] 4-14-07 1230

[illegible]

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC PD

Client / Project: City of Portland Service Request K09 3237
Received: 4/14/09 Opened: 4/14/09 By: DW

1. Samples were received via? US Mail Fed Ex UPS DHL GH GS PDK 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): 4.7
Temperature Blank (°C): NP
Thermometer ID: SMO 244
6. If applicable, list Chain of Custody Numbers: _____
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 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 and 1631 Mercury bottles 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: _____

May 14, 2009

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

RE: Portland Harbor

Enclosed are the results of analyses for samples received by the laboratory on 04/13/09 16:05.
The following list is a summary of the Work Orders contained in this report, generated on 05/14/09 15:55.

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

<u>Work Order</u>	<u>Project</u>	<u>ProjectNumber</u>
PSD0460	Portland Harbor	36238

TestAmerica Portland



Howard Holmes, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report shall not be reproduced except in full, without the written approval of the laboratory.

City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name:

Portland Harbor

Project Number:

36238

Project Manager:

Jennifer Shackelford

Report Created:

05/14/09 15:55

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FO095467	PSD0460-01	Soil	04/07/09 08:48	04/13/09 16:05
FO095468	PSD0460-02	Soil	04/07/09 09:48	04/13/09 16:05
FO095469	PSD0460-03	Soil	04/07/09 11:47	04/13/09 16:05
FO095470	PSD0460-04	Soil	04/07/09 13:11	04/13/09 16:05
FO095471	PSD0460-05	Soil	04/07/09 13:48	04/13/09 16:05
FO095472	PSD0460-06	Soil	04/08/09 07:52	04/13/09 16:05
FO095473	PSD0460-07	Soil	04/08/09 08:18	04/13/09 16:05
FO095474	PSD0460-08	Soil	04/08/09 09:21	04/13/09 16:05
FO095475	PSD0460-09	Soil	04/08/09 13:31	04/13/09 16:05
FO095476	PSD0460-10	Soil	04/08/09 12:13	04/13/09 16:05
FO095477	PSD0460-11	Soil	04/08/09 10:01	04/13/09 16:05
FO095478	PSD0460-12	Soil	04/08/09 10:36	04/13/09 16:05

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name:

Portland Harbor

Project Number:

36238

Project Manager:

Jennifer Shackelford

Report Created:

05/14/09 15:55

Analytical Case Narrative

TestAmerica - Portland, OR

PSD0460

8270 SIM Phthalates

Bis(2-ethylhexyl)phthalate was detected in the method blank between the MDL and MRL. Sample data was not affected as all of the samples had concentrations greater than 10x the method blank contamination level. Results were flagged and reported. No other anomalies were reported.

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
05/14/09 15:55

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSD0460-11 (FO095477)				Soil			Sampled: 04/08/09 10:01			RL3
Acenaphthene	EPA 8270m	ND	----	75.3	ug/kg dry	2x	9040656	04/17/09 18:30	04/22/09 22:42	
Acenaphthylene	"	ND	----	75.3	"	"	"	"	"	
Anthracene	"	ND	----	75.3	"	"	"	"	"	
Benzo (a) anthracene	"	92.3	----	75.3	"	"	"	"	"	
Benzo (a) pyrene	"	131	----	75.3	"	"	"	"	"	
Benzo (b) fluoranthene	"	180	----	75.3	"	"	"	"	"	
Benzo (ghi) perylene	"	224	----	75.3	"	"	"	"	"	
Benzo (k) fluoranthene	"	123	----	75.3	"	"	"	"	"	
Chrysene	"	211	----	75.3	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	----	75.3	"	"	"	"	"	
Fluoranthene	"	223	----	75.3	"	"	"	"	"	
Fluorene	"	ND	----	75.3	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	126	----	75.3	"	"	"	"	"	
Naphthalene	"	ND	----	75.3	"	"	"	"	"	
Phenanthrene	"	114	----	75.3	"	"	"	"	"	
Pyrene	"	233	----	75.3	"	"	"	"	"	
<hr/>										
Surrogate(s): Fluorene-d10				91.8%		24 - 125 %	"			"
Pyrene-d10				80.0%		41 - 141 %	"			"
Benzo (a) pyrene-d12				79.5%		38 - 143 %	"			"

PSD0460-12 (FO095478)				Soil			Sampled: 04/08/09 10:36			RL3
Acenaphthene	EPA 8270m	ND	----	234	ug/kg dry	2x	9040656	04/17/09 18:30	04/22/09 23:14	
Acenaphthylene	"	ND	----	234	"	"	"	"	"	
Anthracene	"	ND	----	234	"	"	"	"	"	
Benzo (a) anthracene	"	ND	----	234	"	"	"	"	"	
Benzo (a) pyrene	"	ND	----	234	"	"	"	"	"	
Benzo (b) fluoranthene	"	254	----	234	"	"	"	"	"	
Benzo (ghi) perylene	"	297	----	234	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	----	234	"	"	"	"	"	
Chrysene	"	455	----	234	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	----	234	"	"	"	"	"	
Fluoranthene	"	588	----	234	"	"	"	"	"	
Fluorene	"	ND	----	234	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	ND	----	234	"	"	"	"	"	
Naphthalene	"	ND	----	234	"	"	"	"	"	
Phenanthrene	"	427	----	234	"	"	"	"	"	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name:

Portland Harbor

Project Number:

36238

Project Manager:

Jennifer Shackelford

Report Created:

05/14/09 15:55

Polynuclear Aromatic Compounds per EPA 8270M-SIM
TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSD0460-12 (FO095478)				Soil			Sampled: 04/08/09 10:36			RL3
Pyrene	EPA 8270m	648	-----	234	ug/kg dry	2x	9040656	04/17/09 18:30	04/22/09 23:14	
Surrogate(s):	Fluorene-d10			110%		24 - 125 %	"			"
	Pyrene-d10			93.6%		41 - 141 %	"			"
	Benzo (a) pyrene-d12			101%		38 - 143 %	"			"

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
05/14/09 15:55

Phthalates per EPA 8270-SIM

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSD0460-08 (FO095474)		Soil		Sampled: 04/08/09 09:21						RL3
Dimethyl phthalate	EPA 8270m	ND	----	4900	ug/kg dry	50x	9040656	04/17/09 18:30	04/24/09 01:37	
Diethyl phthalate	"	ND	----	4900	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	----	4900	"	"	"	"	"	
Butyl benzyl phthalate	"	ND	----	4900	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	"	10900	----	4900	"	"	"	"	"	B1
Di-n-octyl phthalate	"	ND	----	4900	"	"	"	"	"	
<i>Surrogate(s): 2-Fluorobiphenyl</i>				98.1%		10 - 150 %	"		"	Z3
<i>p-Terphenyl-d14</i>				107%		10 - 150 %	"		"	
PSD0460-09 (FO095475)		Soil		Sampled: 04/08/09 13:31						RL3
Dimethyl phthalate	EPA 8270m	ND	----	6370	ug/kg dry	50x	9040656	04/17/09 18:30	04/24/09 02:13	
Diethyl phthalate	"	ND	----	6370	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	----	6370	"	"	"	"	"	
Butyl benzyl phthalate	"	ND	----	6370	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	"	19700	----	6370	"	"	"	"	"	B1
Di-n-octyl phthalate	"	14400	----	6370	"	"	"	"	"	
<i>Surrogate(s): 2-Fluorobiphenyl</i>				101%		10 - 150 %	"		"	
<i>p-Terphenyl-d14</i>				111%		10 - 150 %	"		"	
PSD0460-10 (FO095476)		Soil		Sampled: 04/08/09 12:13						RL3
Dimethyl phthalate	EPA 8270m	ND	----	927	ug/kg dry	10x	9040656	04/17/09 18:30	04/28/09 18:12	
Diethyl phthalate	"	ND	----	927	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	----	927	"	"	"	"	"	
Butyl benzyl phthalate	"	ND	----	927	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	"	1350	----	927	"	"	"	"	"	B1
Di-n-octyl phthalate	"	ND	----	927	"	"	"	"	"	
<i>Surrogate(s): 2-Fluorobiphenyl</i>				94.1%		10 - 150 %	"		"	
<i>p-Terphenyl-d14</i>				113%		10 - 150 %	"		"	
PSD0460-11 (FO095477)		Soil		Sampled: 04/08/09 10:01						RL3
Dimethyl phthalate	EPA 8270m	ND	----	1510	ug/kg dry	20x	9040656	04/17/09 18:30	04/24/09 07:06	
Diethyl phthalate	"	ND	----	1510	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	----	1510	"	"	"	"	"	
Butyl benzyl phthalate	"	ND	----	1510	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	"	3000	----	1510	"	"	"	"	"	B1
Di-n-octyl phthalate	"	ND	----	1510	"	"	"	"	"	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
05/14/09 15:55

Phthalates per EPA 8270-SIM

TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSD0460-11 (FO095477)			Soil				Sampled: 04/08/09 10:01			RL3
Surrogate(s): 2-Fluorobiphenyl				98.6%		10 - 150 %	20x		04/24/09 07:06	
p-Terphenyl-d14				119%		10 - 150 %	"		"	
PSD0460-12 (FO095478)			Soil				Sampled: 04/08/09 10:36			RL3
Dimethyl phthalate	EPA 8270m	ND	----	11700	ug/kg dry	50x	9040656	04/17/09 18:30	04/24/09 02:50	
Diethyl phthalate	"	ND	----	11700	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	----	11700	"	"	"	"	"	
Butyl benzyl phthalate	"	ND	----	11700	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	"	26100	----	11700	"	"	"	"	"	B1
Di-n-octyl phthalate	"	ND	----	11700	"	"	"	"	"	
Surrogate(s): 2-Fluorobiphenyl				106%		10 - 150 %	"		"	
p-Terphenyl-d14				114%		10 - 150 %	"		"	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name:

Portland Harbor

Project Number:

36238

Project Manager:

Jennifer Shackelford

Report Created:

05/14/09 15:55

Percent Dry Weight (Solids) per Standard Methods
TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSD0460-01 (FO095467)					Soil					Sampled: 04/07/09 08:48
% Solids	NCA SOP	67.2	----	0.0100	% by Weight	1x	9040593	04/15/09 16:21	04/15/09 16:21	
PSD0460-02 (FO095468)					Soil					Sampled: 04/07/09 09:48
% Solids	NCA SOP	76.1	----	0.0100	% by Weight	1x	9040593	04/15/09 16:21	04/15/09 16:21	
PSD0460-03 (FO095469)					Soil					Sampled: 04/07/09 11:47
% Solids	NCA SOP	69.8	----	0.0100	% by Weight	1x	9040593	04/15/09 16:21	04/15/09 16:21	
PSD0460-04 (FO095470)					Soil					Sampled: 04/07/09 13:11
% Solids	NCA SOP	80.4	----	0.0100	% by Weight	1x	9040593	04/15/09 16:21	04/15/09 16:21	
PSD0460-05 (FO095471)					Soil					Sampled: 04/07/09 13:48
% Solids	NCA SOP	70.5	----	0.0100	% by Weight	1x	9040593	04/15/09 16:21	04/15/09 16:21	
PSD0460-06 (FO095472)					Soil					Sampled: 04/08/09 07:52
% Solids	NCA SOP	71.0	----	0.0100	% by Weight	1x	9040593	04/15/09 16:21	04/15/09 16:21	
PSD0460-07 (FO095473)					Soil					Sampled: 04/08/09 08:18
% Solids	NCA SOP	69.4	----	0.0100	% by Weight	1x	9040593	04/15/09 16:21	04/15/09 16:21	
PSD0460-08 (FO095474)					Soil					Sampled: 04/08/09 09:21
% Solids	NCA SOP	68.3	----	0.0100	% by Weight	1x	9040593	04/15/09 16:21	04/15/09 16:21	
PSD0460-09 (FO095475)					Soil					Sampled: 04/08/09 13:31
% Solids	NCA SOP	52.5	----	0.0100	% by Weight	1x	9040593	04/15/09 16:21	04/15/09 16:21	
PSD0460-10 (FO095476)					Soil					Sampled: 04/08/09 12:13
% Solids	NCA SOP	72.0	----	0.0100	% by Weight	1x	9040593	04/15/09 16:21	04/15/09 16:21	
PSD0460-11 (FO095477)					Soil					Sampled: 04/08/09 10:01

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name:

Portland Harbor

Project Number:

36238

Project Manager:

Jennifer Shackelford

Report Created:

05/14/09 15:55

Percent Dry Weight (Solids) per Standard Methods
TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSD0460-11 (FO095477)				Soil			Sampled: 04/08/09 10:01			
% Solids	NCA SOP	88.8	-----	0.0100	% by Weight	1x	9040593	04/15/09 16:21	04/15/09 16:21	
PSD0460-12 (FO095478)				Soil			Sampled: 04/08/09 10:36			
% Solids	NCA SOP	28.6	-----	0.0100	% by Weight	1x	9040593	04/15/09 16:21	04/15/09 16:21	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
05/14/09 15:55

Organic Carbon, Total (TOC)

TestAmerica Connecticut

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSD0460-01 (FO095467)			Soil					Sampled: 04/07/09 08:48		
Total Organic Carbon - Duplicates	9060	29600	3.3	100	mg/Kg	1x	26574	04/21/09 14:07	04/21/09 14:07	
PSD0460-02 (FO095468)			Soil					Sampled: 04/07/09 09:48		
Total Organic Carbon - Duplicates	9060	15200	3.3	100	mg/Kg	1x	26574	04/21/09 14:20	04/21/09 14:20	
PSD0460-03 (FO095469)			Soil					Sampled: 04/07/09 11:47		
Total Organic Carbon - Duplicates	9060	25800	3.3	100	mg/Kg	1x	26574	04/21/09 14:34	04/21/09 14:34	
PSD0460-04 (FO095470)			Soil					Sampled: 04/07/09 13:11		
Total Organic Carbon - Duplicates	9060	64100	3.3	100	mg/Kg	1x	26574	04/21/09 14:48	04/21/09 14:48	
PSD0460-05 (FO095471)			Soil					Sampled: 04/07/09 13:48		
Total Organic Carbon - Duplicates	9060	36800	3.3	100	mg/Kg	1x	26574	04/21/09 15:16	04/21/09 15:16	
PSD0460-06 (FO095472)			Soil					Sampled: 04/08/09 07:52		
Total Organic Carbon - Duplicates	9060	24700	3.3	100	mg/Kg	1x	26574	04/21/09 15:30	04/21/09 15:30	
PSD0460-07 (FO095473)			Soil					Sampled: 04/08/09 08:18		
Total Organic Carbon - Duplicates	9060	28100	3.3	100	mg/Kg	1x	26574	04/21/09 15:44	04/21/09 15:44	
PSD0460-08 (FO095474)			Soil					Sampled: 04/08/09 09:21		
Total Organic Carbon - Duplicates	9060	30000	3.3	100	mg/Kg	1x	26574	04/21/09 15:58	04/21/09 15:58	
PSD0460-09 (FO095475)			Soil					Sampled: 04/08/09 13:31		
Total Organic Carbon - Duplicates	9060	56100	3.3	100	mg/Kg	1x	26574	04/21/09 16:12	04/21/09 16:12	
PSD0460-10 (FO095476)			Soil					Sampled: 04/08/09 12:13		
Total Organic Carbon - Duplicates	9060	49500	3.3	100	mg/Kg	1x	26574	04/21/09 16:41	04/21/09 16:41	
PSD0460-11 (FO095477)			Soil					Sampled: 04/08/09 10:01		

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name:

Portland Harbor

Project Number:

36238

Project Manager:

Jennifer Shackelford

Report Created:

05/14/09 15:55

Organic Carbon, Total (TOC)
TestAmerica Connecticut

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSD0460-11 (FO095477)				Soil			Sampled: 04/08/09 10:01			
Total Organic Carbon - Duplicates	9060	54800	3.3	100	mg/Kg	1x	26574	04/21/09 16:55	04/21/09 16:55	
PSD0460-12 (FO095478)				Soil			Sampled: 04/08/09 10:36			
Total Organic Carbon - Duplicates	9060	113000	3.3	100	mg/Kg	1x	26574	04/21/09 17:09	04/21/09 17:09	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
05/14/09 15:55

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

TestAmerica Portland

QC Batch: 9040656

Soil Preparation Method: EPA 3550

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (9040656-BLK1)										Extracted: 04/17/09 18:30				
Acenaphthene	EPA 8270m	ND	---	13.4	ug/kg wet	1x	--	--	--	--	--	--	04/21/09 14:43	
Acenaphthylene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Anthracene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Benzo (a) anthracene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Benzo (a) pyrene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Benzo (b) fluoranthene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Benzo (ghi) perylene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Benzo (k) fluoranthene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Chrysene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Dibenzo (a,h) anthracene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Fluoranthene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Fluorene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Indeno (1,2,3-cd) pyrene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Naphthalene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Phenanthrene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
Pyrene	"	ND	---	13.4	"	"	--	--	--	--	--	--	"	
<hr/>														
Surrogate(s): Fluorene-d10		Recovery: 116%		Limits: 24-125%	"								04/21/09 14:43	
Pyrene-d10		111%		41-141%	"								"	
Benzo (a) pyrene-d12		111%		38-143%	"								"	

LCS (9040656-BS1)

Extracted: 04/17/09 18:30

MNR

Acenaphthene	EPA 8270m	174	---	13.4	ug/kg wet	1x	--	166	105%	(33-139)	--	--	04/21/09 14:11	
Benzo (a) pyrene	"	162	---	13.4	"	"	--	"	97.5%	(45-149)	--	--	"	
Pyrene	"	153	---	13.4	"	"	--	"	92.3%	(39-138)	--	--	"	
<hr/>														
Surrogate(s): Fluorene-d10		Recovery: 122%		Limits: 24-125%	"								04/21/09 14:11	
Pyrene-d10		115%		41-141%	"								"	
Benzo (a) pyrene-d12		121%		38-143%	"								"	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
05/14/09 15:55

Phthalates per EPA 8270-SIM - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 9040656

Soil Preparation Method: EPA 3550

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
---------	--------	--------	------	-----	-------	-----	---------------	-----------	-------	----------	-------	----------	----------	-------

Blank (9040656-BLK1)

Extracted: 04/17/09 18:30

Dimethyl phthalate	EPA 8270m	ND	---	26.8	ug/kg wet	1x	--	--	--	--	--	--	04/22/09 14:19	
Diethyl phthalate	"	ND	---	26.8	"	"	--	--	--	--	--	--	"	
Di-n-butyl phthalate	"	ND	---	26.8	"	"	--	--	--	--	--	--	"	
Butyl benzyl phthalate	"	ND	---	26.8	"	"	--	--	--	--	--	--	"	
Bis(2-ethylhexyl)phthalate	"	ND	---	26.8	"	"	--	--	--	--	--	--	"	N1
Di-n-octyl phthalate	"	ND	---	26.8	"	"	--	--	--	--	--	--	"	

Surrogate(s): 2-Fluorobiphenyl Recovery: 93.9% Limits: 10-150% 10x 04/22/09 17:22
p-Terphenyl-d14 112% 10-150% "

LCS (9040656-BS1)

Extracted: 04/17/09 18:30

MNR

Dimethyl phthalate	EPA 8270m	103	---	80.1	ug/kg wet	3x	--	133	77.4%	(20-150)	--	--	04/23/09 21:21	
Diethyl phthalate	"	104	---	80.1	"	"	--	"	77.9%	"	--	--	"	
Di-n-butyl phthalate	"	110	---	80.1	"	"	--	"	83.2%	"	--	--	"	
Butyl benzyl phthalate	"	115	---	80.1	"	"	--	"	86.7%	"	--	--	"	
Bis(2-ethylhexyl)phthalate	"	127	---	80.1	"	"	--	"	95.8%	"	--	--	"	B
Di-n-octyl phthalate	"	103	---	80.1	"	"	--	"	77.6%	"	--	--	"	

Surrogate(s): 2-Fluorobiphenyl Recovery: 80.1% Limits: 10-150% " 04/23/09 21:21
p-Terphenyl-d14 81.2% 10-150% "

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name:

Portland Harbor

Project Number:

36238

Project Manager:

Jennifer Shackelford

Report Created:

05/14/09 15:55

Percent Dry Weight (Solids) per Standard Methods - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 9040593

Soil Preparation Method: Dry Weight

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Duplicate (9040593-DUP1)			QC Source: PSD0460-01					Extracted: 04/15/09 16:21						
% Solids	NCA SOP	67.0	---	0.0100	% by Weight	1x	67.2	--	--	--	0.298% (20)		04/15/09 16:21	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name: **Portland Harbor**
Project Number: 36238
Project Manager: Jennifer Shackelford

Report Created:
05/14/09 15:55

Organic Carbon, Total (TOC) - Laboratory Quality Control Results

TestAmerica Connecticut

QC Batch: 26574

Soil Preparation Method: NA

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
LCS (220-26574-5)			QC Source:						Extracted: 04/21/09 12:23					
Total Organic Carbon - Duplicates	9060	4487	3.3	100	mg/Kg	1x	--	3530	127%	(28-172)	--	--	04/21/09 12:23	
Blank (220-26574-6)			QC Source:						Extracted: 04/21/09 12:30					
Total Organic Carbon - Duplicates	9060	ND	3.3	100	mg/Kg	1x	--	--	--	--	--	--	04/21/09 12:30	
Matrix Spike (877612S)			QC Source: PSD0460-12						Extracted: 04/21/09 17:38					
Total Organic Carbon - Duplicates	9060	251900	3.3	100	mg/Kg	1x	113000	129000	108%	(75-125)	--	--	04/21/09 17:38	
Duplicate (877612X)			QC Source: PSD0460-12						Extracted: 04/21/09 17:23					
Total Organic Carbon - Duplicates	9060	116300	3.3	100	mg/Kg	1x	113000	--	--	--	3%	(20)	04/21/09 17:23	

TestAmerica Portland



Howard Holmes, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name:

Portland Harbor

Project Number:

36238

Project Manager:

Jennifer Shackelford

Report Created:

05/14/09 15:55

Notes and Definitions

Report Specific Notes:

- B - Analyte was detected in the associated Method Blank.
- B1 - Analyte was detected in the associated method blank. Analyte concentration in the sample is greater than 10x the concentration found in the method blank.
- MNR - No results were reported for the MS/MSD. The sample used for the MS/MSD required dilution due to the sample matrix. Because of this, the spike compounds were diluted below the detection limit.
- N1 - See case narrative.
- RL3 - Reporting limit raised due to high concentrations of non-target analytes.
- Z3 - The sample required a dilution due to the nature of the sample matrix. Because of this dilution, the surrogate spike concentration in the sample was reduced to a level where the recovery calculation does not provide useful information.

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

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11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244
 11922 E. First Ave, Spokane, WA 99206-5302
 9405 SW Nimbus Ave, Beaverton, OR 97008-7145
 2400 W International Airport Rd Ste A10, Anchorage, AK 99502-1119

425-430-9200 FAX 420-9210
 509-924-9200 FAX 924-9290
 503-906-9200 FAX 906-9210
 907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #: **PSD04160**

CLIENT: City of Portland		INVOICE TO: Charles Lytle		TURNAROUND REQUEST	
REPORT TO: Jennifer Shackelford		ADDRESS:		in Business Days*	
PHONE:		FAX:		<input checked="" type="checkbox"/> 7 <input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> <1 Organic & Inorganic Analyses <input type="checkbox"/> 5 <input type="checkbox"/> 4 <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1 <input type="checkbox"/> <1 Petroleum Hydrocarbon Analyses STD.	
PROJECT NAME: Portland Harbor		PRESERVATIVE		OTHER Specify:	
PROJECT NUMBER: PAH + phthalate		P.O. NUMBER: 36238		* Turnaround Requests less than standard may incur Rush Charges.	
SAMPLED BY: PAH + phthalate		REQUESTED ANALYSES		MATRIX (W, S, O)	
CLIENT SAMPLE IDENTIFICATION		SAMPLING DATE/TIME		# OF CONT.	
FO095467		4/7/09 0848		S 3	
468		0948		S 3	
469		1147		S 3	
470		1311		S 3	
471		1348		S 3	
472		4/8/09 0752		S 3	
473		0818		S 3	
474		0921		S 3	
475		1331		S 3	
476		1213		S 3	
RELEASED BY: Robert White		DATE: 4/13/09		DATE: 4/13/09	
PRINT NAME: Robert White		FIRM: City of Portland		FIRM: TAP	
RELEASED BY: Bob F		DATE: 4/13/09		DATE: 4/13/09	
PRINT NAME: Bob F		FIRM: TAP		FIRM: TAP	
ADDITIONAL REMARKS: PAH + phthalate		TEMP: 1.8°C		PAGE: 2	

THE LEADER IN ENVIRONMENTAL TESTING

	FAX 420-9210
	FAX 924-9290
X	FAX 906-9210
	FAX 563-9710

Work Order #: **PS200400**

[illegible]

TestAmerica Portland
Sample Receiving Checklist

Work Order #: PSDO460 Date/Time Received: 4/13/09 @ 1605
Client Name and Project: City of Portland
Portland Harbor

PM to Complete This Section: Yes No
Residual Chlorine Check Required: ☐ ☐ Quarantined: ☐ ☐
Quote #:
Special Instructions:

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

Unpacking Checks:

Cooler #(s): 1
Temperatures: 1.8°C
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: _____

N/A Yes No

Initials: DF

- ☒ ☐ ☐ 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. Were VOA/Oil Syringe samples without headspace?
- ☒ ☐ ☐ 13. Were VOA vials preserved? ☐ HCL ☐ Sodium Thiosulfate ☐ Ascorbic Acid
- ☐ ☒ ☐ 14. Did samples require preservation with sodium thiosulfate?
- ☒ ☐ ☐ 15. If yes to #14, was the residual chlorine test negative? If no, document on NOD.
- ☒ ☐ ☐ 16. Are dissolved/field filtered metals bottles sediment-free? If no, document on NOD.
- ☒ ☐ ☐ 17. Is sufficient volume provided for client requested MS/MSD or matrix duplicates? If no, document on NOD and contact PM before proceeding.
- ☒ ☐ ☐ 18. Are analyses with short holding times received in hold?
- ☒ ☐ ☐ 19. Was Standard Turn Around (TAT) requested?
- ☒ ☐ ☐ 20. Receipt date(s) < 48 hours past the collection date(s)? If no, notify PM.

TestAmerica Portland
Sample Receiving Checklist

Work Order #: PSD0460

Login Checks:

Initials: BIE

N/A Yes No

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

Labeling and Storage Checks:

Initials: BIE

N/A Yes No

- ☐ ☒ ☐ 30. Were the subcontracted samples/containers put in Sx fridge?
- ☒ ☐ ☐ 31. Were sample bottles and COC double checked for dissolved/filtered metals?
- ☒ ☒ ☐ 32. Did the sample ID, Date, and Time from label match what was logged?
- ☒ ☐ ☐ 33. Were Foreign sample stickers affixed to each container and containers stored in foreign fridge?
- ☒ ☐ ☐ 34. Were HF stickers affixed to each container, and containers stored in Sx fridge?

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