

Intergovernmental
Agreement for
Remedial
Investigation and
Source Control
Measures

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Outfall Basin 18 East-Central Subbasin Source Investigation Report

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City of Portland Outfall Project
ECSI No. 2425

■

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PREPARED BY



ENVIRONMENTAL SERVICES
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1120

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Abbreviations and Acronyms

AOPC	Area of Potential Concern
BEHP	bis(2-ethylhexyl)phthalate
BES	Bureau of Environmental Services
BMP	Best Management Practice
CAP	Columbia American Plating
City	City of Portland
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	Environmental Protection Agency
JSCS	Joint Source Control Strategy
LWG	Lower Willamette Group
μ	micron
μg/Kg	microgram(s) per kilogram
MRL	method reporting limit
mg/Kg	milligram(s) per kilogram
NEC	No Exposure Certification
NPDES	National Pollutant Discharge Elimination System
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
SLV	screening level value
SVOC	semivolatile organic compound
VCP	Voluntary Cleanup Program
VOC	volatile organic compound

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SECTION 1

Introduction

This report presents the results of the City of Portland (City) source investigation and source control activities in the east-central branch (aka, subbasin) of the Outfall Basin 18 stormwater conveyance system. The drainage area for this subbasin was identified as having major upland sources to the basin of polychlorinated biphenyls (PCBs), pesticides, and certain metals based on inline investigations conducted by the City in the east-central subbasin between 2003 and early 2009 (CH2M Hill, 2005; BES, 2010a). Following those investigations, the City determined that additional source investigation data were needed in this portion of Basin 18. Stormwater pathway evaluations are in progress under Oregon Department of Environmental Quality (DEQ) and U.S. Environmental Protection Agency (EPA) oversight at several upland sites in and adjacent to the east-central subbasin. The City conducted additional source investigations in the subbasin between September 2009 and June 2011 to supplement these upland site data evaluations and to determine whether there are ongoing major sources in this branch of Basin 18. The investigations presented in this report spanned a two-year period and were conducted before and after comprehensive cleaning of all main lines in the branch.

The source investigation results indicate that concentrations of PCBs and metals in solids in the east-central branch of Basin 18 have decreased from concentrations that were detected in samples collected before line cleanout activities were conducted in 2010. In addition to the removal of legacy contaminated soils from the system, this decrease also may be attributable in part to the recent source control implementation and site redevelopment at a known source of PCBs and metals to the upper part of the subbasin (the former Columbia American Plating facility). Though decreases in pesticides concentrations also were observed, locally elevated concentrations of pesticides in post-line cleanout samples suggests the continued presence of sources of these contaminants to the City stormwater system. Source investigation results collected at the Container Management facility under DEQ oversight indicate that erodible site soils are contaminated with PCBs, pesticides, and metals. Data collected by the City as part of the east-central subbasin investigation indicate that offsite migration of contaminated erodible soils from one or more sites within and adjacent to the subbasin (e.g., via vehicle tracking, overland runoff, and/or fugitive dusts) represents a likely current source to the subbasin. Investigation results, and known and potential sources of pesticides, PCBs, and metals to the east-central subbasin, are evaluated in more detail in this report.

The investigation activities described in this report are part of the City's ongoing Remedial Investigation associated with the Portland Harbor City of Portland Outfalls Project being conducted pursuant to the August 13, 2003, Intergovernmental Agreement between DEQ and the City. The data collected under these investigations support ongoing work by DEQ and the City to characterize and control discharges to the Basin 18 stormwater conveyance system.

1.1 Purpose and Scope

The purpose of this report is to evaluate recent source investigation data, along with information from upland sites within and adjacent to the east-central subbasin, to identify

possible current sources of PCBs, pesticides, and metals to this branch of Basin 18. The City source investigation activities described in this report include collection and analysis of inline solids samples in fall 2009, surface soil and catch basin solids in fall 2010, and sediment trap and inline solids samples in 2011. The report also evaluates inline solids data collected from this portion of the City system by two upland sites as part of site stormwater pathway evaluation efforts.

1.2 Report Organization

The remainder of this report is organized as follows:

- *Section 2: Background* — Summarizes the subbasin conveyance system configuration and drainage basin setting, previous investigations, contaminants identified for source tracing, and potential upland sources.
- *Section 3: Source Investigation and Source Control Activities and Results* — Describes the sampling and line cleanout activities that were conducted as part of this investigation, and summarizes laboratory analytical results.
- *Section 4: Data Evaluation* — Evaluates the investigation results to identify possible current sources of contaminants in the subbasin.
- *Section 5: Conclusions and Next Steps* — Summarizes the findings from the source investigation and identifies next steps the City plans to take in the subbasin.
- *Section 6: References*

Background

2.1 Conveyance System Configuration and Drainage Basin

Outfall 18 discharges to the west side of the Willamette River at approximately river mile 8.8. Basin 18 is a 465-acre stormwater basin with a mix of land uses, including approximately 267 acres of open space in Forest Park, 189 acres of industrial land, 7 acres of major transportation, and 2 acres of residential land. The Basin 18 stormwater conveyance system has two main trunk lines and five main branches.

The City delineated subbasin boundaries using available site drainage information, such as plumbing records and topography, to organize source investigation data collection and evaluation. Subbasin boundaries in this area of Basin 18, especially between the west-central and east-central branches, likely do not reflect all historical and current drainage patterns in this area. There is a documented history of overland flow between sites in the west-central and east-central drainage areas (Wohlers, 2000), and recent redevelopment at the former Columbia American Plating site included construction of a concrete berm between the site and adjacent properties to segregate site stormwater from other areas. While dividing Basin 18 into subbasins provides a useful mechanism for organizing basin information, all subbasin boundaries are subject to continuous change and should be considered as approximate and temporal. As upland sites complete stormwater pathway evaluations in these areas, subbasin boundaries may need revision to reflect additional drainage pathways.

The current east-central subbasin of Basin 18 encompasses a 38-acre drainage area comprised entirely of industrial land uses. Figure 1 shows the estimated east-central subbasin boundary and stormwater conveyance system. Stormwater lines draining this subbasin extend north beneath NW 35th Avenue and beneath private property, between NW St. Helens Road and NW Yeon Avenue. The majority of the current City storm system in this area was constructed by the Federal Housing Authority in the early 1940s. The southernmost segment (on NW 35th Avenue south of NW Lake Street) was constructed by the City in 1995.

2.2 Previous Investigations

Previous investigations conducted in Basin 18 that are relevant to the 2009 – 2011 source investigation activities in the east-central subbasin are briefly summarized below. Solids sampling locations in the east-central subbasin conveyance system are shown on Figure 1.

- *Phase 1 Data Evaluation.* Elevated concentrations of PCBs, metals, pesticides, and phthalates were detected in surface inriver sediment samples collected by the City in 2002 near Outfall 18 (CH2M Hill, 2004a). Phase 1 work included basin assessment research to identify potential sources within the basin. Following an evaluation of the

outfall sediment data, the City designated Basin 18 as a Priority 1 basin for source investigation (CH2M Hill, 2004b).¹

- *Phase 2 Inline Solids Pilot Project.* As part of a pilot project in 2003, the City collected inline solids samples from the Basin 18 conveyance system to evaluate the feasibility of using inline solids as a source investigation tool and to identify basins where additional source investigation may be warranted (CH2M Hill, 2005). The investigation included one location in the east-central subbasin, and results indicated the presence of PCBs, metals, and pesticides sources within the basin.
- *2004 Inline Solids Sampling.* The City conducted inline solids sampling in Basin 18 in 2004 in conjunction with routine stormwater line cleaning activities in the west-central subbasin, in the vicinity of the Container Management Services and Wilhelm Trucking facilities. Results of this investigation indicated elevated concentrations of PCBs, metals, phthalates, and polycyclic aromatic hydrocarbons (PAHs) in solids in the City stormwater lines in the vicinity of these two facilities (BES, 2006). Samples were not analyzed for pesticides. (Note: Although the samples were collected from the west-central subbasin, a portion of the Wilhelm facility is in the east-central subbasin and the Container Management facility is adjacent. Both sites are evaluated in this report as potential sources to the east-central subbasin.)
- *Stormwater Evaluation Report.* As part of its Portland Harbor stormwater screening effort, the City evaluated the 2007-2008 stormwater and sediment trap samples collected by the Lower Willamette Group (LWG) in Basin 18 at a point representing cumulative discharge from most of the basin. Based on this analysis, concentrations of total PCBs, pesticides, and copper in Basin 18 stormwater were identified as potentially warranting further source tracing (BES, 2010b).
- *2007 – 2009 Sediment Trap and Inline Solids Investigation.* Between 2007 and 2009, the City installed sediment traps at multiple locations within Basin 18 to collect data concurrent with sediment trap sampling at a downstream location by the LWG. The objectives of this investigation were to identify potential source areas for contaminants detected at elevated concentrations in the LWG sediment traps and to conduct a pilot study of different trap designs and bottle shapes to evaluate stormwater solids capture rates. The investigation included two locations within the east-central subbasin; analytical results indicated that major sources of PCBs, pesticides, and metals were present (BES, 2010a).
- *Columbia American Plating Investigation.* In May 2009, private contractors collected two sediment samples from the City stormwater conveyance system in the vicinity of the former Columbia American Plating (CAP) facility at 3003 NW 35th Ave. Analytical results indicated sources of PCBs and metals to this line (O’Gara, 2009).

Although one sample was collected from a City manhole (manhole AAX318) located upstream of historical CAP connections, the City considers these analytical results to be influenced by CAP discharges due to sample collection procedures. This “upstream”

¹ Priority 1 designations were assigned to basins where significantly elevated contaminant concentrations had been detected in sediment near the outfall and further investigation efforts were needed to determine if these contaminants were being discharged to the City system.

sample was collected by maneuvering a vector jet rod down the storm line from manhole AAX318 to the estimated location of the southern CAP site lateral connection, and then jet-washing material from this point back upstream for collection at manhole AAX318 (O’Gara, 2009). Solids sampled at manhole AAX318 may have included site contaminants if the jet rod was unintentionally positioned at or downgradient of the southern lateral or if historical surcharge conditions in the 35th Avenue line (e.g., resulting from sediment build up and/or root intrusions) occurred. These results are included in this evaluation but due to the uncertainty in their representativeness, data were not utilized for a spatial evaluation of potential source areas.

2.3 Source Tracing Contaminants

Outfall 18 and approximately 36 private outfalls discharge within the river reach identified by the EPA as an area of potential concern (AOPC 19) for metals, PAHs, bis(2-ethylhexyl)phthalate (BEHP), benzyl alcohol, PCBs, total TCDD-toxic equivalent, pesticides, and chloroethane (EPA, 2010). The area also has overwater activities associated with industrial activities. Based on the results of the previous City investigations in the east-central subbasin (see Section 2.2), contaminants identified for further source investigation are limited to PCBs, pesticides, and metals.

2.4 Potential Upland Sources

Table 1 lists facilities located within or adjacent to the east-central subbasin of Basin 18 that are sites with known or potential hazardous substance contamination and are included in DEQ’s environmental cleanup site information (ECSI) database. Several of these are also covered by the National Pollutant Discharge Elimination System (NPDES) program to regulate discharges to the municipal storm system. The ECSI and NPDES sites within or adjacent to the Basin 18 east-central subbasin are considered potential upland sources of contaminants to this branch of the City stormwater conveyance system. ECSI facility locations are shown on Figure 1 and briefly discussed below.

Facilities Within the East-Central Subbasin

- *ANRFS / ABF Freight Systems / ANRFS Holdings Inc. (ECSI #1820)*: ABF Freight Systems, Inc., owns and operates a truck terminal at this site. Onsite catch basins discharge to the City stormwater line in NW 35th Avenue and to the City line extending beneath the property between manholes AAX261 and AAX262. DEQ collected solids samples from two catch basins at this site in 2007 as part of a Portland Harbor Site Discovery pilot project. Several chemicals in these samples, including PCBs, exceeded Portland Harbor Joint Source Control Strategy (JSCS) screening level values (SLVs) (DEQ/EPA, 2005, as amended 2007). Due to the lower magnitude of the exceedances, DEQ concluded that concentrations did not warrant cleanup under DEQ oversight at this time (DEQ, 2008a). Pesticides were not detected in the samples; however, the laboratory method reporting limits (MRLs) were elevated. DEQ recommended the site clean out the onsite catch basins and storm lines and work with the City’s Industrial Stormwater Program to improve best management practices (BMPs) to control sediment discharges to the system (DEQ, 2008a). Current operations at ABF qualify for an NPDES No Exposure Certification (NEC). MRP Environmental also operated on a portion of this site until

2010 under a separate NPDES 1200-Z permit to discharge stormwater to the City line in NW 35th Avenue.

- *Carson Oil (ECSI #1405)*: The site discharges to the City stormwater line in NW 35th Avenue. Carson Oil operates a bulk oil facility at this site, which involves storage and distribution of petroleum-related products. DEQ collected solid samples from two catch basins at this site as part of the 2007 site discovery project (DEQ, 2008b). Total PCBs and certain metal concentrations in the samples exceeded JSCS SLVs, but the exceedances were relatively low. Pesticides were not detected in the samples, though MRLs were elevated. Based on other SLV exceedances (e.g., BEHP), DEQ requested that Carson Oil enter into a voluntary cleanup program (VCP) agreement to conduct a stormwater evaluation (DEQ, 2008b). The site subsequently cleaned out all onsite catch basins, the oil/water separator, and associated drain lines, and indicated plans to install an upgraded catch basin filter in the catch basin with the high phthalate detection and to resample catch basin solids at a later date (Wohlers, 2008; DEQ, 2008c). No additional catch basins sampling data have been submitted to DEQ. Carson Oil holds a current NPDES 1200-Z permit.
- *Columbia American Plating (ECSI #29)*: The CAP site discharges to the City stormwater line in NW 35th Avenue. CAP, a former commercial metal plating facility, ceased operations at this site in 2003 after repeated violations of federal environmental and safety laws and regulatory enforcement actions related to hazardous materials contamination at the site (DEQ, 2009a). EPA conducted a removal action at the site in 2003 – 2004 to address the imminent threat site contamination posed to human health and the environment (DEQ, 2009a).

A Focused Phase II Environmental Site Assessment was completed in 2008 to address data gaps identified by DEQ for purposes of a Prospective Purchaser Agreement (BB&A, 2008). The scope of this assessment included sampling and limited analysis of stormwater solids from the onsite storm system, soil and groundwater from push-probe borings, and stockpiled concrete rubble. PCBs and metals were detected in the stormwater solids at high concentrations relative to the JSCS SLVs, and metals were elevated in near-surface soil samples (soil samples were not tested for PCBs); none of the samples were analyzed for pesticides (BB&A, 2008).

As part of developing a stormwater evaluation work plan to satisfy a Consent Judgment with DEQ, the onsite stormwater conveyance system was mapped and cleaned in May 2009; a segment of the adjacent City line along NW 35th Avenue also was cleaned as part of this work (O’Gara, 2009). Several cleanout solids samples from the onsite system, along with two samples from the adjacent City line, were submitted for analysis of metals, and selected samples also were analyzed for PCBs, pesticides and other contaminants. Maximum detected concentrations of PCBs and select metals were significantly elevated in onsite samples relative to the JSCS SLVs. Pesticides were not detected in the samples analyzed, but MRLs were elevated (Wohlers, 2011).

The site was redeveloped in 2009 through early 2011. Improvements made as part of the site redevelopment include stormwater system replacement, installation of a stormwater treatment system, and site paving. A stormwater pathway evaluation work plan

(Wohlers, 2011) to evaluate the effectiveness of the site improvements and current BMPs is currently underway, and the site has been issued a new NPDES 1200-Z permit.

- *Container Recovery Inc. (ECSI #4015)*: The site discharges to the subbasin downstream of manhole AAX261. Historical operations at the site included staging automobile hauling, construction of auto hauling trucks, manufacturing of furnaces, and sheet metal fabrication (DEQ, 2008d). Current operations at the site include processing used beverage containers in preparation for recycling. DEQ collected samples from two catch basins at this site during the 2007 site discovery project. Several chemicals, including metals and PCBs (total PCBs and Aroclor 1254) exceeded the JSCS SLVs; pesticides were not detected, though MRLs were elevated. Based on these results, DEQ requested that Container Recovery conduct a stormwater evaluation under the VCP (DEQ, 2008e). The site declined to enter the VCP but indicated plans to work with DEQ to resolve the issues (DEQ, 2008d). Between October 2008 and July 2009, Container Recovery cleaned and repaired the onsite catch basins and resampled the two catch basins sampled during the 2007 site discovery; sampled glass dust generated by site operations; and sampled solids present on the underbodies of truck/trailers at the site (Wohlers, 2010). PCBs concentrations were lower overall in the 2009 catch basin samples, but metals concentrations were similar to the 2007 results. Based on the analytical results, the site concluded that operational dust and/or facility truck traffic is a likely source of contaminants to the catch basins. Accordingly, the site implemented BMPs designed to reduce sediment in the onsite catch basins (Wohlers, 2010). Container Recovery holds a current NPDES 1200-Z permit.
- *Magnus / Wilhelm Trucking (ECSI #69)*: Wilhelm Trucking discharges stormwater to both the east-central and the west-central subbasins. The portion of the site that is within the east-central subbasin is currently used for vehicle parking and fueling, and equipment and wood beam storage. Other activities currently conducted at the site include freight management and logistics, transformer and utilities rigging, heavy hauling, maintenance, and manufacture of industrial component shipping containers (HAI, 2011). Historical industrial operations at the site (beginning around 1930) included the former Magnus Company (Magnus) railcar journal bearing rehabilitation plant (HAI, 2011). As noted in Section 2.2, solids samples collected by the City in 2004 at locations receiving contributions from this site (and Container Management) contained very high concentrations of several chemicals, including PCBs and metals (BES, 2006). In 2008 the site entered into a VCP agreement to conduct a stormwater evaluation. A stormwater evaluation work plan (HAI, 2011) was approved by DEQ in April 2011; work is currently underway.
- *Univar (Van Waters & Rogers) (ECSI #330)*: The majority of the site discharges to the east-central subbasin via several lateral connections between manholes AAX261 and AAT557. Univar has operated a bulk chemical handling facility at this site since 1947. Current operations at the site include the receipt, packaging, storage and distribution of industrial chemical products (mostly petroleum-based solvent) (PES, 2010a). Univar historically recycled spent chlorinated solvents and stored limited volumes of associated hazardous wastes at the site. As part of closure of the hazardous waste storage facility under EPA oversight, surface soils were analyzed for metals, semivolatile organic compound (SVOCs), and volatile organic compounds (VOCs). VOCs, PAHs, and certain

metals (arsenic, chromium, copper, nickel, and zinc) were detected in surface soils, and/or shallow groundwater (PES, 2006). In addition, pesticides and other contaminants were detected in shallow subsurface soils collected between 2002 and 2008 at the site in conjunction with planning work for repaving the site's eastern driveway (PES, 2010a).

Univar is conducting a stormwater pathway investigation under EPA oversight. The current EPA-approved work plan for this investigation (PES, 2010a) involves collecting and analyzing stormwater, sediment trap samples from the City system at manholes AAX261 and AAT557 (i.e., upstream and downstream of the site connections) but does not include investigation of the onsite stormwater system. To facilitate dry-weather flow assessments and sediment trap installations, Univar cleaned out the City stormwater line between manholes AAX261 and AAT557 in August 2010. The video survey confirmed that groundwater is infiltrating the City stormwater line adjacent to the Univar site; in response to this finding Univar prepared a separate work plan to sample and analyze dry-weather flow adjacent to the site (PES, 2011a). Univar has an individual NPDES permit for discharge of stormwater and remediated groundwater. Univar has completed sediment trap sampling (PES, 2011b) and three rounds of stormwater sampling at the two locations in the City line. The analytical data for the two sediment trap samples are evaluated as part of this report.

Facilities Adjacent to the East-Central Subbasin

- *Ashland Chemical / Hill Investment (ECSI #1076)*: This site is located within the eastern subbasin of Basin 18, across NW 35th Avenue from ABF Freight Systems. Formerly the location of Ashland Chemical, the site is currently occupied by Crescent Electric Supply Company (distributors of electrical hardware and supplies). DEQ collected solids from one catch basin at this site during the 2007 site discovery project. Results indicated total PCBs and metals concentrations exceeded JSCS SLVs. Pesticides were not detected, though the MRLs were elevated (DEQ, 2008f). Ashland had recently vacated the site, and DEQ requested that the company also clean out the remainder of the onsite stormwater system to remove any remaining solids with elevated contaminant concentrations (DEQ, 2008f); Ashland did not clean the lines as part of its closure of site operations (DEQ, 2008g).
- *Container Management Services (ECSI #4784)*: The site is located in the west-central subbasin and adjacent to the Carson Oil and former CAP sites. It has been operated as a storage drum reconditioning/recycling facility since approximately 1939 (SES, 2009). Analysis of stormwater solids collected by the City during the 2004 line cleanout in the west-central subbasin indicated PCBs, metals, and SVOCs were present at very high concentrations in the line downstream of Container Management's lateral connections (BES, 2006). Samples were not analyzed for pesticides. Based on these results, Container Management entered into an agreement with DEQ under the VCP to conduct a stormwater evaluation at the site (DEQ, 2008h). The final stormwater assessment work plan was submitted in April 2009 (SES, 2009) and stormwater data collection is underway.

Results of the site solids sampling to date (SES, 2011) indicate concentrations of PCBs and pesticides are significantly elevated in surface soils and catch basin solids at this site. Recent subsurface investigations at the loading dock, in the production area of one building, and in a site drainage structure adjacent to the railroad corridor indicate that subsurface site soils have elevated concentrations of PCBs, pesticides, metals, and SVOCs (SES, 2012a and 2012b). DEQ requested additional characterization of soils in unpaved areas (DEQ, 2011) and a work plan is currently under review. Based on the large area of unpaved ground at the site and the use of NW 35th Avenue by traffic exiting the site, Container Management is identified as a potential source of contaminants to the east-central subbasin via vehicle drag-out of erodible surface soil from the site. Overland flow of site stormwater to adjacent industrial properties is also a possible historical and current pathway. Redevelopment at the former CAP site included installation of a concrete berm between CAP and Container Management.

- *Owens Corning / Trumbull Asphalt (ECSE #1160)*: This site is located in the eastern subbasin, adjacent to the Container Recovery site. DEQ collected a site catch basin solids sample during the 2007 site discovery project. Several chemicals, including metals and PCBs, were detected at concentrations exceeding JSCS SLVs. Pesticides were not detected, though the MRLs were elevated (DEQ, 2008i). Based on the SLV exceedances, DEQ requested that the site conduct a stormwater evaluation under the VCP (DEQ, 2008i). The site declined (DEQ, 2008j).

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SECTION 3

Source Investigation and Source Control Activities and Results

The source investigation and source control activities evaluated in this report are briefly summarized below. Sampling locations are shown on Figure 1 and results are summarized on Tables 2 through 4. Details of the activities described below (including field and laboratory documentation) are presented in Appendices A through D.

3.1 Summary of Activities

3.1.1 Fall 2009 Inline Solids Investigation

Following evaluation of previous sediment trap and inline solids data collected from the subbasin, the City collected a total of eight stormwater solids samples from the upper portion of the east-central branch in September and October 2009 for analysis of PCBs and metals. The purpose of the investigation was to collect data in the upper portion of the subbasin that could be used, along with forthcoming data collected from the lower basin by Univar, to identify contaminant source areas in the subbasin. The City initiated this investigation after review of data collected by CAP in the NW 35th Avenue line raised concerns with the representativeness of the CAP “upstream” sample (see Section 2.2). Pesticides were not analyzed as part of the City source investigation because pesticides were not detected in the CAP samples and suspected sources in the subbasin were slated to evaluate pesticides in the stormwater pathway under EPA and DEQ oversight. The samples were collected from five manholes located along NW 35th Avenue (AAX374, AAX375, AAX376, AAX318, AAX278) and three manholes (AAX264, AAX263, AAX262) located on the east-west trending pipe just upstream of manhole AAX261. Findings indicated the presence of PCBs and metals sources in the upper portion of the subbasin. Results and documentation of the fall 2009 inline solids investigation are provided in Appendix A.

3.1.2 Summer 2010 Line Cleaning

In response to detections of elevated concentrations of contaminants in the fall 2009 inline solids samples and in anticipation of additional source investigations in the subbasin, the City cleaned the main lines upstream of manhole AAX261 in the summer of 2010. The line cleaning was conducted in June and July 2010 and extended from manhole AAX374 (near the upper end of the branch; see Figure 1) to manhole AAX261. The City analyzed samples of the cleanout solids for PCBs and selected metals² for waste disposal purposes. Details on the City’s line cleaning and spoils profiling activities are provided in Appendix B.

As part of the site stormwater source control evaluation, Univar contracted with PES Environmental to clean the City stormwater line in the east-central subbasin from manhole

² Samples were analyzed for barium, lead and zinc by the Toxicity Characteristic Leaching Procedure (TCLP).

AAX261 to manhole AAX557 in August 2010 (PES, 2010b). Univar line cleaning was completed in advance of subsequent stormwater and sediment trap investigations in that portion of the subbasin. The sections of the City system cleaned by the City and by Univar in 2010 are shown on Figure 2.

3.1.3 Fall 2010 Surface Soil and Catch Basin Investigation

In September 2010, the City collected four composite samples of surface soils from NW Lake Street (see Figure 1), which is unpaved, and collected stormwater solids samples from four nearby catch basins along NW 35th Avenue (catch basins ANF164, ANB621, ANB622, and APN941³). The City selected these catch basins because they may be impacted by overland runoff and vehicle drag-out from NW Lake Street. The purpose of this investigation was to evaluate whether offsite migration of contaminants may be occurring from the Container Management site to the NW Lake Street and whether Basin 18 catch basins on NW 35th Avenue may be a current pathway for contaminated erodible soils in runoff and/or vehicle drag-out from NW Lake Street (which is used almost exclusively by traffic from the adjacent Container Management site). The samples were analyzed for PCBs, pesticides, and metals – all of which had been detected in erodible soils at the Container Management site (DEQ, 2010). Results confirmed that PCBs, pesticides and metals are present in NW Lake St. surface soils and soils in catch basins along NW 35th Ave. The results and documentation for the fall 2010 investigation activities are provided in Appendix C.

3.1.4 2011 Post-Line Cleaning Sediment Trap and Inline Solids Investigations

In December 2010, following the completion of line cleaning described above, the City deployed two sediment traps in the upper portion of the east-central branch (at manholes AAX318 and AAX278) to identify potential current source areas of PCBs, pesticides, and metals being discharged to the City conveyance system. Due to the large volume and nature of sediment removed from the subbasin during cleaning activities, the City identified the need to collect additional data to identify current source areas within the upper subbasin. The sediment traps were inspected periodically to remove and archive accumulated solids and were removed from the system in June 2011. At the time of sediment trap removal, inline solids were noted in the vicinity of the trap equipment; inline solids samples were collected from the two sediment trap locations and one adjacent location (manhole AAX376) to supplement the source investigation. Inline solids samples also were analyzed for PCBs, metals, and pesticides. Though results confirmed the presence of PCBs, pesticides, and metals in upper subbasin inline solids, concentrations were lower than those previously detected in this portion of the subbasin. Results and documentation of the 2010 – 2011 sediment trap deployment and solids sampling activities are provided in Appendix D.

Concurrent with the City's sediment trap deployment in the upper portion of the subbasin, PES (on behalf of Univar) deployed two sediment traps at downstream locations. The sediment

³ Catch basin APN941 was sampled as an alternative to a proposed sample location at catch basin ADY099 (mapped in NW 35th Avenue on the corner of NW Guam Street), which no longer exists. Although subsequently it was determined that catch basin APN941 does not discharge to the east-central subbasin, the sample from this catch basin was retained for analysis because it receives runoff from approximately the same area of NW 35th Avenue as the original proposed sample location.

traps were installed in manholes AAX261 and AAT557 on November 30, 2010, and removed on April 28, 2011. The trap bottles were inspected periodically during this period and accumulated solids removed and archived. The final composited sample from each location was analyzed for PCB congeners, pesticides, metals, SVOCs, dioxin-furans, total organic carbon, and total solids (PES, 2011b).

3.2 Summary of Source Investigation Results

Chemical analytical results for the solids samples collected by the City and others from the east-central subbasin conveyance system are summarized in Tables 2 through 4. The data tables include the JSCS SLVs for reference. Total PCBs, total DDx, total chlordane, heptachlor, and some metals concentrations exceed the JSCS Toxicity SLVs in the samples from previous and/or current investigations in this subbasin. Results for PCBs, selected pesticides, and selected metals⁴ for the pre- and post-line cleanout stormwater solids samples are shown on Figures 3 through 6.

PCBs, pesticides, and metals were detected in most subbasin solids samples collected before and after the 2010 line cleaning activities, though concentrations generally are lower in the post-cleanout samples. PCB Aroclors, pesticides, and metals detected in erodible soils on NW Lake Street were also detected in subbasin catch basin solids. These results are evaluated in Section 4 with regard to the JSCS SLVs and “typical” ranges of detected concentrations in Portland Harbor (DEQ, 2010) and in relation to known or suspected contaminant sources.

⁴ Copper was identified in stormwater data evaluation for Basin 18 (BES, 2010b). A broader suite of metals evaluated up-the-pipe to assist with source tracing. Cadmium, copper, lead, and manganese were detected in localized areas at concentrations more than 10 times the JSCS Toxicity SLVs in one or more samples from previous and/or current investigations.

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SECTION 4

Data Evaluation

Results for the east-central subbasin stormwater solids and erodible soils investigations (presented in Tables 2 through 4) are evaluated in this section with regard to sources and source control status. As discussed in Section 2.4, there are multiple upland sites within and adjacent to this subbasin that are known and suspected sources of the subbasin source-tracing contaminants (PCBs, pesticides and certain metals). Based on the available site data, all source tracing contaminants have been detected at one or more of the identified upland sites in the east-central subbasin. Table 5 lists maximum concentrations of these constituents detected in solids samples from these sites, as well as maximum concentrations detected in pre- and post-cleanout stormwater solids samples from the City lines.

Several considerations were taken into account during data evaluation. As discussed in Section 2.1, subbasin boundaries likely do not reflect all historical and current stormwater contaminant migration pathways from upland sites to the east-central subbasin. Because changes to onsite conveyance systems, grading, paving, and development can alter drainage areas and discharge points, this evaluation includes site data from known and suspected sources adjacent to the subbasin. Also, during the course of the City's source investigation work in this basin, source control activities were occurring at several upland sites, which can complicate the interpretation of the inline results. For example, detection of elevated concentrations in solids adjacent to a facility that has implemented source controls may indicate offsite migration of a former source and not an ongoing source. This source investigation evaluation uses both inline and upland site data to assess whether there are additional sources in the basin warranting source control.

The data discussed in this section also are evaluated relative to the reference concentration ranges for Portland Harbor industrial sites provided in DEQ's *Stormwater Evaluation Guidance* (DEQ, 2010), where applicable.⁵ Results for the stormwater solids samples that were collected from storm lines after the summer 2010 line cleaning activities are compared to the pre-cleanout results to evaluate possible ongoing sources. The data indicate a general decrease in contaminant concentrations in the system following the 2010 comprehensive cleanout, although detections in the post-cleanout samples indicate there are still ongoing sources to the subbasin. Results from the NW Lake Street erodible soils investigation are evaluated separately. These findings are discussed in further detail below.

4.1 PCBs

Total PCBs concentrations were elevated relative to DEQ industrial reference concentrations in a number of solids samples collected prior to the 2010 line cleanout, with the highest concentrations detected in samples from the NW 35th Avenue line (see Figure 3). PCBs concentrations in the post-cleanout stormwater solids samples (Univar's May 2011 sediment trap samples and the City's June 2011 sediment trap and inline solids samples) are much lower

⁵ The DEQ guidance does not include data compilation for pesticides.

overall than in the pre-cleanout samples (see Table 5). With the exception of one sample, PCBs either were not detected in the post-cleanout samples or were detected at concentrations that are low compared to the range of DEQ industrial reference concentrations. The total PCBs concentration in the 2011 inline solids sample from manhole AAX278 (in NW 35th Avenue) is moderately elevated compared to the DEQ industrial reference concentrations (although PCBs were not detected in the 2011 sediment trap sample from this location; see Figure 3).

Connecting and adjacent upland sites where PCBs have been detected at elevated concentrations include the former CAP site, Container Recovery and Container Management (see Table 5). PCB-contaminated solids may have been discharged to the City lines via piped stormwater discharges from known sources in the subbasin, overland runoff from adjacent known sources to private conveyance systems discharging to the subbasin, and/or vehicle drag-out from one or more of these sites to streets drained by the City system. Decreased concentrations in the post-cleanout samples likely reflect both the removal of legacy contaminated solids from the municipal system and completion of source control activities at CAP and other upland sites (see Section 4.5). Additional source investigation and control work is underway at the Container Management and Wilhelm sites -- two suspected sources of PCBs to the subbasin (see Section 4.5). Source investigation data indicate that further City source tracing for PCBs is not warranted at this time.

4.2 Pesticides

Concentrations of DDx constituents, total chlordane,⁶ and heptachlor exceeded the JSCS Toxicity SLVs in the 2003, 2007 and/or 2009 solids samples from the lower portion of this subbasin (see Figure 4). Limited pre-cleanout pesticides data are available upstream of Manhole AAX261. Pesticides were analyzed but not detected in the samples collected from the NW 35th Avenue line during the CAP investigation; however, MRLs for the pesticides analysis in these samples exceeded the JSCS SLVs by orders-of-magnitude (Wohlers, 2011; see Table 3), which could easily mask the presence of pesticides.

Total DDx, total chlordane, and heptachlor concentrations in the 2011 sediment trap samples from manholes AAT557 and AAX261 (Univar samples) are lower by approximately an order-of-magnitude compared to concentrations in most of the pre-cleanout samples from these locations. A separate chlordane mixture⁷ analyzed only in the Univar samples was detected at a concentration similar to the pre-line cleanout sample from manhole AAT557. One or both chlordane types in both Univar samples exceed the JSCS Toxicity SLV. Pesticides concentrations detected in the post-cleanout samples from the NW 35th Avenue line were generally low relative to the Toxicity SLVs with the exception of DDx constituents in the inline solids sample from manhole AAX278 (see Table 3).

Suspected pesticides sources to the subbasin have been identified (see Table 5). DDx constituents, chlordane and other pesticides have been detected at elevated concentrations in

⁶ The term "total chlordane" as used in this report refers to the sum of alpha-chlordane and beta-chlordane.

⁷ The chlordane mixture analyzed in the Univar samples labeled as "chlordane" on the associated laboratory report [Chemical Abstract Service (CAS) analyte no. 57-74-9] and Table 2 of this report, refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components.

stormwater solids and soils from the Container Management site, and pesticides were detected at concentrations above the JSCS SLVs in shallow soil samples collected beneath the pavement in Univar's eastern driveway (PES, 2010a). The Wilhelm stormwater pathway investigation will include pesticides analysis of stormwater solids and erodible soils. Although pesticides have not been detected in solids collected at the other upland sites listed in Table 5, MRLs in most cases were elevated relative to JSCS SLVs.

Though historical and current pathways from the Container Management site to Basin 18 are not fully understood, overland flow from this site to stormwater conveyance systems on adjacent sites in the east-central subbasin may have resulted in offsite migration of pesticides to the east-central branch. Completion of source investigation and control at the Container Management, Wilhelm, and Univar sites is expected to further reduce pesticides discharges to the east-central subbasin. Source investigation data indicate that further City source tracing for pesticides is not warranted at this time.

4.3 Metals

Though the City evaluation of Basin 18 stormwater data identified copper as the only metal needing further source tracing (BES, 2010b), the City analyzed a broader suite of metals to help identify potential metals source areas. Concentrations of certain metals (cadmium, copper, lead, and manganese) in one or more of the pre-cleanout stormwater solids samples were elevated relative to DEQ's industrial reference concentrations and/or more than 10 times the JSCS Toxicity SLVs. Metals concentrations in the post-cleanout samples were overall notably lower (see Figure 5 and Table 5), although cadmium and/or chromium concentrations in some of these samples are elevated relative to DEQ's reference concentrations.

As indicated by the metals concentrations detected in stormwater solids from the former CAP site (see Table 5), this site was a major historical source of metals to this subbasin. Copper concentrations in site storm system solids were similar to maximum concentrations detected in the east-central subbasin. Source controls have been implemented at the site and data collection is underway to evaluate whether source controls are sufficient to control contaminant discharges via the stormwater pathway (See Section 4.5). The significant reduction in metals concentrations in the post-cleanout stormwater solids is attributed in large part to the remediation and redevelopment of the former CAP site, as well as cleanout of legacy solids from the City lines. Source investigation data indicate that further City source tracing for copper and other metals is not warranted at this time.

4.4 Erodible Soils Pathway Evaluation

PCBs, pesticides, and metals were detected in the surface soil samples from NW Lake Street and in the solids from the nearby catch basins in NW 35th Avenue (see Table 4 and Figure 6). Total PCBs concentrations in the NW Lake Street samples were low to moderately elevated relative to the DEQ industrial reference concentrations, and concentrations of DDT and/or total chlordane in these samples exceed the JSCS Toxicity SLVs. Copper and other metals were detected in NW Lake Street erodible soils, though concentrations were not elevated relative to SLVs or industrial reference concentrations. Concentrations of all source tracing contaminants (PCBs, pesticides, and copper) in catch basin solids were below Toxicity SLVs.

Surface soil results confirm that offsite migration of PCBs, pesticides, and metals has occurred to NW Lake Street. The highest concentration of total PCBs, total DDx, and total chlordane in catch basin solids was observed in the catch basin closest to NW Lake Street (catch basin ANF164). Elevated concentrations of PCBs, total DDX, and total chlordane have been detected in soils at the adjacent Container Management site (see Table 5). NW Lake Street is utilized almost exclusively for access to and from the Container Management site and Container Management truck parking. The roadway and adjacent Container Management operational areas are unimproved, and sediment tracking has been observed (see Appendix C, Attachment C-1); analytical results and visual observations indicate that contaminated erodible soils dragged out to NW 35th Avenue by vehicles exiting the Container Management site may be an ongoing PCBs and pesticides source to the subbasin. A stormwater pathway investigation is underway at Container Management; work to date has not included an evaluation of the erodible soils pathway from the site to NW Lake Street.

4.5 Subbasin Chronology and Source Control Status

Figure 7 summarizes the chronology of solids source investigations and source control activities in the east-central subbasin. As shown on Figure 7, a number of upland sites have cleaned onsite storm systems to reduce contaminant loading to the east-central subbasin. The two major source control measures completed to date are the line cleanouts completed by the City and Univar in 2010 and the CAP site remediation/redevelopment completed in early 2011. These efforts appear to have reduced concentrations, of total PCBs pesticides, and metals being discharged to the City stormwater conveyance system (see Table 5). Investigations are underway at CAP, Univar, Wilhelm, and Container Management to identify and control site contaminant discharges to Basin 18.

There are other source control mechanisms beyond the State Cleanup program employed in the basin to help control current and future contaminant discharges to the conveyance system. The recently issued 1200-Z NPDES general stormwater permit has lower metals benchmarks and requirements for minimizing vehicle tracking offsite. Several upland sites operate under NPDES stormwater permits or NECs to minimize adverse impacts of industrial operations on stormwater quality. Further reductions in contaminant discharges to this system are expected once stormwater pathway evaluations are completed and source controls implemented at other upland sites in and adjacent to the subbasin.

SECTION 5

Conclusions and Next Steps

The City source investigation of the east-central subbasin, and concurrent evaluation of soils data collected at upland sites discharging to this branch, confirmed that major sources of PCBs, pesticides, and metals to this portion of Basin 18 have been identified and are in appropriate programs to select and implement necessary source controls. Investigation results also identified an apparent erodible soils pathway from the Container Management site to the east-central subbasin via offsite migration of PCBs and pesticides to NW Lake Street and the City storm line on NW 35th Avenue. DEQ is working with identified sources to the east-central basin, and further City source investigation is not needed.

Inline solids data collected from Basin 18 during investigations conducted between 2003 and 2009 indicated that there were major sources of PCBs, pesticides (DDx, total chlordane, heptachlor) and certain metals to the east-central subbasin. The subbasin has a number of known and suspected sources of these contaminants including but not limited to: ANRFS/ABF Freight Systems, Carson Oil, CAP, Container Management, Container Recovery, Univar, and Wilhelm Trucking. Since the initiation of City source investigations in this subbasin, several of these upland sites have commenced stormwater pathway evaluations under DEQ or EPA oversight to identify and control site contaminant discharges to Basin 18.

Stormwater pathway investigations are currently underway at the CAP, Container Management, Wilhelm Trucking, and Univar facilities. Evaluation of basin and upland site data indicates that the CAP site was a major historical source of metals and PCBs; source controls implemented at CAP in early 2011 are expected to reduce metals and PCBs loading to the subbasin. Source investigation data from Container Management indicates that the site is a likely major historical and current source of PCBs, pesticides, and metals. Additional investigation is needed to evaluate the erodible soils pathways from this site to NW Lake Street and adjacent sites and to identify necessary onsite source controls. Stormwater pathway data collection is also underway at Wilhelm and Univar.

Line cleaning completed by the City and Univar in 2010, as well as cleanout of several onsite stormwater systems (i.e., ANRFS/ABF, Carson Oil, CAP, Container Recovery), removed legacy sources of contamination associated with accumulated solids in this branch. Post-cleanout solids data from this subbasin indicate discharges of PCBs, pesticides, and metals have been reduced, although the data also indicate there are continuing sources to the subbasin. Available information from upland sites confirms the presence of these contaminants at sites within and adjacent to the subbasin. Likely current pathways for offsite migration of contaminants to the City stormwater conveyance system include direct piped stormwater discharges from known sources in the subbasin, overland runoff from adjacent known sources to private conveyance systems discharging to the subbasin, and vehicle drag-out of contaminated erodible soils from one or more of these sites to streets drained by the City system.

The City investigation in the east-central subbasin concludes that identified sources of PCBs, pesticides, and metals account for contamination observed in this portion of the Basin 18

stormwater conveyance system. Further reductions in contaminant loading to the east-central subbasin of Basin 18 will be accomplished through source control implementation at upland sites under DEQ and EPA oversight. Additional City investigation of sources of PCBs, pesticides, and metals is not warranted in this area because identified sources are in the process of being controlled. The City will continue to coordinate with DEQ and EPA on the review of work plans and reports related to ongoing evaluations at known and suspected sources to the east-central subbasin.

SECTION 6

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Table 1
Potential Upland Sources Within and Adjacent to East-Central Subbasin of Basin 18

Facility Name	DEQ Cleanup Site	Stormwater NPDES Permit	Site Contaminants of Interest ⁽¹⁾	DEQ Cleanup Program Status	Stormwater Pathway Evaluated Under DEQ or EPA Oversight?
Facilities Within the East-Central Subbasin					
ANRFS / ABF Freight Systems / ANRFS Holdings Inc. (ECSI #1820) ⁽²⁾	X	X	Arsenic, chromium, copper, zinc, PCBs, PAHs, BEHP	Inactive	No
Carson Oil (ECSI #1405)	X	X	VOCs, PAHs, TPH, arsenic, chromium, copper, zinc, PCBs, BEHP	Inactive	No
Columbia American Plating (ECSI #29)	X	X	Lead, PCBs, VOCs, SVOCs	Active	In process
Container Recovery Inc. (ECSI #4015)	X	X	Cadmium, lead, zinc, PAHs, PCBs, phthalates	Inactive	No
Magnus / Wilhelm Trucking (ECSI #69)	X	X	Lead	Active	In process
Univar (Van Waters & Rogers) (ECSI #330)	X	X	Lead, pesticides, TPH, VOCs	Active (under EPA oversight)	In process
Facilities Adjacent to the East-Central Subbasin					
Ashland Chemical / Hill Investment (ECSI #1076)	X	X	Arsenic, chromium, copper, zinc, PCBs, PAHs, BEHP	Inactive	No
Container Management Services (ECSI #4784)	X	X	PCBs, lead, mercury, zinc, PAHs, PCBs, TPH	Active	In process
Owens Corning / Trumbull Asphalt (ECSI #1160)	X	X	PAHs, PCBs, phthalates, arsenic, chromium, copper, zinc	Inactive	No

Notes:

DEQ = Oregon Department of Environmental Quality

ECSI = Environmental Cleanup Site Information List

⁽¹⁾ See *Stormwater Evaluation Report* (BES, 2010) for basis of site COI identification.

⁽²⁾ Current operations at ABF qualify for an NPDES No Exposure Certification (NEC). MRP Services Inc., which operated on the southern portion of this site from 2007-2010, held a separate NPDES permit. MRP filed for bankruptcy in 2010 and has vacated the site.

Table 2
Basin 18 East-Central Subbasin Stormwater Solids Results - Downstream of NW 35th Avenue Line

Downstream ←															→ Upstream							
IL-18-AAT557-0803															Manhole AAX261			Manhole AAX262	Manhole AAX263	Manhole AAX264		
		Inline Solids	Sediment Trap Solids	Inline Solids	Sediment Trap Solids	Sediment Trap Solids (Univar Sample) ⁽¹⁾	Inline Solids	Sediment Trap Solids (Univar Sample) ⁽¹⁾	Sediment Trap Solids	Inline Solids	Inline Solids	Inline Solids										
		Upstream of manhole in 42" line IL-18-AAT557-0803	Upstream of manhole in 42" line ST2: FO070806	Upstream of manhole in 42" line ST2: FO070807	Upstream of manhole in 42" line ST2: FO095693	Upstream of manhole in 42" line SPI-2-S-2010/2011	Downstream of manhole in 42" line ST5: FO095671	Downstream of manhole in 42" line SPI-1-S-2010/2011	Upstream of manhole in 36" line ST5: FO095696	Downstream of manhole in 36" line FO095976	Upstream of manhole in 36" line FO095975	Upstream of manhole in 30" line FO 095974										
Class	Analyte	Units	8/19/2003	6/19/2007	6/19/2007	6/9/2009	5/10/2011	6/4/2009	5/10/2011	6/10/2009	10/6/2009	10/6/2009	10/6/2009	Toxicity	Bioaccumulation							
Total Organic Carbon (EPA 9060 MOD)																						
	TOC	mg/Kg	52,900	106,000	91,100	52,200	46,800	786	112,000	90,600	89,200	75,400	19,000	--	--							
Total Solids (SM 2540G)																						
	TS	%	NA	54	7.18	45.9	69.6	63.5	62.4	59.7	58.2	60.4	79.4	--	--							
Grain Size (ASTM D421/422)																						
	Gravel (>4750 µm)	Fract %	NA	NA	NA	NA	NA	6.2	NA	NA	NA	NA	NA	--	--							
	Coarse Sand (4750-2000 µm)	Fract %	NA	NA	NA	NA	NA	1.4	NA	NA	NA	NA	NA	--	--							
	Medium Sand (2000-425 µm)	Fract %	NA	NA	NA	NA	NA	21.3	NA	NA	NA	NA	NA	--	--							
	Fine Sand (425-75 µm)	Fract %	NA	NA	NA	NA	NA	61.7	NA	NA	NA	NA	NA	--	--							
	Silt (3.2-75 µm)	Fract %	NA	NA	NA	NA	NA	5.0	NA	NA	NA	NA	NA	--	--							
	Clay (<3.2 µm)	Fract %	NA	NA	NA	NA	NA	4.6	NA	NA	NA	NA	NA	--	--							
Metals (EPA 6020)																						
	Aluminum	mg/Kg	NA	NA	13,800	NA	10,700	12,200	13,200	NA	NA	NA	NA	--	--							
	Antimony	mg/Kg	NA	NA	9.1	NA	2.25	0.16	9.41	NA	NA	NA	NA	64	--							
	Arsenic	mg/Kg	10.5	NA	114	4.75	3.38	2.14	3.45	3.54	4.56	4.55	3.08	33	7							
	Cadmium	mg/Kg	14.9	NA	8.4	0.34	5.34	91.5	6.36	24.9	405	195	13.8	4.98	1							
	Chromium	mg/Kg	188	NA	33.9	43.8	51.8	0.17	46.6	142	469	545	94.3	111	--							
	Copper	mg/Kg	151	NA	79.8	46.9	118	16.5	126	192	2,460	536	206	149	--							
	Iron	mg/Kg	NA	NA	NA	NA	30,200	NA	37,100	NA	NA	NA	NA	--	--							
	Lead	mg/Kg	636	NA	128	22.6	370	6.11	138	285	924	665	364	128	17							
	Manganese	mg/Kg	NA	NA	111,000	754	363	347	386	367	NA	NA	NA	1,100	--							
	Mercury	mg/Kg	0.643	NA	0.12	0.260	0.177	0.018	0.086	0.299	0.833	0.532	0.309	1.06	0.07							
	Molybdenum	mg/Kg	NA	NA	NA	NA	3.25	NA	6.66	NA	NA	NA	NA	--	--							
	Nickel	mg/Kg	NA	NA	36	30.2	39.6	19.2	34	73.3	171	211	103	48.6	--							
	Selenium	mg/Kg	NA	NA	NA	NA	0.6 J	NA	0.9 J	NA	NA	NA	NA	5,000	2,000							
	Silver	mg/Kg	NA	NA	0.35	0.24	0.258	0.10 U	0.446	1.60	5.99	6.35	0.86	5	--							
	Zinc	mg/Kg	374	NA	2,470	172	563	58.9	820	897	1,890	1,570	544	459	--							
Organochlorine Pesticides (EPA 8081A)																						
	2,4'-DDD	µg/Kg	NA	NA	NA	NA	7.6	NA	3.3 U	NA	NA	NA	NA	--	--							
	2,4'-DDE	µg/Kg	NA	NA	NA	NA	3.0 U	NA	3.3 U	NA	NA	NA	NA	--	--							
	2,4'-DDT	µg/Kg	NA	NA	NA	NA	3.7	NA	2.0 J	NA	NA	NA	NA	--	--							
	4,4'-DDD ⁽³⁾	µg/Kg	80	69	19	55	6.9	0.70 J	3.3	45	NA	NA	NA	28	0.33							
	4,4'-DDE ⁽³⁾	µg/Kg	21	100	26	66	4.2	0.97	4.6	68	NA	NA	NA	31.3	0.33							
	4,4'-DDT ⁽³⁾	µg/Kg	284	44 U	17	23 U	8.2 U	0.46 J	5.4 U	95	NA	NA	NA	62.9	0.33							
	Estimated Total DDx ⁽⁴⁾	µg/Kg	385	169	62	121	22.4	2.13 J	9.9 J	208	NA	NA	NA	--	0.33							
	Aldrin	µg/Kg	36	16	3.5 U	78	3.0 U	0.54 J	1.6 U	29 U	NA	NA	NA	40	--							
	alpha-BHC (α-BHC)	µg/Kg	1.1 U	9.3 U	3.7 U	2.2 U	3.0 U	0.79 U	0.64 J	8.9 U	NA	NA	NA	--	--							
	beta-BHC (β-BHC)	µg/Kg	1.1 U	9.3 U	4.2 U	2.2 U	8.2	0.79 U	0.58 U	3.7 U	NA	NA	NA	--	--							
	delta-BHC (δ-BHC)	µg/Kg	26	9.3 U	90 U	4.8 U	3.0 U	0.79 U	0.88 U	3.7 U	NA	NA	NA	--	--							
	gamma-BHC (γ-BHC, Lindane)	µg/Kg	1.9	9.3 U	4.8 U	7.9 U	1.3 J	0.79 U	2.1 J	12 U	NA	NA	NA	4.99	--							
	alpha-Chlordane ⁽⁵⁾	µg/Kg	152	34	11	52	5.4	0.15 J	3.6	23 U	NA	NA	NA	--	--							
	beta-Chlordane ⁽⁵⁾	µg/Kg	512	87	52	350	18	0.19 J	8.3	25 U	NA	NA	NA	--	--							
	Total Chlordane ⁽⁶⁾	µg/Kg	664	121	63	402	23.4	0.34 J	11.9	ND	NA	NA	NA	17.6	0.37							
	Chlordane ⁽⁷⁾	µg/Kg	NA	NA	NA	NA	110	NA	110	NA	NA	NA	NA	17.6	0.37							
	Oxychlordane	µg/Kg	NA	NA	NA	NA	5.3	NA	3.3 U	NA	NA	NA	NA	--	--							
	cis-Nonachlor	µg/Kg	NA	NA	NA	NA	4.1 U	NA	3.3 U	NA	NA	NA	NA	--	--							
	trans-Nonachlor	µg/Kg	NA	NA	NA	NA	4.1	NA	2.7 J	NA	NA	NA	NA	--	--							
	Dieldrin	µg/Kg	46	40	4.4	3.8	1.0 J	0.79 U	2.0 U	13 U	NA	NA	NA	61.8	0.0081							
	Endosulfan I	µg/Kg	5.8	22	8.8	5.2 U	3.0 U	0.13 J	5.1 U	8.4	NA	NA	NA	--	--							
	Endosulfan II	µg/Kg	2.2 U	16	3.5 U	18 U	3.0 U	0.79 U	3.3 U	20 U	NA	NA	NA	--	--							
	Endosulfan sulfate	µg/Kg	2.2 U	15 U	3.5 U	2.4	0.87 J	0.79 U	3.9	4	NA	NA	NA	--	--							
	Endrin	µg/Kg	70	9.3 U	3.5 U	3.2 U	3.0 U	0.79 U	0.34 U	3.7 U	NA	NA	NA	207	--							
	Endrin aldehyde	µg/Kg	198 J	9.3 U	3.5 U	3.6 U	3.0 U	0.79 U	1.6 J	3.7 U	NA	NA	NA	--	--							
	Endrin ketone	µg/Kg	2.2 U	9.3 U	7.1 U	8.8	5.8 U	0.79 U	3.3 U	3.7 U	NA	NA	NA	--	--							

Table 2
Basin 18 East-Central Subbasin Stormwater Solids Results - Downstream of NW 35th Avenue Line

Downstream ←														Upstream							
IL-18-AAT557-0803														Manhole AAX261		Manhole AAX262		Manhole AAX263		Manhole AAX264	
		Inline Solids	Sediment Trap Solids	Inline Solids	Sediment Trap Solids	Sediment Trap Solids (Univar Sample) ⁽¹⁾	Inline Solids	Sediment Trap Solids (Univar Sample) ⁽¹⁾	Sediment Trap Solids	Inline Solids	Inline Solids	Inline Solids	Inline Solids	JSCS ⁽²⁾ Screening Level Value							
		Upstream of manhole in 42" line IL-18-AAT557-0803	Upstream of manhole in 42" line ST2: FO070806	Upstream of manhole in 42" line ST2: FO070807	Upstream of manhole in 42" line ST2: FO095693	Upstream of manhole in 42" line SPI-2-S-2010/2011	Downstream of manhole in 42" line ST5: FO095671	Downstream of manhole in 42" line SPI-1-S-2010/2011	Upstream of manhole in 36" line ST5: FO095696	Downstream of manhole in 36" line FO095976	Upstream of manhole in 36" line FO095975	Upstream of manhole in 30" line FO 095974									
Class	Analyte	Units	8/19/2003	6/19/2007	6/19/2007	6/9/2009	5/10/2011	6/4/2009	5/10/2011	6/10/2009	10/6/2009	10/6/2009	10/6/2009	Toxicity	Bioaccumulation						
	Heptachlor	µg/Kg	3.0	66	31	300	2.8 J	0.79 U	4.7 U	12	NA	NA	NA	10	--						
	Heptachlor epoxide	µg/Kg	1.1 U	16	3.6	6.3 U	3.0 U	0.79 U	0.41 U	8.6 U	NA	NA	NA	16	--						
	Methoxychlor	µg/Kg	112 U	15 U	3.5 U	3.7 U	3.0 U	0.79 U	8.0	4.0 U	NA	NA	NA	--	--						
	Toxaphene	µg/Kg	112 U	1,600 U	240 U	790 U	240 U	40 U	200 U	970 U	NA	NA	NA	--	--						
Chlorinated Herbicides (EPA 8151A)																					
	2,4,5-T	µg/Kg	NA	NA	3,500 U	NA	NA	31.3 U	NA	NA	NA	NA	NA	--	--						
	2,4,5-TP (Silvex)	µg/Kg	NA	NA	3,500 U	NA	NA	31.3 U	NA	NA	NA	NA	NA	--	--						
	2,4-D	µg/Kg	NA	NA	3,500 U	NA	NA	31.3 U	NA	NA	NA	NA	NA	--	--						
	2,4-DB	µg/Kg	NA	NA	7,200	NA	NA	31.3 U	NA	NA	NA	NA	NA	--	--						
	Dalapon	µg/Kg	NA	NA	120,000 U	NA	NA	31.3 U	NA	NA	NA	NA	NA	--	--						
	Dicamba	µg/Kg	NA	NA	3,500 U	NA	NA	31.3 U	NA	NA	NA	NA	NA	--	--						
	Dichlorprop	µg/Kg	NA	NA	3,500 U	NA	NA	31.3 U	NA	NA	NA	NA	NA	--	--						
	Dinoseb	µg/Kg	NA	NA	3,500 U	NA	NA	31.3 U	NA	NA	NA	NA	NA	--	--						
	MCPA	µg/Kg	NA	NA	700,000 U	NA	NA	3,130 U	NA	NA	NA	NA	NA	--	--						
	MCPP	µg/Kg	NA	NA	700,000 U	NA	NA	3,130 U	NA	NA	NA	NA	NA	--	--						
Polychlorinated Biphenyls Aroclors (PCBs) (EPA 8082)																					
	Aroclor 1016	µg/Kg	107 U	93 U	67 U	20 U	Note ⁽⁹⁾	10 U	Note ⁽⁹⁾	10 U	20 U	20 U	20 U	530	--						
	Aroclor 1221	µg/Kg	213 U	190 U	93 U	40 U	Note ⁽⁹⁾	20 U	Note ⁽⁹⁾	20 U	40 U	40 U	40 U	--	--						
	Aroclor 1232	µg/Kg	107 U	93 U	190 U	20 U	Note ⁽⁹⁾	10 U	Note ⁽⁹⁾	10 U	20 U	20 U	20 U	--	--						
	Aroclor 1242	µg/Kg	107 U	93 U	140 U	20 U	Note ⁽⁹⁾	10 U	Note ⁽⁹⁾	10 U	20 U	20 U	20 U	--	--						
	Aroclor 1248	µg/Kg	107 U	800	86 U	40 U	Note ⁽⁹⁾	10 U	Note ⁽⁹⁾	100 U	294	288	401	1500	--						
	Aroclor 1254	µg/Kg	107 U	93 U	250	20 U	Note ⁽⁹⁾	10 U	Note ⁽⁹⁾	70	20 U	20 U	20 U	300	--						
	Aroclor 1260	µg/Kg	624	400	93	20 U	Note ⁽⁹⁾	10 U	Note ⁽⁹⁾	37	123	153	122	200	--						
	Aroclor 1262	µg/Kg	NA	93 U	62 U	20 U	Note ⁽⁹⁾	10 U	Note ⁽⁹⁾	10 U	20 U	20 U	20 U	--	--						
	Aroclor 1268	µg/Kg	NA	180	35 U	20 U	Note ⁽⁹⁾	10 U	Note ⁽⁹⁾	10 U	20 U	20 U	20 U	--	--						
	Total PCBs ⁽⁸⁾	µg/Kg	624	1,380	343	ND	99.5	ND	61.4	107	417	441	523	676	0.39						
Polychlorinated Biphenyl Congeners (EPA 1668A)																					
Total PCBs ^{(8) (10)}		NA	NA	NA	NA	NA	NA	NA	NA	NA	2,350 ⁽¹¹⁾	1,460 ⁽¹¹⁾	357 ⁽¹¹⁾	676	0.39						
Chlorinated Dioxins and Furans (EPA 1613)																					
	2,3,7,8-TCDD	µg/Kg	NA	NA	NA	NA	0.000966	NA	0.00159	NA	NA	NA	NA	0.009	0.0000091						
	1,2,3,7,8-PeCDD	µg/Kg	NA	NA	NA	NA	0.00752	NA	0.0172	NA	NA	NA	NA	--	0.0026						
	1,2,3,4,7,8-HxCDD	µg/Kg	NA	NA	NA	NA	0.0131	NA	0.0348	NA	NA	NA	NA	--	--						
	1,2,3,6,7,8-HxCDD	µg/Kg	NA	NA	NA	NA	0.0571	NA	0.112	NA	NA	NA	NA	--	--						
	1,2,3,7,8,9-HxCDD	µg/Kg	NA	NA	NA	NA	0.0334	NA	0.0787	NA	NA	NA	NA	--	--						
	1,2,3,4,6,7,8-HpCDD	µg/Kg	NA	NA	NA	NA	1.35	NA	2.97 B	NA	NA	NA	NA	--	0.69						
	1,2,3,4,6,7,8,9-OCDD	µg/Kg	NA	NA	NA	NA	12.7	NA	25.0 B	NA	NA	NA	NA	--	--						
	2,3,7,8-TCDF	µg/Kg	NA	NA	NA	NA	0.00155	NA	0.00637	NA	NA	NA	NA	--	0.00077						
	1,2,3,7,8-PeCDF	µg/Kg	NA	NA	NA	NA	0.00303	NA	0.00433	NA	NA	NA	NA	--	0.0026						
	2,3,4,7,8-PeCDF	µg/Kg	NA	NA	NA	NA	0.00378	NA	0.00450	NA	NA	NA	NA	--	0.00003						
	1,2,3,4,7,8-HxCDF	µg/Kg	NA	NA	NA	NA	0.0175	NA	0.0254	NA	NA	NA	NA	--	0.0027						
	1,2,3,6,7,8-HxCDF	µg/Kg	NA	NA	NA	NA	0.0132	NA	0.0144	NA	NA	NA	NA	--	0.0027						
	2,3,4,6,7,8-HxCDF	µg/Kg	NA	NA	NA	NA	0.00155 U	NA	0.00164 U	NA	NA	NA	NA	--	0.0027						
	1,2,3,7,8,9-HxCDF	µg/Kg	NA	NA	NA	NA	0.0353	NA	0.00867	NA	NA	NA	NA	--	0.0027						
	1,2,3,4,6,7,8-HpCDF	µg/Kg	NA	NA	NA	NA	0.611	NA	0.516	NA	NA	NA	NA	--	0.69						
	1,2,3,4,7,8,9-HpCDF	µg/Kg	NA	NA	NA	NA	0.0171	NA	0.0393	NA	NA	NA	NA	--	0.69						
	1,2,3,4,6,7,8,9-OCDF	µg/Kg	NA	NA	NA	NA	1.82	NA	3.89 B	NA	NA	NA	NA	--	--						
	Total TCDD	µg/Kg	NA	NA	NA	NA	0.00581	NA	0.0118	NA	NA	NA	NA	NA	--	--					
	Total PeCDD	µg/Kg	NA	NA	NA	NA	0.0314	NA	0.0661	NA	NA	NA	NA	NA	--	--					
	Total HxCDD	µg/Kg	NA	NA	NA	NA	0.283	NA	0.595	NA	NA	NA	NA	NA	--	--					
	Total HpCDD	µg/Kg	NA	NA	NA	NA	2.56	NA	5.39	NA	NA	NA	NA	NA	--	--					
	Total TCDF	µg/Kg	NA	NA	NA	NA	0.0689	NA	0.0689	NA	NA	NA	NA	NA	--	--					

Table 2
Basin 18 East-Central Subbasin Stormwater Solids Results - Downstream of NW 35th Avenue Line

Downstream ←														Upstream →					
IL-18-AAT557-0803														Manhole AAX261			Manhole AAX262	Manhole AAX263	Manhole AAX264
Class	Analyte	Units	Inline Solids	Sediment Trap Solids	Inline Solids	Sediment Trap Solids	Sediment Trap Solids (Univar Sample) ⁽¹⁾	Inline Solids	Sediment Trap Solids (Univar Sample) ⁽¹⁾	Sediment Trap Solids	Inline Solids	Inline Solids	Inline Solids	Toxicity	Bioaccumulation				
			Upstream of manhole in 42" line	Upstream of manhole in 42" line	Upstream of manhole in 42" line	Upstream of manhole in 42" line	Upstream of manhole in 42" line	Downstream of manhole in 42" line	Downstream of manhole in 42" line	Upstream of manhole in 36" line	Downstream of manhole in 36" line	Upstream of manhole in 36" line	Upstream of manhole in 30" line						
			IL-18-AAT557-0803	ST2: FO070806	ST2: FO070807	ST2: FO095693	SPI-2-S-2010/2011	ST5: FO095671	SPI-1-S-2010/2011	ST5: FO095696	FO095976	FO095975	FO 095974						
			8/19/2003	6/19/2007	6/19/2007	6/9/2009	5/10/2011	6/4/2009	5/10/2011	6/10/2009	10/6/2009	10/6/2009	10/6/2009						
	Total PeCDF	µg/Kg	NA	NA	NA	NA	0.258	NA	0.184	NA	NA	NA	NA	--	--				
	Total HxCDF	µg/Kg	NA	NA	NA	NA	1.16	NA	0.379	NA	NA	NA	NA	--	--				
	Total HpCDF	µg/Kg	NA	NA	NA	NA	2.26	NA	2.08	NA	NA	NA	NA	--	--				
Polycyclic Aromatic Hydrocarbons (EPA 8270-SIM)																			
	2-Methylnaphthalene	µg/Kg	355 J	99	18 U	NA	NA	NA	NA	NA	NA	NA	NA	200	--				
	Acenaphthene	µg/Kg	75.0 U	38 U	18 U	146 U	NA	20.8 U	NA	223 U	NA	NA	NA	300	--				
	Acenaphthylene	µg/Kg	478 J	58	18 U	146 U	NA	20.8 U	NA	223 U	NA	NA	NA	200	--				
	Anthracene	µg/Kg	260 J	110	18 U	247	NA	20.8 U	NA	223 U	NA	NA	NA	845	--				
	Benzo(a)anthracene	µg/Kg	75.0 U	340	18 U	163	NA	31.3	NA	267	NA	NA	NA	1,050	--				
	Benzo(a)pyrene	µg/Kg	545 J	410	18 U	186	NA	23.7	NA	284	NA	NA	NA	1,450	--				
	Benzo(b)fluoranthene	µg/Kg	NA	570	18 U	235	NA	20.8 U	NA	360	NA	NA	NA	--	--				
	Benzo(g,h,i)perylene	µg/Kg	1,560 J	750	24	267	NA	20.8 U	NA	451	NA	NA	NA	300	--				
	Benzo(k)fluoranthene	µg/Kg	NA	160	18 U	164	NA	20.8 U	NA	257	NA	NA	NA	13,000	--				
	Benzo(fluoranthenes	µg/Kg	796	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	--				
	Chrysene	µg/Kg	75.0 U	450	18 U	426	NA	35.3	NA	706	NA	NA	NA	1,290	--				
	Dibenzo(a,h)anthracene	µg/Kg	75.0 U	180	18 U	146 U	NA	20.8 U	NA	223 U	NA	NA	NA	1,300	--				
	Dibenzofuran	µg/Kg	298 U	45	18 U	NA	NA	NA	NA	NA	NA	NA	NA	--	--				
	Fluoranthene	µg/Kg	656 J	900	18 U	491	NA	49.7	NA	934	NA	NA	NA	2,230	37,000				
	Fluorene	µg/Kg	75.0 U	87	18 U	146 U	NA	20.8 U	NA	447 U	NA	NA	NA	536	--				
	Indeno(1,2,3-cd)pyrene	µg/Kg	1,030 J	510	18 U	150	NA	20.8 U	NA	223 U	NA	NA	NA	100	--				
	Naphthalene	µg/Kg	147 J	680	18 U	146	NA	20.8 U	NA	223 U	NA	NA	NA	561	--				
	Phenanthrene	µg/Kg	445 J	520	18 U	463	NA	71.9	NA	1,250	NA	NA	NA	1,170	--				
	Pyrene	µg/Kg	964 J	1,100	62	586	NA	55.4	NA	1,210	NA	NA	NA	1,520	1,900				
	Total PAHs ⁽⁸⁾	µg/Kg	8,236 J	6,970	86	3,520	NA	267	NA	5,720	NA	NA	NA	--	--				
Polycyclic Aromatic Hydrocarbons (PAHs) (EPA 8270C)																			
	2-Methylnaphthalene	µg/Kg	NA	NA	NA	NA	NA	7.9 U	NA	NA	NA	NA	NA	200	--				
	Acenaphthene	µg/Kg	NA	610 U	70 U	NA	NA	7.9 U	NA	NA	NA	NA	NA	300	--				
	Acenaphthylene	µg/Kg	NA	610 U	70 U	NA	NA	3.7 J	NA	NA	NA	NA	NA	200	--				
	Anthracene	µg/Kg	NA	610 U	70 U	NA	NA	8.8	NA	NA	NA	NA	NA	845	--				
	Benzo(a)anthracene	µg/Kg	NA	610 U	70 U	NA	NA	27	NA	NA	NA	NA	NA	1,050	--				
	Benzo(a)pyrene	µg/Kg	NA	610 U	70 U	NA	NA	26	NA	NA	NA	NA	NA	1,450	--				
	Benzo(b)fluoranthene	µg/Kg	NA	610 U	70 U	NA	NA	27	NA	NA	NA	NA	NA	--	--				
	Benzo(g,h,i)perylene	µg/Kg	NA	610 U	70 U	NA	NA	17	NA	NA	NA	NA	NA	300	--				
	Benzo(k)fluoranthene	µg/Kg	NA	610 U	70 U	NA	NA	11	NA	NA	NA	NA	NA	13,000	--				
	Chrysene	µg/Kg	NA	670	70 U	NA	NA	31	NA	NA	NA	NA	NA	1,290	--				
	Dibenzo(a,h)anthracene	µg/Kg	NA	610 U	70 U	NA	NA	4.1 J	NA	NA	NA	NA	NA	1,300	--				
	Dibenzofuran	µg/Kg	NA	NA	NA	NA	NA	7.9 U	NA	NA	NA	NA	NA	--	--				
	Fluoranthene	µg/Kg	NA	640	70 U	NA	NA	46	NA	NA	NA	NA	NA	2,230	37,000				
	Fluorene	µg/Kg	NA	610 U	70 U	NA	NA	7.9 U	NA	NA	NA	NA	NA	536	--				
	Indeno(1,2,3-cd)pyrene	µg/Kg	NA	610 U	70 U	NA	NA	15	NA	NA	NA	NA	NA	100	--				
	Naphthalene	µg/Kg	NA	610 U	70 U	NA	NA	3.3 J	NA	NA	NA	NA	NA	561	--				
	Phenanthrene	µg/Kg	NA	610 U	70 U	NA	NA	23	NA	NA	NA	NA	NA	1,170	--				
	Pyrene	µg/Kg	NA	1,200	70 U	NA	NA	5.0 J	NA	NA	NA	NA	NA	1,520	1,900				
	Total PAHs ⁽⁸⁾	µg/Kg	NA	2,510	ND	NA	NA	248	NA	NA	NA	NA	NA	--	--				

Table 2
Basin 18 East-Central Subbasin Stormwater Solids Results - Downstream of NW 35th Avenue Line

Downstream ←														Upstream							
IL-18-AAT557-0803														Manhole AAX261		Manhole AAX262		Manhole AAX263		Manhole AAX264	
Class	Analyte	Units	Inline Solids	Sediment Trap Solids	Inline Solids	Sediment Trap Solids	Sediment Trap Solids (Univar Sample) ⁽¹⁾	Inline Solids	Sediment Trap Solids (Univar Sample) ⁽¹⁾	Sediment Trap Solids	Inline Solids	Inline Solids	Inline Solids	Toxicity	Bioaccumulation						
			Upstream of manhole in 42" line IL-18-AAT557-0803	Upstream of manhole in 42" line ST2: FO070806	Upstream of manhole in 42" line ST2: FO070807	Upstream of manhole in 42" line ST2: FO095693	Upstream of manhole in 42" line SPI-2-S-2010/2011	Downstream of manhole in 42" line ST5: FO095671	Downstream of manhole in 42" line SPI-1-S-2010/2011	Upstream of manhole in 36" line ST5: FO095696	Downstream of manhole in 36" line FO095976	Upstream of manhole in 36" line FO095975	Upstream of manhole in 30" line FO 095974								
			8/19/2003	6/19/2007	6/19/2007	6/9/2009	5/10/2011	6/4/2009	5/10/2011	6/10/2009	10/6/2009	10/6/2009	10/6/2009								
Phthalates (EPA 8270-SIM)																					
	Bis(2-ethylhexyl) phthalate (BEHP)	µg/Kg	NA	NA	NA	26,900	NA	68.9	NA	27,700	NA	NA	NA	800	330						
	Butyl Benzyl Phthalate	µg/Kg	NA	NA	NA	2,910 U	NA	41.7 U	NA	2,230 U	NA	NA	NA	--	--						
	Diethyl phthalate	µg/Kg	NA	NA	NA	2,910 U	NA	41.7 U	NA	2,230 U	NA	NA	NA	600	--						
	Dimethyl phthalate	µg/Kg	NA	NA	NA	2,910 U	NA	41.7 U	NA	2,230 U	NA	NA	NA	--	--						
	Di-n-butyl phthalate	µg/Kg	NA	NA	NA	2,910 U	NA	41.7 U	NA	2,230 U	NA	NA	NA	100	60						
	Di-n-octyl phthalate	µg/Kg	NA	NA	NA	4,370 U	NA	41.7 U	NA	2,230 U	NA	NA	NA	--	--						
Phthalates (EPA8270C)																					
	Bis(2-ethylhexyl) phthalate (BEHP)	µg/Kg	298 U	29,000	1,600	NA	15,000	43 J	28,000	NA	NA	NA	NA	800	330						
	Butyl Benzyl Phthalate	µg/Kg	373 U	960	70 U	NA	780 U	7.9 U	1600	NA	NA	NA	NA	--	--						
	Diethyl phthalate	µg/Kg	298 U	610 U	70 U	NA	780 U	7.9 U	120 U	NA	NA	NA	NA	600	--						
	Dimethyl phthalate	µg/Kg	298 U	610 U	70 U	NA	110 J	7.9 U	140 J	NA	NA	NA	NA	--	--						
	Di-n-butyl phthalate	µg/Kg	298 U	610 U	120 U	NA	1,000 J	16 U	700 U	NA	NA	NA	NA	100	60						
	Di-n-octyl phthalate	µg/Kg	298 U	610 U	70 U	NA	480 J	7.9 U	1300	NA	NA	NA	NA	--	--						
Semi-Volatile Organic Compounds (EPA 8270C)																					
	1,2,4-Trichlorobenzene	µg/Kg	298 U	610 U	70 U	NA	780 U	7.9 U	230 U	NA	NA	NA	NA	9200	--						
	1,2-Dichlorobenzene	µg/Kg	298 U	610 U	70 U	NA	780 U	7.9 U	260 U	NA	NA	NA	NA	1700	--						
	1,3-Dichlorobenzene	µg/Kg	298 U	610 U	70 U	NA	780 U	7.9 U	270 U	NA	NA	NA	NA	300	--						
	1,4-Dichlorobenzene	µg/Kg	298 U	610 U	70 U	NA	780 U	7.9 U	260 U	NA	NA	NA	NA	300	--						
	2,4,5-Trichlorophenol	µg/Kg	298 U	610 U	78	NA	780 U	7.9 U	140 U	NA	NA	NA	NA	--	--						
	2,4,6-Trichlorophenol	µg/Kg	298 U	610 U	70 U	NA	780 U	7.9 U	130 U	NA	NA	NA	NA	--	--						
	2,4-Dichlorophenol	µg/Kg	298 U	610 U	70 U	NA	780 U	7.9 U	88 U	NA	NA	NA	NA	--	--						
	2,4-Dimethylphenol	µg/Kg	298 U	3,100 U	350 U	NA	3,900 U	40 U	490 U	NA	NA	NA	NA	--	--						
	2,4-Dinitrophenol	µg/Kg	1,490 U	13,000 U	1,400 U	NA	16,000 U	160 U	1,500 U	NA	NA	NA	NA	--	--						
	2,4-Dinitrotoluene	µg/Kg	298 U	610 U	70 U	NA	780 U	7.9 U	140 U	NA	NA	NA	NA	--	--						
	2,6-Dinitrotoluene	µg/Kg	298 U	610 U	70 U	NA	780 U	7.9 U	180 U	NA	NA	NA	NA	--	--						
	2-Chloronaphthalene	µg/Kg	75 U	610 U	70 U	NA	780 U	7.9 U	150 U	NA	NA	NA	NA	--	--						
	2-Chlorophenol	µg/Kg	298 U	610 U	70 U	NA	780 U	7.9 U	180 U	NA	NA	NA	NA	--	--						
	2-Methyl-4,6-dinitrophenol	µg/Kg	1,490 U	6,100 U	700 U	NA	7,800 U	7.9 U	130 U	NA	NA	NA	NA	--	--						
	2-Methylphenol	µg/Kg	298 U	610 U	70 U	NA	780 U	7.9 U	140 U	NA	NA	NA	NA	--	--						
	2-Nitroaniline	µg/Kg	298 U	1,300 U	140 U	NA	1,600 U	16 U	290 U	NA	NA	NA	NA	--	--						
	2-Nitrophenol	µg/Kg	298 U	610 U	70 U	NA	780 U	7.9 U	140 U	NA	NA	NA	NA	--	--						
	3,3'-Dichlorobenzidine	µg/Kg	596 U	6,100 U	700 U	NA	7,800 U	79 U	330 U	NA	NA	NA	NA	--	--						
	3-Nitroaniline	µg/Kg	298 U	1,300 U	140 U	NA	1,600 U	16 U	220 U	NA	NA	NA	NA	--	--						
	4-Bromophenylphenyl ether	µg/Kg	298 U	610 U	70 U	NA	780 U	7.9 U	150 U	NA	NA	NA	NA	--	--						
	4-Chloro-3-methylphenol	µg/Kg	298 U	610 U	70 U	NA	780 U	7.9 U	130 U	NA	NA	NA	NA	--	--						
	4-Chloroaniline	µg/Kg	298 U	610 U	70 U	NA	780 U	7.9 U	170 U	NA	NA	NA	NA	--	--						
	4-Chlorophenyl phenyl ether	µg/Kg	298 U	610 U	70 U	NA	780 U	7.9 U	130 U	NA	NA	NA	NA	--	--						
	4-Methylphenol ⁽¹²⁾	µg/Kg	596 U	610 U	70 U	NA	780 U	7.9 U	140 U	NA	NA	NA	NA	--	--						
	4-Nitroaniline	µg/Kg	298 U	1,300 U	140 U	NA	1,600 U	16 U	160 U	NA	NA	NA	NA	--	--						
	4-Nitrophenol	µg/Kg	745 U	6,100 U	700 U	NA	7,800 U	79 U	1,600 U	NA	NA	NA	NA	--	--						
	Benzoic acid	µg/Kg	1,990 J	13,000 U	1,400 U	NA	16,000 U	99 J	8,500 U	NA	NA	NA	NA	--	--						
	Benzyl alcohol	µg/Kg	373 U	1,300 U	140 U	NA	1,600 U	16 U	190 U	NA	NA	NA	NA	--	--						
	Bis(2-chloroethoxy) methane	µg/Kg	298 U	610 U	70 U	NA	780 U	7.9 U	140 U	NA	NA	NA	NA	--	--						
	Bis(2-chloroethyl) ether	µg/Kg	298 U	610 U	70 U	NA	780 U	7.9 U	170 U	NA	NA	NA	NA	--	--						
	Bis(2-chloroisopropyl) ether	µg/Kg	298 U	610 U	70 U	NA	780 U	7.9 U	230 U	NA	NA	NA	NA	--	--						
	Hexachlorobenzene	µg/Kg	298 U	610 U	70 U	NA	780 U	7.9 U	110 U	NA	NA	NA	NA	100	19						
	Hexachlorobutadiene	µg/Kg	298 U	610 U	70 U	NA	780 U	7.9 U	220 U	NA	NA	NA	NA	600	--						
	Hexachlorocyclopentadiene	µg/Kg	298 U	3,100 U	410 U	NA	780 U	40 U	2,600 U	NA	NA	NA	NA	400	--						

Table 2
Basin 18 East-Central Subbasin Stormwater Solids Results - Downstream of NW 35th Avenue Line

Downstream ←													Upstream		
IL-18-AAT557-0803						Manhole AAX261			Manhole AAX262	Manhole AAX263	Manhole AAX264				
	Inline Solids	Sediment Trap Solids	Inline Solids	Sediment Trap Solids	Sediment Trap Solids (Univar Sample) ⁽¹⁾	Inline Solids	Sediment Trap Solids (Univar Sample) ⁽¹⁾	Sediment Trap Solids	Inline Solids	Inline Solids	Inline Solids				
	Upstream of manhole in 42" line IL-18-AAT557-0803	Upstream of manhole in 42" line ST2: FO070806	Upstream of manhole in 42" line ST2: FO070807	Upstream of manhole in 42" line ST2: FO095693	Upstream of manhole in 42" line SPI-2-S-2010/2011	Downstream of manhole in 42" line ST5: FO095671	Downstream of manhole in 42" line SPI-1-S-2010/2011	Upstream of manhole in 36" line ST5: FO095696	Downstream of manhole in 36" line FO095976	Upstream of manhole in 36" line FO095975	Upstream of manhole in 30" line FO 095974	JSCS ⁽²⁾ Screening Level Value			
Class	Analyte	Units	8/19/2003	6/19/2007	6/19/2007	6/9/2009	5/10/2011	6/4/2009	5/10/2011	6/10/2009	10/6/2009	10/6/2009	10/6/2009	Toxicity	Bioaccumulation
	Hexachloroethane	µg/Kg	298 U	610 U	70 U	NA	780 U	7.9 U	280 U	NA	NA	NA	NA	--	--
	Isophorone	µg/Kg	298 U	610 U	70 U	NA	780 U	7.9 U	88 U	NA	NA	NA	NA	--	--
	Nitrobenzene	µg/Kg	298 U	610 U	70 U	NA	780 U	7.9 U	200 U	NA	NA	NA	NA	--	--
	N-Nitrosodi-n-propylamine	µg/Kg	298 U	610 U	70 U	NA	780 U	7.9 U	220 U	NA	NA	NA	NA	--	--
	N-Nitrosodiphenylamine	µg/Kg	298 U	610 U	70 U	NA	780 U	7.9 U	150 U	NA	NA	NA	NA	--	--
	Pentachlorophenol	µg/Kg	298 U	6,100 U	700 U	NA	7,800 U	79 U	1,800 U	NA	NA	NA	NA	1000	250
	Phenol	µg/Kg	298 U	1,900 U	210 U	NA	2,400 U	5.0 J	180 U	NA	NA	NA	NA	50	--

Notes:

J = The analyte was detected at a concentration between the method detection limit and the method reporting limit.

NA = Not analyzed

ND = Not detected

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

-- = No JSCS screening level available

µg/Kg = Micrograms per kilogram

mg/Kg = Milligrams per kilogram

⁽¹⁾ Sample collected for Univar USA stormwater pathway investigation; data provided to City by PES Environmental, Inc. (PES, 2011b)

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

⁽³⁾ The toxicity SLV represents the sum of the 2,4' and 4,4' isomers.

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

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

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

⁽⁷⁾ Columbia Analytical Services (CAS) analyte number 57-74-9 comprises a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components.

⁽⁸⁾ Total PCBs and total PAHs are calculated by assigning "0" to undetected constituents.

⁽⁹⁾ Univar samples were analyzed for selected PCB congeners by EPA Method 8082A; individual PCB Aroclors were not quantified.

⁽¹⁰⁾ Individual congener results are summarized in Tables A-2 and C-2, located in Appendix A and Appendix C, respectively.

⁽¹¹⁾ Total PCBs concentration may be biased slightly high or high (see Appendix A, Table A-2).

⁽¹²⁾ This analyte cannot be separated from 3-Methylphenol.

= concentration exceeds JSCS Toxicity Screening Level Value

bold = concentration exceeds JSCS Bioaccumulation Screening Level Value

Table 3
Basin 18 East-Central Subbasin Stormwater Solids Results - NW 35th Avenue Line

		← Downstream														Upstream →	
		Manhole AAX264		Manhole AAX278				Manhole AAX318				Manhole AAX376		Manhole AAX375	Manhole AAX374		
		Inline Solids		Sediment Trap Solids	Inline Solids	Inline Solids (CAP Sample) ⁽¹⁾	Inline Solids	Sediment Trap Solids	Inline Solids	Inline Solids	Inline Solids (CAP Sample) ⁽¹⁾	Inline Solids	Inline Solids	Inline Solids	Inline Solids	JSCS ⁽²⁾	
		Upstream of manhole in 30" line FO 095974		Downstream of manhole in 30" Line ST7: W11F059-04	Downstream of manhole in 30" Line W11F059-05	Within manhole 35th Downstream	Within manhole FO095884	Downstream of manhole in 15" line ST6: W11F059-01	Downstream of manhole in 15" line W11F059-02	Within manhole and downstream in 15" line FO095882	Within manhole	Within manhole FO 095883	Within Manhole W11F059-03	Within manhole FO 095881	Within manhole FO095880	Screening Level Value	
Class	Analyte	Units	10/6/2009	6/9/2011	6/9/2011	5/7/2009	9/2/2009	6/9/2011	6/9/2011	9/2/2009	5/7/2009	9/2/2009	6/9/2011	9/2/2009	9/2/2009	Toxicity	Bioaccumulation
Total Organic Carbon (EPA 9060 MOD)																	
	TOC	mg/Kg	19,000	96,000	23,000	NA	68,100	72,000	12,000	28,100	NA	54,500	30,000	12,300	3770	--	--
Total Solids (SM2540G)																	
	TS	%	79.4	43.8	75.7	NA	63.5	57.9	83.3	73.6	NA	63.6	72.5	87.6	97.8	--	--
Grain Size (ASTM D421/422)																	
	Gravel (>4750 µm)	Fract %	NA	NA	NA	NA	NA	NA	22.6	NA	NA	NA	1.4	NA	NA	--	--
	Coarse Sand (4750-2000 µm)	Fract %	NA	NA	NA	NA	NA	NA	30.1	NA	NA	NA	5.4	NA	NA	--	--
	Medium Sand (2000-425 µm)	Fract %	NA	NA	NA	NA	NA	NA	31.3	NA	NA	NA	33.7	NA	NA	--	--
	Fine Sand (425-75 µm)	Fract %	NA	NA	NA	NA	NA	NA	9.9	NA	NA	NA	30.9	NA	NA	--	--
	Silt (3.2-75 µm)	Fract %	NA	NA	NA	NA	NA	NA	4.9	NA	NA	NA	25.8	NA	NA	--	--
	Clay (<3.2 µm)	Fract %	NA	NA	NA	NA	NA	NA	1.4	NA	NA	NA	2.6	NA	NA	--	--
Metals (EPA 6020)																	
	Arsenic	mg/Kg	3.08	4.65	2.91	NA	3.56	3.91	1.14	2.68	NA	3.57	3.97	2.15	1.75	33	7
	Cadmium	mg/Kg	13.8	3.02	6.08	2.47	35.0	2.01	0.524	3.71	0.738	4.34	1.22	0.61	0.41	4.98	1
	Chromium	mg/Kg	94.3	93.6	100	118	223	106	52.4	150	69.2	309	554	61.3	33.7	111	--
	Copper	mg/Kg	206	134	92.7	80.3	193	110	33.7	97.9	48.0	104	149	50.5	25.4	149	--
	Lead	mg/Kg	364	175	252	678	1,090	160	23.7	1,170	623	2,280	100	66.0	41.0	128	17
	Mercury	mg/Kg	0.309	0.169	0.405	0.0330	2.11	0.111	0.0154	2.09	0.736	4.61	0.0520	0.031	0.016	1.06	0.07
	Nickel	mg/Kg	103	47.7	53.8	21.9	266	45.5	16.9	32.6	18.5	35.6	124	31.4	19.0	48.6	--
	Silver	mg/Kg	0.86	0.609	1.28	2.23	1.94	0.261	0.100 U	0.33	2.59	0.47	0.234	0.10 U	0.10 U	5	--
	Zinc	mg/Kg	544	730	478	336	768	558	131	575	317	880	343	309	209	459	--
Organochlorine Pesticides (EPA 8081A)																	
	4,4'-DDD ⁽³⁾	µg/Kg	NA	4.1	36	<200 - 1000 U	NA	2.5	0.86	NA	<200 - 1000 U	NA	1.1 U	NA	NA	28	0.33
	4,4'-DDE ⁽³⁾	µg/Kg	NA	4.5	43	<200 - 1000 U	NA	2.0	1.0	NA	<200 - 1000 U	NA	0.98	NA	NA	31.3	0.33
	4,4'-DDT ⁽³⁾	µg/Kg	NA	23 U	18 U	<200 - 1000 U	NA	8.6 U	2.0 U	NA	<200 - 1000 U	NA	5.7 U	NA	NA	62.9	0.33
	Estimated Total DDX ⁽⁴⁾	µg/Kg	NA	8.6	79	ND	NA	4.5	1.9	NA	ND	NA	0.98	NA	NA	--	0.33
	Aldrin	µg/Kg	NA	1.5 J	8.5	<200 - 1000 U	NA	0.98 U	0.60 U	NA	<200 - 1000 U	NA	0.76 U	NA	NA	40	--
	alpha-BHC (α-BHC)	µg/Kg	NA	2.5 U	0.72 U	<200 - 1000 U	NA	0.98 U	0.60 U	NA	<200 - 1000 U	NA	0.76 U	NA	NA	--	--
	beta-BHC (β-BHC)	µg/Kg	NA	2.5 U	0.72 U	<200 - 1000 U	NA	3.6 U	0.60 U	NA	<200 - 1000 U	NA	0.91 U	NA	NA	--	--
	delta-BHC (δ-BHC)	µg/Kg	NA	2.5 U	2.7 U	<200 - 1000 U	NA	0.98 U	0.60 U	NA	<200 - 1000 U	NA	0.76 U	NA	NA	--	--
	gamma-BHC (γ-BHC, Lindane)	µg/Kg	NA	7.6 U	2.0 U	<200 - 1000 U	NA	0.98 U	0.60 U	NA	<200 - 1000 U	NA	1.8 U	NA	NA	4.99	--
	alpha-Chlordane ⁽⁵⁾	µg/Kg	NA	6.1	4.9	<200 - 1000 U	NA	3.7	0.47 J	NA	<200 - 1000 U	NA	0.98	NA	NA	--	--
	beta-Chlordane ⁽⁵⁾	µg/Kg	NA	11 U	11	<200 - 1000 U	NA	6.4	0.85	NA	<200 - 1000 U	NA	2.1	NA	NA	--	--
	Total Chlordane ⁽⁶⁾	µg/Kg	NA	6.1	16	ND	NA	10	1.3	NA	ND	NA	3.1	NA	NA	17.6	0.37
	Dieldrin	µg/Kg	NA	3.8 U	4.9 U	<200 - 1000 U	NA	3.6 U	0.37 J	NA	<200 - 1000 U	NA	1.9 U	NA	NA	61.8	0.0081
	Endosulfan I	µg/Kg	NA	2.5 U	3.8	<200 - 1000 U	NA	0.98 U	0.17 J	NA	<200 - 1000 U	NA	0.76 U	NA	NA	--	--
	Endosulfan II	µg/Kg	NA	5.5 U	5.9 U	<200 - 1000 U	NA	2.1 U	0.33 J	NA	<200 - 1000 U	NA	0.76 U	NA	NA	--	--
	Endosulfan sulfate	µg/Kg	NA	24 U	0.72 U	<200 - 1000 U	NA	1.5	0.60 U	NA	<200 - 1000 U	NA	0.76 U	NA	NA	--	--
	Endrin	µg/Kg	NA	2.5 U	1.2 U	<200 - 1000 U	NA	0.98 U	0.60 U	NA	<200 - 1000 U	NA	0.76 U	NA	NA	207	--
	Endrin aldehyde	µg/Kg	NA	1.3 J	0.72 U	<200 - 1000 U	NA	0.98 U	0.60 U	NA	<200 - 1000 U	NA	0.76 U	NA	NA	--	--
	Endrin ketone	µg/Kg	NA	1.5 J	0.54 J	<200 - 1000 U	NA	0.97 J	0.60 U	NA	<200 - 1000 U	NA	0.34 J	NA	NA	--	--
	Heptachlor	µg/Kg	NA	2.5 U	0.72 U	<200 - 1000 U	NA	0.98 U	0.60 U	NA	<200 - 1000 U	NA	0.86 U	NA	NA	10	--
	Heptachlor epoxide	µg/Kg	NA	2.5 U	0.72 U	<200 - 1000 U	NA	0.98 U	0.60 U	NA	<200 - 1000 U	NA	0.76 U	NA	NA	16	--
	Methoxychlor	µg/Kg	NA	2.5 U	3.8 U	<200 - 1000 U	NA	1.2 U	0.60 U	NA	<200 - 1000 U	NA	2.4 U	NA	NA	--	--
	Toxaphene	µg/Kg	NA	390 U	240 U	<200 - 1000 U	NA	350 U	30 U	NA	<200 - 1000 U	NA	330 U	NA	NA	--	--
Polychlorinated Biphenyls Aroclors (PCBs) (EPA 8082)																	
	Aroclor 1016	µg/Kg	20 U	22.8 U	10.0 U	50 U	10 U	17.3 U	10.0 U	10 U	50 U	10 U	10.0 U	10 U	10 U	530	--
	Aroclor 1221	µg/Kg	40 U	45.7 U	20.0 U	50 U	20 U	34.5 U	20.0 U	20 U	50 U	20 U	20.0 U	20 U	20 U	--	--
	Aroclor 1232	µg/Kg	20 U	22.8 U	10.0 U	50 U	10 U	17.3 U	10.0 U	10 U	50 U	10 U	10.0 U	10 U	10 U	--	--
	Aroclor 1242	µg/Kg	20 U	22.8 U	10.0 U	50 U	10 U	17.3 U	10.0 U	10 U	50 U	10 U	10.0 U	10 U	10 U	--	--
	Aroclor 1248	µg/Kg	401	22.8 U	365	50 U	2,900	17.3 U	10.0 U	3350	50 U	3,450	10.0 U	10 U	10 U	1500	--
	Aroclor 1254	µg/Kg	20 U	22.8 U	10.0 U	6,400	10 U	17.3 U	10.0 U	10 U	2,230	10 U	10.0 U	10 U	10 U	300	--
	Aroclor 1260	µg/Kg	122	22.8 U	69.4	1,100	1,030	17.3 U	10.0 U	1,180	450	1,110	10.0 U	21	10 U ⁽⁷⁾	200	--
	Aroclor 1262	µg/Kg	20 U	22.8 U	10.0 U	50 U	10 U	17.3 U	10.0 U	10 U	50 U	10 U	10.0 U	10 U	10 U	--	--
	Aroclor 1268	µg/Kg	20 U	22.8 U	10.0 U	50 U	10 U	17.3 U	10.0 U	10 U	50 U	10 U	10.0 U	10 U	10 U	--	--
	Total PCBs ⁽⁸⁾	µg/Kg	523	ND	434	7,500	3,930	ND	ND	4,530	2,680	4,560	ND	21	ND	676	0.39
Polychlorinated Biphenyl Congeners (EPA 1668A)																	
	Total PCBs ^{(8) (9)}	µg/Kg	357 ⁽¹⁰⁾	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	676	0.39

Table 3
Basin 18 East-Central Subbasin Stormwater Solids Results - NW 35th Avenue Line

Downstream ←-----→ Upstream																	
Manhole AAX264			Manhole AAX278				Manhole AAX318				Manhole AAX376		Manhole AAX375	Manhole AAX374			
Inline Solids			Sediment Trap Solids	Inline Solids	Inline Solids (CAP Sample) ⁽¹⁾	Inline Solids	Sediment Trap Solids	Inline Solids	Inline Solids	Inline Solids (CAP Sample) ⁽¹⁾	Inline Solids	Inline Solids	Inline Solids	Inline Solids			
Upstream of manhole in 30" line FO 095974			Downstream of manhole in 30" Line ST7: W11F059-04	Downstream of manhole in 30" Line W11F059-05	Within manhole 35th Downstream	Within manhole FO095884	Downstream of manhole in 15" line ST6: W11F059-01	Downstream of manhole in 15" line W11F059-02	Within manhole and downstream in 15" line FO095882	Within manhole	Within manhole FO 095883	Within Manhole W11F059-03	Within manhole FO 095881	Within manhole FO095880			
Class	Analyte	Units	10/6/2009	6/9/2011	6/9/2011	5/7/2009	9/2/2009	6/9/2011	6/9/2011	9/2/2009	5/7/2009	9/2/2009	6/9/2011	9/2/2009	9/2/2009	Toxicity	Bioaccumulation
Polycyclic Aromatic Hydrocarbons (PAHs) (EPA 8270D-SIM)																	
	Acenaphthene	µg/Kg	NA	NA	NA	307	NA	NA	NA	NA	43.3	NA	NA	NA	NA	300	--
	Acenaphthylene	µg/Kg	NA	NA	NA	66.7 U	NA	NA	NA	NA	12.0	NA	NA	NA	NA	200	--
	Anthracene	µg/Kg	NA	NA	NA	513	NA	NA	NA	NA	81.3	NA	NA	NA	NA	845	--
	Benzo(a)anthracene	µg/Kg	NA	NA	NA	313	NA	NA	NA	NA	58.0	NA	NA	NA	NA	1050	--
	Benzo(a)pyrene	µg/Kg	NA	NA	NA	250	NA	NA	NA	NA	68.0	NA	NA	NA	NA	1450	--
	Benzo(b)fluoranthene	µg/Kg	NA	NA	NA	367	NA	NA	NA	NA	89.3	NA	NA	NA	NA	--	--
	Benzo(g,h,i)perylene	µg/Kg	NA	NA	NA	213	NA	NA	NA	NA	50.7	NA	NA	NA	NA	300	--
	Benzo(k)fluoranthene	µg/Kg	NA	NA	NA	120	NA	NA	NA	NA	22.7	NA	NA	NA	NA	13000	--
	Chrysene	µg/Kg	NA	NA	NA	380	NA	NA	NA	NA	108	NA	NA	NA	NA	1290	--
	Dibenzo(a,h)anthracene	µg/Kg	NA	NA	NA	66.7 U	NA	NA	NA	NA	11.3	NA	NA	NA	NA	1300	--
	Dibenzofuran	µg/Kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	--	--
	Fluoranthene	µg/Kg	NA	NA	NA	907	NA	NA	NA	NA	193	NA	NA	NA	NA	2230	37000
	Fluorene	µg/Kg	NA	NA	NA	567	NA	NA	NA	NA	97.3	NA	NA	NA	NA	536	--
	Indeno(1,2,3-cd)pyrene	µg/Kg	NA	NA	NA	133	NA	NA	NA	NA	32.0	NA	NA	NA	NA	100	--
	Naphthalene	µg/Kg	NA	NA	NA	66.7 U	NA	NA	NA	NA	28.7	NA	NA	NA	NA	561	--
	Phenanthrene	µg/Kg	NA	NA	NA	500	NA	NA	NA	NA	215	NA	NA	NA	NA	1170	--
	Pyrene	µg/Kg	NA	NA	NA	1,000	NA	NA	NA	NA	200	NA	NA	NA	NA	1520	1900
	Total PAHs ⁽⁸⁾	µg/Kg	NA	NA	NA	5,570	NA	NA	NA	NA	1,310	NA	NA	NA	NA	--	--
Phthalates (EPA 8270D-SIM)																	
	Bis(2-ethylhexyl) phthalate (BEHP)	µg/Kg	NA	NA	NA	3,800	NA	NA	NA	NA	1,400	NA	NA	NA	NA	800	330
	Butyl Benzyl Phthalate	µg/Kg	NA	NA	NA	170 U	NA	NA	NA	NA	33 U	NA	NA	NA	NA	--	--
	Diethyl phthalate	µg/Kg	NA	NA	NA	170 U	NA	NA	NA	NA	33 U	NA	NA	NA	NA	600	--
	Dimethyl phthalate	µg/Kg	NA	NA	NA	170 U	NA	NA	NA	NA	33 U	NA	NA	NA	NA	--	--
	Di-n-butyl phthalate	µg/Kg	NA	NA	NA	170 U	NA	NA	NA	NA	82	NA	NA	NA	NA	100	60
	Di-n-octyl phthalate	µg/Kg	NA	NA	NA	170 U	NA	NA	NA	NA	33 U	NA	NA	NA	NA	--	--

Notes:

J = The analyte was detected at a concentration between the method detection limit and the method reporting limit.

NA = Not analyzed

ND = Not detected

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

-- = No JSCS screening level available

µg/Kg = Micrograms per kilogram

mg/Kg = Milligrams per kilogram

⁽¹⁾ Data summarized in Former Columbia American Plating (CAP) Facility *Stormwater Assessment Workplan* (Wohlers, 2011). Individual pesticides were not tabulated and laboratory reports were not included in the work plan.

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

⁽³⁾ The toxicity SLV represents the sum of the 2,4' and 4,4' isomers.

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

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

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

⁽⁷⁾ The analytical testing laboratory reports a possible trace of Aroclor 1260 at a concentration less than the reporting limit.

⁽⁸⁾ Total PCBs and total PAHs are calculated by assigning "0" to undetected constituents.

⁽⁹⁾ Individual congener results are summarized in Tables A-2 and C-2, located in Appendix A and Appendix C, respectively.

⁽¹⁰⁾ Total PCBs concentration may be biased slightly high or high (see Appendix A, Table A-2).

■ = concentration exceeds JSCS Toxicity Screening Level Value

bold = concentration exceeds JSCS Bioaccumulation Screening Level Value

Table 4
Basin 18 East-Central Subbasin September 2010 Erodible Soils Pathway Results

		NW Lake Street Right-of-Way					NW 35th Avenue Catch Basins						
		Surface Soil	Surface Soil	Surface Soil	Surface Soil	Surface Soil	Inline Solids	Inline Solids	Inline Solids	Inline Solids			
		West End of Lake St. FO105890	DUPLICATE West End of Lake St. FO105899	Lake St. at Railroad FO105891	East of Railroad FO105892	East End of Lake St. FO105893	Catch Basin ANF164 (Connects to MH AAX318) FO105894	Catch Basin APN941 (Not in Subbasin) FO105896	Catch Basin ANB622 FO105895	Catch Basin ANB621 FO105897	JSCS ⁽¹⁾ Screening Level Value		
Class	Analyte	Units	9/14/2010	9/14/2010	9/14/2010	9/14/2010	9/14/2010	9/14/2010	9/14/2010	9/14/2010	Toxicity	Bioaccumulation	
Total Organic Carbon (EPA 9060 MOD)													
	TOC	mg/Kg	11,100	9,930	8,520	12,600	20,200	40,300	84,000	102,000	111,000	--	--
Total Solids (SM 2540 G)													
	TS	%	96.3	96.2	98.0	92.3	90.2	92.7	62.0	67.1	58.7	--	--
Metals (EPA 6020)													
	Cadmium	mg/Kg	0.79	0.89	0.63	0.71	1.08	2.47	1.53	2.12	2.83	4.98	1
	Chromium	mg/Kg	42.4	59.7	39.9	51.0	51.3	84.7	180	75.0	124	111	--
	Copper	mg/Kg	36.7	34.8	41.0	50.2	46.6	114	136	104	129	149	--
	Lead	mg/Kg	93.9	94.1	104	148	157	151	124	74.4	118	128	17
	Mercury	mg/Kg	0.054	0.048	0.052	0.086	0.066	0.075	0.077	0.081	0.130	1.06	0.07
	Nickel	mg/Kg	13.2	26.1	16.6	16.9	17.8	41.5	52.0	45.2	55.3	48.6	--
	Silver	mg/Kg	0.25	0.22	0.31	1.04	0.44	0.43	0.65	0.45	0.64	5	--
	Zinc	mg/Kg	179	185	239	264	237	644	884	872	1,317	459	--
Organochlorine Pesticides (EPA 8081A)													
	4,4'-DDD ⁽²⁾	µg/Kg	7.7	6.9 U	5.4 U	21	6.2	3.5	1.3	2.3	1.4 U	28	0.33
	4,4'-DDE ⁽²⁾	µg/Kg	6.1	4.7	5.7	26	5.4	3.2	1.1 U	2.3	1.3	31.3	0.33
	4,4'-DDT ⁽²⁾	µg/Kg	72	70	61	140	58	20	19	9.6 U	11 U	62.9	0.33
	Estimated Total DDx ⁽³⁾	µg/Kg	86	75	67	187	70	27	20	4.6	1.3	--	0.33
	Aldrin	µg/Kg	3.0 U	0.97 U	1.0 U	5.5 U	0.97 U	1.1	1.2 U	0.97 U	0.74 J	40	--
	alpha-BHC (α-BHC)	µg/Kg	1.0 U	0.97 U	1.0 U	0.99 U	0.97 U	0.99 U	0.98 U	0.97 U	1.0 U	--	--
	beta-BHC (β-BHC)	µg/Kg	1.0 U	4.0 U	1.4 U	0.99 U	1.2 U	2.9 U	6.9 U	2.3 U	1.0 U	--	--
	delta-BHC (δ-BHC)	µg/Kg	1.0 U	0.97 U	0.31 J	0.99 U	0.97 U	0.99 U	0.98 U	0.97 U	1.0 U	--	--
	gamma-BHC (γ-BHC, Lindane)	µg/Kg	1.0 U	0.97 U	1.0 U	0.99 U	0.97 U	0.99 U	0.98 U	1.4 U	1.6 U	4.99	--
	alpha-Chlordane ⁽⁴⁾	µg/Kg	61	60	82	120	17	5.8	2.3	1.4	2.5	--	--
	beta-Chlordane ⁽⁴⁾	µg/Kg	74	74	90	140	23	8.4	3.0	2.8	4.8	--	--
	Total Chlordane ⁽⁵⁾	µg/Kg	135	134	172	260	40	14	5.3	4.2	7.3	17.6	0.37
	Dieldrin	µg/Kg	13	13	13	21	7.3	2.5 U	0.98 U	0.97 U	1.0 U	61.8	0.0081
	Endosulfan I	µg/Kg	3.9 U	3.5 U	4.3 U	9.9 U	1.2 U	0.99 U	0.98 U	2.9	1.0 U	--	--
	Endosulfan II	µg/Kg	22 U	25 U	19 U	21 U	4.5 U	0.99 U	1.6 U	2.3 U	3.8 U	--	--
	Endosulfan sulfate	µg/Kg	4.0 U	2.7 U	1.8 U	6.1 U	1.7	2.0 U	1.7	2.5	3.9	--	--
	Endrin	µg/Kg	1.0 U	0.97 U	1.0 U	0.99 U	0.97 U	0.99 U	0.98 U	0.97 U	1.0 U	207	--
	Endrin aldehyde	µg/Kg	3.5 U	3.6 U	3.2 U	8.7 U	1.4 U	0.99 U	0.98 U	0.97 U	1.0 U	--	--
	Endrin ketone	µg/Kg	1.0 U	0.97 U	1.2 U	11 U	6.4 U	0.49 J	0.98 U	0.95 J	1.1 U	--	--
	Heptachlor	µg/Kg	1.0 U	0.97 U	1.0 U	0.99 U	0.97 U	0.61 J	16	3.4	3.2	10	--
	Heptachlor epoxide	µg/Kg	1.0 U	0.97 U	1.9 U	0.99 U	0.97 U	0.99 U	0.81 J	0.97 U	1.0 U	16	--
	Methoxychlor	µg/Kg	5.9 U	4.9 U	5.9 U	6.2 U	2.5 U	2.1 U	0.98 U	1.9 U	2.8 U	--	--
	Toxaphene	µg/Kg	420 U	570 U	600 U	580 U	290 U	280 U	97 U	140 U	140 U	--	--

Table 4
Basin 18 East-Central Subbasin September 2010 Erodible Soils Pathway Results

		NW Lake Street Right-of-Way					NW 35th Avenue Catch Basins				JSCS ⁽¹⁾ Screening Level Value	
		Surface Soil	Surface Soil	Surface Soil	Surface Soil	Surface Soil	Inline Solids	Inline Solids	Inline Solids	Inline Solids	Toxicity	Bioaccumulation
		West End of Lake St. FO105890	DUPLICATE West End of Lake St. FO105899	Lake St. at Railroad FO105891	East of Railroad FO105892	East End of Lake St. FO105893	Catch Basin ANF164 (Connects to MH AAX318) FO105894	Catch Basin APN941 (Not in Subbasin) FO105896	Catch Basin ANB622 FO105895	Catch Basin ANB621 FO105897		
Class	Analyte	Units	9/14/2010	9/14/2010	9/14/2010	9/14/2010	9/14/2010	9/14/2010	9/14/2010	9/14/2010		
Polychlorinated Biphenyls (PCBs) (EPA 8082)												
	Aroclor 1016	µg/Kg	40 U	10 U	40 U	40 U	10 U	10 U	10 U	10 U	530	--
	Aroclor 1221	µg/Kg	80 U	20 U	80 U	80 U	20 U	20 U	20 U	20 U	--	--
	Aroclor 1232	µg/Kg	40 U	10 U	40 U	40 U	10 U	10 U	10 U	10 U	--	--
	Aroclor 1242	µg/Kg	40 U	10 U	40 U	40 U	10 U	10 U	10 U	10 U	--	--
	Aroclor 1248	µg/Kg	40 U	10 U	40 U	40 U	10 U	10 U	10 U	10 U	1500	--
	Aroclor 1254	µg/Kg	125	151	85	151 EST	98	112	29	44	300	--
	Aroclor 1260	µg/Kg	40 U	57	63	110	48	76	38	57	200	--
	Aroclor 1262	µg/Kg	40 U	10 U	40 U	40 U	10 U	10 U	10 U	10 U	--	--
	Aroclor 1268	µg/Kg	40 U	10 U	40 U	40 U	10 U	10 U	10 U	10 U	--	--
	Total PCBs ⁽⁶⁾	µg/Kg	125	208	148	261 EST	146	188	67	101	676	0.39
Polychlorinated Biphenyl Congeners (PCBs) (EPA 1668A)												
	Total PCBs ⁽⁶⁾⁽⁷⁾	µg/Kg	234	248	235	385	183	177	90.0	81.7	676	0.39

Notes:

EST = The result is an estimated concentration.

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

NA = not analyzed

ND = not detected

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

-- 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 toxicity SLV represents the sum of the 2,4' and 4,4' isomers

⁽³⁾ Estimated Total DDX is the sum of DDE, DDD, and DDT.

⁽⁴⁾ Alpha-chlordane is also known as cis-Chlordane. Beta-Chlordane is also known as trans-chlordane and gamma-chlordane.

⁽⁵⁾ Total Chlordane is the sum of alpha- and beta-isomers.

⁽⁶⁾ Total PCBs are calculated by assigning "0" to undetected constituents.

⁽⁷⁾ Individual congener results are summarized in Table C-2, located in Appendix C.

= concentration exceeds JSCS Toxicity Screening Level Value

bold = concentration exceeds JSCS Bioaccumulation Screening Level Value

Table 5
Basin 18 East-Central Subbasin Conveyance System and Upland Site Data Comparison

Subbasin Source-Tracing Contaminant ⁽¹⁾	Maximum Concentrations Detected in Stormwater Solids from City Lines ⁽²⁾		Maximum Concentrations Detected at Upland Sites ⁽³⁾		
	Pre-Line Cleanout	Post-Line Cleanout	Site	Stormwater Solids	Site Soils
PCBs					
Total PCBs	7500 µg/Kg	434 µg/Kg	<u>In Subbasin:</u> ANRFS/ABF Carson CAP Container Recovery Univar Wilhelm/Magnus <u>Adjacent to Subbasin:</u> Ashland Container Management Owens Corning	34.5 µg/Kg 37.3 µg/Kg 1070 µg/Kg 615 µg/Kg -- -- 92.3 µg/Kg 1200 µg/Kg 113 µg/Kg	ND -- -- -- -- -- -- 51,100 µg/Kg --
Pesticides					
Total DDx	385 µg/Kg	79 µg/Kg	<u>In Subbasin:</u> ANRFS/ABF Carson CAP Container Recovery Univar Wilhelm/Magnus <u>Adjacent to Subbasin:</u> Ashland Container Management Owens Corning	ND ⁽⁴⁾ ND ⁽⁴⁾ ND ⁽⁴⁾ ND ⁽⁴⁾ -- -- ND ⁽⁴⁾ 377 µg/Kg ND ⁽⁴⁾	-- -- -- -- 103 µg/Kg -- -- 1900 µg/Kg --
Total Chlordane	402 µg/Kg	110 µg/Kg	<u>In Subbasin:</u> ANRFS/ABF Carson CAP Container Recovery Univar Wilhelm/Magnus <u>Adjacent to Subbasin:</u> Ashland Container Management Owens Corning	ND ⁽⁴⁾ ND ⁽⁴⁾ ND ⁽⁴⁾ ND ⁽⁴⁾ -- -- ND ⁽⁴⁾ 5300 µg/Kg ND ⁽⁴⁾	-- -- -- -- 106 µg/Kg -- -- 3300 µg/Kg --
Heptachlor	300 µg/Kg	2.8 µg/Kg (estimated)	<u>In Subbasin:</u> ANRFS/ABF Carson CAP Container Recovery Univar Wilhelm/Magnus <u>Adjacent to Subbasin:</u> Ashland Container Management Owens Corning	ND ⁽⁴⁾ ND ⁽⁴⁾ ND ⁽⁴⁾ ND ⁽⁴⁾ -- -- ND ⁽⁴⁾ ND ND ⁽⁴⁾	-- -- -- -- 11 µg/Kg -- -- 3.9 µg/Kg --
Metals					
Cadmium	405 mg/Kg	6.36 mg/Kg	<u>In Subbasin:</u> ANRFS/ABF Carson CAP Container Recovery Univar Wilhelm/Magnus <u>Adjacent to Subbasin:</u> Ashland Container Management Owens Corning	0.83 mg/Kg 2.4 mg/Kg 2050 mg/Kg 4 mg/Kg -- -- 8.2 mg/Kg 3.45 mg/Kg 0.98 mg/Kg	ND ND ⁽⁵⁾ 300 mg/Kg -- -- -- -- 14.9 mg/Kg --

Table 5
Basin 18 East-Central Subbasin Conveyance System and Upland Site Data Comparison

Subbasin Source-Tracing Contaminant ⁽¹⁾	Maximum Concentrations Detected in Stormwater Solids from City Lines ⁽²⁾		Maximum Concentrations Detected at Upland Sites ⁽³⁾		
	Pre-Line Cleanout	Post-Line Cleanout	Site	Stormwater Solids	Site Soils
Copper	2460 mg/Kg	149 mg/Kg	<u>In Subbasin:</u> ANRFS/ABF Carson CAP Container Recovery Univar Wilhelm/Magnus <u>Adjacent to Subbasin:</u> Ashland Container Management Owens Corning	57.5 mg/Kg 62.1 mg/Kg 2890 mg/Kg 112 mg/Kg -- -- -- 138 mg/Kg 188 mg/Kg 124 mg/Kg	ND ND ⁽⁵⁾ 239 mg/Kg -- -- -- -- 2840 mg/Kg --
Lead	2280 mg/Kg	370 mg/Kg	<u>In Subbasin:</u> ANRFS/ABF Carson CAP Container Recovery Univar Wilhelm/Magnus <u>Adjacent to Subbasin:</u> Ashland Container Management Owens Corning	43.7 mg/Kg 33.3 mg/kg 4960 mg/Kg 250 mg/Kg -- -- -- 111 mg/Kg 286 mg/Kg 54.6 mg/Kg	ND ND ⁽⁵⁾ 84.2 mg/Kg -- 27.8 mg/Kg 39 mg/Kg -- -- 4150 mg/Kg --
Manganese	111,000 mg/Kg	386 mg/Kg	<u>In Subbasin:</u> ANRFS/ABF Carson CAP Container Recovery Univar Wilhelm/Magnus <u>Adjacent to Subbasin:</u> Ashland Container Management Owens Corning	-- -- -- -- -- -- -- -- -- 776 mg/Kg	ND ND ⁽⁵⁾ 317 -- -- -- -- -- 2400 mg/Kg --

Notes:

DEQ = Oregon Department of Environmental Quality

MRL = Laboratory method reporting limit

PCBs = Polychlorinated biphenyls

Total DDx = sum of DDE, DDD, and DDT

ND = Not detected

-- = Data not available

µg/Kg = micrograms per kilogram

mg/Kg = milligrams per kilogram

⁽¹⁾ See Section 2.3 of report for basis of source-tracing contaminant identification. Selected pesticides and metals listed are those that were detected at significantly elevated concentrations in one or more samples from the City lines, as described in Section 3.2 of the report.

⁽²⁾ Refer to data tables in report (Tables 2 and 3). "Cleanout" refers to comprehensive cleanout of City stormwater lines in the east-central subbasin in completed in summer 2010 by the City (from manholes AAX374 to AAX261) and Univar, Inc. (from manholes AAX261 to AAX557).

⁽³⁾ See Table 1 for full site names and site information. Concentrations listed are based on review of available information. Data sources (see Section 6 for full citations): BBA, 2008; Cascade, 1992; Coastal, 1992; DEQ, 2008a, 2008c, 2008e, 2008f, 2008g, 2008j; EPA, 2004; HAI, 2011; PES, 2009, 2010a; SES, 2011, 2012b; Weston, 1994; Wohlers, 2010, 2011.

⁽⁴⁾ Laboratory method reporting limits were elevated.

⁽⁵⁾ Soil samples were analyzed for TCLP metals and not for total metals.

Figures

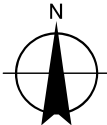


LEGEND

- | | |
|-------------------------|--------------------|
| ● Sample Location | ○ Manhole (MH) |
| — Composite Sample | □ Catch Basin (CB) |
| ■ Outfall Basin 18 | ★ DEQ ECSI Site |
| ■ East-Central Subbasin | ⊞ Tax Lot |
- Sample Types**
- Inline Solids Sample
 - Sediment Trap Sample
 - Surface Soil Sample
- All Other Features**
- Storm Line

NOTES:

Samples by City unless otherwise noted.
DS = Downstream
US = Upstream
CAP = Columbia American Plating Co.



0 125 250
Feet

FIGURE 1

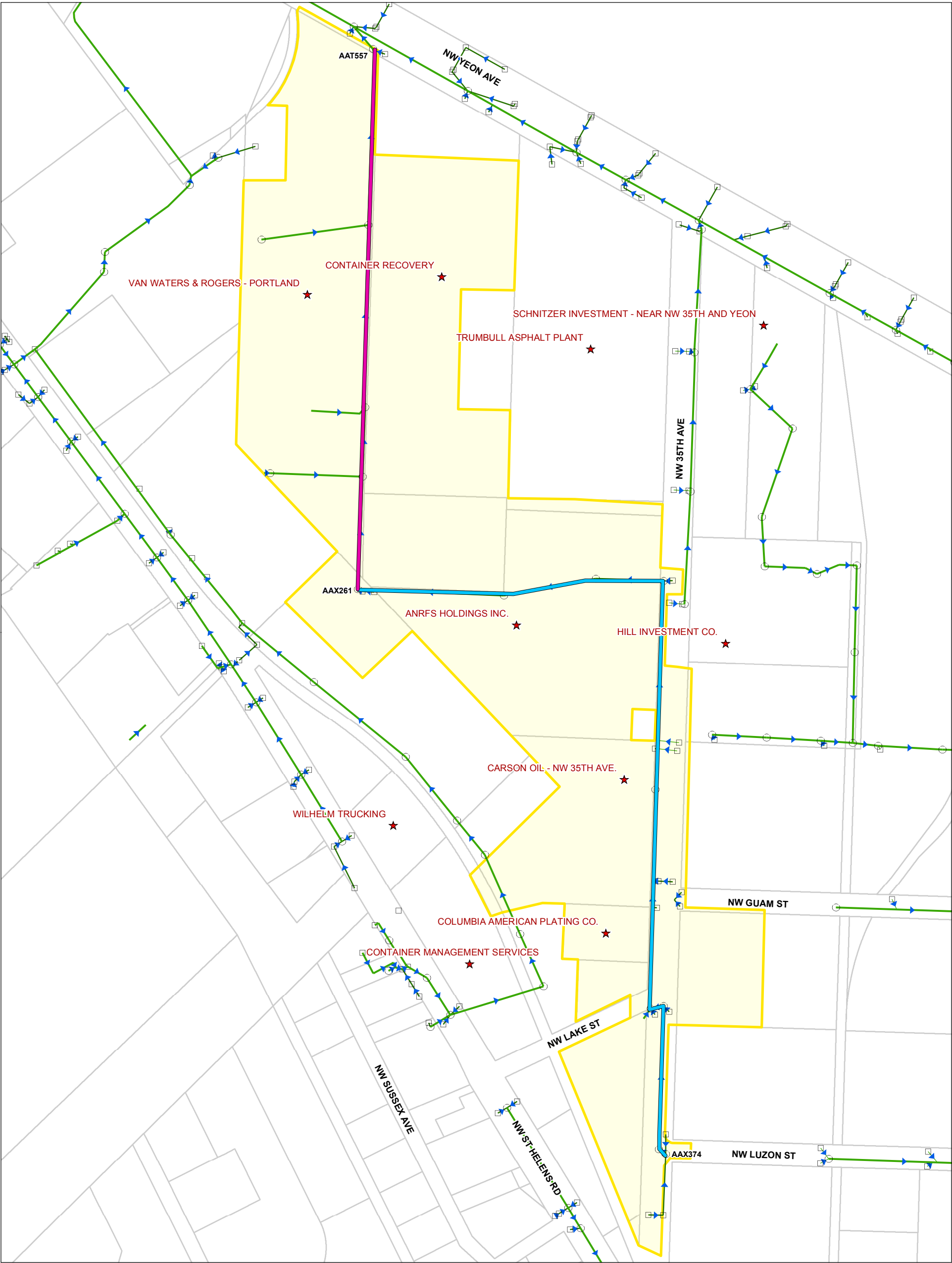
**Basin 18 East-Central Subbasin
Sample Locations**

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:
May 9, 2012
005_SCIPIOF_Basin_18\OF18_EastSubbasin_Report

Source:
City of Portland BES,
Aerial Photo 2010

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



LEGEND

- East-Central Subbasin
- Storm Line Cleaning Status**
 - Cleaned June-July 2010 (City)
 - Cleaned August 2010 (Univar)
- All Other Features**
 - Storm Line
 - Manhole (MH)
 - Catch Basin (CB)
 - DEQ ECSI Site
 - Tax Lot

North arrow pointing up (N).

Scale bar: 0, 125, 250 Feet.

FIGURE 2

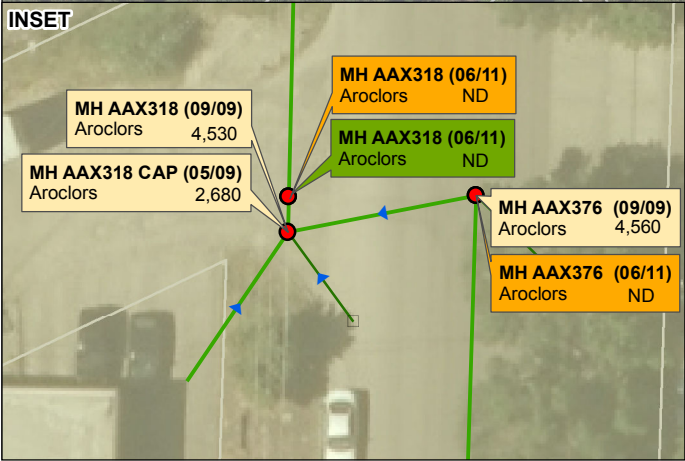
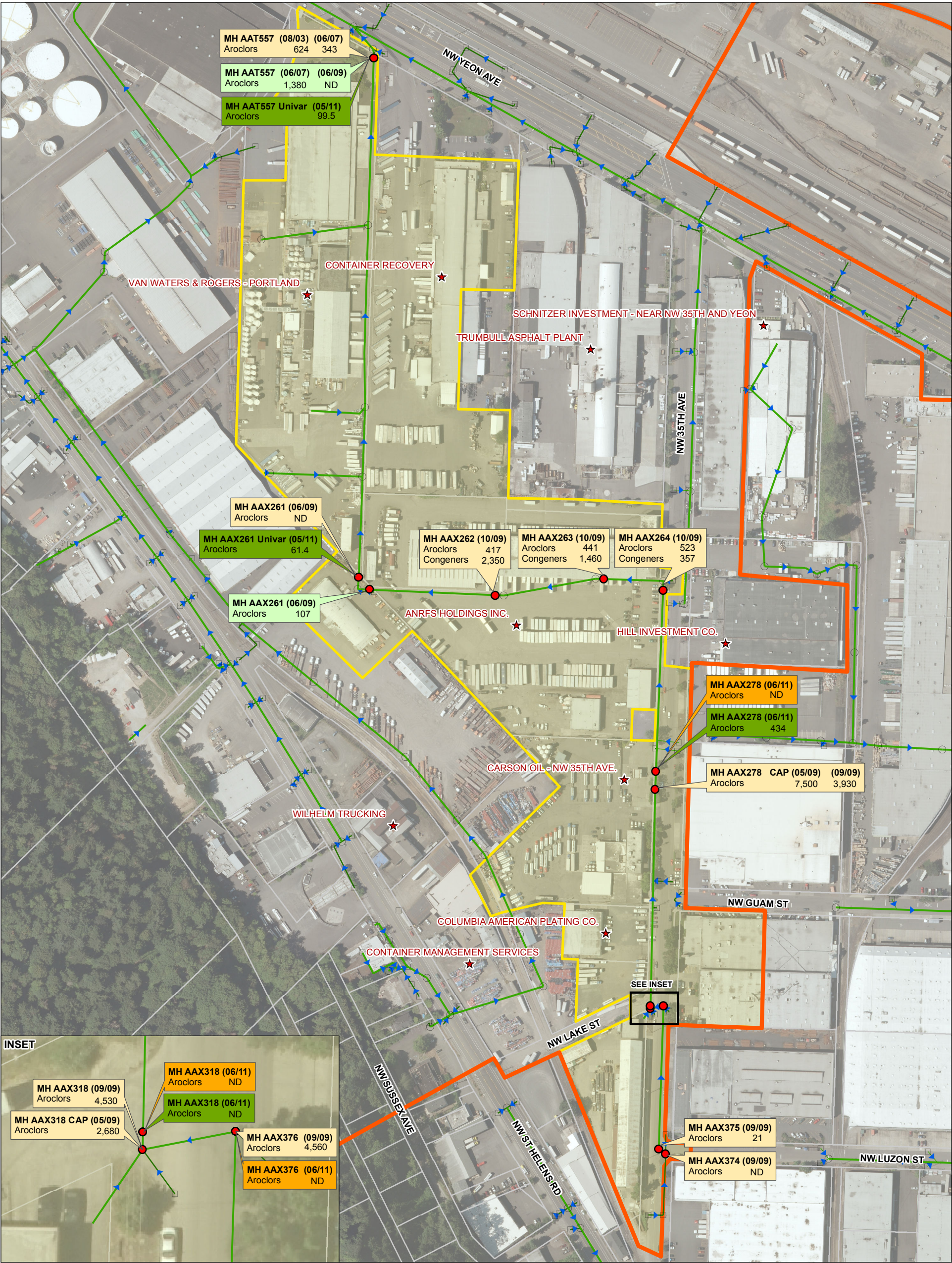
Basin 18 East-Central Subbasin
Summer 2010 Line Cleaning

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



LEGEND

- Sample Location
- Outfall Basin 18
- East-Central Subbasin
- Sample Types**
- Inline Solids Sample, Pre-Cleanout
- Inline Solids Sample, Post-Cleanout
- Sediment Trap Sample, Pre-Cleanout
- Sediment Trap Sample, Post-Cleanout
- Storm Line
- Manhole (MH)
- Catch Basin (CB)
- ★ DEQ ECSI Site
- Tax Lot
- All Other Features**

NOTES:

All Solids results presented in micrograms per kilogram ($\mu\text{g}/\text{kg}$).
Samples by City unless otherwise noted.
CAP = Columbia America Plating Co.
ND = Not Detected
NA = Not Analyzed
EST = Estimated

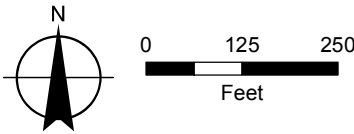


FIGURE 3

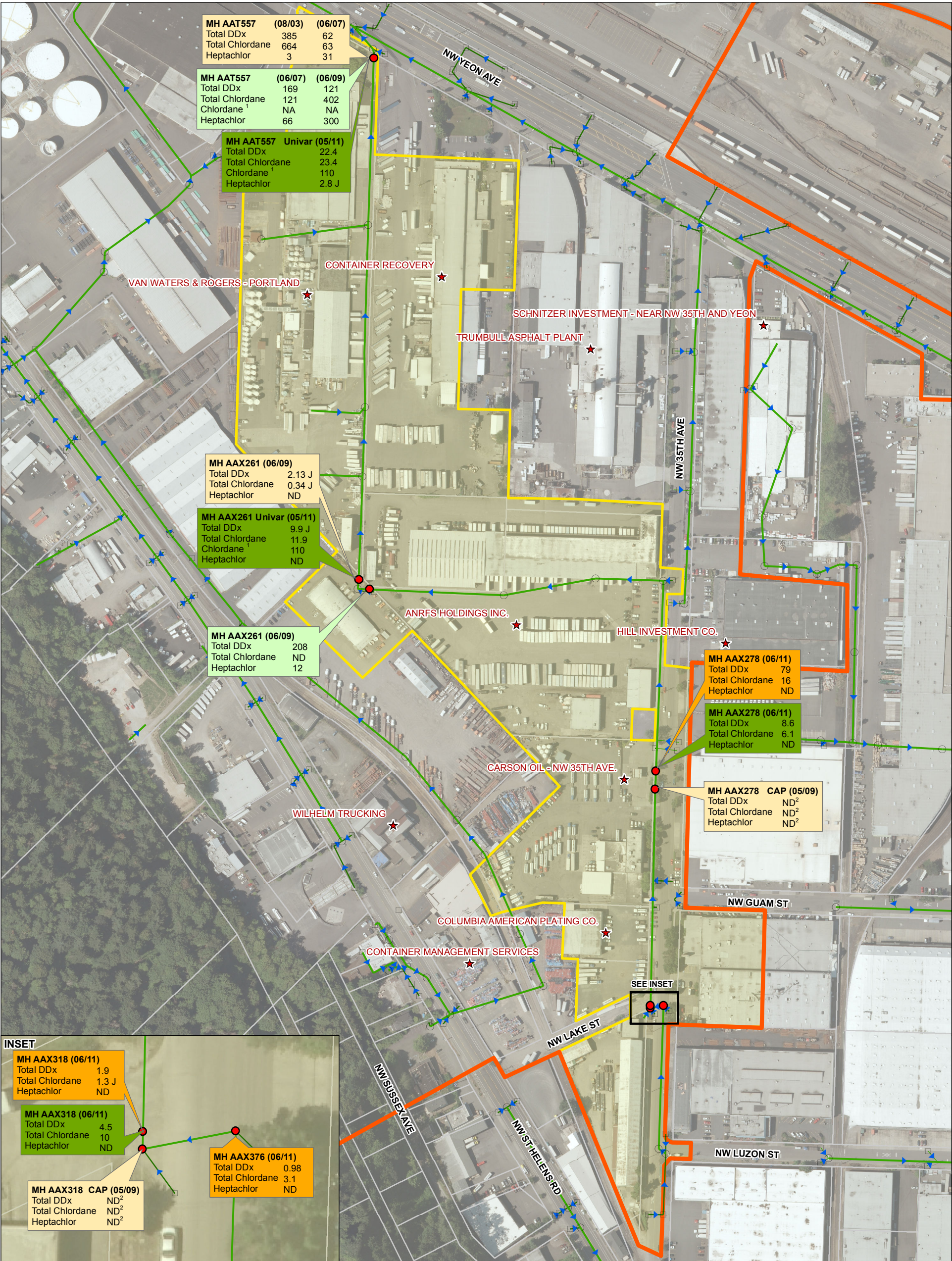
**Basin 18 East-Central Subbasin
Pre- and Post-Cleanout Results - Total PCBs**

Disclaimer:
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Prepared By:
May 9, 2012
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City of Portland BES,
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**ENVIRONMENTAL SERVICES
CITY OF PORTLAND**
1120 SW Fifth Avenue, Room 1000
Portland Oregon, 97204-1912



LEGEND

- Sample Location
- Outfall Basin 18
- East-Central Subbasin
- Sample Types**
- Inline Solids Sample, Pre-Cleanout
- Inline Solids Sample, Post-Cleanout
- Sediment Trap Sample, Pre-Cleanout
- Sediment Trap Sample, Post-Cleanout
- Storm Line
- Manhole (MH)
- Catch Basin (CB)
- ★ DEQ ECSI Site
- ⊕ Tax Lot

NOTES:

¹ Univar samples were analyzed for a chlordane mixture comprised primarily of alpha- and beta- chlordane isomers.

² Laboratory method reporting limits were significantly elevated.

Results in micrograms per kilogram (µg/Kg). Samples by City unless otherwise noted.

Total Chlordane is the sum of alpha- and beta- Chlordane.

CAP = Columbia American Plating Co.

ND = Not Detected

J = Estimated

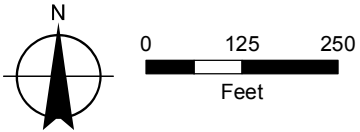


FIGURE 4
Basin 18 East-Central Subbasin
Pre- and Post-Cleanout Results
Total DDx, Total Chlordane, and Heptachlor

Disclaimer:
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Prepared By:
May 9, 2012
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OF18_EastSubbasin_Report

Source:
City of Portland BES,
Aerial Photo 2010

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



LEGEND

● Sample Location

□ Outfall Basin 18

□ East-Central Subbasin

Sample Types

□ Inline Solids Sample, Pre-Cleanout

□ Inline Solids Sample, Post-Cleanout

□ Sediment Trap Sample, Pre-Cleanout

□ Sediment Trap Sample, Post-Cleanout

All Other Features

— Storm Line

○ Manhole (MH)

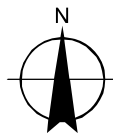
□ Catch Basin (CB)

★ DEQ ECSI Site

□ Tax Lot

NOTES:

All solids results presented in milligrams per kilogram (mg/Kg).
Samples by City unless otherwise noted.
CAP = Columbia America Plating Co.
NA = Not Analyzed

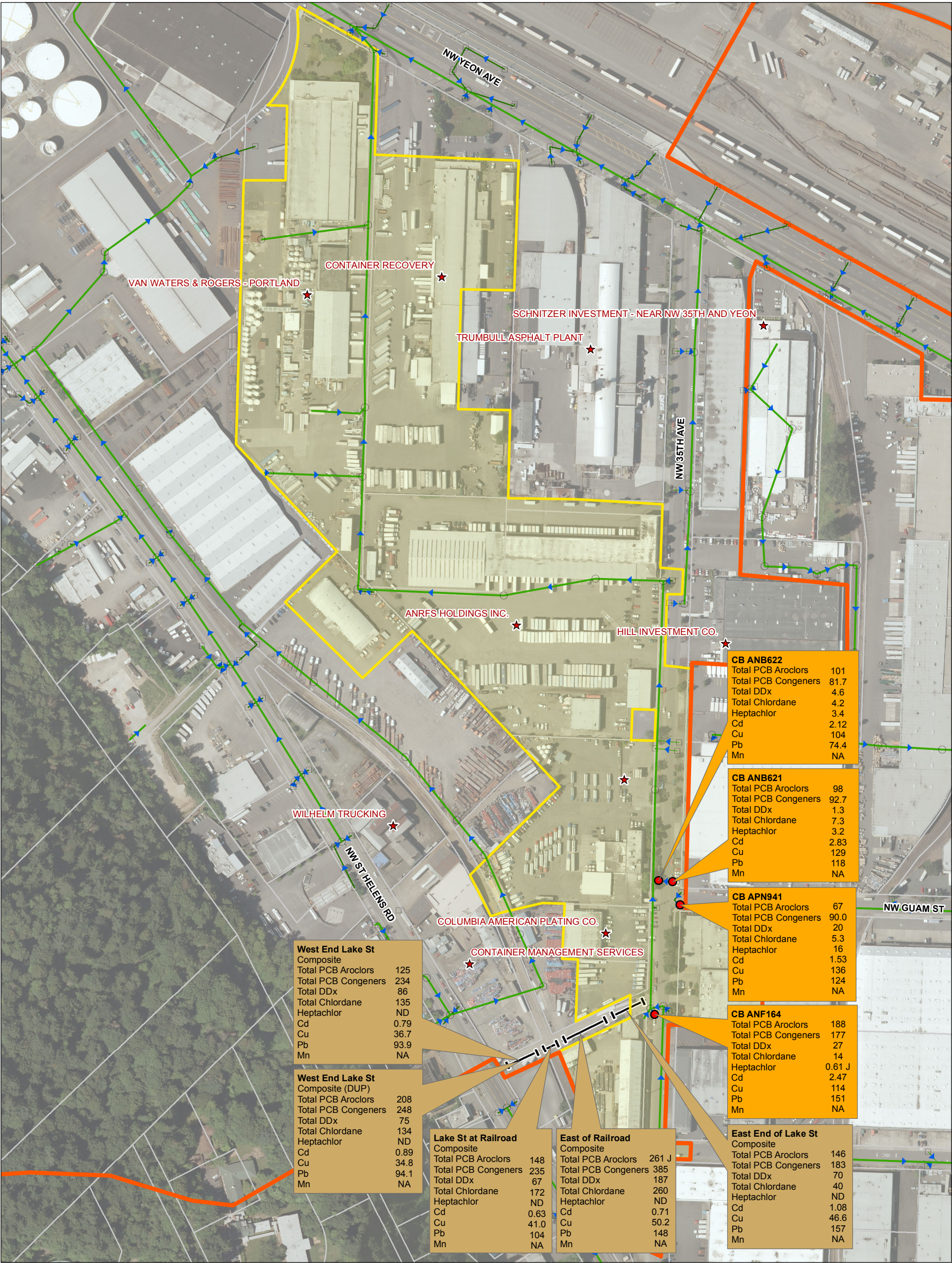


0 125 250
Feet

FIGURE 5
Basin 18 East-Central Subbasin
Pre- and Post-Cleanout Results
Selected Metals

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:
May 9, 2012
005_SCIPIOF_Basin_18\
OF18_EastSubbasin_ Report
Source:
City of Portland BES,
Aerial Photo 2010

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



LEGEND

- Sample Location
- Composite Sample
- Outfall Basin 18
- East-Central Subbasin
- Sample Types**
- Catch Basin Solids Sample
- Surface Soil Sample
- All Other Features**
- Storm Line
- Manhole (MH)
- Catch Basin (CB)
- ★ DEQ ECSI Site
- Tax Lot

NOTES:

All PCB and pesticide results are presented in micrograms per kilogram (µg/Kg)
All metal results are presented in milligrams per kilogram (mg/Kg).
NA = Not Analyzed
ND = Not Detected
J = Estimated

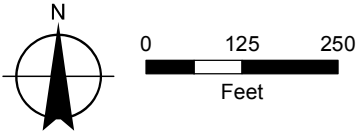


FIGURE 6
Basin 18 East-Central Subbasin
September 2010 Erodible Soils Pathway Results

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:
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Source:
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ENVIRONMENTAL SERVICES
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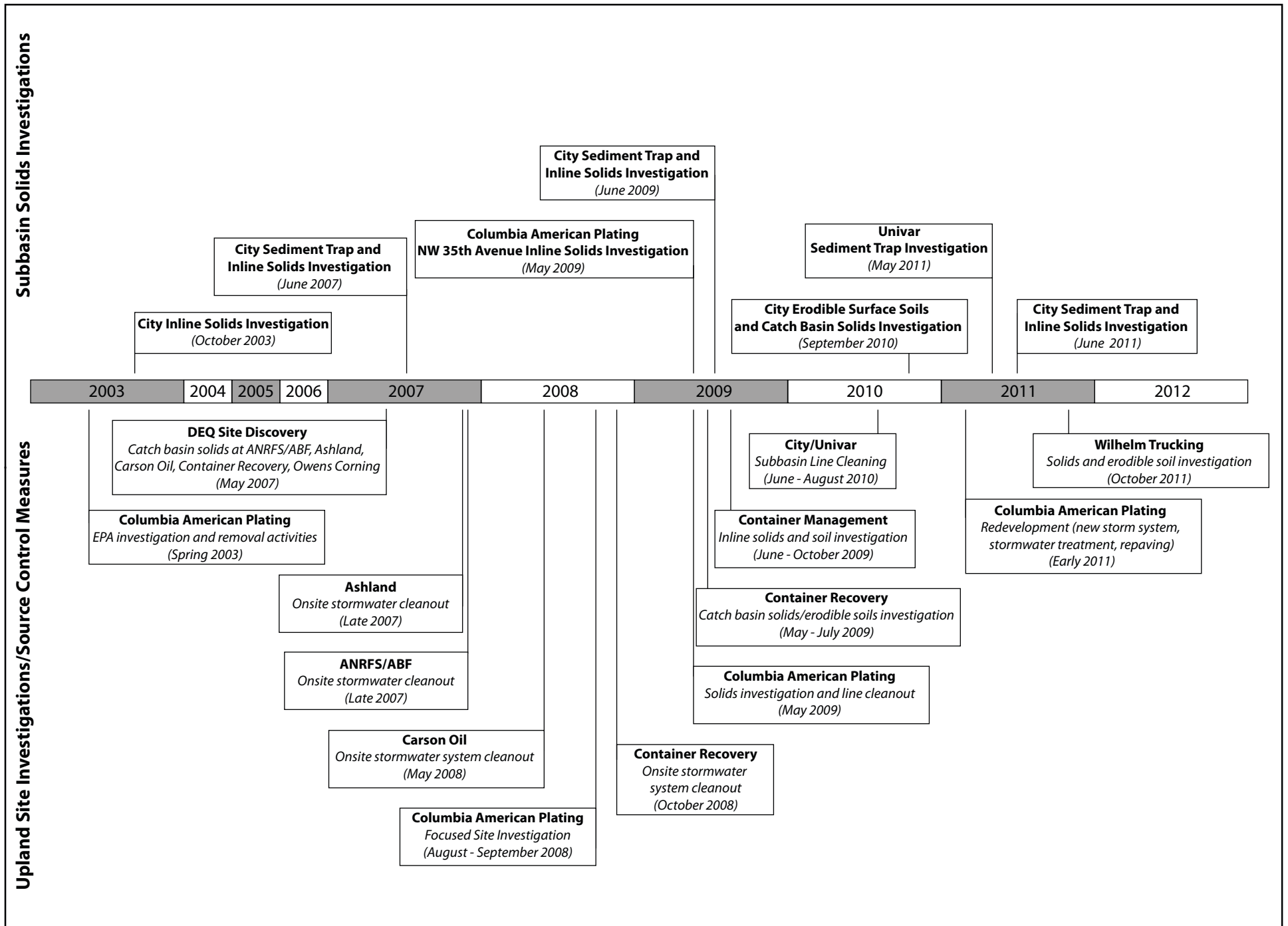


Figure 7. Basin 18 East-Central Subbasin Solids Source Investigation/Control Measures Timeline

APPENDIX A

**Outfall Basin 18 East-Central Subbasin
Fall 2009 Inline Solids Investigation
Data Summary Report**

Appendix A

Outfall Basin 18 East-Central Subbasin

Fall 2009 Inline Solids Investigation

Data Summary Report

Introduction

This report summarizes the results of the City of Portland fall 2009 inline solids investigation activities in the Outfall Basin 18 stormwater conveyance system. The City collected a total of eight stormwater solids samples in September and October 2009 from the east-central subbasin of Basin 18, which was identified as having upland sources of polychlorinated biphenyls (PCBs), pesticides, and metals based on results of sediment trap samples collected in spring 2007 and spring 2009 (BES, 2010). The purpose of the fall 2009 inline solids sampling was to identify possible sources of PCBs and metals upstream of the sediment trap sampling locations. Pesticides were not analyzed as part of this source investigation because two suspected sources¹ were slated to evaluate pesticides in the stormwater pathway under EPA and DEQ oversight.

This inline solids investigation is part of the City's ongoing Remedial Investigation associated with the Portland Harbor City of Portland Outfalls Project being conducted pursuant to the August 13, 2003, Intergovernmental Agreement (IGA) between DEQ and the City. The data collected under this investigation support ongoing work by DEQ and the City to characterize and control discharges to the stormwater pathway from sites within Basin 18.

Sampling Activities and Analytical Approach

Inline solids samples were collected on September 2 and October 6, 2009, from a total of eight locations upstream of manhole AAX261, as communicated by email to DEQ (BES, 2009a; 2009b). The first round of locations was selected to evaluate potential sources upstream of the Columbia American Plating site. The second round of locations was selected to evaluate the nature and extent of contaminated inline solids in the east-central branch downstream of Columbia American Plating connections. The sampling locations are listed below and shown on Figure A-1.

¹ Univar (Van Waters & Rogers) (ECSI #330) and Magnus/Wilhelm Trucking (ECSI #69).

Sampling Location (Manhole)	Sampling Date	Description
AAX374	September 2, 2009	Within manhole
AAX375	September 2, 2009	Within manhole
AAX376	September 2, 2009	Within manhole
AAX318	September 2, 2009	Within manhole
AAX278	September 2, 2009	Within manhole
AAX264	October 6, 2009	Upstream in 30" line
AAX263	October 6, 2009	Upstream in 36" line
AAX262	October 6, 2009	Downstream in 36" line

Sample collection and handling procedures were conducted using the applicable standard operating procedures (SOPs)² included in the City's *Amended Programmatic Sampling and Analysis Plan* 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* for the project (BES, 2007b). Photographs of the inline solids sampling locations and samples collected are included in Attachment A-1. Field notes recorded during sampling activities are provided in Attachment A-2.

The inline solids samples were homogenized and submitted to the City's Water Pollution Control Laboratory and subcontracted laboratories for analysis of metals, PCB Aroclors, total organic carbon, and total solids. In addition, the samples collected in October were analyzed for PCB congeners.

Summary of Results

PCBs were detected in all of the samples except the sample from the most upstream sampling location (manhole AAX374). Metals were detected in all of the samples. Tables A-1 and A-2 summarize the laboratory analytical results for the fall 2009 inline solids samples and include the JSCS SLVs for reference. The laboratory reports and data review memoranda for the samples are provided in Attachment A-3.

² The SOPs were established by the City's Field Operations section to standardize the data collection methodologies for a wide range of monitoring activities and thereby maintain comparability and representativeness of the data produced.

References

- BES. 2007a. Amended Programmatic Quality Assurance Project Plan, City of Portland Outfalls Project, Revision to Programmatic Source Control Remedial Investigation Work Plan Appendix D. Prepared by the City of Portland, Bureau of Environmental Services, Portland Harbor Program. August 2007.
- BES. 2007b. Amended Programmatic Sampling and Analysis Plan, City of Portland Outfalls Remedial Investigation/Source Control Measures Project. Prepared by the City of Portland, Bureau of Environmental Services, Portland Harbor Program. August 2007.
- BES. 2009a. Subject: Basin 18 Inline Solids Sampling. Email to K. Tarnow (DEQ) from L. Scheffler (BES). August 26, 2009.
- BES. 2009b. Subject: FW: PH Sampling Request. Email to K. Tarnow (DEQ) from L. Scheffler (BES). September 17, 2009.
- BES. 2010. Technical Memorandum No. OF18-2, Outfall Basin 18 Inline Solids Investigation. July 20, 2010.
- DEQ/EPA. 2005. Portland Harbor Joint Source Control Strategy, Final, dated December 2005 (updated July 2007).

Tables

- Table A-1 – *Basin 18 East-Central Subbasin Fall 2009 Inline Solids Results*
- Table A-2 – *Basin 18 East-Central Subbasin Fall 2009 Inline Solids Results – PCB Congeners*

Figure

- Figure A-1 – *Basin 18 East-Central Subbasin, Fall 2009 Inline Solids Sampling Locations*

Attachments

- Attachment A-1 – *Field Photographs*
- Attachment A-2 – *Field Data Sheets*
- Attachment A-3 – *Laboratory Results*

Table A-1
Basin 18 East-Central Subbasin Fall 2009 Inline Solids Results

Class	Analyte	Units	Downstream ----->							Upstream		JSCS ⁽¹⁾ Screening Level Value	
			Manhole AAX262 Downstream in 36" Line FO 095976 10/6/09	Manhole AAX263 Upstream in 36" Line FO 095975 10/6/09	Manhole AAX264 Upstream in 30" Line FO 095974 10/6/09	Manhole AAX278 From Manhole FO 095884 9/2/09	Manhole AAX318 From Manhole FO 095882 9/2/09	Manhole AAX376 From Manhole FO 095883 9/2/09	Manhole AAX375 From Manhole FO 095881 9/2/09	Manhole AAX374 From Manhole FO 095880 9/2/09			
			Toxicity	Bioaccumulation									
Total Organic Carbon (EPA 9060 MOD)													
	TOC	mg/Kg	89,200	75,400	19,000	68,100	28,100	54,500	12,300	3770	--	--	
Total Solids (SM 2540 G)													
	TS	%	58.2	60.4	79.4	63.5	73.6	63.6	87.6	97.8	--	--	
Metals (EPA 6020)													
	Arsenic	mg/Kg	4.56	4.55	3.08	3.56	2.68	3.57	2.15	1.75	33	7	
	Cadmium	mg/Kg	405	195	13.8	35.0	3.71	4.34	0.61	0.41	4.98	1	
	Chromium	mg/Kg	469	545	94.3	223	150	309	61.3	33.7	111	--	
	Copper	mg/Kg	2460	536	206	193	97.9	104	50.5	25.4	149	--	
	Lead	mg/Kg	924	665	364	1090	1170	2280	66.0	41.0	128	17	
	Mercury	mg/Kg	0.833	0.532	0.309	2.11	2.09	4.61	0.031	0.016	1.06	0.07	
	Nickel	mg/Kg	171	211	103	266	32.6	35.6	31.4	19.0	48.6	--	
	Silver	mg/Kg	5.99	6.35	0.86	1.94	0.33	0.47	0.10 U	0.10 U	5	--	
	Zinc	mg/Kg	1890	1570	544	768	575	880	309	209	459	--	
Polychlorinated Biphenyl Congeners (EPA 1668A)													
	Total PCB congeners ⁽²⁾⁽³⁾	µg/Kg	2350 ⁽⁴⁾	1460 ⁽⁴⁾	357 ⁽⁴⁾	NA	NA	NA	NA	NA	676	0.39	
Polychlorinated Biphenyls Aroclors (EPA 8082)													
	Aroclor 1016	µg/Kg	20 U	20 U	20 U	10 U	10 U	10 U	10 U	10 U	530	--	
	Aroclor 1221	µg/Kg	40 U	40 U	40 U	20 U	20 U	20 U	20 U	20 U	--	--	
	Aroclor 1232	µg/Kg	20 U	20 U	20 U	10 U	10 U	10 U	10 U	10 U	--	--	
	Aroclor 1242	µg/Kg	20 U	20 U	20 U	10 U	10 U	10 U	10 U	10 U	--	--	
	Aroclor 1248	µg/Kg	294	288	401	2900	3350	3450	10 U	10 U	1500	--	
	Aroclor 1254	µg/Kg	20 U	20 U	20 U	10 U	10 U	10 U	10 U	10 U	300	--	
	Aroclor 1260	µg/Kg	123	153	122	1030	1180	1110	21	10 U ⁽⁵⁾	200	--	
	Aroclor 1262	µg/Kg	20 U	20 U	20 U	10 U	10 U	10 U	10 U	10 U	--	--	
	Aroclor 1268	µg/Kg	20 U	20 U	20 U	10 U	10 U	10 U	10 U	10 U	--	--	
	Total PCB Aroclors ⁽³⁾	µg/Kg	417	441	523	3930	4530	4560	21	ND	676	0.39	

Notes:

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

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⁾Refer to Table 2 for individual congener concentrations.

⁽³⁾Total PCBs are calculated by assigning "0" to undetected constituents.

⁽⁴⁾Total PCBs concentration may be biased slightly high or high because of the percentage of estimated congener detections relative to the total number detected (see Table A-2).

⁽⁵⁾The analytical testing laboratory reports a possible trace of Aroclor 1260 at a concentration less than the reporting limit.

= concentration exceeds JSCS Toxicity Screening Level Value

bold = concentration exceeds JSCS Bioaccumulation Screening Level Value

Table A-2
Basin 18 East-Central Subbasin Fall 2009 Inline Solids Results - PCB Congeners

		Downstream -----> Upstream				JSCS ⁽²⁾	
			Manhole AAX262 Downstream 36" Line FO 095976	Manhole AAX263 Upstream 36" Line FO 095975	Manhole AAX264 Upstream 30" Line FO 095974	Screening Level Value	
IUPAC Number ⁽¹⁾	Chemical Name	Units	10/6/09	10/6/09	10/6/09	Toxicity	Bioaccumulation
Polychlorinated Biphenyl Congeners (EPA 1668A)							
PCB 1	2-MoCB	µg/Kg	1.82 EST	0.933 EST	0.190 EST	--	--
PCB 2	3-MoCB	µg/Kg	0.832 EST	0.589 EST	0.0428 EST	--	--
PCB 3	4-MoCB	µg/Kg	2.42	1.92 EST	0.154	--	--
PCB 4	2,2'-DiCB	µg/Kg	7.63 EST	5.13 EST	1.73	--	--
PCB 5	2,3-DiCB	µg/Kg	0.0243 U	0.0249 U	0.0229 U	--	--
PCB 6	2,3'-DiCB	µg/Kg	7.61 EST	6.95 EST	0.293	--	--
PCB 7	2,4-DiCB	µg/Kg	1.61 EST	1.48 EST	0.0632	--	--
PCB 8	2,4'-DiCB	µg/Kg	35.1 EST	31.8 EST	1.56	--	--
PCB 9	2,5-DiCB	µg/Kg	2.43	2.41	0.0996	--	--
PCB 10	2,6-DiCB	µg/Kg	0.389	0.182	0.131	--	--
PCB 11	3,3'-DiCB	µg/Kg	3.94	3.90	0.248	--	--
PCB 12/13	3,4-DiCB + 3,4'-DiCB	µg/Kg	2.01	2.20	0.134	--	--
PCB 14	3,5-DiCB	µg/Kg	3.21	0.0249 U	0.0229 U	--	--
PCB 15	4,4'-DiCB	µg/Kg	7.88	6.81	2.15	--	--
PCB 16	2,2',3-TriCB	µg/Kg	17.1	7.10	3.20	--	--
PCB 17	2,2',4-TriCB	µg/Kg	23.1	13.0	3.83	--	--
PCB 18/30	2,2',5-TriCB + 2,4,6-TriCB	µg/Kg	54.3	29.7	9.96	--	--
PCB 19	2,2',6-TriCB	µg/Kg	6.65	2.75	1.97	--	--
PCB 20/28	2,3,3'-TriCB + 2,4,4'-TriCB	µg/Kg	74.4	43.3	10.2	--	--
PCB 21/33	2,3,4-TriCB + 2',3,4-TriCB	µg/Kg	34.7	21.0	3.03	--	--
PCB 22	2,3,4'-TriCB	µg/Kg	22.6	12.9	2.55	--	--
PCB 23	2,3,5-TriCB	µg/Kg	0.0658	0.0378	0.0299 U	--	--
PCB 24	2,3,6-TriCB	µg/Kg	0.0243 U	0.379 EMPC	0.180	--	--
PCB 25	2,3',4-TriCB	µg/Kg	4.38	2.42	0.431	--	--
PCB 26/29	2,3',5-TriCB + 2,4,5-TriCB	µg/Kg	11.5	6.46	1.33	--	--
PCB 27	2,3',6-TriCB	µg/Kg	3.48	1.82	0.845	--	--
PCB 31	2,4',5-TriCB	µg/Kg	71.0	39.5	8.76	--	--
PCB 32	2,4',6-TriCB	µg/Kg	19.0	10.5	3.23	--	--
PCB 34	2',3,5-TriCB	µg/Kg	0.364	0.250	0.0532	--	--
PCB 35	3,3',4-TriCB	µg/Kg	0.836	0.527	0.0738	--	--
PCB 36	3,3',5-TriCB	µg/Kg	0.0639 EMPC	0.0249 U	0.0299 U	--	--
PCB 37	3,4,4'-TriCB	µg/Kg	17.0	10.6	2.54	--	--
PCB 38	3,4,5-TriCB	µg/Kg	0.103	0.0571	0.0229 U	--	--
PCB 39	3,4',5-TriCB	µg/Kg	0.526	0.305	0.0581	--	--
PCB 40/41/71	2,2',3,3'-TeCB + 2,2',3,4-TeCB + 2,3',4',6-TeCB	µg/Kg	45.1	27.5	9.69	--	--
PCB 42	2,2',3,4'-TeCB	µg/Kg	19.7	11.8	4.53	--	--
PCB 43/73	2,2',3,5'-TeCB	µg/Kg	8.84	6.76	0.273	--	--
PCB 44/47/65	2,2',3,5'-TeCB + 2,2',4,4'-TeCB + 2,3,5,6-TeCB	µg/Kg	81.5	48.0	17.1	--	--
PCB 45/51	2,2',3,6-TeCB + 2,2',4,6'-TeCB	µg/Kg	18.5	10.6	4.75	--	--
PCB 46	2,2',3,6'-TeCB	µg/Kg	6.14	3.60	1.67	--	--
PCB 48	2,2',4,5'-TeCB	µg/Kg	17.0	10.6	3.18	--	--
PCB 49/69	2,2',4,5'-TeCB + 2,3',4,6-TeCB	µg/Kg	45.2	26.1	9.54	--	--
PCB 50/53	2,2',4,6-TeCB + 2,2',5,6'-TeCB	µg/Kg	15.7	9.01	3.78	--	--
PCB 52	2,2',5,5'-TeCB	µg/Kg	107	62.6	21.1	--	--
PCB 54	2,2',6,6'-TeCB	µg/Kg	0.206	0.134 EST	0.0565	--	--
PCB 55	2,3,3',4-TeCB	µg/Kg	0.0487 U	1.14 EST	0.0459 U	--	--
PCB 56	2,3,3',4'-TeCB	µg/Kg	33.1	21.7 EST	5.70	--	--
PCB 57	2,3,3',5-TeCB	µg/Kg	0.146	0.152 EST	0.0615	--	--
PCB 58	2,3,3',5'-TeCB	µg/Kg	0.211 EMPC	0.197 EST	0.0459 U	--	--
PCB 59/62/75	2,3,3',6-TeCB + 2,3,4,6-TeCB + 2,4,4',6-TeCB	µg/Kg	6.61	4.06 EST	1.52	--	--
PCB 60	2,3,4,4'-TeCB	µg/Kg	15.7	10.1 EST	2.44	--	--
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	131	81.5 EST	20.1	--	--
PCB 63	2,3,4',5-TeCB	µg/Kg	2.68	1.72 EST	0.408	--	--
PCB 64	2,3,4',6-TeCB	µg/Kg	31.6	19.7 EST	6.92	--	--
PCB 66	2,3',4,4'-TeCB	µg/Kg	57.4	36.0 EST	11.0	--	--
PCB 67	2,3',4,5-TeCB	µg/Kg	1.79	1.11 EST	0.265	--	--
PCB 68	2,3',4,5'-TeCB	µg/Kg	0.210	0.136 EST	0.0459 U	--	--
PCB 72	2,3',5,5'-TeCB	µg/Kg	0.412	0.231 EST	0.0832	--	--
PCB 77	3,3',4,4'-TeCB	µg/Kg	6.25	4.18	1.10	--	0.052
PCB 78	3,3',4,5-TeCB	µg/Kg	0.0487 U	0.0499 U	0.0459 U	--	--
PCB 79	3,3',4,5'-TeCB	µg/Kg	0.614	0.316	0.0736	--	--
PCB 80	3,3',5,5'-TeCB	µg/Kg	0.0487 U	0.0499 U	0.0459 U	--	--
PCB 81	3,4,4',5-TeCB	µg/Kg	0.189 EMPC	0.165	0.0459 U	--	0.017
PCB 82	2,2',3,3',4-PeCB	µg/Kg	13.6	8.51	2.36	--	--
PCB 83	2,2',3,3',5-PeCB	µg/Kg	6.07	5.59	1.09	--	--
PCB 84	2,2',3,3',6-PeCB	µg/Kg	28.6	16.1	5.23	--	--
PCB 85/116/117	2,2',3,4,4'-PeCB + 2,3,4,5,6-PeCB + 2,3,4',5,6-PeCB	µg/Kg	17.1	10.3	2.80	--	--
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	68.4	40.7	10.7	--	--
PCB 88/91	2,2',3,4,6-PeCB + 2,2',3,4',6-PeCB	µg/Kg	15.0	8.46	2.60	--	--
PCB 89	2,2',3,4,6'-PeCB	µg/Kg	1.84	1.13	0.363	--	--
PCB 90/101/113	2,2',3,4',5-PeCB + 2,2',4,5,5'-PeCB + 2,3,3',5',6-PeCB	µg/Kg	92.8	54.0	14.2	--	--
PCB 92	2,2',3,5,5'-PeCB	µg/Kg	15.6	8.86	2.55	--	--
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	5.07	2.87	0.847	--	--
PCB 94	2,2',3,5,6'-PeCB	µg/Kg	0.650	0.351	0.118	--	--
PCB 95	2,2',3,5',6-PeCB	µg/Kg	78.0	42.5	13.6	--	--
PCB 96	2,2',3,6,6'-PeCB	µg/Kg	1.08	0.609	0.219	--	--
PCB 99	2,2',4,4',5-PeCB	µg/Kg	39.2	21.6	5.79	--	--
PCB 103	2,2',4,5',6-PeCB	µg/Kg	0.573	0.316	0.0980	--	--
PCB 104	2,2',4,6,6'-PeCB	µg/Kg	0.0487 U	0.0499 U	0.0459 U	--	--
PCB 105	2,3,3',4,4'-PeCB	µg/Kg	34.5	24.4	4.36	--	0.17
PCB 106	2,3,3',4,5-PeCB	µg/Kg	0.0487 U	0.0499 U	0.0459 U	--	--
PCB 107/124	2,3,3',4',5-PeCB + 2',3,4,5,5'-PeCB	µg/Kg	3.24	2.13	0.408	--	--
PCB 109	2,3,3',4,6-PeCB	µg/Kg	4.97	3.42	0.694	--	--
PCB 110/115	2,3,3',4',6-PeCB + 2,3,4,4',6-PeCB	µg/Kg	97.8	62.4	16.2	--	--
PCB 111	2,3,3',5,5'-PeCB	µg/Kg	0.0487 U	0.0499 U	0.0459 U	--	--
PCB 112	2,3,3',5,6-PeCB	µg/Kg	0.0487 U	0.0499 U	0.0459 U	--	--
PCB 114	2,3,4,4',5-PeCB	µg/Kg	1.90	1.53	0.276	--	0.17
PCB 118	2,3',4,4',5-PeCB	µg/Kg	79.1	45.7	9.36	--	0.12
PCB 120	2,3',4,5,5'-PeCB	µg/Kg	0.143	0.104	0.0459 U	--	--
PCB 121	2,3',4,5',6-PeCB	µg/Kg	0.0487 U	0.0499 U	0.0459 U	--	--
PCB 122	2',3,3',4,5-PeCB	µg/Kg	0.887	0.756	0.170	--	--
PCB 123	2',3,4,4',5-PeCB	µg/Kg	1.79	1.03	0.207	--	0.21
PCB 126	3,3',4,4',5-PeCB	µg/Kg	1.08	0.195	0.0459 U	--	0.00005
PCB 127	3,3',4,5,5'-PeCB	µg/Kg	0.306	0.193	0.0459 U	--	--
PCB 128/166	2,2',3,3',4,4'-HxCB + 2,3,4,4',5,6-HxCB	µg/Kg	13.7	9.06	1.65	--	--
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	98.0	67.0	11.7	--	--
PCB 130	2,2',3,3',4,5'-HxCB	µg/Kg	5.40	3.62	0.662	--	--
PCB 131	2,2',3,3',4,6-HxCB	µg/Kg	1.34	0.870	0.170	--	--
PCB 132	2,2',3,3',4,6'-HxCB	µg/Kg	32.8	21.3	4.27	--	--
PCB 133	2,2',3,3',5,5'-HxCB	µg/Kg	1.06	0.671	0.126	--	--
PCB 134/143	2,2',3,3',5,6-HxCB + 2,2',3,4,5,6'-HxCB	µg/Kg	4.79	2.98	0.592	--	--
PCB 135/151	2,2',3,3',5,6'-HxCB + 2,2',3,5,5',6-HxCB	µg/Kg	33.7	19.9	4.46	--	--
PCB 136	2,2',3,3',6,6'-HxCB	µg/Kg	12.6	7.23	1.79	--	--
PCB 137	2,2',3,4,4',5-HxCB	µg/Kg	6.05	2.94	0.459	--	--
PCB 139/140	2,2',3,4,4',6-HxCB + 2,2',3,4,4',6'-HxCB	µg/Kg	1.45	0.891	0.169	--	--
PCB 141	2,2',3,4,5,5'-HxCB	µg/Kg	19.0	12.1	2.30	--	--
PCB 142	2,2',3,4,5,6-HxCB	µg/Kg	0.0487 U	0.0499 U	0.0459 U	--	--
PCB 144	2,2',3,4,5',6-HxCB	µg/Kg	2.77	2.38	0.606	--	--
PCB 145	2,2',3,4,6,6'-HxCB	µg/Kg	0.0487 U	0.0499 U	0.0459 U	--	--
PCB 146	2,2',3,4',5,5'-HxCB	µg/Kg	11.7	7.80	1.33	--	--
PCB 147/149	2,2',3,4',5,6-HxCB + 2,2',3,4',5',6-HxCB	µg/Kg	69.2	44.3	9.28	--	--
PCB 148	2,2',3,4',5,6'-HxCB	µg/Kg	0.0508 EMPC	0.0499 U	0.0459 U	--	--
PCB 150	2,2',3,4',6,6'-HxCB	µg/Kg	0.0928	0.0499 U	0.0459 U	--	--
PCB 152	2,2',3,5,6,6'-HxCB	µg/Kg	0.0724 EMPC	0.0499 U	0.0459 U	--	--

Table A-2
Basin 18 East-Central Subbasin Fall 2009 Inline Solids Results - PCB Congeners

		Downstream -----> Upstream					
		Manhole AAX262 Downstream 36" Line FO 095976 10/6/09	Manhole AAX263 Upstream 36" Line FO 095975 10/6/09	Manhole AAX264 Upstream 30" Line FO 095974 10/6/09	JSCS ⁽²⁾ Screening Level Value		
IUPAC Number ⁽¹⁾	Chemical Name	Units			Toxicity	Bioaccumulation	
Polychlorinated Biphenyl Congeners (EPA 1668A)							
PCB 153/168	2,2',4,4',5,5'-HxCB + 2,3',4,4',5',6-HxCB	µg/Kg	75.2	50.2	8.72	--	--
PCB 154	2,2',4,4',5,6'-HxCB	µg/Kg	0.677	0.408	0.0734	--	--
PCB 155	2,2',4,4',6,6'-HxCB	µg/Kg	0.0487 U	0.0499 U	0.0459 U	--	--
PCB 156/157	2,3,3',4,4',5-HxCB + 2,3,3',4,4',5'-HxCB	µg/Kg	10.5	7.32	1.17	--	--
PCB 158	2,3,3',4,4',6-HxCB	µg/Kg	9.02	6.19	1.10	--	--
PCB 159	2,3,3',4,5,5'-HxCB	µg/Kg	0.0844	0.717	0.0965	--	--
PCB 160	2,3,3',4,5,6-HxCB	µg/Kg	0.0487 U	0.0499 U	0.0459 U	--	--
PCB 161	2,3,3',4,5',6-HxCB	µg/Kg	0.0487 U	0.0499 U	0.0459 U	--	--
PCB 162	2,3,3',4',5,5'-HxCB	µg/Kg	0.841	0.581	0.0859	--	--
PCB 164	2,3,3',4',5',6-HxCB	µg/Kg	5.10	3.96	0.781	--	--
PCB 165	2,3,3',5,5',6-HxCB	µg/Kg	0.0487 U	0.0499 U	0.0459 U	--	--
PCB 167	2,3',4,4',5,5'-HxCB	µg/Kg	3.42	2.28	0.380	--	0.21
PCB 169	3,3',4,4',5,5'-HxCB	µg/Kg	0.140	0.0621	0.0459 U	--	0.00021
PCB 170	2,2',3,3',4,4',5-HpCB	µg/Kg	19.8	14.2	2.36	--	--
PCB 171/173	2,2',3,3',4,4',6-HpCB + 2,2',3,3',4,5,6-HpCB	µg/Kg	6.19	4.61	0.774	--	--
PCB 172	2,2',3,3',4,5,5'-HpCB	µg/Kg	3.65	2.62	0.425	--	--
PCB 174	2,2',3,3',4,5,6'-HpCB	µg/Kg	21.5	15.3	2.78	--	--
PCB 175	2,2',3,3',4,5',6-HpCB	µg/Kg	1.05	0.689	0.122	--	--
PCB 176	2,2',3,3',4,6,6'-HpCB	µg/Kg	3.08	2.07	0.384	--	--
PCB 177	2,2',3,3',4',5,6-HpCB	µg/Kg	11.9	8.54	1.50	--	--
PCB 178	2,2',3,3',5,5',6-HpCB	µg/Kg	4.45	3.07	0.537	--	--
PCB 179	2,2',3,3',5,6,6'-HpCB	µg/Kg	9.42	6.37	1.19	--	--
PCB 180/193	2,2',3,4,4',5,5'-HpCB + 2,3,3',4',5,5',6-HpCB	µg/Kg	46.3	32.9	5.33	--	--
PCB 181	2,2',3,4,4',5,6-HpCB	µg/Kg	0.151	0.114	0.0459 U	--	--
PCB 182	2,2',3,4,4',5,6'-HpCB	µg/Kg	0.0487 U	0.0770 EMPC	0.0459 U	--	--
PCB 183/185	2,2',3,4,4',5',6-HpCB + 2,2',3,4,5,5',6-HpCB	µg/Kg	15.8	11.3	1.82	--	--
PCB 184	2,2',3,4,4',6,6'-HpCB	µg/Kg	0.0487 U	0.0499 U	0.0459 U	--	--
PCB 186	2,2',3,4,5,6,6'-HpCB	µg/Kg	0.0487 U	0.0499 U	0.0459 U	--	--
PCB 187	2,2',3,4',5,5',6-HpCB	µg/Kg	27.7	19.1	3.38	--	--
PCB 188	2,2',3,4',5,6,6'-HpCB	µg/Kg	0.0487 U	0.0499 U	0.0459 U	--	--
PCB 189	2,3,3',4,4',5,5'-HpCB	µg/Kg	0.798	0.595	0.0959	--	1.2
PCB 190	2,3,3',4,4',5,6-HpCB	µg/Kg	3.64	2.76	0.491	--	--
PCB 191	2,3,3',4,4',5',6-HpCB	µg/Kg	0.844	0.590	0.103	--	--
PCB 192	2,3,3',4,5,5',6-HpCB	µg/Kg	0.0487 U	0.0499 U	0.0459 U	--	--
PCB 194	2,2',3,3',4,4',5,5'-OcCB	µg/Kg	10.1	6.80	1.02	--	--
PCB 195	2,2',3,3',4,4',5,6-OcCB	µg/Kg	3.77	2.57	0.414	--	--
PCB 196	2,2',3,3',4,4',5,6'-OcCB	µg/Kg	5.61	3.89	0.608	--	--
PCB 197/200	2,2',3,3',4,4',6,6'-OcCB + 2,2',3,3',4,5,6,6'-OcCB	µg/Kg	1.87	1.27	0.207	--	--
PCB 198/199	2,2',3,3',4,5,5',6-OcCB + 2,2',3,3',4,5,5',6'-OcCB	µg/Kg	12.1	8.46	1.33	--	--
PCB 201	2,2',3,3',4,5',6,6'-OcCB	µg/Kg	1.54	1.04	0.167	--	--
PCB 202	2,2',3,3',5,5',6,6'-OcCB	µg/Kg	2.23	1.54	0.223	--	--
PCB 203	2,2',3,4,4',5,5',6-OcCB	µg/Kg	7.04	5.06	0.772	--	--
PCB 204	2,2',3,4,4',5,6,6'-OcCB	µg/Kg	0.0730 U	0.0748 U	0.0688 U	--	--
PCB 205	2,3,3',4,4',5,5',6-OcCB	µg/Kg	0.568	0.389	0.0688 U	--	--
PCB 206	2,2',3,3',4,4',5,5',6-NoCB	µg/Kg	4.12	2.65	0.414	--	--
PCB 207	2,2',3,3',4,4',5,6,6'-NoCB	µg/Kg	0.500	0.359	0.0688 U	--	--
PCB 208	2,2',3,3',4,5,5',6,6'-NoCB	µg/Kg	1.03	0.833	0.109	--	--
PCB 209	Decachlorobiphenyl	µg/Kg	1.61	1.01	0.132	--	--
	Total Monochlorobiphenyls	µg/Kg	5.07 ⁽³⁾	3.44 ⁽³⁾	0.387 ⁽³⁾	--	--
	Total Dichlorobiphenyls	µg/Kg	71.8 ⁽³⁾	60.9 ⁽³⁾	6.41	--	--
	Total Trichlorobiphenyls	µg/Kg	361	202	52.2	--	--
	Total Tetrachlorobiphenyls	µg/Kg	652	399 ⁽³⁾	125	--	--
	Total Pentachlorobiphenyls	µg/Kg	609	364	94.2	--	--
	Total Hexachlorobiphenyls	µg/Kg	419	275	52.0	--	--
	Total Heptachlorobiphenyls	µg/Kg	176	125	21.3	--	--
	Total Octachlorobiphenyls	µg/Kg	44.8	31.0	4.74	--	--
	Total Nonachlorobiphenyls	µg/Kg	5.65	3.84	0.523	--	--
	Total Decachlorobiphenyls	µg/Kg	1.61	1.01	0.132	--	--
	Total PCBs	µg/Kg	2350 ⁽³⁾	1460 ⁽³⁾	357 ⁽³⁾	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.

EMPC = Estimated maximum possible concentration.

EST = Congener value is estimated due to matrix interference or an internal standard recovery outside of method control limits

-- No JSCS screening level available.


ug/Kg = Micrograms per kilogram.

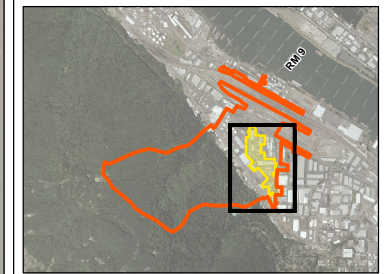
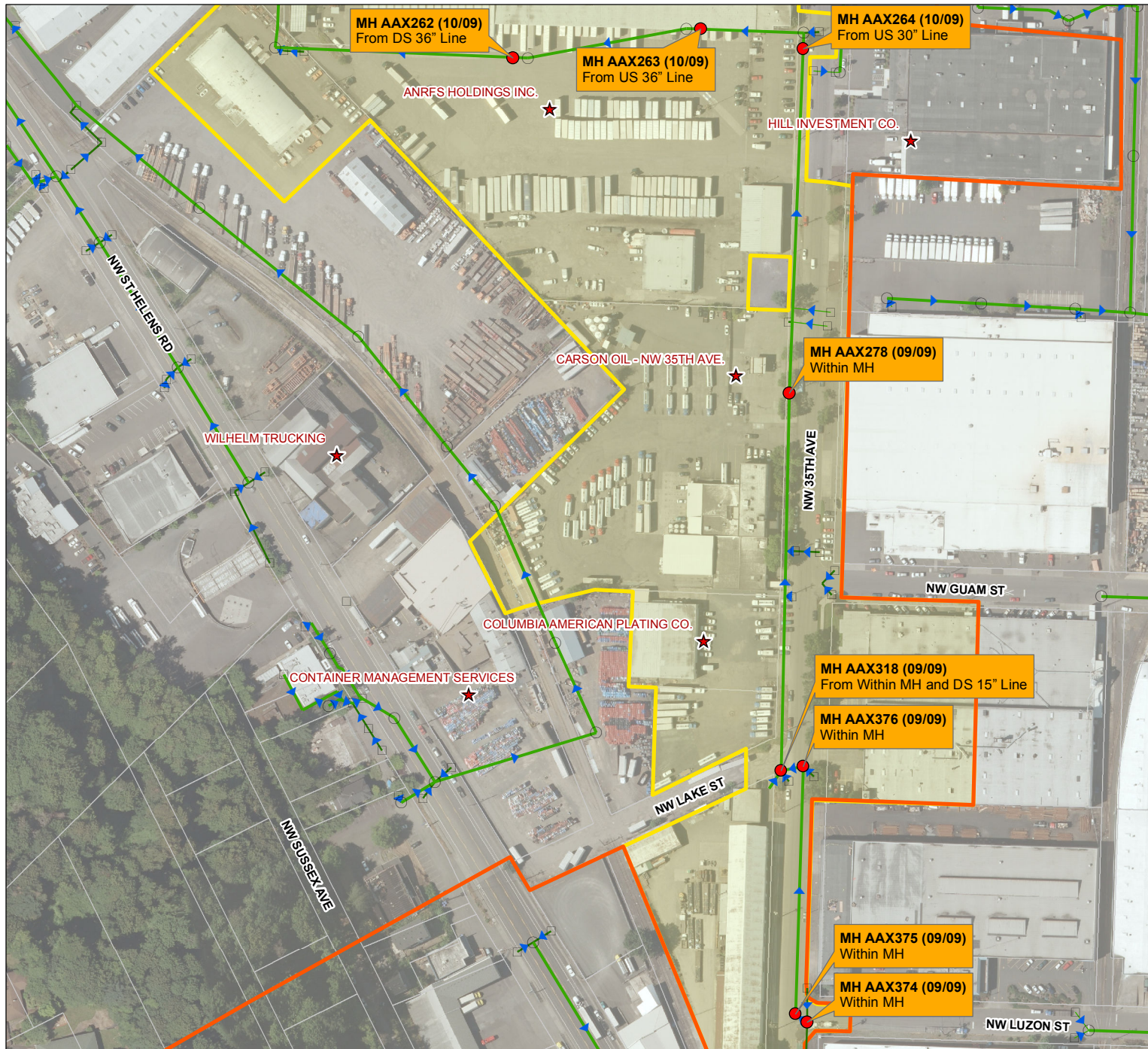
⁽¹⁾IUPAC = International Union of Pure and Applied Chemistry

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

⁽³⁾Total homolog and total congener values are considered biased slightly high for samples FO095974 and FO095976. Total homolog and total congener values are considered biased high for sample FO095975 based on internal standard recoveries outside of method control limits.

bold = concentration exceeds JSCS Bioaccumulation Screening Level Value

 = concentration exceeds JSCS Toxicity Screening Level Value



LEGEND

- Sample Location
- Outfall Basin 18
- East-Central Subbasin
- Sample Types**
- Inline Solids Sample
- All Other Features**
- Storm Line
- Manhole (MH)
- Catch Basin (CB)
- ★ DEQ ECSI Site
- Tax Lot

NOTES:

DS = Downstream
US = Upstream



0 55 110 165 220
Feet

FIGURE A-1

Basin 18 East-Central Subbasin Fall 2009 Inline Solids Sampling Locations

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:
May 9, 2012
005_SCR/IOF_Basin_18\
OF18_EastSubbasin_

Report
Source:
City of Portland BES,
Aerial Photo 2010

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

Attachment A-1

Field Photographs

September 2009 Inline Solids Sampling



Photo 1 (September 2, 2009). Sampling setup at Manhole AAX374, at the intersection of NW 35th Avenue and NW Luzon Street.



Photo 2 (September 2, 2009). Solids at the bottom of Manhole AAX374, after sampling.



Photo 3 (September 2, 2009). Final homogenized solids sample from manhole AAX374.



Photo 4 (September 2, 2009). Sampling setup at Manhole AAX375, at the intersection of NW 35th Avenue and NW Luzon Street.



Photo 5 (September 2, 2009). Solids accumulated along west side of Manhole AAX375.



Photo 6 (September 2, 2009). Final homogenized solids sample from Manhole AAX375.



Photo 7 (September 2, 2009). Sampling setup at Manhole AAX318, at the southwest corner of NW Lake Street and NW 35th Avenue.



Photo 8 (September 2, 2009). Solids at the bottom of Manhole AAX318.

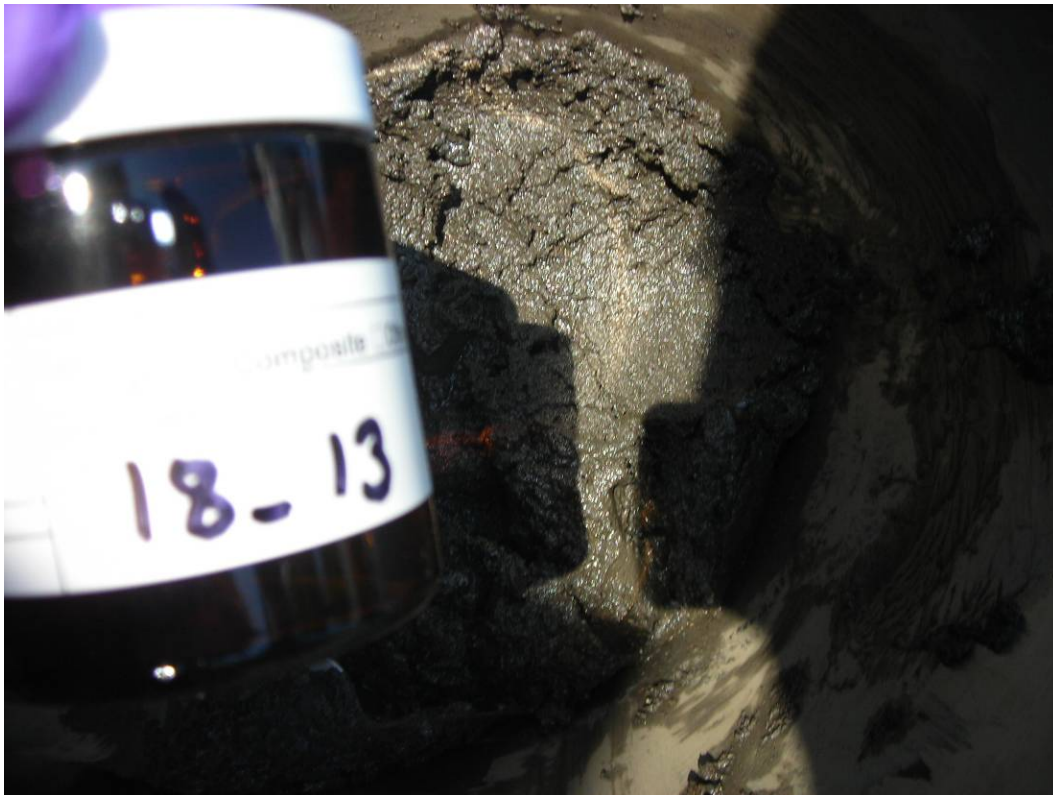


Photo 9 (September 2, 2009). Final homogenized solids sample from Manhole AAX318.



Photo 10 (September 2, 2009). Sampling setup at Manhole AAX376, in NW 35th Avenue at the intersection with NW Lake Street.



Photo 11 (September 2, 2009). Solids at the bottom of Manhole AAX376.



Photo 12 (September 2, 2009). Final homogenized solids sample from Manhole AAX376.



Photo 13 (September 2, 2009). Sampling setup at Manhole AAX278, in parking strip along the west side of NW 35th Avenue.



Photo 14 (September 2, 2009). Solids and standing water in Manhole AAX278.



Photo 15 (September 2, 2009). Homogenized solids sample from Manhole AAX278.

October 2009 Inline Solids Sampling

Note: Photos taken during the October 6, 2009, sampling activities were lost due to camera damage.

Attachment A-2

Field Notes



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



Date: 9/2/09
Page: 1 of 1
Collected By: PTB, MJS, WCE

Project Name: PORTLAND HARBOR INLINE SAMP

File Number: 1020.001

Matrix: SEDIMENT + DI

WATER

OUTFALL 18

Requested Analyses

Field Comments

WPCL Sample I.D.

Location

Point Sample
Code Date Time Sample Type

PCB Aroclors - LL

Organics

General

Metals

Total Solds

TOC

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

FO095880

FO095881

FO095882

FO095883

FO095884

FO095885

IL-18-AXX374-0909
NW 35th & LUZON

IL-18-AXX375-0909
NW 35th & LUZON

IL-18-AXX318-0909
NW 35th & LAKE

IL-18-AXX376-0909
NW 35th & LAKE

IL-18-AXX278-0909
3125 NW 35th AVE

FIELD DECON BLANK

18_11

9/2/09

0906

C

18_12

9/2/09

0939

C

18_13

9/2/09

1035

C

18_14

9/2/09

1107

C

18_15

9/2/09

1144

C

FDB

9/2/09

1124

G

•

•

•

•

•

•

•

Total Solds

TOC

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

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•

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~~PTB~~
9/2/09

WATER SAMPLE

Relinquished By: 1.

Signature: [Signature] Time: 1340

Printed Name: Peter Bryant Date: 9/2/09

Received By: 1.

Signature: [Signature] Time: [Blank]

Printed Name: [Blank] Date: [Blank]

Relinquished By: 2.

Signature: [Blank] Time: [Blank]

Printed Name: [Blank] Date: [Blank]

Received By: 2.

Signature: [Blank] Time: [Blank]

Printed Name: [Blank] Date: [Blank]

Relinquished By: 3.

Signature: [Blank] Time: [Blank]

Printed Name: [Blank] Date: [Blank]

Received By: 3.

Signature: [Blank] Time: [Blank]

Printed Name: [Blank] Date: [Blank]

Relinquished By: 4.

Signature: [Blank] Time: [Blank]

Printed Name: [Blank] Date: [Blank]

Received By: 4.

Signature: [Blank] Time: [Blank]

Printed Name: [Blank] Date: [Blank]



Page 1 of 1

Project Portland Harbor Inline Samp

Project No. 1020.001

Location Basin 18

Date 9/2/09

Subject Sampling Activities

By PTB, WCR, MSS

0836 Arrive at NW 35th + Luzon. Set up for AAX374.
Sediment visible in MH invert. Will collect sample.

0906 Sample collected and given point code 18-11.

0919 Set up for AAX375. Sediment visible.

0929 Sample collected and given point code 18-12.

1003 Arrive at NW Lake and NW 35th. Set up for AAX318.

1035 Sample collected and given point code 18-13.

1045 Set up for AAX376. Sediment & standing water visible

1107 Sample collected and given point code 18-14.

1124 Arrive at AAX278. Performed Field Decon Blank.

FO095885

1132 Set up for AAX278. Standing water present

1144 Sample collected and given point code 18-15.

1200 Finished packing up. Headed back to WPCL

Attachments



CITY OF PORTLAND
ENVIRONMENTAL SERVICES

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



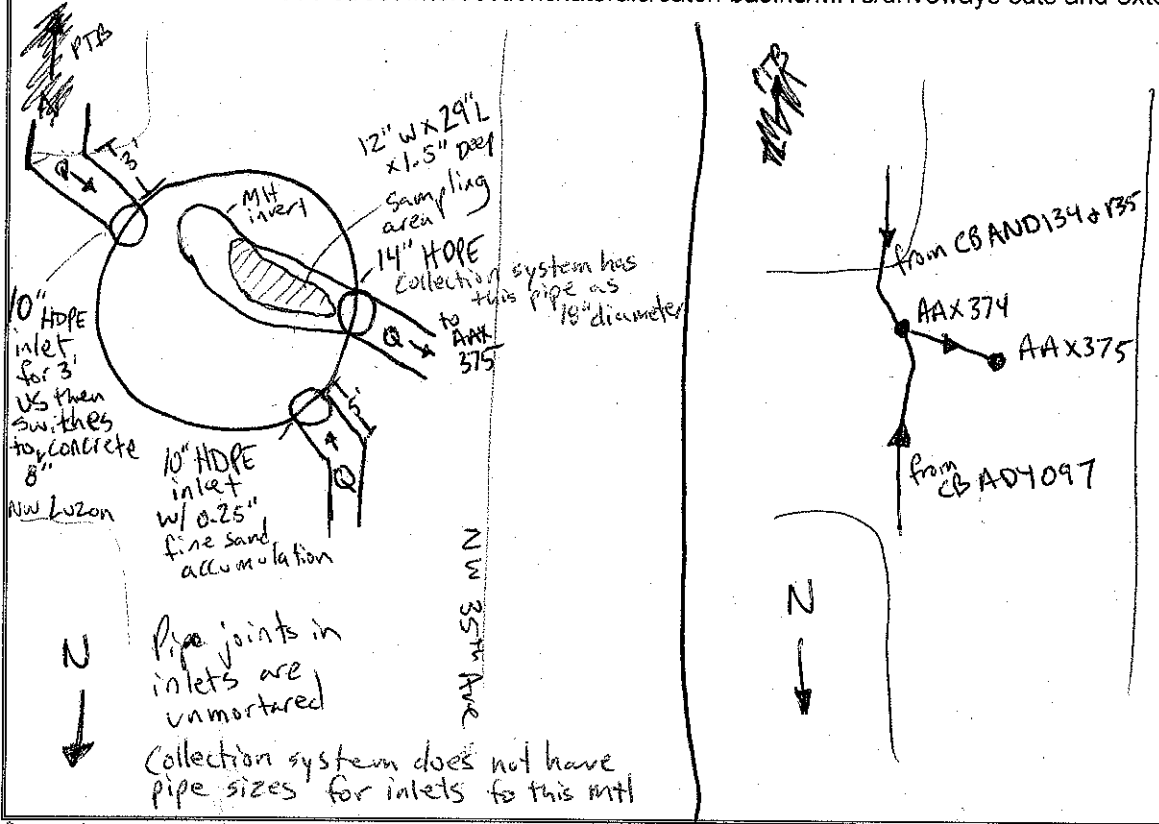
INLINE SEDIMENT SAMPLING FIELD DATA SHEET

Project Name: <u>Portland Harbor Inline Samp</u>		Project Number: <u>1020.001</u>	
Sampling Team: <u>PTB, WCR</u>	Date: <u>9/2/09</u>	Arrival Time: <u>0836</u>	Current Weather Conditions/Last Rain: <u>partly cloudy, light rain ~ 1 week ago</u>
Basin: <u>18</u>	Node: <u>AAX374</u>	Subbasin: <u>NA</u>	
Sampling Location Description/Address: <u>NW 35th & Luzon</u>			

SECTION 1 - PRE-SAMPLING VISUAL OBSERVATION REPORT

Describe any flowing or standing water observed in the line?	<u>None, the MH chamber is completely dry.</u>
Does river appear to back up to this location? Describe rate/color/odor of flow:	<u>No, the river does not appear to back up to this location.</u>
Are sediments observed in the line?	<u>Yes, sediments are visible.</u>
Are sample-able quantities of sediments present in the line?	<u>Yes, they appear sample-able.</u>
Describe lateral extent of sample-able sediments present in the line:	<u>12" wide by 29" long area of fine sands with small gravels interspersed. 1.5" deep accumulation.</u>

SITE DIAGRAM: Include street intersections/laterals/catch basins/MH's/driveways cuts and extent of solids accumulation.



PTB 9/2/09

18-11

Date: 9/2/09		SECTION 2 - SAMPLE COLLECTION REPORT		Node: AAX 374	
Sampling Equipment:		<input checked="" type="checkbox"/> Stainless steel spoon & stainless steel bucket <input type="checkbox"/> Other (Describe)			
Equipment Decontamination process:		<input checked="" type="checkbox"/> Per SOP7.01a <input type="checkbox"/> Other (Describe)			
Sample date: 9/2/09	Sample time: 0906	Sample Identification: (IL-XX-NNNNNN-mmyy) ^{Point code} 18-11 IL-18-AAX374-0909			
Sample location description: (number of feet from node of entry) Sample collected from MH chamber invert.					
Sample collection technique:		Stainless steel spoon used to scoop sediment out from representative areas along entire accumulation.			
Describe Color of sample:		Dark grey w/ flecks of other colors.			
Describe Texture/Particle size:		95% fine sands, 5% small gravels			
Describe visual or olfactory evidence of contamination in bulk sediment sample (odor, sheen, discoloration, etc.):			No visual or olfactory evidence of contamination.		
Describe depth of solids in area where sample collected:			Sediment was up to 1.5" deep in the sample collection area.		
Describe amount and type of debris in sample:			No debris observed.		
Amount and type of debris removed from final sample:			None.		
Compositing notes: Sample collected along entire accumulation. Homogenized in bucket with sample collection spoon.					
Sample Jars Collected (number, size, full or partial)? 3 full 4oz. jars					
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: FO095880		Duplicate sample collected? Y <input checked="" type="checkbox"/> Dupe ID			
Duplicate sample identification # on COC:					
Any deviations from standard procedures: None					

SECTION 3 - PHOTOGRAPH LOG

Overview of node showing drainage area	#3
Plan view of sediments inline	#2
Homogenized sample (sediment in bowl)	Composited sample in collection jar #1
Other?	



CITY OF PORTLAND ENVIRONMENTAL SERVICES

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



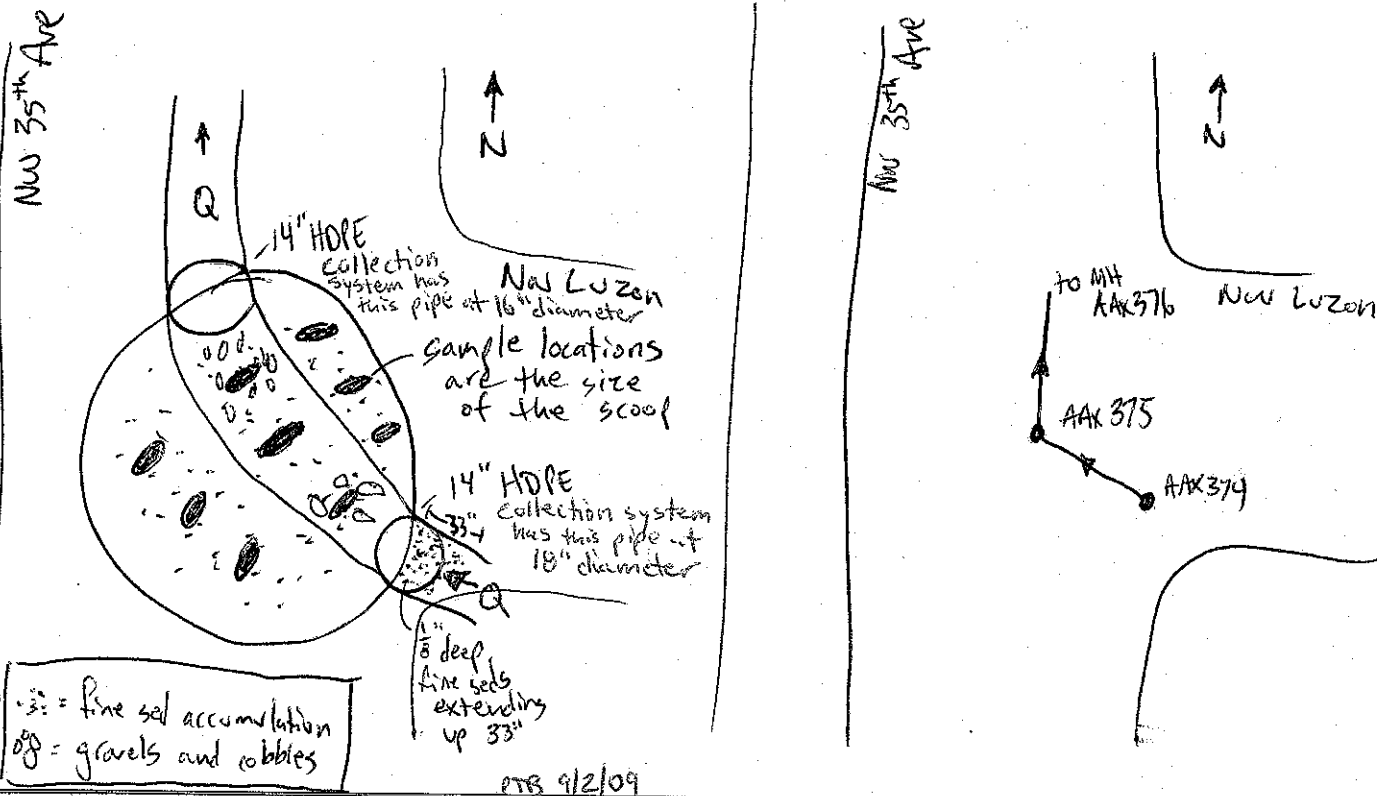
INLINE SEDIMENT SAMPLING FIELD DATA SHEET

Project Name: <u>Portland Harbor Inline Sample</u>		Project Number: <u>1020.001</u>	
Sampling Team: <u>PTB, WCR, MSS</u>	Date: <u>9/2/09</u>	Arrival Time: <u>0919</u>	Current Weather Conditions/Last Rain: <u>Mostly sunny / light rain ~ 1 week ago</u>
Basin: <u>18</u>	Node: <u>AAK375</u>		Subbasin: <u>NA</u>
Sampling Location Description/Address: <u>NW 35th and Luzon</u>			

SECTION 1 - PRE-SAMPLING VISUAL OBSERVATION REPORT

Describe any flowing or standing water observed in the line?	<u>None, the Mft chamber is dry</u>
Does river appear to back up to this location? Describe rate/color/odor of flow:	<u>No, the river does not appear to back up to here.</u>
Are sediments observed in the line?	<u>Yes, sediments are present</u>
Are sample-able quantities of sediments present in the line?	<u>Yes, sediments are sampleable</u>
Describe lateral extent of sample-able sediments present in the line:	<u>Sample-able sediments extend across entire mft floor 48" in diameter, and 2.8" max depth.</u>

SITE DIAGRAM: Include street intersections/laterals/catch basins/MH's/driveways cuts and extent of solids accumulation.



18-12

Date: 9/2/09		SECTION 2 - SAMPLE COLLECTION REPORT		Node: AAX 375	
Sampling Equipment:		<input checked="" type="checkbox"/> Stainless steel spoon & stainless steel bucket <input type="checkbox"/> Other (Describe)			
Equipment Decontamination process:		<input checked="" type="checkbox"/> Per SOP7.01a <input type="checkbox"/> Other (Describe)			
Sample date: 9/2/09	Sample time: 0939	Sample Identification: (IL-XX-NNNNNN-mmyy) IL-18-AAX375-0909		Point Code 18-12	
Sample location description: (number of feet from node of entry) Sample location includes MH invert and floor of MH chamber.					
Sample collection technique:		3 scoops taken from each side of MH invert from MH floor as well as from MH invert. Each scoop was the size of the scoop used.			
Describe Color of sample:		Dark brown with white flecks. Sample is somewhat damp.			
Describe Texture/Particle size:		90% fine sands, 5% silt & fines, 5% small gravels, <1% debris			
Describe visual or olfactory evidence of contamination in bulk sediment sample (odor, sheen, discoloration, etc.):		No visual or olfactory evidence of contamination.			
Describe depth of solids in area where sample collected:		Sediment depth was up to 2.8" deep at its deepest point.			
Describe amount and type of debris in sample:		<1% plastics.			
Amount and type of debris removed from final sample:		None removed from composite. Scoops were selected to exclude large gravels and cobbles.			
Compositing notes: Sample was homogenized in bucket using sample collection scoop.					
Sample Jars Collected (number, size, full or partial)? 3 full 4 oz. jars.					
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 FO095881		Duplicate sample collected? <input checked="" type="checkbox"/> Dupe ID			
Duplicate sample identification # on COC:					
Any deviations from standard procedures: None.					

SECTION 3 - PHOTOGRAPH LOG

Overview of node showing drainage area	1266.jpg
Plan view of sediments inline	1269
Homogenized sample (sediment in bowl)	1271
Other?	

18-13



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Portland, OR 97203-5452



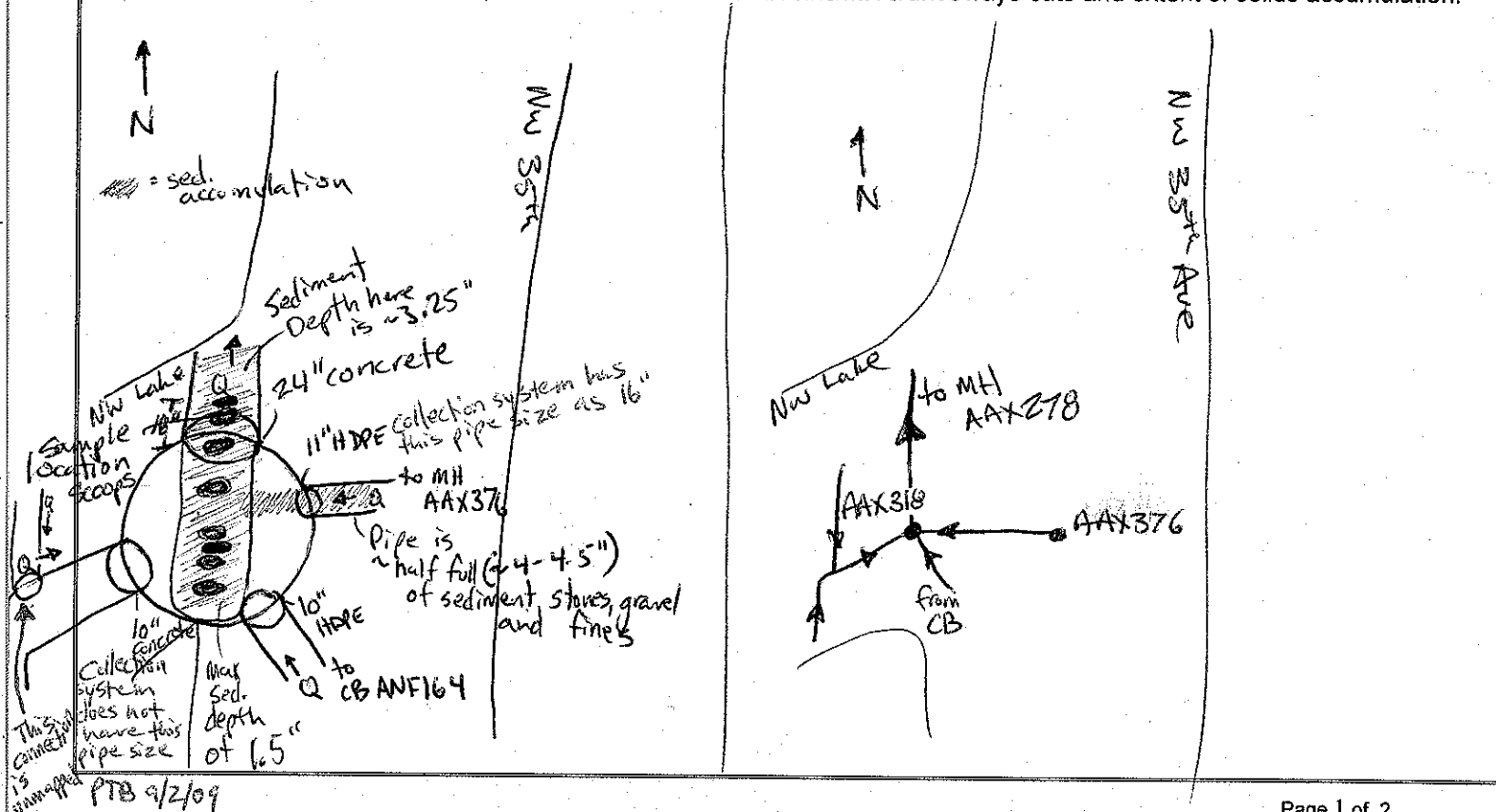
INLINE SEDIMENT SAMPLING FIELD DATA SHEET

Project Name: <u>Portland Harbor Inline Samp</u>		Project Number: <u>1020.001</u>	
Sampling Team: <u>PTB, WCR</u>	Date: <u>9/2/09</u>	Arrival Time: <u>1003</u>	Current Weather Conditions/Last Rain: <u>Mostly sunny / light rain ~ 1 week ago</u>
Basin: <u>18</u>	Node: <u>AAX318</u>		Subbasin: <u>NA</u>
Sampling Location Description/Address: <u>NW 35th & Lake</u>			

SECTION 1 - PRE-SAMPLING VISUAL OBSERVATION REPORT

Describe any flowing or standing water observed in the line?	<u>No flowing or standing water.</u>
Does river appear to back up to this location? Describe rate/color/odor of flow:	<u>No, river does not back up to this location.</u>
Are sediments observed in the line?	<u>Yes, sediments are present.</u>
Are sample-able quantities of sediments present in the line?	<u>Yes, sample-able quantities are present</u>
Describe lateral extent of sample-able sediments present in the line:	<u>Sediment is present in MH invert, in main outlet and in inlet from the east. Sediment is present as far as can be seen up and ds. Sediment depth is 1.5" to 3.25".</u>

SITE DIAGRAM: Include street intersections/laterals/catch basins/MH's/driveways cuts and extent of solids accumulation.



18-13

Date: 9/2/09		SECTION 2 - SAMPLE COLLECTION REPORT		Node: AAX 318	
Sampling Equipment:		<input checked="" type="checkbox"/> Stainless steel spoon & stainless steel bucket <input type="checkbox"/> Other (Describe)			
Equipment Decontamination process:		<input checked="" type="checkbox"/> Per SOP7.01a <input type="checkbox"/> Other (Describe)			
Sample date: 9/2/09	Sample time: 1035	Sample Identification: (IL-XX-NNNNNN-mmyy) IL-18-AAX318-0909		Paint Code 18-13	
Sample location description: (number of feet from node of entry) 8 scoops were taken in total. 4 us of main inlet from E and 4 ds of inlet to 18" ds of EOP in MH chamber					
Sample collection technique:		8 scoops spaced at regular intervals from S side of MH chamber down to 18" into the outlet pipe			
Describe Color of sample:		Dark greyish brown (sediment is wetted)			
Describe Texture/Particle size:		90% fines, 8% fine sands, 2% particulate organics.			
Describe visual or olfactory evidence of contamination in bulk sediment sample (odor, sheen, discoloration, etc.):		Smells oily from petroleum products. Upper layer is 3/8" thick brown w/ rusty coloring. Lower layer was silvery/sheen in appearance			
Describe depth of solids in area where sample collected:		Sediment was 1.5"-3.25" in depth in the sample collection area.			
Describe amount and type of debris in sample:		No debris observed.			
Amount and type of debris removed from final sample:		No debris removed.			
Compositing notes: Homogenized using sample collection spoon and jars filled with fresh stainless steel spoon.					
Sample Jars Collected (number, size, full or partial)? 3 full 4oz jars					
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 FO095882		Duplicate sample collected? Y/N <input checked="" type="radio"/> Dupe ID			
Duplicate sample identification # on COC:					
Any deviations from standard procedures: None					

SECTION 3 - PHOTOGRAPH LOG

Overview of node showing drainage area	1275
Plan view of sediments inline	1272 + 1273
Homogenized sample (sediment in bowl)	1274
Other?	



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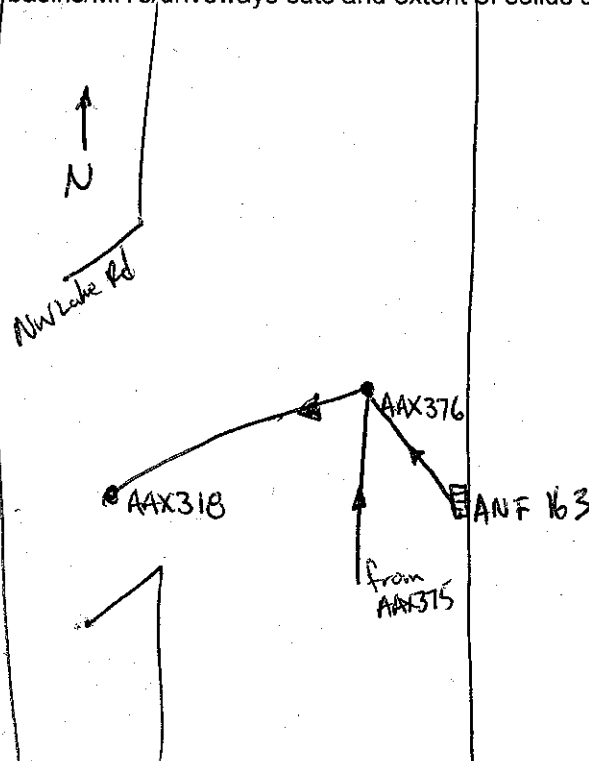
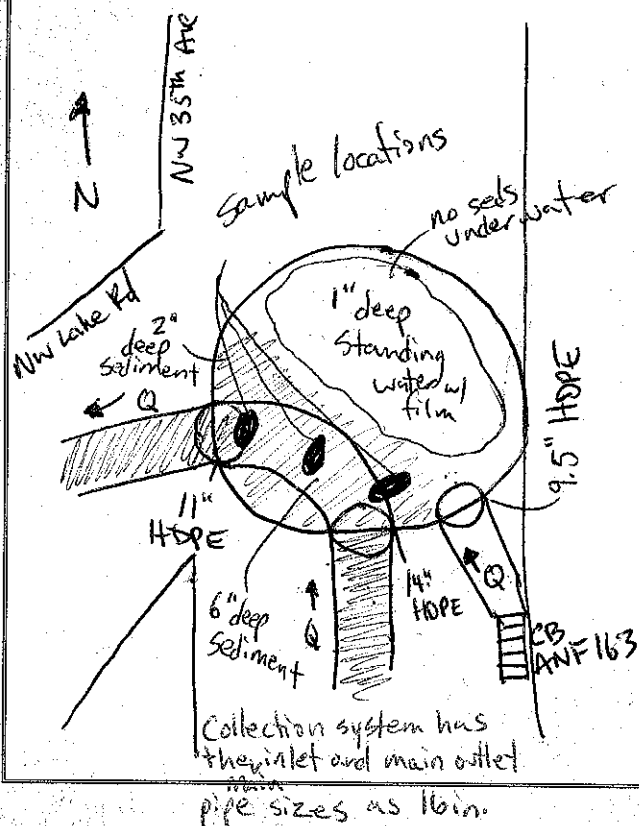
INLINE SEDIMENT SAMPLING FIELD DATA SHEET

Project Name: <i>Portland Harbor Inline Samp</i>		Project Number: <i>1020.001</i>	
Sampling Team: <i>PTB, WS, WCR</i>	Date: <i>9/2/09</i>	Arrival Time: <i>1045</i>	Current Weather Conditions/Last Rain: <i>Mostly Sunny / light rain ~ 1 week ago</i>
Basin: <i>18</i>	Node: <i>AAX376</i>		Subbasin: <i>NA</i>
Sampling Location Description/Address: <i>NW 35th & Lake</i>			

SECTION 1 - PRE-SAMPLING VISUAL OBSERVATION REPORT

Describe any flowing or standing water observed in the line?	<i>Standing water is present, with film ^{PTB} on surface. in MH chamber but not in main invert.</i>
Does river appear to back up to this location? Describe rate/color/odor of flow:	<i>No, river does not appear to back up to this location.</i>
Are sediments observed in the line?	<i>Yes, sediments are present. It appears water backed up into this MH and sediments settled out in an even distribution upstream and downstream of MH chamber. PTB 9/2/09</i>
Are sample-able quantities of sediments present in the line?	<i>Yes, sediments are sample-able.</i>
Describe lateral extent of sample-able sediments present in the line:	<i>Sample-able sediments are present in main inlet 6" deep as far as can be seen, in the MH Chamber 2-6" deep & in main outlet 6" deep as far as can be seen.</i>

SITE DIAGRAM: Include street intersections/laterals/catch basins/MH's/driveways cuts and extent of solids accumulation.



18-14 #18-15 PTB

Date: 9/2/09		SECTION 2 - SAMPLE COLLECTION REPORT		Node: AAX376	
Sampling Equipment:		<input checked="" type="checkbox"/> Stainless steel spoon & stainless steel bucket <input type="checkbox"/> Other (Describe)			
Equipment Decontamination process:		<input checked="" type="checkbox"/> Per SOP7.01a <input type="checkbox"/> Other (Describe)			
Sample date: 9/2/09	Sample time: 1107	Sample Identification: (IL-XX-NNNNNN-mmyy) 1L-18-AAX376-0909		Point Code 18-14	
Sample location description: (number of feet from node of entry) 3 scoops from w/in MH chamber at EOP of inlet & outlet and in middle of invert.					
Sample collection technique:		Stainless steel scoops taken from 3 representative locations w/in MH chamber.			
Describe Color of sample:		Very dark brown (wetted)			
Describe Texture/Particle size:		100% fines			
Describe visual or olfactory evidence of contamination in bulk sediment sample (odor, sheen, discoloration, etc.):		Strong hydrocarbon odor with visible sheen on sediment.			
Describe depth of solids in area where sample collected:		Sediment depth in collection areas were 4-6" deep.			
Describe amount and type of debris in sample:		No debris in sample.			
Amount and type of debris removed from final sample:		No debris removed.			
Compositing notes: Sample homogenized in bucket with sample collection scoop and added to jars with a fresh decontaminated stainless steel spoon.					
Sample Jars Collected (number, size, full or partial)? 3 full 4 oz. jars					
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). FO095883					
Lab ID		Duplicate sample collected? <input checked="" type="checkbox"/> Dupe ID			
Duplicate sample identification # on COC:					
Any deviations from standard procedures: None					

SECTION 3 - PHOTOGRAPH LOG

Overview of node showing drainage area	1276
Plan view of sediments inline	1278
Homogenized sample (sediment in bowl)	1279
Other?	



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INLINE SEDIMENT SAMPLING FIELD DATA SHEET

Project Name: <u>Portland Harbor Inline Samp</u>		Project Number: <u>1020.001</u>	
Sampling Team: <u>PTB, MSS, WCR</u>	Date: <u>9/2/09</u>	Arrival Time: <u>1132</u>	Current Weather Conditions/Last Rain: <u>Sunny / light rain w/ week go</u>
Basin: <u>18</u>	Node: <u>AAX278</u>	Subbasin: <u>NA</u>	

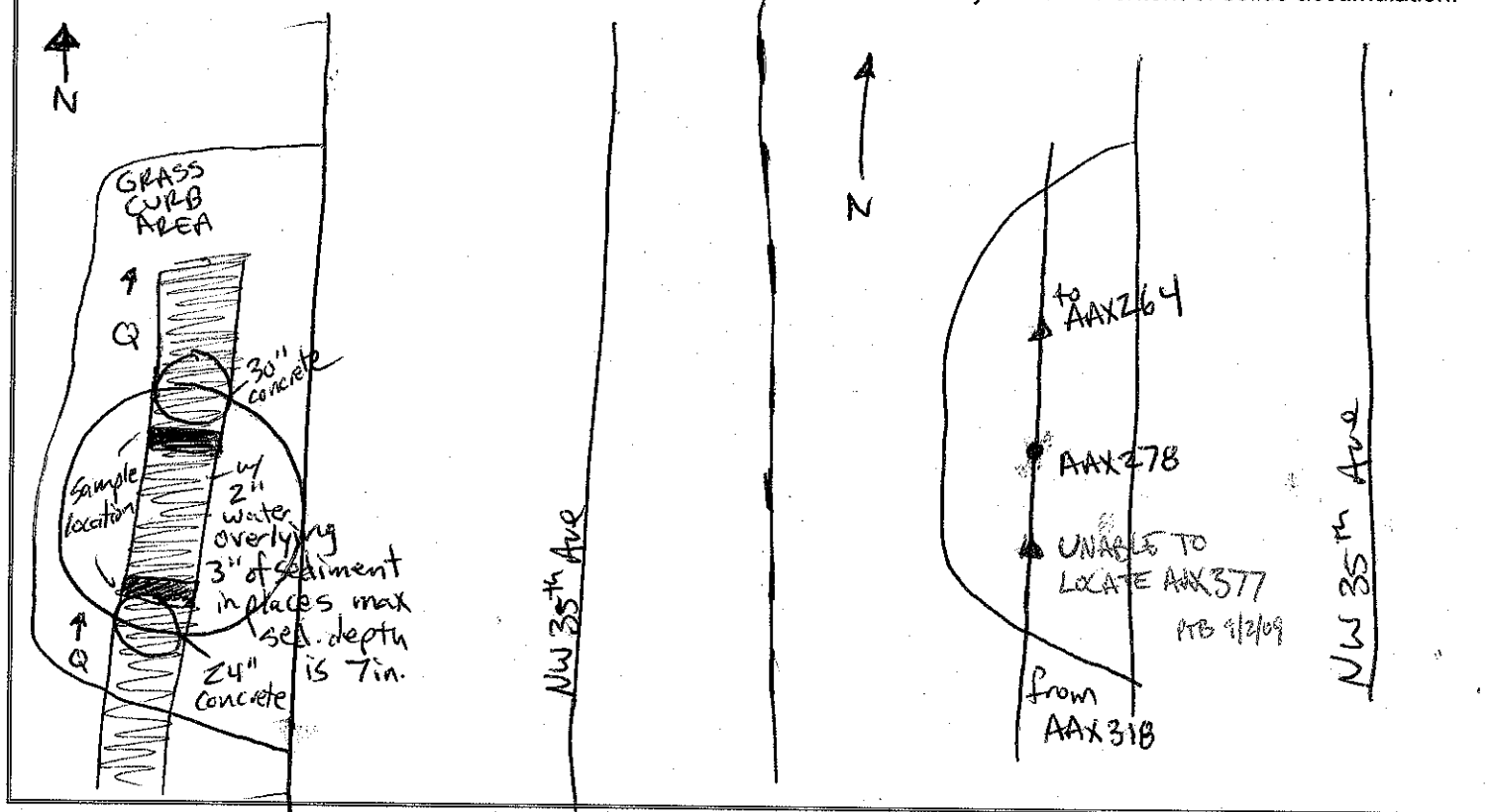
Sampling Location Description/Address:

3125 NW 35th Ave

SECTION 1 - PRE-SAMPLING VISUAL OBSERVATION REPORT

Describe any flowing or standing water observed in the line?	<u>Standing water present in invert at 2" in depth.</u>
Does river appear to back up to this location? Describe rate/color/odor of flow:	<u>River does not appear to back up to this location.</u>
Are sediments observed in the line?	<u>Yes, sediments are present</u>
Are sample-able quantities of sediments present in the line?	<u>Yes, seds are sample-able.</u>
Describe lateral extent of sample-able sediments present in the line:	<u>Seds are present w/in MHT invert up and downstream as far as entrant can see. Ranging in depth from 3-7 in.</u>

SITE DIAGRAM: Include street intersections/laterals/catch basins/MH's/driveways cuts and extent of solids accumulation.



18-15

Date: 9/2/09		SECTION 2 - SAMPLE COLLECTION REPORT		Node: AAX 278	
Sampling Equipment:		<input checked="" type="checkbox"/> Stainless steel spoon & stainless steel bucket <input type="checkbox"/> Other (Describe)			
Equipment Decontamination process:		<input checked="" type="checkbox"/> Per SOP7.01a <input type="checkbox"/> Other (Describe)			
Sample date: 9/2/09	Sample time: 1144	Sample Identification: (IL-XX-NNNNNN-mmyy) ^{Int} Code: 18-15 IL-18-AAX278-0909			
Sample location description: (number of feet from node of entry) Two cross invert scoops taken perpendicular to invert flow 6" into the Mtt chamber from US&S ends.					
Sample collection technique:		Scoop taken of entire profile of accumulation the width of the scoop. Overlying water decanted prior to addition to sample bucket			
Describe Color of sample:		Dark black (very high moisture content)			
Describe Texture/Particle size:		90% fines, 10% fine gravels, < 1% organics			
Describe visual or olfactory evidence of contamination in bulk sediment sample (odor, sheen, discoloration, etc.):		Visible sheen present in sediment. Strong petroleum odor.			
Describe depth of solids in area where sample collected:		Sediment depth was 3-7" in area where sample was collected.			
Describe amount and type of debris in sample:		No ^{PBS} debris present in the sample			
Amount and type of debris removed from final sample:		No debris removed. Coarsest of gravels excluded from sample.			
Compositing notes: Sample was homogenized using stainless steel scoop used for collection and added to sample jars using a fresh stainless steel spoon.					
Sample Jars Collected (number, size, full or partial)? 3 full 4 oz. jars					
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 FO095884		Duplicate sample collected? <input checked="" type="checkbox"/> Dupe ID			
Duplicate sample identification # on COC:					
Any deviations from standard procedures: None					

SECTION 3 - PHOTOGRAPH LOG

Overview of node showing drainage area	1282
Plan view of sediments inline	1280 + 1281
Homogenized sample (sediment in bowl)	1284
Other?	



Page 1 of 1

Project PORTLAND Harbor INLINE Samp
Location 3333 NW 35th Avenue / BASIN 18 + 44 + M1
Subject Inline Sediment Sampling Activities

Project No. 1020.001
Date 10/6/09
By PTB, JXB, ECH

0924 DST ON-SITE 3333 NW 35th Avenue, ABF trucking. Informed ABF of our sampling activities on their property today.
0949 collected sample and filled sample jars at AAX264 and given point code 18-16.

1034 Collected sample and filled sample jars at AAX263 and given point code 18-17.

1124 Collected sample and filled sample jars at AAX262. Attributed point code 18-18.

1214 ARRIVE on-site at Basin 44 node AMQ287. To perform Field Decon Blank and Duplicate at this site.

1246 Performed Field Decon Blank. This node is adjacent to Pacific Power Substation where a diesel crane is currently operating in the assistance of the replacement of insulators as can be seen in the drainage overview photo.

1256 Field Decon Blank completed.

1318 Collected sample and filled sample jars at AMQ287. Attributed point code 44-17

1419 ARRIVE on-site at Basin M1 node AAJ831. Worker from Western Star facility informed sampling crew of water test occurring upstream of

1436 Collected sample and filled sample jars at AAJ831. Attributed point code M1-10. Returned to WPCF.

Attachments No increased flow was observed during sampling activities.

this note that many increase flow through M14 chamber during

PORTLAND HARBOR INLINE SAMP

1020.001

RE: SAMPLING PHOTOS FOR BASINS 18 & 44

ON 10/6/09

ALL PHOTOS TAKEN ON 10/6/09
IN BASINS 18 & 44 FOR INLINE
SEDIMENT SAMPLING ACTIVITIES
WERE LOST DUE TO A DAMAGED
CAMERA.



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



Date: 10/6/2009

Page: 1 of 1

Collected By: JXB, PTB, ECH

Project Name: PORTLAND HARBOR INLINE SAMP
File Number: 1020.001

Matrix: SEDIMENT

OUTFALL 18

WPCCL Sample I.D. Location Point Code Sample Date Sample Time Sample Type

FO095974

IL-18-AAAX264-1009
3333 NW 35TH AVE

18_16

10/6/09

0949

C

FO095975

IL-18-AAAX263-1009
3333 NW 35TH AVE

18_17

10/6/09

1034

C

FO095976

IL-18-AAAX262-1009
3333 NE 35TH AVE

18_18

10/6/09

1124

C

Requested Analyses

Organics	General	Metals	Field Comments
PCB Aroclors - LL			
PCB Congeners (All 209)			
Total Solids			
TOC			
Total Metals (As, Cd, Cr, Cu, Pb, Hg, Ni, Ag, Zn)			

Relinquished By: 1. Signature: <i>Al K. Byers</i> Time: 1550 Printed Name: Peter Bryant Date: 10/6/09		Relinquished By: 2. Signature: _____ Time: _____ Printed Name: _____ Date: _____		Relinquished By: 3. Signature: _____ Time: _____ Printed Name: _____ Date: _____		Relinquished By: 4. Signature: _____ Time: _____ Printed Name: _____ Date: _____	
Received By: <i>Al K. Byers</i> Signature: _____ Time: 1550 Printed Name: Peter Bryant Date: 10/6/09		Received By: 2. Signature: _____ Time: _____ Printed Name: _____ Date: _____		Received By: 3. Signature: _____ Time: _____ Printed Name: _____ Date: _____		Received By: 4. Signature: _____ Time: _____ Printed Name: _____ Date: _____	



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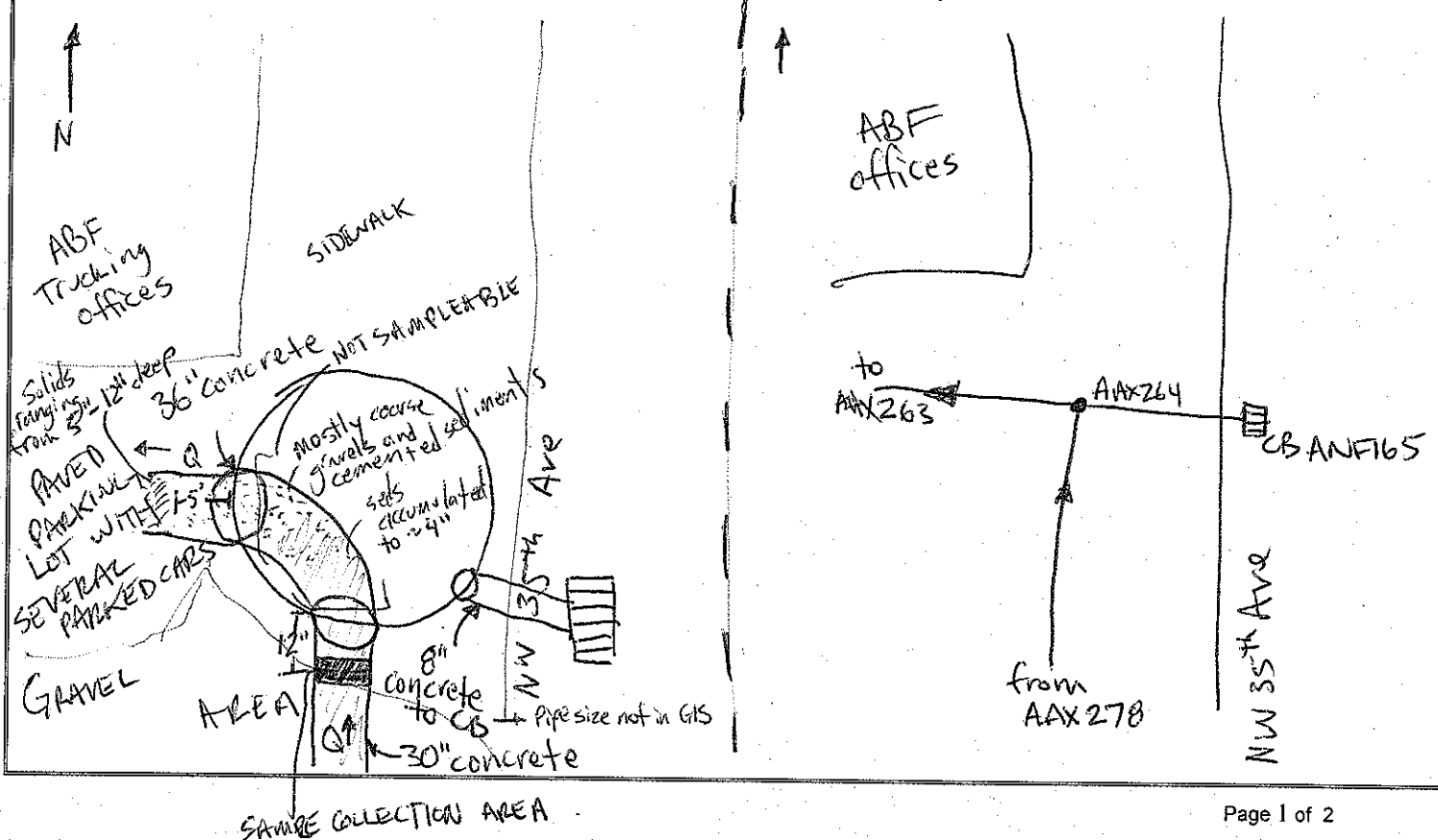
INLINE SEDIMENT SAMPLING FIELD DATA SHEET

Project Name: PORTLAND HARBOR INLINE SAMP		Project Number: 1020.001	
Sampling Team: PTB, JXB, ECH	Date: 10/6/09	Arrival Time: 0924	Current Weather Conditions/Last Rain: Sunny/Last rain 3 days ago
Basin: 18	Node: AAx264		Subbasin: NA
Sampling Location Description/Address: 3333 NW 35th Ave. Node is located in sidewalk in front of main office of ABF trucking in industrial northwest			

SECTION 1 - PRE-SAMPLING VISUAL OBSERVATION REPORT

Describe any flowing or standing water observed in the line?	Standing water is present inline to ~4" in depth.
Does river appear to back up to this location? Describe rate/color/odor of flow:	No, river does not appear to back up to this location.
Are sediments observed in the line?	Yes, sediments are observed underneath the standing water.
Are sample-able quantities of sediments present in the line?	Yes, the sediments range from fine material to coarse gravels and are predominantly fine outside of MH chamber.
Describe lateral extent of sample-able sediments present in the line:	Sediments are ~4" in depth and extend as far as can be seen upstream of MH chamber and starting ~5' ds of MH chamber.

SITE DIAGRAM: Include street intersections/laterals/catch basins/MH's/driveways cuts and extent of solids accumulation.



Date: 10/6/09		SECTION 2 - SAMPLE COLLECTION REPORT		Node: AAX264	
Sampling Equipment:			<input checked="" type="checkbox"/> Stainless steel spoon & stainless steel bucket <input type="checkbox"/> Other (Describe)		
Equipment Decontamination process:			<input checked="" type="checkbox"/> Per SOP7.01a <input type="checkbox"/> Other (Describe)		
Sample date: 10/6/09	Sample time: 0949	Sample Identification: (IL-XX-NNNNNN-mmyy) 1L-18-AAX264-1009			
Sample location description: (number of feet from node of entry) 12" us of MH chamber, sample is of the full horizon of deposition in a cross-section the length of the scoop.					
Sample collection technique:			Using stainless steel scoop to collect the whole profile of deposition at a cross-section of the pipe.		
Describe Color of sample:			Very dark gray and black		
Describe Texture/Particle size:			50% fine sands, 40% coarse sands, < 1% coarse organics, 10% angular gravels		
Describe visual or olfactory evidence of contamination in bulk sediment sample (odor, sheen, discoloration, etc.):			Strong hydrocarbon odor and a sheen-like film on surface of water. ^{In addition to apparent petroleum staining}		
Describe depth of solids in area where sample collected:			Solids were 4-6" in depth in sample collection area.		
Describe amount and type of debris in sample:			< 1% coarse organics, 10% angular gravels.		
Amount and type of debris removed from final sample:			None		
Compositing notes: Homogenized in sample collection bowl using sample collection scoop					
Sample Jars Collected (number, size, full or partial)? (4) full 4 oz. jars					
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).					
FO095974					
Lab ID		Duplicate sample collected? <input checked="" type="checkbox"/> Y <input type="checkbox"/> N Dupe ID			
Duplicate sample identification # on COC:					
Any deviations from standard procedures: None					

SECTION 3 - PHOTOGRAPH LOG

Overview of node showing drainage area	1577.
Plan view of sediments inline	1579.jpg looking vs. , 1581.jpg looking ds
Homogenized sample (sediment in bowl)	1582
Other?	



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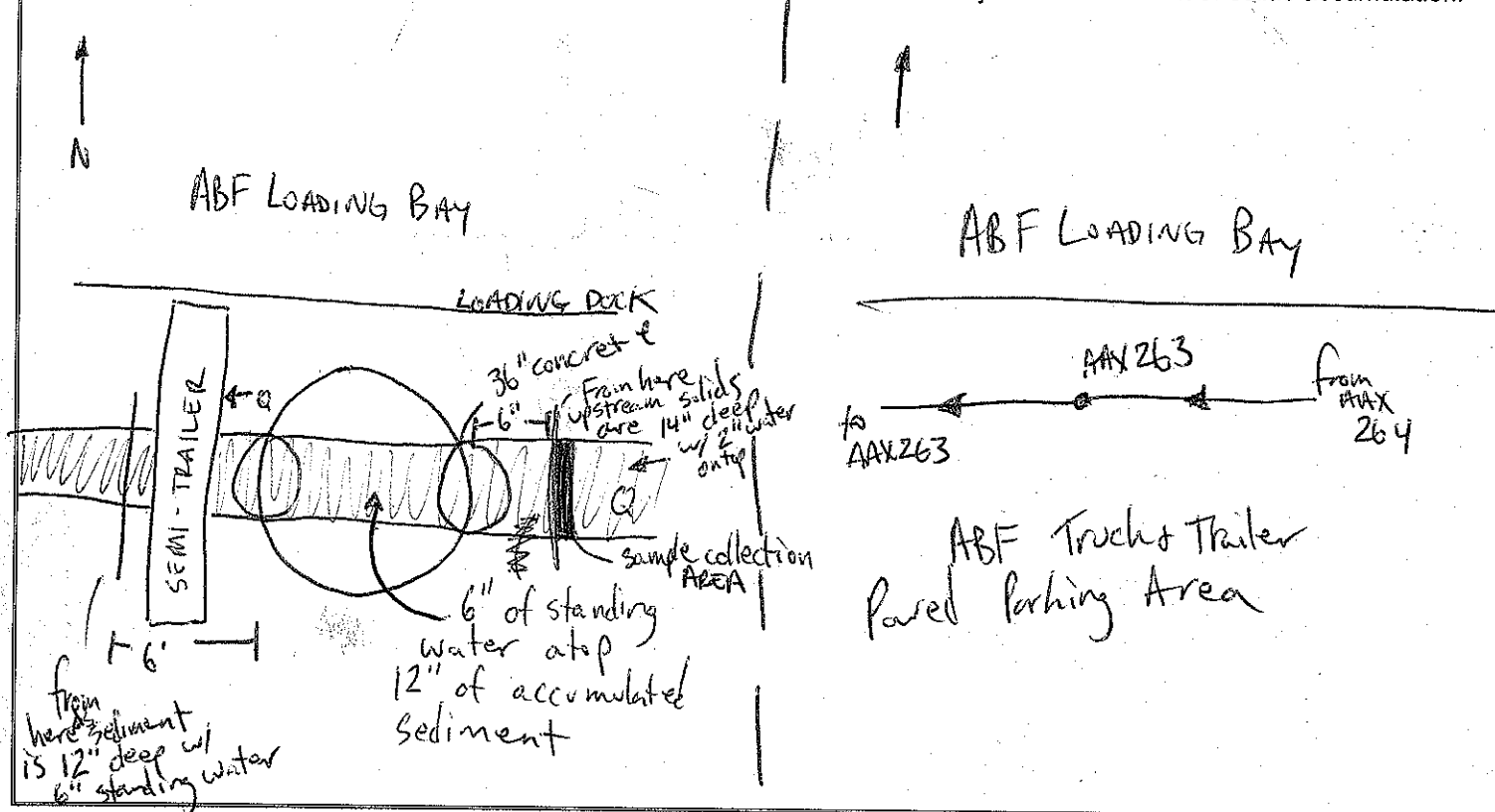
INLINE SEDIMENT SAMPLING FIELD DATA SHEET

Project Name: PORTLAND HARBOR IN-LINE SAMP		Project Number: 1020.001	
Sampling Team: PTB, JKB, ECH	Date: 10/6/09	Arrival Time: 1018	Current Weather Conditions/Last Rain: Sunny / 3 days ago
Basin: 18	Node: AAX 263		Subbasin: NA
Sampling Location Description/Address: 3333 NW 35th Ave Node is located in loading dock of ABF trucking where semi-trailers back up and are loaded. In loading bay inside ABF facility there is a sign within 50 feet indicating a hazardous material area.			

SECTION 1 - PRE-SAMPLING VISUAL OBSERVATION REPORT

Describe any flowing or standing water observed in the line?	Standing water is present inline at 6" in depth
Does river appear to back up to this location? Describe rate/color/odor of flow:	No, river does not appear to back up to this location.
Are sediments observed in the line?	Yes, 12" of solids underneath the standing water.
Are sample-able quantities of sediments present in the line?	Yes, 12" of accumulated sediment throughout line. they appear to be fine + coarse sands.
Describe lateral extent of sample-able sediments present in the line:	Solids are observed as far as entrant can see up and down stream.

SITE DIAGRAM: Include street intersections/laterals/catch basins/MH's/driveways cuts and extent of solids accumulation.



18-17

Date: 10/6/09		SECTION 2 - SAMPLE COLLECTION REPORT		Node: AAX263	
Sampling Equipment:		<input checked="" type="checkbox"/> Stainless steel spoon & stainless steel bucket <input type="checkbox"/> Other (Describe)			
Equipment Decontamination process:		<input checked="" type="checkbox"/> Per SOP7.01a <input type="checkbox"/> Other (Describe)			
Sample date: 10/6/09	Sample time: 1034	Sample Identification: (IL-XX-NNNNNN-mmyy) 1L-18-AAX263-1009			
Sample location description: (number of feet from node of entry) 6" vs from EOP in a cross-section to the pipe					
Sample collection technique:		Taking random scoops from cross-section the entire depth of the spoon (~12" long)			
Describe Color of sample:		Very dark grey to black			
Describe Texture/Particle size:		85% fine sands, fine silts ^{and silts} , 5% organics, 10% coarse sands			
Describe visual or olfactory evidence of contamination in bulk sediment sample (odor, sheen, discoloration, etc.):		Strong hydrocarbon odor and sheen like film on surface with petroleum staining			
Describe depth of solids in area where sample collected:		14-18" deep sediment accumulation with ~2" of standing water atop sediment.			
Describe amount and type of debris in sample:		5% coarse organics			
Amount and type of debris removed from final sample:		None.			
Compositing notes: Homogenized in sample collection bucket using sample collection spoon.					
Sample Jars Collected (number, size, full or partial)? Jars filled with fresh stainless steel spoon. (4) full 4oz jars					
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 FO095975		Duplicate sample collected? Y/N <input checked="" type="checkbox"/> Dupe ID			
Duplicate sample identification # on COC:					
Any deviations from standard procedures: None					

SECTION 3 - PHOTOGRAPH LOG

Overview of node showing drainage area	1583 looking S, 1584 looking N
Plan view of sediments inline	1587 & 1588 look vs, 1589 looking ds
Homogenized sample (sediment in bowl)	1590
Other?	



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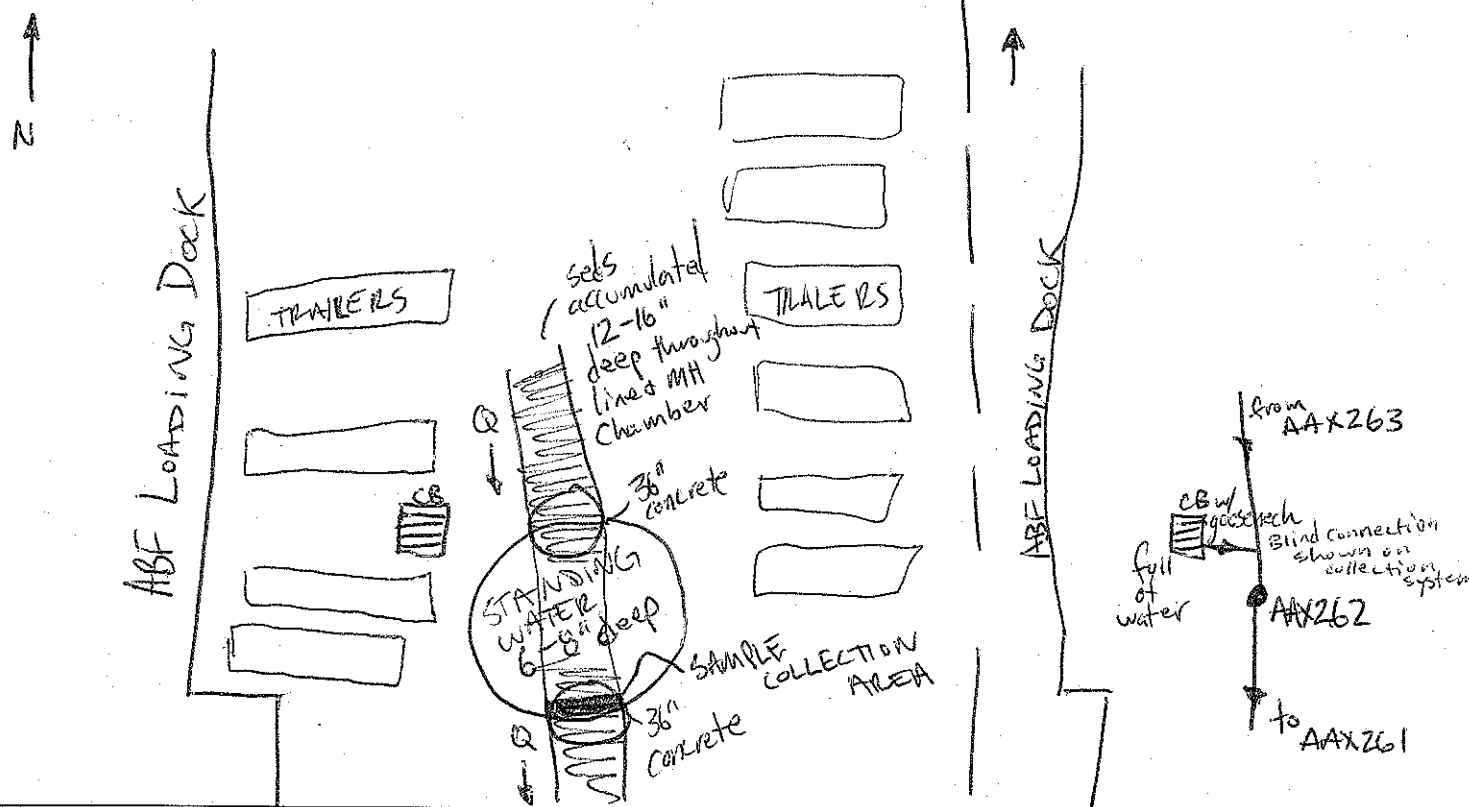
INLINE SEDIMENT SAMPLING FIELD DATA SHEET

Project Name: <u>PORTLAND HARBOR INLINE SAMP</u>		Project Number: <u>1020-001</u>	
Sampling Team: <u>PTB, JXB, ECH</u>	Date: <u>10/6/09</u>	Arrival Time: <u>1100</u>	Current Weather Conditions/Last Rain: <u>Sunny/3 days ago</u>
Basin: <u>18</u>	Node: <u>AAx262</u>		Subbasin: <u>NA</u>
Sampling Location Description/Address: <u>3333 NW 35th Ave</u> <u>In driveway between ABF trucking loading dock and trailer parking.</u>			

SECTION 1 - PRE-SAMPLING VISUAL OBSERVATION REPORT

Describe any flowing or standing water observed in the line?	<u>Standing water present inline at 6-8" in depth</u>
Does river appear to back up to this location? Describe rate/color/odor of flow:	<u>No, river doesnot appear to back up to this location</u>
Are sediments observed in the line?	<u>Yes, underneath the water and mostly fines.</u>
Are sample-able quantities of sediments present in the line?	<u>Yes, sediments are 16-12" deep under the water.</u>
Describe lateral extent of sample-able sediments present in the line:	<u>Sediments extend up and downstream but have more water overlying.</u>

SITE DIAGRAM: Include street intersections/laterals/catch basins/MH's/driveways cuts and extent of solids accumulation.



18-18

Date: 10/6/09		SECTION 2 - SAMPLE COLLECTION REPORT		Node: AAY262	
Sampling Equipment:		<input checked="" type="checkbox"/> Stainless steel spoon & stainless steel bucket <input type="checkbox"/> Other (Describe)			
Equipment Decontamination process:		<input checked="" type="checkbox"/> Per SOP7.01a <input type="checkbox"/> Other (Describe)			
Sample date:	Sample time:	Sample Identification: (IL-XX-NNNNNN-mmyy)			
10/6/09	1124	18-18-AAY262-1009			
Sample location description: (number of feet from node of entry) At EOP on ds side of mtl in cross section the width of the spoon.					
Sample collection technique:		In cross-section the width of the spoon taking random scoops up to the length of the spoon (up) and attempting to decant the water.			
Describe Color of sample:		Very dark grey to black			
Describe Texture/Particle size:		85% fines, 10% coarse sands, 5% organic debris			
Describe visual or olfactory evidence of contamination in bulk sediment sample (odor, sheen, discoloration, etc.):		Strong decomposing organic odor. Black stringy hydrocarbon floating on water's surface similar in appearance to bunker fuel.			
Describe depth of solids in area where sample collected:		Solids were 12-16" in depth in sample collection area.			
Describe amount and type of debris in sample:		5% organic debris consisting of small woody debris & plant matter			
Amount and type of debris removed from final sample:		None.			
Compositing notes: Homogenized in sample collection bucket using sample collection spoon. Using a fresh stainless steel spoon to fill sample jars.					
Sample Jars Collected (number, size, full or partial)? (4) full 4 oz. jars.					
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		FO095976		Duplicate sample collected? Y(N) Dupe ID	
Duplicate sample identification # on COC:					
Any deviations from standard procedures: None					

SECTION 3 - PHOTOGRAPH LOG

Overview of node showing drainage area	1591 looking NE, 1592 looking SW
Plan view of sediments inline	1593, US, 1595 ds
Homogenized sample (sediment in bowl)	1596 + 1597 1599
Other?	

Attachment A-3

Laboratory Reports and Data Review Memoranda (on CD only)



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Laboratory Data QA/QC Review Fall 2009 Inline Solids Sampling Outfall Basin 18 East-Central Subbasin

To: File
From: Andrew Davidson, GSI
Date: March 3, 2010

This memorandum presents a quality assurance/quality control (QA/QC) review of the laboratory data generated during source control sampling and analyses conducted by the City of Portland (City) in September 2009. Five inline solids samples and one field decontamination blank water sample were collected in Outfall Basin 18 on September 2, 2009 and submitted for analyses.

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

- BES WPCL
 - Total Solids – SM 2540 G
 - Metals – EPA 6020
 - Polychlorinated Biphenyl (PCB) Aroclors – EPA 8082
- Test America (TA)
 - Total Organic Carbon (TOC) – EPA 9060 MOD

The WPCL summary report and the subcontracted laboratory's data report are attached for all analyses associated with these source control program samples. The WPCL summary report comments that 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.

The following QA/QC review of the analytical data is based upon the available documentation provided by the 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
- Matrix spike and matrix spike duplicate (MS/MSD) sample results within laboratory control limits
- Laboratory control and duplicate laboratory control (LC/DLC) sample recoveries within laboratory control limits

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 sample. The chain-of-custody procedures were adequate and sample integrity was maintained through the sample collection and delivery process.

Analysis Holding Times

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

Method Blanks

A method blank was processed during the subcontracted laboratory analysis of TOC. TOC was not detected in the method blank.

Laboratory Control / Duplicate Laboratory Control Samples

An LC sample was processed during the subcontracted laboratory analysis of TOC. LC sample recovery was within acceptance limits.

Other

WPCL reports that a possible trace of Aroclor 1260 was detected below reporting limits during the PCB analysis of sample FO095880.



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Laboratory Data QA/QC Review Fall 2009 Inline Solids Sampling Outfall Basin 18 East-Central Subbasin

To: File
From: Andrew Davidson, GSI
Date: March 2, 2010

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). Three inline solids samples were collected in Outfall Basin 18 on October 6, 2009 and submitted for analyses.

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

- BES WPCL
 - Total Solids – SM 2540 G
 - Metals – EPA 6020
 - Polychlorinated Biphenyl (PCB) Aroclors – EPA 8082
- Test America (TA)
 - Total Organic Carbon – EPA 9060 MOD
- Pace Analytical Services (Pace)
 - PCB Congeners – EPA 1668A

The WPCL summary report and the subcontracted laboratories' data reports are attached for all analyses associated with these source control program samples. The WPCL summary report comments that 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 of the analytical data 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:

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

Two method blanks were processed during the subcontracted laboratory analysis of PCB congeners. One method blank was analyzed with sample FO095974. Samples FO095975 and FO095976 required dilution due to the presence of compounds that impacted the analysis and a separate method blank was processed for these two samples. PCB congener 31 was detected in the first method blank; however, because congener 31 was detected in the sample FO095974 at a concentration greater than 10 times the detection in the associated method blank, the result is not qualified. PCB congeners 1, 2, 3, and 31 were detected in the second method blank; however, because these congeners were detected in samples FO095975 and FO095976 at concentrations greater than 10 times the detections in the associated method blank, the results are not qualified. No analytes were detected in the method blank processed during the TOC analysis.

Internal Standard Recoveries

Isotopically-labeled internal standard recoveries were processed during the laboratory analysis of PCB congeners. Internal standard recoveries were within control limits with twelve exceptions, which are flagged “R” in the subcontracted laboratory report. Affected congeners are qualified with an “EST” flag.

Interfering background constituents impacted the measurement of one or more isotopically-labeled internal standards for field samples FO095975 and FO095976. These values are flagged

“T” in the subcontracted report to indicate that incorrect isotope ratios were obtained. Affected congeners are qualified with an “EST” flag. One cleanup standard is flagged “T” in the subcontracted report to indicate that incorrect isotope ratios were obtained; however, because the recovery for this standard was within acceptance criteria, the result is not qualified.

Congener values qualified as “EST” account for 0.06, 15.5, and 2.3 percent of the total PCB concentration detected in samples FO095974, FO095975, and FO095976, respectively. Therefore, homolog and total PCB concentrations that include one or more estimated congener value(s) are considered biased high or slightly high.

Matrix Spike/Matrix Spike Duplicate

MS/MSD samples were prepared using aliquots of field sample FO095974 and processed during the laboratory analysis of PCB congeners. With the exception of isotopically-labeled PCB congener 1, labeled analyte recoveries were within laboratory control limits for the MS/MSD samples. Recoveries for the spiked native analytes appear to have been impacted by high background levels of PCB congeners in the matrix.

Laboratory Control Samples/Duplicate Laboratory Control Samples

LCS/DLC samples were processed during the analyses of PCB congeners and TOC. All laboratory control sample recoveries and relative percent differences were within laboratory control limits.



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



Date: 9/2/09
Page: 1 of 1

Collected By: PFB, MJS, WCE

Project Name: PORTLAND HARBOR INLINE SAMP

File Number: 1020.001

Matrix: SEDIMENT + DI WATER

Requested Analyses

Organics General Metals Field Comments

OUTFALL 18

WPCL Sample I.D.	Location	Point Code	Sample Date	Sample Time	Sample Type	PCB Aroclors - LL	Total Solids	TOC	Total Metals (As, Cd, Cr, Cu, Pb, Hg, Ni, Ag, Zn)	Field Comments
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FO095880

IL-18-AA374-0909
NW 35th & LUZON

18_11 9/2/09 0906 C

• • •

FO095881

IL-18-AA375-0909
NW 35th & LUZON

18_12 9/2/09 0939 C

• • •

FO095882

IL-18-AA376-0909
NW 35th & LAKE

18_13 9/2/09 1035 C

• • •

FO095883

IL-18-AA376-0909
NW 35th & LAKE

18_14 9/2/09 1107 C

• • •

FO095884

IL-18-AA378-0909
3125 NW 35th AVE

18_15 9/2/09 1144 C

• • •

FO095885

FIELD DECON BLANK

FDB 9/2/09 1124 G

• • •

WATER SAMPLE

Relinquished By: 1.	Signature: [Signature]	Time: 1340	Relinquished By: 2.	Signature: [Signature]	Time: [Blank]	Relinquished By: 3.	Signature: [Signature]	Time: [Blank]	Relinquished By: 4.	Signature: [Signature]	Time: [Blank]
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Printed Name: Peter Bryant	Date: 9/2/09	Printed Name: [Blank]	Date: [Blank]	Printed Name: [Blank]	Date: [Blank]	Printed Name: [Blank]	Date: [Blank]	Printed Name: [Blank]	Date: [Blank]
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Received By: [Signature]	Time: 1340	Received By: 2.	Signature: [Signature]	Time: [Blank]	Received By: 3.	Signature: [Signature]	Time: [Blank]	Received By: 4.	Signature: [Signature]	Time: [Blank]
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City of Portland
Water Pollution Control Laboratory
6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656



LABORATORY ANALYSIS REPORT

Sample ID: FO095880

Sample Collected: 09/02/09 09:06
Sample Received: 09/02/09

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-18-AAX374-0909
NW 35TH & LUZON
Sample Point Code: 18_11
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 1 of 1

System ID: AN08538
EID File # : 1020.001
LocCode: PORTHARI
Collected By: PTB/MJS/WCR

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: Analysis for PCB Aroclors detected a possible trace of Aroclor 1260 at less than the reporting limit.

Test Parameter	Result	Units	MRL	Method	Analysis Date
GENERAL					
TOTAL SOLIDS	97.8	% W/W	0.01	SM 2540 G	09/08/09
METALS					
ARSENIC	1.75	mg/Kg dry wt	0.50	EPA 6020	09/10/09
CADMIUM	0.41	mg/Kg dry wt	0.10	EPA 6020	09/10/09
CHROMIUM	33.7	mg/Kg dry wt	0.50	EPA 6020	09/10/09
COPPER	25.4	mg/Kg dry wt	0.25	EPA 6020	09/10/09
LEAD	41.0	mg/Kg dry wt	0.10	EPA 6020	09/10/09
MERCURY	0.016	mg/Kg dry wt	0.010	EPA 6020	09/10/09
NICKEL	19.0	mg/Kg dry wt	0.25	EPA 6020	09/10/09
SILVER	<0.10	mg/Kg dry wt	0.10	EPA 6020	09/10/09
ZINC	209	mg/Kg dry wt	0.50	EPA 6020	09/10/09
GC ANALYSIS					
POLYCHLORINATED BIPHENYLS (PCB)					
Aroclor 1016/1242	<10	µg/Kg dry wt	10	EPA 8082	09/03/09
Aroclor 1221	<20	µg/Kg dry wt	20	EPA 8082	09/03/09
Aroclor 1232	<10	µg/Kg dry wt	10	EPA 8082	09/03/09
Aroclor 1248	<10	µg/Kg dry wt	10	EPA 8082	09/03/09
Aroclor 1254	<10	µg/Kg dry wt	10	EPA 8082	09/03/09
Aroclor 1260	<10	µg/Kg dry wt	10	EPA 8082	09/03/09
Aroclor 1262	<10	µg/Kg dry wt	10	EPA 8082	09/03/09
Aroclor 1268	<10	µg/Kg dry wt	10	EPA 8082	09/03/09
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	3770	mg/Kg dry wt	100	EPA 9060 MOD	09/15/09

End of Report for Sample ID: FO095880

Report Date: 09/18/09

Validated By:



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Water Pollution Control Laboratory
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LABORATORY ANALYSIS REPORT

Sample ID: FO095881

Sample Collected: 09/02/09 09:39
Sample Received: 09/02/09

Sample Status: COMPLETE AND
VALIDATED

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-18-AAX375-0909
NW 35TH & LUZON
Sample Point Code: 18_12
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 1 of 1

System ID: AN08539
EID File #: 1020.001
LocCode: PORTHARI
Collected By: PTB/MJS/WCR

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 SOLIDS	87.6	% W/W	0.01	SM 2540 G	09/08/09
METALS					
ARSENIC	2.15	mg/Kg dry wt	0.50	EPA 6020	09/10/09
CADMIUM	0.61	mg/Kg dry wt	0.10	EPA 6020	09/10/09
CHROMIUM	61.3	mg/Kg dry wt	0.50	EPA 6020	09/10/09
COPPER	50.5	mg/Kg dry wt	0.25	EPA 6020	09/10/09
LEAD	66.0	mg/Kg dry wt	0.10	EPA 6020	09/10/09
MERCURY	0.031	mg/Kg dry wt	0.010	EPA 6020	09/10/09
NICKEL	31.4	mg/Kg dry wt	0.25	EPA 6020	09/10/09
SILVER	<0.10	mg/Kg dry wt	0.10	EPA 6020	09/10/09
ZINC	309	mg/Kg dry wt	0.50	EPA 6020	09/10/09
GC ANALYSIS					
POLYCHLORINATED BIPHENYLS (PCB)					
Aroclor 1016/1242	<10	µg/Kg dry wt	10	EPA 8082	09/03/09
Aroclor 1221	<20	µg/Kg dry wt	20	EPA 8082	09/03/09
Aroclor 1232	<10	µg/Kg dry wt	10	EPA 8082	09/03/09
Aroclor 1248	<10	µg/Kg dry wt	10	EPA 8082	09/03/09
Aroclor 1254	<10	µg/Kg dry wt	10	EPA 8082	09/03/09
Aroclor 1260	21	µg/Kg dry wt	10	EPA 8082	09/03/09
Aroclor 1262	<10	µg/Kg dry wt	10	EPA 8082	09/03/09
Aroclor 1268	<10	µg/Kg dry wt	10	EPA 8082	09/03/09
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	12300	mg/Kg dry wt	100	EPA 9060 MOD	09/15/09

End of Report for Sample ID: FO095881

Report Date: 09/18/09

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: FO095882

Sample Collected: 09/02/09 10:35

Sample Received: 09/02/09

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR INLINE SAMP

Address/Location: IL-18-AAX318-0909

NW 35TH & LAKE

Sample Point Code: 18_13

Sample Type: COMPOSITE

Sample Matrix: SEDIMENT

Report Page: Page 1 of 1

System ID: AN08540

EID File #: 1020.001

LocCode: PORTHARI

Collected By: PTB/MJS/WCR

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 SOLIDS	73.6	% W/W	0.01	SM 2540 G	09/08/09
METALS					
ARSENIC	2.68	mg/Kg dry wt	0.50	EPA 6020	09/10/09
CADMIUM	3.71	mg/Kg dry wt	0.10	EPA 6020	09/10/09
CHROMIUM	150	mg/Kg dry wt	0.50	EPA 6020	09/10/09
COPPER	97.9	mg/Kg dry wt	0.25	EPA 6020	09/10/09
LEAD	1170	mg/Kg dry wt	0.10	EPA 6020	09/10/09
MERCURY	2.09	mg/Kg dry wt	0.010	EPA 6020	09/10/09
NICKEL	32.6	mg/Kg dry wt	0.25	EPA 6020	09/10/09
SILVER	0.33	mg/Kg dry wt	0.10	EPA 6020	09/10/09
ZINC	575	mg/Kg dry wt	0.50	EPA 6020	09/10/09
GC ANALYSIS					
POLYCHLORINATED BIPHENYLS (PCB)					
Aroclor 1016/1242	<10	µg/Kg dry wt	10	EPA 8082	09/03/09
Aroclor 1221	<20	µg/Kg dry wt	20	EPA 8082	09/03/09
Aroclor 1232	<10	µg/Kg dry wt	10	EPA 8082	09/03/09
Aroclor 1248	3350	µg/Kg dry wt	10	EPA 8082	09/03/09
Aroclor 1254	<10	µg/Kg dry wt	10	EPA 8082	09/03/09
Aroclor 1260	1180	µg/Kg dry wt	10	EPA 8082	09/03/09
Aroclor 1262	<10	µg/Kg dry wt	10	EPA 8082	09/03/09
Aroclor 1268	<10	µg/Kg dry wt	10	EPA 8082	09/03/09
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	28100	mg/Kg dry wt	100	EPA 9060 MOD	09/15/09

End of Report for Sample ID: FO095882

Report Date: 09/18/09

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: **FO095883**

Sample Collected: 09/02/09 11:07
Sample Received: 09/02/09

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-18-AAX376-0909
NW 35TH & LAKE
Sample Point Code: 18_14
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 1 of 1

System ID: AN08541
EID File #: 1020.001
LocCode: PORTHARI
Collected By: PTB/MJS/WCR

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 SOLIDS	63.6	% W/W	0.01	SM 2540 G	09/08/09
METALS					
ARSENIC	3.57	mg/Kg dry wt	0.50	EPA 6020	09/10/09
CADMIUM	4.34	mg/Kg dry wt	0.10	EPA 6020	09/10/09
CHROMIUM	309	mg/Kg dry wt	0.50	EPA 6020	09/10/09
COPPER	104	mg/Kg dry wt	0.25	EPA 6020	09/10/09
LEAD	2280	mg/Kg dry wt	0.10	EPA 6020	09/10/09
MERCURY	4.61	mg/Kg dry wt	0.010	EPA 6020	09/10/09
NICKEL	35.6	mg/Kg dry wt	0.25	EPA 6020	09/10/09
SILVER	0.47	mg/Kg dry wt	0.10	EPA 6020	09/10/09
ZINC	880	mg/Kg dry wt	0.50	EPA 6020	09/10/09
GC ANALYSIS					
POLYCHLORINATED BIPHENYLS (PCB)					
Aroclor 1016/1242	<10	µg/Kg dry wt	10	EPA 8082	09/03/09
Aroclor 1221	<20	µg/Kg dry wt	20	EPA 8082	09/03/09
Aroclor 1232	<10	µg/Kg dry wt	10	EPA 8082	09/03/09
Aroclor 1248	3450	µg/Kg dry wt	10	EPA 8082	09/03/09
Aroclor 1254	<10	µg/Kg dry wt	10	EPA 8082	09/03/09
Aroclor 1260	1110	µg/Kg dry wt	10	EPA 8082	09/03/09
Aroclor 1262	<10	µg/Kg dry wt	10	EPA 8082	09/03/09
Aroclor 1268	<10	µg/Kg dry wt	10	EPA 8082	09/03/09
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	54500	mg/Kg dry wt	100	EPA 9060 MOD	09/15/09

End of Report for Sample ID: FO095883

Report Date: 09/18/09

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: FO095884

Sample Collected: 09/02/09 11:44
Sample Received: 09/02/09

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-18-AAX278-0909
3125 NW 35TH AVE
Sample Point Code: 18_15
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 1 of 1

System ID: AN08542
EID File #: 1020.001
LocCode: PORTHARI
Collected By: PTB/MJS/WCR

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 SOLIDS	63.5	% W/W	0.01	SM 2540 G	09/08/09
METALS					
ARSENIC	3.56	mg/Kg dry wt	0.50	EPA 6020	09/10/09
CADMIUM	35.0	mg/Kg dry wt	0.10	EPA 6020	09/10/09
CHROMIUM	223	mg/Kg dry wt	0.50	EPA 6020	09/10/09
COPPER	193	mg/Kg dry wt	0.25	EPA 6020	09/10/09
LEAD	1090	mg/Kg dry wt	0.10	EPA 6020	09/10/09
MERCURY	2.11	mg/Kg dry wt	0.010	EPA 6020	09/10/09
NICKEL	266	mg/Kg dry wt	0.25	EPA 6020	09/10/09
SILVER	1.94	mg/Kg dry wt	0.10	EPA 6020	09/10/09
ZINC	768	mg/Kg dry wt	0.50	EPA 6020	09/10/09
GC ANALYSIS					
POLYCHLORINATED BIPHENYLS (PCB)					
Aroclor 1016/1242	<10	µg/Kg dry wt	10	EPA 8082	09/03/09
Aroclor 1221	<20	µg/Kg dry wt	20	EPA 8082	09/03/09
Aroclor 1232	<10	µg/Kg dry wt	10	EPA 8082	09/03/09
Aroclor 1248	2900	µg/Kg dry wt	10	EPA 8082	09/03/09
Aroclor 1254	<10	µg/Kg dry wt	10	EPA 8082	09/03/09
Aroclor 1260	1030	µg/Kg dry wt	10	EPA 8082	09/03/09
Aroclor 1262	<10	µg/Kg dry wt	10	EPA 8082	09/03/09
Aroclor 1268	<10	µg/Kg dry wt	10	EPA 8082	09/03/09
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	68100	mg/Kg dry wt	100	EPA 9060 MOD	09/15/09

End of Report for Sample ID: FO095884

Report Date: 09/18/09

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: **FO095885**

Sample Collected: 09/02/09 11:24
Sample Received: 09/02/09

Sample Status: **COMPLETE AND
VALIDATED**

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

Report Page: Page 1 of 1

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

System ID: AN08543
EID File #: 1020.001
LocCode: PORTHARI
Collected By: PTB/MJS/WCR

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
METALS					
MERCURY	<0.0020	µg/L	0.002	WPCLSOP M-10.02	09/03/09
METALS BY ICP-MS (TOTAL) - 8					
ARSENIC	<0.10	µg/L	0.1	EPA 200.8	09/11/09
CADMIUM	<0.10	µg/L	0.1	EPA 200.8	09/11/09
CHROMIUM	<0.40	µg/L	0.4	EPA 200.8	09/11/09
COPPER	<0.20	µg/L	0.2	EPA 200.8	09/11/09
LEAD	<0.10	µg/L	0.1	EPA 200.8	09/11/09
NICKEL	<0.20	µg/L	0.2	EPA 200.8	09/11/09
SILVER	<0.10	µg/L	0.1	EPA 200.8	09/11/09
ZINC	0.98	µg/L	0.5	EPA 200.8	09/11/09
GC ANALYSIS					
POLYCHLORINATED BIPHENYLS (PCB)					
Aroclor 1016/1242	<0.025	µg/L	0.025	EPA 8082	09/04/09
Aroclor 1221	<0.050	µg/L	0.050	EPA 8082	09/04/09
Aroclor 1232	<0.025	µg/L	0.025	EPA 8082	09/04/09
Aroclor 1248	<0.025	µg/L	0.025	EPA 8082	09/04/09
Aroclor 1254	<0.025	µg/L	0.025	EPA 8082	09/04/09
Aroclor 1260	<0.025	µg/L	0.025	EPA 8082	09/04/09
Aroclor 1262	<0.025	µg/L	0.025	EPA 8082	09/04/09
Aroclor 1268	<0.025	µg/L	0.025	EPA 8082	09/04/09

End of Report for Sample ID: FO095885

Report Date: 09/18/09

Validated By:

September 18, 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 09/03/09 14:50.
The following list is a summary of the Work Orders contained in this report, generated on 09/18/09 09:15.

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

<u>Work Order</u>	<u>Project</u>	<u>ProjectNumber</u>
PSI0178	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:

09/18/09 09:15

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FO 095880	PSI0178-01	Soil	09/02/09 09:06	09/03/09 14:50
FO 095881	PSI0178-02	Soil	09/02/09 09:39	09/03/09 14:50
FO 095882	PSI0178-03	Soil	09/02/09 10:35	09/03/09 14:50
FO 095883	PSI0178-04	Soil	09/02/09 11:07	09/03/09 14:50
FO 095884	PSI0178-05	Soil	09/02/09 11:44	09/03/09 14:50

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:
09/18/09 09:15

Organic Carbon, Total (TOC)
TestAmerica Connecticut

Analyte	Method	Result	MDL *	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSI0178-01 (FO 095880)			Soil				Sampled: 09/02/09 09:06			
Total Organic Carbon - Duplicates	9060	3770	10.4	100	mg/Kg	1x	31224	09/15/09 17:36	09/15/09 17:36	
PSI0178-02 (FO 095881)			Soil				Sampled: 09/02/09 09:39			
Total Organic Carbon - Duplicates	9060	12300	10.4	100	mg/Kg	1x	31224	09/15/09 17:49	09/15/09 17:49	
PSI0178-03 (FO 095882)			Soil				Sampled: 09/02/09 10:35			
Total Organic Carbon - Duplicates	9060	28100	10.4	100	mg/Kg	1x	31224	09/15/09 18:03	09/15/09 18:03	
PSI0178-04 (FO 095883)			Soil				Sampled: 09/02/09 11:07			
Total Organic Carbon - Duplicates	9060	54500	10.4	100	mg/Kg	1x	31224	09/15/09 18:16	09/15/09 18:16	
PSI0178-05 (FO 095884)			Soil				Sampled: 09/02/09 11:44			
Total Organic Carbon - Duplicates	9060	68100	10.4	100	mg/Kg	1x	31224	09/15/09 18:47	09/15/09 18:47	

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:

09/18/09 09:15

Organic Carbon, Total (TOC) - Laboratory Quality Control Results

TestAmerica Connecticut

QC Batch: 31224

Soil Preparation Method: NA

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
LCS (220-31224-5)			QC Source:					Extracted: 09/15/09 17:22						
Total Organic Carbon - Duplicates	9060	4102	10.4	100	mg/Kg	1x	--	3530	116%	(28-172)	--	--	09/15/09 17:22	
Blank (220-31224-6)			QC Source:					Extracted: 09/15/09 17:29						
Total Organic Carbon - Duplicates	9060	ND	10.4	100	mg/Kg	1x	--	--	--	--	--	--	09/15/09 17:29	

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:

09/18/09 09:15

Notes and Definitions

Report Specific Notes:

None

Laboratory Reporting Conventions:

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

TestAmerica Portland



Howard Holmes, Project Manager

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.

Work Order #: 15T0178

TAI-1000(0408)

TestAmerica Portland
Sample Receiving Checklist

Work Order #: PSIC0178 Date/Time Received: 9/3/09 1450
Client Name and Project: City of Portland

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

Unpacking Checks:

Cooler #(s): 1
 Temperatures: 2.8
 Digi #1 ☐ Digi #2 ☐ IR Gun ☒ (☐ Plastic ☒ Glass)

Temperature out of Range:

☐ Not enough or No Ice
☐ Ice Melted
☐ W/in 4 Hrs of collection
☐ Other: _____

N/A Yes No

Initials: PS

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

TestAmerica Portland
Sample Receiving Checklist

Work Order #: PSIO178

Login Checks:

Initials: PS

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: K

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).

[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: **FO095974**

Sample Collected: 10/06/09 09:49
Sample Received: 10/06/09

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR INLINE SAMP

Report Page: Page 1 of 1

Address/Location: IL-18-AAX264-1009
3333 NW 35TH AVE

System ID: AN09578

Sample Point Code: 18_16

EID File #: 1020.001

Sample Type: COMPOSITE

LocCode: PORTHARI

Sample Matrix: SEDIMENT

Collected By: JXB/PTB/ECH

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 SOLIDS	79.4	% W/W	0.01	SM 2540 G	10/07/09
METALS					
ARSENIC	3.08	mg/Kg dry wt	0.50	EPA 6020	10/06/09
CADMIUM	13.8	mg/Kg dry wt	0.10	EPA 6020	10/06/09
CHROMIUM	94.3	mg/Kg dry wt	0.50	EPA 6020	10/06/09
COPPER	206	mg/Kg dry wt	0.25	EPA 6020	10/06/09
LEAD	364	mg/Kg dry wt	0.10	EPA 6020	10/06/09
MERCURY	0.309	mg/Kg dry wt	0.010	EPA 6020	10/06/09
NICKEL	103	mg/Kg dry wt	0.25	EPA 6020	10/06/09
SILVER	0.86	mg/Kg dry wt	0.10	EPA 6020	10/06/09
ZINC	544	mg/Kg dry wt	0.50	EPA 6020	10/06/09
GC ANALYSIS					
POLYCHLORINATED BIPHENYLS (PCB)					
Aroclor 1016/1242	<20	µg/Kg dry wt	20	EPA 8082	10/07/09
Aroclor 1221	<40	µg/Kg dry wt	40	EPA 8082	10/07/09
Aroclor 1232	<20	µg/Kg dry wt	20	EPA 8082	10/07/09
Aroclor 1248	401	µg/Kg dry wt	20	EPA 8082	10/07/09
Aroclor 1254	<20	µg/Kg dry wt	20	EPA 8082	10/07/09
Aroclor 1260	122	µg/Kg dry wt	20	EPA 8082	10/07/09
Aroclor 1262	<20	µg/Kg dry wt	20	EPA 8082	10/07/09
Aroclor 1268	<20	µg/Kg dry wt	20	EPA 8082	10/07/09
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	19000	mg/Kg dry wt	100	EPA 9060 MOD	10/15/09
POLYCHLORINATED BIPHENYL CONGENERS -PACE					
Refer to Contract Report	Completed	ng/Kg dry wt		EPA 1668 MOD	10/22/09

End of Report for Sample ID: FO095974

Report Date: 11/18/09

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: FO095975

Sample Collected: 10/06/09 10:34
Sample Received: 10/06/09

Sample Status: COMPLETE AND
VALIDATED

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-18-AAX263-1009
3333 NW 35TH AVE
Sample Point Code: 18_17
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 1 of 1

System ID: AN09579
EID File #: 1020.001
LocCode: PORTHARI
Collected By: JXB/PTB/ECH

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 SOLIDS	60.4	% W/W	0.01	SM 2540 G	10/07/09
METALS					
ARSENIC	4.55	mg/Kg dry wt	0.50	EPA 6020	10/06/09
CADMIUM	195	mg/Kg dry wt	0.10	EPA 6020	10/06/09
CHROMIUM	545	mg/Kg dry wt	0.50	EPA 6020	10/06/09
COPPER	536	mg/Kg dry wt	0.25	EPA 6020	10/06/09
LEAD	665	mg/Kg dry wt	0.10	EPA 6020	10/06/09
MERCURY	0.532	mg/Kg dry wt	0.010	EPA 6020	10/06/09
NICKEL	211	mg/Kg dry wt	0.25	EPA 6020	10/06/09
SILVER	6.35	mg/Kg dry wt	0.10	EPA 6020	10/06/09
ZINC	1570	mg/Kg dry wt	0.50	EPA 6020	10/06/09
GC ANALYSIS					
POLYCHLORINATED BIPHENYLS (PCB)					
Aroclor 1016/1242	<20	µg/Kg dry wt	20	EPA 8082	10/07/09
Aroclor 1221	<40	µg/Kg dry wt	40	EPA 8082	10/07/09
Aroclor 1232	<20	µg/Kg dry wt	20	EPA 8082	10/07/09
Aroclor 1248	288	µg/Kg dry wt	20	EPA 8082	10/07/09
Aroclor 1254	<20	µg/Kg dry wt	20	EPA 8082	10/07/09
Aroclor 1260	153	µg/Kg dry wt	20	EPA 8082	10/07/09
Aroclor 1262	<20	µg/Kg dry wt	20	EPA 8082	10/07/09
Aroclor 1268	<20	µg/Kg dry wt	20	EPA 8082	10/07/09
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	75400	mg/Kg dry wt	100	EPA 9060 MOD	10/15/09
POLYCHLORINATED BIPHENYL CONGENERS -PACE					
Refer to Contract Report	Completed	ng/Kg dry wt		EPA 1668 MOD	10/22/09

End of Report for Sample ID: FO095975

Report Date: 11/18/09

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: **FO095976**

Sample Collected: 10/06/09 11:24
Sample Received: 10/06/09

Sample Status: **COMPLETE AND
VALIDATED**

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-18-AAX262-1009
3333 NW 35TH AVE
Sample Point Code: 18_18
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 1 of 1

System ID: AN09580
EID File #: 1020.001
LocCode: PORTHARI
Collected By: JXB/PTB/ECH

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 SOLIDS	58.2	% W/W	0.01	SM 2540 G	10/07/09
METALS					
ARSENIC	4.56	mg/Kg dry wt	0.50	EPA 6020	10/06/09
CADMIUM	405	mg/Kg dry wt	0.10	EPA 6020	10/06/09
CHROMIUM	469	mg/Kg dry wt	0.50	EPA 6020	10/06/09
COPPER	2460	mg/Kg dry wt	0.25	EPA 6020	10/06/09
LEAD	924	mg/Kg dry wt	0.10	EPA 6020	10/06/09
MERCURY	0.833	mg/Kg dry wt	0.010	EPA 6020	10/06/09
NICKEL	171	mg/Kg dry wt	0.25	EPA 6020	10/06/09
SILVER	5.99	mg/Kg dry wt	0.10	EPA 6020	10/06/09
ZINC	1890	mg/Kg dry wt	0.50	EPA 6020	10/06/09
GC ANALYSIS					
POLYCHLORINATED BIPHENYLS (PCB)					
Aroclor 1016/1242	<20	µg/Kg dry wt	20	EPA 8082	10/07/09
Aroclor 1221	<40	µg/Kg dry wt	40	EPA 8082	10/07/09
Aroclor 1232	<20	µg/Kg dry wt	20	EPA 8082	10/07/09
Aroclor 1248	294	µg/Kg dry wt	20	EPA 8082	10/07/09
Aroclor 1254	<20	µg/Kg dry wt	20	EPA 8082	10/07/09
Aroclor 1260	123	µg/Kg dry wt	20	EPA 8082	10/07/09
Aroclor 1262	<20	µg/Kg dry wt	20	EPA 8082	10/07/09
Aroclor 1268	<20	µg/Kg dry wt	20	EPA 8082	10/07/09
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	89200	mg/Kg dry wt	100	EPA 9060 MOD	10/15/09
POLYCHLORINATED BIPHENYL CONGENERS -PACE					
Refer to Contract Report	Completed	ng/Kg dry wt		EPA 1668 MOD	10/22/09

End of Report for Sample ID: FO095976

Report Date: 11/18/09

Validated By: 

Report Prepared for:

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

**REPORT OF
LABORATORY
ANALYSIS
FOR PCBs**

Report Prepared Date:

November 6, 2009

Report Information:

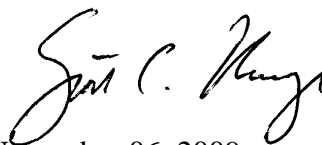
Pace Project #: 10114354
Sample Receipt Date: 10/09/2009
Client Project #: PSJ0242
Client Sub PO #: N/A
State Cert #: MN200001-005

Invoicing & Reporting Options:

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

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

This report has been reviewed by:



November 06, 2009

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 extracts were recovered at 15-100%. With 12 exceptions, 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. In some cases, interfering substances impacted the measurement of the internal standards or native PCB congeners. These values are flagged "I" in the sample results tables to indicate that incorrect isotope ratios were obtained. Two of the samples (F0095975 and F0095976) contained compounds which impacted the chromatography, necessitating additional cleanup steps for those extracts. After the cleanup steps, the extracts still required dilutions of 10 fold and 50 fold to obtain peak areas for all of the PCB congeners. The congeners which were obtained from the 50 fold dilution are flagged "N2" in the results tables.

A laboratory method blank was prepared and analyzed with each sample batch as part of our routine quality control procedures. The results show the blanks, with the exception of a low level of congener #31 in the solid blank, to be free of PCB congeners at the reporting limits. This indicates that the sample preparation steps did not significantly impact the measurement of the native congeners in the field samples. The blank corresponding to the two extra cleanup samples was processed through the extra cleanup procedure along with the samples. Upon reanalysis, it was found to contain low levels of PCB congeners 1,2, and 3 in addition to congener 31. All of those congeners were detected in the samples at levels more than 10 times higher than the levels in the blank, indicating that the background levels did not significantly affect the sample measurements in this case either.

Laboratory spike samples were also prepared with the sample batches using solid or water reference matrices that had been fortified with native standards. The results show that the spiked native compounds in the water lab spikes were recovered at 92-115% with relative percent differences of 0-8.4%. The spiked native compounds in the solid lab spike were recovered at 97-112%. This indicates a high level of accuracy for these analyses. Matrix spikes were also prepared with the sample batch using aliquots of one of the samples fortified with native standards. Results for some congeners in the matrix spikes appear to have been impacted by the high levels of native PCB congeners in the sample used for the spikes.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
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Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
Alabama	40770	Montana	92
Alaska	MN00064	Nebraska	
Arizona	AZ0014	Nevada	MN00064_2000
Arkansas	88-0680	New Jersey (NE	MN002
California	01155CA	New Mexico	MN00064
Colorado	MN00064	New York (NEL	11647
Connecticut	PH-0256	North Carolina	27700
EPA Region 5	WD-15J	North Dakota	R-036
EPA Region 8	8TMS-Q	Ohio	4150
Florida (NELAP	E87605	Ohio VAP	CL101
Georgia (DNR)	959	Oklahoma	D9922
Guam	08-004r	Oregon (ELAP)	MN200001-005
Hawaii	SLD	Oregon (OREL	MN200001-005
Idaho	MN00064	Pennsylvania	68-00563
Illinois	200012	Saipan	MP0003
Indiana		South Carolina	74003001
Indiana	C-MN-01	Tennessee	2818
Iowa	368	Tennessee	02818
Kansas	E-10167	Texas	T104704192-08
Kentucky	90062	Utah (NELAP)	PAM
Louisiana	LA0900016	Virginia	00251
Maine	2007029	Washington	C755
Maryland	322	West Virginia	9952C
Michigan	9909	Wisconsin	999407970
Minnesota	027-053-137	Wyoming	8TMS-Q
Mississippi	MN00064		

REPORT OF LABORATORY ANALYSIS

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Appendix A

Sample Management

SUBCONTRACT ORDER

TestAmerica Portland

PSJ0242

1153

1011435H

SENDING LABORATORY:

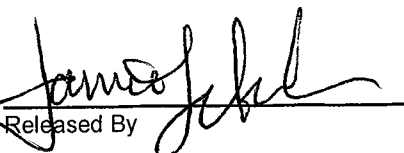
TestAmerica Portland
9405 SW Nimbus Ave.
Beaverton, OR 97008
Phone: (503) 906-9200
Fax: (503) 906-9210
Project Manager: Howard Holmes

RECEIVING LABORATORY:

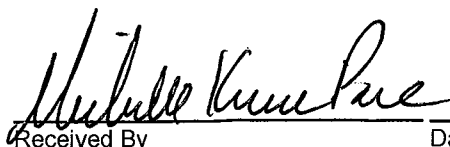
Pace Analytical Services, Inc - Minneapolis
1700 Elm Street Suite 200
Minneapolis, MN 55414
Phone : (612) 607-1700
Fax: (612) 607-6444
Project Location: OR - OREGON
Receipt Temperature: 4.9 °C Ice: (Y) / N

needs Excel EDD

Analysis	Units	Due	Expires	Comments
Sample ID: PSJ0242-01	Soil		Sampled: 10/06/09 09:49	City of Portland ID FO 095974 001
1668 Coplanar PCBs - SUB	ug/l	11/04/09	04/04/10 09:49	***209 Congeners*** to Pace
Containers Supplied: 4 oz. jar (A)				
Sample ID: PSJ0242-02	Soil		Sampled: 10/06/09 10:34	FO 095975 002
1668 Coplanar PCBs - SUB	ug/l	11/04/09	04/04/10 10:34	***209 Congeners*** to Pace
Containers Supplied: 4 oz. jar (A)				
Sample ID: PSJ0242-03	Soil		Sampled: 10/06/09 11:24	FO 095976 003
1668 Coplanar PCBs - SUB	ug/l	11/04/09	04/04/10 11:24	***209 Congeners*** to Pace
Containers Supplied: 4 oz. jar (A)				
Sample ID: PSJ0242-04	Soil		Sampled: 10/06/09 13:18	FO 095977 004
1668 Coplanar PCBs - SUB	ug/l	11/04/09	04/04/10 13:18	***209 Congeners*** to Pace
Containers Supplied: 4 oz. jar (A)				
Sample ID: PSJ0242-05	Soil		Sampled: 10/06/09 13:18	FO 095978 005
1668 Coplanar PCBs - SUB	ug/l	11/04/09	04/04/10 13:18	***209 Congeners*** to Pace
Containers Supplied: 4 oz. jar (A)				
Sample ID: PSJ0242-06	Water		Sampled: 10/06/09 12:56	FO 095979 006
1668 Coplanar PCBs - SUB	ug/l	11/04/09	04/04/10 12:56	***209 Congeners*** to Pace
Containers Supplied: 1L Amber - Unpres. (A)				

Released By 

10/06/09 13:58
Date/Time

Received By 

10/06/09 10:10
Date/Time

T=4.9



Sample Condition Upon Receipt

Client Name:

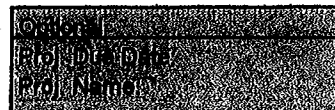
TA-Portland

Project #

10114354

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

Tracking #: 4170 7524 4661

Custody Seal on Cooler/Box Present: ☒ yes ☐ no Seals Intact: ☒ yes ☐ noPacking Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other Temp Blank: Yes ☒ No

Thermometer Used 80344042 or 179425

Type of Ice: Wet Blue None

☐ Samples on ice, cooling process has begun

Cooler Temperature 4.9

Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents: Jul 10/09/09

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 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: Water/soil		
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 type="checkbox"/> No	
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Headpace 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: 10/09/09

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina Compliance Office, Inc.
F-L213Rev.00, 05Aug2009 1700 Elm Street SE, Suite 200, Minneapolis, MN 55414

Reporting Flags

- A = Reporting Limit based on signal to noise
- B = Less than 10x higher than method blank level
- C = Result obtained from confirmation analysis
- D = Result obtained from analysis of diluted sample
- E = Exceeds calibration range
- I = Interference present
- J = Estimated value
- Nn = Value obtained from additional analysis
- P = PCDE Interference
- R = Recovery outside target range
- S = Peak saturated
- U = Analyte not detected
- V = Result verified by confirmation analysis
- X = %D Exceeds limits
- Y = Calculated using average of daily RFs
- * = See Discussion

REPORT OF LABORATORY ANALYSIS

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Appendix B

Sample Analysis Summary

Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America-Portland

Client's Sample ID	PSJ0242-01;F0095974		
Lab Sample ID	10114354001		
Filename	P91101B_11		
Injected By	BAL		
Total Amount Extracted	16.3 g	Matrix	Solid
% Moisture	33.1	Dilution	5
Dry Weight Extracted	10.9 g	Collected	10/06/2009 09:49
ICAL ID	P91101B02	Received	10/09/2009 10:10
CCal Filename(s)	P91101B_01	Extracted	10/22/2009 16:10
Method Blank ID	BLANK-22143	Analyzed	11/02/2009 02:35

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery	
Labeled Analytes							
13C-2-MoCB	1	9.205	2.78	2.0	0.376	19	R
13C-4-MoCB	3	12.668	2.96	2.0	0.853	43	
13C-2,2'-DiCB	4	13.015	1.62	2.0	0.698	35	
13C-4,4'-DiCB	15	21.198	1.62	2.0	1.34	67	
13C-2,2',6-TrCB	19	17.485	1.19	2.0	1.03	51	
13C-3,4,4'-TrCB	37	29.511	1.11	2.0	1.72	86	
13C-2,2',6,6'-TeCB	54	21.529	0.75	2.0	1.25	62	
13C-3,4,4',5-TeCB	81	36.789	0.84	2.0	1.71	85	
13C-3,3',4,4'-TeCB	77	37.376	0.79	2.0	1.61	80	
13C-2,2',4,6,6'-PeCB	104	28.119	1.64	2.0	1.36	68	
13C-2,3,3',4,4'-PeCB	105	40.981	1.72	2.0	1.62	81	
13C-2,3,4,4',5-PeCB	114	40.327	1.61	2.0	1.61	80	
13C-2,3',4,4',5-PeCB	118	39.790	1.62	2.0	1.62	81	
13C-2,3',4,4',5'-PeCB	123	39.455	1.62	2.0	1.59	80	
13C-3,3',4,4',5-PeCB	126	44.150	1.56	2.0	1.66	83	
13C-2,2',4,4',6,6'-HxCB	155	34.374	1.36	2.0	1.47	74	
13C-HxCB (156/157)	156/157	47.202	1.22	4.0	3.10	77	
13C-2,3',4,4',5,5'-HxCB	167	46.045	1.23	2.0	1.56	78	
13C-3,3',4,4',5,5'-HxCB	169	50.539	1.23	2.0	1.54	77	
13C-2,2',3,4',5,6,6'-HpCB	188	40.293	1.10	2.0	1.56	78	
13C-2,3,3',4,4',5,5'-HpCB	189	53.135	1.07	2.0	1.63	82	
13C-2,2',3,3',5,5',6,6'-OxCB	202	45.743	0.95	2.0	1.54	77	
13C-2,3,3',4,4',5,5',6-OxCB	205	56.174	0.87	2.0	1.45	73	
13C-2,2',3,3',4,4',5,5',6-NoCB	206	58.610	0.87	2.0	1.51	75	
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	52.575	0.81	2.0	1.46	73	
13C--DeCB	209	61.175	0.69	2.0	1.32	66	
Cleanup Standards							
13C-2,4,4'-TrCB	28	24.933	1.12	2.0	1.64	82	
13C-2,3,3',5,5'-PeCB	111	37.443	1.62	2.0	1.66	83	
13C-2,2',3,3',5,5',6-HpCB	178	43.396	1.04	2.0	1.59	80	
Recovery Standards							
13C-2,5-DiCB	9	15.963	1.57	2.0	NA	NA	
13C-2,2',5,5'-TeCB	52	27.046	0.80	2.0	NA	NA	
13C-2,2',4,5,5'-PeCB	101	34.609	1.56	2.0	NA	NA	
13C-2,2',3,4,4',5'-HxCB	138	42.943	1.27	2.0	NA	NA	
13C-2,2',3,3',4,4',5,5'-OxCB	194	55.571	0.93	2.0	NA	NA	

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

Results reported on a dry weight basis

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

REPORT OF LABORATORY ANALYSIS

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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 PSJ0242-01;F0095974
Lab Sample ID 10114354001
Filename P91101B_11

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
1		9.241	3.06	190	---	22.9
2		12.416	2.87	42.8	---	22.9
3		12.704	3.14	154	---	22.9
4		13.051	1.61	1730	---	22.9
5		---	---	ND	---	22.9
6		16.538	1.49	293	---	22.9
7		16.227	1.40	63.2	---	22.9
8		17.149	1.57	1560	---	22.9
9		15.987	1.51	99.6	---	22.9
10		13.315	1.65	131	---	22.9
11		20.456	1.50	248	---	138
12	12/13	20.803	1.40	134	---	45.9
13	12/13	20.803	1.40	(134)	---	45.9
14		---	---	ND	---	22.9
15		21.222	1.54	2150	---	22.9
16		21.127	1.05	3200	---	22.9
17		20.575	1.05	3830	---	22.9
18	18/30	20.036	1.05	9960	---	45.9
19		17.508	1.05	1970	---	22.9
20	20/28	24.950	1.03	10200	---	45.9
21	21/33	25.218	1.02	3030	---	45.9
22		25.671	1.05	2550	---	22.9
23		---	---	ND	---	22.9
24		20.983	1.04	180	---	22.9
25		24.229	1.02	431	---	22.9
26	26/29	23.944	1.06	1330	---	45.9
27		20.839	1.05	845	---	22.9
28	20/28	24.950	1.03	(10200)	---	45.9
29	26/29	23.944	1.06	(1330)	---	45.9
30	18/30	20.036	1.05	(9960)	---	45.9
31		24.598	1.04	8760	---	22.9
32		21.814	1.04	3230	---	22.9
33	21/33	25.218	1.02	(3030)	---	45.9
34		23.390	1.14	53.2	---	22.9
35		29.075	1.01	73.8	---	22.9
36		---	---	ND	---	22.9
37		29.545	1.03	2540	---	22.9
38		---	---	ND	---	22.9
39		27.952	0.92	58.1	---	22.9
40	40/41/71	29.343	0.80	9690	---	138
41	40/41/71	29.343	0.80	(9690)	---	138
42		28.790	0.79	4530	---	45.9
43	43/73	27.348	0.76	273	---	45.9
44	44/47/65	28.186	0.78	17100	---	138
45	45/51	25.017	0.80	4750	---	91.7
46		25.369	0.76	1670	---	45.9
47	44/47/65	28.186	0.78	(17100)	---	138
48		27.968	0.78	3180	---	45.9

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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 PSJ0242-01;F0095974
Lab Sample ID 10114354001
Filename P91101B_11

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
49	49/69	27.633	0.78	9540	---	91.7
50	50/53	24.229	0.81	3780	---	91.7
51	45/51	25.017	0.80	(4750)	---	91.7
52		27.080	0.80	21100	---	45.9
53	50/53	24.229	0.81	(3780)	---	91.7
54		21.529	0.77	56.5	---	45.9
55		---	---	ND	---	45.9
56		33.536	0.78	5700	---	45.9
57		31.339	0.78	61.5	---	45.9
58		---	---	ND	---	45.9
59	59/62/75	28.555	0.78	1520	---	138
60		33.770	0.76	2440	---	45.9
61	61/70/74/76	32.446	0.78	20100	---	183
62	59/62/75	28.555	0.78	(1520)	---	138
63		32.093	0.76	408	---	45.9
64		29.595	0.79	6920	---	45.9
65	44/47/65	28.186	0.78	(17100)	---	138
66		32.815	0.78	11000	---	45.9
67		31.808	0.79	265	---	45.9
68		---	---	ND	---	45.9
69	49/69	27.633	0.78	(9540)	---	91.7
70	61/70/74/76	32.446	0.78	(20100)	---	183
71	40/41/71	29.343	0.80	(9690)	---	138
72		30.567	0.84	83.2	---	45.9
73	43/73	27.348	0.76	(273)	---	45.9
74	61/70/74/76	32.446	0.78	(20100)	---	183
75	59/62/75	28.555	0.78	(1520)	---	138
76	61/70/74/76	32.446	0.78	(20100)	---	183
77		37.392	0.76	1100	---	45.9
78		---	---	ND	---	45.9
79		35.732	0.69	73.6	---	45.9
80		---	---	ND	---	45.9
81		---	---	ND	---	45.9
82		36.990	1.62	2360	---	45.9
83		35.112	1.48	1090	---	45.9
84		32.613	1.56	5230	---	45.9
85	85/116/117	36.504	1.43	2800	---	138
86	86/87/97/108/119/125	35.833	1.59	10700	---	275
87	86/87/97/108/119/125	35.833	1.59	(10700)	---	275
88	88/91	32.395	1.63	2600	---	91.7
89		33.167	1.63	363	---	45.9
90	90/101/113	34.642	1.58	14200	---	138
91	88/91	32.395	1.63	(2600)	---	91.7
92		34.039	1.58	2550	---	45.9
93	93/98/100/102	31.859	1.65	847	---	183
94		30.970	1.55	118	---	45.9
95		31.456	1.58	13600	---	45.9
96		28.522	1.61	219	---	45.9

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Nn = Value obtained from additional analyses

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X = Outside QC Limits
RT = Retention Time
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSJ0242-01;F0095974
Lab Sample ID 10114354001
Filename P91101B_11

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
97	86/87/97/108/119/125	35.833	1.59	(10700)	---	275
98	93/98/100/102	31.859	1.65	(847)	---	183
99		35.246	1.57	5790	---	45.9
100	93/98/100/102	31.859	1.65	(847)	---	183
101	90/101/113	34.642	1.58	(14200)	---	138
102	93/98/100/102	31.859	1.65	(847)	---	183
103		30.752	1.65	98.0	---	45.9
104		---	---	ND	---	45.9
105		40.998	1.60	4360	---	45.9
106		---	---	ND	---	45.9
107	107/124	39.103	1.56	408	---	91.7
108	86/87/97/108/119/125	35.833	1.59	(10700)	---	275
109		39.354	1.59	694	---	45.9
110	110/115	36.671	1.62	16200	---	91.7
111		---	---	ND	---	45.9
112		---	---	ND	---	45.9
113	90/101/113	34.642	1.58	(14200)	---	138
114		40.360	1.65	276	---	45.9
115	110/115	36.671	1.62	(16200)	---	91.7
116	85/116/117	36.504	1.43	(2800)	---	138
117	85/116/117	36.504	1.43	(2800)	---	138
118		39.824	1.58	9360	---	45.9
119	86/87/97/108/119/125	35.833	1.59	(10700)	---	275
120		---	---	ND	---	45.9
121		---	---	ND	---	45.9
122		40.142	1.54	170	---	45.9
123		39.472	1.53	207	---	45.9
124	107/124	39.103	1.56	(408)	---	91.7
125	86/87/97/108/119/125	35.833	1.59	(10700)	---	275
126		---	---	ND	---	45.9
127		---	---	ND	---	45.9
128	128/166	44.251	1.28	1650	---	91.7
129	129/138/163	42.976	1.27	11700	---	138
130		42.322	1.28	662	---	45.9
131		39.405	1.25	170	---	45.9
132		39.874	1.27	4270	---	45.9
133		40.428	1.18	126	---	45.9
134	134/143	38.784	1.26	592	---	91.7
135	135/151	37.644	1.28	4460	---	91.7
136		35.095	1.29	1790	---	45.9
137		42.540	1.25	459	---	45.9
138	129/138/163	42.976	1.27	(11700)	---	138
139	139/140	39.220	1.32	169	---	91.7
140	139/140	39.220	1.32	(169)	---	91.7
141		41.903	1.29	2300	---	45.9
142		---	---	ND	---	45.9
143	134/143	38.784	1.26	(592)	---	91.7
144		38.214	1.31	606	---	45.9

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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 PSJ0242-01;F0095974
Lab Sample ID 10114354001
Filename P91101B_11

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
145		---	---	ND	---	45.9
146		41.098	1.30	1330	---	45.9
147	147/149	38.600	1.27	9280	---	91.7
148		---	---	ND	---	45.9
149	147/149	38.600	1.27	(9280)	---	91.7
150		---	---	ND	---	45.9
151	135/151	37.644	1.28	(4460)	---	91.7
152		---	---	ND	---	45.9
153	153/168	41.719	1.28	8720	---	91.7
154		37.929	1.30	73.4	---	45.9
155		---	---	ND	---	45.9
156	156/157	47.219	1.26	1170	---	91.7
157	156/157	47.219	1.26	(1170)	---	91.7
158		43.379	1.29	1100	---	45.9
159		45.207	1.12	96.5	---	45.9
160		---	---	ND	---	45.9
161		---	---	ND	---	45.9
162		45.609	1.28	85.9	---	45.9
163	129/138/163	42.976	1.27	(11700)	---	138
164		42.658	1.28	781	---	45.9
165		---	---	ND	---	45.9
166	128/166	44.251	1.28	(1650)	---	91.7
167		46.079	1.23	380	---	45.9
168	153/168	41.719	1.28	(8720)	---	91.7
169		---	---	ND	---	45.9
170		49.902	1.07	2360	---	45.9
171	171/173	46.297	1.09	774	---	91.7
172		47.973	1.06	425	---	45.9
173	171/173	46.297	1.09	(774)	---	91.7
174		45.190	1.09	2780	---	45.9
175		44.083	1.16	122	---	45.9
176		41.534	1.03	384	---	45.9
177		45.659	1.06	1500	---	45.9
178		43.429	1.06	537	---	45.9
179		40.645	1.05	1190	---	45.9
180	180/193	48.627	1.07	5330	---	91.7
181		---	---	ND	---	45.9
182		---	---	ND	---	45.9
183	183/185	44.972	1.03	1820	---	91.7
184		---	---	ND	---	45.9
185	183/185	44.972	1.03	(1820)	---	91.7
186		---	---	ND	---	45.9
187		44.351	1.06	3380	---	45.9
188		---	---	ND	---	45.9
189		53.157	1.01	95.9	---	45.9
190		50.455	1.08	491	---	45.9
191		48.980	1.05	103	---	45.9
192		---	---	ND	---	45.9

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSJ0242-01;F0095974
Lab Sample ID 10114354001
Filename P91101B_11

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
193	180/193	48.627	1.07	(5330)	---	91.7
194		55.592	0.89	1020	---	68.8
195		52.855	0.91	414	---	68.8
196		51.294	0.88	608	---	68.8
197	197/200	47.722	0.93	207	---	138
198	198/199	50.623	0.89	1330	---	138
199	198/199	50.623	0.89	(1330)	---	138
200	197/200	47.722	0.93	(207)	---	138
201		46.699	0.88	167	---	68.8
202		45.760	0.90	223	---	68.8
203		51.512	0.92	772	---	68.8
204		---	---	ND	---	68.8
205		---	---	ND	---	68.8
206		58.653	0.76	414	---	68.8
207		---	---	ND	---	68.8
208		52.597	0.80	109	---	68.8
209		61.196	0.74	132	---	68.8

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PSJ0242-01;F0095974
Lab Sample ID 10114354001
Filename P91101B_11

Congener Group	Concentration ng/Kg
Total Monochloro Biphenyls	387
Total Dichloro Biphenyls	6410
Total Trichloro Biphenyls	52200
Total Tetrachloro Biphenyls	125000
Total Pentachloro Biphenyls	94200
Total Hexachloro Biphenyls	52000
Total Heptachloro Biphenyls	21300
Total Octachloro Biphenyls	4740
Total Nonachloro Biphenyls	523
Decachloro Biphenyls	132
Total PCBs	357000

ND = Not Detected

Results reported on a dry weight basis

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America-Portland

Client's Sample ID	PSJ0242-02;F0095975		
Lab Sample ID	10114354002		
Filename	P91105B_04		
Injected By	BAL		
Total Amount Extracted	16.9 g	Matrix	Solid
% Moisture	40.8	Dilution	10
Dry Weight Extracted	10.0 g	Collected	10/06/2009 10:34
ICAL ID	P91105B02	Received	10/09/2009 10:10
CCal Filename(s)	P91105B_01	Extracted	10/22/2009 16:10
Method Blank ID	BLANK-22143	Analyzed	11/05/2009 22:46

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery	
Labeled Analytes							
13C-2-MoCB	1	9.240	0.32	2.0	0.138	21	IR
13C-4-MoCB	3	12.738	2.19	2.0	0.700	39	I
13C-2,2'-DiCB	4	13.014	1.56	2.0	0.290	15	R
13C-4,4'-DiCB	15	21.232	1.49	2.0	0.614	31	
13C-2,2',6-TrCB	19	17.542	1.03	2.0	0.818	41	
13C-3,4,4'-TrCB	37	29.625	1.10	2.0	1.73	87	
13C-2,2',6,6'-TeCB	54	21.628	0.95	2.0	0.951	52	I
13C-3,4,4',5-TeCB	81	36.852	0.79	2.0	1.99	100	
13C-3,3',4,4'-TeCB	77	37.439	0.80	2.0	1.82	91	
13C-2,2',4,6,6'-PeCB	104	28.183	1.58	2.0	1.16	58	
13C-2,3,3',4,4'-PeCB	105	41.044	1.76	2.0	1.51	75	
13C-2,3,4,4',5-PeCB	114	40.390	1.51	2.0	1.60	80	
13C-2,3',4,4',5-PeCB	118	39.853	1.52	2.0	1.74	87	
13C-2,3',4,4',5'-PeCB	123	39.518	1.63	2.0	1.65	83	
13C-3,3',4,4',5-PeCB	126	44.230	1.69	2.0	1.54	77	
13C-2,2',4,4',6,6'-HxCB	155	34.387	1.32	2.0	1.35	67	
13C-HxCB (156/157)	156/157	47.265	1.23	4.0	3.07	77	
13C-2,3',4,4',5,5'-HxCB	167	46.108	1.25	2.0	1.70	85	
13C-3,3',4,4',5,5'-HxCB	169	50.601	1.38	2.0	1.62	81	
13C-2,2',3,4',5,6,6'-HpCB	188	40.356	0.99	2.0	1.37	69	
13C-2,3,3',4,4',5,5'-HpCB	189	53.195	0.93	2.0	1.58	79	
13C-2,2',3,3',5,5',6,6'-OxCB	202	45.789	0.89	2.0	1.47	74	
13C-2,3,3',4,4',5,5',6-OxCB	205	56.255	0.90	2.0	1.34	67	
13C-2,2',3,3',4,4',5,5',6-NoCB	206	58.691	0.84	2.0	1.58	79	
13C-2,2',3,3',4,4',5,5',6-NoCB	208	52.635	0.88	2.0	1.29	64	
13C--DeCB	209	61.234	0.78	2.0	1.23	61	
Cleanup Standards							
13C-2,4,4'-TrCB	28	25.031	1.25	2.0	1.58	87	I
13C-2,3,3',5,5'-PeCB	111	37.489	1.60	2.0	1.45	73	
13C-2,2',3,3',5,5',6-HpCB	178	43.475	1.04	2.0	1.47	74	
Recovery Standards							
13C-2,5-DiCB	9	16.069	1.47	2.0	NA	NA	
13C-2,2',5,5'-TeCB	52	27.161	0.81	2.0	NA	NA	
13C-2,2',4,5,5'-PeCB	101	34.639	1.71	2.0	NA	NA	
13C-2,2',3,4,4',5'-HxCB	138	43.022	1.27	2.0	NA	NA	
13C-2,2',3,3',4,4',5,5'-OxCB	194	55.652	0.86	2.0	NA	NA	

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PSJ0242-02;F0095975
Lab Sample ID 10114354002
Filename P91105B_04

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
1		9.288	3.36	933	---	24.9
2		12.499	2.79	589	---	24.9
3		12.738	3.19	1920	---	24.9
4		13.086	1.55	5130	---	24.9
5		---	---	ND	---	24.9
6		16.632	1.55	6950	---	24.9
7		16.297	1.53	1480	---	24.9
8		17.231	1.56	31800	---	24.9
9		16.069	1.40	2410	---	24.9
10		13.361	1.58	182	---	24.9
11		20.562	1.38	3900	---	150
12	12/13	20.909	1.34	2200	---	49.9
13	12/13	20.909	1.34	(2200)	---	49.9
14		---	---	ND	---	24.9
15		21.233	1.56	6810	N2	24.9
16		21.220	1.09	7100	---	24.9
17		20.669	1.07	13000	---	24.9
18	18/30	20.130	1.05	29700	---	49.9
19		17.578	1.09	2750	---	24.9
20	20/28	25.031	1.02	43300	---	49.9
21	21/33	25.316	1.03	21000	---	49.9
22		25.769	1.03	12900	---	24.9
23		23.707	1.09	37.8	---	24.9
24		21.089	1.52 I	---	379	24.9
25		24.327	1.03	2420	---	24.9
26	26/29	24.042	1.02	6460	---	49.9
27		20.933	1.05	1820	---	24.9
28	20/28	25.031	1.02	(43300)	---	49.9
29	26/29	24.042	1.02	(6460)	---	49.9
30	18/30	20.130	1.05	(29700)	---	49.9
31		24.696	1.02	39500	---	24.9
32		21.896	1.00	10500	---	24.9
33	21/33	25.316	1.03	(21000)	---	49.9
34		23.522	1.01	250	---	24.9
35		29.189	0.92	527	---	24.9
36		---	---	ND	---	24.9
37		29.625	1.01	10600	---	24.9
38		28.636	0.98	57.1	---	24.9
39		28.049	0.89	305	---	24.9
40	40/41/71	29.407	0.79	27500	---	150
41	40/41/71	29.407	0.79	(27500)	---	150
42		28.871	0.79	11800	---	49.9
43	43/73	27.429	0.80	6760	---	99.7
44	44/47/65	28.267	0.80	48000	---	150
45	45/51	25.098	0.80	10600	---	99.7
46		25.451	0.81	3600	---	49.9
47	44/47/65	28.267	0.80	(48000)	---	150
48		28.049	0.79	10600	---	49.9

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PSJ0242-02;F0095975
Lab Sample ID 10114354002
Filename P91105B_04

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
49	49/69	27.731	0.80	26100	---	99.7
50	50/53	24.327	0.80	9010	---	99.7
51	45/51	25.098	0.80	(10600)	---	99.7
52		27.177	0.80	62600	---	49.9
53	50/53	24.327	0.80	(9010)	---	99.7
54		21.611	0.84	134	---	49.9
55		32.979	0.78	1140	---	49.9
56		33.532	0.78	21700	---	49.9
57		31.386	0.84	152	---	49.9
58		31.604	0.76	197	---	49.9
59	59/62/75	28.653	0.79	4060	---	150
60		33.767	0.75	10100	---	49.9
61	61/70/74/76	32.476	0.76	81500	---	199
62	59/62/75	28.653	0.79	(4060)	---	150
63		32.124	0.76	1720	---	49.9
64		29.659	0.79	19700	---	49.9
65	44/47/65	28.267	0.80	(48000)	---	150
66		32.811	0.78	36000	---	49.9
67		31.839	0.75	1110	---	49.9
68		30.950	0.72	136	---	49.9
69	49/69	27.731	0.80	(26100)	---	99.7
70	61/70/74/76	32.476	0.76	(81500)	---	199
71	40/41/71	29.407	0.79	(27500)	---	150
72		30.631	0.73	231	---	49.9
73	43/73	27.429	0.80	(6760)	---	99.7
74	61/70/74/76	32.476	0.76	(81500)	---	199
75	59/62/75	28.653	0.79	(4060)	---	150
76	61/70/74/76	32.476	0.76	(81500)	---	199
77		37.456	0.76	4180	---	49.9
78		---	---	ND	---	49.9
79		35.796	0.68	316	---	49.9
80		---	---	ND	---	49.9
81		36.885	0.72	165	---	49.9
82		37.053	1.60	8510	---	49.9
83		35.175	1.60	5590	---	49.9
84		32.660	1.63	16100	---	49.9
85	85/116/117	36.567	1.60	10300	---	150
86	86/87/97/108/119/125	35.896	1.59	40700	---	299
87	86/87/97/108/119/125	35.896	1.59	(40700)	---	299
88	88/91	32.442	1.54	8460	---	99.7
89		33.163	1.59	1130	---	49.9
90	90/101/113	34.672	1.61	54000	---	150
91	88/91	32.442	1.54	(8460)	---	99.7
92		34.052	1.60	8860	---	49.9
93	93/98/100/102	31.889	1.68	2870	---	199
94		31.017	1.57	351	---	49.9
95		31.503	1.64	42500	---	49.9
96		28.619	1.63	609	---	49.9

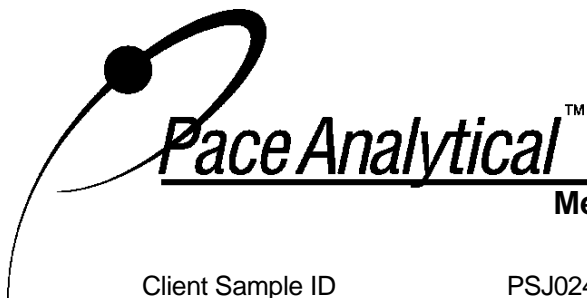
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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PSJ0242-02;F0095975
Lab Sample ID 10114354002
Filename P91105B_04

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
97	86/87/97/108/119/125	35.896	1.59	(40700)	---	299
98	93/98/100/102	31.889	1.68	(2870)	---	199
99		35.293	1.59	21600	---	49.9
100	93/98/100/102	31.889	1.68	(2870)	---	199
101	90/101/113	34.672	1.61	(54000)	---	150
102	93/98/100/102	31.889	1.68	(2870)	---	199
103		30.799	1.57	316	---	49.9
104		---	---	ND	---	49.9
105		41.077	1.52	24400	---	49.9
106		---	---	ND	---	49.9
107	107/124	39.166	1.55	2130	---	99.7
108	86/87/97/108/119/125	35.896	1.59	(40700)	---	299
109		39.417	1.49	3420	---	49.9
110	110/115	36.735	1.59	62400	---	99.7
111		---	---	ND	---	49.9
112		---	---	ND	---	49.9
113	90/101/113	34.672	1.61	(54000)	---	150
114		40.424	1.51	1530	---	49.9
115	110/115	36.735	1.59	(62400)	---	99.7
116	85/116/117	36.567	1.60	(10300)	---	150
117	85/116/117	36.567	1.60	(10300)	---	150
118		39.887	1.51	45700	---	49.9
119	86/87/97/108/119/125	35.896	1.59	(40700)	---	299
120		38.009	1.71	104	---	49.9
121		---	---	ND	---	49.9
122		40.205	1.51	756	---	49.9
123		39.535	1.50	1030	---	49.9
124	107/124	39.166	1.55	(2130)	---	99.7
125	86/87/97/108/119/125	35.896	1.59	(40700)	---	299
126		44.230	1.36	195	---	49.9
127		42.687	1.40	193	---	49.9
128	128/166	44.314	1.36	9060	---	99.7
129	129/138/163	43.039	1.27	67000	---	150
130		42.385	1.29	3620	---	49.9
131		39.468	1.31	870	---	49.9
132		39.937	1.27	21300	---	49.9
133		40.491	1.30	671	---	49.9
134	134/143	38.847	1.29	2980	---	99.7
135	135/151	37.707	1.28	19900	---	99.7
136		35.142	1.27	7230	---	49.9
137		42.603	1.26	2940	---	49.9
138	129/138/163	43.039	1.27	(67000)	---	150
139	139/140	39.283	1.27	891	---	99.7
140	139/140	39.283	1.27	(891)	---	99.7
141		41.966	1.27	12100	---	49.9
142		---	---	ND	---	49.9
143	134/143	38.847	1.29	(2980)	---	99.7
144		38.211	1.26	2380 N2	---	49.9

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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 PSJ0242-02;F0095975
Lab Sample ID 10114354002
Filename P91105B_04

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
145		---	---	ND	---	49.9
146		41.145	1.27	7800	---	49.9
147	147/149	38.646	1.26	44300	---	99.7
148		---	---	ND	---	49.9
149	147/149	38.646	1.26	(44300)	---	99.7
150		---	---	ND	---	49.9
151	135/151	37.707	1.28	(19900)	---	99.7
152		---	---	ND	---	49.9
153	153/168	41.782	1.28	50200	---	99.7
154		37.975	1.17	408	---	49.9
155		---	---	ND	---	49.9
156	156/157	47.281	1.26	7320	---	99.7
157	156/157	47.281	1.26	(7320)	---	99.7
158		43.442	1.25	6190	---	49.9
159		45.269	1.30	717	---	49.9
160		---	---	ND	---	49.9
161		---	---	ND	---	49.9
162		45.689	1.20	581	---	49.9
163	129/138/163	43.039	1.27	(67000)	---	150
164		42.721	1.26	3960	---	49.9
165		---	---	ND	---	49.9
166	128/166	44.314	1.36	(9060)	---	99.7
167		46.124	1.24	2280	---	49.9
168	153/168	41.782	1.28	(50200)	---	99.7
169		50.685	1.42	62.1	---	49.9
170		49.964	1.06	14200	---	49.9
171	171/173	46.359	1.08	4610	---	99.7
172		48.036	1.11	2620	---	49.9
173	171/173	46.359	1.08	(4610)	---	99.7
174		45.269	1.06	15300	---	49.9
175		44.146	0.93	689	---	49.9
176		41.597	1.08	2070	---	49.9
177		45.705	1.06	8540	---	49.9
178		43.492	1.09	3070	---	49.9
179		40.692	1.06	6370	---	49.9
180	180/193	48.690	1.08	32900	---	99.7
181		46.124	1.07	114	---	49.9
182		44.549	2.37 I	---	77.0	49.9
183	183/185	45.035	1.07	11300	---	99.7
184		---	---	ND	---	49.9
185	183/185	45.035	1.07	(11300)	---	99.7
186		---	---	ND	---	49.9
187		44.414	1.05	19100	---	49.9
188		---	---	ND	---	49.9
189		53.238	1.00	595	---	49.9
190		50.534	1.02	2760	---	49.9
191		49.059	1.09	590	---	49.9
192		---	---	ND	---	49.9

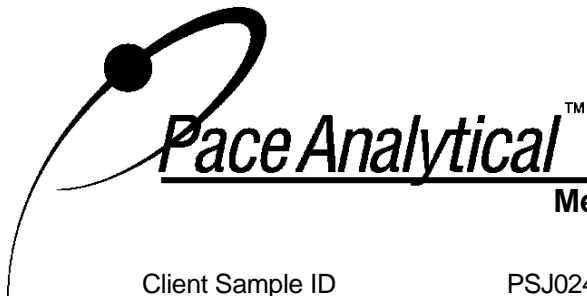
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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PSJ0242-02;F0095975
Lab Sample ID 10114354002
Filename P91105B_04

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
193	180/193	48.690	1.08	(32900)	---	99.7
194		55.695	0.91	6800	---	74.8
195		52.936	0.92	2570	---	74.8
196		51.356	0.84	3890	---	74.8
197	197/200	47.784	0.87	1270	---	150
198	198/199	50.685	0.89	8460	---	150
199	198/199	50.685	0.89	(8460)	---	150
200	197/200	47.784	0.87	(1270)	---	150
201		46.778	0.90	1040	---	74.8
202		45.823	0.88	1540	---	74.8
203		51.557	0.93	5060	---	74.8
204		---	---	ND	---	74.8
205		56.320	0.89	389	---	74.8
206		58.734	0.81	2650	---	74.8
207		53.669	0.76	359	---	74.8
208		52.656	0.82	833	---	74.8
209		61.320	0.69	1010	---	74.8

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PSJ0242-02;F0095975
Lab Sample ID 10114354002
Filename P91105B_04

Congener Group	Concentration ng/Kg
Total Monochloro Biphenyls	3440
Total Dichloro Biphenyls	60900
Total Trichloro Biphenyls	202000
Total Tetrachloro Biphenyls	399000
Total Pentachloro Biphenyls	364000
Total Hexachloro Biphenyls	275000
Total Heptachloro Biphenyls	125000
Total Octachloro Biphenyls	31000
Total Nonachloro Biphenyls	3840
Decachloro Biphenyls	1010
Total PCBs	1460000

ND = Not Detected

Results reported on a dry weight basis

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America-Portland

Client's Sample ID	PSJ0242-03;F0095976		
Lab Sample ID	10114354003		
Filename	P91105B_06		
Injected By	BAL		
Total Amount Extracted	16.9 g	Matrix	Solid
% Moisture	39.3	Dilution	10
Dry Weight Extracted	10.3 g	Collected	10/06/2009 11:24
ICAL ID	P91105B02	Received	10/09/2009 10:10
CCal Filename(s)	P91105B_01	Extracted	10/22/2009 16:10
Method Blank ID	BLANK-22143	Analyzed	11/06/2009 00:56

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery	
Labeled Analytes							
13C-2-MoCB	1	9.240	0.50	2.0	0.147	17	IR
13C-4-MoCB	3	12.726	2.78	2.0	0.719	36	
13C-2,2'-DiCB	4	13.038	1.64	2.0	0.401	20	R
13C-4,4'-DiCB	15	21.233	1.75	2.0	0.719	36	
13C-2,2',6-TrCB	19	17.579	1.06	2.0	0.587	29	
13C-3,4,4'-TrCB	37	29.592	1.20	2.0	1.41	70	
13C-2,2',6,6'-TeCB	54	21.561	0.86	2.0	1.02	51	
13C-3,4,4',5-TeCB	81	36.919	0.84	2.0	1.56	78	
13C-3,3',4,4'-TeCB	77	37.456	0.87	2.0	1.46	73	
13C-2,2',4,6,6'-PeCB	104	28.183	1.70	2.0	1.15	57	
13C-2,3,3',4,4'-PeCB	105	41.111	1.56	2.0	1.38	69	
13C-2,3,4,4',5-PeCB	114	40.457	1.37	2.0	1.47	73	
13C-2,3',4,4',5-PeCB	118	39.920	1.74	2.0	1.35	68	
13C-2,3',4,4',5'-PeCB	123	39.552	1.43	2.0	1.41	71	
13C-3,3',4,4',5-PeCB	126	44.330	1.46	2.0	1.27	64	
13C-2,2',4,4',6,6'-HxCB	155	34.438	1.27	2.0	1.29	65	
13C-HxCB (156/157)	156/157	47.399	1.23	4.0	2.63	66	
13C-2,3',4,4',5,5'-HxCB	167	46.225	1.24	2.0	1.43	71	
13C-3,3',4,4',5,5'-HxCB	169	50.769	1.41	2.0	1.19	59	
13C-2,2',3,4',5,6,6'-HpCB	188	40.407	1.17	2.0	1.28	64	
13C-2,3,3',4,4',5,5'-HpCB	189	53.324	0.93	2.0	1.40	70	
13C-2,2',3,3',5,5',6,6'-OxCB	202	45.906	0.94	2.0	1.27	63	
13C-2,3,3',4,4',5,5',6-OxCB	205	56.449	0.87	2.0	1.18	59	
13C-2,2',3,3',4,4',5,5',6-NoCB	206	58.820	0.79	2.0	1.32	66	
13C-2,2',3,3',4,4',5,5',6-NoCB	208	52.742	0.81	2.0	1.22	61	
13C--DeCB	209	61.384	0.64	2.0	1.22	61	
Cleanup Standards							
13C-2,4,4'-TrCB	28	25.015	1.20	2.0	1.43	71	
13C-2,3,3',5,5'-PeCB	111	37.539	1.51	2.0	1.30	65	
13C-2,2',3,3',5,5',6-HpCB	178	43.525	0.93	2.0	1.22	61	
Recovery Standards							
13C-2,5-DiCB	9	16.033	1.59	2.0	NA	NA	
13C-2,2',5,5'-TeCB	52	27.127	0.79	2.0	NA	NA	
13C-2,2',4,5,5'-PeCB	101	34.672	1.52	2.0	NA	NA	
13C-2,2',3,4,4',5'-HxCB	138	43.073	1.28	2.0	NA	NA	
13C-2,2',3,3',4,4',5,5'-OxCB	194	55.803	1.01	2.0	NA	NA	

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSJ0242-03;F0095976
Lab Sample ID 10114354003
Filename P91105B_06

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
1		9.264	3.21	1820	---	24.3
2		12.475	2.92	832	---	24.3
3		12.738	3.05	2420	---	24.3
4		13.098	1.60	7630	---	24.3
5		---	---	ND	---	24.3
6		16.608	1.51	7610	---	24.3
7		16.261	1.43	1610	---	24.3
8		17.207	1.55	35100	---	24.3
9		16.057	1.47	2430	---	24.3
10		13.314	1.44	389	---	24.3
11		20.526	1.63	3940	---	146
12	12/13	20.909	1.50	2010	---	48.7
13	12/13	20.909	1.50	(2010)	---	48.7
14		20.118	1.45	3210	---	24.3
15		21.233	1.52	7880	N2	24.3
16		21.197	1.07	17100	---	24.3
17		20.646	1.07	23100	---	24.3
18	18/30	20.106	1.06	54300	---	48.7
19		17.567	1.06	6650	---	24.3
20	20/28	25.031	1.02	74400	---	48.7
21	21/33	25.300	1.00	34700	---	48.7
22		25.752	1.03	22600	---	24.3
23		23.656	1.08	65.8	---	24.3
24		---	---	ND	---	24.3
25		24.310	1.02	4380	---	24.3
26	26/29	24.025	1.02	11500	---	48.7
27		20.909	1.02	3480	---	24.3
28	20/28	25.031	1.02	(74400)	---	48.7
29	26/29	24.025	1.02	(11500)	---	48.7
30	18/30	20.106	1.06	(54300)	---	48.7
31		24.679	1.02	71000	---	24.3
32		21.879	1.02	19000	---	24.3
33	21/33	25.300	1.00	(34700)	---	48.7
34		23.472	1.05	364	---	24.3
35		29.189	1.01	836	---	24.3
36		27.597	0.59 I	---	63.9	24.3
37		29.625	1.02	17000	---	24.3
38		28.636	0.89	103	---	24.3
39		28.049	0.97	526	---	24.3
40	40/41/71	29.407	0.79	45100	---	146
41	40/41/71	29.407	0.79	(45100)	---	146
42		28.871	0.78	19700	---	48.7
43	43/73	27.412	0.86	8840	---	97.4
44	44/47/65	28.267	0.80	81500	---	146
45	45/51	25.082	0.80	18500	---	97.4
46		25.434	0.81	6140	---	48.7
47	44/47/65	28.267	0.80	(81500)	---	146
48		28.033	0.80	17000	---	48.7

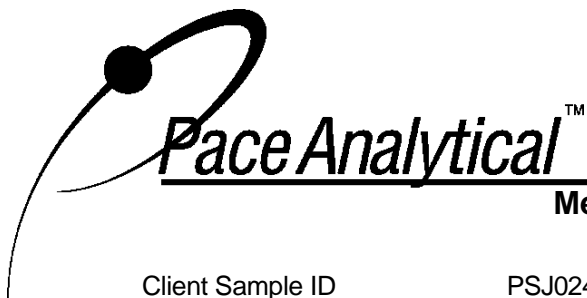
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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PSJ0242-03;F0095976
Lab Sample ID 10114354003
Filename P91105B_06

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
49	49/69	27.714	0.79	45200	---	97.4
50	50/53	24.310	0.81	15700	---	97.4
51	45/51	25.082	0.80	(18500)	---	97.4
52		27.161	0.80	107000	---	48.7
53	50/53	24.310	0.81	(15700)	---	97.4
54		21.628	0.75	206	---	48.7
55		---	---	ND	---	48.7
56		33.549	0.77	33100	---	48.7
57		31.369	0.76	146	---	48.7
58		31.604	0.48 I	---	211	48.7
59	59/62/75	28.636	0.83	6610	---	146
60		33.784	0.76	15700	---	48.7
61	61/70/74/76	32.493	0.77	131000	---	195
62	59/62/75	28.636	0.83	(6610)	---	146
63		32.141	0.76	2680	---	48.7
64		29.676	0.80	31600	---	48.7
65	44/47/65	28.267	0.80	(81500)	---	146
66		32.845	0.76	57400	---	48.7
67		31.855	0.77	1790	---	48.7
68		30.967	0.86	210	---	48.7
69	49/69	27.714	0.79	(45200)	---	97.4
70	61/70/74/76	32.493	0.77	(131000)	---	195
71	40/41/71	29.407	0.79	(45100)	---	146
72		30.665	0.80	412	---	48.7
73	43/73	27.412	0.86	(8840)	---	97.4
74	61/70/74/76	32.493	0.77	(131000)	---	195
75	59/62/75	28.636	0.83	(6610)	---	146
76	61/70/74/76	32.493	0.77	(131000)	---	195
77		37.523	0.78	6250	---	48.7
78		---	---	ND	---	48.7
79		35.829	0.69	614	---	48.7
80		---	---	ND	---	48.7
81		36.919	0.92 I	---	189	48.7
82		37.087	1.60	13600	---	48.7
83		35.175	1.59	6070	---	48.7
84		32.660	1.58	28600	---	48.7
85	85/116/117	36.584	1.56	17100	---	146
86	86/87/97/108/119/125	35.913	1.60	68400	---	292
87	86/87/97/108/119/125	35.913	1.60	(68400)	---	292
88	88/91	32.442	1.66	15000	---	97.4
89		33.180	1.65	1840	---	48.7
90	90/101/113	34.706	1.59	92800	---	146
91	88/91	32.442	1.66	(15000)	---	97.4
92		34.085	1.61	15600	---	48.7
93	93/98/100/102	31.906	1.54	5070	---	195
94		31.034	1.64	650	---	48.7
95		31.503	1.62	78000	---	48.7
96		28.603	1.55	1080	---	48.7

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PSJ0242-03;F0095976
Lab Sample ID 10114354003
Filename P91105B_06

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
97	86/87/97/108/119/125	35.913	1.60	(68400)	---	292
98	93/98/100/102	31.906	1.54	(5070)	---	195
99		35.326	1.59	39200	---	48.7
100	93/98/100/102	31.906	1.54	(5070)	---	195
101	90/101/113	34.706	1.59	(92800)	---	146
102	93/98/100/102	31.906	1.54	(5070)	---	195
103		30.816	1.59	573	---	48.7
104		---	---	ND	---	48.7
105		41.144	1.53	34500	---	48.7
106		---	---	ND	---	48.7
107	107/124	39.216	1.56	3240	---	97.4
108	86/87/97/108/119/125	35.913	1.60	(68400)	---	292
109		39.484	1.58	4970	---	48.7
110	110/115	36.768	1.61	97800	---	97.4
111		---	---	ND	---	48.7
112		---	---	ND	---	48.7
113	90/101/113	34.706	1.59	(92800)	---	146
114		40.490	1.52	1900	---	48.7
115	110/115	36.768	1.61	(97800)	---	97.4
116	85/116/117	36.584	1.56	(17100)	---	146
117	85/116/117	36.584	1.56	(17100)	---	146
118		39.937	1.52	79100	---	48.7
119	86/87/97/108/119/125	35.913	1.60	(68400)	---	292
120		38.042	1.61	143	---	48.7
121		---	---	ND	---	48.7
122		40.272	1.53	887	---	48.7
123		39.585	1.54	1790	---	48.7
124	107/124	39.216	1.56	(3240)	---	97.4
125	86/87/97/108/119/125	35.913	1.60	(68400)	---	292
126		44.364	1.55	1080	---	48.7
127		42.788	1.45	306	---	48.7
128	128/166	44.380	1.27	13700	---	97.4
129	129/138/163	43.123	1.27	98000	---	146
130		42.452	1.30	5400	---	48.7
131		39.535	1.22	1340	---	48.7
132		40.004	1.26	32800	---	48.7
133		40.591	1.18	1060	---	48.7
134	134/143	38.898	1.29	4790	---	97.4
135	135/151	37.741	1.28	33700	---	97.4
136		35.159	1.28	12600	---	48.7
137		42.687	1.28	6050	---	48.7
138	129/138/163	43.123	1.27	(98000)	---	146
139	139/140	39.334	1.25	1450	---	97.4
140	139/140	39.334	1.25	(1450)	---	97.4
141		42.033	1.27	19000	---	48.7
142		---	---	ND	---	48.7
143	134/143	38.898	1.29	(4790)	---	97.4
144		38.245	1.31	2770 N2	---	48.7

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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 PSJ0242-03;F0095976
Lab Sample ID 10114354003
Filename P91105B_06

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
145		---	---	ND	---	48.7
146		41.228	1.24	11700	---	48.7
147	147/149	38.713	1.26	69200	---	97.4
148		37.187	1.45 I	---	50.8	48.7
149	147/149	38.713	1.26	(69200)	---	97.4
150		34.823	1.33	92.8	---	48.7
151	135/151	37.741	1.28	(33700)	---	97.4
152		34.605	1.65 I	---	72.4	48.7
153	153/168	41.865	1.27	75200	---	97.4
154		38.026	1.19	677	---	48.7
155		---	---	ND	---	48.7
156	156/157	47.382	1.24	10500	---	97.4
157	156/157	47.382	1.24	(10500)	---	97.4
158		43.525	1.27	9020	---	48.7
159		45.454	0.94 I	---	84.4	48.7
160		---	---	ND	---	48.7
161		---	---	ND	---	48.7
162		45.772	1.23	841	---	48.7
163	129/138/163	43.123	1.27	(98000)	---	146
164		42.804	1.27	5100	---	48.7
165		---	---	ND	---	48.7
166	128/166	44.380	1.27	(13700)	---	97.4
167		46.242	1.26	3420	---	48.7
168	153/168	41.865	1.27	(75200)	---	97.4
169		50.785	1.42	140	---	48.7
170		50.081	1.06	19800	---	48.7
171	171/173	46.443	1.08	6190	---	97.4
172		48.120	1.04	3650	---	48.7
173	171/173	46.443	1.08	(6190)	---	97.4
174		45.336	1.05	21500	---	48.7
175		44.230	1.05	1050	---	48.7
176		41.664	1.04	3080	---	48.7
177		45.789	1.04	11900	---	48.7
178		43.576	1.07	4450	---	48.7
179		40.759	1.07	9420	---	48.7
180	180/193	48.807	1.05	46300	---	97.4
181		46.208	1.12	151	---	48.7
182		---	---	ND	---	48.7
183	183/185	45.135	1.05	15800	---	97.4
184		---	---	ND	---	48.7
185	183/185	45.135	1.05	(15800)	---	97.4
186		---	---	ND	---	48.7
187		44.498	1.07	27700	---	48.7
188		---	---	ND	---	48.7
189		53.367	1.01	798	---	48.7
190		50.635	1.00	3640	---	48.7
191		49.159	1.03	844	---	48.7
192		---	---	ND	---	48.7

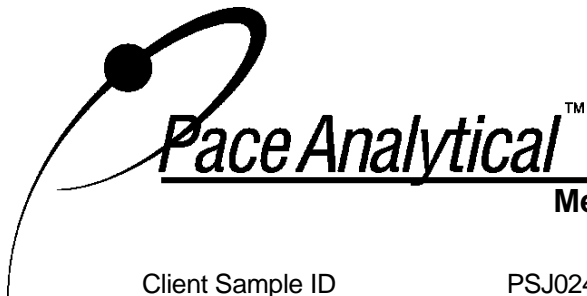
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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PSJ0242-03;F0095976
Lab Sample ID 10114354003
Filename P91105B_06

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
193	180/193	48.807	1.05	(46300)	---	97.4
194		55.846	0.91	10100	---	73.0
195		53.044	0.90	3770	---	73.0
196		51.456	0.90	5610	---	73.0
197	197/200	47.868	0.89	1870	---	146
198	198/199	50.786	0.89	12100	---	146
199	198/199	50.786	0.89	(12100)	---	146
200	197/200	47.868	0.89	(1870)	---	146
201		46.862	0.90	1540	---	73.0
202		45.906	0.86	2230	---	73.0
203		51.674	0.88	7040	---	73.0
204		---	---	ND	---	73.0
205		56.471	0.96	568	---	73.0
206		58.906	0.78	4120	---	73.0
207		53.777	0.81	500	---	73.0
208		52.742	0.78	1030	---	73.0
209		61.514	0.72	1610	---	73.0

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PSJ0242-03;F0095976
Lab Sample ID 10114354003
Filename P91105B_06

Congener Group	Concentration ng/Kg
Total Monochloro Biphenyls	5070
Total Dichloro Biphenyls	71800
Total Trichloro Biphenyls	361000
Total Tetrachloro Biphenyls	652000
Total Pentachloro Biphenyls	609000
Total Hexachloro Biphenyls	419000
Total Heptachloro Biphenyls	176000
Total Octachloro Biphenyls	44800
Total Nonachloro Biphenyls	5650
Decachloro Biphenyls	1610
Total PCBs	2350000

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Results reported on a dry weight basis

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America-Portland

Client's Sample ID	PSJ0242-04;F0095977		
Lab Sample ID	10114354004		
Filename	P91101B_09		
Injected By	BAL		
Total Amount Extracted	14.8 g	Matrix	Solid
% Moisture	29.7	Dilution	5
Dry Weight Extracted	10.4 g	Collected	10/06/2009 13:18
ICAL ID	P91101B02	Received	10/09/2009 10:10
CCal Filename(s)	P91101B_01	Extracted	10/22/2009 16:10
Method Blank ID	BLANK-22143	Analyzed	11/02/2009 00:25

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	9.180	2.83	2.0	0.547	27
13C-4-MoCB	3	12.619	3.55	2.0	0.923	46
13C-2,2'-DiCB	4	12.978	1.58	2.0	0.711	36
13C-4,4'-DiCB	15	21.138	1.59	2.0	1.36	68
13C-2,2',6-TrCB	19	17.435	0.99	2.0	0.854	43
13C-3,4,4'-TrCB	37	29.442	1.03	2.0	1.51	76
13C-2,2',6,6'-TeCB	54	21.461	0.84	2.0	1.05	52
13C-3,4,4',5-TeCB	81	36.770	0.82	2.0	1.62	81
13C-3,3',4,4'-TeCB	77	37.324	0.76	2.0	1.57	78
13C-2,2',4,6,6'-PeCB	104	28.034	1.53	2.0	1.21	61
13C-2,3,3',4,4'-PeCB	105	40.962	1.67	2.0	1.62	81
13C-2,3,4,4',5-PeCB	114	40.308	1.63	2.0	1.53	76
13C-2,3',4,4',5-PeCB	118	39.755	1.66	2.0	1.50	75
13C-2,3',4,4',5'-PeCB	123	39.420	1.52	2.0	1.51	75
13C-3,3',4,4',5-PeCB	126	44.148	1.60	2.0	1.63	81
13C-2,2',4,4',6,6'-HxCB	155	34.322	1.31	2.0	1.28	64
13C-HxCB (156/157)	156/157	47.217	1.26	4.0	3.11	78
13C-2,3',4,4',5,5'-HxCB	167	46.043	1.26	2.0	1.55	78
13C-3,3',4,4',5,5'-HxCB	169	50.537	1.28	2.0	1.59	79
13C-2,2',3,4',5,6,6'-HpCB	188	40.258	1.02	2.0	1.36	68
13C-2,3,3',4,4',5,5'-HpCB	189	53.134	1.03	2.0	1.62	81
13C-2,2',3,3',5,5',6'-OxCB	202	45.741	0.95	2.0	1.34	67
13C-2,3,3',4,4',5,5',6-OxCB	205	56.172	0.90	2.0	1.39	69
13C-2,2',3,3',4,4',5,5',6-NoCB	206	58.629	0.77	2.0	1.32	66
13C-2,2',3,3',4,4',5,5',6'-NoCB	208	52.573	0.81	2.0	1.34	67
13C--DeCB	209	61.173	0.70	2.0	1.23	62
Cleanup Standards						
13C-2,4,4'-TrCB	28	24.848	1.09	2.0	1.52	76
13C-2,3,3',5,5'-PeCB	111	37.391	1.54	2.0	1.47	73
13C-2,2',3,3',5,5',6-HpCB	178	43.394	0.99	2.0	1.45	73
Recovery Standards						
13C-2,5-DiCB	9	15.901	1.60	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	26.994	0.77	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	34.557	1.63	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	42.924	1.26	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	55.591	0.94	2.0	NA	NA

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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 PSJ0242-04;F0095977
Lab Sample ID 10114354004
Filename P91101B_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
1		---	---	ND	---	24.0
2		---	---	ND	---	24.0
3		---	---	ND	---	24.0
4		13.002	1.67	81.5	---	24.0
5		---	---	ND	---	24.0
6		16.489	1.55	33.0	---	24.0
7		---	---	ND	---	24.0
8		17.088	1.53	146	---	24.0
9		---	---	ND	---	24.0
10		---	---	ND	---	24.0
11		20.371	1.58	812	---	144
12	12/13	---	---	ND	---	48.0
13	12/13	---	---	ND	---	48.0
14		---	---	ND	---	24.0
15		21.150	1.53	149	---	24.0
16		21.078	1.08	119	---	24.0
17		20.503	1.13	139	---	24.0
18	18/30	19.963	1.06	274	---	48.0
19		17.459	1.17	41.6	---	24.0
20	20/28	24.882	1.02	677	---	48.0
21	21/33	25.167	0.99	247	---	48.0
22		25.603	1.10	283	---	24.0
23		---	---	ND	---	24.0
24		---	---	ND	---	24.0
25		24.161	1.07	41.3	---	24.0
26	26/29	23.876	1.08	85.7	---	48.0
27		20.778	1.13	30.0	---	24.0
28	20/28	24.882	1.02	(677)	---	48.0
29	26/29	23.876	1.08	(85.7)	---	48.0
30	18/30	19.963	1.06	(274)	---	48.0
31		24.530	1.03	458	---	24.0
32		21.746	1.04	118	---	24.0
33	21/33	25.167	0.99	(247)	---	48.0
34		---	---	ND	---	24.0
35		29.040	1.11	29.1	---	24.0
36		---	---	ND	---	24.0
37		29.476	0.99	273	---	24.0
38		---	---	ND	---	24.0
39		---	---	ND	---	24.0
40	40/41/71	29.292	0.82	515	---	144
41	40/41/71	29.292	0.82	(515)	---	144
42		28.738	0.75	225	---	48.0
43	43/73	---	---	ND	---	48.0
44	44/47/65	28.118	0.76	992	---	144
45	45/51	24.949	0.84	143	---	95.9
46		25.301	0.76	54.1	---	48.0
47	44/47/65	28.118	0.76	(992)	---	144
48		27.900	0.84	146	---	48.0

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSJ0242-04;F0095977
Lab Sample ID 10114354004
Filename P91101B_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
49	49/69	27.581	0.79	530	---	95.9
50	50/53	24.177	0.83	110	---	95.9
51	45/51	24.949	0.84	(143)	---	95.9
52		27.011	0.81	1570	---	48.0
53	50/53	24.177	0.83	(110)	---	95.9
54		---	---	ND	---	48.0
55		---	---	ND	---	48.0
56		33.433	0.76	369	---	48.0
57		---	---	ND	---	48.0
58		---	---	ND	---	48.0
59	59/62/75	---	---	ND	---	144
60		33.685	0.81	191	---	48.0
61	61/70/74/76	32.360	0.77	1530	---	192
62	59/62/75	---	---	ND	---	144
63		---	---	ND	---	48.0
64		29.526	0.81	410	---	48.0
65	44/47/65	28.118	0.76	(992)	---	144
66		32.746	0.75	727	---	48.0
67		---	---	ND	---	48.0
68		---	---	ND	---	48.0
69	49/69	27.581	0.79	(530)	---	95.9
70	61/70/74/76	32.360	0.77	(1530)	---	192
71	40/41/71	29.292	0.82	(515)	---	144
72		---	---	ND	---	48.0
73	43/73	---	---	ND	---	48.0
74	61/70/74/76	32.360	0.77	(1530)	---	192
75	59/62/75	---	---	ND	---	144
76	61/70/74/76	32.360	0.77	(1530)	---	192
77		37.357	0.77	170	---	48.0
78		---	---	ND	---	48.0
79		---	---	ND	---	48.0
80		---	---	ND	---	48.0
81		---	---	ND	---	48.0
82		36.971	1.59	546	---	48.0
83		35.043	1.55	247	---	48.0
84		32.545	1.64	1230	---	48.0
85	85/116/117	36.452	1.77	697	---	144
86	86/87/97/108/119/125	35.781	1.57	3020	---	288
87	86/87/97/108/119/125	35.781	1.57	(3020)	---	288
88	88/91	32.327	1.53	593	---	95.9
89		---	---	ND	---	48.0
90	90/101/113	34.574	1.58	4880	---	144
91	88/91	32.327	1.53	(593)	---	95.9
92		33.970	1.56	847	---	48.0
93	93/98/100/102	---	---	ND	---	192
94		---	---	ND	---	48.0
95		31.388	1.59	4340	---	48.0
96		---	---	ND	---	48.0

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSJ0242-04;F0095977
Lab Sample ID 10114354004
Filename P91101B_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
97	86/87/97/108/119/125	35.781	1.57	(3020)	---	288
98	93/98/100/102	---	---	ND	---	192
99		35.194	1.56	1580	---	48.0
100	93/98/100/102	---	---	ND	---	192
101	90/101/113	34.574	1.58	(4880)	---	144
102	93/98/100/102	---	---	ND	---	192
103		---	---	ND	---	48.0
104		---	---	ND	---	48.0
105		40.979	1.59	1450	---	48.0
106		---	---	ND	---	48.0
107	107/124	39.084	1.61	166	---	95.9
108	86/87/97/108/119/125	35.781	1.57	(3020)	---	288
109		39.319	1.52	249	---	48.0
110	110/115	36.636	1.57	6130	---	95.9
111		---	---	ND	---	48.0
112		---	---	ND	---	48.0
113	90/101/113	34.574	1.58	(4880)	---	144
114		40.325	1.66	69.1	---	48.0
115	110/115	36.636	1.57	(6130)	---	95.9
116	85/116/117	36.452	1.77	(697)	---	144
117	85/116/117	36.452	1.77	(697)	---	144
118		39.789	1.54	3820	---	48.0
119	86/87/97/108/119/125	35.781	1.57	(3020)	---	288
120		---	---	ND	---	48.0
121		---	---	ND	---	48.0
122		40.124	1.54	63.1	---	48.0
123		39.453	1.52	55.3	---	48.0
124	107/124	39.084	1.61	(166)	---	95.9
125	86/87/97/108/119/125	35.781	1.57	(3020)	---	288
126		---	---	ND	---	48.0
127		---	---	ND	---	48.0
128	128/166	44.232	1.29	1350	---	95.9
129	129/138/163	42.958	1.27	11600	---	144
130		42.287	1.26	534	---	48.0
131		39.386	1.25	114	---	48.0
132		39.839	1.27	3700	---	48.0
133		40.392	1.22	121	---	48.0
134	134/143	38.766	1.33	429	---	95.9
135	135/151	37.592	1.28	6060	---	95.9
136		35.043	1.27	1720	---	48.0
137		42.505	1.22	288	---	48.0
138	129/138/163	42.958	1.27	(11600)	---	144
139	139/140	39.185	1.25	125	---	95.9
140	139/140	39.185	1.25	(125)	---	95.9
141		41.885	1.29	2930	---	48.0
142		---	---	ND	---	48.0
143	134/143	38.766	1.33	(429)	---	95.9
144		38.196	1.21	715	---	48.0

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ND = Not Detected
NA = Not Applicable
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Pace AnalyticalTM

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1700 Elm Street - Suite 200
Minneapolis, MN 55414

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

Client Sample ID PSJ0242-04;F0095977
Lab Sample ID 10114354004
Filename P91101B_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
145		---	---	ND	---	48.0
146		41.063	1.24	1460	---	48.0
147	147/149	38.565	1.27	11400	---	95.9
148		---	---	ND	---	48.0
149	147/149	38.565	1.27	(11400)	---	95.9
150		---	---	ND	---	48.0
151	135/151	37.592	1.28	(6060)	---	95.9
152		---	---	ND	---	48.0
153	153/168	41.700	1.27	11700	---	95.9
154		37.877	1.35	61.2	---	48.0
155		---	---	ND	---	48.0
156	156/157	47.200	1.26	921	---	95.9
157	156/157	47.200	1.26	(921)	---	95.9
158		43.377	1.26	1030	---	48.0
159		45.205	1.18	302	---	48.0
160		---	---	ND	---	48.0
161		---	---	ND	---	48.0
162		45.641	1.25	192	---	48.0
163	129/138/163	42.958	1.27	(11600)	---	144
164		42.639	1.26	816	---	48.0
165		---	---	ND	---	48.0
166	128/166	44.232	1.29	(1350)	---	95.9
167		46.060	1.24	361	---	48.0
168	153/168	41.700	1.27	(11700)	---	95.9
169		---	---	ND	---	48.0
170		49.900	1.06	4960	---	48.0
171	171/173	46.278	1.16	1470	---	95.9
172		47.972	1.06	1020	---	48.0
173	171/173	46.278	1.16	(1470)	---	95.9
174		45.188	1.06	8250	---	48.0
175		44.064	1.11	301	---	48.0
176		41.532	1.04	984	---	48.0
177		45.641	1.07	3890	---	48.0
178		43.410	1.05	1710	---	48.0
179		40.610	1.05	3890	---	48.0
180	180/193	48.625	1.05	16300	---	95.9
181		---	---	ND	---	48.0
182		---	---	ND	---	48.0
183	183/185	44.970	1.05	5330	---	95.9
184		---	---	ND	---	48.0
185	183/185	44.970	1.05	(5330)	---	95.9
186		---	---	ND	---	48.0
187		44.333	1.06	11400	---	48.0
188		---	---	ND	---	48.0
189		53.177	1.18	156	---	48.0
190		50.453	1.12	1170	---	48.0
191		48.994	1.06	203	---	48.0
192		---	---	ND	---	48.0

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSJ0242-04;F0095977
Lab Sample ID 10114354004
Filename P91101B_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
193	180/193	48.625	1.05	(16300)	---	95.9
194		55.612	0.91	5700	---	71.9
195		52.853	0.90	2140	---	71.9
196		51.292	0.90	3100	---	71.9
197	197/200	47.720	0.94	1200	---	144
198	198/199	50.621	0.91	8200	---	144
199	198/199	50.621	0.91	(8200)	---	144
200	197/200	47.720	0.94	(1200)	---	144
201		46.714	0.90	960	---	71.9
202		45.758	0.96	1520	---	71.9
203		51.510	0.91	4570	---	71.9
204		---	---	ND	---	71.9
205		56.216	0.93	272	---	71.9
206		58.629	0.79	2300	---	71.9
207		53.608	0.79	313	---	71.9
208		52.616	0.83	486	---	71.9
209		61.194	0.71	129	---	71.9

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PSJ0242-04;F0095977
Lab Sample ID 10114354004
Filename P91101B_09

Congener Group	Concentration ng/Kg
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	1220
Total Trichloro Biphenyls	2820
Total Tetrachloro Biphenyls	7680
Total Pentachloro Biphenyls	30000
Total Hexachloro Biphenyls	57900
Total Heptachloro Biphenyls	61000
Total Octachloro Biphenyls	27700
Total Nonachloro Biphenyls	3100
Decachloro Biphenyls	129
Total PCBs	192000

ND = Not Detected

Results reported on a dry weight basis

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America-Portland

Client's Sample ID	PSJ0242-05;F0095978		
Lab Sample ID	10114354005		
Filename	P91101B_10		
Injected By	BAL		
Total Amount Extracted	14.7 g	Matrix	Solid
% Moisture	27.2	Dilution	5
Dry Weight Extracted	10.7 g	Collected	10/06/2009 13:18
ICAL ID	P91101B02	Received	10/09/2009 10:10
CCal Filename(s)	P91101B_01	Extracted	10/22/2009 16:10
Method Blank ID	BLANK-22143	Analyzed	11/02/2009 01:30

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery	
Labeled Analytes							
13C-2-MoCB	1	9.193	3.03	2.0	0.327	16	R
13C-4-MoCB	3	12.631	2.70	2.0	0.702	35	
13C-2,2'-DiCB	4	12.979	1.67	2.0	0.527	26	
13C-4,4'-DiCB	15	21.126	1.62	2.0	1.41	71	
13C-2,2',6-TrCB	19	17.448	1.20	2.0	0.879	44	
13C-3,4,4'-TrCB	37	29.461	1.16	2.0	1.53	77	
13C-2,2',6,6'-TeCB	54	21.462	0.76	2.0	1.02	51	
13C-3,4,4',5-TeCB	81	36.772	0.82	2.0	1.49	74	
13C-3,3',4,4'-TeCB	77	37.342	0.82	2.0	1.51	76	
13C-2,2',4,6,6'-PeCB	104	28.052	1.72	2.0	1.15	58	
13C-2,3,3',4,4'-PeCB	105	40.982	1.61	2.0	1.41	70	
13C-2,3,4,4',5-PeCB	114	40.294	1.54	2.0	1.43	72	
13C-2,3',4,4',5-PeCB	118	39.757	1.53	2.0	1.43	72	
13C-2,3',4,4',5'-PeCB	123	39.439	1.58	2.0	1.42	71	
13C-3,3',4,4',5-PeCB	126	44.151	1.57	2.0	1.54	77	
13C-2,2',4,4',6,6'-HxCB	155	34.324	1.23	2.0	1.47	73	
13C-HxCB (156/157)	156/157	47.203	1.28	4.0	2.98	74	
13C-2,3',4,4',5,5'-HxCB	167	46.046	1.33	2.0	1.51	76	
13C-3,3',4,4',5,5'-HxCB	169	50.557	1.25	2.0	1.55	78	
13C-2,2',3,4',5,6,6'-HpCB	188	40.260	1.04	2.0	1.46	73	
13C-2,3,3',4,4',5,5'-HpCB	189	53.180	1.01	2.0	1.63	81	
13C-2,2',3,3',5,5',6,6'-OxCB	202	45.744	0.88	2.0	1.45	72	
13C-2,3,3',4,4',5,5',6-OxCB	205	56.240	0.86	2.0	1.34	67	
13C-2,2',3,3',4,4',5,5',6-NoCB	206	58.654	0.84	2.0	1.33	67	
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	52.598	0.77	2.0	1.35	67	
13C--DeCB	209	61.219	0.68	2.0	1.27	64	
Cleanup Standards							
13C-2,4,4'-TrCB	28	24.849	1.06	2.0	1.54	77	
13C-2,3,3',5,5'-PeCB	111	37.410	1.52	2.0	1.46	73	
13C-2,2',3,3',5,5',6-HpCB	178	43.413	0.99	2.0	1.50	75	
Recovery Standards							
13C-2,5-DiCB	9	15.914	1.65	2.0	NA	NA	
13C-2,2',5,5'-TeCB	52	26.979	0.79	2.0	NA	NA	
13C-2,2',4,5,5'-PeCB	101	34.559	1.64	2.0	NA	NA	
13C-2,2',3,4,4',5'-HxCB	138	42.943	1.28	2.0	NA	NA	
13C-2,2',3,3',4,4',5,5'-OxCB	194	55.594	0.91	2.0	NA	NA	

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSJ0242-05;F0095978
Lab Sample ID 10114354005
Filename P91101B_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
1		---	---	ND	---	23.4
2		---	---	ND	---	23.4
3		12.655	3.19	24.5	---	23.4
4		13.015	1.46	55.6	---	23.4
5		---	---	ND	---	23.4
6		16.525	1.44	24.8	---	23.4
7		---	---	ND	---	23.4
8		17.077	1.44	112	---	23.4
9		---	---	ND	---	23.4
10		---	---	ND	---	23.4
11		20.396	1.54	723	---	140
12	12/13	---	---	ND	---	46.8
13	12/13	---	---	ND	---	46.8
14		---	---	ND	---	23.4
15		21.162	1.43	120	---	23.4
16		21.079	1.06	79.0	---	23.4
17		20.515	1.08	97.3	---	23.4
18	18/30	19.964	1.15	195	---	46.8
19		17.484	1.06	30.1	---	23.4
20	20/28	24.900	1.00	554	---	46.8
21	21/33	25.168	1.07	187	---	46.8
22		25.621	1.07	222	---	23.4
23		---	---	ND	---	23.4
24		---	---	ND	---	23.4
25		24.179	1.10	35.0	---	23.4
26	26/29	23.893	1.06	70.4	---	46.8
27		---	---	ND	---	23.4
28	20/28	24.900	1.00	(554)	---	46.8
29	26/29	23.893	1.06	(70.4)	---	46.8
30	18/30	19.964	1.15	(195)	---	46.8
31		24.547	1.01	382	---	23.4
32		21.764	1.04	95.6	---	23.4
33	21/33	25.168	1.07	(187)	---	46.8
34		---	---	ND	---	23.4
35		---	---	ND	---	23.4
36		---	---	ND	---	23.4
37		29.494	0.98	229	---	23.4
38		---	---	ND	---	23.4
39		---	---	ND	---	23.4
40	40/41/71	29.293	0.77	450	---	140
41	40/41/71	29.293	0.77	(450)	---	140
42		28.723	0.80	207	---	46.8
43	43/73	---	---	ND	---	46.8
44	44/47/65	28.136	0.81	894	---	140
45	45/51	24.933	0.72	115	---	93.6
46		---	---	ND	---	46.8
47	44/47/65	28.136	0.81	(894)	---	140
48		27.901	0.83	121	---	46.8

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSJ0242-05;F0095978
Lab Sample ID 10114354005
Filename P91101B_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
49	49/69	27.566	0.80	500	---	93.6
50	50/53	24.162	0.86	97.4	---	93.6
51	45/51	24.933	0.72	(115)	---	93.6
52		27.029	0.80	1520	---	46.8
53	50/53	24.162	0.86	(97.4)	---	93.6
54		---	---	ND	---	46.8
55		---	---	ND	---	46.8
56		33.469	0.79	335	---	46.8
57		---	---	ND	---	46.8
58		---	---	ND	---	46.8
59	59/62/75	---	---	ND	---	140
60		33.687	0.78	175	---	46.8
61	61/70/74/76	32.362	0.79	1500	---	187
62	59/62/75	---	---	ND	---	140
63		---	---	ND	---	46.8
64		29.545	0.78	374	---	46.8
65	44/47/65	28.136	0.81	(894)	---	140
66		32.748	0.77	700	---	46.8
67		---	---	ND	---	46.8
68		---	---	ND	---	46.8
69	49/69	27.566	0.80	(500)	---	93.6
70	61/70/74/76	32.362	0.79	(1500)	---	187
71	40/41/71	29.293	0.77	(450)	---	140
72		---	---	ND	---	46.8
73	43/73	---	---	ND	---	46.8
74	61/70/74/76	32.362	0.79	(1500)	---	187
75	59/62/75	---	---	ND	---	140
76	61/70/74/76	32.362	0.79	(1500)	---	187
77		37.376	0.77	141	---	46.8
78		---	---	ND	---	46.8
79		35.800	0.76	64.6	---	46.8
80		---	---	ND	---	46.8
81		---	---	ND	---	46.8
82		36.957	1.61	495	---	46.8
83		35.062	1.53	279	---	46.8
84		32.563	1.60	1150	---	46.8
85	85/116/117	36.470	1.59	640	---	140
86	86/87/97/108/119/125	35.800	1.60	2950	---	281
87	86/87/97/108/119/125	35.800	1.60	(2950)	---	281
88	88/91	32.328	1.58	581	---	93.6
89		---	---	ND	---	46.8
90	90/101/113	34.592	1.59	4990	---	140
91	88/91	32.328	1.58	(581)	---	93.6
92		33.972	1.59	846	---	46.8
93	93/98/100/102	---	---	ND	---	187
94		---	---	ND	---	46.8
95		31.389	1.62	4230	---	46.8
96		---	---	ND	---	46.8

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSJ0242-05;F0095978
Lab Sample ID 10114354005
Filename P91101B_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
97	86/87/97/108/119/125	35.800	1.60	(2950)	---	281
98	93/98/100/102	---	---	ND	---	187
99		35.196	1.59	1540	---	46.8
100	93/98/100/102	---	---	ND	---	187
101	90/101/113	34.592	1.59	(4990)	---	140
102	93/98/100/102	---	---	ND	---	187
103		---	---	ND	---	46.8
104		---	---	ND	---	46.8
105		40.998	1.59	1340	---	46.8
106		---	---	ND	---	46.8
107	107/124	39.087	1.52	142	---	93.6
108	86/87/97/108/119/125	35.800	1.60	(2950)	---	281
109		39.338	1.45	228	---	46.8
110	110/115	36.638	1.59	5760	---	93.6
111		---	---	ND	---	46.8
112		---	---	ND	---	46.8
113	90/101/113	34.592	1.59	(4990)	---	140
114		40.344	1.57	55.7	---	46.8
115	110/115	36.638	1.59	(5760)	---	93.6
116	85/116/117	36.470	1.59	(640)	---	140
117	85/116/117	36.470	1.59	(640)	---	140
118		39.808	1.57	3210	---	46.8
119	86/87/97/108/119/125	35.800	1.60	(2950)	---	281
120		---	---	ND	---	46.8
121		---	---	ND	---	46.8
122		40.143	1.44	49.0	---	46.8
123		---	---	ND	---	46.8
124	107/124	39.087	1.52	(142)	---	93.6
125	86/87/97/108/119/125	35.800	1.60	(2950)	---	281
126		---	---	ND	---	46.8
127		---	---	ND	---	46.8
128	128/166	44.251	1.27	1240	---	93.6
129	129/138/163	42.977	1.26	11100	---	140
130		42.306	1.32	486	---	46.8
131		39.388	1.26	114	---	46.8
132		39.858	1.27	3410	---	46.8
133		40.411	1.27	124	---	46.8
134	134/143	38.768	1.27	438	---	93.6
135	135/151	37.594	1.29	6310	---	93.6
136		35.045	1.26	1770	---	46.8
137		42.541	1.26	361	---	46.8
138	129/138/163	42.977	1.26	(11100)	---	140
139	139/140	39.187	1.26	115	---	93.6
140	139/140	39.187	1.26	(115)	---	93.6
141		41.904	1.29	2750	---	46.8
142		---	---	ND	---	46.8
143	134/143	38.768	1.27	(438)	---	93.6
144		38.198	1.22	735	---	46.8

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

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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 PSJ0242-05;F0095978
Lab Sample ID 10114354005
Filename P91101B_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
145		---	---	ND	---	46.8
146		41.082	1.28	1430	---	46.8
147	147/149	38.567	1.27	11200	---	93.6
148		---	---	ND	---	46.8
149	147/149	38.567	1.27	(11200)	---	93.6
150		---	---	ND	---	46.8
151	135/151	37.594	1.29	(6310)	---	93.6
152		---	---	ND	---	46.8
153	153/168	41.719	1.25	11400	---	93.6
154		37.879	1.15	65.2	---	46.8
155		---	---	ND	---	46.8
156	156/157	47.236	1.22	816	---	93.6
157	156/157	47.236	1.22	(816)	---	93.6
158		43.379	1.28	963	---	46.8
159		45.207	1.16	269	---	46.8
160		---	---	ND	---	46.8
161		---	---	ND	---	46.8
162		45.660	1.22	175	---	46.8
163	129/138/163	42.977	1.26	(11100)	---	140
164		42.658	1.29	711	---	46.8
165		40.629	1.17	53.6	---	46.8
166	128/166	44.251	1.27	(1240)	---	93.6
167		46.079	1.29	312	---	46.8
168	153/168	41.719	1.25	(11400)	---	93.6
169		---	---	ND	---	46.8
170		49.919	1.07	4410	---	46.8
171	171/173	46.297	1.04	1370	---	93.6
172		47.974	1.03	951	---	46.8
173	171/173	46.297	1.04	(1370)	---	93.6
174		45.207	1.08	7780	---	46.8
175		44.067	1.13	296	---	46.8
176		41.535	1.07	968	---	46.8
177		45.660	1.04	3590	---	46.8
178		43.430	1.07	1700	---	46.8
179		40.629	1.07	3870	---	46.8
180	180/193	48.645	1.04	15100	---	93.6
181		---	---	ND	---	46.8
182		---	---	ND	---	46.8
183	183/185	44.989	0.99	4960	---	93.6
184		---	---	ND	---	46.8
185	183/185	44.989	0.99	(4960)	---	93.6
186		---	---	ND	---	46.8
187		44.352	1.06	11300	---	46.8
188		---	---	ND	---	46.8
189		53.180	0.94	133	---	46.8
190		50.473	1.08	1070	---	46.8
191		48.997	1.10	183	---	46.8
192		---	---	ND	---	46.8

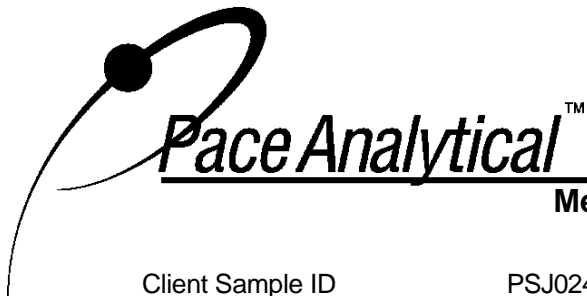
Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PSJ0242-05;F0095978
Lab Sample ID 10114354005
Filename P91101B_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
193	180/193	48.645	1.04	(15100)	---	93.6
194		55.637	0.89	5480	---	70.2
195		52.878	0.89	2010	---	70.2
196		51.311	0.91	3090	---	70.2
197	197/200	47.739	0.90	1170	---	140
198	198/199	50.641	0.91	8080	---	140
199	198/199	50.641	0.91	(8080)	---	140
200	197/200	47.739	0.90	(1170)	---	140
201		46.717	0.89	929	---	70.2
202		45.777	0.90	1380	---	70.2
203		51.529	0.91	4520	---	70.2
204		---	---	ND	---	70.2
205		56.240	0.88	264	---	70.2
206		58.698	0.78	2300	---	70.2
207		53.632	0.79	327	---	70.2
208		52.619	0.81	477	---	70.2
209		61.263	0.74	123	---	70.2

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EML =Method Specified Reporting Limit (1668A)
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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PSJ0242-05;F0095978
Lab Sample ID 10114354005
Filename P91101B_10

Congener Group	Concentration ng/Kg
Total Monochloro Biphenyls	24.5
Total Dichloro Biphenyls	1040
Total Trichloro Biphenyls	2180
Total Tetrachloro Biphenyls	7190
Total Pentachloro Biphenyls	28500
Total Hexachloro Biphenyls	56300
Total Heptachloro Biphenyls	57700
Total Octachloro Biphenyls	26900
Total Nonachloro Biphenyls	3100
Decachloro Biphenyls	123
Total PCBs	183000

ND = Not Detected

Results reported on a dry weight basis

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America-Portland

Client's Sample ID	PSJ0242-06;F0095979		
Lab Sample ID	10114354006		
Filename	P91027A_10		
Injected By	SMT		
Total Amount Extracted	951 mL	Matrix	Water
% Moisture	NA	Dilution	NA
Dry Weight Extracted	NA	Collected	10/06/2009 12:56
ICAL ID	P91027A02	Received	10/09/2009 10:10
CCal Filename(s)	P91027A_01	Extracted	10/23/2009 08:00
Method Blank ID	BLANK-22134	Analyzed	10/27/2009 18:37

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	9.229	2.95	2.0	0.609	30
13C-4-MoCB	3	12.655	2.96	2.0	0.798	40
13C-2,2'-DiCB	4	13.002	1.74	2.0	0.683	34
13C-4,4'-DiCB	15	21.125	1.57	2.0	1.13	57
13C-2,2',6-TrCB	19	17.447	1.07	2.0	0.931	47
13C-3,4,4'-TrCB	37	29.443	1.09	2.0	1.70	85
13C-2,2',6,6'-TeCB	54	21.477	0.81	2.0	1.08	54
13C-3,4,4',5-TeCB	81	36.721	0.79	2.0	1.73	87
13C-3,3',4,4'-TeCB	77	37.308	0.78	2.0	1.75	87
13C-2,2',4,6,6'-PeCB	104	28.034	1.68	2.0	1.31	66
13C-2,3,3',4,4'-PeCB	105	40.914	1.64	2.0	1.71	85
13C-2,3,4,4',5-PeCB	114	40.226	1.65	2.0	1.76	88
13C-2,3',4,4',5-PeCB	118	39.706	1.64	2.0	1.77	88
13C-2,3',4,4',5'-PeCB	123	39.371	1.61	2.0	1.70	85
13C-3,3',4,4',5-PeCB	126	44.066	1.57	2.0	1.76	88
13C-2,2',4,4',6,6'-HxCB	155	34.256	1.34	2.0	1.57	79
13C-HxCB (156/157)	156/157	47.119	1.30	4.0	3.59	90
13C-2,3',4,4',5,5'-HxCB	167	45.945	1.28	2.0	1.80	90
13C-3,3',4,4',5,5'-HxCB	169	50.422	1.32	2.0	1.78	89
13C-2,2',3,4',5,6,6'-HpCB	188	40.226	1.05	2.0	1.72	86
13C-2,3,3',4,4',5,5'-HpCB	189	53.007	1.06	2.0	1.83	92
13C-2,2',3,3',5,5',6'-OxCB	202	45.660	0.94	2.0	1.72	86
13C-2,3,3',4,4',5,5',6-OxCB	205	56.046	0.90	2.0	1.63	81
13C-2,2',3,3',4,4',5,5',6-NoCB	206	58.439	0.79	2.0	1.67	83
13C-2,2',3,3',4,4',5,5',6-NoCB	208	52.489	0.82	2.0	1.64	82
13C--DeCB	209	60.982	0.70	2.0	1.60	80
Cleanup Standards						
13C-2,4,4'-TrCB	28	24.848	1.04	2.0	1.59	80
13C-2,3,3',5,5'-PeCB	111	37.341	1.65	2.0	1.66	83
13C-2,2',3,3',5,5',6-HpCB	178	43.328	1.00	2.0	1.63	82
Recovery Standards						
13C-2,5-DiCB	9	15.914	1.62	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	26.961	0.80	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	34.507	1.66	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	42.876	1.27	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	55.421	0.91	2.0	NA	NA

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSJ0242-06;F0095979
Lab Sample ID 10114354006
Filename P91027A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		---	---	ND	---	0.263
2		---	---	ND	---	0.263
3		---	---	ND	---	0.263
4		---	---	ND	---	0.263
5		---	---	ND	---	0.263
6		---	---	ND	---	0.263
7		---	---	ND	---	0.263
8		---	---	ND	---	0.263
9		---	---	ND	---	0.263
10		---	---	ND	---	0.263
11		---	---	ND	---	1.58
12	12/13	---	---	ND	---	0.526
13	12/13	---	---	ND	---	0.526
14		---	---	ND	---	0.263
15		---	---	ND	---	0.263
16		---	---	ND	---	0.263
17		---	---	ND	---	0.263
18	18/30	---	---	ND	---	0.526
19		---	---	ND	---	0.263
20	20/28	---	---	ND	---	0.526
21	21/33	---	---	ND	---	0.526
22		---	---	ND	---	0.263
23		---	---	ND	---	0.263
24		---	---	ND	---	0.263
25		---	---	ND	---	0.263
26	26/29	---	---	ND	---	0.526
27		---	---	ND	---	0.263
28	20/28	---	---	ND	---	0.526
29	26/29	---	---	ND	---	0.526
30	18/30	---	---	ND	---	0.526
31		---	---	ND	---	0.263
32		---	---	ND	---	0.263
33	21/33	---	---	ND	---	0.526
34		---	---	ND	---	0.263
35		---	---	ND	---	0.263
36		---	---	ND	---	0.263
37		---	---	ND	---	0.263
38		---	---	ND	---	0.263
39		---	---	ND	---	0.263
40	40/41/71	---	---	ND	---	1.58
41	40/41/71	---	---	ND	---	1.58
42		---	---	ND	---	0.526
43	43/73	---	---	ND	---	0.526
44	44/47/65	---	---	ND	---	1.58
45	45/51	---	---	ND	---	1.05
46		---	---	ND	---	0.526
47	44/47/65	---	---	ND	---	1.58
48		---	---	ND	---	0.526

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
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R = Recovery outside of Method 1668A control limits
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSJ0242-06;F0095979
Lab Sample ID 10114354006
Filename P91027A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
49	49/69	---	---	ND	---	1.05
50	50/53	---	---	ND	---	1.05
51	45/51	---	---	ND	---	1.05
52		---	---	ND	---	0.526
53	50/53	---	---	ND	---	1.05
54		---	---	ND	---	0.526
55		---	---	ND	---	0.526
56		---	---	ND	---	0.526
57		---	---	ND	---	0.526
58		---	---	ND	---	0.526
59	59/62/75	---	---	ND	---	1.58
60		---	---	ND	---	0.526
61	61/70/74/76	---	---	ND	---	2.10
62	59/62/75	---	---	ND	---	1.58
63		---	---	ND	---	0.526
64		---	---	ND	---	0.526
65	44/47/65	---	---	ND	---	1.58
66		---	---	ND	---	0.526
67		---	---	ND	---	0.526
68		---	---	ND	---	0.526
69	49/69	---	---	ND	---	1.05
70	61/70/74/76	---	---	ND	---	2.10
71	40/41/71	---	---	ND	---	1.58
72		---	---	ND	---	0.526
73	43/73	---	---	ND	---	0.526
74	61/70/74/76	---	---	ND	---	2.10
75	59/62/75	---	---	ND	---	1.58
76	61/70/74/76	---	---	ND	---	2.10
77		---	---	ND	---	0.526
78		---	---	ND	---	0.526
79		---	---	ND	---	0.526
80		---	---	ND	---	0.526
81		---	---	ND	---	0.526
82		---	---	ND	---	0.526
83		---	---	ND	---	0.526
84		---	---	ND	---	0.526
85	85/116/117	---	---	ND	---	1.58
86	86/87/97/108/119/125	---	---	ND	---	3.15
87	86/87/97/108/119/125	---	---	ND	---	3.15
88	88/91	---	---	ND	---	1.05
89		---	---	ND	---	0.526
90	90/101/113	---	---	ND	---	1.58
91	88/91	---	---	ND	---	1.05
92		---	---	ND	---	0.526
93	93/98/100/102	---	---	ND	---	2.10
94		---	---	ND	---	0.526
95		---	---	ND	---	0.526
96		---	---	ND	---	0.526

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

Client Sample ID PSJ0242-06;F0095979
Lab Sample ID 10114354006
Filename P91027A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
97	86/87/97/108/119/125	---	---	ND	---	3.15
98	93/98/100/102	---	---	ND	---	2.10
99		---	---	ND	---	0.526
100	93/98/100/102	---	---	ND	---	2.10
101	90/101/113	---	---	ND	---	1.58
102	93/98/100/102	---	---	ND	---	2.10
103		---	---	ND	---	0.526
104		---	---	ND	---	0.526
105		---	---	ND	---	0.526
106		---	---	ND	---	0.526
107	107/124	---	---	ND	---	1.05
108	86/87/97/108/119/125	---	---	ND	---	3.15
109		---	---	ND	---	0.526
110	110/115	---	---	ND	---	1.05
111		---	---	ND	---	0.526
112		---	---	ND	---	0.526
113	90/101/113	---	---	ND	---	1.58
114		---	---	ND	---	0.526
115	110/115	---	---	ND	---	1.05
116	85/116/117	---	---	ND	---	1.58
117	85/116/117	---	---	ND	---	1.58
118		---	---	ND	---	0.526
119	86/87/97/108/119/125	---	---	ND	---	3.15
120		---	---	ND	---	0.526
121		---	---	ND	---	0.526
122		---	---	ND	---	0.526
123		---	---	ND	---	0.526
124	107/124	---	---	ND	---	1.05
125	86/87/97/108/119/125	---	---	ND	---	3.15
126		---	---	ND	---	0.526
127		---	---	ND	---	0.526
128	128/166	---	---	ND	---	1.05
129	129/138/163	---	---	ND	---	1.58
130		---	---	ND	---	0.526
131		---	---	ND	---	0.526
132		---	---	ND	---	0.526
133		---	---	ND	---	0.526
134	134/143	---	---	ND	---	1.05
135	135/151	---	---	ND	---	1.05
136		---	---	ND	---	0.526
137		---	---	ND	---	0.526
138	129/138/163	---	---	ND	---	1.58
139	139/140	---	---	ND	---	1.05
140	139/140	---	---	ND	---	1.05
141		---	---	ND	---	0.526
142		---	---	ND	---	0.526
143	134/143	---	---	ND	---	1.05
144		---	---	ND	---	0.526

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Pace AnalyticalTM

Pace Analytical Services, Inc.
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Tel: 612-607-1700
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSJ0242-06;F0095979
Lab Sample ID 10114354006
Filename P91027A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
145		---	---	ND	---	0.526
146		---	---	ND	---	0.526
147	147/149	---	---	ND	---	1.05
148		---	---	ND	---	0.526
149	147/149	---	---	ND	---	1.05
150		---	---	ND	---	0.526
151	135/151	---	---	ND	---	1.05
152		---	---	ND	---	0.526
153	153/168	---	---	ND	---	1.05
154		---	---	ND	---	0.526
155		---	---	ND	---	0.526
156	156/157	---	---	ND	---	1.05
157	156/157	---	---	ND	---	1.05
158		---	---	ND	---	0.526
159		---	---	ND	---	0.526
160		---	---	ND	---	0.526
161		---	---	ND	---	0.526
162		---	---	ND	---	0.526
163	129/138/163	---	---	ND	---	1.58
164		---	---	ND	---	0.526
165		---	---	ND	---	0.526
166	128/166	---	---	ND	---	1.05
167		---	---	ND	---	0.526
168	153/168	---	---	ND	---	1.05
169		---	---	ND	---	0.526
170		---	---	ND	---	0.526
171	171/173	---	---	ND	---	1.05
172		---	---	ND	---	0.526
173	171/173	---	---	ND	---	1.05
174		---	---	ND	---	0.526
175		---	---	ND	---	0.526
176		---	---	ND	---	0.526
177		---	---	ND	---	0.526
178		---	---	ND	---	0.526
179		---	---	ND	---	0.526
180	180/193	---	---	ND	---	1.05
181		---	---	ND	---	0.526
182		---	---	ND	---	0.526
183	183/185	---	---	ND	---	1.05
184		---	---	ND	---	0.526
185	183/185	---	---	ND	---	1.05
186		---	---	ND	---	0.526
187		---	---	ND	---	0.526
188		---	---	ND	---	0.526
189		---	---	ND	---	0.526
190		---	---	ND	---	0.526
191		---	---	ND	---	0.526
192		---	---	ND	---	0.526

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

ND = Not Detected
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RT = Retention Time
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REPORT OF LABORATORY ANALYSIS

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSJ0242-06;F0095979
Lab Sample ID 10114354006
Filename P91027A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
193	180/193	---	---	ND	---	1.05
194		---	---	ND	---	0.788
195		---	---	ND	---	0.788
196		---	---	ND	---	0.788
197	197/200	---	---	ND	---	1.58
198	198/199	---	---	ND	---	1.58
199	198/199	---	---	ND	---	1.58
200	197/200	---	---	ND	---	1.58
201		---	---	ND	---	0.788
202		---	---	ND	---	0.788
203		---	---	ND	---	0.788
204		---	---	ND	---	0.788
205		---	---	ND	---	0.788
206		---	---	ND	---	0.788
207		---	---	ND	---	0.788
208		---	---	ND	---	0.788
209		---	---	ND	---	0.788

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

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PSJ0242-06;F0095979
Lab Sample ID 10114354006
Filename P91027A_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-22134	Matrix	Water
Filename	P91026A_08	Extracted	10/23/2009 08:00
Injected By	CVS	Analyzed	10/26/2009 22:40
Total Amount Extracted	961 mL	Dilution	NA
ICAL ID	P91026A02		
CCal Filename(s)	P91026A_01		

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery	
Labeled Analytes							
13C-2-MoCB	1	9.181	2.21	2.0	0.0396	2	IR
13C-4-MoCB	3	12.609	1.68	2.0	0.0879	5	IR
13C-2,2'-DiCB	4	12.968	1.49	2.0	0.0921	5	R
13C-4,4'-DiCB	15	21.081	1.56	2.0	0.553	28	
13C-2,2',6-TrCB	19	17.390	1.10	2.0	0.290	14	R
13C-3,4,4'-TrCB	37	29.397	1.06	2.0	1.33	67	
13C-2,2',6,6'-TeCB	54	21.431	0.80	2.0	0.517	26	
13C-3,4,4',5-TeCB	81	36.658	0.76	2.0	1.67	84	
13C-3,3',4,4'-TeCB	77	37.262	0.78	2.0	1.67	83	
13C-2,2',4,6,6'-PeCB	104	27.988	1.59	2.0	0.995	50	
13C-2,3,3',4,4'-PeCB	105	40.850	1.59	2.0	1.71	85	
13C-2,3,4,4',5-PeCB	114	40.196	1.61	2.0	1.71	86	
13C-2,3',4,4',5-PeCB	118	39.660	1.65	2.0	1.72	86	
13C-2,3',4,4',5'-PeCB	123	39.308	1.55	2.0	1.75	88	
13C-3,3',4,4',5-PeCB	126	44.020	1.66	2.0	1.78	89	
13C-2,2',4,4',6,6'-HxCB	155	34.226	1.34	2.0	1.26	63	
13C-HxCB (156/157)	156/157	47.072	1.28	4.0	3.50	88	
13C-2,3',4,4',5,5'-HxCB	167	45.882	1.30	2.0	1.71	86	
13C-3,3',4,4',5,5'-HxCB	169	50.376	1.31	2.0	1.74	87	
13C-2,2',3,4',5,6,6'-HpCB	188	40.163	1.08	2.0	1.49	75	
13C-2,3,3',4,4',5,5'-HpCB	189	52.951	1.01	2.0	1.82	91	
13C-2,2',3,3',5,5',6,6'-OxCB	202	45.613	0.88	2.0	1.49	75	
13C-2,3,3',4,4',5,5',6-OxCB	205	55.947	0.92	2.0	1.65	82	
13C-2,2',3,3',4,4',5,5',6-NoCB	206	58.340	0.80	2.0	1.61	81	
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	52.434	0.82	2.0	1.56	78	
13C--DeCB	209	60.884	0.70	2.0	1.50	75	
Cleanup Standards							
13C-2,4,4'-TrCB	28	24.802	1.08	2.0	1.13	56	
13C-2,3,3',5,5'-PeCB	111	37.278	1.59	2.0	1.55	77	
13C-2,2',3,3',5,5',6-HpCB	178	43.282	1.04	2.0	1.57	79	
Recovery Standards							
13C-2,5-DiCB	9	15.880	1.62	2.0	NA	NA	
13C-2,2',5,5'-TeCB	52	26.915	0.86	2.0	NA	NA	
13C-2,2',4,5,5'-PeCB	101	34.461	1.62	2.0	NA	NA	
13C-2,2',3,4,4',5'-HxCB	138	42.829	1.34	2.0	NA	NA	
13C-2,2',3,3',4,4',5,5'-OxCB	194	55.365	0.93	2.0	NA	NA	

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-22134
Filename P91026A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
1		9.241	2.53 I	---	0.261	0.260
2		---	---	ND	---	0.260
3		---	---	ND	---	0.260
4		---	---	ND	---	0.260
5		---	---	ND	---	0.260
6		---	---	ND	---	0.260
7		---	---	ND	---	0.260
8		---	---	ND	---	0.260
9		---	---	ND	---	0.260
10		---	---	ND	---	0.260
11		---	---	ND	---	1.56
12	12/13	---	---	ND	---	0.520
13	12/13	---	---	ND	---	0.520
14		---	---	ND	---	0.260
15		---	---	ND	---	0.260
16		---	---	ND	---	0.260
17		---	---	ND	---	0.260
18	18/30	---	---	ND	---	0.520
19		---	---	ND	---	0.260
20	20/28	---	---	ND	---	0.520
21	21/33	---	---	ND	---	0.520
22		---	---	ND	---	0.260
23		---	---	ND	---	0.260
24		---	---	ND	---	0.260
25		---	---	ND	---	0.260
26	26/29	---	---	ND	---	0.520
27		---	---	ND	---	0.260
28	20/28	---	---	ND	---	0.520
29	26/29	---	---	ND	---	0.520
30	18/30	---	---	ND	---	0.520
31		---	---	ND	---	0.260
32		---	---	ND	---	0.260
33	21/33	---	---	ND	---	0.520
34		---	---	ND	---	0.260
35		---	---	ND	---	0.260
36		---	---	ND	---	0.260
37		---	---	ND	---	0.260
38		---	---	ND	---	0.260
39		---	---	ND	---	0.260
40	40/41/71	---	---	ND	---	1.56
41	40/41/71	---	---	ND	---	1.56
42		---	---	ND	---	0.520
43	43/73	---	---	ND	---	0.520
44	44/47/65	---	---	ND	---	1.56
45	45/51	---	---	ND	---	1.04

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

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-22134
Filename P91026A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
46		---	---	ND	---	0.520
47	44/47/65	---	---	ND	---	1.56
48		---	---	ND	---	0.520
49	49/69	---	---	ND	---	1.04
50	50/53	---	---	ND	---	1.04
51	45/51	---	---	ND	---	1.04
52		---	---	ND	---	0.520
53	50/53	---	---	ND	---	1.04
54		---	---	ND	---	0.520
55		---	---	ND	---	0.520
56		---	---	ND	---	0.520
57		---	---	ND	---	0.520
58		---	---	ND	---	0.520
59	59/62/75	---	---	ND	---	1.56
60		---	---	ND	---	0.520
61	61/70/74/76	---	---	ND	---	2.08
62	59/62/75	---	---	ND	---	1.56
63		---	---	ND	---	0.520
64		---	---	ND	---	0.520
65	44/47/65	---	---	ND	---	1.56
66		---	---	ND	---	0.520
67		---	---	ND	---	0.520
68		---	---	ND	---	0.520
69	49/69	---	---	ND	---	1.04
70	61/70/74/76	---	---	ND	---	2.08
71	40/41/71	---	---	ND	---	1.56
72		---	---	ND	---	0.520
73	43/73	---	---	ND	---	0.520
74	61/70/74/76	---	---	ND	---	2.08
75	59/62/75	---	---	ND	---	1.56
76	61/70/74/76	---	---	ND	---	2.08
77		---	---	ND	---	0.520
78		---	---	ND	---	0.520
79		---	---	ND	---	0.520
80		---	---	ND	---	0.520
81		---	---	ND	---	0.520
82		---	---	ND	---	0.520
83		---	---	ND	---	0.520
84		---	---	ND	---	0.520
85	85/116/117	---	---	ND	---	1.56
86	86/87/97/108/119/125	---	---	ND	---	3.12
87	86/87/97/108/119/125	---	---	ND	---	3.12
88	88/91	---	---	ND	---	1.04
89		---	---	ND	---	0.520
90	90/101/113	---	---	ND	---	1.56

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
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R = Recovery outside of Method 1668A control limits
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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-22134
Filename P91026A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
91	88/91	---	---	ND	---	1.04
92		---	---	ND	---	0.520
93	93/98/100/102	---	---	ND	---	2.08
94		---	---	ND	---	0.520
95		---	---	ND	---	0.520
96		---	---	ND	---	0.520
97	86/87/97/108/119/125	---	---	ND	---	3.12
98	93/98/100/102	---	---	ND	---	2.08
99		---	---	ND	---	0.520
100	93/98/100/102	---	---	ND	---	2.08
101	90/101/113	---	---	ND	---	1.56
102	93/98/100/102	---	---	ND	---	2.08
103		---	---	ND	---	0.520
104		---	---	ND	---	0.520
105		---	---	ND	---	0.520
106		---	---	ND	---	0.520
107	107/124	---	---	ND	---	1.04
108	86/87/97/108/119/125	---	---	ND	---	3.12
109		---	---	ND	---	0.520
110	110/115	---	---	ND	---	1.04
111		---	---	ND	---	0.520
112		---	---	ND	---	0.520
113	90/101/113	---	---	ND	---	1.56
114		---	---	ND	---	0.520
115	110/115	---	---	ND	---	1.04
116	85/116/117	---	---	ND	---	1.56
117	85/116/117	---	---	ND	---	1.56
118		---	---	ND	---	0.520
119	86/87/97/108/119/125	---	---	ND	---	3.12
120		---	---	ND	---	0.520
121		---	---	ND	---	0.520
122		---	---	ND	---	0.520
123		---	---	ND	---	0.520
124	107/124	---	---	ND	---	1.04
125	86/87/97/108/119/125	---	---	ND	---	3.12
126		---	---	ND	---	0.520
127		---	---	ND	---	0.520
128	128/166	---	---	ND	---	1.04
129	129/138/163	---	---	ND	---	1.56
130		---	---	ND	---	0.520
131		---	---	ND	---	0.520
132		---	---	ND	---	0.520
133		---	---	ND	---	0.520
134	134/143	---	---	ND	---	1.04
135	135/151	---	---	ND	---	1.04

Conc = Concentration
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R = 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-22134
Filename P91026A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
136		---	---	ND	---	0.520
137		---	---	ND	---	0.520
138	129/138/163	---	---	ND	---	1.56
139	139/140	---	---	ND	---	1.04
140	139/140	---	---	ND	---	1.04
141		---	---	ND	---	0.520
142		---	---	ND	---	0.520
143	134/143	---	---	ND	---	1.04
144		---	---	ND	---	0.520
145		---	---	ND	---	0.520
146		---	---	ND	---	0.520
147	147/149	---	---	ND	---	1.04
148		---	---	ND	---	0.520
149	147/149	---	---	ND	---	1.04
150		---	---	ND	---	0.520
151	135/151	---	---	ND	---	1.04
152		---	---	ND	---	0.520
153	153/168	---	---	ND	---	1.04
154		---	---	ND	---	0.520
155		---	---	ND	---	0.520
156	156/157	---	---	ND	---	1.04
157	156/157	---	---	ND	---	1.04
158		---	---	ND	---	0.520
159		---	---	ND	---	0.520
160		---	---	ND	---	0.520
161		---	---	ND	---	0.520
162		---	---	ND	---	0.520
163	129/138/163	---	---	ND	---	1.56
164		---	---	ND	---	0.520
165		---	---	ND	---	0.520
166	128/166	---	---	ND	---	1.04
167		---	---	ND	---	0.520
168	153/168	---	---	ND	---	1.04
169		---	---	ND	---	0.520
170		---	---	ND	---	0.520
171	171/173	---	---	ND	---	1.04
172		---	---	ND	---	0.520
173	171/173	---	---	ND	---	1.04
174		---	---	ND	---	0.520
175		---	---	ND	---	0.520
176		---	---	ND	---	0.520
177		---	---	ND	---	0.520
178		---	---	ND	---	0.520
179		---	---	ND	---	0.520
180	180/193	---	---	ND	---	1.04

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-22134
Filename P91026A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/L	EMPC ng/L	EML ng/L
181		---	---	ND	---	0.520
182		---	---	ND	---	0.520
183	183/185	---	---	ND	---	1.04
184		---	---	ND	---	0.520
185	183/185	---	---	ND	---	1.04
186		---	---	ND	---	0.520
187		---	---	ND	---	0.520
188		---	---	ND	---	0.520
189		---	---	ND	---	0.520
190		---	---	ND	---	0.520
191		---	---	ND	---	0.520
192		---	---	ND	---	0.520
193	180/193	---	---	ND	---	1.04
194		---	---	ND	---	0.780
195		---	---	ND	---	0.780
196		---	---	ND	---	0.780
197	197/200	---	---	ND	---	1.56
198	198/199	---	---	ND	---	1.56
199	198/199	---	---	ND	---	1.56
200	197/200	---	---	ND	---	1.56
201		---	---	ND	---	0.780
202		---	---	ND	---	0.780
203		---	---	ND	---	0.780
204		---	---	ND	---	0.780
205		---	---	ND	---	0.780
206		---	---	ND	---	0.780
207		---	---	ND	---	0.780
208		---	---	ND	---	0.780
209		---	---	ND	---	0.780

Conc = Concentration
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I = Interference

REPORT OF LABORATORY ANALYSIS

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Client Sample ID
Lab Sample ID BLANK-22134
Filename P91026A_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 Polychlorobiphenyl Blank Analysis Results

Lab Sample ID	BLANK-22143		
Filename	P91101A_05		
Injected By	BAL	Matrix	Solid-extractcleanup
Total Amount Extracted	10.2 g	Extracted	10/22/2009 16:10
ICAL ID	P91101A02	Analyzed	11/01/2009 07:58
CCal Filename(s)	P91101A_01	Dilution	5

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

Labeled Analytes

13C-2-MoCB	1	9.157	3.34	2.0	0.819	41
13C-4-MoCB	3	12.571	3.20	2.0	1.02	51
13C-2,2'-DiCB	4	12.919	1.61	2.0	0.884	44
13C-4,4'-DiCB	15	21.066	1.68	2.0	1.37	69
13C-2,2',6-TrCB	19	17.376	1.05	2.0	1.17	59
13C-3,4,4'-TrCB	37	29.360	1.04	2.0	1.52	76
13C-2,2',6,6'-TeCB	54	21.378	0.82	2.0	1.20	60
13C-3,4,4',5-TeCB	81	36.637	0.79	2.0	1.66	83
13C-3,3',4,4'-TeCB	77	37.224	0.78	2.0	1.63	82
13C-2,2',4,6,6'-PeCB	104	27.951	1.56	2.0	1.19	60
13C-2,3,3',4,4'-PeCB	105	40.813	1.55	2.0	1.66	83
13C-2,3,4,4',5-PeCB	114	40.159	1.61	2.0	1.67	83
13C-2,3',4,4',5-PeCB	118	39.622	1.58	2.0	1.67	83
13C-2,3',4,4',5'-PeCB	123	39.287	1.62	2.0	1.62	81
13C-3,3',4,4',5-PeCB	126	43.982	1.56	2.0	1.69	84
13C-2,2',4,4',6,6'-HxCB	155	34.189	1.25	2.0	1.26	63
13C-HxCB (156/157)	156/157	47.017	1.28	4.0	3.24	81
13C-2,3',4,4',5,5'-HxCB	167	45.860	1.27	2.0	1.64	82
13C-3,3',4,4',5,5'-HxCB	169	50.337	1.30	2.0	1.70	85
13C-2,2',3,4',5,6,6'-HpCB	188	40.142	1.05	2.0	1.38	69
13C-2,3,3',4,4',5,5'-HpCB	189	52.919	1.04	2.0	1.68	84
13C-2,2',3,3',5,5',6,6'-OxCB	202	45.592	0.91	2.0	1.45	72
13C-2,3,3',4,4',5,5',6-OxCB	205	55.894	0.93	2.0	1.64	82
13C-2,2',3,3',4,4',5,5',6-NoCB	206	58.308	0.80	2.0	1.67	83
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	52.380	0.76	2.0	1.60	80
13C--DeCB	209	60.829	0.71	2.0	1.54	77

Cleanup Standards

13C-2,4,4'-TrCB	28	24.765	1.03	2.0	1.54	77
13C-2,3,3',5,5'-PeCB	111	37.258	1.55	2.0	1.67	83
13C-2,2',3,3',5,5',6-HpCB	178	43.244	1.07	2.0	1.65	82

Recovery Standards

13C-2,5-DiCB	9	15.842	1.58	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	26.895	0.83	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	34.424	1.63	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	42.791	1.33	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	55.312	0.93	2.0	NA	NA

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

Results reported on a dry weight basis

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = 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-22143
Filename P91101A_05

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
1		---	---	ND	---	24.6
2		---	---	ND	---	24.6
3		---	---	ND	---	24.6
4		---	---	ND	---	24.6
5		---	---	ND	---	24.6
6		---	---	ND	---	24.6
7		---	---	ND	---	24.6
8		---	---	ND	---	24.6
9		---	---	ND	---	24.6
10		---	---	ND	---	24.6
11		---	---	ND	---	148
12	12/13	---	---	ND	---	49.3
13	12/13	---	---	ND	---	49.3
14		---	---	ND	---	24.6
15		---	---	ND	---	24.6
16		---	---	ND	---	24.6
17		---	---	ND	---	24.6
18	18/30	---	---	ND	---	49.3
19		---	---	ND	---	24.6
20	20/28	---	---	ND	---	49.3
21	21/33	---	---	ND	---	49.3
22		---	---	ND	---	24.6
23		---	---	ND	---	24.6
24		---	---	ND	---	24.6
25		---	---	ND	---	24.6
26	26/29	---	---	ND	---	49.3
27		---	---	ND	---	24.6
28	20/28	---	---	ND	---	49.3
29	26/29	---	---	ND	---	49.3
30	18/30	---	---	ND	---	49.3
31		24.447	0.89	30.7	---	24.6
32		---	---	ND	---	24.6
33	21/33	---	---	ND	---	49.3
34		---	---	ND	---	24.6
35		---	---	ND	---	24.6
36		---	---	ND	---	24.6
37		---	---	ND	---	24.6
38		---	---	ND	---	24.6
39		---	---	ND	---	24.6
40	40/41/71	---	---	ND	---	148
41	40/41/71	---	---	ND	---	148
42		---	---	ND	---	49.3
43	43/73	---	---	ND	---	98.5
44	44/47/65	---	---	ND	---	148
45	45/51	---	---	ND	---	98.5

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

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

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-22143
Filename P91101A_05

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
46		---	---	ND	---	49.3
47	44/47/65	---	---	ND	---	148
48		---	---	ND	---	49.3
49	49/69	---	---	ND	---	98.5
50	50/53	---	---	ND	---	98.5
51	45/51	---	---	ND	---	98.5
52		---	---	ND	---	49.3
53	50/53	---	---	ND	---	98.5
54		---	---	ND	---	49.3
55		---	---	ND	---	49.3
56		---	---	ND	---	49.3
57		---	---	ND	---	49.3
58		---	---	ND	---	49.3
59	59/62/75	---	---	ND	---	148
60		---	---	ND	---	49.3
61	61/70/74/76	---	---	ND	---	197
62	59/62/75	---	---	ND	---	148
63		---	---	ND	---	49.3
64		---	---	ND	---	49.3
65	44/47/65	---	---	ND	---	148
66		---	---	ND	---	49.3
67		---	---	ND	---	49.3
68		---	---	ND	---	49.3
69	49/69	---	---	ND	---	98.5
70	61/70/74/76	---	---	ND	---	197
71	40/41/71	---	---	ND	---	148
72		---	---	ND	---	49.3
73	43/73	---	---	ND	---	98.5
74	61/70/74/76	---	---	ND	---	197
75	59/62/75	---	---	ND	---	148
76	61/70/74/76	---	---	ND	---	197
77		---	---	ND	---	49.3
78		---	---	ND	---	49.3
79		---	---	ND	---	49.3
80		---	---	ND	---	49.3
81		---	---	ND	---	49.3
82		---	---	ND	---	49.3
83		---	---	ND	---	49.3
84		---	---	ND	---	49.3
85	85/116/117	---	---	ND	---	148
86	86/87/97/108/119/125	---	---	ND	---	296
87	86/87/97/108/119/125	---	---	ND	---	296
88	88/91	---	---	ND	---	98.5
89		---	---	ND	---	49.3
90	90/101/113	---	---	ND	---	148

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

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

Results reported on a dry weight basis

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-22143
Filename P91101A_05

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
91	88/91	---	---	ND	---	98.5
92		---	---	ND	---	49.3
93	93/98/100/102	---	---	ND	---	197
94		---	---	ND	---	49.3
95		---	---	ND	---	49.3
96		---	---	ND	---	49.3
97	86/87/97/108/119/125	---	---	ND	---	296
98	93/98/100/102	---	---	ND	---	197
99		---	---	ND	---	49.3
100	93/98/100/102	---	---	ND	---	197
101	90/101/113	---	---	ND	---	148
102	93/98/100/102	---	---	ND	---	197
103		---	---	ND	---	49.3
104		---	---	ND	---	49.3
105		---	---	ND	---	49.3
106		---	---	ND	---	49.3
107	107/124	---	---	ND	---	98.5
108	86/87/97/108/119/125	---	---	ND	---	296
109		---	---	ND	---	49.3
110	110/115	---	---	ND	---	98.5
111		---	---	ND	---	49.3
112		---	---	ND	---	49.3
113	90/101/113	---	---	ND	---	148
114		---	---	ND	---	49.3
115	110/115	---	---	ND	---	98.5
116	85/116/117	---	---	ND	---	148
117	85/116/117	---	---	ND	---	148
118		---	---	ND	---	49.3
119	86/87/97/108/119/125	---	---	ND	---	296
120		---	---	ND	---	49.3
121		---	---	ND	---	49.3
122		---	---	ND	---	49.3
123		---	---	ND	---	49.3
124	107/124	---	---	ND	---	98.5
125	86/87/97/108/119/125	---	---	ND	---	296
126		---	---	ND	---	49.3
127		---	---	ND	---	49.3
128	128/166	---	---	ND	---	98.5
129	129/138/163	---	---	ND	---	148
130		---	---	ND	---	49.3
131		---	---	ND	---	49.3
132		---	---	ND	---	49.3
133		---	---	ND	---	49.3
134	134/143	---	---	ND	---	98.5
135	135/151	---	---	ND	---	98.5

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

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

Results reported on a dry weight basis

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-22143
Filename P91101A_05

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
136		---	---	ND	---	49.3
137		---	---	ND	---	49.3
138	129/138/163	---	---	ND	---	148
139	139/140	---	---	ND	---	98.5
140	139/140	---	---	ND	---	98.5
141		---	---	ND	---	49.3
142		---	---	ND	---	49.3
143	134/143	---	---	ND	---	98.5
144		---	---	ND	---	49.3
145		---	---	ND	---	49.3
146		---	---	ND	---	49.3
147	147/149	---	---	ND	---	98.5
148		---	---	ND	---	49.3
149	147/149	---	---	ND	---	98.5
150		---	---	ND	---	49.3
151	135/151	---	---	ND	---	98.5
152		---	---	ND	---	49.3
153	153/168	---	---	ND	---	98.5
154		---	---	ND	---	49.3
155		---	---	ND	---	49.3
156	156/157	---	---	ND	---	98.5
157	156/157	---	---	ND	---	98.5
158		---	---	ND	---	49.3
159		---	---	ND	---	49.3
160		---	---	ND	---	49.3
161		---	---	ND	---	49.3
162		---	---	ND	---	49.3
163	129/138/163	---	---	ND	---	148
164		---	---	ND	---	49.3
165		---	---	ND	---	49.3
166	128/166	---	---	ND	---	98.5
167		---	---	ND	---	49.3
168	153/168	---	---	ND	---	98.5
169		---	---	ND	---	49.3
170		---	---	ND	---	49.3
171	171/173	---	---	ND	---	98.5
172		---	---	ND	---	49.3
173	171/173	---	---	ND	---	98.5
174		---	---	ND	---	49.3
175		---	---	ND	---	49.3
176		---	---	ND	---	49.3
177		---	---	ND	---	49.3
178		---	---	ND	---	49.3
179		---	---	ND	---	49.3
180	180/193	---	---	ND	---	98.5

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

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

Results reported on a dry weight basis

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-22143
Filename P91101A_05

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
181		---	---	ND	---	49.3
182		---	---	ND	---	49.3
183	183/185	---	---	ND	---	98.5
184		---	---	ND	---	49.3
185	183/185	---	---	ND	---	98.5
186		---	---	ND	---	49.3
187		---	---	ND	---	49.3
188		---	---	ND	---	49.3
189		---	---	ND	---	49.3
190		---	---	ND	---	49.3
191		---	---	ND	---	49.3
192		---	---	ND	---	49.3
193	180/193	---	---	ND	---	98.5
194		---	---	ND	---	73.9
195		---	---	ND	---	73.9
196		---	---	ND	---	73.9
197	197/200	---	---	ND	---	148
198	198/199	---	---	ND	---	148
199	198/199	---	---	ND	---	148
200	197/200	---	---	ND	---	148
201		---	---	ND	---	73.9
202		---	---	ND	---	73.9
203		---	---	ND	---	73.9
204		---	---	ND	---	73.9
205		---	---	ND	---	73.9
206		---	---	ND	---	73.9
207		---	---	ND	---	73.9
208		---	---	ND	---	73.9
209		---	---	ND	---	73.9

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

Results reported on a dry weight basis

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

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Method 1668A Polychlorobiphenyl Blank Analysis Results

Client Sample ID
Lab Sample ID BLANK-22143
Filename P91101A_05

Congener Group	Concentration ng/Kg
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	ND
Total Trichloro Biphenyls	30.7
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	30.7

ND = Not Detected

Results reported on a dry weight basis

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Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID	BLANK-22143		
Filename	P91105A_09		
Injected By	SMT	Matrix	Solid-extractcleanup
Total Amount Extracted	10.2 g	Extracted	10/22/2009 16:10
ICAL ID	P91105B02	Analyzed	11/05/2009 16:08
CCal Filename(s)	P91105B_01	Dilution	NA

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery	
Labeled Analytes							
13C-2-MoCB	1	9.432	2.69	2.0	0.245	12	R
13C-4-MoCB	3	12.739	3.02	2.0	0.737	37	
13C-2,2'-DiCB	4	13.086	1.64	2.0	0.464	23	R
13C-4,4'-DiCB	15	21.125	1.58	2.0	1.60	80	
13C-2,2',6-TrCB	19	17.459	1.13	2.0	0.848	42	
13C-3,4,4'-TrCB	37	29.375	1.07	2.0	1.82	91	
13C-2,2',6,6'-TeCB	54	21.443	0.80	2.0	1.12	56	
13C-3,4,4',5-TeCB	81	36.653	0.78	2.0	1.97	98	
13C-3,3',4,4'-TeCB	77	37.240	0.80	2.0	2.09	104	
13C-2,2',4,6,6'-PeCB	104	27.966	1.69	2.0	1.09	55	
13C-2,3,3',4,4'-PeCB	105	40.845	1.70	2.0	1.99	100	
13C-2,3,4,4',5-PeCB	114	40.174	1.63	2.0	1.93	97	
13C-2,3',4,4',5-PeCB	118	39.638	1.57	2.0	1.92	96	
13C-2,3',4,4',5'-PeCB	123	39.302	1.55	2.0	1.85	93	
13C-3,3',4,4',5-PeCB	126	43.998	1.69	2.0	2.06	103	
13C-2,2',4,4',6,6'-HxCB	155	34.204	1.30	2.0	1.10	55	
13C-HxCB (156/157)	156/157	47.049	1.28	4.0	4.01	100	
13C-2,3',4,4',5,5'-HxCB	167	45.876	1.27	2.0	1.96	98	
13C-3,3',4,4',5,5'-HxCB	169	50.370	1.27	2.0	2.05	102	
13C-2,2',3,4',5,6,6'-HpCB	188	40.157	1.07	2.0	1.21	61	
13C-2,3,3',4,4',5,5'-HpCB	189	52.940	1.08	2.0	1.86	93	
13C-2,2',3,3',5,5',6,6'-OxCB	202	45.590	0.93	2.0	1.33	67	
13C-2,3,3',4,4',5,5',6-OxCB	205	55.958	0.93	2.0	1.60	80	
13C-2,2',3,3',4,4',5,5',6-NoCB	206	58.328	0.79	2.0	1.39	69	
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	52.401	0.82	2.0	1.45	72	
13C--DeCB	209	60.872	0.73	2.0	1.23	62	
Cleanup Standards							
13C-2,4,4'-TrCB	28	24.797	1.02	2.0	1.80	90	
13C-2,3,3',5,5'-PeCB	111	37.273	1.63	2.0	1.75	88	
13C-2,2',3,3',5,5',6-HpCB	178	43.260	1.05	2.0	1.50	75	
Recovery Standards							
13C-2,5-DiCB	9	15.949	1.61	2.0	NA	NA	
13C-2,2',5,5'-TeCB	52	26.910	0.79	2.0	NA	NA	
13C-2,2',4,5,5'-PeCB	101	34.439	1.62	2.0	NA	NA	
13C-2,2',3,4,4',5'-HxCB	138	42.807	1.29	2.0	NA	NA	
13C-2,2',3,3',4,4',5,5'-OxCB	194	55.333	0.91	2.0	NA	NA	

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

Results reported on a total weight basis

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = 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-22143
Filename P91105A_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
1		9.432	3.04	49.9	---	24.6
2		12.499	3.10	54.7	---	24.6
3		12.751	2.87	34.5	---	24.6
4		---	---	ND	---	24.6
5		---	---	ND	---	24.6
6		---	---	ND	---	24.6
7		---	---	ND	---	24.6
8		---	---	ND	---	24.6
9		---	---	ND	---	24.6
10		---	---	ND	---	24.6
11		---	---	ND	---	148
12	12/13	---	---	ND	---	49.3
13	12/13	---	---	ND	---	49.3
14		---	---	ND	---	24.6
15		---	---	ND	---	24.6
16		---	---	ND	---	24.6
17		---	---	ND	---	24.6
18	18/30	---	---	ND	---	49.3
19		---	---	ND	---	24.6
20	20/28	---	---	ND	---	49.3
21	21/33	---	---	ND	---	49.3
22		---	---	ND	---	24.6
23		---	---	ND	---	24.6
24		---	---	ND	---	24.6
25		---	---	ND	---	24.6
26	26/29	---	---	ND	---	49.3
27		---	---	ND	---	24.6
28	20/28	---	---	ND	---	49.3
29	26/29	---	---	ND	---	49.3
30	18/30	---	---	ND	---	49.3
31		24.479	0.98	35.1	---	24.6
32		---	---	ND	---	24.6
33	21/33	---	---	ND	---	49.3
34		---	---	ND	---	24.6
35		---	---	ND	---	24.6
36		---	---	ND	---	24.6
37		---	---	ND	---	24.6
38		---	---	ND	---	24.6
39		---	---	ND	---	24.6
40	40/41/71	---	---	ND	---	148
41	40/41/71	---	---	ND	---	148
42		---	---	ND	---	49.3
43	43/73	---	---	ND	---	98.5
44	44/47/65	---	---	ND	---	148
45	45/51	---	---	ND	---	98.5

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

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

Results reported on a total weight basis

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-22143
Filename P91105A_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
46		---	---	ND	---	49.3
47	44/47/65	---	---	ND	---	148
48		---	---	ND	---	49.3
49	49/69	---	---	ND	---	98.5
50	50/53	---	---	ND	---	98.5
51	45/51	---	---	ND	---	98.5
52		---	---	ND	---	49.3
53	50/53	---	---	ND	---	98.5
54		---	---	ND	---	49.3
55		---	---	ND	---	49.3
56		---	---	ND	---	49.3
57		---	---	ND	---	49.3
58		---	---	ND	---	49.3
59	59/62/75	---	---	ND	---	148
60		---	---	ND	---	49.3
61	61/70/74/76	---	---	ND	---	197
62	59/62/75	---	---	ND	---	148
63		---	---	ND	---	49.3
64		---	---	ND	---	49.3
65	44/47/65	---	---	ND	---	148
66		---	---	ND	---	49.3
67		---	---	ND	---	49.3
68		---	---	ND	---	49.3
69	49/69	---	---	ND	---	98.5
70	61/70/74/76	---	---	ND	---	197
71	40/41/71	---	---	ND	---	148
72		---	---	ND	---	49.3
73	43/73	---	---	ND	---	98.5
74	61/70/74/76	---	---	ND	---	197
75	59/62/75	---	---	ND	---	148
76	61/70/74/76	---	---	ND	---	197
77		---	---	ND	---	49.3
78		---	---	ND	---	49.3
79		---	---	ND	---	49.3
80		---	---	ND	---	49.3
81		---	---	ND	---	49.3
82		---	---	ND	---	49.3
83		---	---	ND	---	49.3
84		---	---	ND	---	49.3
85	85/116/117	---	---	ND	---	148
86	86/87/97/108/119/125	---	---	ND	---	296
87	86/87/97/108/119/125	---	---	ND	---	296
88	88/91	---	---	ND	---	98.5
89		---	---	ND	---	49.3
90	90/101/113	---	---	ND	---	148

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
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I = Interference

Results reported on a total weight basis

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-22143
Filename P91105A_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
91	88/91	---	---	ND	---	98.5
92		---	---	ND	---	49.3
93	93/98/100/102	---	---	ND	---	197
94		---	---	ND	---	49.3
95		---	---	ND	---	49.3
96		---	---	ND	---	49.3
97	86/87/97/108/119/125	---	---	ND	---	296
98	93/98/100/102	---	---	ND	---	197
99		---	---	ND	---	49.3
100	93/98/100/102	---	---	ND	---	197
101	90/101/113	---	---	ND	---	148
102	93/98/100/102	---	---	ND	---	197
103		---	---	ND	---	49.3
104		---	---	ND	---	49.3
105		---	---	ND	---	49.3
106		---	---	ND	---	49.3
107	107/124	---	---	ND	---	98.5
108	86/87/97/108/119/125	---	---	ND	---	296
109		---	---	ND	---	49.3
110	110/115	---	---	ND	---	98.5
111		---	---	ND	---	49.3
112		---	---	ND	---	49.3
113	90/101/113	---	---	ND	---	148
114		---	---	ND	---	49.3
115	110/115	---	---	ND	---	98.5
116	85/116/117	---	---	ND	---	148
117	85/116/117	---	---	ND	---	148
118		---	---	ND	---	49.3
119	86/87/97/108/119/125	---	---	ND	---	296
120		---	---	ND	---	49.3
121		---	---	ND	---	49.3
122		---	---	ND	---	49.3
123		---	---	ND	---	49.3
124	107/124	---	---	ND	---	98.5
125	86/87/97/108/119/125	---	---	ND	---	296
126		---	---	ND	---	49.3
127		---	---	ND	---	49.3
128	128/166	---	---	ND	---	98.5
129	129/138/163	---	---	ND	---	148
130		---	---	ND	---	49.3
131		---	---	ND	---	49.3
132		---	---	ND	---	49.3
133		---	---	ND	---	49.3
134	134/143	---	---	ND	---	98.5
135	135/151	---	---	ND	---	98.5

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
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Results reported on a total weight basis

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-22143
Filename P91105A_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
136		---	---	ND	---	49.3
137		---	---	ND	---	49.3
138	129/138/163	---	---	ND	---	148
139	139/140	---	---	ND	---	98.5
140	139/140	---	---	ND	---	98.5
141		---	---	ND	---	49.3
142		---	---	ND	---	49.3
143	134/143	---	---	ND	---	98.5
144		---	---	ND	---	49.3
145		---	---	ND	---	49.3
146		---	---	ND	---	49.3
147	147/149	---	---	ND	---	98.5
148		---	---	ND	---	49.3
149	147/149	---	---	ND	---	98.5
150		---	---	ND	---	49.3
151	135/151	---	---	ND	---	98.5
152		---	---	ND	---	49.3
153	153/168	---	---	ND	---	98.5
154		---	---	ND	---	49.3
155		---	---	ND	---	49.3
156	156/157	---	---	ND	---	98.5
157	156/157	---	---	ND	---	98.5
158		---	---	ND	---	49.3
159		---	---	ND	---	49.3
160		---	---	ND	---	49.3
161		---	---	ND	---	49.3
162		---	---	ND	---	49.3
163	129/138/163	---	---	ND	---	148
164		---	---	ND	---	49.3
165		---	---	ND	---	49.3
166	128/166	---	---	ND	---	98.5
167		---	---	ND	---	49.3
168	153/168	---	---	ND	---	98.5
169		---	---	ND	---	49.3
170		---	---	ND	---	49.3
171	171/173	---	---	ND	---	98.5
172		---	---	ND	---	49.3
173	171/173	---	---	ND	---	98.5
174		---	---	ND	---	49.3
175		---	---	ND	---	49.3
176		---	---	ND	---	49.3
177		---	---	ND	---	49.3
178		---	---	ND	---	49.3
179		---	---	ND	---	49.3
180	180/193	---	---	ND	---	98.5

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

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
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RT = Retention Time
I = Interference

Results reported on a total weight basis

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-22143
Filename P91105A_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
181		---	---	ND	---	49.3
182		---	---	ND	---	49.3
183	183/185	---	---	ND	---	98.5
184		---	---	ND	---	49.3
185	183/185	---	---	ND	---	98.5
186		---	---	ND	---	49.3
187		---	---	ND	---	49.3
188		---	---	ND	---	49.3
189		---	---	ND	---	49.3
190		---	---	ND	---	49.3
191		---	---	ND	---	49.3
192		---	---	ND	---	49.3
193	180/193	---	---	ND	---	98.5
194		---	---	ND	---	73.9
195		---	---	ND	---	73.9
196		---	---	ND	---	73.9
197	197/200	---	---	ND	---	148
198	198/199	---	---	ND	---	148
199	198/199	---	---	ND	---	148
200	197/200	---	---	ND	---	148
201		---	---	ND	---	73.9
202		---	---	ND	---	73.9
203		---	---	ND	---	73.9
204		---	---	ND	---	73.9
205		---	---	ND	---	73.9
206		---	---	ND	---	73.9
207		---	---	ND	---	73.9
208		---	---	ND	---	73.9
209		---	---	ND	---	73.9

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

Results reported on a total weight basis

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

Client Sample ID
Lab Sample ID BLANK-22143
Filename P91105A_09

Congener Group	Concentration ng/Kg
Total Monochloro Biphenyls	139
Total Dichloro Biphenyls	ND
Total Trichloro Biphenyls	35.1
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	174

ND = Not Detected

Results reported on a total weight basis

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Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID	LCS-22135	
Filename	P91026A_11	Matrix
Total Amount Extracted	948 mL	Water
ICAL ID	P91026A02	Dilution
CCal Filename(s)	P91026A_01	Extracted
Method Blank ID	BLANK-22134	Analyzed
		10/23/2009 08:00
		10/27/2009 01:56
		Injected By
		CVS

PCB Isomer	Native Analytes			Labeled Analytes			
	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recovery	
1	1.0	1.08	108	2.0	0.404	20	R
3	1.0	1.01	101	2.0	0.515	26	R
4	1.0	1.06	106	2.0	0.423	21	R
15	1.0	1.15	115	2.0	0.853	43	
19	1.0	0.984	98	2.0	0.578	29	R
37	1.0	1.04	104	2.0	1.51	75	
54	1.0	0.995	100	2.0	0.750	37	
81	1.0	0.996	100	2.0	1.69	84	
77	1.0	0.995	99	2.0	1.67	84	
104	1.0	0.921	92	2.0	1.13	57	
105	1.0	1.09	109	2.0	1.75	88	
114	1.0	1.00	100	2.0	1.82	91	
118	1.0	1.03	103	2.0	1.82	91	
123	1.0	0.979	98	2.0	1.82	91	
126	1.0	1.00	100	2.0	1.92	96	
155	1.0	1.03	103	2.0	1.32	66	
156/157	2.0	2.05	102	4.0	3.67	92	
167	1.0	1.02	102	2.0	1.81	91	
169	1.0	1.02	102	2.0	1.84	92	
188	1.0	1.05	105	2.0	1.54	77	
189	1.0	1.04	104	2.0	1.85	93	
202	1.0	1.03	103	2.0	1.62	81	
205	1.0	1.00	100	2.0	1.74	87	
206	1.0	1.00	100	2.0	1.72	86	
208	1.0	0.997	100	2.0	1.61	81	
209	1.0	0.985	99	2.0	1.62	81	

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

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID	LCS-22144		
Filename	P91101A_03	Matrix	Solid-extractcleanup
Total Amount Extracted	10.4 g	Dilution	5
ICAL ID	P91101A02	Extracted	10/22/2009 16:10
CCal Filename(s)	P91101A_01	Analyzed	11/01/2009 05:48
Method Blank ID	BLANK-22143	Injected By	BAL

PCB Isomer	Native Analytes			Labeled Analytes		
	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recovery
1	1.0	1.07	107	2.0	0.653	33
3	1.0	1.10	110	2.0	0.948	47
4	1.0	1.07	107	2.0	0.865	43
15	1.0	1.07	107	2.0	1.47	74
19	1.0	1.01	101	2.0	1.17	58
37	1.0	1.08	108	2.0	1.63	81
54	1.0	0.996	100	2.0	1.22	61
81	1.0	0.971	97	2.0	1.79	90
77	1.0	1.01	101	2.0	1.74	87
104	1.0	0.979	98	2.0	1.27	64
105	1.0	1.06	106	2.0	1.80	90
114	1.0	1.02	102	2.0	1.74	87
118	1.0	1.12	112	2.0	1.76	88
123	1.0	1.03	103	2.0	1.75	88
126	1.0	0.995	99	2.0	1.86	93
155	1.0	1.02	102	2.0	1.38	69
156/157	2.0	1.95	97	4.0	3.73	93
167	1.0	1.02	102	2.0	1.79	90
169	1.0	0.990	99	2.0	1.89	94
188	1.0	1.03	103	2.0	1.41	70
189	1.0	1.03	103	2.0	1.76	88
202	1.0	0.995	99	2.0	1.52	76
205	1.0	1.04	104	2.0	1.73	86
206	1.0	0.996	100	2.0	1.71	86
208	1.0	1.01	101	2.0	1.61	80
209	1.0	1.03	103	2.0	1.61	81

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

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyls

Laboratory Control Spike Analysis Results

Lab Sample ID	LCS-22144		
Filename	P91105A_07	Matrix	Solid-extractcleanup
Total Amount Extracted	10.4 g	Dilution	NA
ICAL ID	P91105A02	Extracted	10/22/2009 16:10
CCal Filename(s)	P91105A_01	Analyzed	11/05/2009 13:57
Method Blank ID	BLANK-22143	Injected By	SMT

PCB Isomer	Native Analytes			Labeled Analytes			
	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recovery	
1	1.0	1.35	135	2.0	0.221	11	R
3	1.0	1.28	128	2.0	0.641	32	
4	1.0	1.20	120	2.0	0.425	21	R
15	1.0	1.08	108	2.0	1.89	95	
19	1.0	1.04	104	2.0	0.886	44	
37	1.0	1.06	106	2.0	1.99	99	
54	1.0	1.04	104	2.0	1.06	53	
81	1.0	0.978	98	2.0	2.07	104	
77	1.0	1.04	104	2.0	2.14	107	
104	1.0	1.01	101	2.0	1.13	56	
105	1.0	0.989	99	2.0	1.99	99	
114	1.0	0.974	97	2.0	1.99	99	
118	1.0	1.06	106	2.0	1.93	97	
123	1.0	0.941	94	2.0	1.95	97	
126	1.0	0.931	93	2.0	2.06	103	
155	1.0	1.01	101	2.0	1.23	61	
156/157	2.0	2.01	101	4.0	4.23	106	
167	1.0	0.973	97	2.0	2.12	106	
169	1.0	1.01	101	2.0	2.10	105	
188	1.0	1.06	106	2.0	1.39	69	
189	1.0	1.00	100	2.0	2.01	101	
202	1.0	1.09	109	2.0	1.43	72	
205	1.0	1.07	107	2.0	1.71	86	
206	1.0	1.03	103	2.0	1.49	74	
208	1.0	1.04	104	2.0	1.51	76	
209	1.0	1.09	109	2.0	1.28	64	

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

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID	LCSD-22136	
Filename	P91026A_12	Matrix
Total Amount Extracted	949 mL	Water
ICAL ID	P91026A02	Dilution
CCal Filename(s)	P91026A_01	Extracted
Method Blank ID	BLANK-22134	Analyzed
		10/23/2009 08:00
		10/27/2009 03:01
		Injected By
		CVS

PCB Isomer	Native Analytes			Labeled Analytes			
	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recovery	
1	1.0	1.02	102	2.0	0.571	29	R
3	1.0	1.05	105	2.0	0.741	37	
4	1.0	1.06	106	2.0	0.629	31	
15	1.0	1.08	108	2.0	1.24	62	
19	1.0	0.968	97	2.0	0.871	44	
37	1.0	1.04	104	2.0	1.82	91	
54	1.0	0.997	100	2.0	1.13	56	
81	1.0	0.997	100	2.0	1.89	95	
77	1.0	1.01	101	2.0	1.88	94	
104	1.0	0.970	97	2.0	1.38	69	
105	1.0	1.07	107	2.0	1.82	91	
114	1.0	1.02	102	2.0	1.91	95	
118	1.0	1.12	112	2.0	1.88	94	
123	1.0	1.01	101	2.0	1.92	96	
126	1.0	1.00	100	2.0	1.92	96	
155	1.0	0.993	99	2.0	1.55	78	
156/157	2.0	2.13	106	4.0	3.71	93	
167	1.0	1.06	106	2.0	1.84	92	
169	1.0	1.00	100	2.0	1.83	92	
188	1.0	1.05	105	2.0	1.70	85	
189	1.0	1.07	107	2.0	1.88	94	
202	1.0	1.01	101	2.0	1.71	85	
205	1.0	1.04	104	2.0	1.73	87	
206	1.0	0.999	100	2.0	1.68	84	
208	1.0	1.01	101	2.0	1.63	82	
209	1.0	0.956	96	2.0	1.69	84	

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

REPORT OF LABORATORY ANALYSIS

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Method 1668A

Spike Recovery Relative Percent Difference (RPD) Results

Client Test America-Portland

Spike 1 ID LCS-22135
Spike 1 Filename P91026A_11

Spike 2 ID LCSD-22136
Spike 2 Filename P91026A_12

Compound	IUPAC	Spike 1 %REC	Spike 2 %REC	%RPD
2-MoCB	1	108	102	5.7
4-MoCB	3	101	105	3.9
2,2'-DiCB	4	106	106	0.0
4,4'-DiCB	15	115	108	6.3
2,2',6-TrCB	19	98	97	1.0
3,4,4'-TrCB	37	104	104	0.0
2,2',6,6'-TeCB	54	100	100	0.0
3,3',4,4'-TeCB	77	99	101	2.0
3,4,4',5-TeCB	81	100	100	0.0
2,2',4,6,6'-PeCB	104	92	97	5.3
2,3,3',4,4'-PeCB	105	109	107	1.9
2,3,4,4',5-PeCB	114	100	102	2.0
2,3',4,4',5-PeCB	118	103	112	8.4
2,3,4,4',5'-PeCB	123	98	101	3.0
3,3',4,4',5-PeCB	126	100	100	0.0
2,2',4,4',6,6'-HxCB	155	103	99	4.0
(156/157)	156/157	102	106	3.8
2,3',4,4',5,5'-HxCB	167	102	106	3.8
3,3',4,4',5,5'-HxCB	169	102	100	2.0
2,2',3,4',5,6,6'-HpCB	188	105	105	0.0
2,3,3',4,4',5,5'-HpCB	189	104	107	2.8
2,2',3,3',5,5',6,6'-OcCB	202	103	101	2.0
2,3,3',4,4',5,5',6-OcCB	205	100	104	3.9
2,2',3,3',4,4',5,5',6-NoCB	206	100	100	0.0
2,2',3,3',4,5,5',6,6'-NoCB	208	100	101	1.0
Decachlorobiphenyl	209	99	96	3.1

%REC = Percent Recovered

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

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyls Matrix Spike Analysis Results

Client - Test America-Portland

Lab Sample ID	10114354001-MS	Matrix	Solid
Filename	P91102A_03	Dilution	5
Total Amount Extracted	16.4 g	Extracted	10/22/2009 16:10
ICAL ID	P91102A02	Analyzed	11/02/2009 06:55
CCal Filename(s)	P91102A_01	Injected By	BAL
Method Blank ID	BLANK-22143		

PCB Isomer	Native Analytes			Labeled Analytes			
	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recovery	
1	1.0	5.74	574	2.0	0.177	12	P
3	1.0	10.1	1015	2.0	0.704	35	
4	1.0	17.9	1788	2.0	0.532	27	
15	1.0	26.8	2684	2.0	1.48	74	
19	1.0	21.8	2178	2.0	0.943	47	
37	1.0	34.4	3440	2.0	1.53	77	
54	1.0	1.61	161	2.0	1.09	54	
81	1.0	1.48	148	2.0	1.68	84	
77	1.0	15.2	1525	2.0	1.64	82	
104	1.0	1.05	105	2.0	1.26	63	
105	1.0	60.8	6082	2.0	1.56	78	
114	1.0	4.85	485	2.0	1.56	78	
118	1.0	132	13193	2.0	1.54	77	
123	1.0	3.75	375	2.0	1.54	77	
126	1.0	1.31	131	2.0	1.62	81	
155	1.0	1.03	103	2.0	1.32	66	
156/157	2.0	19.2	961	4.0	2.86	71	
167	1.0	6.56	656	2.0	1.44	72	
169	1.0	1.27	127	2.0	1.47	74	
188	1.0	1.06	106	2.0	1.50	75	
189	1.0	2.30	230	2.0	1.58	79	
202	1.0	4.04	404	2.0	1.50	75	
205	1.0	1.79	179	2.0	1.39	70	
206	1.0	6.31	631	2.0	1.47	73	
208	1.0	2.27	227	2.0	1.48	74	
209	1.0	2.66	266	2.0	1.30	65	

R = Recovery outside of method
1668A control limits
ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
ng = Nanograms

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyls Matrix Spike Analysis Results

Client - Test America-Portland

Lab Sample ID	10114354001-MSD	Matrix	Solid
Filename	P91102A_04	Dilution	5
Total Amount Extracted	16.8 g	Extracted	10/22/2009 16:10
ICAL ID	P91102A02	Analyzed	11/02/2009 08:00
CCal Filename(s)	P91102A_01	Injected By	BAL
Method Blank ID	BLANK-22143		

PCB Isomer	Native Analytes			Labeled Analytes			
	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recovery	
1	1.0	3.30	330	2.0	0.243	14	P
3	1.0	3.17	317	2.0	0.801	40	
4	1.0	21.1	2106	2.0	0.597	30	
15	1.0	27.9	2792	2.0	1.35	68	
19	1.0	23.4	2336	2.0	0.970	48	
37	1.0	33.9	3392	2.0	1.54	77	
54	1.0	1.65	165	2.0	1.10	55	
81	1.0	1.39	139	2.0	1.63	82	
77	1.0	14.8	1476	2.0	1.63	82	
104	1.0	1.08	108	2.0	1.19	60	
105	1.0	56.9	5686	2.0	1.52	76	
114	1.0	4.75	475	2.0	1.45	73	
118	1.0	118	11805	2.0	1.53	76	
123	1.0	2.88	288	2.0	1.54	77	
126	1.0	1.06	106	2.0	1.58	79	
155	1.0	1.03	103	2.0	1.29	64	
156/157	2.0	17.9	893	4.0	2.81	70	
167	1.0	6.16	616	2.0	1.43	72	
169	1.0	1.19	119	2.0	1.42	71	
188	1.0	1.04	104	2.0	1.53	76	
189	1.0	2.36	236	2.0	1.60	80	
202	1.0	4.43	443	2.0	1.44	72	
205	1.0	1.85	185	2.0	1.33	67	
206	1.0	17.9	1792	2.0	1.44	72	
208	1.0	7.30	730	2.0	1.37	68	
209	1.0	17.4	1738	2.0	1.33	67	

R = Recovery outside of method
1668A control limits
ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
ng = Nanograms

REPORT OF LABORATORY ANALYSIS

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Method PCB1668-209 Spike Sample Results

Client Sample ID PSJ0242-01;F0095974
Lab Sample ID 10114354001
MS ID 10114354001-MS
MSD ID 10114354001-MSD

Client - Test America-Portland
Sample Filename P91101B_11
MS Filename P91102A_03
MSD Filename P91102A_04

Dry Weights

Sample Amount 10.9 g
MS Amount 11.0 g
MSD Amount 11.2 g

Analyte	Sample Conc. ng/Kg	MS/MSD Qs (ng)	MS Qm (ng)	MSD Qm (ng)	RPD	Background Subtracted		
						MS % Rec.	MSD % Rec.	RPD
2-MoCB	190.000	1.00	5.74	3.30	53.8	365	117	102.6
4-MoCB	154.000	1.00	10.15	3.17	104.8	845	144	141.8
2,2'-DiCB	1730.000	1.00	17.88	21.06	16.4	0	162	200.0
4,4'-DiCB	2150.000	1.00	26.84	27.92	3.9	315	375	17.5
2,2',6-TrCB	1970.000	1.00	21.78	23.36	7.0	13	127	163.2
3,4,4'-TrCB	2540.000	1.00	34.40	33.92	1.4	642	539	17.6
2,2',6,6'-TeCB	56.500	1.00	1.61	1.65	2.1	99	101	2.2
3,3',4,4'-TeCB	1100.000	1.00	15.25	14.76	3.3	313	239	26.5
3,4,4',5-TeCB	0.000	1.00	1.48	1.39	6.2	111	102	9.1
2,2',4,6,6'-PeCB	0.000	1.00	1.05	1.08	2.8	105	108	2.8
2,3,3',4,4'-PeCB	4360.000	1.00	60.82	56.86	6.7	1288	795	47.3
2,3,4,4',5-PeCB	276.000	1.00	4.85	4.75	2.1	181	165	9.3
2,3',4,4',5-PeCB	9360.000	1.00	131.93	118.05	11.1	2891	1297	76.1
2,3',4,4',5'-PeCB	207.000	1.00	3.75	2.88	26.3	147	56	90.4
3,3',4,4',5-PeCB	0.000	1.00	1.31	1.06	21.4	111	85	26.4
2,2',4,4',6,6'-HxCB	0.000	1.00	1.03	1.03	0.3	103	103	0.3
(156/157)	1170.000	2.00	19.21	17.85	7.3	315	234	29.5
2,3',4,4',5,5'-HxCB	380.000	1.00	6.56	6.16	6.3	238	189	22.8
3,3',4,4',5,5'-HxCB	0.000	1.00	1.27	1.19	6.5	112	103	7.7
2,2',3,4',5,6,6'-HpCB	0.000	1.00	1.06	1.04	2.5	106	104	2.5
2,3,3',4,4',5,5'-HpCB	95.900	1.00	2.30	2.36	2.8	124	128	3.5
2,2',3,3',5,5',6,6'-OcCB	223.000	1.00	4.04	4.43	9.2	158	192	19.4
2,3,3',4,4',5,5',6-OcCB	0.000	1.00	1.79	1.85	3.4	117	121	4.1
2,2',3,3',4,4',5,5',6-NoCB	414.000	1.00	6.31	17.92	95.8	176	1327	153.2
2,2',3,3',4,5,5',6,6'-NoCB	109.000	1.00	2.27	7.30	105.1	107	608	140.0
Decachlorobiphenyl	132.000	1.00	2.66	17.38	146.8	121	1589	171.7

Definitions

MS = Matrix Spike Qm = Quantity Measured % Rec. = Percent Recovery
MSD = Matrix Spike Duplicate Qs = Quantity Spiked RPD = Relative Percent Difference NA = Not Applicable

Amended Report

December 24, 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 10/07/09 12:40.
The following list is a summary of the Work Orders contained in this report, generated on 12/24/09 08:58.

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

<u>Work Order</u>	<u>Project</u>	<u>ProjectNumber</u>
PSJ0242	Portland Harbor	36238

TestAmerica Portland



Howard Holmes, Project Manager

Amended Report

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.

Amended Report

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:

12/24/09 08:58

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FO 095974	PSJ0242-01	Soil	10/06/09 09:49	10/07/09 12:40
FO 095975	PSJ0242-02	Soil	10/06/09 10:34	10/07/09 12:40
FO 095976	PSJ0242-03	Soil	10/06/09 11:24	10/07/09 12:40
FO 095977	PSJ0242-04	Soil	10/06/09 13:18	10/07/09 12:40
FO 095978	PSJ0242-05	Soil	10/06/09 13:18	10/07/09 12:40
FO 095979	PSJ0242-06	Water	10/06/09 12:56	10/07/09 12:40
FO 095980	PSJ0242-07	Soil	10/06/09 14:36	10/07/09 12:40

TestAmerica Portland



Howard Holmes, Project Manager

Amended Report

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Amended Report

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:

12/24/09 08:58

Analytical Case Narrative

TestAmerica - Portland, OR

PSJ0242

Amended Report

2-Methylnaphthalene was added to the 8270 SIM PAH results as requested by Peter Abrams on 12/23/09

TestAmerica Portland



Howard Holmes, Project Manager

Amended Report

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Amended Report

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:
12/24/09 08:58

Polynuclear Aromatic Compounds per EPA 8270M-SIM

TestAmerica Portland

Analyte	Method	Result	MDL *	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSJ0242-07 (FO 095980)			Soil				Sampled: 10/06/09 14:36			RL3
2-Methylnaphthalene	EPA 8270m	412	----	84.7	ug/kg dry	5x	9100355	10/12/09 11:30	10/13/09 20:07	
Acenaphthene	"	ND	----	84.7	"	"	"	"	"	
Acenaphthylene	"	ND	----	84.7	"	"	"	"	"	
Anthracene	"	89.1	----	84.7	"	"	"	"	"	
Benzo (a) anthracene	"	ND	----	84.7	"	"	"	"	"	
Benzo (a) pyrene	"	ND	----	84.7	"	"	"	"	"	
Benzo (b) fluoranthene	"	109	----	84.7	"	"	"	"	"	
Benzo (ghi) perylene	"	ND	----	84.7	"	"	"	"	"	
Benzo (k) fluoranthene	"	ND	----	84.7	"	"	"	"	"	
Chrysene	"	149	----	84.7	"	"	"	"	"	
Dibenzo (a,h) anthracene	"	ND	----	84.7	"	"	"	"	"	
Fluoranthene	"	266	----	84.7	"	"	"	"	"	
Fluorene	"	198	----	84.7	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	"	ND	----	84.7	"	"	"	"	"	
Naphthalene	"	169	----	84.7	"	"	"	"	"	
Phenanthrene	"	840	----	84.7	"	"	"	"	"	
Pyrene	"	266	----	84.7	"	"	"	"	"	
<i>Surrogate(s): Fluorene-d10</i>				94.5%		24 - 125 %				"
<i>Pyrene-d10</i>				74.7%		41 - 141 %				"
<i>Benzo (a) pyrene-d12</i>				101%		38 - 143 %				"

TestAmerica Portland



Howard Holmes, Project Manager

Amended Report

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Amended Report

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:
12/24/09 08:58

Phthalates per EPA 8270-SIM TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSJ0242-07 (FO 095980)			Soil			Sampled: 10/06/09 14:36			RL7	
Dimethyl phthalate	EPA 8270m	ND	----	842	ug/kg dry	25x	9100711	10/20/09 16:00	10/22/09 05:11	
Diethyl phthalate	"	ND	----	842	"	"	"	"	"	
Di-n-butyl phthalate	"	ND	----	842	"	"	"	"	"	
Butyl benzyl phthalate	"	ND	----	842	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	"	11300	----	842	"	"	"	"	"	
Di-n-octyl phthalate	"	7980	----	842	"	"	"	"	"	
<i>Surrogate(s): 2-Fluorobiphenyl</i>				106%		10 - 150 %			"	Z3
<i>p-Terphenyl-d14</i>				119%		10 - 150 %			"	Z3

TestAmerica Portland



Howard Holmes, Project Manager

Amended Report

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Amended Report

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:
12/24/09 08:58

Percent Dry Weight (Solids) per ASTM D2216-80 TestAmerica Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSJ0242-07 (FO 095980)					Soil			Sampled: 10/06/09 14:36		
% Solids	NCA SOP	78.8	-----	0.0100	% by Weight	1x	9100358	10/12/09 07:26	10/12/09 07:26	

TestAmerica Portland



Howard Holmes, Project Manager

Amended Report

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Amended Report

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:
12/24/09 08:58

Organic Carbon, Total (TOC)

TestAmerica Connecticut

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PSJ0242-01 (FO 095974)			Soil					Sampled: 10/06/09 09:49		
Total Organic Carbon - Duplicates	9060	19000	30.0	100	mg/Kg	1x	32393	10/15/09 21:24	10/15/09 21:24	
PSJ0242-02 (FO 095975)			Soil					Sampled: 10/06/09 10:34		
Total Organic Carbon - Duplicates	9060	75400	30.0	100	mg/Kg	1x	32393	10/15/09 21:38	10/15/09 21:38	
PSJ0242-03 (FO 095976)			Soil					Sampled: 10/06/09 11:24		
Total Organic Carbon - Duplicates	9060	89200	30.0	100	mg/Kg	1x	32393	10/15/09 21:53	10/15/09 21:53	
PSJ0242-04 (FO 095977)			Soil					Sampled: 10/06/09 13:18		
Total Organic Carbon - Duplicates	9060	35500	30.0	100	mg/Kg	1x	32393	10/15/09 22:07	10/15/09 22:07	
PSJ0242-05 (FO 095978)			Soil					Sampled: 10/06/09 13:18		
Total Organic Carbon - Duplicates	9060	24600	30.0	100	mg/Kg	1x	32393	10/15/09 22:37	10/15/09 22:37	
PSJ0242-07 (FO 095980)			Soil					Sampled: 10/06/09 14:36		
Total Organic Carbon - Duplicates	9060	28600	30.0	100	mg/Kg	1x	32393	10/15/09 22:51	10/15/09 22:51	

TestAmerica Portland



Howard Holmes, Project Manager

Amended Report

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Amended Report

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:
12/24/09 08:58

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

TestAmerica Portland

QC Batch: 9100355

Soil Preparation Method: EPA 3550

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (9100355-BLK1)										Extracted: 10/12/09 11:30				
Benzo (e) pyrene	EPA 8270m	ND	---	13.3	ug/kg wet	1x	--	--	--	--	--	--	10/12/09 18:35	ID5
2-Methylnaphthalene	"	ND	---	13.3	"	"	--	--	--	--	--	--	"	
Acenaphthene	"	ND	---	13.3	"	"	--	--	--	--	--	--	"	
Acenaphthylene	"	ND	---	13.3	"	"	--	--	--	--	--	--	"	
Anthracene	"	ND	---	13.3	"	"	--	--	--	--	--	--	"	
Benzo (a) anthracene	"	ND	---	13.3	"	"	--	--	--	--	--	--	"	
Benzo (a) pyrene	"	ND	---	13.3	"	"	--	--	--	--	--	--	"	
Benzo (b) fluoranthene	"	ND	---	13.3	"	"	--	--	--	--	--	--	"	
Benzo (ghi) perylene	"	ND	---	13.3	"	"	--	--	--	--	--	--	"	
Benzo (k) fluoranthene	"	ND	---	13.3	"	"	--	--	--	--	--	--	"	ID4
Chrysene	"	ND	---	13.3	"	"	--	--	--	--	--	--	"	
Dibenzo (a,h) anthracene	"	ND	---	13.3	"	"	--	--	--	--	--	--	"	
Fluoranthene	"	ND	---	13.3	"	"	--	--	--	--	--	--	"	
Fluorene	"	ND	---	13.3	"	"	--	--	--	--	--	--	"	
Indeno (1,2,3-cd) pyrene	"	ND	---	13.3	"	"	--	--	--	--	--	--	"	
Naphthalene	"	ND	---	13.3	"	"	--	--	--	--	--	--	"	
Phenanthrene	"	ND	---	13.3	"	"	--	--	--	--	--	--	"	
Pyrene	"	ND	---	13.3	"	"	--	--	--	--	--	--	"	
Surrogate(s): Fluorene-d10		Recovery:	83.5%	Limits: 24-125%		10/12/09 18:35								
Pyrene-d10			96.2%	41-141%		"								
Benzo (a) pyrene-d12			88.0%	38-143%		"								

LCS (9100355-BS1)

Extracted: 10/12/09 11:30

Acenaphthene	EPA 8270m	172	---	13.2	ug/kg wet	1x	--	164	105%	(33-139)	--	--	10/12/09 19:05	
Benzo (a) pyrene	"	173	---	13.2	"	"	--	"	105%	(45-149)	--	--	"	
Pyrene	"	172	---	13.2	"	"	--	"	104%	(39-138)	--	--	"	
Surrogate(s): Fluorene-d10		Recovery:	96.6%	Limits: 24-125%		10/12/09 19:05								
Pyrene-d10			91.8%	41-141%		"								
Benzo (a) pyrene-d12			94.0%	38-143%		"								

TestAmerica Portland



Howard Holmes, Project Manager

Amended Report

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Amended Report

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:
12/24/09 08:58

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

TestAmerica Portland

QC Batch: 9100355

Soil Preparation Method: EPA 3550

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Matrix Spike (9100355-MS1)			QC Source: PSJ0372-03					Extracted: 10/12/09 11:30						
Acenaphthene	EPA 8270m	172	---	137	ug/kg dry	10x	ND	171	101%	(33-139)	--	--	10/12/09 19:34	
Benzo (a) pyrene	"	321	---	137	"	"	54.0	"	156%	(45-149)	--	--	"	M7
Pyrene	"	704	---	137	"	"	101	"	353%	(39-138)	--	--	"	M7
<i>Surrogate(s): Fluorene-d10 Recovery: 86.2% Limits: 24-125% 10/12/09 19:34</i>														
<i>Pyrene-d10 86.2% 41-141% "</i>														
<i>Benzo (a) pyrene-d12 87.8% 38-143% "</i>														
Matrix Spike Dup (9100355-MSD1)			QC Source: PSJ0372-03					Extracted: 10/12/09 11:30						
Acenaphthene	EPA 8270m	159	---	138	ug/kg dry	10x	ND	172	92.4%	(33-139)	7.75% (60)		10/12/09 20:03	
Benzo (a) pyrene	"	205	---	138	"	"	54.0	"	87.7%	(45-149)	44.3% "		"	
Pyrene	"	239	---	138	"	"	101	"	79.9%	(39-138)	98.7% "		"	R3
<i>Surrogate(s): Fluorene-d10 Recovery: 84.0% Limits: 24-125% 10/12/09 20:03</i>														
<i>Pyrene-d10 82.6% 41-141% "</i>														
<i>Benzo (a) pyrene-d12 84.9% 38-143% "</i>														

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Howard Holmes, Project Manager

Amended Report

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Amended Report

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:
12/24/09 08:58

Phthalates per EPA 8270-SIM - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 9100711

Soil Preparation Method: EPA 3550

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
---------	--------	--------	------	-----	-------	-----	---------------	-----------	-------	----------	-------	----------	----------	-------

Blank (9100711-BLK1)

Extracted: 10/20/09 16:00

Dimethyl phthalate	EPA 8270m	ND	---	26.8	ug/kg wet	1x	--	--	--	--	--	--	10/21/09 20:47	
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:	110%	Limits: 10-150%		10/21/09 20:47								
p-Terphenyl-d14			101%	10-150%		"								

LCS (9100711-BS1)

Extracted: 10/20/09 16:00

Dimethyl phthalate	EPA 8270m	122	---	26.8	ug/kg wet	1x	--	133	91.5%	(20-150)	--	--	10/21/09 21:24	
Diethyl phthalate	"	133	---	26.8	"	"	--	"	99.6%	"	--	--	"	
Di-n-butyl phthalate	"	145	---	26.8	"	"	--	"	109%	"	--	--	"	
Butyl benzyl phthalate	"	149	---	26.8	"	"	--	"	112%	"	--	--	"	
Bis(2-ethylhexyl)phthalate	"	148	---	26.8	"	"	--	"	111%	"	--	--	"	
Di-n-octyl phthalate	"	143	---	26.8	"	"	--	"	107%	"	--	--	"	
Surrogate(s): 2-Fluorobiphenyl		Recovery:	127%	Limits: 10-150%		10/21/09 21:24								
p-Terphenyl-d14			112%	10-150%		"								

Matrix Spike (9100711-MS1)

QC Source: PSJ0657-06

Extracted: 10/20/09 16:00

Dimethyl phthalate	EPA 8270m	152	---	296	ug/kg dry	10x	ND	147	103%	(10-150)	--	--	10/22/09 22:21	
Diethyl phthalate	"	155	---	296	"	"	ND	"	106%	"	--	--	"	
Di-n-butyl phthalate	"	162	---	296	"	"	ND	"	110%	"	--	--	"	
Butyl benzyl phthalate	"	182	---	296	"	"	37.6	"	98.1%	"	--	--	"	
Bis(2-ethylhexyl)phthalate	"	307	---	296	"	"	95.2	"	144%	"	--	--	"	
Di-n-octyl phthalate	"	141	---	296	"	"	ND	"	95.5%	"	--	--	"	
Surrogate(s): 2-Fluorobiphenyl		Recovery:	92.8%	Limits: 10-150%		10/22/09 22:21								
p-Terphenyl-d14			93.2%	10-150%		"								

Matrix Spike Dup (9100711-MSD1)

QC Source: PSJ0657-06

Extracted: 10/20/09 16:00

Dimethyl phthalate	EPA 8270m	149	---	295	ug/kg dry	10x	ND	147	101%	(10-150)	1.92% (50)		10/22/09 22:57	
Diethyl phthalate	"	216	---	295	"	"	ND	"	147%	"	32.4%	"	"	
Di-n-butyl phthalate	"	160	---	295	"	"	ND	"	109%	"	0.724%	"	"	
Butyl benzyl phthalate	"	205	---	295	"	"	37.6	"	114%	"	11.7%	"	"	
Bis(2-ethylhexyl)phthalate	"	1330	---	295	"	"	95.2	"	841%	"	125%	"	"	M7, R2
Di-n-octyl phthalate	"	269	---	295	"	"	ND	"	183%	"	62.5%	"	"	M7, R2
Surrogate(s): 2-Fluorobiphenyl		Recovery:	92.1%	Limits: 10-150%		10/22/09 22:57								
p-Terphenyl-d14			91.1%	10-150%		"								

TestAmerica Portland



Howard Holmes, Project Manager

Amended Report

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Amended Report

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:
12/24/09 08:58

Percent Dry Weight (Solids) per ASTM D2216-80 - Laboratory Quality Control Results

TestAmerica Portland

QC Batch: 9100358

Soil Preparation Method: Dry Weight

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Duplicate (9100358-DUP1)			QC Source: PSJ0276-02					Extracted: 10/12/09 07:26						
% Solids	NCA SOP	77.4	---	0.0100	% by Weight	1x	77.1	--	--	--	0.388% (20)		10/12/09 07:26	

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Howard Holmes, Project Manager

Amended Report

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Amended Report

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:
12/24/09 08:58

Organic Carbon, Total (TOC) - Laboratory Quality Control Results

TestAmerica Connecticut

QC Batch: 32393

Soil Preparation Method: NA

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
LCS (220-32393-6)			QC Source:					Extracted: 10/15/09 21:10						
Total Organic Carbon - Duplicates	9060	3783	30.0	100	mg/Kg	1x	--	3530	107%	(28-172)	--	--	10/15/09 21:10	
Blank (220-32393-7)			QC Source:					Extracted: 10/15/09 21:17						
Total Organic Carbon - Duplicates	9060	ND	30.0	100	mg/Kg	1x	--	--	--	--	--	--	10/15/09 21:17	

TestAmerica Portland



Howard Holmes, Project Manager

Amended Report

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Amended Report

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:
12/24/09 08:58

Notes and Definitions

Report Specific Notes:

- ID4 - Benzo(j)fluoranthene coelutes with Benzo(k)fluoranthene. The reported result is a summation of the isomers and the concentration is based on the response factor of Benzo(k)fluoranthene.
- ID5 - Benzo(e)pyrene concentration is based on the response factor of Benzo(a)pyrene, and has not been calibrated independently.
- M7 - The MS and/or MSD were above the acceptance limits. See Blank Spike (LCS).
- R2 - The RPD exceeded the acceptance limit.
- R3 - The RPD exceeded the acceptance limit 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

Amended Report

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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 #: **PSS0242**

CLIENT: City of Portland		INVOICE TO: Charles Lytle		TURNAROUND REQUEST	
REPORT TO: Jennifer Shackelford		PRESERVATIVE		in Business Days*	
PHONE: Portland Harbor Water		PO NUMBER: 36238		<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 checked="" 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 Water		REQUESTED ANALYSES		OTHER Specify:	
PROJECT NUMBER:				* Turnaround Requests less than standard may incur Rush Charges.	
SAMPLED BY:					
CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	MATRIX (W, S, O)			
1 F0095974	10/6/19 09:49	S 2			
2 F0095975	10/31 10:34	S 2			
3 F0095976	11/24 11:24	S 2			
4 F0095977	13/18 13:18	S 2			
5 F0095978	13/18 13:18	S 2			
6 F0095979	12/26 12:26	W 1			
7 F0095980	14/36 14:36	S 2			
8					
9					
10					
RELEASED BY: Shackelford	DATE: 10/7/19	RECEIVED BY: Bob F		DATE: 10/7/19	
PRINT NAME: Shackelford	TIME: 12:05	PRINT NAME: Bob F		TIME: 12:40	
RELEASED BY: Shackelford	DATE: 10/7/19	RECEIVED BY: Shackelford		DATE: 10/7/19	
PRINT NAME: Shackelford	TIME: 12:40	PRINT NAME: Shackelford		TIME: 12:40	
ADDITIONAL REMARKS:					

TestAmerica Portland
Sample Receiving Checklist

Work Order #: PS50242 Date/Time Received: 10/7/09 1240
Client Name and Project: COP Portland Harbor

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

Unpacking Checks:

Cooler #(s): 1
Temperatures: 1 1 1
Digi #1 ☐ Digi #2 ☐ IR Gun ☒ (☒ Plastic ☐ Glass)

Temperature out of Range:

☐ Not enough or No Ice
☐ Ice Melted
☐ W/in 4 Hrs of collection
Other: _____

Initials: pm

N/A Yes No

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

TestAmerica Portland
Sample Receiving Checklist

Work Order #: PSJ0242

Login Checks:

Initials: PS

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: PS

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).

APPENDIX B

NW 35th Ave. Line Cleaning Spoils
Management CSA# 1120
(Memorandum dated October 18, 2010)

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Memorandum

Date: October 18, 2010

To: Linda Scheffler

From: John O'Donovan, PE

RE: NW 35th Ave. Line Cleaning Spoils Management CSA# 1120

Background:

The City of Portland's Bureau of Environmental Services (BES) Coordinated Site Analysis (CSA) program was requested to characterize for disposal the liquid and solid materials generated from storm line cleaning activities conducted in June and July, 2010. The storm lines are located within and near NW 35th Avenue and NW Luzon in Portland, Oregon (see Figure 1). Iron Horse Inc. was hired to complete the line cleaning for the City. Iron Horse Inc. used vactor trucks to remove the solids and liquids from the City of Portland storm lines. Iron Horse Inc. was also tasked with management and disposal of the non-hazardous solid and liquid waste generated as part of the line cleaning effort. The City of Portland CSA program was tasked with characterization, transportation, and disposal of hazardous waste generated as part of the line cleaning effort. The overall project was managed by the BES Maintenance Engineering section. Because previous investigation of storm system solids in this area indicated releases of various contaminants to the storm lines, CSA analyzed the spoils for detected contaminants of concern (COC) including; metals, and PCBs. The following is a summary of the results of sampling and analysis, characterization, and disposal of the spoils.

Spoils Management

The storm system segments were cleaned in a general upstream to downstream directions (i.e., manhole AAX374 to manhole AAX261). Solids were transferred from the vactor truck into lined and covered drop boxes. After extraction from City storm lines, liquids were decanted from the vactor truck and deposited into a 20,000-gallon storage tank. Solids and liquids were kept on site until a disposal determination was made.

Spoils Sampling and Analyses

Solids

CSA coordinated with BES Maintenance Engineering and Iron Horse to collect representative solids samples from the drop boxes as the line cleaning activities progressed. A total of 7 solids samples were collected and analyzed for TCLP metals and/or PCB Aroclors. One additional solids sample was also collected and analyzed to characterize the residual sludge in the 20,000-gallon tank utilized to store wash water. Care was taken to avoid collecting sample material that was in contact with the sides or the floor of the drop boxes. Samples were collected using clean Nitril gloves. Composite samples were collected from three different areas within the drop boxes. Samples were composited from surface materials to a depth of approximately one foot from the surface of the material. Detected concentrations are summarized in Table 1 and laboratory sheets are provided in Appendix A.

Memorandum

Liquids

Liquids generated during line cleaning activities were characterized in accordance with batch discharge requirements for disposal to the sanitary sewer. Following cleaning of the upper portion of the system, CSA collected a liquid sample from the storage tank by using a new clean bailer from the top tank portal. The sample was submitted for total suspended solids (TSS), TCLP metals, and PCB Aroclor analysis. A second sample was collected from the tank portal, filtered, and submitted for TSS analysis to evaluate whether liquids should be filtered before discharge to the sanitary sewer. Subsequent liquid samples were not required due to the volume of the washwater generated and disposed of and the analytical results of the characterization samples. Detected concentrations are summarized in Table 1 and laboratory sheets and chains of custody are provided in Appendix A.

Table 1: Summary of Analytical Data

Sample ID	Sample Date	Lab ID	Media	Detected TCLP Metals	PCBs (Aroclor)	TSS
16 inch line	6/24/2010	C5040	Solid	Ba 0.6 mg/L Pb 0.4 mg/L Zn 2.9 mg/L	ND	NA
600'-24 inch line	6/29/2010	C5185	Solid	Ba 4 mg/L Pb 6 mg/L Zn 9 mg/L	1.4 ppm (1260)	NA
600ft-1100ft 24in Line	6/30/2010	C5245	Solid	Ba 0.9 mg/L Cd 0.6 mg/L Pb 0.2 mg/L Zn 7 mg/L	0.2 ppm (1260)	NA
36 inch TCLP-8+Zn	7/2/2010	C5501	Solid	Ba 0.4 mg/L Pb 0.3 mg/L Zn 1.6 mg/L	0.95 ppm (1260)	NA
End 24 inch	7/9/2010	C5937	Solid	Ba 0.9 mg/L Cd 1.5 mg/L Pb 0.5 mg/L Zn 20 mg/L	0.3 ppm (1260)	NA
0-70 36 inch	7/9/2010	C5936	Solid	Ba 0.9 mg/L Cd 1.6 mg/L Pb 0.5 mg/L Zn 23 mg/L	0.4 ppm (1260)	NA
36 inch 70-160	7/14/2010	C6412	Solid	Ba 0.8 mg/L Cd 0.8 mg/L Zn 13 mg/L	0.1 ppm (1260)	NA
16 inch line water non filtered ¹	6/24/2010	C5041	Liquid	Ba 0.5 mg/L Cr 0.1 mg/L Pb 3.8 mg/L Zn 0.8 mg/L	ND	12,300 mg/L
16 inch line water filtered ¹	6/24/2010	C5041	Liquid	NA	NA	1 mg/L
Baker Tank Sludge PCB	7/16/2010	C6607	Solid	Ba 1 mg/L Cd 1 mg/L Pb 1 mg/L Zn 15 mg/L	ND	NA

Bold Hazardous Waste Level

NA Not Analyzed

¹Batch Discharge Samples

Memorandum

Spoils Disposal Summary

Based on the chemical analysis the line cleaning spoils were characterized into three categories; hazardous waste solids, non-hazardous waste solids (contaminated media), and liquids.

Solids

The resulting analytical data were used to characterize the solid spoils as either contaminated media suitable for disposal at a Subtitle-D-Landfill, or as hazardous waste requiring disposal at a Subtitle-C-Landfill. Solids were transferred from the vector trucks to the lined drop boxes. Solids remained on site until a waste determination was completed.

Of the approximate 39 tons of solids removed from the lines, **28.61** tons were classified as contaminated media and were disposed of at Hillsboro Landfill, a Subtitle-D-Landfill, under Permit number **106859OR**. **10.35** tons were classified as hazardous waste and were disposed of at Chem Waste, Arlington, Oregon, a Subtitle-C-Landfill, under manifest number **001823773JJJ**.

Residual solids from the liquid storage tanks were removed by Iron Horse and placed in the drop boxes for disposal at Hillsboro Landfill. The non-hazardous solids were transported to Hillsboro landfill by Iron Horse Inc. Fillup's Trucking, a licensed hazardous waste hauler in the state of Oregon, transported the hazardous waste solids to Arlington. Solids disposal information is summarized in Table 2. The disposal permits and the hazardous waste manifest are provided in Appendix B.

Table 2: Spoils Disposal

Solids	Disposal Site	Permit Number	Manifest Number	USEPA Generator Identification Number	Quantity (Tons)
Contaminated Media	Waste Management-Hillsboro Landfill Hillsboro Oregon	106859OR	NA	NA	28.61
Hazardous Waste	Waste Management-Chem Waste Arlington Oregon	OR304171	001823777JJJ	ORQ000028951	10.35

Liquids

Analytical results were sufficient for batch discharge disposal of decanted liquids to the sanitary sewer. After treatment, approximately 20,000 gallons of water were discharged to City of Portland sanitary sewer manhole AAX326, at the intersection of NW 35th Avenue and NW Luzon Street. A copy of the batch discharge authorization is included in Appendix B.

Conclusions

The line cleaning spoils were managed and disposed of in accordance with all applicable rules, laws, and policies.

Recommendations

Additional action is not required.

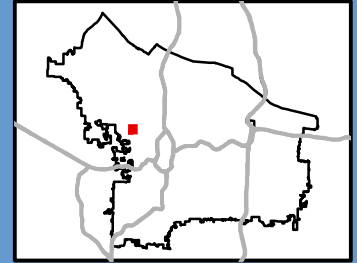
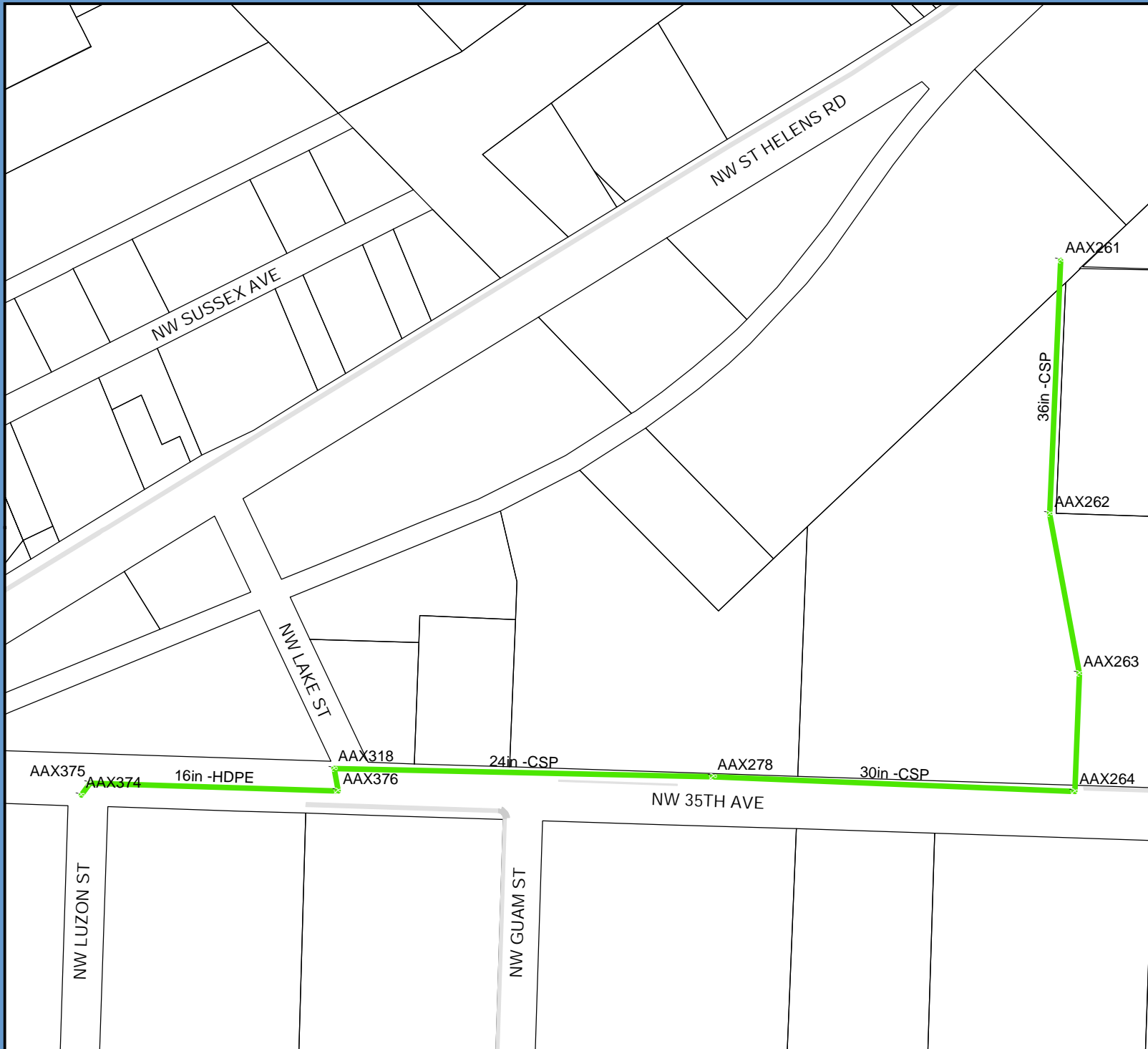
Memorandum

Limitations

The purpose of this report is to summarize activities related to a City of Portland Line cleaning effort. Sampling and analysis was conducted to identify contamination related to environmental conditions at the subject site. The samples collected only indicate the presence or absence of contaminants in the samples. The sampling locations target the most likely locations for contamination, but contamination may exist in areas not sampled. The focus of this survey is on hazardous substances likely associated with the historic activities conducted within the subject site. In this context, the term hazardous substance includes the chemicals listed as hazardous substances in the Code of Federal Regulations, Oregon Administrative Rules, and petroleum products.

Please contact me if you have further questions or if other suspect materials are encountered during site activities. I may be reached at 503-823-7881.

Figures



35th Ave Line Cleaning

CSA 1120

Figure 1

Explanation

Storm Nodes

Cleaned Lines

1:2,500

0 250 Feet

Map Created by: sbraunsten Oct 18, 2010



Appendix A

WyEast
Environmental Sciences, Inc.
2415 SE 11th Ave. Portland Oregon 97214

CHAIN OF CUSTODY

Report Number _____

Phone(503) 231-9320 FAX(503) 231-9344

Company COP/BES		Phone 503-823-7881														Comments RUN TCIP ONLY ON RCRA8+ZN Rush
Project #		FAX 503-823-5565														
Project Name NW 35th LINE CLEANING		Purchase Order #														
Site NW 35th / LUZON		Report Attention J. O'Donovan		Collected By J. O'Donovan												
Samples: Temperature _____ On Ice? Yes / No		Turnaround Time: <input type="checkbox"/> Regular <input type="checkbox"/> 3-5 Business Days														
LAB ID	Field ID	Sampling Date	Sampling Time	Matrix	Container	Volume	NW-TPH-DX	NW-TPH-GX	NW-TPH-HCID	EPA 8021B (BTEX)	EPA 8270 SIM (PAH)	EPA 8260B	Analysis Requested			
C5040	16 inch Line	6/24/10	09:04	Soil	Jar	40Z							RCRA-8 + ZN (TCIP)			
	11	11	11	11	11	11							PCB			
C5041	16 inch Line	11	09:24	Water	Bottle	1-L							Filter first PCB			
		11	11	11	11	0.5L							Filter RCRA-8+ZN			
		11	11	11	11	160Z							Filter TSS/Non Filter TSS			
Relinquished by [Signature]		Affiliation COP/BES		Date 6/24/10		Time 11:10		Received by [Signature]		Affiliation		Date 6/24/10		Time 11:10		
Relinquished by		Affiliation		Date		Time		Received by		Affiliation		Date		Time		

CSA 1120

78610

Laboratory Report

City of Portland Environmental Services
1120 SW 5th Ave., Room 1000

Project Name: NW 35th Line Cleaning
Project Location: NW 35th / LU2ON
Project Number:
Date Sampled: 6/24/10
Date received: 6/24/10

Report Number: 78610
Report Date: 6-28-10

EPA 8082

Analyte: Polychlorinated biphenyls (PCBs) identification and quantification in water

All concentrations listed in ug/L (ppb)

Field ID	Lab ID	AROCLOR #							Surrogate
		1016	1221	1232	1242	1248	1254	1260	Recovery (%)
16 inch Line	C5041	ND	ND	ND	ND	ND	ND	ND	96%

BLANK	--	ND	ND	ND	ND	ND	ND	ND
Reporting Limit		0.2	0.2	0.2	0.2	0.2	0.2	0.2

Surrogate is Decachlorobiphenyl

ND = Not Detected (below reporting limit or detection limit)

**Wy'East**

Wy'East Environmental Sciences, Inc.

QC Report for PCB

Batch Date: 6-25-10

Matrix B	<i>Preparation Batch</i>	<i>Result (ug/L)</i>	<i>Acceptable Range</i>	<i>Surrogate Recovery</i>	<i>Surr. Acc. Range</i>
BLANK	PCB100625-1	0.1	<0.2	108%	50%-150%

Matrix S_I	<i>Preparation Batch</i>	<i>Result (ug/ml)</i>	<i>Theoretical Result (ug/ml)</i>	<i>Percent Recovery</i>	<i>Acc. Range</i>
LCS1	PCB100625-1	0.9	1	90%	70%-130%

Laboratory Report

City of Portland Environmental Services
1120 SW 5th Ave., Room 1000

Report Number: 78610
Report Date: 6-28-10

Project Name: NW 35th Line Cleaning
Project Location: NW 33th/LU2ON
Project Number:
Date Sampled: 6/24/10
Date received: 6/24/10

EPA 8082

Analyte: Polychlorinated biphenyls (PCBs) identification and quantification in soil

All concentrations listed in mg/Kg (ppm)

Field ID	Lab ID	AROCLOL #							Surrogate
		1016	1221	1232	1242	1248	1254	1260	Recovery (%)
16 inch Line	C5040	ND	ND	ND	ND	ND	ND	ND	39%

BLANK	--	ND	ND	ND	ND	ND	ND	ND
Reporting Limit		0.5	0.5	0.5	0.5	0.5	0.5	0.5

Note Low surrogate recovery, detection limits have been raised
Surrogate is Decachlorobiphenyl
ND = Not Detected (below reporting limit or detection limit)



WyEast Environmental Sciences, Inc.

Quality Control Report for PCB by EPA8082

Batch Date: 6/25/2010

Matrix	Preparation	Result	Acceptable	Surrogate	Surr. Acc.
Blank	Batch	(ug/ml)	Range	Recovery	Range
BLANK	PCB100625-1	0.01	<0.1	117%	50%-150%

Matrix	Preparation	Result	Theoretical	Percent	
Spike	Batch	(ug/ml)	Result	Recovery	Acc. Range
LCS1	PCB100625-1	0.9	(ug/ml)	90%	70%-130%
			1		

Laboratory Report

City of Portland Environmental Services

Report Number: 78610

Report Date: 6-28-10

Project Name: NW 35th Line Cleaning

Project Location: NE 35th / LU2ON

Project Number:

Date Sampled: 6/24/2010

Date received: 6/24/2010

EPA 160.2

Analytic: Total Suspended Solids

Field ID	Lab ID	Quantiation mg/L (ppm)	Detection Limit mg/L (ppm)
16 inch line-water- non-filtered	C5041	12,300	1
16 inch line-water filtered	C5041	1	1
	Blank	ND	1

LABORATORY REPORT

City of Portland Environmental Services
1120 SW 5th Ave., Room 1000

PROJECT NAME: NW 35th Line Cleaning
SITE LOCATION: NW 35th / LU2ON
PROJECT NUMBER:

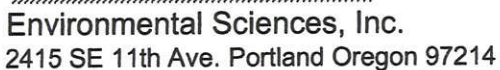
REPORT NUMBER: 78610
REPORT DATE: 6/28/10
PAGE: Page 1 of 1

ICPMS Metals Report - TCLP Metals

EPA 1311 / EPA 200.8

Silver (Ag) Arsenic (As) Barium (Ba) Cadmium (Cd) Chromium (Cr) Mercury (Hg) Lead (Pb) Selenium (Se) Zinc (Zn)

Field ID	LAB ID	Ag mg/L	As mg/L	Ba mg/L	Cd mg/L	Cr mg/L	Hg mg/L	Pb mg/L	Se mg/L	Zn mg/L	Sample Collection	
											Date	Batch
16 inch Line	C5040	ND	ND	0.6	ND	ND	ND	0.4	ND	2.9	6/24/2010	10F2512A.B
16 inch Line-water	C5041	ND	ND	0.5	ND	0.1	ND	3.8	ND	0.8	6/24/2010	10F2512A.B
Blank		ND	ND	ND	ND	ND	ND	ND	ND	ND		
Reporting Limit		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		



CSA 1120

78670

Report Number_____

Phone(503) 231-9320 FAX(503) 231-9344

[illegible]

Laboratory Report

City of Portland Environmental Services

Project Name: 35TH Ave Line Cleaning

Project Location: 600ft-24in

Project Number:

Report Number: 78670

Date Sampled: 6/29/10

Report Date: 6-30-10

Date received: 6/29/10

EPA 8082

Analyte: Polychlorinated biphenyls (PCBs) identification and quantification in soil

All concentrations listed in mg/Kg (ppm)

Field ID	Lab ID	AROCLOR #							Surrogate
		1016	1221	1232	1242	1248	1254	1260	Recovery (%)
600'-24inch line	C5185	ND	ND	ND	ND	ND	ND	1.4*	109%
BLANK	--	ND	ND	ND	ND	ND	ND	ND	
Reporting Limit		0.1	0.1	0.1	0.1	0.1	0.1	0.1	

* Sample contains mostly Ar1260 with some Ar1254, quantified as Ar1262

Surrogate is Decachlorobiphenyl

ND = Not Detected (below reporting limit or detection limit)



WyEast Environmental Sciences, Inc.

Quality Control Report for PCB by EPA8082

Batch Date: 6/29/2010

Matrix	Preparation	Result	Acceptable	Surrogate	Surr. Acc.
Blank	Batch	(ug/ml)	Range	Recovery	Range
BLANK	PCB100629-1	0.002	<0.1	139%	50%-150%

Matrix	Preparation	Result	Theoretical	Percent	
Spike	Batch	(ug/ml)	Result	Recovery	Acc. Range
LCS1	PCB100629-1	1.07	(ug/ml)	107%	70%-130%
			1		

LABORATORY REPORT

City of Portland Environmental Services
1120 SW 5th Ave., Room 1000

PROJECT NAME: 600ft-24in
SITE LOCATION:
PROJECT NUMBER: 35th Ave line Cleaning

REPORT NUMBER: 78670
REPORT DATE: 6/30/10
PAGE: Page 1 of 1

ICPMS Metals Report - TCLP Soil

EPA 1311 / EPA 200.8

Silver (Ag) Arsenic (As) Barium (Ba) Cadmium (Cd) Chromium (Cr) Mercury (Hg) Lead (Pb) Selenium (Se) Zinc (Zn)

Field ID	LAB ID	Ag	As	Ba	Cd	Cr	Hg	Pb	Se	Zn	Sample Collection	
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	Date	Batch
600'-24inch line	C5185	ND	ND	4	ND	ND	ND	6	ND	9	6/29/2010	10F3012A.B
Blank		ND	ND	ND	ND	ND	ND	ND	ND	ND		
Reporting Limit		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		

[illegible]

7 8 6 9 2



Report Number_____

Phone(503) 231-9320 FAX(503) 231-9344

[illegible]

Laboratory Report

City of Portland Environmental Services

Project Name: 35th Ave Line cleaning

Project Location:

Project Number:

Report Number: 78692

Date Sampled: 6/30/10

Report Date: 7-1-10

Date received: 6/30/10

EPA 8082

Analyte: Polychlorinated biphenyls (PCBs) identification and quantification in soil

All concentrations listed in mg/Kg (ppm)

Field ID	Lab ID	AROCLOR #							Surrogate
		1016	1221	1232	1242	1248	1254	1260	Recovery (%)
600ft-1100ft 24in. Line	C5245	ND	ND	ND	ND	ND	ND	0.2*	106%
BLANK	--	ND	ND	ND	ND	ND	ND	ND	
Reporting Limit		0.1	0.1	0.1	0.1	0.1	0.1	0.1	

* Sample contains mostly AR1260 and some AR1254, Quantified as AR1260

Surrogate is Decachlorobiphenyl

ND = Not Detected (below reporting limit or detection limit)



WyEast Environmental Sciences, Inc.

Quality Control Report for PCB by EPA8082

Batch Date: 7/1/2010

Matrix	Preparation	Result	Acceptable	Surrogate	Surr. Acc.
Blank	Batch	(ug/ml)	Range	Recovery	Range
BLANK	PCB100701-1	0.005	<0.1	128%	50%-150%

Matrix	Preparation	Result	Theoretical	Percent	
Spike	Batch	(ug/ml)	Result (ug/ml)	Recovery	Acc. Range
LCS1	PCB100701-1	1.01	1	101%	70%-130%

LABORATORY REPORT

City of Portland Environmental Services
1120 SW 5th Ave., Room 1000

PROJECT NAME: 35th Ave Line Cleaning
SITE LOCATION:
PROJECT NUMBER:

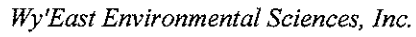
REPORT NUMBER: 78692
REPORT DATE: 7/1/10
PAGE: Page 1 of 1

ICPMS Metals Report - TCLP Soil

EPA 1311 / EPA 200.8

Silver (Ag) Arsenic (As) Barium (Ba) Cadmium (Cd) Chromium (Cr) Mercury (Hg) Lead (Pb) Selenium (Se) Zinc (Zn)

Field ID	LAB ID	Ag	As	Ba	Cd	Cr	Hg	Pb	Se	Zn	Sample	
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	Collection	Batch
600ft-1100ft 24in Line	C5245	ND	ND	0.9	0.6	ND	ND	0.2	ND	7	6/30/2010	10G0112A.B
Blank		ND	ND	ND	ND	ND	ND	ND	ND	ND		
Reporting Limit		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		

[illegible]

78732



Phone(503) 231-9320 FAX(503) 231-9344

[illegible]

Laboratory Report

City of Portland Environmental Services
1120 SW 5th Ave., Room 1000

Project Name: 35th ave line cleaning
Project Location: 36 inch nw line cleaning
Project Number:
Date Sampled: 7/2/10
Date received: 7/2/10

Report Number: 78732
Report Date: 7/6/10

EPA 8082

Analyte: Polychlorinated biphenyls (PCBs) identification and quantification in soil

All concentrations listed in mg/Kg (ppm)

Field ID	Lab ID	AROCLOR #							Surrogate
		1016	1221	1232	1242	1248	1254	1260	Recovery (%)
36 inch	C5501	ND	ND	ND	ND	ND	ND	0.95*	102%

BLANK -- ND ND ND ND ND ND ND

Reporting Limit 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1

* mostly Ar1260 with some Ar1254, quantified as AR1260

Surrogate is Decachlorobiphenyl

ND = Not Detected (below reporting limit or detection limit)



Wy'East Environmental Sciences, Inc.

Quality Control Report for PCB by EPA8082

Batch Date: 7/6/2010

Matrix	Preparation	Result	Acceptable	Surrogate	Surr. Acc.
Blank	Batch	(ug/ml)	Range	Recovery	Range
BLANK	PCB100706-1	0.006	<0.1	130%	50%-150%

Matrix	Preparation	Result	Theoretical	Percent	
Spike	Batch	(ug/ml)	Result	Recovery	Acc. Range
LCS1	PCB100706-1	0.99	(ug/ml)	99%	70%-130%
			1		

LABORATORY REPORT

City of Portland Environmental Services
1120 SW 5th Ave., Room 1000

PROJECT NAME: 35th Ave Line Cleaning
SITE LOCATION: 36 Inch NW Line Cleaning
PROJECT NUMBER:

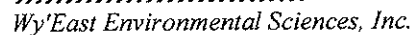
REPORT NUMBER: 78732
REPORT DATE: 7/6/10
PAGE: Page 1 of 1

ICPMS Metals Report - TCLP Soil

EPA 1311 / EPA 200.8

Silver (Ag) Arsenic (As) Barium (Ba) Cadmium (Cd) Chromium (Cr) Mercury (Hg) Lead (Pb) Selenium (Se) Zinc (Zn)

Field ID	LAB ID	Ag mg/L	As mg/L	Ba mg/L	Cd mg/L	Cr mg/L	Hg mg/L	Pb mg/L	Se mg/L	Zn mg/L	Sample Collection	
											Date	Batch
36inch	C5501	ND	ND	0.4	ND	ND	ND	0.3	ND	1.6	7/2/2010	10G0611A.B
Blank		ND	ND	ND	ND	ND	ND	ND	ND	ND		
Reporting Limit		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		

[illegible]

Environmental Sciences, Inc.
2415 SE 11th Ave. Portland Oregon 97214

CHAIN OF CUSTODY

Report Number _____

Phone(503) 231-9320 FAX(503) 231-9344

[illegible]

Laboratory Report

City of Portland Environmental Services
1120 SW 5th Ave., Room 1000

Report Number: 78804
Report Date: 7/12/10

Project Name: 35th Ave Samples
Project Location: NW 36th Ave 36 inch line
Project Number:
Date Sampled: 7/9/10
Date received: 7/9/10

EPA 8082

Analyte: Polychlorinated biphenyls (PCBs) identification and quantification in soil

All concentrations listed in mg/Kg (ppm)

Field ID	Lab ID	AROCLOR #							Surrogate Recovery (%)
		1016	1221	1232	1242	1248	1254	1260	
0-70 36 inch	C5936	ND	ND	ND	ND	ND	ND	0.4*	87%
End 34 inch	C5937	ND	ND	ND	ND	ND	ND	0.3*	90%

BLANK	--	ND	ND	ND	ND	ND	ND	ND	
Reporting Limit		0.1	0.1	0.1	0.1	0.1	0.1	0.1	

* Mostly Ar1260 with some Ar1254, quantified as Ar 1260

Surrogate is Decachlorobiphenyl

ND = Not Detected (below reporting limit or detection limit)



Wy'East Environmental Sciences, Inc.

Quality Control Report for PCB by EPA8082

Batch Date: 7/9/2010

Matrix	Preparation	Result	Acceptable	Surrogate	Surr. Acc.
Blank	Batch	(ug/ml)	Range	Recovery	Range
BLANK	PCB100708-1	0.004	<0.01	107%	50%-150%

Matrix	Preparation	Result	Theoretical	Percent	
Spike	Batch	(ug/ml)	Result	Recovery	Acc. Range
LCS1	PCB100708-1	1	(ug/ml)	100%	70%-130%

LABORATORY REPORT

City of Portland Environmental Services
1120 SW 5th Ave., Room 1000

PROJECT NAME: 35th Ave Samples
SITE LOCATION: NW 36th Ave 36inch Line
PROJECT NUMBER:

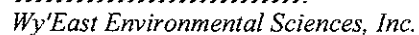
REPORT NUMBER: 78804
REPORT DATE: 7/12/10
PAGE: Page 1 of 1

ICPMS Metals Report - TCLP Soil

EPA 1311 / EPA 200.8

Silver (Ag) Arsenic (As) Barium (Ba) Cadmium (Cd) Chromium (Cr) Mercury (Hg) Lead (Pb) Selenium (Se) Zinc (Zn)

Field ID	LAB ID	Ag	As	Ba	Cd	Cr	Hg	Pb	Se	Zn	Sample Collection	
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	Date	Batch
0-70 36inch	C5936	ND	ND	0.9	1.6	ND	ND	0.5	ND	23	7/9/2010	10G1211A.B
End 24inch	C5937	ND	ND	0.9	1.5	ND	ND	0.5	ND	20	7/9/2010	10G1211A.B
Blank		ND	ND	ND	ND	ND	ND	ND	ND	ND		
Reporting Limit		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		

[illegible]

CSA 1120

78878

Report Number _____

Phone(503) 231-9320 FAX(503) 231-9344

CHAIN OF CUSTODY

WyEast

Environmental Sciences, Inc.
2415 SE 11th Ave. Portland Oregon 97214

Company COP/BES		Phone 503-823-7881														Comments RUSH
Project #		FAX 503-823-5565														
Project Name NW 35th LIN Cleaning		Purchase Order #														
Site NW 35th		Report Attention J. O'DONOVAN		Collected By J. O'DONOVAN												
Samples: Temperature 26.5 On Ice? Yes / No		Turnaround Time: <input type="checkbox"/> Regular <input type="checkbox"/> 3-5 Business Days														
LAB ID	Field ID	Sampling Date	Sampling Time	Matrix	Container	Volume	NW-TPH-Dx	NW-TPH-GX	NW-TPH-HCID	EPA 8021B (BTEX)	EPA 8270 SIM (PAH)	EPA 8260B	Analysis Requested			
6412	36-inch-70-160	7/14/10	11:35	SOIL	JAR	40Z							TCLP-RCRA-8+20			
	↓	↓	↓	↓	↓	↓							PCB			
Relinquished by [Signature]	Affiliation BES/COP	Date 7/14/10	Time 15:30	Received by [Signature]		Affiliation		Date 7/14/10		Time 3:20						
Relinquished by	Affiliation	Date	Time	Received by		Affiliation		Date		Time						

Laboratory Report

City of Portland/BES

Report Number: 78878
Report Date: 7/15/10

Project Name: NW 35th Lin Cleaning
Project Location: NW 35th
Project Number:
Date Sampled: 7/14/10
Date received: 7/14/10

EPA 8082

Analyte: Polychlorinated biphenyls (PCBs) identification and quantification in soil

All concentrations listed in mg/Kg (ppm)

Field ID	Lab ID	AROCLOR #							Surrogate
		1016	1221	1232	1242	1248	1254	1260	Recovery (%)
36inch 70-160	C6412	ND	ND	ND	ND	ND	ND	0.1	72%
BLANK	--	ND	ND	ND	ND	ND	ND	ND	89%
Reporting Limit		0.1	0.1	0.1	0.1	0.1	0.1	0.1	

Surrogate is Decachlorobiphenyl

ND = Not Detected (below reporting limit or detection limit)



Wy'East Environmental Sciences, Inc.

Quality Control Report for PCB by EPA8082

Batch Date: 7/15/2010

Matrix Blank	Preparation Batch	Result (ug/ml)	Acceptable Range	Surrogate Recovery	Surr. Acc. Range
BLANK	PCB100715-1	0.005	<0.1	89%	50%-150%

Matrix Spike	Preparation Batch	Result (ug/ml)	Theoretical Result (ug/ml)	Percent Recovery	Acc. Range
LCS1	PCB100715-1	1	1	100%	70%-130%

LABORATORY REPORT

City of Portland Environmental Services
1120 SW 5th Ave., Room 1000

PROJECT NAME: NW 35th Line Cleaning
SITE LOCATION: NW 35th
PROJECT NUMBER:

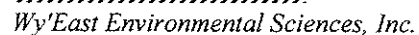
REPORT NUMBER: 78878
REPORT DATE: 7/15/10
PAGE: Page 1 of 1

ICPMS Metals Report - TCLP Soil

EPA 1311 / EPA 200.8

Silver (Ag) Arsenic (As) Barium (Ba) Cadmium (Cd) Chromium (Cr) Mercury (Hg) Lead (Pb) Selenium (Se) Zinc (Zn)

Field ID	LAB ID	Ag	As	Ba	Cd	Cr	Hg	Pb	Se	Zn	Sample Collection	
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	Date	Batch
36 inch 70-160	C6412	ND	ND	0.8	0.8	ND	ND	ND	ND	13	7/14/2010	10G1512A.B
Blank		ND	ND	ND	ND	ND	ND	ND	ND	ND		
Reporting Limit		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		

[illegible]

Wy'East

Environmental Sciences, Inc.
2415 SE 11th Ave. Portland Oregon 97214

CHAIN OF CUSTODY

Report Number 7892 1

Phone(503) 231-9320 FAX(503) 231-9344

[illegible]

LABORATORY REPORT

City of Portland Environmental Services
1120 SW 5th Ave., Room 1000

PROJECT NAME: NW 35th Line Cleaning
SITE LOCATION: NW 35th Baker Tank
PROJECT NUMBER:

REPORT NUMBER: 78921
REPORT DATE: 7/19/10
PAGE: Page 1 of 1

ICPMS Metals Report - TCLP Soil

EPA 1311 / EPA 200.8

Silver (Ag) Arsenic (As) Barium (Ba) Cadmium (Cd) Chromium (Cr) Mercury (Hg) Lead (Pb) Selenium (Se) Zinc (Zn)

Field ID	LAB ID	Ag	As	Ba	Cd	Cr	Hg	Pb	Se	Zn	Sample Collection	
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	Date	Batch
BAKER TANK SLUDGE	C6607	ND	ND	1	1	ND	ND	1	ND	15	7/16/2010	10G1910A.B
Blank		ND	ND	ND	ND	ND	ND	ND	ND	ND		
Reporting Limit		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		



Quality Control Report for Metals by ICPMS

[illegible]

PCB Laboratory Report

City of Portland Environmental Services
1120 SW 5th Ave., Room 1000
Portland, OR 97204-1912

Project Name: NW 35th Line Cleaning
Project Location: NW 35th Baker Tank
Project Number:
Date Sampled: 7/16/10
Date received: 7/16/10

Report Number: 78921
Report Date: 7/20/10

EPA 8082

Analyte: Polychlorinated biphenyls (PCBs) identification and quantification in soil

All concentrations listed in mg/Kg (ppm)

Field ID	Lab ID	AROCLOR #							Surrogate
		1016	1221	1232	1242	1248	1254	1260	Recovery (%)
Baker tank Sludge	C6607	ND	ND	ND	ND	ND	ND	ND	58%

BLANK	--	ND	ND	ND	ND	ND	ND	ND	95%
Reporting Limit		0.1	0.1	0.1	0.1	0.1	0.1	0.1	

Surrogate is Decachlorobiphenyl

ND = Not Detected (below reporting limit or detection limit)



Wy'East Environmental Sciences, Inc.

Quality Control Report for PCB by EPA 8082

Batch Date: 7/19/2010

Matrix Blank	Preparation Batch	Result (ug/ml)	Acceptable Range	Surrogate Recovery	Surr. Acc. Range
BLANK	PCB100719-1	0.008	<0.1	95%	50%-150%

Matrix Spike	Preparation Batch	Result (ug/ml)	Theoretical Result (ug/ml)	Percent Recovery	Acc. Range
LCS1	PCB100719-1	0.99	1	99%	70%-130%

Appendix B

WASTE MANAGEMENT, INC.NON HAZARDOUS WASTE DISPOSAL SOLUTIONS FOR THE PACIFIC NORTHWEST

Hillsboro Landfill, Inc.

3205 SE MINTER BRIDGE ROAD HILLSBORO, OR 97123

PERMIT # 106859OR

Tracking Number 14190

PERMIT TO DISPOSE OF NON-HAZARDOUS MATERIALS


This permit authorizes disposal of Customer's waste materials in accordance with the Industrial Waste & Disposal Services Agreement dated _____

EXPIRES: 10/15/2010**GENERATOR: CITY OF PORTLAND - BES - 35TH
AVENUE LINE CLEANING**

DESCRIPTION: STORM LINE SEDIMENT AND DEBRIS	TONS: 100
<input type="checkbox"/> SPECIAL WASTE <input type="checkbox"/> CS <input type="checkbox"/> C&D <input checked="" type="checkbox"/> CLEAN-UP	
LOCATION: PORTLAND, OREGON NW 35TH AND ST. HELENS ROAD	COUNTY: Multnomah
CONTACT: SCOTT BRAUNSTEN	PHONE: 503-823-5836
	FAX: 503-823-5565

BILLING: Landfill account CITY OF PORTLAND - BES	PO#: N/A	JOB#: N/A
We accept business checks, cash, VISA / Mastercard or charge (with prior approval)		

SPECIAL HANDLING : NOTE: PREAPPROVAL ONLY, PROJECT START DATE OF 6/1/2010, BES WILL CALL WITH EXTENSION DATE OF PERMIT
MK
TyT

APPROVED: 	KRISTIN CASTNER	DATE: 07/15/10 2:29:44 PM
--	------------------------	----------------------------------

A COPY OF THIS PERMIT MUST BE SHOWN BY EACH DRIVER

THERE IS A MINIMUM CHARGE OF \$50-\$60 FOR EACH LOAD OF SPECIAL WASTE

**WASTE MANAGEMENT**



Chemical Waste Management of the Northwest
17629 Cedar Springs Lane
Arlington, OR 97812
(541) 454-3235
(541) 454-3237

INVOICE

THIS IS AN INVOICE FOR CURRENT CHARGES.
PLEASE PAY AMOUNT INDICATED BELOW

TERMS

**DUE UPON RECEIPT
OR PER CONTRACT**

ALL PAST DUE AMOUNTS WILL BEAR INTEREST
AT ONE AND ONE HALF PERCENT PER MONTH
OR THE MAXIMUM RATE ALLOWED
BY LAW, WHICHEVER IS LESS

DPR-0012053802

my L# 5000102066

CITY OF PORTLAND
ATTN: BETHANY NABHAN
1120 SW 5TH AVE RM 1000
PORTLAND OR 97204-1912

Invoice Date: 08/01/2010
Customer #: 450-1319842
Invoice #: 2236-0086823
Page #: 1

PAID

Paid 8/13/2010

ifest#	Profile	Description	Gener/Quantity	P.O.#/Unit	Billor	Rate	Total
10409116	OR304171	SEWER LINE CLEANING	008358 CITY OF PORTLAN	110349	TWORLEY	Svc Date	07/28/2010
	DIRECT LANDFILL	DISPOSAL/FEE	10.35	TONS		110.00000	1,138.50
	OTHER SERVICES	NON CONFORMING WASTE	1.00	LOAD		500.00000	500.00
		\$500 OTHER SERVICES					
		CHARGE IS FOR THE					
		LOAD BEING					
		SOLIDIFIED DUE TO					
		THE PRESENCE OF					
		FREE LIQUID.					
		PRICE AGREEMENT#					
		31000157					
		CONTRACT BID# 110349					
		MANIFEST DOCUMENT 001823777JJK					

Subtotal 1,638.50

** PAYMENT DUE UPON
RECEIPT OF INVOICE
OR PER CONTRACT **
THANK YOU FOR YOUR BUSINESS!

CONTRACT 31000157
CSA # 1120
COST CENTER ESW0000003
WBS
1/O 9ESW00000042
GRANT
PO/DPO # 22051709
DATE 8/25/10
PROJECT MANAGER Dan Wolsborn
SIGNATURE Dan Wolsborn

Remit to: CHEMICAL WASTE MANAGEMENT, INC.
P.O. BOX 660345
DALLAS, TX 75266

Total Due \$1,638.50



Chemical Waste Management of the Northwest
17629 Cedar Springs Lane
Arlington, OR 97812
(541) 454-3235
(541) 454-3237

INVOICE

THIS IS AN INVOICE FOR CURRENT CHARGES.
PLEASE PAY AMOUNT INDICATED BELOW

TERMS

**DUE UPON RECEIPT
OR PER CONTRACT**

ALL PAST DUE AMOUNTS WILL BEAR INTEREST
AT ONE AND ONE HALF PERCENT PER MONTH
OR THE MAXIMUM RATE ALLOWED
BY LAW, WHICHEVER IS LESS

DPR-0012053802

CITY OF PORTLAND
ATTN: BETHANY NABHAN
1120 SW 5TH AVE RM 1000
PORTLAND OR 97204-1912

Invoice Date: 08/01/2010
Customer #: 450-1319842
Invoice #: 2236-0086823
Page #: 1

Manifest#	Profile	Description	Gener/Quantity	P.O.#/Unit	Billor	Rate	Total
0000409116	OR304171	SEWER LINE CLEANING	008358 CITY OF PORTLAN	110349	TWORLEY	Svc Date	07/28/2010
	DIRECT LANDFILL	DISPOSAL/FEES	10.35	TONS		110.00000	1,138.50
	OTHER SERVICES	NON CONFORMING WASTE	1.00	LOAD		500.00000	500.00
	\$500 OTHER SERVICES						
	CHARGE IS FOR THE						
	LOAD BEING						
	SOLIDIFIED DUE TO						
	THE PRESENCE OF						
	FREE LIQUID.						
	PRICE AGREEMENT#						
	31000157						
	CONTRACT BID# 110349						
	MANIFEST DOCUMENT 001823777JJK						
					Subtotal		1,638.50

** PAYMENT DUE UPON
RECEIPT OF INVOICE
OR PER CONTRACT **
THANK YOU FOR YOUR BUSINESS!

CONTRACT 31000157
CSA # 1120
COST CENTER ESWW000003
WBS
1/O. 9ESWW0000042
GRANT
PO/DPO # 22051709
DATE 8/25/10
PROJECT MANAGER Don Wolsborn
SIGNATURE Don Wolsborn

Remit to: CHEMICAL WASTE MANAGEMENT, INC.
P.O. BOX 660345
DALLAS, TX 75266

Total Due \$1,638.50

409116

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number OR 0000029951	2. Page 1 of 1	3. Emergency Response Phone (800) 424-9300	4. Manifest Tracking Number 001823777 JJK	
5. Generator's Name and Mailing Address CITY OF PORTLAND EES NW 36TH NW 36TH AND ST HELENS ROAD PORTLAND OR 97210			Generator's Site Address (if different than mailing address)			
Generator's Phone: (503) 823-8838			U.S. EPA ID Number ORA 000028173			
6. Transporter 1 Company Name <i>Fillup's Trucking</i>			U.S. EPA ID Number			
7. Transporter 2 Company Name			U.S. EPA ID Number			
8. Designated Facility Name and Site Address CHEMICAL WASTE MANAGEMENT, INC. 17829 CEDAR SPRINGS LANE ARLINGTON OR 97812-9708			U.S. EPA ID Number ORD 089452353			
Facility's Phone: (503) 450-2800						
GENERATOR	9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
		1. HAZARDOUS WASTE, SOLID, N.O.S., (BNA3077)(H)(D002)	No. Type			
	X		1	D	2000	P
14. Special Handling Instructions and Additional Information 207000 10135t S06B						
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.						
Generator's/Officer's Printed/Typed Name JOHN O'DONOVAN			Signature <i>[Signature]</i>		Month Day Year 17 27 10	
INTL	16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: _____ Date leaving U.S.: _____					
	17. Transporter Acknowledgment of Receipt of Materials					
TRANSPORTER	Transporter 1 Printed/Typed Name William Baker			Signature <i>[Signature]</i>		Month Day Year 17 28 10
	Transporter 2 Printed/Typed Name			Signature		Month Day Year
DESIGNATED FACILITY	18. Discrepancy					
	18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input checked="" type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection					
	Free liquid source is the waste separated during transit per Scott Braunster/Cal. Environmental Scientist 8m 7-30-10					
	Manifest Reference Number: _____ U.S. EPA ID Number					
	18b. Alternate Facility (or Generator)					
Facility's Phone: _____						
18c. Signature of Alternate Facility (or Generator)						
Month Day Year						
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)						
1. H11		2.		3.		4.
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a						
Printed/Typed Name Sue McMahon			Signature <i>[Signature]</i>		Month Day Year 10 28 10	

Arlington TSDf Billing Attachment

Receipt Load Number	Manifest Number	Date Received
409116	00182377JJK	07/28/10
TSDF Billable Services		Price per unit or hour # of units or hours
Customer Approved Services:		
Surcharges: Bill in addition to contract pricing for landfill		
Free Liquid Stabilization/ Drums (Unscheduled)	\$100/drum	
Free Liquid Stabilization/ Bulk (Unscheduled)	\$500/load	1
Drum Less than 90% Full	\$20/drum	
Leaking shipment	\$500/load	
Profile Approval Fees:		
Profile Approval at the gate	\$1500.00/profile	
Re-Certification at the gate	\$150.00/profile	
Truck Washout (Unscheduled/Disposed on Site)	\$1.00/gallon	
Site Services:		
General Labor	\$45/hour	
Response Leader/ Supervisor	\$90/hour	
Supplies:		
55 gal Drum	\$65/drum	
85 gal Salvage Drum	\$150/drum	
6 mil plastic	\$100/roll	
6 mil plastic - Diaper truck/pup	\$50/truck/pup	
Flyash	\$35/ton	
Absorbents	\$10/sack	
Hydraulic Oil	\$8/gallon	
Poly Drum	\$30/drum	
Equipment (Spill Cleanup Usage):		
Loader	\$85/hour	
Grader	\$85/hour	
Scraper	\$85/hour	
Dozer	\$85/hour	
Vacuum Truck	\$85/hour	
Backhoe	\$85/hour	
Taylor	\$85/hour	
Crane (25,000 lb capacity)	\$85/hour	
Crane Rental (70,000 lb capacity)	\$2000/day	
Comments: OKay To Solidify Per Scott Brown Sen Gov. Environmental Scientist. JCB 7/28/10.		



CITY OF PORTLAND ENVIRONMENTAL SERVICES



Water Pollution Control Laboratory

6543 N. Burlington Avenue, Bldg. 217, Portland, Oregon 97203 • Dan Saltzman, Commissioner • Dean Marriott, Director

June 10, 2010

Mr. John O'Donovan
City of Portland – BES
1120 SW 5th Avenue
Portland, OR 97204

Subject: Industrial Wastewater Batch Discharge Authorization (Batch-2010-028)

Dear Mr. O'Donovan:

This letter responds to your June 2, 2010 batch discharge request. The Industrial Source Control Division has reviewed your request and finds the waste meets City limits and is acceptable for discharge to the sanitary sewer system. This letter authorizes the discharge of approximately 100,000 gallons of sewer cleaning effluent into the City's sanitary sewer system. This is a one-time authorization for this project and this particular waste only.

This authorization is subject to the following stipulations:

- The discharge point shall be to sanitary manhole nodes #AAX317, AAX282, AAX271 or AAX254(as identified in your application).
- At no time shall discharge water be allowed to enter the storm sewer system.
- The discharge rate shall not exceed 50 gallons per minute and shall meet local discharge limitations.
- Appropriate measures (filtering, settling, etc.) shall be taken to reduce suspended solids entering the sanitary sewer system.
- A copy of this authorization shall be at the discharge location at all times.
- The discharge must take place during DRY WEATHER ONLY. Dry weather is defined by the Oregon Department of Environmental Quality as a time it is not raining and it has not rained in the Portland metropolitan area during the previous eight (8) hours.
- Within thirty (30) days of concluding discharge, return the enclosed *Monthly Batch Discharge Report* in order to notify this office of the date, volume discharged and discharge location.

Please sign a copy of this letter acknowledging your agreement to the above-mentioned terms and return it to this office prior to discharge. If you have any questions concerning the above requirements, please contact the undersigned at 503-823-7230 or anno@bes.ci.portland.or.us.

Respectfully,

Ann O'Roke
Industrial Permitting Section
Industrial Source Control Division
Bureau of Environmental Services

Agreement to above terms:


Name
ENGINEER
Title
6/10/10
Date

APPENDIX C

**Outfall Basin 18 East-Central Subbasin
September 2010 Surface Soil and
Catch Basin Solids Investigation
Data Summary Report**

Appendix C

Outfall Basin 18 East-Central Subbasin September 2010 Surface Soil and Catch Basin Solids Investigation Data Summary Report

Introduction

The east-central subbasin of Basin 18 was identified as having upland sources of polychlorinated biphenyls (PCBs), pesticides, and metals, based on results of sediment trap samples collected in spring 2007 and spring 2009 (BES, 2010a). After the sediment trap investigation, the City investigated inline solids from the City conveyance system at several locations upstream of the sediment trap locations, and PCBs and metals were detected in most of the samples (BES, 2012). This report summarizes the results of the subsequent City of Portland surface soil and inline solids investigation in this area. In September 2010, the City collected four surface soil samples from NW Lake Street (which is unpaved) and solids samples from four catch basins along NW 35th Avenue.

The purpose of the fall 2010 sampling event was to investigate a potential erodible soils pathway between a known source of PCBs, pesticides, and metals and the east-central subbasin conveyance system. Container Management Services is a site being investigated under the DEQ Cleanup program, and is located in an area that may have historical and current pathways to the east-central subbasin. In 2009, Container Management analyzed site catch basin solids and erodible soils; results indicate that the site is a major source of pesticides and PCBs (SES, 2011). The analytical results indicate the presence of these contaminants in surface soils from NW Lake Street and in the catch basin solids from the sampled locations along NW 35th Avenue.

This inline solids investigation is part of the City's ongoing Remedial Investigation associated with the Portland Harbor City of Portland Outfalls Project being conducted pursuant to the August 13, 2003, Intergovernmental Agreement (IGA) between DEQ and the City. The data collected under this investigation support ongoing work by DEQ and the City to characterize and control discharges to the stormwater pathway from sites within Basin 18.

Background

The Container Management site has operated as a storage drum reconditioning/recycling facility since approximately 1939 (SES, 2009), and data from the site (SES, 2011) indicate PCBs and pesticides are present at elevated concentrations in onsite surface soils and stormwater solids. Vehicles exit the site onto NW 35th Avenue by way of NW Lake Street (see Figure A-1). Although NW Lake Street is a public road, it is used almost exclusively by traffic from the adjacent Container Management site. NW Lake Street is unimproved and shows evidence of

erosion (see photographs 1 through 12 in Attachment C-1). In turn, soil tracked from the Container Management site via NW Lake Street is a potential source of contaminants to a stretch of NW 35th Avenue where runoff discharges to adjacent catch basins within the east-central subbasin.

Based on the large area of unpaved ground at the Container Management site, its long history of industrial operations, and the use of NW 35th Avenue by traffic exiting the site, the City identified Container Management as a potential source of contaminants to the east-central subbasin via vehicle drag-out of erodible surface soil from the site.

Sampling Activities and Analytical Approach

The surface soil and catch basin solids sampling activities were completed in accordance with the Summer 2010 Sampling and Analysis Plan (SAP) submitted to DEQ in August 2010 (BES, 2010b). Four composite surface soil samples (0 – 2 inches below the ground surface) were collected on September 14, 2010, from the NW Lake Street right-of-way, at the locations shown on Figure C-1. Sample locations were selected to represent areas that may be impacted by Container Management operations. Each sample represents a composite of five subsamples collected from discrete locations in close proximity. These subsamples were first composited and then homogenized into a representative composite sample for chemical analysis. Also on September 14, solids samples were collected from four catch basins along NW 35th Avenue and near NW Lake Street. The locations of these catch basins are shown on Figure C-1. One of the catch basins proposed for sampling (catch basin ADY099, mapped in NW 35th Avenue on the corner of NW Guam Street) was no longer present; therefore, nearby catch basin APN941 was sampled as an alternative. Although it was determined that catch basin APN941 is not connected to the east-central subbasin, accumulated solids in the catch basin were analyzed because they represent contributions of solids from vehicle traffic on NW 35th Avenue. Visual observation at catch basin APP278 indicated that sampleable soils were not present at that location. The surface soil and catch basin sampling locations are listed below:

Sample Identification	Description
West end of Lake St.	NW Lake Street between NW St. Helens Road and railroad tracks
Lake St. at railroad tracks	NW Lake Street between railroad tracks that cross NW Lake Street
East of railroad tracks	NW Lake Street on the east side of the railroad tracks
East end of Lake St.	NW Lake Street just west of NW 35 th Avenue
Catch basin ANF164	Catch basin on west side of NW 35 th Avenue at the intersection with NW Lake Street
Catch basin APN941	Catch basin on the south side of NW Guam Street at the intersection with NW 35 th Avenue (referred to as “unnamed catch basin” in Attachment C-2 field notes). This catch basin is not connected to the east-central subbasin conveyance system.
Catch basin ANB621	Catch basin on the east side NW 35 th Avenue north of the intersection with NW Guam Street
Catch basin ANB622	Catch basin on the west side of NW 35 th Avenue north of the intersection with NW Guam Street

Photographs of the sampling locations and samples collected are included in Attachment C-1. Field notes recorded during sampling activities are provided in Attachment C-2.

The surface soil and inline solids samples were submitted to the City’s Water Pollution Control Laboratory or contracted laboratories for analysis of metals, PCB congeners, PCB Aroclors, pesticides, total organic carbon, and total solids.

Summary of Results

PCBs, metals, and pesticides were detected in all of the samples. Tables C-1 and C-2 summarize the laboratory analytical results and include the JSCS SLVs for reference. The laboratory reports and data review memorandum for the samples are provided in Attachment C-3.

References

- BES. 2007a. Amended Programmatic Quality Assurance Project Plan, City of Portland Outfalls Project, Revision to Programmatic Source Control Remedial Investigation Work Plan Appendix D. Prepared by the City of Portland, Bureau of Environmental Services, Portland Harbor Program. August 2007.
- BES. 2007b. Amended Programmatic Sampling and Analysis Plan, City of Portland Outfalls Remedial Investigation/Source Control Measures Project. Prepared by the City of Portland, Bureau of Environmental Services, Portland Harbor Program. August 2007.

- BES. 2010a. Technical Memorandum No. OF18-2, Outfall Basin 18 Inline Solids Investigation. July 20, 2010.
- BES. 2010b. Subject: City of Portland Outfall Project, Source Investigations for Basins 18, 19A, 52, 52C, 53, 53A, and S-1, Summer 2010 Sampling and Analysis Plan. Letter to K. Tarnow (DEQ) from L. Scheffler (BES). August 11, 2010.
- BES. 2012. Outfall Basin 18 East-Central Subbasin, Fall 2009 Inline Solids Sampling, Data Summary Report. Appendix A to Outfall Basin 18, East-Central Subbasin Source Investigation Report. May 2012.
- DEQ/EPA. 2005. Portland Harbor Joint Source Control Strategy, Final, dated December 2005 (updated July 2007).
- SES. 2009. Stormwater Assessment Work Plan, Container Management Services, LLC, 3000 NW St. Helens Road, Portland, OR. Prepared for IMACC Corporation by Strategic Engineering & Science, Inc. January 30, 2009.
- SES. 2011. Re: Sediment and Soil Sampling Data Tables, Container Management Services, LLC, 3000 NW St. Helens Road, Portland, Oregon, ECSI #4784. Data transmittal to J. Orr (DEQ) from S. Kemnitz and M. Bazargani (SES). October 12, 2011.

Tables

Table C-1 – *Basin 18 East-Central Subbasin Fall 2010 Surface Soils and Catch Basin Solids Results*

Table C-2 – *Basin 18 East-Central Subbasin Fall 2010 Surface Soils and Catch Basin Solids PCB Congener Results*

Figure

Figure C-1 – *Basin 18 East-Central Subbasin, Fall 2010 Surface Soil and Catch Basin Solids Sampling Locations*

Attachments

Attachment C-1 – *Field Photographs*

Attachment C-2 – *Field Data Sheets*

Attachment C-3 – *Laboratory Results*

Table C-1
Basin 18 East-Central Subbasin September 2010 Surface Soil and Catch Basin Solids Results

		NW Lake Street Right-of-Way						NW 35th Avenue Catch Basins														
		Surface Soil	Surface Soil	Surface Soil	Surface Soil	Surface Soil	Surface Soil	Inline Solids	Inline Solids	Inline Solids	Inline Solids											
		West End of Lake St. FO105890	DUPLICATE West End of Lake St. FO105899	Lake St. at Railroad FO105891	East of Railroad FO105892	East End of Lake St. FO105893	East End of Lake St. FO105893	Catch Basin ANB622 FO105895	Catch Basin ANB621 FO105897	Catch Basin APN941 (Not in Subbasin) FO105896	Catch Basin ANF164 (Connects to MH AAX318) FO105894	JSCS ⁽¹⁾ Screening Level Value										
Class	Analyte	Units	9/14/2010	9/14/2010	9/14/2010	9/14/2010	9/14/2010	9/14/2010	9/14/2010	9/14/2010	9/14/2010	Toxicity	Bioaccumulation									
Total Organic Carbon (EPA 9060 MOD)																						
	TOC	mg/Kg	11,100	9,930	8,520	12,600	20,200	102,000	111,000	84,000	40,300	--	--									
Total Solids (SM 2540G)																						
	TS	%	96.3	96.2	98	92.3	90.2	67.1	58.7	62.0	92.7	--	--									
Metals (EPA 6020)																						
	Cadmium	mg/Kg	0.79	0.89	0.63	0.71	1.08	2.12	2.83	1.53	2.47	4.98	1									
	Chromium	mg/Kg	42.4	59.7	39.9	51.0	51.3	75.0	124	180	84.7	111	--									
	Copper	mg/Kg	36.7	34.8	41.0	50.2	46.6	104	129	136	114	149	--									
	Lead	mg/Kg	93.9	94.1	104	148	157	74.4	118	124	151	128	17									
	Mercury	mg/Kg	0.054	0.048	0.052	0.086	0.066	0.081	0.130	0.077	0.075	1.06	0.07									
	Nickel	mg/Kg	13.2	26.1	16.6	16.9	17.8	45.2	55.3	52.0	41.5	48.6	--									
	Silver	mg/Kg	0.25	0.22	0.31	1.04	0.44	0.45	0.64	0.65	0.43	5	--									
	Zinc	mg/Kg	179	185	239	264	237	872	1,317	884	644	459	--									
Organochlorine Pesticides (EPA 8081A)																						
	4,4'-DDD ⁽²⁾	µg/Kg	7.7	6.9	U	5.4	U	21	6.2	2.3	1.4	U	1.3	3.5	28	0.33						
	4,4'-DDE ⁽²⁾	µg/Kg	6.1	4.7		5.7		26	5.4	2.3	1.3		1.1	U	3.2	31.3	0.33					
	4,4'-DDT ⁽²⁾	µg/Kg	72	70		61		140	58	9.6	U	11	U	19	20	62.9	0.33					
	Estimated Total DDx ⁽³⁾	µg/Kg	86	75		67		187	70	4.6		1.3		20	27	--	0.33					
	Aldrin	µg/Kg	3	U	0.97	U	1	U	5.5	U	0.97	U	0.97	U	0.74	J	1.2	U	1.1	40	--	--
	alpha-BHC (α-BHC)	µg/Kg	1	U	0.97	U	1	U	0.99	U	0.97	U	0.97	U	1.0	U	0.98	U	0.99	U	--	--
	beta-BHC (β-BHC)	µg/Kg	1	U	4	U	1.4	U	0.99	U	1.2	U	2.3	U	1.0	U	6.9	U	2.9	U	--	--
	delta-BHC (δ-BHC)	µg/Kg	1	U	0.97	U	0.31	J	0.99	U	0.97	U	0.97	U	1.0	U	0.98	U	0.99	U	--	--
	gamma-BHC (γ-BHC, Lindane)	µg/Kg	1	U	0.97	U	1	U	0.99	U	0.97	U	1.4	U	1.6	U	0.98	U	0.99	U	4.99	--
	alpha-Chlordane ⁽⁴⁾	µg/Kg	61		60		82		120		17		1.4		2.5		2.3		5.8		--	--
	beta-Chlordane ⁽⁴⁾	µg/Kg	74		74		90		140		23		2.8		4.8		3.0		8.4		--	--
	Total Chlordane ⁽⁵⁾	µg/Kg	135	134		172		260	40	4.2		7.3		5.3		14		17.6		0.37		0.37
	Dieldrin	µg/Kg	13	13		13		21	7.3	0.97	U	1.0	U	0.98	U	2.5	U	61.8		0.0081		0.0081
	Endosulfan I	µg/Kg	3.9	U	3.5	U	4.3	U	9.9	U	1.2	U	2.9		1.0	U	0.98	U	0.99	U	--	--
	Endosulfan II	µg/Kg	22	U	25	U	19	U	21	U	4.5	U	2.3	U	3.8	U	1.6	U	0.99	U	--	--
	Endosulfan sulfate	µg/Kg	4	U	2.7	U	1.8	U	6.1	U	1.7		2.5		3.9		1.7		2.0	U	--	--
	Endrin	µg/Kg	1	U	0.97	U	1	U	0.99	U	0.97	U	0.97	U	1.0	U	0.98	U	0.99	U	207	--
	Endrin aldehyde	µg/Kg	3.5	U	3.6	U	3.2	U	8.7	U	1.4	U	0.97	U	1.0	U	0.98	U	0.99	U	--	--
	Endrin ketone	µg/Kg	1	U	0.97	U	1.2	U	11	U	6.4	U	0.95	J	1.1	U	0.98	U	0.49	J	--	--
	Heptachlor	µg/Kg	1	U	0.97	U	1	U	0.99	U	0.97	U	3.4		3.2		16		0.61	J	10	--
	Heptachlor epoxide	µg/Kg	1	U	0.97	U	1.9	U	0.99	U	0.97	U	0.97	U	1.0	U	0.81	J	0.99	U	16	--
	Methoxychlor	µg/Kg	5.9	U	4.9	U	5.9	U	6.2	U	2.5	U	1.9	U	2.8	U	0.98	U	2.1	U	--	--
	Toxaphene	µg/Kg	420	U	570	U	600	U	580	U	290	U	140	U	140	U	97	U	280	U	--	--

Table C-1
Basin 18 East-Central Subbasin September 2010 Surface Soil and Catch Basin Solids Results

		NW Lake Street Right-of-Way										NW 35th Avenue Catch Basins									
		Surface Soil		Surface Soil		Surface Soil		Surface Soil		Surface Soil		Inline Solids		Inline Solids		Inline Solids		Inline Solids			
		West End of Lake St. FO105890		DUPLICATE West End of Lake St. FO105899		Lake St. at Railroad FO105891		East of Railroad FO105892		East End of Lake St. FO105893		Catch Basin ANB622 FO105895		Catch Basin ANB621 FO105897		Catch Basin APN941 (Not in Subbasin) FO105896		Catch Basin ANF164 (Connects to MH AAX318) FO105894		JSCS ⁽¹⁾ Screening Level Value	
Class	Analyte	Units	9/14/2010	9/14/2010	9/14/2010	9/14/2010	9/14/2010	9/14/2010	9/14/2010	9/14/2010	9/14/2010	9/14/2010	9/14/2010	9/14/2010	9/14/2010	9/14/2010	9/14/2010	9/14/2010	Toxicity	Bioaccumulation	
Polychlorinated Biphenyls Aroclors (PCBs) (EPA 8082)																					
	Aroclor 1016	µg/Kg	40	U	10	U	40	U	40	U	10	U	10	U	10	U	10	U	530	--	
	Aroclor 1221	µg/Kg	80	U	20	U	80	U	80	U	20	U	20	U	20	U	20	U	--	--	
	Aroclor 1232	µg/Kg	40	U	10	U	40	U	40	U	10	U	10	U	10	U	10	U	--	--	
	Aroclor 1242	µg/Kg	40	U	10	U	40	U	40	U	10	U	10	U	10	U	10	U	--	--	
	Aroclor 1248	µg/Kg	40	U	10	U	40	U	40	U	10	U	10	U	10	U	10	U	1500	--	
	Aroclor 1254	µg/Kg	125		151		85		151	EST	98		44		56		29		300	--	
	Aroclor 1260	µg/Kg	40	U	57		63		110		48		57		42		38		200	--	
	Aroclor 1262	µg/Kg	40	U	10	U	40	U	40	U	10	U	10	U	10	U	10	U	--	--	
	Aroclor 1268	µg/Kg	40	U	10	U	40	U	40	U	10	U	10	U	10	U	10	U	--	--	
	Total PCBs ⁽⁶⁾	µg/Kg	125		208		148		261	EST	146		101		98		67		676	0.39	
Polychlorinated Biphenyl Congeners (EPA 1668A)																					
	Total PCBs ^{(6) (7)}	µg/Kg	234		248		235		385		183		81.7		92.7		90.0		676	0.39	

Notes:

J = The analyte was detected at a concentration between the method detection limit and the method reporting limit.

NA = Not analyzed

ND = Not detected

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

-- = 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 toxicity SLV represents the sum of the 2,4' and 4,4' isomers.

⁽³⁾ Estimated Total DDx is the sum of DDE, DDD and DDT.

⁽⁴⁾ Alpha-Chlordane also is known as cis-Chlordane. Beta-Chlordane also is known as trans-Chlordane and gamma-Chlordane.

⁽⁵⁾ Total Chlordane is the sum of alpha- and beta-Chlordane.

⁽⁶⁾ Total PCBs are calculated by assigning "0" to undetected constituents.

⁽⁷⁾ Individual congener results are summarized in TableC-2.

= concentration exceeds JSCS Toxicity Screening Level Value

bold = concentration exceeds JSCS Bioaccumulation Screening Level Value

Table C-2
Basin 18 East-Central Subbasin Fall 2010 Surface Soil and Inline Solids Results - PCB Congeners

			NW Lake Street Surface Soil Samples					NW 35th Avenue Catch Basin Solids Samples					JSCS ⁽²⁾ Screening Level Value	
IUPAC Number ⁽¹⁾	Chemical Name	Units	West End Lake St. FO105890	DUPLICATE West End Lake St. FO105899	Lake St. at Railroad FO105891	East of Railroad FO105892	East End of Lake St. FO105893	Catch Basin ANF 164 FO105894	Catch Basin APN941 FO105896	Catch Basin ANB621 FO105897	Catch Basin ANB622 FO105895	Toxicity	Bioaccumulation	
Chlorinated Biphenyl Congeners (EPA 1668A)			9/14/2010	9/14/2010	9/14/2010	9/14/2010	9/14/2010	9/14/2010	9/14/2010	9/14/2010	9/14/2010			
PCB 1	2-MoCB	µg/Kg	0.0229	0.0282	0.0240 U	0.0247 U	0.0239 U	0.0245 U	0.0239 U	0.0248 U	0.0247 U	--	--	--
PCB 2	3-MoCB	µg/Kg	0.0287	0.0316	0.0240 U	0.0264	0.0248	0.0245 U	0.0239 U	0.0248 U	0.0247 U	--	--	--
PCB 3	4-MoCB	µg/Kg	0.0267	0.0312	0.0250	0.0280	0.0251	0.0245 U	0.0239 U	0.0325	0.0247 U	--	--	--
PCB 4	2,2'-DiCB	µg/Kg	0.0378	0.0410	0.0321	0.0513	0.0329	0.0738	0.0263	0.0295	0.0286	--	--	--
PCB 5	2,3-DiCB	µg/Kg	0.0219 U	0.0247 U	0.0240 U	0.0247 U	0.0239 U	0.0245 U	0.0239 U	0.0248 U	0.0247 U	--	--	--
PCB 6	2,3'-DiCB	µg/Kg	0.0239	0.0247 U	0.0240 U	0.0247 U	0.0239 U	0.0245 U	0.0239 U	0.0248 U	0.0247 U	--	--	--
PCB 7	2,4-DiCB	µg/Kg	0.0219 U	0.0247 U	0.0240 U	0.0247 U	0.0239 U	0.0245 U	0.0239 U	0.0248 U	0.0247 U	--	--	--
PCB 8	2,4'-DiCB	µg/Kg	0.082	0.0906	0.0788	0.0943	0.0685	0.0726	0.0889	0.0778		--	--	--
PCB 9	2,5-DiCB	µg/Kg	0.0219 U	0.0247 U	0.0240 U	0.0247 U	0.0239 U	0.0245 U	0.0239 U	0.0248 U	0.0247 U	--	--	--
PCB 10	2,6-DiCB	µg/Kg	0.0219 U	0.0247 U	0.0240 U	0.0247 U	0.0239 U	0.0245 U	0.0239 U	0.0248 U	0.0247 U	--	--	--
PCB 11	3,3'-DiCB	µg/Kg	1.57	1.71	1.50	1.89	1.10	0.522	5.82	2.37	0.950	--	--	--
PCB 12/13	3,4-DiCB + 3,4'-DiCB	µg/Kg	0.0438 U	0.0493 U	0.0479 U	0.0494 U	0.0478 U	0.0490 U	0.0478 U	0.0500	0.0494 U	--	--	--
PCB 14	3,5-DiCB	µg/Kg	0.0219 U	0.0247 U	0.0240 U	0.0247 U	0.0239 U	0.0245 U	0.0239 U	0.0248 U	0.0247 U	--	--	--
PCB 15	4,4'-DiCB	µg/Kg	0.165	0.151	0.116	0.180	0.122	0.194	0.144	0.172	0.200	--	--	--
PCB 16	2,2',3-TriCB	µg/Kg	0.109	0.0799	0.0656	0.105	0.0574	0.175	0.0554	0.0544	0.0582	--	--	--
PCB 17	2,2',4-TriCB	µg/Kg	0.115	0.0926	0.0715	0.113	0.0674	0.166	0.0509	0.0512	0.0549	--	--	--
PCB 18/30	2,2',5-TriCB + 2,4,6-TriCB	µg/Kg	0.286	0.214	0.168	0.265	0.155	0.420	0.0872	0.0852	0.0965	--	--	--
PCB 19	2,2',6-TriCB	µg/Kg	0.0405	0.039	0.0261	0.0438	0.0239 U	0.171	0.0262	0.0276	0.0293	--	--	--
PCB 20/28	2,3,3'-TriCB + 2,4,4'-TriCB	µg/Kg	0.515	0.492	0.341	0.547	0.278	0.459	0.336	0.385	0.323	--	--	--
PCB 21/33	2,3,4-TriCB + 2',3,4-TriCB	µg/Kg	0.235	0.198	0.157	0.230	0.136	0.230	0.166	0.173	0.135	--	--	--
PCB 22	2,3,4'-TriCB	µg/Kg	0.178	0.160	0.116	0.185	0.0988	0.163	0.124	0.132	0.102	--	--	--
PCB 23	2,3,5-TriCB	µg/Kg	0.0219 U	0.0247 U	0.0240 U	0.0247 U	0.0239 U	0.0245 U	0.0239 U	0.0248 U	0.0247 U	--	--	--
PCB 24	2,3,6-TriCB	µg/Kg	0.0219 U	0.0247 U	0.0240 U	0.0247 U	0.0239 U	0.0245 U	0.0239 U	0.0248 U	0.0247 U	--	--	--
PCB 25	2,3',4-TriCB	µg/Kg	0.0381	0.0362	0.0278	0.0407	0.0239 U	0.0408	0.0239 U	0.0283	0.0247 U	--	--	--
PCB 26/29	2,3',5-TriCB + 2,4,5-TriCB	µg/Kg	0.0756	0.0714	0.0510	0.0799	0.0478 U	0.0652	0.0478 U	0.0591	0.0494 U	--	--	--
PCB 27	2,3',6-TriCB	µg/Kg	0.0326	0.0251	0.0240 U	0.0313	0.0239 U	0.0591	0.0239 U	0.0248 U	0.0291	--	--	--
PCB 31	2,4',5-TriCB	µg/Kg	0.514	0.424	0.313	0.523	0.266	0.425	0.261	0.291	0.244	--	--	--
PCB 32	2,4',6-TriCB	µg/Kg	0.123	0.105	0.0749	0.148	0.0693	0.158	0.0510	0.0716	0.0852	--	--	--
PCB 34	2',3,5-TriCB	µg/Kg	0.0219 U	0.0247 U	0.0240 U	0.0247 U	0.0239 U	0.0245 U	0.0239 U	0.0248 U	0.0247 U	--	--	--
PCB 35	3,3',4-TriCB	µg/Kg	0.0443	0.0462	0.0368	0.0486	0.0283	0.0249	0.0851	0.0507	0.0439	--	--	--
PCB 36	3,3',5-TriCB	µg/Kg	0.0219 U	0.0247 U	0.0240 U	0.0247 U	0.0239 U	0.0245 U	0.0367	0.0248 U	0.0247 U	--	--	--
PCB 37	3,4,4'-TriCB	µg/Kg	0.338	0.342	0.248	0.393	0.178	0.218	0.274	0.288	0.274	--	--	--
PCB 38	3,4,5-TriCB	µg/Kg	0.0219 U	0.0247 U	0.0240 U	0.0247 U	0.0239 U	0.0245 U	0.0239 U	0.0248 U	0.0247 U	--	--	--
PCB 39	3,4',5-TriCB	µg/Kg	0.0219 U	0.0247 U	0.0240 U	0.0247 U	0.0239 U	0.0245 U	0.0239 U	0.0248 U	0.0247 U	--	--	--
PCB 40/41/71	2,2',3,3'-TeCB + 2,2',3,4'-TeCB + 2,3',4',6'-TeCB	µg/Kg	1.61	1.44	1.07	2.54	0.703	0.974	0.521	0.535	0.560	--	--	--
PCB 42	2,2',3,4'-TeCB	µg/Kg	0.613	0.563	0.448	1.05	0.306	0.448	0.203	0.204	0.209	--	--	--
PCB 43/73	2,2',3,5'-TeCB + 2,3',5',6'-TeCB	µg/Kg	0.0875 U	0.0986 U	0.0959 U	0.0988 U	0.0955 U	0.098 U	0.0478 U	0.0992 U	0.0987 U	--	--	--
PCB 44/47/65	2,2',3,5'-TeCB + 2,2',4,4'-TeCB + 2,3,5,6'-TeCB	µg/Kg	3.07	3.07	2.80	5.26	2.11	2.27	0.944	0.897	0.869	--	--	--
PCB 45/51	2,2',3,6'-TeCB + 2,2',4,6'-TeCB	µg/Kg	0.471	0.434	0.298	0.552	0.184	0.719	0.159	0.173	0.194	--	--	--
PCB 46	2,2',3,6'-TeCB	µg/Kg	0.179	0.160	0.112	0.198	0.0698	0.290	0.0589	0.0664	0.0730	--	--	--
PCB 48	2,2',4,5'-TeCB	µg/Kg	0.295	0.238	0.190	0.399	0.129	0.245	0.106	0.115	0.104	--	--	--
PCB 49/69	2,2',4,5'-TeCB + 2,3',4,6'-TeCB	µg/Kg	1.69	1.67	1.45	2.75	1.09	1.25	0.509	0.464	0.446	--	--	--
PCB 50/53	2,2',4,6'-TeCB + 2,2',5,6'-TeCB	µg/Kg	0.420	0.403	0.293	0.485	0.201	0.633	0.129	0.147	0.156	--	--	--
PCB 52	2,2',5,5'-TeCB	µg/Kg	6.54	6.91	6.83	11.6	5.41	5.08	1.85	1.90	1.63	--	--	--
PCB 54	2,2',6,6'-TeCB	µg/Kg	0.0438 U	0.0493 U	0.0479 U	0.0494 U	0.0478 U	0.0490 U	0.0478 U	0.0496 U	0.0494 U	--	--	--
PCB 55	2,3,3',4'-TeCB	µg/Kg	0.0438 U	0.0493 U	0.0479 U	0.0494 U	0.0478 U	0.0490 U	0.0478 U	0.0496 U	0.0494 U	--	--	--
PCB 56	2,3,3',4'-TeCB	µg/Kg	1.14	1.05	0.927	2.09	0.633	0.540	0.404	0.452	0.428	--	--	--
PCB 57	2,3,3',5'-TeCB	µg/Kg	0.0438 U	0.0493 U	0.0479 U	0.0494 U	0.0478 U	0.0490 U	0.0478 U	0.0496 U	0.0494 U	--	--	--
PCB 58	2,3,3',5'-TeCB	µg/Kg	0.0438 U	0.0493 U	0.0479 U	0.0494 U	0.0478 U	0.0490 U	0.0478 U	0.0496 U	0.0494 U	--	--	--
PCB 59/62/75	2,3,3',6'-TeCB + 2,3,4,6'-TeCB + 2,4,4',6'-TeCB	µg/Kg	0.235	0.213	0.149	0.336	0.143 U	0.152	0.143 U	0.149 U	0.148 U	--	--	--
PCB 60	2,3,4,4'-TeCB	µg/Kg	0.459	0.388	0.327	0.589	0.231	0.210	0.178	0.213	0.203	--	--	--
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	5.07	5.04	4.86	8.75	3.54	2.98	1.81	1.86	1.64	--	--	--
PCB 63	2,3,4',5'-TeCB	µg/Kg	0.0733	0.0624	0.0582	0.109	0.0478 U	0.0490 U	0.0478 U	0.0496 U	0.0494 U	--	--	--
PCB 64	2,3,4',6'-TeCB	µg/Kg	1.15	1.07	0.912	2.23	0.686	0.387	0.520	0.514		--	--	--
PCB 66	2,3',4,4'-TeCB	µg/Kg	2.50	2.40	2.08	4.32	1.43	1.24	0.866	0.907	0.877	--	--	--
PCB 67	2,3',4,5'-TeCB	µg/Kg	0.0520	0.0493 U	0.0479 U	0.0719	0.0478 U	0.0490 U	0.0478 U	0.0496 U	0.0494 U	--	--	--
PCB 68	2,3',4,5'-TeCB	µg/Kg	0.0438 U	0.0493 U	0.0479 U	0.0494 U	0.0478 U	0.0490 U	0.0478 U	0.0496 U	0.0494 U	--	--	--
PCB 72	2,3',5,5'-TeCB	µg/Kg	0.0438 U	0.0493 U	0.0479 U	0.0494 U	0.0478 U	0.0490 U	0.0478 U	0.0496 U	0.0494 U	--	--	--
PCB 77	3,3',4,4'-TeCB	µg/Kg	0.608	0.584	0.460	0.826	0.283	0.278	0.218	0.247	0.272	--	0.052	--
PCB 78	3,3',4,5'-TeCB	µg/Kg	0.104	0.115	0.0479 U	0.180	0.0859	0.0490 U	0.0478 U	0.0496 U	0.0494 U	--	--	--
PCB 79	3,3',4,5'-TeCB	µg/Kg	0.406	0.106	0.147	0.681	0.0978	0.0806	0.0478 U	0.0496 U	0.0494 U	--	--	--
PCB 80	3,3',5,5'-TeCB	µg/Kg	0.0438 U	0.0493 U	0.0479 U	0.0494 U	0.0478 U	0.0490 U	0.0478 U	0.0496 U	0.0494 U	--	--	--
PCB 81	3,4,4',5'-TeCB	µg/Kg	0.0438 U	0.0493 U	0.0479 U	0.0494 U	0.0478 U	0.0490 U	0.0478 U	0.0496 U	0.0494 U	--	0.017	--
PCB 82	2,2',3,3',4-PeCB	µg/Kg	2.18	2.30	2.04	3.61	1.53	1.30	0.500	0.543	0.470	--	--	--
PCB 83	2,2',3,3',5-PeCB	µg/Kg	0.912	1.06	0.956	1.47	0.601	0.572	0.244	0.292	0.264	--	--	--
PCB 84	2,2',3,3',6-PeCB	µg/Kg	4.44	4.70	4.46	7.03	3.24	2.94	1.35	1.52	1.19	--	--	--
PCB 85/116/117	2,2',3,4,4'-PeCB + 2,3,4,5,6-PeCB + 2,3,4',5,6-PeCB	µg/Kg	2.57	2.60	2.49	4.48	1.98	1.46	0.630	0.598	0.540	--	--	--

Table C-2
Basin 18 East-Central Subbasin Fall 2010 Surface Soil and Inline Solids Results - PCB Congeners

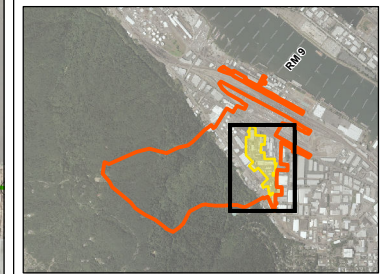
			NW Lake Street Surface Soil Samples					NW 35th Avenue Catch Basin Solids Samples						
			West End Lake St. FO105890	DUPLICATE West End Lake St. FO105899	Lake St. at Railroad FO105891	East of Railroad FO105892	East End of Lake St. FO105893	Catch Basin ANF 164 FO105894	Catch Basin APN941 FO105896	Catch Basin ANB621 FO105897	Catch Basin ANB622 FO105895	JSCS ⁽²⁾ Screening Level Value		
IUPAC Number ⁽¹⁾	Chemical Name	Units	9/14/2010	9/14/2010	9/14/2010	9/14/2010	9/14/2010	9/14/2010	9/14/2010	9/14/2010	9/14/2010	Toxicity	Bioaccumulation	
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	10.1	10.1	10.5	17.3	8.04	6.73	3.51	3.64	2.97	--	--	
PCB 88/91	2,2',3,4,6-PeCB + 2,2',3,4',6-PeCB	µg/Kg	2.13	2.26	2.06	3.57	1.55	1.30	0.598	0.640	0.562	--	--	
PCB 89	2,2',3,4,6'-PeCB	µg/Kg	0.220	0.221	0.171	0.303	0.122	0.121	0.0528	0.0562	0.0543	--	--	
PCB 90/101/113	2,2',3,4',5-PeCB + 2,2',4,5,5'-PeCB + 2,3,3',5',6-PeCB	µg/Kg	13.2	14.1	14.1	22.8	10.7	8.96	5.17	5.47	4.49	--	--	
PCB 92	2,2',3,5,5'-PeCB	µg/Kg	2.68	2.84	2.84	4.63	2.10	1.74	0.930	1.01	0.805	--	--	
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	0.496	0.519	0.457	0.817	0.327	0.282	0.191 U	0.198 U	0.197 U	--	--	
PCB 94	2,2',3,5,6'-PeCB	µg/Kg	0.0758	0.0757	0.0713	0.118	0.0533	0.0490 U	0.0478 U	0.0496 U	0.0494 U	--	--	
PCB 95	2,2',3,5',6-PeCB	µg/Kg	12.4	13.3	13.1	20.2	9.66	8.55	4.18	4.60	3.71	--	--	
PCB 96	2,2',3,6,6'-PeCB	µg/Kg	0.102	0.109	0.0899	0.179	0.0737	0.0725	0.0478 U	0.0496 U	0.0494 U	--	--	
PCB 99	2,2',4,4',5-PeCB	µg/Kg	5.41	5.64	5.56	9.76	4.46	3.28	1.69	1.69	1.41	--	--	
PCB 103	2,2',4,5',6-PeCB	µg/Kg	0.0630	0.0698	0.0624	0.0960	0.0478 U	0.0490 U	0.0478 U	0.0496 U	0.0494 U	--	--	
PCB 104	2,2',4,6,6'-PeCB	µg/Kg	0.0438 U	0.0493 U	0.0479 U	0.0494 U	0.0478 U	0.0490 U	0.0478 U	0.0496 U	0.0494 U	--	--	
PCB 105	2,3,3',4,4'-PeCB	µg/Kg	5.05	5.64	5.26	9.10	4.31	3.71	1.55	1.78	1.61	--	0.17	
PCB 106	2,3,3',4,5-PeCB	µg/Kg	0.0438 U	0.0493 U	0.0479 U	0.0494 U	0.0478 U	0.0490 U	0.0478 U	0.0496 U	0.0494 U	--	--	
PCB 107/124	2,3,3',4',5-PeCB + 2',3,4,5,5'-PeCB	µg/Kg	0.605	0.665	0.631	1.03	0.464	0.401	0.151	0.177	0.152	--	--	
PCB 109	2,3,3',4,6-PeCB	µg/Kg	0.814	0.848	0.855	1.32	0.601	0.555	0.196	0.253	0.186	--	--	
PCB 110/115	2,3,3',4',6-PeCB + 2,3,4,4',6-PeCB	µg/Kg	18.1	19.5	18.9	31.2	14.9	12.4	4.82	5.44	4.41	--	--	
PCB 111	2,3,3',5,5'-PeCB	µg/Kg	0.0438 U	0.0493 U	0.0479 U	0.0494 U	0.0478 U	0.0490 U	0.0478 U	0.0496 U	0.0494 U	--	--	
PCB 112	2,3,3',5,6-PeCB	µg/Kg	0.0438 U	0.0493 U	0.0479 U	0.0494 U	0.0478 U	0.0490 U	0.0478 U	0.0496 U	0.0494 U	--	--	
PCB 114	2,3,4,4',5-PeCB	µg/Kg	0.253	0.289	0.282	0.409	0.201	0.172	0.0748	0.0865	0.0777	--	0.17	
PCB 118	2,3',4,4',5-PeCB	µg/Kg	11.1	12.3	12.2	19.7	9.63	7.75	3.41	4.04	3.49	--	0.12	
PCB 120	2,3',4,5,5'-PeCB	µg/Kg	0.0438 U	0.0493 U	0.0479 U	0.0494 U	0.0478 U	0.0490 U	0.0478 U	0.0496 U	0.0494 U	--	--	
PCB 121	2,3',4,5',6-PeCB	µg/Kg	0.0438 U	0.0493 U	0.0479 U	0.0494 U	0.0478 U	0.0490 U	0.0478 U	0.0496 U	0.0494 U	--	--	
PCB 122	2',3,3',4,5-PeCB	µg/Kg	0.223	0.245	0.215	0.374	0.164	0.126	0.0487	0.0496 U	0.0494 U	--	--	
PCB 123	2',3,4,4',5-PeCB	µg/Kg	0.287	0.368	0.273	0.605	0.264	0.160	0.0855	0.0716	0.101	--	0.21	
PCB 126	3,3',4,4',5-PeCB	µg/Kg	0.289	0.0584	0.272	0.0759 EMPC	0.0663	0.0729	0.103	0.0496 U	0.109	--	0.00005	
PCB 127	3,3',4,5,5'-PeCB	µg/Kg	0.0733 EMPC	0.0493 U	0.0479 U	0.0612 EMPC	0.0478 U	0.0490 U	0.0478 U	0.0496 U	0.0494 U	--	--	
PCB 128/166	2,2',3,3',4,4'-HxCB + 2,3,4,4',5,6-HxCB	µg/Kg	3.09	3.43	3.23	4.87	2.57	2.69	0.936	1.15	0.906	--	--	
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	18.5	20.6	19.8	30.0	15.7	16.0	6.45	7.76	6.42	--	--	
PCB 130	2,2',3,3',4,5'-HxCB	µg/Kg	1.19	1.35	1.30	1.88	0.976	1.02	0.393	0.472	0.378	--	--	
PCB 131	2,2',3,3',4,6-HxCB	µg/Kg	0.281	0.315	0.323	0.458	0.235	0.236	0.0858	0.103	0.0852	--	--	
PCB 132	2,2',3,3',4,6'-HxCB	µg/Kg	6.23	6.87	6.77	10.1	5.22	5.02	1.99	2.43	2.00	--	--	
PCB 133	2,2',3,3',5,5'-HxCB	µg/Kg	0.215	0.235	0.230	0.329	0.174	0.176	0.0744	0.0854	0.0743	--	--	
PCB 134/143	2,2',3,3',5,6-HxCB + 2,2',3,4,5,6'-HxCB	µg/Kg	1.04	1.10	1.14	1.70	0.783	0.836	0.278	0.346	0.272	--	--	
PCB 135/151	2,2',3,3',5,6'-HxCB + 2,2',3,5,5',6-HxCB	µg/Kg	4.73	5.25	5.09	7.99	3.92	3.77	2.00	2.18	1.80	--	--	
PCB 136	2,2',3,3',6,6'-HxCB	µg/Kg	2.04	2.21	2.23	3.45	1.75	1.54	0.977	1.11	0.912	--	--	
PCB 137	2,2',3,4,4',5-HxCB	µg/Kg	0.995	1.24	1.17	1.36	0.866	0.792	0.246	0.360	0.336	--	--	
PCB 139/140	2,2',3,4,4',6-HxCB + 2,2',3,4,4',6'-HxCB	µg/Kg	0.330	0.363	0.367	0.520	0.273	0.240	0.0956 U	0.106	0.0987 U	--	--	
PCB 141	2,2',3,4,5,5'-HxCB	µg/Kg	2.91	3.37	2.98	4.79	2.32	2.51	1.07	1.26	1.10	--	--	
PCB 142	2,2',3,4,5,6-HxCB	µg/Kg	0.0438 U	0.0493 U	0.0479 U	0.0494 U	0.0478 U	0.0490 U	0.0478 U	0.0496 U	0.0494 U	--	--	
PCB 144	2,2',3,4,5',6-HxCB	µg/Kg	0.781	0.851	0.822	1.29	0.619	0.605	0.186	0.0615	0.112	--	--	
PCB 145	2,2',3,4,6,6'-HxCB	µg/Kg	0.0438 U	0.0493 U	0.0479 U	0.0494 U	0.0478 U	0.0490 U	0.0478 U	0.0496 U	0.0494 U	--	--	
PCB 146	2,2',3,4',5,5'-HxCB	µg/Kg	2.16	2.39	2.27	3.45	1.77	1.79	0.810	0.901	0.777	--	--	
PCB 147/149	2,2',3,4',5,6-HxCB + 2,2',3,4',5',6-HxCB	µg/Kg	12.3	13.4	13.1	20.2	10.3	9.69	4.33	5.01	4.13	--	--	
PCB 148	2,2',3,4',5,6'-HxCB	µg/Kg	0.0438 U	0.0493 U	0.0479 U	0.0494 U	0.0478 U	0.0490 U	0.0478 U	0.0496 U	0.0494 U	--	--	
PCB 150	2,2',3,4',6,6'-HxCB	µg/Kg	0.0438 U	0.0493 U	0.0479 U	0.0494 U	0.0478 U	0.0490 U	0.0478 U	0.0496 U	0.0494 U	--	--	
PCB 152	2,2',3,5,6,6'-HxCB	µg/Kg	0.0438 U	0.0493 U	0.0479 U	0.0494 U	0.0478 U	0.0490 U	0.0478 U	0.0496 U	0.0494 U	--	--	
PCB 153/168	2,2',4,4',5,5'-HxCB + 2,3',4,4',5',6-HxCB	µg/Kg	12.3	13.6	13.0	20.7	10.2	10.4	4.86	5.68	4.81	--	--	
PCB 154	2,2',4,4',5,6'-HxCB	µg/Kg	0.128	0.124	0.118	0.171	0.0887	0.0930	0.0478 U	0.0496 U	0.0494 U	--	--	
PCB 155	2,2',4,4',6,6'-HxCB	µg/Kg	0.0438 U	0.0493 U	0.0479 U	0.0494 U	0.0478 U	0.0490 U	0.0478 U	0.0496 U	0.0494 U	--	--	
PCB 156/157	2,3,3',4,4',5-HxCB + 2,3,3',4,4',5'-HxCB	µg/Kg	2.31	2.54	2.50	3.64	1.93	2.16	0.856	0.970	0.879	--	0.21	
PCB 158	2,3,3',4,4',6-HxCB	µg/Kg	1.75	1.97	1.90	2.86	1.48	1.52	0.602	0.737	0.594	--	--	
PCB 159	2,3,3',4,5,5'-HxCB	µg/Kg	0.163	0.162	0.0479 U	0.0494 U	0.121	0.0490 U	0.0478 U	0.0496 U	0.0494 U	--	--	
PCB 160	2,3,3',4,5,6-HxCB	µg/Kg	0.0438 U	0.0493 U	0.0479 U	0.0494 U	0.0478 U	0.0490 U	0.0478 U	0.0496 U	0.0494 U	--	--	
PCB 161	2,3,3',4,5',6-HxCB	µg/Kg	0.0438 U	0.0493 U	0.0479 U	0.0494 U	0.0478 U	0.0490 U	0.0478 U	0.0496 U	0.0494 U	--	--	
PCB 162	2,3,3',4',5,5'-HxCB	µg/Kg	0.149	0.156	0.0479 U	0.0677	0.110	0.0490 U	0.0591	0.0496 U	0.0575	--	--	
PCB 164	2,3,3',4',5',6-HxCB	µg/Kg	0.902	1.19	1.17	1.90	0.927	0.986	0.408	0.450	0.361	--	--	
PCB 165	2,3,3',5,5',6-HxCB	µg/Kg	0.0438 U	0.0493 U	0.0479 U	0.0494 U	0.0478 U	0.0490 U	0.0478 U	0.0496 U	0.0494 U	--	--	
PCB 167	2,3',4,4',5,5'-HxCB	µg/Kg	0.776	0.910	0.869	1.26	0.660	0.713	0.331	0.343	0.324			

Table C-2
Basin 18 East-Central Subbasin Fall 2010 Surface Soil and Inline Solids Results - PCB Congeners

			NW Lake Street Surface Soil Samples					NW 35th Avenue Catch Basin Solids Samples					JSCS ⁽²⁾ Screening Level Value	
			West End Lake St. FO105890	DUPLICATE West End Lake St. FO105899	Lake St. at Railroad FO105891	East of Railroad FO105892	East End of Lake St. FO105893	Catch Basin ANF 164 FO105894	Catch Basin APN941 FO105896	Catch Basin ANB621 FO105897	Catch Basin ANB622 FO105895			
IUPAC Number ⁽¹⁾	Chemical Name	Units	9/14/2010	9/14/2010	9/14/2010	9/14/2010	9/14/2010	9/14/2010	9/14/2010	9/14/2010	9/14/2010	Toxicity	Bioaccumulation	
PCB 177	2,2',3,3',4',5,6-HpCB	µg/Kg	1.84	1.92	1.66	2.83	1.34	1.56	1.01	0.820	0.974	--	--	
PCB 178	2,2',3,3',5,5',6-HpCB	µg/Kg	0.613	0.678	0.552	0.949	0.452	0.521	0.444	0.359	0.319	--	--	
PCB 179	2,2',3,3',5,6,6'-HpCB	µg/Kg	1.27	1.29	1.15	2.04	0.961	0.997	0.700	0.702	0.641	--	--	
PCB 180/193	2,2',3,4,4',5,5'-HpCB + 2,3,3',4',5,5',6-HpCB	µg/Kg	6.84	7.16	6.11	10.4	5.02	6.06	3.63	3.09	3.72	--	--	
PCB 181	2,2',3,4,4',5,6-HpCB	µg/Kg	0.0438 U	0.0493 U	0.0479 U	0.0526	0.0478 U	0.0490 U	0.0478 U	0.0496 U	0.0494 U	--	--	
PCB 182	2,2',3,4,4',5,6'-HpCB	µg/Kg	0.0438 U	0.0493 U	0.0479 U	0.0494 U	0.0478 U	0.0490 U	0.0478 U	0.0496 U	0.0494 U	--	--	
PCB 183/185	2,2',3,4,4',5',6-HpCB + 2,2',3,4,5,5',6-HpCB	µg/Kg	2.25	2.31	2.05	3.62	1.74	1.87	1.17	1.01	1.21	--	--	
PCB 184	2,2',3,4,4',6,6'-HpCB	µg/Kg	0.0438 U	0.0493 U	0.0479 U	0.0494 U	0.0478 U	0.0490 U	0.0478 U	0.0496 U	0.0494 U	--	--	
PCB 186	2,2',3,4,5,6,6'-HpCB	µg/Kg	0.0438 U	0.0493 U	0.0479 U	0.0494 U	0.0478 U	0.0490 U	0.0478 U	0.0496 U	0.0494 U	--	--	
PCB 187	2,2',3,4',5,5',6-HpCB	µg/Kg	3.50	3.55	3.05	5.24	3.54	3.00	1.82	1.79	1.79	--	--	
PCB 188	2,2',3,4',5,6,6'-HpCB	µg/Kg	0.0438 U	0.0493 U	0.0479 U	0.0494 U	0.0478 U	0.0490 U	0.0478 U	0.0496 U	0.0494 U	--	--	
PCB 189	2,3,3',4,4',5,5'-HpCB	µg/Kg	0.154	0.172	0.144	0.234	0.117	0.141	0.0869	0.0806	0.0777	--	--	
PCB 190	2,3,3',4,4',5,6-HpCB	µg/Kg	0.691	0.734	0.622	1.04	0.501	0.619	0.330	0.290	0.353	--	1.2	
PCB 191	2,3,3',4,4',5',6-HpCB	µg/Kg	0.145	0.157	0.134	0.227	0.113	0.127	0.0688	0.0599	0.0722	--	--	
PCB 192	2,3,3',4,5,5',6-HpCB	µg/Kg	0.0438 U	0.0493 U	0.0479 U	0.0494 U	0.0478 U	0.0490 U	0.0478 U	0.0496 U	0.0494 U	--	--	
PCB 194	2,2',3,3',4,4',5,5'-OcCB	µg/Kg	1.45	1.51	1.27	2.20	1.04	1.30	0.890	0.864	0.909	--	--	
PCB 195	2,2',3,3',4,4',5,6-OcCB	µg/Kg	0.603	0.627	0.533	0.947	0.440	0.519	0.323	0.335	0.357	--	--	
PCB 196	2,2',3,3',4,4',5,6'-OcCB	µg/Kg	0.866	0.849	0.757	1.28	0.599	0.721	0.421	0.442	0.479	--	--	
PCB 197/200	2,2',3,3',4,4',6,6'-OcCB + 2,2',3,3',4,5,6,6'-OcCB	µg/Kg	0.264	0.275	0.235	0.414	0.207	0.228	0.143 U	0.149 U	0.148 U	--	--	
PCB 198/199	2,2',3,3',4,5,5',6-OcCB + 2,2',3,3',4,5,5',6'-OcCB	µg/Kg	1.67	1.69	1.51	2.53	1.21	1.57	0.861	0.919	0.956	--	--	
PCB 201	2,2',3,3',4,5',6,6'-OcCB	µg/Kg	0.203	0.207	0.179	0.317	0.156	0.182	0.119	0.122	0.125	--	--	
PCB 202	2,2',3,3',5,5',6,6'-OcCB	µg/Kg	0.281	0.297	0.254	0.444	0.221	0.292	0.208	0.208	0.208	--	--	
PCB 203	2,2',3,4,4',5,5',6-OcCB	µg/Kg	0.987	1.01	0.930	1.57	0.742	0.965	0.525	0.552	0.600	--	--	
PCB 204	2,2',3,4,4',5,6,6'-OcCB	µg/Kg	0.0656 U	0.0740 U	0.0719 U	0.0741 U	0.0717 U	0.0735 U	0.0717 U	0.0744 U	0.0740 U	--	--	
PCB 205	2,3,3',4,4',5,5',6-OcCB	µg/Kg	0.0897	0.0901	0.0788	0.131	0.0717 U	0.0735 U	0.0717 U	0.0744 U	0.0740 U	--	--	
PCB 206	2,2',3,3',4,4',5,5',6-NoCB	µg/Kg	0.541	0.572	0.614	0.902	0.444	0.739	0.377	0.358	0.353	--	--	
PCB 207	2,2',3,3',4,4',5,6,6'-NoCB	µg/Kg	0.0782	0.0846	0.0826	0.139	0.0717 U	0.0975	0.0717 U	0.0744 U	0.0740 U	--	--	
PCB 208	2,2',3,3',4,5,5',6,6'-NoCB	µg/Kg	0.126	0.135	0.152	0.231	0.107	0.204	0.108	0.115	0.112	--	--	
PCB 209	Decachlorobiphenyl	µg/Kg	0.176	0.171	0.196	0.419	0.263	0.366	0.162	0.189	0.161	--	--	
	Total Monochlorobiphenyls	µg/Kg	0.0783	0.0910	0.0250	0.0544	0.0499	ND	ND	0.0325	ND	--	--	
	Total Dichlorobiphenyls	µg/Kg	1.88	1.99	1.73	2.22	1.32	0.862	6.07	2.71	1.26	--	--	
	Total Trichlorobiphenyls	µg/Kg	2.64	2.33	1.70	2.75	1.33	2.78	1.58	1.70	1.48	--	--	
	Total Tetrachlorobiphenyls	µg/Kg	26.7	25.9	23.4	45.0	17.2	18.1	8.34	8.70	8.18	--	--	
	Total Pentachlorobiphenyls	µg/Kg	93.7	99.8	97.8	160	75.0	62.7	29.3	31.9	26.6	--	--	
	Total Hexachlorobiphenyls	µg/Kg	75.3	83.6	80.4	123	63.0	62.8	26.9	31.5	26.3	--	--	
	Total Heptachlorobiphenyls	µg/Kg	25.9	27.1	23.4	39.9	19.2	22.4	13.8	12.1	13.6	--	--	
	Total Octachlorobiphenyls	µg/Kg	6.41	6.56	5.75	9.83	4.62	5.78	3.35	3.44	3.63	--	--	
	Total Nonachlorobiphenyls	µg/Kg	0.745	0.792	0.849	1.27	0.551	1.04	0.485	0.473	0.465	--	--	
	Total Decachlorobiphenyls	µg/Kg	0.176	0.171	0.196	0.419	0.263	0.366	0.162	0.189	0.161	--	--	
	Total PCBs ⁽³⁾	µg/Kg	234	248	235	385	183	177	90.0	92.7	81.7	676	0.39	

Notes:
MoCB = Monochlorobiphenyl
DiCB = Dichlorobiphenyl
TriCB = Trichlorobiphenyl
TeCB = Tetrachlorobiphenyl
PeCB = Pentachlorobiphenyl
HeCB = Hexachlorobiphenyl
HpCB = Heptachlorobiphenyl
OcCB = Octachlorobiphenyl
NoCB = Nonachlorobiphenyl
-- No JSCS screening level available.
EMPC = Estimated Maximum Possible Concentration.
U = The analyte was not detected above the reported sample quantification limit.
µg/Kg = 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⁾Total homologs and total congener concentrations are calculated by assigning "0" to undetected and EMPC-qualified constituents.
■ = concentration exceeds JSCS Toxicity Screening Level Value.
bold = concentration exceeds JSCS Bioaccumulation Screening Level Value.



LEGEND

- Sample Location
- Outfall Basin 18
- East-Central Subbasin
- Sample Types**
- Inline Solids Sample
- Surface Soil Sample
- All Other Features**
- Storm Line
- Manhole (MH)
- Catch Basin (CB)
- ★ DEQ ECSI Site
- Tax Lot

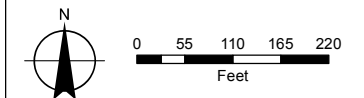


FIGURE C-1
Basin 18 East-Central Subbasin
September 2010 Surface Soil & Inline Solids Sampling Locations

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:
 May 9, 2012
 005_SCR/IOF_Basin_18/
 OF18_EastSubbasin_

Report
Source:
 City of Portland BES,
 Aerial Photo 2010



Attachment C-1

Field Photographs

Surface Soil Sampling in NW Lake Street



Photo 1 (September 14, 2010). Area of composite surface soil sample 18_20 (West End Lake St.). Sample area is in the (unpaved) street between NW St. Helens Road and the railroad tracks (see Figure A-1). View is to the southwest.



Photo 2 (September 14, 2010). Erodible surface soil caked onto truck tire parked at west end of NW Lake Street.



Photo 3 (September 14, 2010). Collecting subsample A from sample location 18_20. View is to the southwest.



Photo 4 (September 14, 2010). Collecting subsample E from sample location 18_20. View is to the northeast.



Photo 5 (September 14, 2010). Area of composite surface soil sample 18_21 (Lake St. at Railroad). Sample area is in the vicinity of the railroad tracks (see Figure A-1). View is to the northeast.



Photo 6 (September 14, 2010). Collecting subsample D from sample location 18_21.



Photo 7 (September 14, 2010). Area of composite surface soil sample 18_22 (East of Railroad), on the east side of the railroad tracks (see Figure A-1). View is to the northeast.



Photo 8 (September 14, 2010). Location of subsample A from sample location 18_22.



Photo 9 (September 14, 2010). Collecting subsample B from sample location 18_22.



Photo 10 (September 14, 2010). Area of composite surface soil sample 18_23 (East End Lake St.). Sample area is near the east end of NW Lake Street (see Figure A-1). View is to the southwest.



Photo 11 (September 14, 2010). Collecting subsample C from sample location 18_23.



Photo 12 (September 14, 2010). Collecting subsample D from sample location 18_23.

September 2010 Catch Basin Sampling



Photo 13 (September 14, 2010). Catch basin ANF164, on the southwest corner of NW 35th Avenue and NW Lake Street. View is to the northwest.



Photo 14 (September 14, 2010). Final homogenized solids sample from catch basin ANF164.



Photo 15 (September 14, 2010). Catch basin ANB622, on the west side of NW 35th Avenue. View is to the north.



Photo 16 (September 14, 2010). Solids and overlying organic matter and debris in catch basin ANB622 before sampling.



Photo 17 (September 14, 2010). Catch basin APN941 (adjacent to wheel of parked car) on the south side of NW Guam Street near the intersection with NW 35th Avenue. View is to the east.



Photo 18 (September 14, 2010). Catch basin APN941 before sampling.



Photo 19 (September 14, 2010). Catch basin ANB621, on the east side of NW 35th Avenue near the intersection with NW Guam Street. View is to the southeast.

Attachment C-2

Field Notes



Page 1 of 2

Project PORTLAND HARBOR INLINE SAMP

Project No. 1020.001

Location BASIN 18

Date 9/14/10

Subject Surface composites + CB composites

By JM, PTB

0900 Arrive on-site NW Lake Rd at Container Management for the NWlake1 composite. Met Andrew Davidson, GSI, to aid in direction for sampling. Andrew informed us that the intent of the 0-2" designation was to emphasize surface sampling and that it was not necessary to reach two inches for each sub-sample, but rather to go no deeper than two inches. Sampling locations chosen opportunistically to focus on low points where fines are likely to have settled (i.e. pot-holes and dry puddles)

0942 Completed sub-sample collection, homogenized and filled sample jars. Gave Point code 18-20. Duplicate sample collected here.

0947 Began sampling NW LAKE2 at the RR tracks crossing NW LAKE

1004 Completed sampling. Filled jars. Gave point code 18-21.

1014 Began sampling NWLAKE3. at NW LAKE ST EAST OF RR TRACKS and extending to east end of gate into Kevin Bros. Iron Works.

1041 Completed sampling of NWLAKE3. Filled jars. Given point code 18-22.

1049 Began sampling NWLAKE4 at east end of NW Lake St. from East end of gate into Kevin Brothers Iron Works to NW 35th Ave.

1118 Completed sampling of NWLAKE4. Filled jars. Given point code 18-23.

1304 Performed field decon blank at CB ANFL64 w/ UPDI from WPL

Attachments on bucket and sampling spoon + in filling spoon.

FO105898



Page 2 of 2

Project PORTLAND HARBOR INLINE SAMP

Project No. 1020-001

Location Basin 18

Date 9/14/10

Subject CB sampling

By JSM, PTB

1308 Began sampling of CB ANF164.

1320 Finished collecting sample at ANF164. Given point code 18-24.
un-named CB

1335 Arrive on-site ADY099. Begin sampling of un-named CB.

1351 Finished collecting sample. After consulting map, the CB we thought was ADY099 appears to actually be an un-named, abandoned CB. The map shows that it previously connected to the sanitary line. Field observations suggest that it is either still connected or is now connected to stormwater. ADY099 does not currently exist as it is mapped. Pooling water is instead where the CB should be. The solids collected will be jarred and stored for later decision.

1400 Began sampling at ANB622.

1411 Completed sampling at ANB622. Filled sample jars, given point code 18-25.

1440 Collected sample at ANB621 per direction of A.N.D. due to confusion with ADY099 and whether or not it would be submitted. This CB could serve as an alternate sample for that site.

1453 Completed sample collection @ ANB621. Filled jars.

1630 Per customer communication all collected samples will be submitted. The un-named CB thought to be ADY099 at address 2840 NW 35th Ave. will be given point code 18-26 & CB ANB621 will be given point code 18-27.

Attachments



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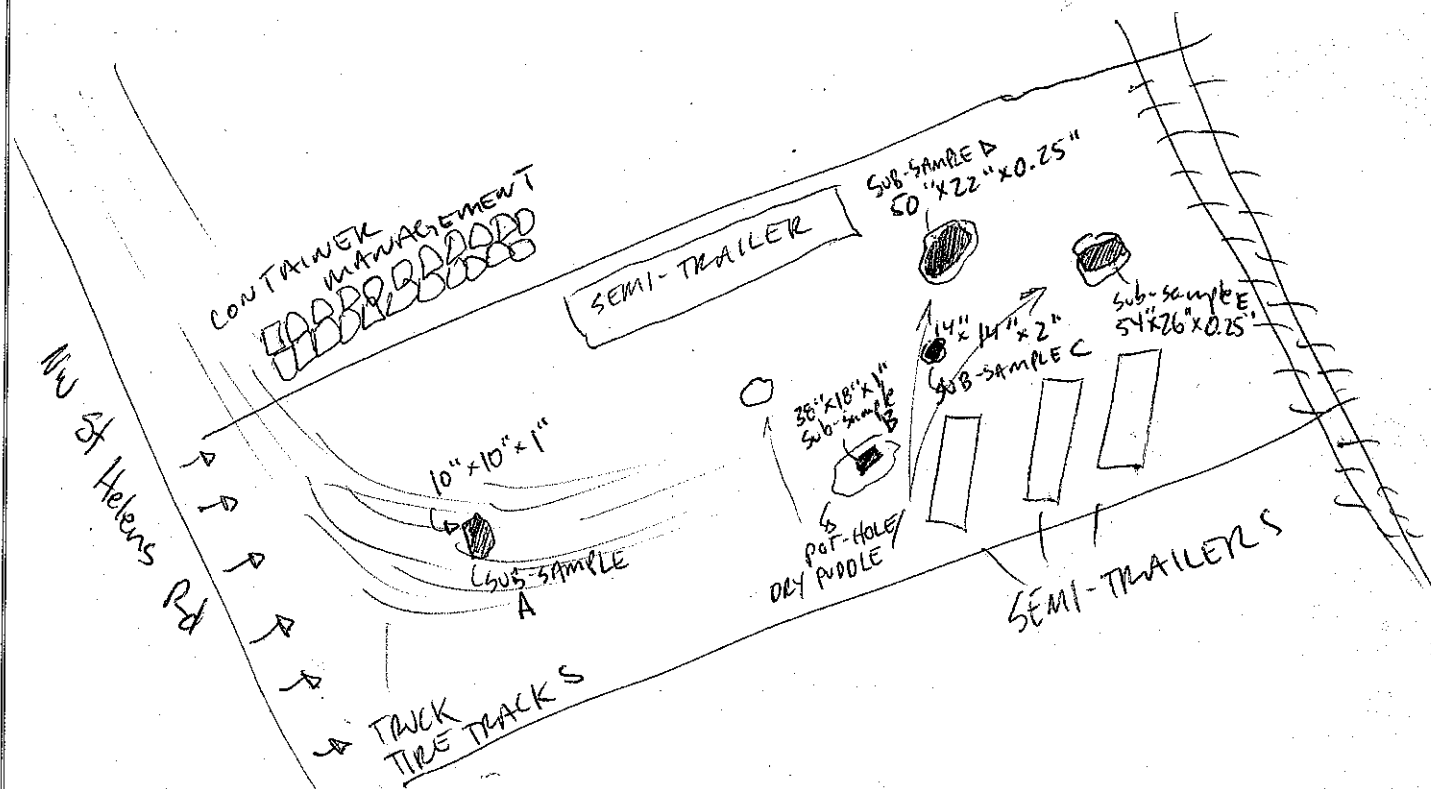
INLINE SEDIMENT SAMPLING FIELD DATA SHEET

Project Name: <u>PORTLAND HARBOR INLINE SAMP</u>		Project Number: <u>1020-601</u>	
Sampling Team: <u>JJM, PTB, AND</u>	Date: <u>9/14/10</u>	Arrival Time: <u>0900</u>	Current Weather Conditions/Last Rain: <u>Overcast/Last Week (9/8)</u>
Basin: <u>18</u>	Node: <u>NA</u>	Subbasin: <u>NA</u>	
Sampling Location Description/Address: <u>WEST END of NW Lake St to RR tracks</u>			

SECTION 1 - PRE-SAMPLING VISUAL OBSERVATION REPORT

Describe any flowing or standing water observed in the line?	<u>NA</u>
Does river appear to back up to this location? Describe rate/color/odor of flow:	<u>NA</u>
Are sediments observed in the line? <u>on the street</u>	<u>Yes, NW Lake is a gravel/dirt road.</u>
Are sample-able quantities of sediments present in the line?	<u>Yes, there is abundant sediment</u>
Describe lateral extent of sample-able sediments present in the line:	<u>Soil is present all along NW Lake.</u>

SITE DIAGRAM: Include street intersections/laterals/catch basins/MH's/driveways cuts and extent of solids accumulation.



18-20

Date: 9/14/10		SECTION 2 - SAMPLE COLLECTION REPORT		Node: NWLake1	
Sampling Equipment:		<input checked="" type="checkbox"/> Stainless steel spoon & stainless steel bucket <input type="checkbox"/> Other (Describe)			
Equipment Decontamination process:		<input checked="" type="checkbox"/> Per SOP7.01a <input type="checkbox"/> Other (Describe)			
Sample date: 9/14/10	Sample time: 0942	Sample Identification: (IL-XX-NNNNNN-mmyy) IL-18-NWLAKE1-0910			
Sample location description: (number of feet from node of entry) 5 sub-samples 1 within tire tracks, 4 in pot-holes/puddles along NW Lake Rd.					
Sample collection technique:		Scraping with trowel to form pile which is then scooped into bowl, excluding large gravels			
Describe Color of sample:		Light brown			
Describe Texture/Particle size:		85% fines/silt & sands, 15% pea-sized gravels			
Describe visual or olfactory evidence of contamination in bulk sediment sample (odor, sheen, discoloration, etc.):		None			
Describe depth of solids in area where sample collected:		Surface soils collected. 0.25" - 2"			
Describe amount and type of debris in sample:		None			
Amount and type of debris removed from final sample:		None			
Compositing notes: Homogenized in bowl.					
Sample Jars Collected (number, size, full or partial)? 7 full 4 oz. jars					
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 FO105890		Duplicate sample collected? <input checked="" type="checkbox"/> YN		Dupe ID FO105899	
Duplicate sample identification # on COC:					
Any deviations from standard procedures: None					

SECTION 3 - PHOTOGRAPH LOG

Overview of node showing drainage area	
Plan view of sediments inline	
Homogenized sample (sediment in bowl)	
Other?	

18-21



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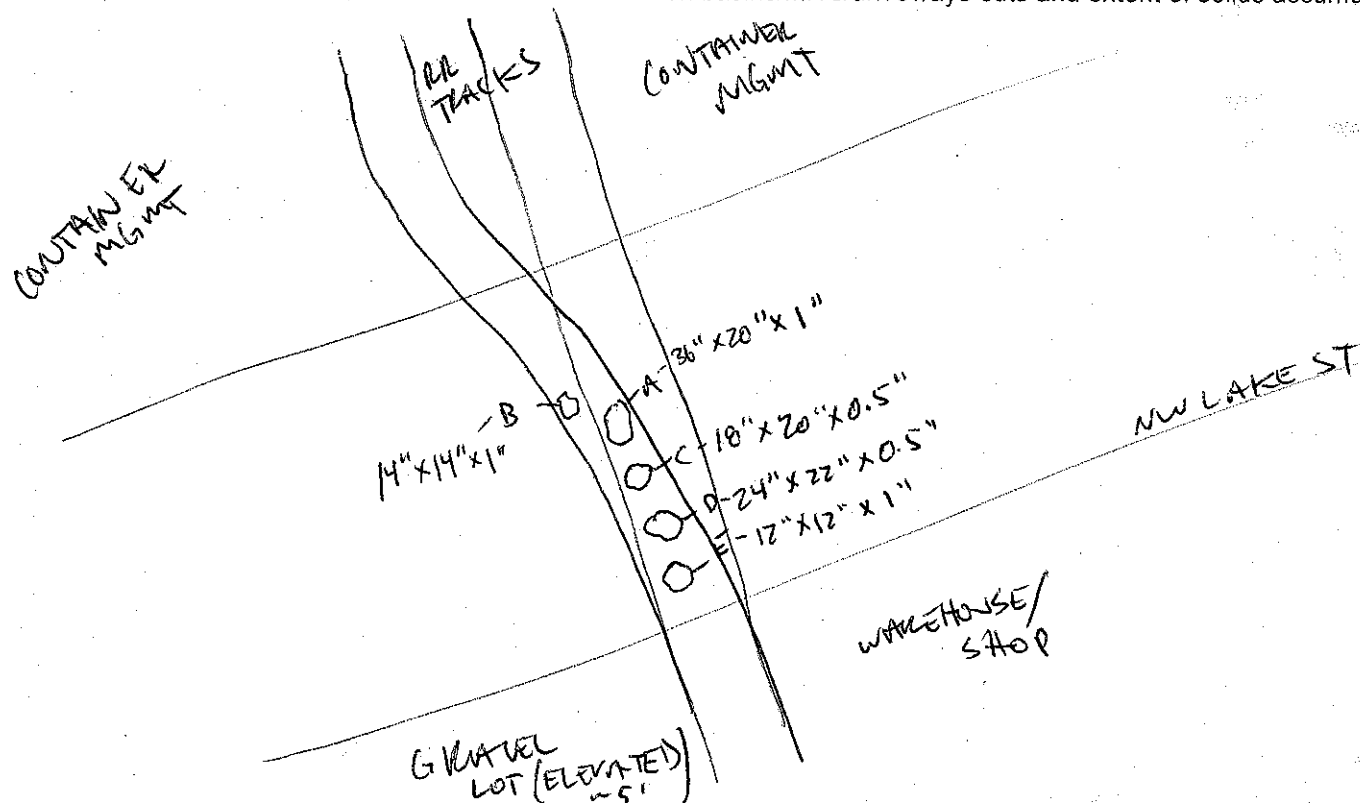
INLINE SEDIMENT SAMPLING FIELD DATA SHEET

Project Name: <u>PORTLAND HARBOR INLINE SAMP</u>		Project Number: <u>1020-001</u>	
Sampling Team: <u>JM, PTB, AND</u>	Date: <u>9/14/10</u>	Arrival Time: <u>0947</u>	Current Weather Conditions/Last Rain: <u>Overcast / Last week (9/8)</u>
Basin: <u>18</u>	Node: <u>NA</u>	Subbasin: <u>NA</u>	
Sampling Location Description/Address: <u>NW Lake St at ML tracks</u>			

SECTION 1 - PRE-SAMPLING VISUAL OBSERVATION REPORT

Describe any flowing or standing water observed in the line?	<u>NA</u>
Does river appear to back up to this location? Describe rate/color/odor of flow:	<u>NA</u>
Are sediments observed in the line? <u>on street</u>	<u>Yes, NW Lake is gravel with fines</u>
Are sample-able quantities of sediments present in the line?	<u>Yes, plenty of seds along tracks & road.</u>
Describe lateral extent of sample-able sediments present in the line:	<u>Sample-able solids all along road.</u>

SITE DIAGRAM: Include street intersections/laterals/catch basins/MH's/driveways cuts and extent of solids accumulation.



18-21

Date: 9/14/10		SECTION 2 - SAMPLE COLLECTION REPORT		Node: NWLAKEZ	
Sampling Equipment:		<input checked="" type="checkbox"/> Stainless steel spoon & stainless steel bucket <input type="checkbox"/> Other (Describe)			
Equipment Decontamination process:		<input checked="" type="checkbox"/> Per SOP7.01a <input type="checkbox"/> Other (Describe)			
Sample date: 9/14/10	Sample time: 1004	Sample Identification: (IL-XX-NNNNNN-mmyy) 18-NWLAKEZ-0910			
Sample location description: (number of feet from node of entry) 5 sub-samples along/between railroad tracks where they cross NW Lake St					
Sample collection technique:		Per SOP Scraped surface with trowel collected into bowl			
Describe Color of sample:		light brown			
Describe Texture/Particle size:		85% fines, sands & silts, 15% pea-sized gravels.			
Describe visual or olfactory evidence of contamination in bulk sediment sample (odor, sheen, discoloration, etc.):		None			
Describe depth of solids in area where sample collected:		0.5" - 1" depth of collected soils			
Describe amount and type of debris in sample:		None			
Amount and type of debris removed from final sample:		None			
Compositing notes: Homogenized in collection bowl					
Sample Jars Collected (number, size, full or partial)? 7 full 4 oz. jars					
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).					
FO105891					
Lab ID		Duplicate sample collected? <input checked="" type="checkbox"/> Dupe ID			
Duplicate sample identification # on COC:					
Any deviations from standard procedures: None					

SECTION 3 - PHOTOGRAPH LOG

Overview of node showing drainage area	
Plan view of sediments inline	
Homogenized sample (sediment in bowl)	
Other?	



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INLINE SEDIMENT SAMPLING FIELD DATA SHEET

Project Name: <u>PORTLAND HARBOR INLINE SAMP</u>		Project Number: <u>1020-001</u>	
Sampling Team: <u>JSM, PTB, AND</u>	Date: <u>9/14/10</u>	Arrival Time: <u>1014</u>	Current Weather Conditions/Last Rain: <u>Overcast / Last week (9/8)</u>
Basin: <u>18</u>	Node: <u>NA</u>	Subbasin: <u>NA</u>	
Sampling Location Description/Address: <u>NW LAKE ST EAST OF RR TRACKS</u>			

SECTION 1 - PRE-SAMPLING VISUAL OBSERVATION REPORT

Describe any flowing or standing water observed in the line?	<u>NA</u>
Does river appear to back up to this location? Describe rate/color/odor of flow:	<u>NA</u>
Are sediments observed in the line?	<u>Yes, NW Lake St is a gravel road</u>
Are sample-able quantities of sediments present in the line?	<u>Yes, there are abundant sed</u>
Describe lateral extent of sample-able sediments present in the line:	<u>Seds extend across & along entire street.</u>

SITE DIAGRAM: Include street intersections/laterals/catch basins/MH's/driveways cuts and extent of solids accumulation.



18-22

Date: 9/14/10		SECTION 2 - SAMPLE COLLECTION REPORT		Node: NWLAKE3	
Sampling Equipment:			<input checked="" type="checkbox"/> Stainless steel spoon & stainless steel bucket <input type="checkbox"/> Other (Describe)		
Equipment Decontamination process:			<input checked="" type="checkbox"/> Per SOP7.01a <input type="checkbox"/> Other (Describe)		
Sample date: 9/14/10	Sample time: 1041	Sample Identification: (IL-XX-NNNNNN-mmyy) IL-18-NWLAKE3-0910			
Sample location description: (number of feet from node of entry) 5 sub-samples from pit-holes along NW LAKE ST					
Sample collection technique:			Scraped top layer of sed from each sub-sample location, excluding large gravels		
Describe Color of sample:			Brown		
Describe Texture/Particle size:			0.5"-1" in sub-sam 80% fine silts, sands. 20% pea sized gravels		
Describe visual or olfactory evidence of contamination in bulk sediment sample (odor, sheen, discoloration, etc.):			None		
Describe depth of solids in area where sample collected:			0.5"-1" in sub-sample locations		
Describe amount and type of debris in sample:			A piece of aluminum can,		
Amount and type of debris removed from final sample:			removed debris		
Compositing notes: Homogenized in sample container					
Sample Jars Collected (number, size, full or partial)? 7 full 4 oz. jars					
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). FO105892					
Lab ID			Duplicate sample collected? <input checked="" type="checkbox"/> Dupe ID		
Duplicate sample identification # on COC:					
Any deviations from standard procedures: None					

SECTION 3 - PHOTOGRAPH LOG	
Overview of node showing drainage area	
Plan view of sediments inline	
Homogenized sample (sediment in bowl)	
Other?	

18-23



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INLINE SEDIMENT SAMPLING FIELD DATA SHEET

Project Name: <u>PORTLAND HARBOR INLINE SAMP</u>		Project Number: <u>1020-001</u>	
Sampling Team: <u>JSM, PTB, AND</u>	Date: <u>9/14/10</u>	Arrival Time: <u>1049</u>	Current Weather Conditions/Last Rain: <u>Overcast / Last week (9/8)</u>
Basin: <u>18</u>	Node: <u>NA</u>		Subbasin: <u>NA</u>

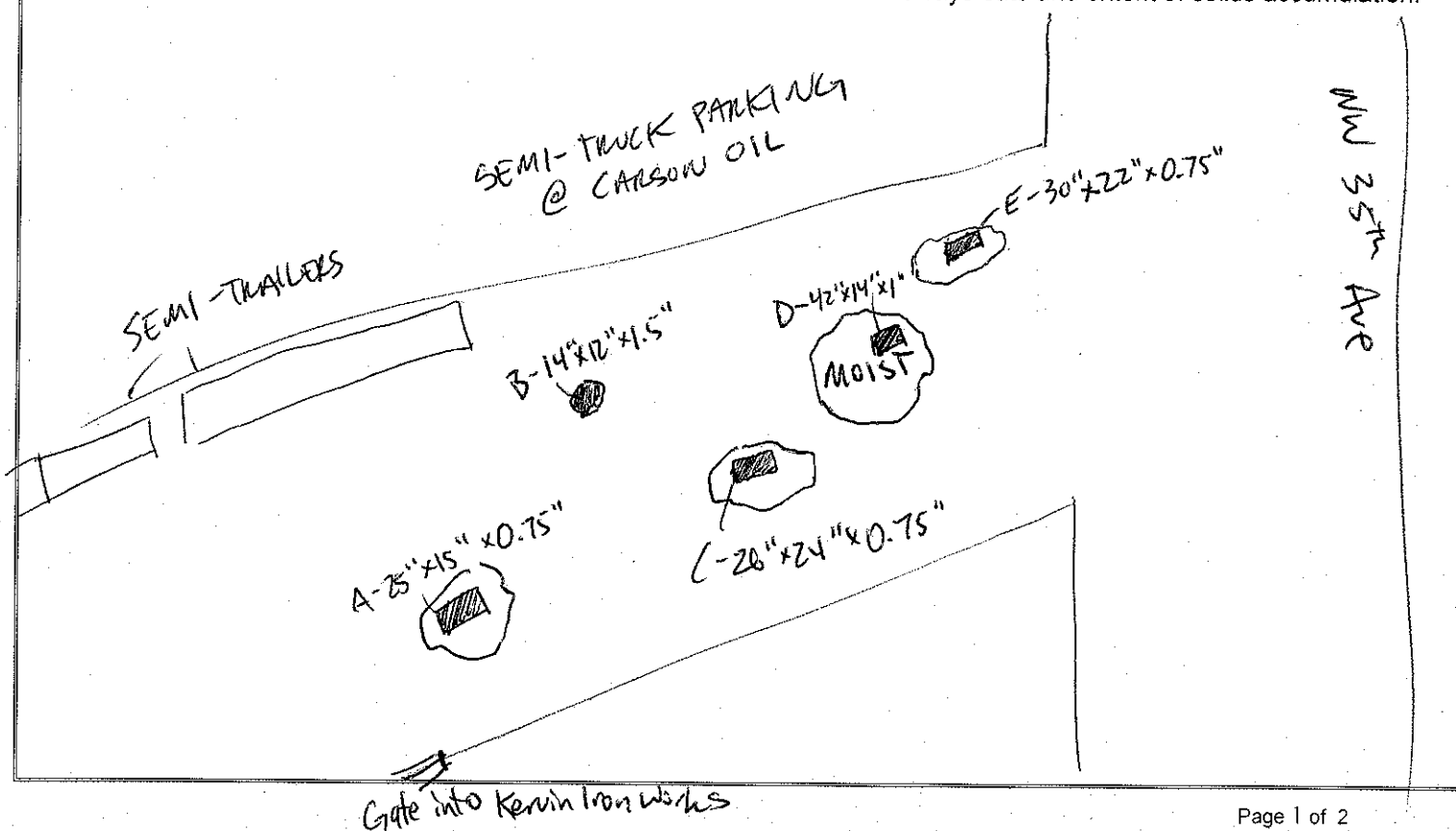
Sampling Location Description/Address:

EAST END OF NW LAKE ST

SECTION 1 - PRE-SAMPLING VISUAL OBSERVATION REPORT

Describe any flowing or standing water observed in the line?	<u>NA</u>
Does river appear to back up to this location? Describe rate/color/odor of flow:	<u>NA</u>
Are sediments observed in the line?	<u>Yes, NW Lake Street is a gravel road.</u>
Are sample-able quantities of sediments present in the line?	<u>Yes, there are ample quantities of seds.</u>
Describe lateral extent of sample-able sediments present in the line:	<u>Seds cover entire area of street.</u>

SITE DIAGRAM: Include street intersections/laterals/catch basins/MH's/driveways cuts and extent of solids accumulation.



~~52~~ 18-23

Date: 9/14/10		SECTION 2 - SAMPLE COLLECTION REPORT		Node: NWLAKE4	
Sampling Equipment:		<input checked="" type="checkbox"/> Stainless steel spoon & stainless steel bucket <input type="checkbox"/> Other (Describe)			
Equipment Decontamination process:		<input checked="" type="checkbox"/> Per SOP7.01a <input type="checkbox"/> Other (Describe)			
Sample date: 9/14/10	Sample time: 1118	Sample Identification: (IL-XX-NNNNNN-mmyy) IL-18-NWLAKE4-0910			
Sample location description: (number of feet from node of entry) 5 Sub-samples from along NW Lake					
Sample collection technique:		Scraped surface for soils excluding large angular gravels.			
Describe Color of sample:		Brown			
Describe Texture/Particle size:		80% fines, sands & silts, 10% gravels, 2% coarse organics			
Describe visual or olfactory evidence of contamination in bulk sediment sample (odor, sheen, discoloration, etc.):		None			
Describe depth of solids in area where sample collected:		0.75"-1" depths of the subsamples			
Describe amount and type of debris in sample:		None			
Amount and type of debris removed from final sample:		None			
Compositing notes: Homogenized in sample bucket					
Sample Jars Collected (number, size, full or partial)? 7 full 4 oz. jars					
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). FO105893					
Lab ID		Duplicate sample collected? <input checked="" type="checkbox"/> Dupe ID			
Duplicate sample identification # on COC:					
Any deviations from standard procedures: None					

SECTION 3 - PHOTOGRAPH LOG	
Overview of node showing drainage area	
Plan view of sediments inline	
Homogenized sample (sediment in bowl)	
Other?	



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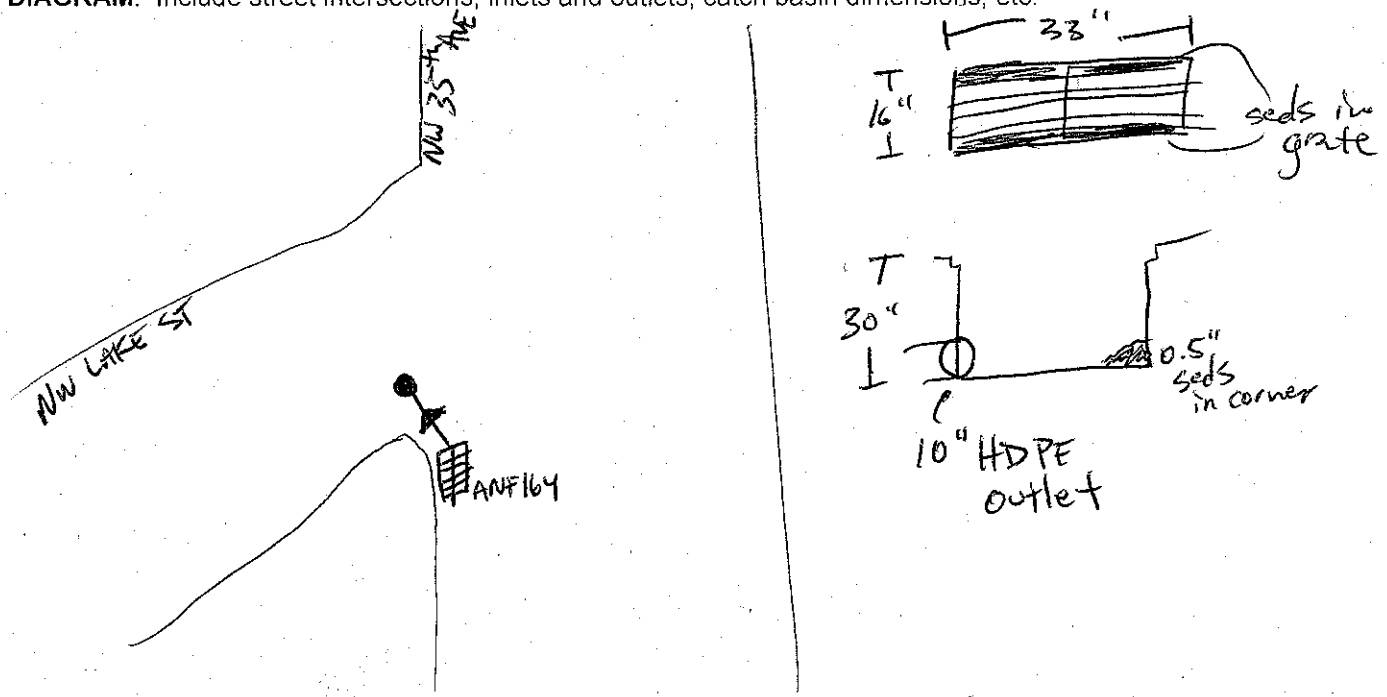
CATCH BASIN SOLIDS SAMPLING
FIELD DATA SHEET

Project Name: <u>PORTLAND HARBOR INLINE SAMP</u>		Project Number: <u>1020.001</u>
Sampling Team: <u>JJM, PTB</u>	Date: <u>9/14/10</u>	Arrival Time: <u>1300</u>
Basin: <u>18</u>	Node: <u>ANF164</u>	Address: <u>2727 NW 35th Ave</u>
Current weather and last known rainfall: <u>Overcast. Last rain was last week (9/8)</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>NW Lake St is a gravel/dirt road, with container storage at its end that washes containers. Heavy truck traffic uses this road regularly. NW 35th Ave is a regularly travelled road for many trucks coming from/to Carson Oil.</u>
Describe debris and/or clogging around, or in catch basin grate/cover:	<u>Ring ~15% of CB cover clogged with sediment.</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>0.5" of seds in SE corner of CB. Solids from grate clogging are 1.5"</u>

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



18-24

Date: 9/14/10	SECTION 2 - SAMPLE COLLECTION REPORT			Node: ANF164
Sampling Equipment:	<input checked="" type="checkbox"/> Stainless steel spoon & stainless steel bucket <input type="checkbox"/> OTHER (DESCRIBE)			
Equipment decontamination procedure:	<input checked="" type="checkbox"/> Per SOP7.01a <input type="checkbox"/> OTHER (DESCRIBE)			
Sample date: 9/14/10	Sample time: 1320			
Sample Identification Code: 1L-18-ANF164-0910	Sample collection technique and if/how overlying water was removed: Per SOP 5.01a			
Subsample number and location:	All available solids collected			
Color of sample:	Brown			
Texture/particle size:	15% small gravels, 25% organics, 50% fines & silts, 10% sands			
Visual or olfactory evidence of contamination in bulk sediment sample (odor, sheen, discoloration, etc.)	None			
Amount and type of debris in bulk sample:	Cigarette butts			
Amount and type of debris removed from final sample:	Cigarette butts removed			
Compositing notes: Homogenized in bucket				
Sample jars collected (number, size, full or partial)? 7 full 4 oz. jars				
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). FO105894				
Lab ID	Duplicate sample collected? <input checked="" type="radio"/> Y <input type="radio"/> N Dupe ID			
Duplicate sample identification # on COC:				
Any deviations from standard procedures: None				

SECTION 3 - PHOTOGRAPH LOG	
Overview of CB showing drainage area	
Catch basin plan view prior to sampling showing solids	
Lateral connections to/from CB	
Homogenized sample (sediment in bowl)	

18-25



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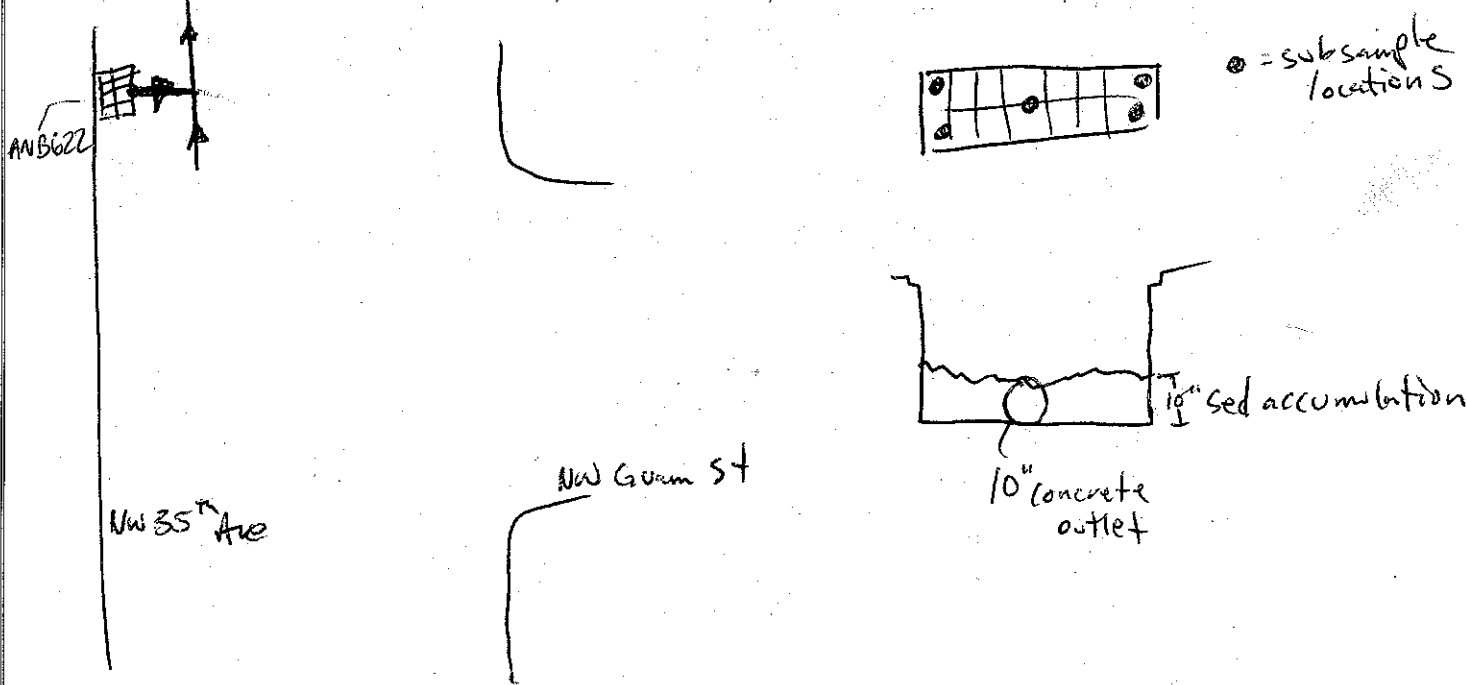
CATCH BASIN SOLIDS SAMPLING FIELD DATA SHEET

Project Name: <u>PORTLAND HARBOR WILVE Samp</u>		Project Number: <u>1020001</u>
Sampling Team: <u>JJM, PTB, AND</u>	Date: <u>9/14/10</u>	Arrival Time: <u>1400</u>
Basin: <u>18</u>	Node: <u>ANB622</u>	Address: <u>3125 NW 35th Ave</u>
Current weather and last known rainfall: <u>Partly sunny / Last week (9/8)</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>Heavy truck traffic on NW 35th Avenue in industrial area.</u>
Describe debris and/or clogging around, or in catch basin grate/cover:	<u>Extensive leaf accumulation. 10" on top of sed.</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>10" of sediment across floor of CB 32" deep CB</u>

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



18-25

Date: 9/14/10	SECTION 2 - SAMPLE COLLECTION REPORT		Node: ANB622
Sampling Equipment:	<input checked="" type="checkbox"/> Stainless steel spoon & stainless steel bucket <input type="checkbox"/> OTHER (DESCRIBE)		
Equipment decontamination procedure:	<input checked="" type="checkbox"/> Per SOP7.01a <input type="checkbox"/> OTHER (DESCRIBE)		
Sample date: 9/14/10	Sample time: 1411		
Sample Identification Code: 1L-18-ANB622-0910	Sample collection technique and if/how overlying water was removed: Per SOP 5.01a		
Subsample number and location:	5 total, 4 in corners & 1 in center		
Color of sample:	Very dark brown		
Texture/particle size:	85% fines & silts, 15% organics (roots & leaves)		
Visual or olfactory evidence of contamination in bulk sediment sample (odor, sheen, discoloration, etc.)	None		
Amount and type of debris in bulk sample:	15% organics (roots & leaves)		
Amount and type of debris removed from final sample:	10% roots & leaves		
Compositing notes: Homogenized in bowl			
Sample jars collected (number, size, full or partial)? 7 full 4oz. jars			
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: FO105895	Duplicate sample collected? <input checked="" type="checkbox"/> Dupe ID		
Duplicate sample identification # on COC:			
Any deviations from standard procedures: None			

SECTION 3 - PHOTOGRAPH LOG	
Overview of CB showing drainage area	
Catch basin plan view prior to sampling showing solids	
Lateral connections to/from CB	
Homogenized sample (sediment in bowl)	AI



CITY OF PORTLAND ENVIRONMENTAL SERVICES

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



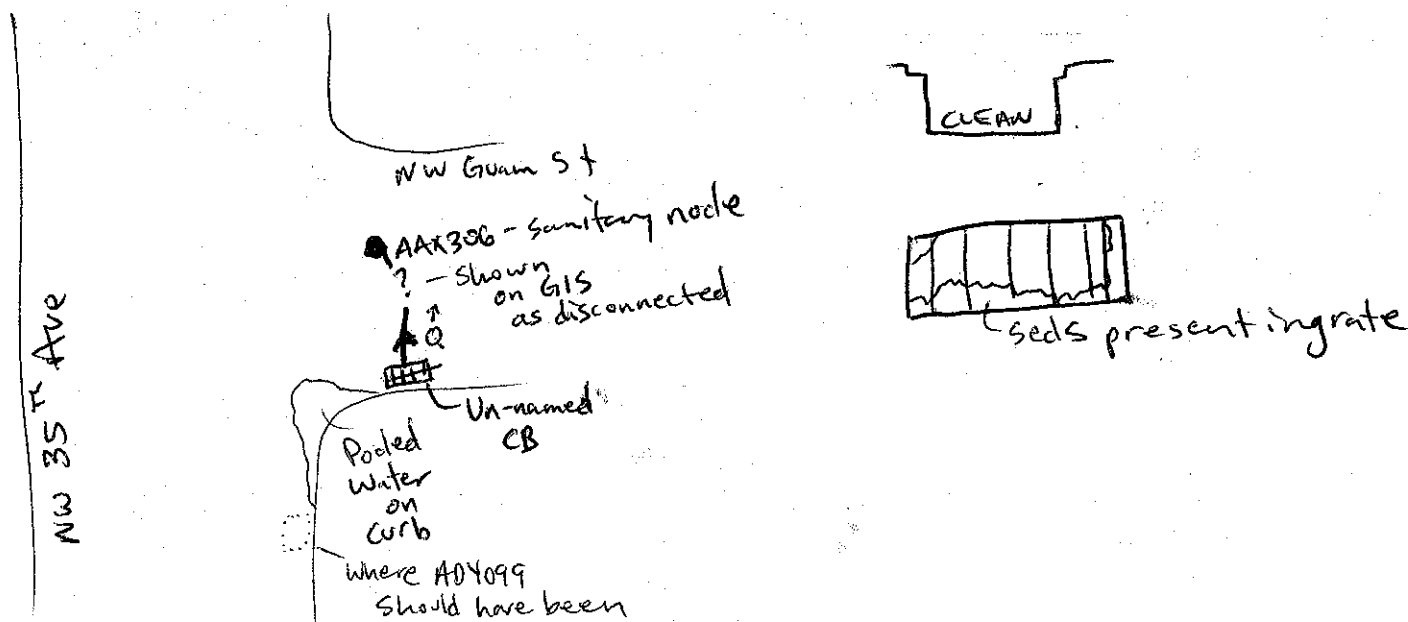
CATCH BASIN SOLIDS SAMPLING FIELD DATA SHEET

Project Name: PORTLAND HARBOR INLINE SAMPLING		Project Number: 1020.001	
Sampling Team: DM, PTB	Date: 9/14/10	Arrival Time: 1335	
Basin: 18	Node: AD4099 ^{Un-named CB}	Address: 2840 NW 35th Ave	
Current weather and last known rainfall: Overcast. Last rain was last week (9/8)			

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.):	Heavy truck traffic by here in industrial area.
Describe debris and/or clogging around, or in catch basin grate/cover:	10% clogged with dirt, grass clippings & leaves
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:	No seds in bottom of CB, but seds present in grate and along rim.

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



18-26

Date: 9/14/10		SECTION 2 - SAMPLE COLLECTION REPORT		Node: Un-named CB A04099	
Sampling Equipment:		<input checked="" type="checkbox"/> Stainless steel spoon & stainless steel bucket <input type="checkbox"/> OTHER (DESCRIBE)			
Equipment decontamination procedure:		<input checked="" type="checkbox"/> Per SOP7.01a <input type="checkbox"/> OTHER (DESCRIBE)			
Sample date: 9/14/10		Sample time: 1351			
Sample Identification Code: UNNAMED CB 1L-18 - A04099 - 0910		Sample collection technique and if/how overlying water was removed: Per SOP 5.01a			
Subsample number and location:		Sub-samples were taken from the grate clogging in the cover as there were no sed in the bottom			
Color of sample:		Dark brown			
Texture/particle size:		90% fines, silts & sands, 5% leaves & moss, 5% small gravels			
Visual or olfactory evidence of contamination in bulk sediment sample (odor, sheen, discoloration, etc.)		None			
Amount and type of debris in bulk sample:		5% leaves & moss			
Amount and type of debris removed from final sample:		5% leaves & moss excluded			
Compositing notes: Homogenized in sample bucket					
Sample jars collected (number, size, full or partial)? 7 full 4 oz. jars					
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 FO105896		Duplicate sample collected? <input checked="" type="radio"/> Y <input type="radio"/> N Dupe ID			
Duplicate sample identification # on COC:					
Any deviations from standard procedures: None					

SECTION 3 - PHOTOGRAPH LOG	
Overview of CB showing drainage area	
Catch basin plan view prior to sampling showing solids	
Lateral connections to/from CB	
Homogenized sample (sediment in bowl)	

18-27



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 WLINE SAMP

Project Number: 1020.001

Sampling Team: JAM, PTB, AND

Date: 9/14/10

Arrival Time: 1440

Basin: 10

Node: ANB621

Address: 3441 NW GUAM ST

Current weather and last known rainfall:

Partly Sunny / Last week (9/8)

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.):

Heavy truck traffic in industrial area

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

5% clogged at grate with sed's and leaves

Is there standing water in catch basin?

No

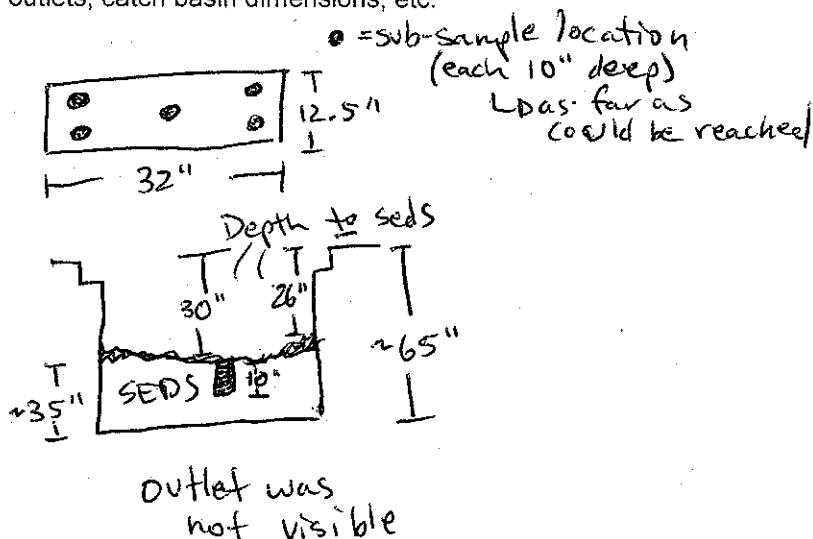
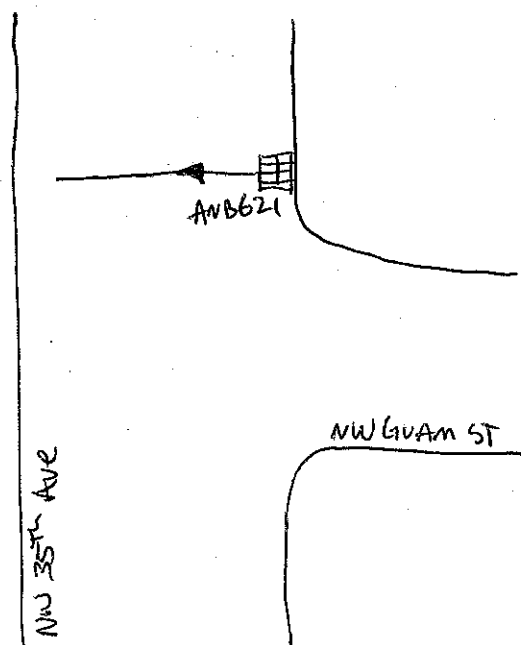
Describe visual or olfactory observations of contamination at catch basin if any (odor, sheen, discoloration, etc.):

None

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

Could not physically measure (reach) bottom of CB. Estimated to be ~65" deep. Depth of sed's estimated to ~35" in depth.

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



18-27

Date: 9/14/10	SECTION 2 - SAMPLE COLLECTION REPORT		Node: ANB621
Sampling Equipment:	<input checked="" type="checkbox"/> Stainless steel spoon & stainless steel bucket <input type="checkbox"/> OTHER (DESCRIBE)		
Equipment decontamination procedure:	<input checked="" type="checkbox"/> Per SOP7.01a <input type="checkbox"/> OTHER (DESCRIBE)		
Sample date: 9/14/10	Sample time: 1453		
Sample Identification Code: 1L-18-ANB621-0910	Sample collection technique and if/how overlying water was removed: Per SOP5.01a		
Subsample number and location:	5 sub-samples. One in each corner and one in the middle.		
Color of sample:	Very dark brown		
Texture/particle size:	90% fines, silts, 10% coarse organics		
Visual or olfactory evidence of contamination in bulk sediment sample (odor, sheen, discoloration, etc.)	Decomposing organic odor (as from leaves) No apparent contamination		
Amount and type of debris in bulk sample:	10% coarse organics		
Amount and type of debris removed from final sample:	5% coarse organics large enough to exclude		
Compositing notes: Homogenized in sample bucket			
Sample jars collected (number, size, full or partial)? 7 full 4 oz. jars			
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 FO105897	Duplicate sample collected? <input checked="" type="checkbox"/> Dupe ID		
Duplicate sample identification # on COC:			
Any deviations from standard procedures: None			

SECTION 3 - PHOTOGRAPH LOG

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

Attachment C-3

Laboratory Reports and Data Review Memoranda (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 Erodible Soils and Catch Basin Sampling Outfall Basin 18 East-Central Subbasin

To: File
From: Andrew Davidson, GSI Water Solutions, Inc.
Date: September 26, 2011

This memorandum presents a quality assurance/quality control (QA/QC) review of the laboratory data generated from a sampling event conducted by the City of Portland (City) in the east-central sub-basin of Outfall (OF) Basin 18 on September 14, 2010. Four erodible soil samples (FO105890 – FO105893), four catch basin solids samples (FO105894 – FO105897), one field duplicate sample (FO105898), and one equipment decontamination sample (FO105899) were collected and submitted for analyses.

The laboratory analyses for these solids 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 below:

- BES WPCL
 - Total Solids (TS) – SM 2540G
 - Total Metals – EPA 6020
 - Polychlorinated Biphenyls (PCBs) Aroclors – EPA 8082
- Test America (TA)
 - Total Organic Carbon – EPA 9060 MOD
- Pace Analytical (Pace)
 - PCB Congeners – EPA 1668A
- Columbia Analytical Services (CAS)
 - Pesticides – EPA 8081A

The WPCL summary report and the subcontracted laboratory reports for all analyses associated with this sampling event 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 of the analytical data is based on the available documentation provided by the subcontracted laboratory and on exceptions noted in the WPCL summary report. The QA/QC review of the analytical data consisted of reviewing the following elements for each laboratory report, if applicable and/or available:

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

The results from the QA/QC review of the available information in the laboratory reports are presented below.

Chain-of-Custody

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

Analysis Holding Times

Samples for all analyses were extracted and analyzed within the recommended method-specific holding times.

Method Blanks

Method blanks were processed during the subcontracted laboratory analyses of TOC, PCBs, and organochlorine pesticides. Additionally, the field decontamination blank (FO10598) was analyzed for organochlorine pesticides. No analytes were detected in the method blanks.

CAS notes that method detection limits (MDL) for Endosulfan II and Toxaphene were elevated in both the method blank and in the field decontamination blank sample due to the presence of non-target background components, which were reportedly introduced as laboratory artifacts. The contamination prevented adequate resolution of the target compounds at the MDL, but the level of background was relatively low compared to the MDL. Therefore the effect on the results

was minimal. These results are flagged in the subcontracted report to indicate the slightly elevated detection limits.

Surrogate Recoveries

Surrogates were utilized during the analysis of organochlorine pesticides. The surrogate, Decachlorobiphenyl, was above the laboratory control limit for field samples FO105891 and FO105892. However, because the other surrogate, Tetrachloro-m-xylene, was recovered within laboratory control limits, the results are not qualified further.

Internal Standards

Isotopically-labeled internal standard recoveries were processed during the laboratory analysis of PCB congeners. Internal standard recoveries are within control limits with three exceptions in the QC samples, which are flagged “R” in the subcontracted laboratory report. All internal standards processed with the field samples were recovered within control criteria, and the data are not qualified further.

Interfering background constituents impacted the measurement of some PCB congeners and internal standards. The affected values are flagged “T” in the subcontracted report to indicate that incorrect isotope ratios were obtained. These values are qualified as estimated maximum possible concentrations (EMPCs). Also, in some cases, low levels of congeners 15 and 144 eluted outside the acquisition window. This resulted in slightly reduced concentrations for these congeners. Because the sum of congeners 15 and 144 and the EMPC value(s) are not significant relative to the total PCB concentration (i.e. <1%), total homolog and total PCB concentrations are considered only slightly biased.

Matrix Spike/Matrix Spike Duplicates (MS/MSD)

MS/MSD samples were processed during the subcontracted analyses of TOC and organochlorine pesticides. MS/MSD recoveries and RPDs were all within laboratory control limits during the TOC analysis.

During the pesticide analysis, sample FO105891 was used for the MS/MSD samples. Several analytes were recovered outside of control limits in the MS/MSD samples, and the relative percent difference (RPD) for several analytes was above acceptance limits. CAS reports that the control criteria for several analytes in the MS/MSD samples are not applicable because non-target matrix background components contributed to the reported matrix spike concentrations. While the RPD results indicate a low/high bias in the MS/MSD samples, all recoveries in the associated LC sample were within acceptance limits, indicating that the analytical batch was in control. Accordingly, the data are not further qualified.

Laboratory Control/Laboratory Control Duplicate Sample (LC/LCD)

LC samples were processed with the field samples during the subcontracted laboratory analyses of TOC and organochlorine pesticides, and LC/DLC samples were processed with the field decontamination blank during the pesticide analysis. Additionally, two sets of LC/DLC samples

were processed during the PCB congener analysis. Spike recoveries and RPDs were within laboratory control limits for all analyses.

Other

CAS reports that results from the primary and verification columns varied by more than 40% for several analytes detected during the organochlorine pesticide analysis. These analytes are qualified as estimates “EST” in the WPCL report. Several analytes were detected between the method reporting limit (MRL) and method detection limit (MDL) during the pesticide analysis. These analytes are flagged “J” in the subcontracted report. CAS also notes that the primary evaluation criteria were not met on the confirmation column for Decachlorobiphenyl in the continuing calibration verification (CCV) 1005F029, for Methoxychlor and Decachlorobiphenyl in sample CCV 0928F004, and for a few analytes in CCV 1011F004. The results were reported from the column with an acceptable CCV. The data quality was not affected, and no further corrective action was necessary.

Dilutions were required during the PCB analysis of samples FO105890, FO105891, and FO105892 due to the presence of high concentrations of non-target background constituents. As a result, detection limits were elevated in these samples.

WPCL notes that for sample FO105892, quantification of PCB Aroclor 1254 is based on only 2 chromatographic peaks due to matrix interferences. For pesticide results flagged as estimates, results from the primary and verification columns varied by more than 40%.

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: 9/15/10
Page: 1 of 1
Collected By: JSM, OTB, AND

Project Name: PORTLAND HARBOR INLINE SAMP

File Number: 1020.001

Matrix: SEDIMENT

Requested Analyses

Basin 18 Inline

WPCL Sample I.D.

Location

Point Code Sample Date Sample Time Sample Type

PCB Aroclors - LL

PCB Congeners (All 209)

Pesticides LL (CAS)

TOC

Total Solids

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

Organics

General

Metals

Field Comments

FO105890
FO105891
FO105892
FO105893
FO105894
FO105895
FO105896
FO105897
FO105898
FO105899

IL-18-NWLAKE1-0910 WEST END OF NW LAKE	18_20	9/14/10	0942	C
IL-18-NWLAKE2-0910 NW LAKE @ RR TRACKS	18_21	9/14/10	1004	C
IL-18-NWLAKE3-0910 EAST OF RR TRACKS	18_22	9/14/10	1041	C
IL-18-NWLAKE4-0910 EAST END OF NW LAKE	18_23	9/14/10	1118	C
IL-18-ANF164-0910 2727 NW 35TH AVE	18_24	9/14/10	1320	C
IL-18-ANB622-0910 3125 NW 35TH AVE	18_25	9/14/10	1411	C
IL-18-UNNAMEDCB-0910 2840 NW 35TH AVE	18_26	9/14/10	1351	C
IL-18-ANB621-0910 3441 NW GUAM ST	18_27	9/14/10	1453	C
FIELD DECON BLANK	FDBLANK	9/14/10	1304	G
FIELD DUPLICATE	DUP	9/14/10		C

Relinquished By: 2.

Signature:

Time:

Printed Name:

Date:

Received By: 2.

Signature:

Time:

Printed Name:

Date:

Signature:

Time:

Printed Name:

Date:

Relinquished By: 3.

Signature:

Time:

Printed Name:

Date:

Received By: 3.

Signature:

Time:

Printed Name:

Date:

Signature:

Time:

Printed Name:

Date:

Relinquished By: 4.

Signature:

Time:

Printed Name:

Date:

Received By: 4.

Signature:

Time:

Printed Name:

Date:

Signature:

Time:

Printed Name:

Date:

Portland Harbor Inline Samp COC - OF 18 (9-14-10) XIS



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: FO105890

Sample Collected: 09/14/10 09:42
Sample Received: 09/15/10

Sample Status: COMPLETE AND
VALIDATED

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-18-NWLAK1-0910
NW LAKE SOILS 0-2 IN W END TO RR TRKS
Sample Point Code: 18_20
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 1 of 2

System ID: AO08191
EID File #: 1020.001
LocCode: PORTHARI
Collected By: JJM/PTB

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%. LAB: For PCB analysis, dilution was required due to high levels of non-target compounds, resulting in raised reporting limits.

Test Parameter	Result	Units	MRL	Method	Analysis Date
GENERAL					
TOTAL SOLIDS	96.3	% W/W	0.01	SM 2540 G	09/16/10
METALS					
CADMIUM	0.79	mg/Kg dry wt	0.10	EPA 6020	09/17/10
CHROMIUM	42.4	mg/Kg dry wt	0.50	EPA 6020	09/17/10
COPPER	36.7	mg/Kg dry wt	0.25	EPA 6020	09/17/10
LEAD	93.9	mg/Kg dry wt	0.10	EPA 6020	09/17/10
MERCURY	0.054	mg/Kg dry wt	0.010	EPA 6020	09/17/10
NICKEL	13.2	mg/Kg dry wt	0.25	EPA 6020	09/17/10
SILVER	0.25	mg/Kg dry wt	0.10	EPA 6020	09/17/10
ZINC	179	mg/Kg dry wt	0.50	EPA 6020	09/17/10
GC ANALYSIS					
POLYCHLORINATED BIPHENYLS (PCB)					
Aroclor 1016/1242	<40	µg/Kg dry wt	40	EPA 8082	09/16/10
Aroclor 1221	<80	µg/Kg dry wt	80	EPA 8082	09/16/10
Aroclor 1232	<40	µg/Kg dry wt	40	EPA 8082	09/16/10
Aroclor 1248	<40	µg/Kg dry wt	40	EPA 8082	09/16/10
Aroclor 1254	125	µg/Kg dry wt	40	EPA 8082	09/16/10
Aroclor 1260	<40	µg/Kg dry wt	40	EPA 8082	09/16/10
Aroclor 1262	<40	µg/Kg dry wt	40	EPA 8082	09/16/10
Aroclor 1268	<40	µg/Kg dry wt	40	EPA 8082	09/16/10
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	11100	mg/Kg dry wt	100	EPA 9060 MOD	09/22/10
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	EST 7.70	µg/Kg dry wt	1	EPA 8081A	09/26/10
4,4'-DDE	EST 6.10	µg/Kg dry wt	1	EPA 8081A	09/26/10
4,4'-DDT	72.0	µg/Kg dry wt	5	EPA 8081A	09/26/10
Aldrin	<3	µg/Kg dry wt	3	EPA 8081A	09/26/10
Alpha-BHC	<1	µg/Kg dry wt	1	EPA 8081A	09/26/10
Alpha-Chlordane	61.0	µg/Kg dry wt	5	EPA 8081A	09/26/10
Beta-BHC	<1	µg/Kg dry wt	1	EPA 8081A	09/26/10
Delta-BHC	<1	µg/Kg dry wt	1	EPA 8081A	09/26/10

Report Date: 10/20/10

Validated By:



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



LABORATORY ANALYSIS REPORT

Sample ID: FO105890

Sample Collected: 09/14/10 09:42
Sample Received: 09/15/10

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-18-NWLAKE1-0910
NW LAKE SOILS 0-2 IN W END TO RR TRKS
Sample Point Code: 18_20
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 2 of 2

System ID: AO08191
EID File #: 1020.001
LocCode: PORTHARI
Collected By: JJM/PTB

Comments:

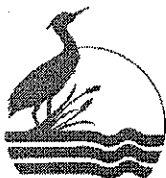
QA/QC: Except as follows, all analytical QA/QC criteria were met for this sample including holding times, calibration, method blanks, laboratory control sample recoveries, duplicate precision, matrix spike recoveries, and surrogate recoveries, as applicable. For pesticide results flagged as estimates, results from the primary and verification columns varied by more than 40%. LAB: For PCB analysis, dilution was required due to high levels of non-target compounds, resulting in raised reporting limits.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Dieldrin	13.0	µg/Kg dry wt	1	EPA 8081A	09/26/10
Endosulfan I	<3.9	µg/Kg dry wt	3.9	EPA 8081A	09/26/10
Endosulfan II	<22	µg/Kg dry wt	22	EPA 8081A	09/26/10
Endosulfan Sulfate	<4	µg/Kg dry wt	4	EPA 8081A	09/26/10
Endrin	<1	µg/Kg dry wt	1	EPA 8081A	09/26/10
Endrin Aldehyde	<3.5	µg/Kg dry wt	3.5	EPA 8081A	09/26/10
Endrin Ketone	<1	µg/Kg dry wt	1	EPA 8081A	09/26/10
Gamma-BHC(Lindane)	<1	µg/Kg dry wt	1	EPA 8081A	09/26/10
Gamma-Chlordane	74.0	µg/Kg dry wt	5	EPA 8081A	09/26/10
Heptachlor	<1	µg/Kg dry wt	1	EPA 8081A	09/26/10
Heptachlor Epoxide	<1	µg/Kg dry wt	1	EPA 8081A	09/26/10
Methoxychlor	<5.9	µg/Kg dry wt	5.9	EPA 8081A	09/26/10
Toxaphene	<420	µg/Kg dry wt	420	EPA 8081A	09/26/10
POLYCHLORINATED BIPHENYL CONGENERS -PACE					
Refer to Contract Report	Completed	ng/Kg dry wt		EPA 1668 MOD	09/29/10

End of Report for Sample ID: FO105890

Report Date: 10/20/10

Validated By:



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



LABORATORY ANALYSIS REPORT

Sample ID: FO105891

Sample Collected: 09/14/10 10:04
Sample Received: 09/15/10

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-18-NWLAK2-0910
NW LAKE SOILS 0-2 IN LAKE ST @ RR TRKS
Sample Point Code: 18_21
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 1 of 2

System ID: AO08192
EID File #: 1020.001
LocCode: PORTHARI
Collected By: JJM/PTB

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%. This sample exhibited significant matrix interferences for organic analyses, causing high spike recoveries and RPDs for pesticide analysis, and raised reporting limits for PCBs.

Test Parameter	Result	Units	MRL	Method	Analysis Date
GENERAL					
TOTAL SOLIDS	98.0	% W/W	0.01	SM 2540 G	09/16/10
METALS					
CADMIUM	0.63	mg/Kg dry wt	0.10	EPA 6020	09/17/10
CHROMIUM	39.9	mg/Kg dry wt	0.50	EPA 6020	09/17/10
COPPER	41.0	mg/Kg dry wt	0.25	EPA 6020	09/17/10
LEAD	104	mg/Kg dry wt	0.10	EPA 6020	09/17/10
MERCURY	0.052	mg/Kg dry wt	0.010	EPA 6020	09/17/10
NICKEL	16.6	mg/Kg dry wt	0.25	EPA 6020	09/17/10
SILVER	0.31	mg/Kg dry wt	0.10	EPA 6020	09/17/10
ZINC	239	mg/Kg dry wt	0.50	EPA 6020	09/17/10
GC ANALYSIS					
POLYCHLORINATED BIPHENYLS (PCB)					
Aroclor 1016/1242	<40	µg/Kg dry wt	40	EPA 8082	09/16/10
Aroclor 1221	<80	µg/Kg dry wt	80	EPA 8082	09/16/10
Aroclor 1232	<40	µg/Kg dry wt	40	EPA 8082	09/16/10
Aroclor 1248	<40	µg/Kg dry wt	40	EPA 8082	09/16/10
Aroclor 1254	85	µg/Kg dry wt	40	EPA 8082	09/16/10
Aroclor 1260	63	µg/Kg dry wt	40	EPA 8082	09/16/10
Aroclor 1262	<40	µg/Kg dry wt	40	EPA 8082	09/16/10
Aroclor 1268	<40	µg/Kg dry wt	40	EPA 8082	09/16/10
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	8520	mg/Kg dry wt	100	EPA 9060 MOD	09/22/10
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	<5.4	µg/Kg dry wt	5.4	EPA 8081A	09/26/10
4,4'-DDE	EST 5.70	µg/Kg dry wt	1	EPA 8081A	09/26/10
4,4'-DDT	61.0	µg/Kg dry wt	5	EPA 8081A	09/26/10
Aldrin	<1	µg/Kg dry wt	1	EPA 8081A	09/26/10
Alpha-BHC	<1	µg/Kg dry wt	1	EPA 8081A	09/26/10
Alpha-Chlordane	82	µg/Kg dry wt	5	EPA 8081A	09/26/10
Beta-BHC	<1.4	µg/Kg dry wt	1.4	EPA 8081A	09/26/10
Delta-BHC	<1	µg/Kg dry wt	1	EPA 8081A	09/26/10

Report Date: 10/20/10

Validated By: 



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LABORATORY ANALYSIS REPORT

Sample ID: FO105891

Sample Collected: 09/14/10 10:04

**Sample Status: COMPLETE AND
VALIDATED**

Sample Received: 09/15/10

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-18-NWLAKE2-0910
NW LAKE SOILS 0-2 IN LAKE ST @ RR TRKS
Sample Point Code: 18_21
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 2 of 2

System ID: AO08192
EID File #: 1020.001
LocCode: PORTHARI
Collected By: JJM/PTB

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%. This sample exhibited significant matrix interferences for organic analyses, causing high spike recoveries and RPDs for pesticide analysis, and raised reporting limits for PCBs.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Dieldrin	13.0	µg/Kg dry wt	1	EPA 8081A	09/26/10
Endosulfan I	<4.3	µg/Kg dry wt	4.3	EPA 8081A	09/26/10
Endosulfan II	<19	µg/Kg dry wt	19	EPA 8081A	09/26/10
Endosulfan Sulfate	<1.8	µg/Kg dry wt	1.8	EPA 8081A	09/26/10
Endrin	<1	µg/Kg dry wt	1	EPA 8081A	09/26/10
Endrin Aldehyde	<3.2	µg/Kg dry wt	3.2	EPA 8081A	09/26/10
Endrin Ketone	<1.2	µg/Kg dry wt	1.2	EPA 8081A	09/26/10
Gamma-BHC(Lindane)	<1	µg/Kg dry wt	1	EPA 8081A	09/26/10
Gamma-Chlordane	90	µg/Kg dry wt	5	EPA 8081A	09/26/10
Heptachlor	<1	µg/Kg dry wt	1	EPA 8081A	09/26/10
Heptachlor Epoxide	<1.9	µg/Kg dry wt	1.9	EPA 8081A	09/26/10
Methoxychlor	<5.9	µg/Kg dry wt	5.9	EPA 8081A	09/26/10
Toxaphene	<600	µg/Kg dry wt	600	EPA 8081A	09/26/10
POLYCHLORINATED BIPHENYL CONGENERS -PACE					
Refer to Contract Report	Completed	ng/Kg dry wt		EPA 1668 MOD	09/29/10

End of Report for Sample ID: FO105891

Report Date: 10/20/10

Validated By:



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LABORATORY ANALYSIS REPORT

Sample ID: FO105892

Sample Collected: 09/14/10 10:41
Sample Received: 09/15/10

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-18-NWLAK3-0910
NW LAKE SOILS 0-2 IN EAST OF RR TRKS
Sample Point Code: 18_22
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 1 of 2

System ID: AO08193
EID File #: 1020.001
LocCode: PORTHARI
Collected By: JJM/PTB

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. Quantification of PCB Aroclor 1254 is based on only 2 chromatographic peaks due to matrix interferences. For pesticide results flagged as estimates, results from the primary and verification columns varied by more than 40%. LAB: For PCB analysis, dilution was required due to high levels of non-target compounds, resulting in raised reporting limits.

Test Parameter	Result	Units	MRL	Method	Analysis Date
GENERAL					
TOTAL SOLIDS	92.3	% WW	0.01	SM 2540 G	09/16/10
METALS					
CADMIUM	0.71	mg/Kg dry wt	0.10	EPA 6020	09/17/10
CHROMIUM	51.0	mg/Kg dry wt	0.50	EPA 6020	09/17/10
COPPER	50.2	mg/Kg dry wt	0.25	EPA 6020	09/17/10
LEAD	148	mg/Kg dry wt	0.10	EPA 6020	09/17/10
MERCURY	0.086	mg/Kg dry wt	0.010	EPA 6020	09/17/10
NICKEL	16.9	mg/Kg dry wt	0.25	EPA 6020	09/17/10
SILVER	1.04	mg/Kg dry wt	0.10	EPA 6020	09/17/10
ZINC	264	mg/Kg dry wt	0.50	EPA 6020	09/17/10
GC ANALYSIS					
POLYCHLORINATED BIPHENYLS (PCB)					
Aroclor 1016/1242	<40	µg/Kg dry wt	40	EPA 8082	09/16/10
Aroclor 1221	<80	µg/Kg dry wt	80	EPA 8082	09/16/10
Aroclor 1232	<40	µg/Kg dry wt	40	EPA 8082	09/16/10
Aroclor 1248	<40	µg/Kg dry wt	40	EPA 8082	09/16/10
Aroclor 1254	EST 151	µg/Kg dry wt	40	EPA 8082	09/16/10
Aroclor 1260	110	µg/Kg dry wt	40	EPA 8082	09/16/10
Aroclor 1262	<40	µg/Kg dry wt	40	EPA 8082	09/16/10
Aroclor 1268	<40	µg/Kg dry wt	40	EPA 8082	09/16/10
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	12600	mg/Kg dry wt	100	EPA 9060 MOD	09/22/10
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	EST 21	µg/Kg dry wt	9.9	EPA 8081A	09/26/10
4,4'-DDE	26.0	µg/Kg dry wt	0.99	EPA 8081A	09/26/10
4,4'-DDT	140	µg/Kg dry wt	9.9	EPA 8081A	09/26/10
Aldrin	<5.5	µg/Kg dry wt	5.5	EPA 8081A	09/26/10
Alpha-BHC	<0.99	µg/Kg dry wt	0.99	EPA 8081A	09/26/10
Alpha-Chlordane	120	µg/Kg dry wt	9.9	EPA 8081A	09/26/10
Beta-BHC	<0.99	µg/Kg dry wt	0.99	EPA 8081A	09/26/10
Delta-BHC	<0.99	µg/Kg dry wt	0.99	EPA 8081A	09/26/10

Report Date: 10/20/10

Validated By:



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LABORATORY ANALYSIS REPORT

Sample ID: FO105892

Sample Collected: 09/14/10 10:41
Sample Received: 09/15/10

Sample Status: COMPLETE AND
VALIDATED

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-18-NWLAK3-0910
NW LAKE SOILS 0-2 IN EAST OF RR TRKS
Sample Point Code: 18_22
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 2 of 2

System ID: AO08193
EID File # : 1020.001
LocCode: PORTHARI
Collected By: JJM/PTB

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. Quantification of PCB Aroclor 1254 is based on only 2 chromatographic peaks due to matrix interferences. For pesticide results flagged as estimates, results from the primary and verification columns varied by more than 40%. LAB: For PCB analysis, dilution was required due to high levels of non-target compounds, resulting in raised reporting limits.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Dieldrin	21.0	µg/Kg dry wt	0.99	EPA 8081A	09/26/10
Endosulfan I	<9.9	µg/Kg dry wt	9.9	EPA 8081A	09/26/10
Endosulfan II	<21	µg/Kg dry wt	21	EPA 8081A	09/26/10
Endosulfan Sulfate	<6.1	µg/Kg dry wt	6.1	EPA 8081A	09/26/10
Endrin	<0.99	µg/Kg dry wt	0.99	EPA 8081A	09/26/10
Endrin Aldehyde	<8.7	µg/Kg dry wt	8.7	EPA 8081A	09/26/10
Endrin Ketone	<11	µg/Kg dry wt	11	EPA 8081A	09/26/10
Gamma-BHC(Lindane)	<0.99	µg/Kg dry wt	0.99	EPA 8081A	09/26/10
Gamma-Chlordane	140	µg/Kg dry wt	9.9	EPA 8081A	09/26/10
Heptachlor	<0.99	µg/Kg dry wt	0.99	EPA 8081A	09/26/10
Heptachlor Epoxide	<0.99	µg/Kg dry wt	0.99	EPA 8081A	09/26/10
Methoxychlor	<6.2	µg/Kg dry wt	6.2	EPA 8081A	09/26/10
Toxaphene	<580	µg/Kg dry wt	580	EPA 8081A	09/26/10
POLYCHLORINATED BIPHENYL CONGENERS -PACE					
Refer to Contract Report	Completed	ng/Kg dry wt		EPA 1668 MOD	09/29/10

End of Report for Sample ID: FO105892

Report Date: 10/20/10

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LABORATORY ANALYSIS REPORT

Sample ID: FO105893

Sample Collected: 09/14/10 11:18
Sample Received: 09/15/10

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-18-NWLAKE4-0910
NW LAKE SOILS 0-2 IN E END OF LAKE ST
Sample Point Code: 18_23
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 1 of 2

System ID: AO08194
EID File #: 1020.001
LocCode: PORTHARI
Collected By: JJM/PTB

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%.

Test Parameter	Result	Units	MRL	Method	Analysis Date
GENERAL					
TOTAL SOLIDS	90.2	% W/W	0.01	SM 2540 G	09/16/10
METALS					
CADMIUM	1.08	mg/Kg dry wt	0.10	EPA 6020	09/17/10
CHROMIUM	51.3	mg/Kg dry wt	0.50	EPA 6020	09/17/10
COPPER	46.6	mg/Kg dry wt	0.25	EPA 6020	09/17/10
LEAD	157	mg/Kg dry wt	0.10	EPA 6020	09/17/10
MERCURY	0.066	mg/Kg dry wt	0.010	EPA 6020	09/17/10
NICKEL	17.8	mg/Kg dry wt	0.25	EPA 6020	09/17/10
SILVER	0.44	mg/Kg dry wt	0.10	EPA 6020	09/17/10
ZINC	237	mg/Kg dry wt	0.50	EPA 6020	09/17/10
GC ANALYSIS					
POLYCHLORINATED BIPHENYLS (PCB)					
Aroclor 1016/1242	<10	µg/Kg dry wt	10	EPA 8082	09/16/10
Aroclor 1221	<20	µg/Kg dry wt	20	EPA 8082	09/16/10
Aroclor 1232	<10	µg/Kg dry wt	10	EPA 8082	09/16/10
Aroclor 1248	<10	µg/Kg dry wt	10	EPA 8082	09/16/10
Aroclor 1254	98	µg/Kg dry wt	10	EPA 8082	09/16/10
Aroclor 1260	48	µg/Kg dry wt	10	EPA 8082	09/16/10
Aroclor 1262	<10	µg/Kg dry wt	10	EPA 8082	09/16/10
Aroclor 1268	<10	µg/Kg dry wt	10	EPA 8082	09/16/10
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	20200	mg/Kg dry wt	100	EPA 9060 MOD	09/22/10
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	EST 6.20	µg/Kg dry wt	0.97	EPA 8081A	09/26/10
4,4'-DDE	EST 5.40	µg/Kg dry wt	0.97	EPA 8081A	09/26/10
4,4'-DDT	58.0	µg/Kg dry wt	4.9	EPA 8081A	09/26/10
Aldrin	<0.97	µg/Kg dry wt	0.97	EPA 8081A	09/26/10
Alpha-BHC	<0.97	µg/Kg dry wt	0.97	EPA 8081A	09/26/10
Alpha-Chlordane	17.0	µg/Kg dry wt	0.97	EPA 8081A	09/26/10
Beta-BHC	<1.2	µg/Kg dry wt	1.2	EPA 8081A	09/26/10
Delta-BHC	<0.97	µg/Kg dry wt	0.97	EPA 8081A	09/26/10
Dieldrin	7.30	µg/Kg dry wt	0.97	EPA 8081A	09/26/10

Report Date: 10/20/10

Validated By:



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LABORATORY ANALYSIS REPORT

Sample ID: FO105893

Sample Collected: 09/14/10 11:18
Sample Received: 09/15/10

Sample Status: COMPLETE AND
VALIDATED

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-18-NWLAK4-0910
NW LAKE SOILS 0-2 IN E END OF LAKE ST
Sample Point Code: 18_23
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 2 of 2

System ID: AO08194
EID File #: 1020.001
LocCode: PORTHARI
Collected By: JJM/PTB

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%.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Endosulfan I	<1.2	µg/Kg dry wt	1.2	EPA 8081A	09/26/10
Endosulfan II	<4.5	µg/Kg dry wt	4.5	EPA 8081A	09/26/10
Endosulfan Sulfate	EST 1.70	µg/Kg dry wt	0.97	EPA 8081A	09/26/10
Endrin	<0.97	µg/Kg dry wt	0.97	EPA 8081A	09/26/10
Endrin Aldehyde	<1.4	µg/Kg dry wt	1.4	EPA 8081A	09/26/10
Endrin Ketone	<6.4	µg/Kg dry wt	6.4	EPA 8081A	09/26/10
Gamma-BHC(Lindane)	<0.97	µg/Kg dry wt	0.97	EPA 8081A	09/26/10
Gamma-Chlordane	23.0	µg/Kg dry wt	0.97	EPA 8081A	09/26/10
Heptachlor	<0.97	µg/Kg dry wt	0.97	EPA 8081A	09/26/10
Heptachlor Epoxide	<0.97	µg/Kg dry wt	0.97	EPA 8081A	09/26/10
Methoxychlor	<2.5	µg/Kg dry wt	2.5	EPA 8081A	09/26/10
Toxaphene	<290	µg/Kg dry wt	290	EPA 8081A	09/26/10
POLYCHLORINATED BIPHENYL CONGENERS -PACE					
Refer to Contract Report	Completed	ng/Kg dry wt		EPA 1668 MOD	09/29/10

End of Report for Sample ID: FO105893

Report Date: 10/20/10

Validated By:



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LABORATORY ANALYSIS REPORT

Sample ID: FO105894

Sample Collected: 09/14/10 13:20

Sample Received: 09/15/10

Sample Status: COMPLETE AND
VALIDATED

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-18-ANF164-0910
2727 NW 35TH CB ON WEST SIDE OF 35TH
Sample Point Code: 18_24
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 1 of 2

System ID: AO08195
EID File #: 1020.001
LocCode: PORTHARI
Collected By: JJM/PTB

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%.

Test Parameter	Result	Units	MRL	Method	Analysis Date
GENERAL					
TOTAL SOLIDS	92.7	% W/W	0.01	SM 2540 G	09/16/10
METALS					
CADMIUM	2.47	mg/Kg dry wt	0.10	EPA 6020	09/17/10
CHROMIUM	84.7	mg/Kg dry wt	0.50	EPA 6020	09/17/10
COPPER	114	mg/Kg dry wt	0.25	EPA 6020	09/17/10
LEAD	151	mg/Kg dry wt	0.10	EPA 6020	09/17/10
MERCURY	0.075	mg/Kg dry wt	0.010	EPA 6020	09/17/10
NICKEL	41.5	mg/Kg dry wt	0.25	EPA 6020	09/17/10
SILVER	0.43	mg/Kg dry wt	0.10	EPA 6020	09/17/10
ZINC	644	mg/Kg dry wt	0.50	EPA 6020	09/17/10
GC ANALYSIS					
POLYCHLORINATED BIPHENYLS (PCB)					
Aroclor 1016/1242	<10	µg/Kg dry wt	10	EPA 8082	09/16/10
Aroclor 1221	<20	µg/Kg dry wt	20	EPA 8082	09/16/10
Aroclor 1232	<10	µg/Kg dry wt	10	EPA 8082	09/16/10
Aroclor 1248	<10	µg/Kg dry wt	10	EPA 8082	09/16/10
Aroclor 1254	112	µg/Kg dry wt	10	EPA 8082	09/16/10
Aroclor 1260	76	µg/Kg dry wt	10	EPA 8082	09/16/10
Aroclor 1262	<10	µg/Kg dry wt	10	EPA 8082	09/16/10
Aroclor 1268	<10	µg/Kg dry wt	10	EPA 8082	09/16/10
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	40300	mg/Kg dry wt	100	EPA 9060 MOD	09/22/10
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	3.50	µg/Kg dry wt	0.99	EPA 8081A	09/26/10
4,4'-DDE	EST 3.20	µg/Kg dry wt	0.99	EPA 8081A	09/26/10
4,4'-DDT	EST 20.0	µg/Kg dry wt	5	EPA 8081A	09/26/10
Aldrin	1.10	µg/Kg dry wt	0.99	EPA 8081A	09/26/10
Alpha-BHC	<0.99	µg/Kg dry wt	0.99	EPA 8081A	09/26/10
Alpha-Chlordane	5.80	µg/Kg dry wt	0.99	EPA 8081A	09/26/10
Beta-BHC	<2.9	µg/Kg dry wt	2.9	EPA 8081A	09/26/10
Delta-BHC	<0.99	µg/Kg dry wt	0.99	EPA 8081A	09/26/10
Dieldrin	<2.5	µg/Kg dry wt	2.5	EPA 8081A	09/26/10

Report Date: 10/20/10

Validated By:



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LABORATORY ANALYSIS REPORT

Sample ID: FO105894

Sample Collected: 09/14/10 13:20
Sample Received: 09/15/10

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-18-ANF164-0910
2727 NW 35TH CB ON WEST SIDE OF 35TH
Sample Point Code: 18_24
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 2 of 2

System ID: AO08195
EID File #: 1020.001
LocCode: PORTHARI
Collected By: JJM/PTB

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%.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Endosulfan I	<0.99	µg/Kg dry wt	0.99	EPA 8081A	09/26/10
Endosulfan II	<0.99	µg/Kg dry wt	0.99	EPA 8081A	09/26/10
Endosulfan Sulfate	<2	µg/Kg dry wt	2	EPA 8081A	09/26/10
Endrin	<0.99	µg/Kg dry wt	0.99	EPA 8081A	09/26/10
Endrin Aldehyde	<0.99	µg/Kg dry wt	0.99	EPA 8081A	09/26/10
Endrin Ketone	<0.99	µg/Kg dry wt	0.99	EPA 8081A	09/26/10
Gamma-BHC(Lindane)	<0.99	µg/Kg dry wt	0.99	EPA 8081A	09/26/10
Gamma-Chlordane	8.40	µg/Kg dry wt	0.99	EPA 8081A	09/26/10
Heptachlor	<0.99	µg/Kg dry wt	0.99	EPA 8081A	09/26/10
Heptachlor Epoxide	<0.99	µg/Kg dry wt	0.99	EPA 8081A	09/26/10
Methoxychlor	<2.1	µg/Kg dry wt	2.1	EPA 8081A	09/26/10
Toxaphene	<280	µg/Kg dry wt	280	EPA 8081A	09/26/10
POLYCHLORINATED BIPHENYL CONGENERS -PACE					
Refer to Contract Report	Completed	ng/Kg dry wt		EPA 1668 MOD	09/29/10

End of Report for Sample ID: FO105894

Report Date: 10/20/10

Validated By:



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LABORATORY ANALYSIS REPORT

Sample ID: FO105895

Sample Collected: 09/14/10 14:11
Sample Received: 09/15/10

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-18-ANB622-0910
3125 NW 35TH CB ON WEST SIDE OF 35TH
Sample Point Code: 18_25
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 1 of 2

System ID: AO08196
EID File #: 1020.001
LocCode: PORTHARI
Collected By: JJM/PTB

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%.

Test Parameter	Result	Units	MRL	Method	Analysis Date
GENERAL					
TOTAL SOLIDS	67.1	% W/W	0.01	SM 2540 G	09/16/10
METALS					
CADMIUM	2.12	mg/Kg dry wt	0.10	EPA 6020	09/17/10
CHROMIUM	75.0	mg/Kg dry wt	0.50	EPA 6020	09/17/10
COPPER	104	mg/Kg dry wt	0.25	EPA 6020	09/17/10
LEAD	74.4	mg/Kg dry wt	0.10	EPA 6020	09/17/10
MERCURY	0.081	mg/Kg dry wt	0.010	EPA 6020	09/17/10
NICKEL	45.2	mg/Kg dry wt	0.25	EPA 6020	09/17/10
SILVER	0.45	mg/Kg dry wt	0.10	EPA 6020	09/17/10
ZINC	872	mg/Kg dry wt	0.50	EPA 6020	09/17/10
GC ANALYSIS					
POLYCHLORINATED BIPHENYLS (PCB)					
Aroclor 1016/1242	<10	µg/Kg dry wt	10	EPA 8082	09/17/10
Aroclor 1221	<20	µg/Kg dry wt	20	EPA 8082	09/17/10
Aroclor 1232	<10	µg/Kg dry wt	10	EPA 8082	09/17/10
Aroclor 1248	<10	µg/Kg dry wt	10	EPA 8082	09/17/10
Aroclor 1254	44	µg/Kg dry wt	10	EPA 8082	09/17/10
Aroclor 1260	57	µg/Kg dry wt	10	EPA 8082	09/17/10
Aroclor 1262	<10	µg/Kg dry wt	10	EPA 8082	09/17/10
Aroclor 1268	<10	µg/Kg dry wt	10	EPA 8082	09/17/10
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	102000	mg/Kg dry wt	100	EPA 9060 MOD	09/22/10
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	EST 2.30	µg/Kg dry wt	0.97	EPA 8081A	09/26/10
4,4'-DDE	EST 2.30	µg/Kg dry wt	0.97	EPA 8081A	09/26/10
4,4'-DDT	<9.6	µg/Kg dry wt	9.6	EPA 8081A	09/26/10
Aldrin	<0.97	µg/Kg dry wt	0.97	EPA 8081A	09/26/10
Alpha-BHC	<0.97	µg/Kg dry wt	0.97	EPA 8081A	09/26/10
Alpha-Chlordane	EST 1.40	µg/Kg dry wt	0.97	EPA 8081A	09/26/10
Beta-BHC	<2.3	µg/Kg dry wt	2.3	EPA 8081A	09/26/10
Delta-BHC	<0.97	µg/Kg dry wt	0.97	EPA 8081A	09/26/10
Dieldrin	<0.97	µg/Kg dry wt	0.97	EPA 8081A	09/26/10

Report Date: 10/20/10

Validated By:



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LABORATORY ANALYSIS REPORT

Sample ID: FO105895

Sample Collected: 09/14/10 14:11
Sample Received: 09/15/10

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-18-ANB622-0910
3125 NW 35TH CB ON WEST SIDE OF 35TH
Sample Point Code: 18_25
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 2 of 2

System ID: AO08196
EID File #: 1020.001
LocCode: PORTHARI
Collected By: JJM/PTB

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%.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Endosulfan I	EST 2.90	µg/Kg dry wt	0.97	EPA 8081A	09/26/10
Endosulfan II	<2.3	µg/Kg dry wt	2.3	EPA 8081A	09/26/10
Endosulfan Sulfate	EST 2.50	µg/Kg dry wt	0.97	EPA 8081A	09/26/10
Endrin	<0.97	µg/Kg dry wt	0.97	EPA 8081A	09/26/10
Endrin Aldehyde	<0.97	µg/Kg dry wt	0.97	EPA 8081A	09/26/10
Endrin Ketone	<0.97	µg/Kg dry wt	0.97	EPA 8081A	09/26/10
Gamma-BHC(Lindane)	<1.4	µg/Kg dry wt	1.4	EPA 8081A	09/26/10
Gamma-Chlordane	EST 2.80	µg/Kg dry wt	0.97	EPA 8081A	09/26/10
Heptachlor	3.40	µg/Kg dry wt	0.97	EPA 8081A	09/26/10
Heptachlor Epoxide	<0.97	µg/Kg dry wt	0.97	EPA 8081A	09/26/10
Methoxychlor	<1.9	µg/Kg dry wt	1.9	EPA 8081A	09/26/10
Toxaphene	<140	µg/Kg dry wt	140	EPA 8081A	09/26/10
POLYCHLORINATED BIPHENYL CONGENERS -PACE					
Refer to Contract Report	Completed	ng/Kg dry wt		EPA 1668 MOD	10/06/10

End of Report for Sample ID: FO105895

Report Date: 10/20/10

Validated By:



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LABORATORY ANALYSIS REPORT

Sample ID: FO105896

Sample Collected: 09/14/10 13:51
Sample Received: 09/15/10

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-18-UNNAMEDCB-0910
2840 NW 35TH AVE
Sample Point Code: 18_26
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 1 of 2

System ID: AO08197
EID File #: 1020.001
LocCode: PORTHARI
Collected By: JJM/PTB

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%.

Test Parameter	Result	Units	MRL	Method	Analysis Date
GENERAL					
TOTAL SOLIDS	62.0	% W/W	0.01	SM 2540 G	09/16/10
METALS					
CADMIUM	1.53	mg/Kg dry wt	0.10	EPA 6020	09/17/10
CHROMIUM	180	mg/Kg dry wt	0.50	EPA 6020	09/17/10
COPPER	136	mg/Kg dry wt	0.25	EPA 6020	09/17/10
LEAD	124	mg/Kg dry wt	0.10	EPA 6020	09/17/10
MERCURY	0.077	mg/Kg dry wt	0.010	EPA 6020	09/17/10
NICKEL	52.0	mg/Kg dry wt	0.25	EPA 6020	09/17/10
SILVER	0.65	mg/Kg dry wt	0.10	EPA 6020	09/17/10
ZINC	884	mg/Kg dry wt	0.50	EPA 6020	09/17/10
GC ANALYSIS					
POLYCHLORINATED BIPHENYLS (PCB)					
Aroclor 1016/1242	<10	µg/Kg dry wt	10	EPA 8082	09/17/10
Aroclor 1221	<20	µg/Kg dry wt	20	EPA 8082	09/17/10
Aroclor 1232	<10	µg/Kg dry wt	10	EPA 8082	09/17/10
Aroclor 1248	<10	µg/Kg dry wt	10	EPA 8082	09/17/10
Aroclor 1254	29	µg/Kg dry wt	10	EPA 8082	09/17/10
Aroclor 1260	38	µg/Kg dry wt	10	EPA 8082	09/17/10
Aroclor 1262	<10	µg/Kg dry wt	10	EPA 8082	09/17/10
Aroclor 1268	<10	µg/Kg dry wt	10	EPA 8082	09/17/10
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	84000	mg/Kg dry wt	100	EPA 9060 MOD	09/22/10
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	EST 1.30	µg/Kg dry wt	0.98	EPA 8081A	09/26/10
4,4'-DDE	<1.1	µg/Kg dry wt	1.1	EPA 8081A	09/26/10
4,4'-DDT	EST 19.0	µg/Kg dry wt	0.98	EPA 8081A	09/26/10
Aldrin	<1.2	µg/Kg dry wt	1.2	EPA 8081A	09/26/10
Alpha-BHC	<0.98	µg/Kg dry wt	0.98	EPA 8081A	09/26/10
Alpha-Chlordane	EST 2.30	µg/Kg dry wt	0.98	EPA 8081A	09/26/10
Beta-BHC	<6.9	µg/Kg dry wt	6.9	EPA 8081A	09/26/10
Delta-BHC	<0.98	µg/Kg dry wt	0.98	EPA 8081A	09/26/10
Dieldrin	<0.98	µg/Kg dry wt	0.98	EPA 8081A	09/26/10

Report Date: 10/20/10

Validated By:



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LABORATORY ANALYSIS REPORT

Sample ID: FO105896

Sample Collected: 09/14/10 13:51
Sample Received: 09/15/10

Sample Status: COMPLETE AND
VALIDATED

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-18-UNNAMEDCB-0910
2840 NW 35TH AVE
Sample Point Code: 18_26
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 2 of 2

System ID: AO08197
EID File #: 1020.001
LocCode: PORTHARI
Collected By: JJM/PTB

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%.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Endosulfan I	<0.98	µg/Kg dry wt	0.98	EPA 8081A	09/26/10
Endosulfan II	<1.6	µg/Kg dry wt	1.6	EPA 8081A	09/26/10
Endosulfan Sulfate	EST 1.70	µg/Kg dry wt	0.98	EPA 8081A	09/26/10
Endrin	<0.98	µg/Kg dry wt	0.98	EPA 8081A	09/26/10
Endrin Aldehyde	<0.98	µg/Kg dry wt	0.98	EPA 8081A	09/26/10
Endrin Ketone	<0.98	µg/Kg dry wt	0.98	EPA 8081A	09/26/10
Gamma-BHC(Lindane)	<0.98	µg/Kg dry wt	0.98	EPA 8081A	09/26/10
Gamma-Chlordane	EST 3.00	µg/Kg dry wt	0.98	EPA 8081A	09/26/10
Heptachlor	16.0	µg/Kg dry wt	0.98	EPA 8081A	09/26/10
Heptachlor Epoxide	<0.98	µg/Kg dry wt	0.98	EPA 8081A	09/26/10
Methoxychlor	<0.98	µg/Kg dry wt	0.98	EPA 8081A	09/26/10
Toxaphene	<97	µg/Kg dry wt	97	EPA 8081A	09/26/10
POLYCHLORINATED BIPHENYL CONGENERS -PACE					
Refer to Contract Report	Completed	ng/Kg dry wt		EPA 1668 MOD	10/06/10

End of Report for Sample ID: FO105896

Report Date: 10/20/10

Validated By: 



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LABORATORY ANALYSIS REPORT

Sample ID: FO105897

Sample Collected: 09/14/10 14:53
Sample Received: 09/15/10

Sample Status: COMPLETE AND VALIDATED

Proj./Company Name: PORTLAND HARBOR INLINE SAMP

Report Page: Page 1 of 2

Address/Location: IL-18-ANB621-0910
3441 NW GUAM ST

System ID: AO08198

Sample Point Code: 18_27

EID File #: 1020.001

Sample Type: COMPOSITE

LocCode: PORTHARI

Sample Matrix: SEDIMENT

Collected By: JJM/PTB

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%.

Test Parameter	Result	Units	MRL	Method	Analysis Date
GENERAL					
TOTAL SOLIDS	58.7	% W/W	0.01	SM 2540 G	09/16/10
METALS					
CADMIUM	2.83	mg/Kg dry wt	0.10	EPA 6020	09/17/10
CHROMIUM	124	mg/Kg dry wt	0.50	EPA 6020	09/17/10
COPPER	129	mg/Kg dry wt	0.25	EPA 6020	09/17/10
LEAD	118	mg/Kg dry wt	0.10	EPA 6020	09/17/10
MERCURY	0.130	mg/Kg dry wt	0.010	EPA 6020	09/17/10
NICKEL	55.3	mg/Kg dry wt	0.25	EPA 6020	09/17/10
SILVER	0.64	mg/Kg dry wt	0.10	EPA 6020	09/17/10
ZINC	1317	mg/Kg dry wt	0.50	EPA 6020	09/17/10
GC ANALYSIS					
POLYCHLORINATED BIPHENYLS (PCB)					
Aroclor 1016/1242	<10	µg/Kg dry wt	10	EPA 8082	09/17/10
Aroclor 1221	<20	µg/Kg dry wt	20	EPA 8082	09/17/10
Aroclor 1232	<10	µg/Kg dry wt	10	EPA 8082	09/17/10
Aroclor 1248	<10	µg/Kg dry wt	10	EPA 8082	09/17/10
Aroclor 1254	56	µg/Kg dry wt	10	EPA 8082	09/17/10
Aroclor 1260	42	µg/Kg dry wt	10	EPA 8082	09/17/10
Aroclor 1262	<10	µg/Kg dry wt	10	EPA 8082	09/17/10
Aroclor 1268	<10	µg/Kg dry wt	10	EPA 8082	09/17/10
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	111000	mg/Kg dry wt	100	EPA 9060 MOD	09/22/10
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	<1.4	µg/Kg dry wt	1.4	EPA 8081A	09/26/10
4,4'-DDE	EST 1.30	µg/Kg dry wt	1	EPA 8081A	09/26/10
4,4'-DDT	<11	µg/Kg dry wt	11	EPA 8081A	09/26/10
Aldrin	<1	µg/Kg dry wt	1	EPA 8081A	09/26/10
Alpha-BHC	<1	µg/Kg dry wt	1	EPA 8081A	09/26/10
Alpha-Chlordane	EST 2.50	µg/Kg dry wt	1	EPA 8081A	09/26/10
Beta-BHC	<1	µg/Kg dry wt	1	EPA 8081A	09/26/10
Delta-BHC	<1	µg/Kg dry wt	1	EPA 8081A	09/26/10
Dieldrin	<1	µg/Kg dry wt	1	EPA 8081A	09/26/10

Report Date: 10/20/10

Validated By:



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LABORATORY ANALYSIS REPORT

Sample ID: FO105897

Sample Collected: 09/14/10 14:53
Sample Received: 09/15/10

Sample Status: COMPLETE AND
VALIDATED

Proj./Company Name: PORTLAND HARBOR INLINE SAMP
Address/Location: IL-18-ANB621-0910
3441 NW GUAM ST
Sample Point Code: 18_27
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

Report Page: Page 2 of 2

System ID: AO08198
EID File #: 1020.001
LocCode: PORTHARI
Collected By: JJM/PTB

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%.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Endosulfan I	<1	µg/Kg dry wt	1	EPA 8081A	09/26/10
Endosulfan II	<3.8	µg/Kg dry wt	3.8	EPA 8081A	09/26/10
Endosulfan Sulfate	3.90	µg/Kg dry wt	1	EPA 8081A	09/26/10
Endrin	<1	µg/Kg dry wt	1	EPA 8081A	09/26/10
Endrin Aldehyde	<1	µg/Kg dry wt	1	EPA 8081A	09/26/10
Endrin Ketone	<1.1	µg/Kg dry wt	1.1	EPA 8081A	09/26/10
Gamma-BHC(Lindane)	<1.6	µg/Kg dry wt	1.6	EPA 8081A	09/26/10
Gamma-Chlordane	4.80	µg/Kg dry wt	1	EPA 8081A	09/26/10
Heptachlor	3.20	µg/Kg dry wt	1	EPA 8081A	09/26/10
Heptachlor Epoxide	<1	µg/Kg dry wt	1	EPA 8081A	09/26/10
Methoxychlor	<2.8	µg/Kg dry wt	2.8	EPA 8081A	09/26/10
Toxaphene	<140	µg/Kg dry wt	140	EPA 8081A	09/26/10
POLYCHLORINATED BIPHENYL CONGENERS -PACE					
Refer to Contract Report	Completed	ng/Kg dry wt		EPA 1668 MOD	10/06/10

End of Report for Sample ID: FO105897

Report Date: 10/20/10

Validated By:



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LABORATORY ANALYSIS REPORT

Sample ID: **FO105898**

Sample Collected: 09/14/10 13:04
Sample Received: 09/15/10

Sample Status: **COMPLETE AND
VALIDATED**

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

Report Page: Page 1 of 2

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

System ID: AO08199
EID File #: 1020.001
LocCode: PORTHARI
Collected By: JJM/PTB

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
METALS					
MERCURY	<0.0020	µg/L	0.002	WPCLSOP M-10.02	09/17/10
METALS BY ICP-MS (TOTAL) - 7					
CADMIUM	<0.10	µg/L	0.1	EPA 200.8	10/02/10
CHROMIUM	<0.40	µg/L	0.4	EPA 200.8	10/02/10
COPPER	<0.20	µg/L	0.2	EPA 200.8	10/02/10
LEAD	<0.10	µg/L	0.1	EPA 200.8	10/02/10
NICKEL	<0.20	µg/L	0.2	EPA 200.8	10/02/10
SILVER	<0.10	µg/L	0.1	EPA 200.8	10/02/10
ZINC	2.00	µg/L	0.5	EPA 200.8	10/02/10
GC ANALYSIS					
POLYCHLORINATED BIPHENYLS (PCB)					
Aroclor 1016/1242	<0.025	µg/L	0.025	EPA 8082	09/30/10
Aroclor 1221	<0.050	µg/L	0.050	EPA 8082	09/30/10
Aroclor 1232	<0.025	µg/L	0.025	EPA 8082	09/30/10
Aroclor 1248	<0.025	µg/L	0.025	EPA 8082	09/30/10
Aroclor 1254	<0.025	µg/L	0.025	EPA 8082	09/30/10
Aroclor 1260	<0.025	µg/L	0.025	EPA 8082	09/30/10
Aroclor 1262	<0.025	µg/L	0.025	EPA 8082	09/30/10
Aroclor 1268	<0.025	µg/L	0.025	EPA 8082	09/30/10
OUTSIDE ANALYSIS					
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	<0.52	ng/L	0.52	EPA 8081	09/20/10
4,4'-DDE	<0.52	ng/L	0.52	EPA 8081	09/20/10
4,4'-DDT	<0.52	ng/L	0.52	EPA 8081	09/20/10
Aldrin	<0.52	ng/L	0.52	EPA 8081	09/20/10
Alpha-BHC	<0.52	ng/L	0.52	EPA 8081	09/20/10
Alpha-Chlordane	<0.52	ng/L	0.52	EPA 8081	09/20/10
Beta-BHC	<0.52	ng/L	0.52	EPA 8081	09/20/10
Delta-BHC	<0.52	ng/L	0.52	EPA 8081	09/20/10
Dieldrin	<0.52	ng/L	0.52	EPA 8081	09/20/10
Endosulfan I	<0.52	ng/L	0.52	EPA 8081	09/20/10
Endosulfan II	<0.52	ng/L	0.52	EPA 8081	09/20/10
Endosulfan Sulfate	<0.52	ng/L	0.52	EPA 8081	09/20/10

Report Date: 10/20/10

Validated By:



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LABORATORY ANALYSIS REPORT

Sample ID: FO105898

Sample Collected: 09/14/10 13:04
Sample Received: 09/15/10

Sample Status: COMPLETE AND VALIDATED

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

Report Page: Page 2 of 2

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

System ID: AO08199
EID File #: 1020.001
LocCode: PORTHARI
Collected By: JJM/PTB

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
Endrin	<0.52	ng/L	0.52	EPA 8081	09/20/10
Endrin Aldehyde	<0.52	ng/L	0.52	EPA 8081	09/20/10
Endrin Ketone	<0.52	ng/L	0.52	EPA 8081	09/20/10
Gamma-BHC(Lindane)	<0.52	ng/L	0.52	EPA 8081	09/20/10
Gamma-Chlordane	<0.52	ng/L	0.52	EPA 8081	09/20/10
Heptachlor	<0.52	ng/L	0.52	EPA 8081	09/20/10
Heptachlor Epoxide	<0.52	ng/L	0.52	EPA 8081	09/20/10
Methoxychlor	<0.52	ng/L	0.52	EPA 8081	09/20/10
Toxaphene	<45	ng/L	45	EPA 8081	09/20/10

End of Report for Sample ID: FO105898

Report Date: 10/20/10

Validated By:



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LABORATORY ANALYSIS REPORT

Sample ID: FO105899

Sample Collected: 09/14/10 00:00

**Sample Status: COMPLETE AND
VALIDATED**

Sample Received: 09/15/10

Proj./Company Name: PORTLAND HARBOR INLINE SAMP

Report Page: Page 1 of 2

Address/Location: FIELD DUPLICATE

Sample Point Code: DUP

System ID: AO08200

Sample Type: COMPOSITE

EID File #: 1020.001

Sample Matrix: SEDIMENT

LocCode: PORTHARI

Collected By: JJM/PTB

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%.

Test Parameter	Result	Units	MRL	Method	Analysis Date
GENERAL					
TOTAL SOLIDS	96.2	% W/W	0.01	SM 2540 G	09/16/10
METALS					
CADMIUM	0.89	mg/Kg dry wt	0.10	EPA 6020	09/17/10
CHROMIUM	59.7	mg/Kg dry wt	0.50	EPA 6020	09/17/10
COPPER	34.8	mg/Kg dry wt	0.25	EPA 6020	09/17/10
LEAD	94.1	mg/Kg dry wt	0.10	EPA 6020	09/17/10
MERCURY	0.048	mg/Kg dry wt	0.010	EPA 6020	09/17/10
NICKEL	26.1	mg/Kg dry wt	0.25	EPA 6020	09/17/10
SILVER	0.22	mg/Kg dry wt	0.10	EPA 6020	09/17/10
ZINC	185	mg/Kg dry wt	0.50	EPA 6020	09/17/10
GC ANALYSIS					
POLYCHLORINATED BIPHENYLS (PCB)					
Aroclor 1016/1242	<10	µg/Kg dry wt	10	EPA 8082	09/17/10
Aroclor 1221	<20	µg/Kg dry wt	20	EPA 8082	09/17/10
Aroclor 1232	<10	µg/Kg dry wt	10	EPA 8082	09/17/10
Aroclor 1248	<10	µg/Kg dry wt	10	EPA 8082	09/17/10
Aroclor 1254	151	µg/Kg dry wt	10	EPA 8082	09/17/10
Aroclor 1260	57	µg/Kg dry wt	10	EPA 8082	09/17/10
Aroclor 1262	<10	µg/Kg dry wt	10	EPA 8082	09/17/10
Aroclor 1268	<10	µg/Kg dry wt	10	EPA 8082	09/17/10
OUTSIDE ANALYSIS					
TOTAL ORGANIC CARBON	9930	mg/Kg dry wt	100	EPA 9060 MOD	09/22/10
PESTICIDES BY EPA 8081 - CAS					
4,4'-DDD	<6.9	µg/Kg dry wt	6.9	EPA 8081A	09/26/10
4,4'-DDE	EST 4.70	µg/Kg dry wt	0.97	EPA 8081A	09/26/10
4,4'-DDT	70.0	µg/Kg dry wt	4.9	EPA 8081A	09/26/10
Aldrin	<0.97	µg/Kg dry wt	0.97	EPA 8081A	09/26/10
Alpha-BHC	<0.97	µg/Kg dry wt	0.97	EPA 8081A	09/26/10
Alpha-Chlordane	60.0	µg/Kg dry wt	4.9	EPA 8081A	09/26/10
Beta-BHC	<4	µg/Kg dry wt	4	EPA 8081A	09/26/10
Delta-BHC	<0.97	µg/Kg dry wt	0.97	EPA 8081A	09/26/10
Dieldrin	13.0	µg/Kg dry wt	0.97	EPA 8081A	09/26/10

Report Date: 10/20/10

Validated By:



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



LABORATORY ANALYSIS REPORT

Sample ID: FO105899

Sample Collected: 09/14/10 00:00
Sample Received: 09/15/10

Sample Status: COMPLETE AND VALIDATED

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

Report Page: Page 2 of 2

Sample Point Code: DUP
Sample Type: COMPOSITE
Sample Matrix: SEDIMENT

System ID: AO08200
EID File #: 1020.001
LocCode: PORTHARI
Collected By: JJM/PTB

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%.

Test Parameter	Result	Units	MRL	Method	Analysis Date
Endosulfan I	<3.5	µg/Kg dry wt	3.5	EPA 8081A	09/26/10
Endosulfan II	<25	µg/Kg dry wt	25	EPA 8081A	09/26/10
Endosulfan Sulfate	<2.7	µg/Kg dry wt	2.7	EPA 8081A	09/26/10
Endrin	<0.97	µg/Kg dry wt	0.97	EPA 8081A	09/26/10
Endrin Aldehyde	<3.6	µg/Kg dry wt	3.6	EPA 8081A	09/26/10
Endrin Ketone	<0.97	µg/Kg dry wt	0.97	EPA 8081A	09/26/10
Gamma-BHC(Lindane)	<0.97	µg/Kg dry wt	0.97	EPA 8081A	09/26/10
Gamma-Chlordane	74	µg/Kg dry wt	4.9	EPA 8081A	09/26/10
Heptachlor	<0.97	µg/Kg dry wt	0.97	EPA 8081A	09/26/10
Heptachlor Epoxide	<0.97	µg/Kg dry wt	0.97	EPA 8081A	09/26/10
Methoxychlor	<4.9	µg/Kg dry wt	4.9	EPA 8081A	09/26/10
Toxaphene	<570	µg/Kg dry wt	570	EPA 8081A	09/26/10
POLYCHLORINATED BIPHENYL CONGENERS -PACE					
Refer to Contract Report	Completed	ng/Kg dry wt		EPA 1668 MOD	09/29/10

End of Report for Sample ID: FO105899

Report Date: 10/20/10

Validated By: 

October 15, 2010

Analytical Report for Service Request No: K1010183

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 September 16, 2010. For your reference, these analyses have been assigned our service request number K1010183.

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

Please call if you have any questions. My extension is 3364. You may also contact me via Email at HHolmes@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.


Howard Holmes
Project Chemist

HH/jb

Page 1 of 27

Acronyms

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

Inorganic Data Qualifiers

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

Metals Data Qualifiers

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

Organic Data Qualifiers

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

Additional Petroleum Hydrocarbon Specific Qualifiers

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

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

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

COLUMBIA ANALYTICAL SERVICES, INC.

Client: City of Portland
Project: Portland Harbor Inline Samp
Sample Matrix: Sediment & Water

Service Request No.: K1010183
Date Received: 9/16/10

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), Laboratory Control Sample (LCS), and Laboratory/Duplicate Laboratory Control Sample (LCS/DLCS).

Sample Receipt

Nine sediment & one water samples were received for analysis at Columbia Analytical Services on 9/16/10. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Organochlorine Pesticides by EPA Method 8081A

Sediment

Calibration Verification Exceptions:

The analysis of Chlorinated Pesticides by EPA 8081 requires the use of dual column confirmation. When the Continuing Calibration Verification (CCV) criterion is met for both columns, the higher of the two sample results is generally reported. The primary evaluation criteria were not met on the confirmation column for Decachlorobiphenyl in CCV 1005F029; for a few analytes in CCV 1011F004. The results were reported from the column with an acceptable CCV. The data quality was not affected. No further corrective action was necessary.

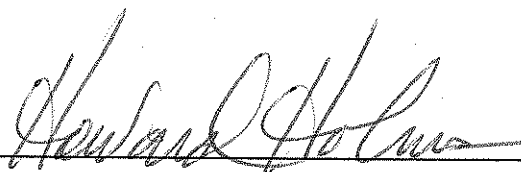
Matrix Spike Recovery Exceptions:

The control criteria for the matrix spike recovery of several analytes for sample FO 105891 was not applicable. The chromatogram indicated non-target matrix background components contributed to the reported matrix spike concentrations. Thus, the reported recoveries contained a high bias. Based on the magnitude of background contribution, the interference appeared to be minimal.

Relative Percent Difference Exceptions:

The Relative Percent Difference (RPD) for several analytes in the replicate matrix spike analyses of sample FO 105891 was outside control criteria. In general, the RPD was relatively high for all spiked compounds, which indicates a low/high bias in the Matrix Spike (MS)/Matrix Spike Duplicate (MSD). All spike recoveries in the associated Laboratory Control Sample (LCS) were within acceptance limits, indicating the analytical batch was in control. No further corrective action was appropriate.

Approved by

 Date 10-15-10

Sample Confirmation Notes:

The confirmation comparison criteria of 40% difference for one or more analytes was exceeded in all samples. The lower of the two values was reported when no evidence of a matrix interference was observed, or the higher of the two values was reported when there was an apparent problem on the alternate column that produced the higher value.

Elevated Detection Limits:

Several samples required dilution due to the presence of elevated levels of target analyte. The reporting limits were adjusted to reflect the dilution.

The detection limit was elevated for a few 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.

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

Water**Calibration Verification Exceptions:**

The analysis of Chlorinated Pesticides by EPA 8081 requires the use of dual column confirmation. When the Continuing Calibration Verification (CCV) criterion is met for both columns, the higher of the two sample results is generally reported. The primary evaluation criteria were not met on the confirmation column for Methoxychlor and Decachlorobiphenyl in CCV 0928F004. The results were reported from the column with an acceptable CCV. The data quality was not affected. No further corrective action was necessary.

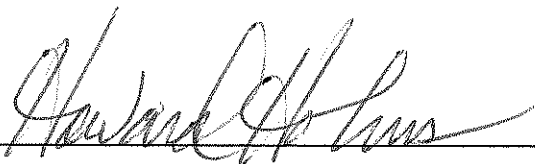
Elevated Detection Limits:

The MDL is elevated for Endosulfan II and Toxaphene in sample Method Blank KWG1010160-3. The chromatogram indicated the presence of non-target background components, which were apparently introduced as laboratory artifacts. The contamination prevented adequate resolution of the target compounds at the MDL. Note the level of background was relatively low compared to the MDL, so the affect on the results was minimal. The results are flagged to indicate the problem.

The detection limit was elevated for Endosulfan II and Toxaphene in sample FO 105898. The chromatogram indicated the presence of non-target background components. The matrix interference prevented adequate resolution of the target compounds at the normal limit. The results were flagged to indicate the matrix interference.

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

Approved by



Date

10-15-10

CHAIN OF CUSTODY

K1010183

SR#:

W101004

PAGE 1 OF 1 COC #

PROJECT NAME PORTLAND HARBOR INLINE SAMPL		PROJECT NUMBER	
PROJECT MANAGER Jennifer Shackelford		COMPANY ADDRESS City of Portland/WPCCL	
CITY/STATE/ZIP		E-MAIL ADDRESS	
PHONE #		FAX #	
SAMPLER'S SIGNATURE		DATE	
SAMPLE ID		DATE	TIME
LAB ID		MATRIX	
F0105890		9/14/10	0942
891		1004	Sediment
892		1041	1
893		1118	1
894		1320	1
895		1411	1
896		1351	1
897		1453	1
898		1304	Water
899			Sediment

REPORT REQUIREMENTS		INVOICE INFORMATION	
<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		P.O. # Bill To: Turnaround Requirements: 24 hr. _____ 48 hr. _____ 5 Day _____ Standard (10-15 working days) _____ Provide FAX Results _____	

RELINQUISHED BY:		RECEIVED BY:		RELINQUISHED BY:		RECEIVED BY:	
Signature: <i>Kene Klueh</i>		Signature: <i>[Signature]</i>		Signature: <i>[Signature]</i>		Signature: <i>[Signature]</i>	
Date/Time: 9/16/10 9:05		Date/Time: 9/16/10 9:05		Date/Time: 9/16/10 2:35		Date/Time: 9/16/10 14:25	
Firm: WPCCL		Firm: [Firm]		Firm: [Firm]		Firm: [Firm]	

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:

Please run low-level pesticides, Thanks.

NUMBER OF CONTAINERS	
Semivolatile Organics by GC/MS 625 <input type="checkbox"/> 8270 <input type="checkbox"/> 8270LL <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)	Fuel Fingerprint (FIO) <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 <input type="checkbox"/>	8081A <input 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, SO ₄ , PO ₄ , F, NO ₂ , NO ₃ , BOD, TSS, TDS (circle)	
NH ₃ -N, COD, Total-P, TKN, TOC, DOC (circle) NO ₂ +NO ₃	
TOX 9020 <input type="checkbox"/>	AOX 1650 <input type="checkbox"/> 506 <input type="checkbox"/>
REMARKS	

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC PD

Client / Project: City of Portland Service Request K10 10183

Received: 9/16/10 Opened: 9/16/10 By: DW

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

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

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

Sample ID on Bottle	Sample ID on COC	Identified by:

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

Notes, Discrepancies, & Resolutions: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Inli
Sample Matrix: Sediment

Service Request: K1010183

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
FO 105890	K1010183-001	09/14/2010	09/16/2010	09/21/2010	96.2	
FO 105891	K1010183-002	09/14/2010	09/16/2010	09/21/2010	98.2	
FO 105892	K1010183-003	09/14/2010	09/16/2010	09/21/2010	93.9	
FO 105893	K1010183-004	09/14/2010	09/16/2010	09/21/2010	90.6	
FO 105894	K1010183-005	09/14/2010	09/16/2010	09/21/2010	93.3	
FO 105895	K1010183-006	09/14/2010	09/16/2010	09/21/2010	66.2	
FO 105896	K1010183-007	09/14/2010	09/16/2010	09/21/2010	69.2	
FO 105897	K1010183-008	09/14/2010	09/16/2010	09/21/2010	59.0	
FO 105899	K1010183-010	09/14/2010	09/16/2010	09/21/2010	96.3	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Portland, City of
Project: Portland Harbor Inli
Sample Matrix: Sediment

Service Request: K1010183
Date Collected: 09/14/2010
Date Received: 09/16/2010
Date Analyzed: 09/21/2010

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
FO 105890	K1010183-001	96.2	96.7	96.5	<1	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor Inline Samp
 Sample Matrix: Sediment

Service Request: K1010183
 Date Collected: 09/14/2010
 Date Received: 09/16/2010

Organochlorine Pesticides

Sample Name: FO 105890
 Lab Code: K1010183-001
 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	Ui	1.0	0.11	1	09/26/10	10/05/10	KWG1010563	
beta-BHC	ND	Ui	1.0	0.99	1	09/26/10	10/05/10	KWG1010563	
gamma-BHC (Lindane)	ND	Ui	1.0	0.34	1	09/26/10	10/05/10	KWG1010563	
delta-BHC	ND	Ui	1.0	0.20	1	09/26/10	10/05/10	KWG1010563	
Heptachlor	ND	Ui	1.0	1.0	1	09/26/10	10/05/10	KWG1010563	
Aldrin	ND	Ui	3.0	3.0	1	09/26/10	10/05/10	KWG1010563	
Heptachlor Epoxide	ND	Ui	1.0	1.0	1	09/26/10	10/05/10	KWG1010563	
gamma-Chlordane†	74	D	5.0	0.45	5	09/26/10	10/06/10	KWG1010563	
Endosulfan I	ND	Ui	3.9	3.9	1	09/26/10	10/05/10	KWG1010563	
alpha-Chlordane	61	D	5.0	0.50	5	09/26/10	10/06/10	KWG1010563	
Dieldrin	13		1.0	0.14	1	09/26/10	10/05/10	KWG1010563	
4,4'-DDE	6.1	P	1.0	0.11	1	09/26/10	10/05/10	KWG1010563	
Endrin	ND	Ui	1.0	1.0	1	09/26/10	10/05/10	KWG1010563	
Endosulfan II	ND	Ui	22	22	1	09/26/10	10/05/10	KWG1010563	
4,4'-DDD	7.7	P	1.0	0.11	1	09/26/10	10/05/10	KWG1010563	
Endrin Aldehyde	ND	Ui	3.5	3.5	1	09/26/10	10/05/10	KWG1010563	
Endosulfan Sulfate	ND	Ui	4.0	4.0	1	09/26/10	10/05/10	KWG1010563	
4,4'-DDT	72	D	5.0	0.85	5	09/26/10	10/06/10	KWG1010563	
Endrin Ketone	ND	Ui	1.0	1.0	1	09/26/10	10/05/10	KWG1010563	
Methoxychlor	ND	Ui	5.9	5.9	1	09/26/10	10/05/10	KWG1010563	
Toxaphene	ND	Ui	420	420	1	09/26/10	10/05/10	KWG1010563	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	67	21-112	10/05/10	Acceptable
Decachlorobiphenyl	111	15-130	10/05/10	Acceptable

† Analyte Comments

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

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor Inline Samp
 Sample Matrix: Sediment

Service Request: K1010183
 Date Collected: 09/14/2010
 Date Received: 09/16/2010

Organochlorine Pesticides

Sample Name: FO 105891
 Lab Code: K1010183-002
 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	09/26/10	10/06/10	KWG1010563	
beta-BHC	ND	Ui	1.4	1.4	1	09/26/10	10/06/10	KWG1010563	
gamma-BHC (Lindane)	ND	Ui	1.0	0.37	1	09/26/10	10/06/10	KWG1010563	
delta-BHC	0.31	JP	1.0	0.074	1	09/26/10	10/06/10	KWG1010563	
Heptachlor	ND	Ui	1.0	1.0	1	09/26/10	10/06/10	KWG1010563	
Aldrin	ND	Ui	1.0	1.0	1	09/26/10	10/06/10	KWG1010563	
Heptachlor Epoxide	ND	Ui	1.9	1.9	1	09/26/10	10/06/10	KWG1010563	
gamma-Chlordane†	90	D	5.0	0.45	5	09/26/10	10/06/10	KWG1010563	
Endosulfan I	ND	Ui	4.3	4.3	1	09/26/10	10/06/10	KWG1010563	
alpha-Chlordane	82	D	5.0	0.50	5	09/26/10	10/06/10	KWG1010563	
Dieldrin	13		1.0	0.14	1	09/26/10	10/06/10	KWG1010563	
4,4'-DDE	5.7	P	1.0	0.11	1	09/26/10	10/06/10	KWG1010563	
Endrin	ND	Ui	1.0	1.0	1	09/26/10	10/06/10	KWG1010563	
Endosulfan II	ND	Ui	19	19	1	09/26/10	10/06/10	KWG1010563	
4,4'-DDD	ND	Ui	5.4	5.4	1	09/26/10	10/06/10	KWG1010563	
Endrin Aldehyde	ND	Ui	3.2	3.2	1	09/26/10	10/06/10	KWG1010563	
Endosulfan Sulfate	ND	Ui	1.8	1.8	1	09/26/10	10/06/10	KWG1010563	
4,4'-DDT	61	D	5.0	0.85	5	09/26/10	10/06/10	KWG1010563	
Endrin Ketone	ND	Ui	1.2	1.2	1	09/26/10	10/06/10	KWG1010563	
Methoxychlor	ND	Ui	5.9	5.9	1	09/26/10	10/06/10	KWG1010563	
Toxaphene	ND	Ui	600	600	1	09/26/10	10/06/10	KWG1010563	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	78	21-112	10/06/10	Acceptable
Decachlorobiphenyl	136	15-130	10/06/10	Outside Control Limits

† Analyte Comments

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

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor Inline Samp
 Sample Matrix: Sediment

Service Request: K1010183
 Date Collected: 09/14/2010
 Date Received: 09/16/2010

Organochlorine Pesticides

Sample Name: FO 105892
 Lab Code: K1010183-003
 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	Ui	0.99	0.20	1	09/26/10	10/06/10	KWG1010563	
beta-BHC	ND	Ui	0.99	0.99	1	09/26/10	10/06/10	KWG1010563	
gamma-BHC (Lindane)	ND	U	0.99	0.080	1	09/26/10	10/06/10	KWG1010563	
delta-BHC	ND	Ui	0.99	0.51	1	09/26/10	10/06/10	KWG1010563	
Heptachlor	ND	Ui	0.99	0.99	1	09/26/10	10/06/10	KWG1010563	
Aldrin	ND	Ui	5.5	5.5	1	09/26/10	10/06/10	KWG1010563	
Heptachlor Epoxide	ND	Ui	0.99	0.99	1	09/26/10	10/06/10	KWG1010563	
gamma-Chlordane†	140	D	9.9	0.90	10	09/26/10	10/08/10	KWG1010563	
Endosulfan I	ND	Ui	9.9	9.9	10	09/26/10	10/08/10	KWG1010563	
alpha-Chlordane	120	D	9.9	1.0	10	09/26/10	10/08/10	KWG1010563	
Dieldrin	21		0.99	0.14	1	09/26/10	10/06/10	KWG1010563	
4,4'-DDE	26		0.99	0.11	1	09/26/10	10/06/10	KWG1010563	
Endrin	ND	Ui	0.99	0.99	1	09/26/10	10/06/10	KWG1010563	
Endosulfan II	ND	Ui	21	21	1	09/26/10	10/06/10	KWG1010563	
4,4'-DDD	21	PD	9.9	1.1	10	09/26/10	10/08/10	KWG1010563	
Endrin Aldehyde	ND	Ui	8.7	8.7	1	09/26/10	10/06/10	KWG1010563	
Endosulfan Sulfate	ND	Ui	6.1	6.1	1	09/26/10	10/06/10	KWG1010563	
4,4'-DDT	140	D	9.9	1.7	10	09/26/10	10/08/10	KWG1010563	
Endrin Ketone	ND	Ui	11	11	1	09/26/10	10/06/10	KWG1010563	
Methoxychlor	ND	Ui	6.2	6.2	1	09/26/10	10/06/10	KWG1010563	
Toxaphene	ND	Ui	580	580	1	09/26/10	10/06/10	KWG1010563	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	78	21-112	10/06/10	Acceptable
Decachlorobiphenyl	266	15-130	10/06/10	Outside Control Limits

† Analyte Comments

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

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor Inline Samp
Sample Matrix: Sediment

Service Request: K1010183
Date Collected: 09/14/2010
Date Received: 09/16/2010

Organochlorine Pesticides

Sample Name: FO 105893
Lab Code: K1010183-004
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	Ui	0.97	0.12	1	09/26/10	10/06/10	KWG1010563	
beta-BHC	ND	Ui	1.2	1.2	1	09/26/10	10/06/10	KWG1010563	
gamma-BHC (Lindane)	ND	Ui	0.97	0.11	1	09/26/10	10/06/10	KWG1010563	
delta-BHC	ND	U	0.97	0.074	1	09/26/10	10/06/10	KWG1010563	
Heptachlor	ND	Ui	0.97	0.97	1	09/26/10	10/06/10	KWG1010563	
Aldrin	ND	Ui	0.97	0.94	1	09/26/10	10/06/10	KWG1010563	
Heptachlor Epoxide	ND	Ui	0.97	0.83	1	09/26/10	10/06/10	KWG1010563	
gamma-Chlordane†	23		0.97	0.090	1	09/26/10	10/06/10	KWG1010563	
Endosulfan I	ND	Ui	1.2	1.2	1	09/26/10	10/06/10	KWG1010563	
alpha-Chlordane	17		0.97	0.10	1	09/26/10	10/06/10	KWG1010563	
Dieldrin	7.3		0.97	0.14	1	09/26/10	10/06/10	KWG1010563	
4,4'-DDE	5.4	P	0.97	0.11	1	09/26/10	10/06/10	KWG1010563	
Endrin	ND	Ui	0.97	0.97	1	09/26/10	10/06/10	KWG1010563	
Endosulfan II	ND	Ui	4.5	4.5	1	09/26/10	10/06/10	KWG1010563	
4,4'-DDD	6.2	P	0.97	0.11	1	09/26/10	10/06/10	KWG1010563	
Endrin Aldehyde	ND	Ui	1.4	1.4	1	09/26/10	10/06/10	KWG1010563	
Endosulfan Sulfate	1.7	P	0.97	0.11	1	09/26/10	10/06/10	KWG1010563	
4,4'-DDT	58	D	4.9	0.85	5	09/26/10	10/07/10	KWG1010563	
Endrin Ketone	ND	Ui	6.4	6.4	1	09/26/10	10/06/10	KWG1010563	
Methoxychlor	ND	Ui	2.5	2.5	1	09/26/10	10/06/10	KWG1010563	
Toxaphene	ND	Ui	290	290	1	09/26/10	10/06/10	KWG1010563	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	65	21-112	10/06/10	Acceptable
Decachlorobiphenyl	92	15-130	10/06/10	Acceptable

† Analyte Comments

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

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor Inline Samp
 Sample Matrix: Sediment

Service Request: K1010183
 Date Collected: 09/14/2010
 Date Received: 09/16/2010

Organochlorine Pesticides

Sample Name: FO 105894
 Lab Code: K1010183-005
 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	Ui	0.99	0.99	1	09/26/10	10/06/10	KWG1010563	
beta-BHC	ND	Ui	2.9	2.9	1	09/26/10	10/06/10	KWG1010563	
gamma-BHC (Lindane)	ND	U	0.99	0.080	1	09/26/10	10/06/10	KWG1010563	
delta-BHC	ND	U	0.99	0.074	1	09/26/10	10/06/10	KWG1010563	
Heptachlor	0.61	JP	0.99	0.12	1	09/26/10	10/06/10	KWG1010563	
Aldrin	1.1		0.99	0.16	1	09/26/10	10/06/10	KWG1010563	
Heptachlor Epoxide	ND	Ui	0.99	0.99	1	09/26/10	10/06/10	KWG1010563	
gamma-Chlordane†	8.4		0.99	0.090	1	09/26/10	10/06/10	KWG1010563	
Endosulfan I	ND	Ui	0.99	0.99	1	09/26/10	10/06/10	KWG1010563	
alpha-Chlordane	5.8		0.99	0.10	1	09/26/10	10/06/10	KWG1010563	
Dieldrin	ND	Ui	2.5	2.5	1	09/26/10	10/06/10	KWG1010563	
4,4'-DDE	3.2	P	0.99	0.11	1	09/26/10	10/06/10	KWG1010563	
Endrin	ND	Ui	0.99	0.40	1	09/26/10	10/06/10	KWG1010563	
Endosulfan II	ND	Ui	0.99	0.99	1	09/26/10	10/06/10	KWG1010563	
4,4'-DDD	3.5		0.99	0.11	1	09/26/10	10/06/10	KWG1010563	
Endrin Aldehyde	ND	U	0.99	0.12	1	09/26/10	10/06/10	KWG1010563	
Endosulfan Sulfate	ND	Ui	2.0	2.0	1	09/26/10	10/06/10	KWG1010563	
4,4'-DDT	20	PD	5.0	0.85	5	09/26/10	10/07/10	KWG1010563	
Endrin Ketone	0.49	JP	0.99	0.093	1	09/26/10	10/06/10	KWG1010563	
Methoxychlor	ND	Ui	2.1	2.1	1	09/26/10	10/06/10	KWG1010563	
Toxaphene	ND	Ui	280	280	1	09/26/10	10/06/10	KWG1010563	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	75	21-112	10/06/10	Acceptable
Decachlorobiphenyl	127	15-130	10/06/10	Acceptable

† Analyte Comments

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

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor Inline Samp
 Sample Matrix: Sediment

Service Request: K1010183
 Date Collected: 09/14/2010
 Date Received: 09/16/2010

Organochlorine Pesticides

Sample Name: FO 105895
 Lab Code: K1010183-006
 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	Ui	0.97	0.97	1	09/26/10	10/08/10	KWG1010563	
beta-BHC	ND	Ui	2.3	2.3	1	09/26/10	10/08/10	KWG1010563	
gamma-BHC (Lindane)	ND	Ui	1.4	1.4	1	09/26/10	10/08/10	KWG1010563	
delta-BHC	ND	U	0.97	0.074	1	09/26/10	10/08/10	KWG1010563	
Heptachlor	3.4		0.97	0.12	1	09/26/10	10/08/10	KWG1010563	
Aldrin	ND	Ui	0.97	0.97	1	09/26/10	10/08/10	KWG1010563	
Heptachlor Epoxide	ND	Ui	0.97	0.97	1	09/26/10	10/08/10	KWG1010563	
gamma-Chlordane†	2.8	P	0.97	0.090	1	09/26/10	10/08/10	KWG1010563	
Endosulfan I	2.9	P	0.97	0.063	1	09/26/10	10/08/10	KWG1010563	
alpha-Chlordane	1.4	P	0.97	0.10	1	09/26/10	10/08/10	KWG1010563	
Dieldrin	ND	Ui	0.97	0.97	1	09/26/10	10/08/10	KWG1010563	
4,4'-DDE	2.3	P	0.97	0.11	1	09/26/10	10/08/10	KWG1010563	
Endrin	ND	Ui	0.97	0.18	1	09/26/10	10/08/10	KWG1010563	
Endosulfan II	ND	Ui	2.3	2.3	1	09/26/10	10/08/10	KWG1010563	
4,4'-DDD	2.3	P	0.97	0.11	1	09/26/10	10/08/10	KWG1010563	
Endrin Aldehyde	ND	Ui	0.97	0.67	1	09/26/10	10/08/10	KWG1010563	
Endosulfan Sulfate	2.5	P	0.97	0.11	1	09/26/10	10/08/10	KWG1010563	
4,4'-DDT	ND	Ui	9.6	9.6	1	09/26/10	10/08/10	KWG1010563	
Endrin Ketone	0.95	JP	0.97	0.093	1	09/26/10	10/08/10	KWG1010563	
Methoxychlor	ND	Ui	1.9	1.9	1	09/26/10	10/08/10	KWG1010563	
Toxaphene	ND	Ui	140	140	1	09/26/10	10/08/10	KWG1010563	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	79	21-112	10/08/10	Acceptable
Decachlorobiphenyl	76	15-130	10/08/10	Acceptable

† Analyte Comments

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

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor Inline Samp
 Sample Matrix: Sediment

Service Request: K1010183
 Date Collected: 09/14/2010
 Date Received: 09/16/2010

Organochlorine Pesticides

Sample Name: FO 105896
 Lab Code: K1010183-007
 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	0.98	0.11	1	09/26/10	10/08/10	KWG1010563	
beta-BHC	ND	Ui	6.9	6.9	1	09/26/10	10/08/10	KWG1010563	
gamma-BHC (Lindane)	ND	Ui	0.98	0.98	1	09/26/10	10/08/10	KWG1010563	
delta-BHC	ND	U	0.98	0.074	1	09/26/10	10/08/10	KWG1010563	
Heptachlor	16		0.98	0.12	1	09/26/10	10/08/10	KWG1010563	
Aldrin	ND	Ui	1.2	1.2	1	09/26/10	10/08/10	KWG1010563	
Heptachlor Epoxide	0.81	J	0.98	0.084	1	09/26/10	10/08/10	KWG1010563	
gamma-Chlordane†	3.0	P	0.98	0.090	1	09/26/10	10/08/10	KWG1010563	
Endosulfan I	ND	Ui	0.98	0.98	1	09/26/10	10/08/10	KWG1010563	
alpha-Chlordane	2.3	P	0.98	0.10	1	09/26/10	10/08/10	KWG1010563	
Dieldrin	ND	Ui	0.98	0.98	1	09/26/10	10/08/10	KWG1010563	
4,4'-DDE	ND	Ui	1.1	1.1	1	09/26/10	10/08/10	KWG1010563	
Endrin	ND	Ui	0.98	0.11	1	09/26/10	10/08/10	KWG1010563	
Endosulfan II	ND	Ui	1.6	1.6	1	09/26/10	10/08/10	KWG1010563	
4,4'-DDD	1.3	P	0.98	0.11	1	09/26/10	10/08/10	KWG1010563	
Endrin Aldehyde	ND	Ui	0.98	0.98	1	09/26/10	10/08/10	KWG1010563	
Endosulfan Sulfate	1.7	P	0.98	0.11	1	09/26/10	10/08/10	KWG1010563	
4,4'-DDT	19	P	0.98	0.17	1	09/26/10	10/08/10	KWG1010563	
Endrin Ketone	ND	Ui	0.98	0.98	1	09/26/10	10/08/10	KWG1010563	
Methoxychlor	ND	Ui	0.98	0.71	1	09/26/10	10/08/10	KWG1010563	
Toxaphene	ND	Ui	97	97	1	09/26/10	10/08/10	KWG1010563	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	68	21-112	10/08/10	Acceptable
Decachlorobiphenyl	95	15-130	10/08/10	Acceptable

† Analyte Comments

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

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor Inline Samp
 Sample Matrix: Sediment

Service Request: K1010183
 Date Collected: 09/14/2010
 Date Received: 09/16/2010

Organochlorine Pesticides

Sample Name: FO 105897
 Lab Code: K1010183-008
 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	Ui	1.0	0.11	1	09/26/10	10/08/10	KWG1010563	
beta-BHC	ND	Ui	1.0	1.0	1	09/26/10	10/08/10	KWG1010563	
gamma-BHC (Lindane)	ND	Ui	1.6	1.6	1	09/26/10	10/08/10	KWG1010563	
delta-BHC	ND	Ui	1.0	1.0	1	09/26/10	10/08/10	KWG1010563	
Heptachlor	3.2		1.0	0.12	1	09/26/10	10/08/10	KWG1010563	
Aldrin	0.74	JP	1.0	0.16	1	09/26/10	10/08/10	KWG1010563	
Heptachlor Epoxide	ND	Ui	1.0	0.70	1	09/26/10	10/08/10	KWG1010563	
gamma-Chlordane†	4.8		1.0	0.090	1	09/26/10	10/08/10	KWG1010563	
Endosulfan I	ND	Ui	1.0	1.0	1	09/26/10	10/08/10	KWG1010563	
alpha-Chlordane	2.5	P	1.0	0.10	1	09/26/10	10/08/10	KWG1010563	
Dieldrin	ND	Ui	1.0	1.0	1	09/26/10	10/08/10	KWG1010563	
4,4'-DDE	1.3	P	1.0	0.11	1	09/26/10	10/08/10	KWG1010563	
Endrin	ND	Ui	1.0	1.0	1	09/26/10	10/08/10	KWG1010563	
Endosulfan II	ND	Ui	3.8	3.8	1	09/26/10	10/08/10	KWG1010563	
4,4'-DDD	ND	Ui	1.4	1.4	1	09/26/10	10/08/10	KWG1010563	
Endrin Aldehyde	ND	Ui	1.0	1.0	1	09/26/10	10/08/10	KWG1010563	
Endosulfan Sulfate	3.9		1.0	0.11	1	09/26/10	10/08/10	KWG1010563	
4,4'-DDT	ND	Ui	11	11	1	09/26/10	10/08/10	KWG1010563	
Endrin Ketone	ND	Ui	1.1	1.1	1	09/26/10	10/08/10	KWG1010563	
Methoxychlor	ND	Ui	2.8	2.8	1	09/26/10	10/08/10	KWG1010563	
Toxaphene	ND	Ui	140	140	1	09/26/10	10/08/10	KWG1010563	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	84	21-112	10/08/10	Acceptable
Decachlorobiphenyl	81	15-130	10/08/10	Acceptable

† Analyte Comments

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

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor Inline Samp
 Sample Matrix: Sediment

Service Request: K1010183
 Date Collected: 09/14/2010
 Date Received: 09/16/2010

Organochlorine Pesticides

Sample Name: FO 105899
 Lab Code: K1010183-010
 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	Ui	0.97	0.14	1	09/26/10	10/06/10	KWG1010563	
beta-BHC	ND	Ui	4.0	4.0	1	09/26/10	10/06/10	KWG1010563	
gamma-BHC (Lindane)	ND	Ui	0.97	0.97	1	09/26/10	10/06/10	KWG1010563	
delta-BHC	ND	Ui	0.97	0.22	1	09/26/10	10/06/10	KWG1010563	
Heptachlor	ND	Ui	0.97	0.97	1	09/26/10	10/06/10	KWG1010563	
Aldrin	ND	Ui	0.97	0.97	1	09/26/10	10/06/10	KWG1010563	
Heptachlor Epoxide	ND	Ui	0.97	0.97	1	09/26/10	10/06/10	KWG1010563	
gamma-Chlordane†	74	D	4.9	0.45	5	09/26/10	10/07/10	KWG1010563	
Endosulfan I	ND	Ui	3.5	3.5	1	09/26/10	10/06/10	KWG1010563	
alpha-Chlordane	60	D	4.9	0.50	5	09/26/10	10/07/10	KWG1010563	
Dieldrin	13		0.97	0.14	1	09/26/10	10/06/10	KWG1010563	
4,4'-DDE	4.7	P	0.97	0.11	1	09/26/10	10/06/10	KWG1010563	
Endrin	ND	Ui	0.97	0.97	1	09/26/10	10/06/10	KWG1010563	
Endosulfan II	ND	Ui	25	25	1	09/26/10	10/06/10	KWG1010563	
4,4'-DDD	ND	Ui	6.9	6.9	1	09/26/10	10/06/10	KWG1010563	
Endrin Aldehyde	ND	Ui	3.6	3.6	1	09/26/10	10/06/10	KWG1010563	
Endosulfan Sulfate	ND	Ui	2.7	2.7	1	09/26/10	10/06/10	KWG1010563	
4,4'-DDT	70	D	4.9	0.85	5	09/26/10	10/07/10	KWG1010563	
Endrin Ketone	ND	Ui	0.97	0.97	1	09/26/10	10/06/10	KWG1010563	
Methoxychlor	ND	Ui	4.9	4.9	1	09/26/10	10/06/10	KWG1010563	
Toxaphene	ND	Ui	570	570	1	09/26/10	10/06/10	KWG1010563	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	72	21-112	10/06/10	Acceptable
Decachlorobiphenyl	94	15-130	10/06/10	Acceptable

† Analyte Comments

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

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor Inline Samp
 Sample Matrix: Sediment

Service Request: K1010183
 Date Collected: NA
 Date Received: NA

Organochlorine Pesticides

Sample Name: Method Blank
 Lab Code: KWG1010563-4
 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	0.59	0.11	1	09/26/10	10/05/10	KWG1010563	
beta-BHC	ND	U	0.59	0.18	1	09/26/10	10/05/10	KWG1010563	
gamma-BHC (Lindane)	ND	U	0.59	0.080	1	09/26/10	10/05/10	KWG1010563	
delta-BHC	ND	U	0.59	0.074	1	09/26/10	10/05/10	KWG1010563	
Heptachlor	ND	U	0.59	0.12	1	09/26/10	10/05/10	KWG1010563	
Aldrin	ND	U	0.59	0.16	1	09/26/10	10/05/10	KWG1010563	
Heptachlor Epoxide	ND	U	0.59	0.084	1	09/26/10	10/05/10	KWG1010563	
gamma-Chlordane†	ND	U	0.59	0.090	1	09/26/10	10/05/10	KWG1010563	
Endosulfan I	ND	U	0.59	0.063	1	09/26/10	10/05/10	KWG1010563	
alpha-Chlordane	ND	U	0.59	0.10	1	09/26/10	10/05/10	KWG1010563	
Dieldrin	ND	U	0.59	0.14	1	09/26/10	10/05/10	KWG1010563	
4,4'-DDE	ND	U	0.59	0.11	1	09/26/10	10/05/10	KWG1010563	
Endrin	ND	U	0.59	0.094	1	09/26/10	10/05/10	KWG1010563	
Endosulfan II	ND	U	0.59	0.14	1	09/26/10	10/05/10	KWG1010563	
4,4'-DDD	ND	U	0.59	0.11	1	09/26/10	10/05/10	KWG1010563	
Endrin Aldehyde	ND	U	0.59	0.12	1	09/26/10	10/05/10	KWG1010563	
Endosulfan Sulfate	ND	U	0.59	0.11	1	09/26/10	10/05/10	KWG1010563	
4,4'-DDT	ND	U	0.59	0.17	1	09/26/10	10/05/10	KWG1010563	
Endrin Ketone	ND	U	0.59	0.093	1	09/26/10	10/05/10	KWG1010563	
Methoxychlor	ND	U	0.59	0.19	1	09/26/10	10/05/10	KWG1010563	
Toxaphene	ND	U	30	4.8	1	09/26/10	10/05/10	KWG1010563	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	71	21-112	10/05/10	Acceptable
Decachlorobiphenyl	92	15-130	10/05/10	Acceptable

† Analyte Comments

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

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Portland, City of
Project: Portland Harbor Inline Samp
Sample Matrix: Sediment

Service Request: K1010183

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 105890	K1010183-001	67	111
FO 105891	K1010183-002	78	136 *
FO 105892	K1010183-003	78	266 *
FO 105893	K1010183-004	65	92
FO 105894	K1010183-005	75	127
FO 105895	K1010183-006	79	76
FO 105896	K1010183-007	68	95
FO 105897	K1010183-008	84	81
FO 105899	K1010183-010	72	94
Method Blank	KWG1010563-4	71	92
FO 105891MS	KWG1010563-1	79	116
FO 105891DMS	KWG1010563-2	75	120
Lab Control Sample	KWG1010563-3	65	89

Surrogate Recovery Control Limits (%)

Sur1 = Tetrachloro-m-xylene	21-112
Sur2 = Decachlorobiphenyl	15-130

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: K1010183
 Date Extracted: 09/26/2010
 Date Analyzed: 10/06/2010 -
 10/11/2010

Matrix Spike/Duplicate Matrix Spike Summary
 Organochlorine Pesticides

Sample Name: FO 105891
 Lab Code: K1010183-002
 Extraction Method: EPA 3541
 Analysis Method: 8081A

Units: ug/Kg
 Basis: Dry
 Level: Low
 Extraction Lot: KWG1010563

Analyte Name	Sample Result	FO 105891MS KWG1010563-1 Matrix Spike			FO 105891DMS KWG1010563-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
alpha-BHC	ND	16.3	19.7	83	14.7	19.9	74	23-133	10	40
beta-BHC	ND	17.8	19.7	90 #	16.0	19.9	80 #	22-142	11	40
gamma-BHC (Lindane)	ND	17.4	19.7	88	15.6	19.9	78	26-135	11	40
delta-BHC	0.31	23.6	19.7	118	16.0	19.9	79	25-148	38	40
Heptachlor	ND	18.8	19.7	95	17.2	19.9	86	21-136	9	40
Aldrin	ND	16.5	19.7	84	16.7	19.9	84	22-135	1	40
Heptachlor Epoxide	ND	27.6	19.7	140 #	15.9	19.9	80 #	25-129	54 *	40
gamma-Chlordane	90	136	19.7	233 #	103	19.9	67 #	24-133	27	40
Endosulfan I	ND	36.9	19.7	187 #	25.7	19.9	129 #	15-119	36	40
alpha-Chlordane	82	92.6	19.7	55 #	88.7	19.9	35 #	24-132	4	40
Dieldrin	13	59.1	19.7	235 *	27.4	19.9	73	26-133	73 *	40
4,4'-DDE	5.7	30.3	19.7	124	20.1	19.9	72	22-142	41 *	40
Endrin	ND	32.6	19.7	165 *	14.1	19.9	71	22-145	79 *	40
Endosulfan II	ND	62.3	19.7	316 #	18.8	19.9	94 #	13-129	107 *	40
4,4'-DDD	ND	91.9	19.7	466 #	25.4	19.9	127 #	19-143	113 *	40
Endrin Aldehyde	ND	165	19.7	835 #	28.3	19.9	142 #	10-129	141 *	40
Endosulfan Sulfate	ND	79.6	19.7	404 #	22.8	19.9	114 #	20-134	111 *	40
4,4'-DDT	61	73.2	19.7	62	85.1	19.9	121	19-154	15	40
Endrin Ketone	ND	70.1	19.7	355 #	18.3	19.9	92 #	19-139	117 *	40
Methoxychlor	ND	107	19.7	543 #	25.8	19.9	129 #	24-151	122 *	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: K1010183
 Date Extracted: 09/26/2010
 Date Analyzed: 10/05/2010

Lab Control Spike Summary
 Organochlorine Pesticides

Extraction Method: EPA 3541
 Analysis Method: 8081A

Units: ug/Kg
 Basis: Dry
 Level: Low
 Extraction Lot: KWG1010563

Analyte Name	Lab Control Sample KWG1010563-3 Lab Control Spike			%Rec Limits
	Result	Expected	%Rec	
alpha-BHC	13.3	20.0	66	36-139
beta-BHC	13.6	20.0	68	38-142
gamma-BHC (Lindane)	13.6	20.0	68	40-142
delta-BHC	14.5	20.0	73	48-145
Heptachlor	13.4	20.0	67	39-135
Aldrin	13.6	20.0	68	37-134
Heptachlor Epoxide	14.3	20.0	71	45-118
gamma-Chlordane	14.1	20.0	70	41-135
Endosulfan I	13.2	20.0	66	35-121
alpha-Chlordane	14.3	20.0	72	41-134
Dieldrin	14.8	20.0	74	46-136
4,4'-DDE	15.2	20.0	76	46-141
Endrin	14.0	20.0	70	40-152
Endosulfan II	14.4	20.0	72	39-128
4,4'-DDD	15.2	20.0	76	46-146
Endrin Aldehyde	15.0	20.0	75	32-132
Endosulfan Sulfate	15.6	20.0	78	43-138
4,4'-DDT	17.8	20.0	89	46-151
Endrin Ketone	18.4	20.0	92	47-135
Methoxychlor	17.7	20.0	89	42-147

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 Inline Samp
 Sample Matrix: Water

Service Request: K1010183
 Date Collected: 09/14/2010
 Date Received: 09/16/2010

Organochlorine Pesticides

Sample Name: FO 105898
 Lab Code: K1010183-009
 Extraction Method: EPA 3535A
 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	09/20/10	09/29/10	KWG1010160	
beta-BHC	ND	U	0.52	0.43	1	09/20/10	09/29/10	KWG1010160	
gamma-BHC (Lindane)	ND	U	0.52	0.49	1	09/20/10	09/29/10	KWG1010160	
delta-BHC	ND	U	0.52	0.15	1	09/20/10	09/29/10	KWG1010160	
Heptachlor	ND	U	0.52	0.19	1	09/20/10	09/29/10	KWG1010160	
Aldrin	ND	U	0.52	0.12	1	09/20/10	09/29/10	KWG1010160	
Heptachlor Epoxide	ND	U	0.52	0.22	1	09/20/10	09/29/10	KWG1010160	
gamma-Chlordane†	ND	U	0.52	0.32	1	09/20/10	09/29/10	KWG1010160	
Endosulfan I	ND	U	0.52	0.26	1	09/20/10	09/29/10	KWG1010160	
alpha-Chlordane	ND	U	0.52	0.28	1	09/20/10	09/29/10	KWG1010160	
Dieldrin	ND	U	0.52	0.39	1	09/20/10	09/29/10	KWG1010160	
4,4'-DDE	ND	U	0.52	0.20	1	09/20/10	09/29/10	KWG1010160	
Endrin	ND	U	0.52	0.51	1	09/20/10	09/29/10	KWG1010160	
Endosulfan II	ND	Ui	0.52	0.52	1	09/20/10	09/29/10	KWG1010160	
4,4'-DDD	ND	U	0.52	0.22	1	09/20/10	09/29/10	KWG1010160	
Endrin Aldehyde	ND	U	0.52	0.22	1	09/20/10	09/29/10	KWG1010160	
Endosulfan Sulfate	ND	U	0.52	0.29	1	09/20/10	09/29/10	KWG1010160	
4,4'-DDT	ND	U	0.52	0.18	1	09/20/10	09/29/10	KWG1010160	
Endrin Ketone	ND	U	0.52	0.33	1	09/20/10	09/29/10	KWG1010160	
Methoxychlor	ND	U	0.52	0.29	1	09/20/10	09/29/10	KWG1010160	
Toxaphene	ND	Ui	45	45	1	09/20/10	09/29/10	KWG1010160	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	96	20-102	09/29/10	Acceptable
Decachlorobiphenyl	73	35-128	09/29/10	Acceptable

† Analyte Comments

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

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
 Project: Portland Harbor Inline Samp
 Sample Matrix: Water

Service Request: K1010183
 Date Collected: NA
 Date Received: NA

Organochlorine Pesticides

Sample Name: Method Blank
 Lab Code: KWG1010160-3
 Extraction Method: EPA 3535A
 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	09/20/10	09/29/10	KWG1010160	
beta-BHC	ND	U	0.50	0.41	1	09/20/10	09/29/10	KWG1010160	
gamma-BHC (Lindane)	ND	U	0.50	0.47	1	09/20/10	09/29/10	KWG1010160	
delta-BHC	ND	U	0.50	0.14	1	09/20/10	09/29/10	KWG1010160	
Heptachlor	ND	U	0.50	0.18	1	09/20/10	09/29/10	KWG1010160	
Aldrin	ND	U	0.50	0.11	1	09/20/10	09/29/10	KWG1010160	
Heptachlor Epoxide	ND	U	0.50	0.21	1	09/20/10	09/29/10	KWG1010160	
gamma-Chlordane†	ND	U	0.50	0.31	1	09/20/10	09/29/10	KWG1010160	
Endosulfan I	ND	U	0.50	0.25	1	09/20/10	09/29/10	KWG1010160	
alpha-Chlordane	ND	U	0.50	0.27	1	09/20/10	09/29/10	KWG1010160	
Dieldrin	ND	U	0.50	0.37	1	09/20/10	09/29/10	KWG1010160	
4,4'-DDE	ND	U	0.50	0.19	1	09/20/10	09/29/10	KWG1010160	
Endrin	ND	U	0.50	0.49	1	09/20/10	09/29/10	KWG1010160	
Endosulfan II	ND	Ui	0.50	0.44	1	09/20/10	09/29/10	KWG1010160	
4,4'-DDD	ND	U	0.50	0.21	1	09/20/10	09/29/10	KWG1010160	
Endrin Aldehyde	ND	U	0.50	0.21	1	09/20/10	09/29/10	KWG1010160	
Endosulfan Sulfate	ND	U	0.50	0.28	1	09/20/10	09/29/10	KWG1010160	
4,4'-DDT	ND	U	0.50	0.17	1	09/20/10	09/29/10	KWG1010160	
Endrin Ketone	ND	U	0.50	0.32	1	09/20/10	09/29/10	KWG1010160	
Methoxychlor	ND	U	0.50	0.28	1	09/20/10	09/29/10	KWG1010160	
Toxaphene	ND	Ui	25	25	1	09/20/10	09/29/10	KWG1010160	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	86	20-102	09/29/10	Acceptable
Decachlorobiphenyl	74	35-128	09/29/10	Acceptable

† Analyte Comments

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

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Portland, City of
Project: Portland Harbor Inline Samp
Sample Matrix: Water

Service Request: K1010183

Surrogate Recovery Summary
Organochlorine Pesticides

Extraction Method: EPA 3535A
Analysis Method: 8081A

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>
FO 105898	K1010183-009	96	73
Method Blank	KWG1010160-3	86	74
Lab Control Sample	KWG1010160-1	80	77
Duplicate Lab Control Sample	KWG1010160-2	82	80

Surrogate Recovery Control Limits (%)

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

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

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

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Portland, City of
 Project: Portland Harbor Inline Samp
 Sample Matrix: Water

Service Request: K1010183
 Date Extracted: 09/20/2010
 Date Analyzed: 09/29/2010

**Lab Control Spike/Duplicate Lab Control Spike Summary
 Organochlorine Pesticides**

Extraction Method: EPA 3535A
 Analysis Method: 8081A

Units: ng/L
 Basis: NA
 Level: Low
 Extraction Lot: KWG1010160

Analyte Name	Lab Control Sample KWG1010160-1 Lab Control Spike			Duplicate Lab Control Sample KWG1010160-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
alpha-BHC	9.19	10.0	92	8.55	10.0	86	36-122	7	30
beta-BHC	8.55	10.0	86	8.78	10.0	88	42-125	3	30
gamma-BHC (Lindane)	9.01	10.0	90	8.53	10.0	85	44-117	5	30
delta-BHC	9.39	10.0	94	8.94	10.0	89	48-123	5	30
Heptachlor	7.76	10.0	78	7.29	10.0	73	40-115	6	30
Aldrin	8.12	10.0	81	7.71	10.0	77	10-102	5	30
Heptachlor Epoxide	8.27	10.0	83	7.96	10.0	80	49-109	4	30
gamma-Chlordane	7.96	10.0	80	7.66	10.0	77	47-113	4	30
Endosulfan I	8.16	10.0	82	7.75	10.0	77	35-115	5	30
alpha-Chlordane	7.77	10.0	78	7.54	10.0	75	45-115	3	30
Dieldrin	8.25	10.0	82	7.97	10.0	80	50-115	3	30
4,4'-DDE	8.95	10.0	89	8.53	10.0	85	41-116	5	30
Endrin	7.89	10.0	79	7.48	10.0	75	48-126	5	30
Endosulfan II	7.80	10.0	78	7.52	10.0	75	28-128	4	30
4,4'-DDD	7.81	10.0	78	7.25	10.0	73	33-132	7	30
Endrin Aldehyde	6.13	10.0	61	6.01	10.0	60	27-104	2	30
Endosulfan Sulfate	6.73	10.0	67	6.44	10.0	64	38-118	4	30
4,4'-DDT	8.05	10.0	81	7.79	10.0	78	42-143	3	30
Endrin Ketone	7.78	10.0	78	7.32	10.0	73	30-124	6	30
Methoxychlor	7.49	10.0	75	7.47	10.0	75	43-143	0	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.

Report Prepared for:

Darrell Auvil
Test America
9405 SW Nimbus Avenue
Beaverton OR 97008

**REPORT OF
LABORATORY
ANALYSIS
FOR PCBs**

Report Prepared Date:

October 12, 2010

Report Information:

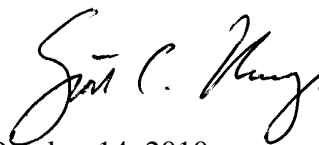
Pace Project #: 10138174
Sample Receipt Date: 09/16/2010
Client Project #: PTI0491
Client Sub PO #: N/A
State Cert #: MN200001-005

Invoicing & Reporting Options:

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

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

This report has been reviewed by:



October 14, 2010

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 nine 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 dry sample extracted.

The isotopically-labeled PCB internal standards in the sample extracts were recovered at 37-135%. With three exceptions, flagged "R" on the QC results tables, the labeled internal standard recoveries obtained for the sample extracts were within the target ranges specified in the method. Since the quantification of the native PCB congeners was based on internal standard and isotope dilution methodology, the data were automatically corrected for variation in recovery and accurate values were obtained.

In some cases, interfering substances impacted the determination of PCB congeners. The affected values were flagged "I" where incorrect isotope ratios were obtained. Also, in some cases, small amounts of congeners 15 and 144 eluted outside of the acquisition window. This resulted in slightly reduced concentrations for these congeners. However, these congeners represented a very small contribution to the overall PCB level determined.

A laboratory method blank was prepared and analyzed with each sample batch as part of our routine quality control procedures. The results show the blanks be free of PCB congeners at the reporting limits. This indicates that the sample preparation procedures did not significantly contribute to the levels determined for the field samples.

Laboratory spike samples were also prepared with each sample batch using a reference matrix that had been fortified with native standards. The results show that the spiked native compounds were recovered at 88-136% with relative percent differences of 0.0-13.2%. These results indicate high levels of accuracy and precision for these analyses. Matrix spikes were not prepared with the samples.

REPORT OF LABORATORY ANALYSIS

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Minnesota Laboratory Certifications

Authority	Certificate #	Authority	Certificate #
Alabama	40770	Montana	92
Alaska	MN00064	Nebraska	
Arizona	AZ0014	Nevada	MN000642010A
Arkansas	88-0680	New Jersey (NE	MN002
California	01155CA	New Mexico	MN00064
Colorado	MN00064	New York (NEL	11647
Connecticut	PH-0256	North Carolina	27700
EPA Region 5	WD-15J	North Dakota	R-036
EPA Region 8	8TMS-Q	Ohio	4150
Florida (NELAP	E87605	Ohio VAP	CL101
Georgia (DNR)	959	Oklahoma	D9922
Guam	09-019r	Oregon (ELAP)	MN200001-005
Hawaii	SLD	Oregon (OREL	MN200001-005
Idaho	MN00064	Pennsylvania	68-00563
Illinois	200012	Saipan	MP0003
Indiana	C-MN-01	South Carolina	74003001
Indiana	C-MN-01	Tennessee	2818
Iowa	368	Tennessee	02818
Kansas	E-10167	Texas	T104704192-08
Kentucky	90062	Utah (NELAP)	PAM
Louisiana	LA0900016	Virginia	00251
Maine	2007029	Washington	C755
Maryland	322	West Virginia	9952C
Michigan	9909	Wisconsin	999407970
Minnesota	027-053-137	Wyoming	8TMS-Q
Mississippi	MN00064		

REPORT OF LABORATORY ANALYSIS

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Report No.....10138174

Appendix A

Sample Management

COC p.1 (OF 2)

SUBCONTRACT ORDER
TestAmerica Portland
PTI0491

1130 10138174

SENDING LABORATORY:

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

RECEIVING LABORATORY:

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

needs Excel EDD

Standard TAT is requested unless specific due date is requested. => Due Date: 3 weeks Initials: jm

Analysis	Units	Expires	Comments
----------	-------	---------	----------

Sample ID: PTI0491-01 (FO105890 - Soil)

Sampled: 09/14/10 09:42

1668 Coplanar PCBs - SUB ug/l	03/13/11 09:42	coplanars only, sub to PACE
-------------------------------	----------------	-----------------------------

Containers Supplied:
4 oz. jar Amber (A)

001

Sample ID: PTI0491-02 (FO105891 - Soil)

Sampled: 09/14/10 10:04

1668 Coplanar PCBs - SUB ug/l	03/13/11 10:04	coplanars only, sub to PACE
-------------------------------	----------------	-----------------------------

Containers Supplied:
4 oz. jar Amber (A)

002

Sample ID: PTI0491-03 (FO105892 - Soil)

Sampled: 09/14/10 10:41

1668 Coplanar PCBs - SUB ug/l	03/13/11 10:41	coplanars only, sub to PACE
-------------------------------	----------------	-----------------------------

Containers Supplied:
4 oz. jar Amber (A)

003

Sample ID: PTI0491-04 (FO105893 - Soil)

Sampled: 09/14/10 11:18

1668 Coplanar PCBs - SUB ug/l	03/13/11 11:18	coplanars only, sub to PACE
-------------------------------	----------------	-----------------------------

Containers Supplied:
4 oz. jar Amber (A)

004

Sample ID: PTI0491-05 (FO105894 - Soil)

Sampled: 09/14/10 13:20

1668 Coplanar PCBs - SUB ug/l	03/13/11 13:20	coplanars only, sub to PACE
-------------------------------	----------------	-----------------------------

Containers Supplied:
4 oz. jar Amber (A)

005

Sample ID: PTI0491-06 (FO105895 - Soil)

Sampled: 09/14/10 14:11

1668 Coplanar PCBs - SUB ug/l	03/13/11 14:11	coplanars only, sub to PACE
-------------------------------	----------------	-----------------------------

Containers Supplied:
4 oz. jar Amber (A)

006

Released By

Date/Time

Received By

Date/Time

Released By

Report No.....10138174-1668A

Received By

Date/Time

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COC p. 2 (of 2)

SUBCONTRACT ORDER
TestAmerica Portland
PTI0491

10138174

Analysis	Units	Expires	Comments
Sample ID: PTI0491-07 (FO105896 - Soil)			
		Sampled: 09/14/10 13:51	
1668 Coplanar PCBs - SUB	ug/l	03/13/11 13:51	coplanars only, sub to PACE
Containers Supplied:			007
4 oz. jar Amber (A)			
Sample ID: PTI0491-08 (FO105897 - Soil)			
		Sampled: 09/14/10 14:53	
1668 Coplanar PCBs - SUB	ug/l	03/13/11 14:53	coplanars only, sub to PACE
Containers Supplied:			008
4 oz. jar Amber (A)			
Sample ID: PTI0491-09 (FO105899 - Soil)			
		Sampled: 09/14/10 00:00	
1668 Coplanar PCBs - SUB	ug/l	03/13/11 00:00	coplanars only, sub to PACE
Containers Supplied:			006
4 oz. jar Amber (A)			

Sample Condition Upon Receipt

Pace Analytical

Client Name: Test AmericaProject # 10138174Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace OtherTracking #: 417075261930Custody Seal on Cooler/Box Present: ☒ yes ☐ no Seals Intact: ☒ yes ☐ noPacking Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other Temp Blank: Yes ☒ NoThermometer Used 80344042 or 179425 Type of Ice: Wet Blue None ☐ Samples on ice, cooling process has begunCooler Temperature 2.0

Biological Tissue Is Frozen: Yes No

Temp should be above freezing to 6°C

Comments:

Date and Initials of person examining contents: 7/16/10 MSP

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 checked="" type="checkbox"/> Yes <input 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 type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>SL</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	
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: Daniell Anvil Date/Time: 9/17/10 @ 09:33

Comments/ Resolution:

- 1668-209, despite the notes on the COC.

Project Manager Review:

NALLDate: 9/16/10

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina State, Inc. F-L213Rev.00, 05Aug2009

1700 Elm Street SE, Suite 200, Minneapolis, MN 55414

Report No.....10138174_1668A

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Reporting Flags

- A = Reporting Limit based on signal to noise
- B = Less than 10x higher than method blank level
- C = Result obtained from confirmation analysis
- D = Result obtained from analysis of diluted sample
- E = Exceeds calibration range
- I = Interference present
- J = Estimated value
- Nn = Value obtained from additional analysis
- P = PCDE Interference
- R = Recovery outside target range
- S = Peak saturated
- U = Analyte not detected
- V = Result verified by confirmation analysis
- X = %D Exceeds limits
- Y = Calculated using average of daily RFs
- * = See Discussion

REPORT OF LABORATORY ANALYSIS

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Report No.....10138174

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Appendix B

Sample Analysis Summary

Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PTI0491-01 (FO105890)		
Lab Sample ID	10138174001		
Filename	P101001B_06		
Injected By	CVS		
Total Amount Extracted	11.9 g	Matrix	Solid
% Moisture	3.8	Dilution	5
Dry Weight Extracted	11.4 g	Collected	09/14/2010 09:42
ICAL ID	P101001B02	Received	09/16/2010 09:57
CCal Filename(s)	P101001B_01	Extracted	09/29/2010 14:40
Method Blank ID	BLANK-26482	Analyzed	10/01/2010 21:52

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	9.061	2.78	2.0	0.739	37
13C-4-MoCB	3	12.512	2.87	2.0	0.835	42
13C-2,2'-DiCB	4	12.847	1.75	2.0	0.924	46
13C-4,4'-DiCB	15	21.030	1.56	2.0	0.888	44
13C-2,2',6-TrCB	19	17.316	1.11	2.0	0.863	43
13C-3,4,4'-TrCB	37	29.342	1.05	2.0	1.15	57
13C-2,2',6,6'-TeCB	54	21.327	0.79	2.0	0.968	48
13C-3,4,4',5-TeCB	81	36.636	0.79	2.0	1.14	57
13C-3,3',4,4'-TeCB	77	37.223	0.79	2.0	1.15	58
13C-2,2',4,6,6'-PeCB	104	27.883	1.59	2.0	1.03	51
13C-2,3,3',4,4'-PeCB	105	40.812	1.58	2.0	0.974	49
13C-2,3,4,4',5-PeCB	114	40.124	1.58	2.0	1.01	51
13C-2,3',4,4',5-PeCB	118	39.588	1.64	2.0	0.954	48
13C-2,3',4,4',5'-PeCB	123	39.252	1.55	2.0	0.992	50
13C-3,3',4,4',5-PeCB	126	43.998	1.52	2.0	0.964	48
13C-2,2',4,4',6,6'-HxCB	155	34.104	1.22	2.0	1.36	68
13C-HxCB (156/157)	156/157	47.033	1.24	4.0	2.01	50
13C-2,3',4,4',5,5'-HxCB	167	45.842	1.23	2.0	1.11	56
13C-3,3',4,4',5,5'-HxCB	169	50.370	1.29	2.0	1.04	52
13C-2,2',3,4',5,6,6'-HpCB	188	40.057	1.04	2.0	1.37	69
13C-2,3,3',4,4',5,5'-HpCB	189	52.918	1.04	2.0	1.14	57
13C-2,2',3,3',5,5',6,6'-OxCB	202	45.507	0.89	2.0	1.33	66
13C-2,3,3',4,4',5,5',6-OxCB	205	55.914	0.93	2.0	1.20	60
13C-2,2',3,3',4,4',5,5',6-NoCB	206	58.220	0.78	2.0	1.32	66
13C-2,2',3,3',4,4',5,5',6'-NoCB	208	52.315	0.81	2.0	1.29	64
13C--DeCB	209	60.720	0.63	2.0	1.15	58
Cleanup Standards						
13C-2,4,4'-TrCB	28	24.731	1.06	2.0	1.62	81
13C-2,3,3',5,5'-PeCB	111	37.223	1.55	2.0	1.74	87
13C-2,2',3,3',5,5',6-HpCB	178	43.193	1.08	2.0	1.99	100
Recovery Standards						
13C-2,5-DiCB	9	15.758	1.62	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	26.843	0.80	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	34.372	1.57	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	42.757	1.25	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	55.246	0.88	2.0	NA	NA

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

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

Results reported on a total weight basis

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 PTI0491-01 (FO105890)
Lab Sample ID 10138174001
Filename P101001B_06

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
1		9.097	2.85	22.9	---	21.9
2		12.260	3.38	28.7	---	21.9
3		12.512	3.01	26.7	---	21.9
4		12.871	1.81	37.8	---	21.9
5		---	---	ND	---	21.9
6		16.334	1.48	23.9	---	21.9
7		---	---	ND	---	21.9
8		16.945	1.46	82.0	---	21.9
9		---	---	ND	---	21.9
10		---	---	ND	---	21.9
11		20.251	1.54	1570	---	131
12	12/13	---	---	ND	---	43.8
13	12/13	---	---	ND	---	43.8
14		---	---	ND	---	21.9
15		21.054	1.35	165	---	21.9
16		20.934	1.11	109	---	21.9
17		20.347	1.12	115	---	21.9
18	18/30	19.832	1.10	286	---	43.8
19		17.316	1.18	40.5	---	21.9
20	20/28	24.747	1.03	515	---	43.8
21	21/33	25.016	1.02	235	---	43.8
22		25.485	1.01	178	---	21.9
23		---	---	ND	---	21.9
24		---	---	ND	---	21.9
25		24.026	1.06	38.1	---	21.9
26	26/29	23.741	1.03	75.6	---	43.8
27		20.622	0.98	32.6	---	21.9
28	20/28	24.747	1.03	(515)	---	43.8
29	26/29	23.741	1.03	(75.6)	---	43.8
30	18/30	19.832	1.10	(286)	---	43.8
31		24.395	1.04	514	---	21.9
32		21.612	1.03	123	---	21.9
33	21/33	25.016	1.02	(235)	---	43.8
34		---	---	ND	---	21.9
35		28.906	0.97	44.3	---	21.9
36		---	---	ND	---	21.9
37		29.375	1.02	338	---	21.9
38		---	---	ND	---	21.9
39		---	---	ND	---	21.9
40	40/41/71	29.124	0.77	1610	---	131
41	40/41/71	29.124	0.77	(1610)	---	131
42		28.571	0.78	613	---	43.8
43	43/73	---	---	ND	---	87.5
44	44/47/65	27.984	0.77	3070	---	131
45	45/51	24.815	0.79	471	---	87.5
46		25.167	0.80	179	---	43.8
47	44/47/65	27.984	0.77	(3070)	---	131
48		27.715	0.77	295	---	43.8

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

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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 PTI0491-01 (FO105890)
Lab Sample ID 10138174001
Filename P101001B_06

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
49	49/69	27.414	0.78	1690	---	87.5
50	50/53	24.026	0.77	420	---	87.5
51	45/51	24.815	0.79	(471)	---	87.5
52		26.860	0.78	6540	---	43.8
53	50/53	24.026	0.77	(420)	---	87.5
54		---	---	ND	---	43.8
55		---	---	ND	---	43.8
56		33.283	0.78	1140	---	43.8
57		---	---	ND	---	43.8
58		---	---	ND	---	43.8
59	59/62/75	28.353	0.76	235	---	131
60		33.501	0.80	459	---	43.8
61	61/70/74/76	32.209	0.78	5070	---	175
62	59/62/75	28.353	0.76	(235)	---	131
63		31.857	0.79	73.3	---	43.8
64		29.375	0.78	1150	---	43.8
65	44/47/65	27.984	0.77	(3070)	---	131
66		32.562	0.79	2500	---	43.8
67		31.555	0.73	52.0	---	43.8
68		---	---	ND	---	43.8
69	49/69	27.414	0.78	(1690)	---	87.5
70	61/70/74/76	32.209	0.78	(5070)	---	175
71	40/41/71	29.124	0.77	(1610)	---	131
72		---	---	ND	---	43.8
73	43/73	---	---	ND	---	87.5
74	61/70/74/76	32.209	0.78	(5070)	---	175
75	59/62/75	28.353	0.76	(235)	---	131
76	61/70/74/76	32.209	0.78	(5070)	---	175
77		37.240	0.79	608	---	43.8
78		36.301	0.76	104	---	43.8
79		35.647	0.73	406	---	43.8
80		---	---	ND	---	43.8
81		---	---	ND	---	43.8
82		36.804	1.54	2180	---	43.8
83		34.876	1.52	912	---	43.8
84		32.394	1.57	4440	---	43.8
85	85/116/117	36.301	1.55	2570	---	131
86	86/87/97/108/119/125	35.630	1.56	10100	---	263
87	86/87/97/108/119/125	35.630	1.56	(10100)	---	263
88	88/91	32.159	1.54	2130	---	87.5
89		32.897	1.53	220	---	43.8
90	90/101/113	34.389	1.56	13200	---	131
91	88/91	32.159	1.54	(2130)	---	87.5
92		33.769	1.55	2680	---	43.8
93	93/98/100/102	31.606	1.54	496	---	175
94		30.717	1.52	75.8	---	43.8
95		31.220	1.57	12400	---	43.8
96		28.319	1.56	102	---	43.8

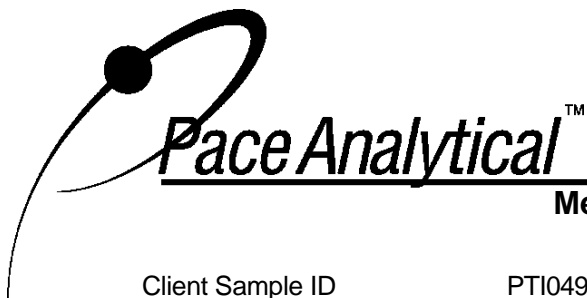
Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
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R = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

Results reported on a total weight basis

ND = Not Detected
NA = Not Applicable
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ng's = Nanograms

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PTI0491-01 (FO105890)
Lab Sample ID 10138174001
Filename P101001B_06

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
97	86/87/97/108/119/125	35.630	1.56	(10100)	---	263
98	93/98/100/102	31.606	1.54	(496)	---	175
99		35.010	1.58	5410	---	43.8
100	93/98/100/102	31.606	1.54	(496)	---	175
101	90/101/113	34.389	1.56	(13200)	---	131
102	93/98/100/102	31.606	1.54	(496)	---	175
103		30.499	1.51	63.0	---	43.8
104		---	---	ND	---	43.8
105		40.828	1.60	5050	---	43.8
106		---	---	ND	---	43.8
107	107/124	38.900	1.50	605	---	87.5
108	86/87/97/108/119/125	35.630	1.56	(10100)	---	263
109		39.152	1.49	814	---	43.8
110	110/115	36.485	1.56	18100	---	87.5
111		---	---	ND	---	43.8
112		---	---	ND	---	43.8
113	90/101/113	34.389	1.56	(13200)	---	131
114		40.158	1.40	253	---	43.8
115	110/115	36.485	1.56	(18100)	---	87.5
116	85/116/117	36.301	1.55	(2570)	---	131
117	85/116/117	36.301	1.55	(2570)	---	131
118		39.621	1.59	11100	---	43.8
119	86/87/97/108/119/125	35.630	1.56	(10100)	---	263
120		---	---	ND	---	43.8
121		---	---	ND	---	43.8
122		39.956	1.59	223	---	43.8
123		39.269	1.46	287	---	43.8
124	107/124	38.900	1.50	(605)	---	87.5
125	86/87/97/108/119/125	35.630	1.56	(10100)	---	263
126		44.065	1.53	289	---	43.8
127		42.371	1.12 I	---	73.3	43.8
128	128/166	44.065	1.24	3090	---	87.5
129	129/138/163	42.774	1.25	18500	---	131
130		42.120	1.27	1190	---	43.8
131		39.219	1.20	281	---	43.8
132		39.688	1.25	6230	---	43.8
133		40.208	1.24	215	---	43.8
134	134/143	38.581	1.28	1040	---	87.5
135	135/151	37.424	1.25	4730	---	87.5
136		34.892	1.25	2040	---	43.8
137		42.337	1.24	995	---	43.8
138	129/138/163	42.774	1.25	(18500)	---	131
139	139/140	39.001	1.25	330	---	87.5
140	139/140	39.001	1.25	(330)	---	87.5
141		41.700	1.27	2910	---	43.8
142		---	---	ND	---	43.8
143	134/143	38.581	1.28	(1040)	---	87.5
144		38.011	1.25	781	---	43.8

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Pace AnalyticalTM

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1700 Elm Street - Suite 200
Minneapolis, MN 55414

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

Client Sample ID PTI0491-01 (FO105890)
Lab Sample ID 10138174001
Filename P101001B_06

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
145		---	---	ND	---	43.8
146		40.862	1.25	2160	---	43.8
147	147/149	38.380	1.25	12300	---	87.5
148		---	---	ND	---	43.8
149	147/149	38.380	1.25	(12300)	---	87.5
150		---	---	ND	---	43.8
151	135/151	37.424	1.25	(4730)	---	87.5
152		---	---	ND	---	43.8
153	153/168	41.499	1.26	12300	---	87.5
154		37.642	1.20	128	---	43.8
155		---	---	ND	---	43.8
156	156/157	47.016	1.25	2310	---	87.5
157	156/157	47.016	1.25	(2310)	---	87.5
158		43.176	1.25	1750	---	43.8
159		45.004	1.13	163	---	43.8
160		---	---	ND	---	43.8
161		---	---	ND	---	43.8
162		45.440	1.24	149	---	43.8
163	129/138/163	42.774	1.25	(18500)	---	131
164		42.472	1.25	902	---	43.8
165		---	---	ND	---	43.8
166	128/166	44.065	1.24	(3090)	---	87.5
167		45.859	1.25	776	---	43.8
168	153/168	41.499	1.26	(12300)	---	87.5
169		---	---	ND	---	43.8
170		49.699	1.04	3430	---	43.8
171	171/173	46.077	1.04	1040	---	87.5
172		47.737	1.06	619	---	43.8
173	171/173	46.077	1.04	(1040)	---	87.5
174		44.987	1.05	2950	---	43.8
175		43.847	1.07	156	---	43.8
176		41.315	1.06	421	---	43.8
177		45.440	1.05	1840	---	43.8
178		43.209	1.04	613	---	43.8
179		40.426	1.05	1270	---	43.8
180	180/193	48.408	1.05	6840	---	87.5
181		---	---	ND	---	43.8
182		---	---	ND	---	43.8
183	183/185	44.752	1.04	2250	---	87.5
184		---	---	ND	---	43.8
185	183/185	44.752	1.04	(2250)	---	87.5
186		---	---	ND	---	43.8
187		44.132	1.05	3500	---	43.8
188		---	---	ND	---	43.8
189		52.918	1.10	154	---	43.8
190		50.252	1.06	691	---	43.8
191		48.760	1.11	145	---	43.8
192		---	---	ND	---	43.8

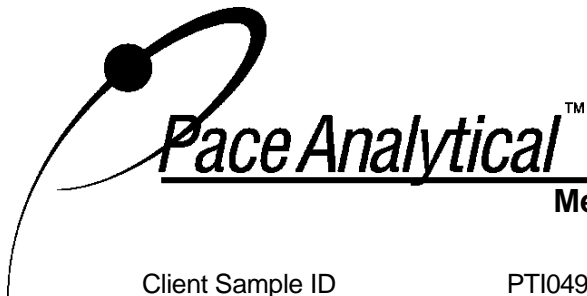
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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PTI0491-01 (FO105890)
Lab Sample ID 10138174001
Filename P101001B_06

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
193	180/193	48.408	1.05	(6840)	---	87.5
194		55.310	0.88	1450	---	65.6
195		52.638	0.89	603	---	65.6
196		51.040	0.89	866	---	65.6
197	197/200	47.485	0.90	264	---	131
198	198/199	50.386	0.89	1670	---	131
199	198/199	50.386	0.89	(1670)	---	131
200	197/200	47.485	0.90	(264)	---	131
201		46.479	0.88	203	---	65.6
202		45.540	0.88	281	---	65.6
203		51.258	0.89	987	---	65.6
204		---	---	ND	---	65.6
205		55.914	0.83	89.7	---	65.6
206		58.263	0.78	541	---	65.6
207		53.306	0.77	78.2	---	65.6
208		52.315	0.74	126	---	65.6
209		60.720	0.72	176	---	65.6

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PTI0491-01 (FO105890)
Lab Sample ID 10138174001
Filename P101001B_06

Congener Group	Concentration ng/Kg
Total Monochloro Biphenyls	78.3
Total Dichloro Biphenyls	1880
Total Trichloro Biphenyls	2640
Total Tetrachloro Biphenyls	26700
Total Pentachloro Biphenyls	93700
Total Hexachloro Biphenyls	75300
Total Heptachloro Biphenyls	25900
Total Octachloro Biphenyls	6410
Total Nonachloro Biphenyls	745
Decachloro Biphenyls	176
Total PCBs	234000

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Results reported on a total weight basis

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PTI0491-02 (FO105891)		
Lab Sample ID	10138174002		
Filename	P101001B_07		
Injected By	CVS		
Total Amount Extracted	10.6 g	Matrix	Solid
% Moisture	1.9	Dilution	5
Dry Weight Extracted	10.4 g	Collected	09/14/2010 10:04
ICAL ID	P101001B02	Received	09/16/2010 09:57
CCal Filename(s)	P101001B_01	Extracted	09/29/2010 14:40
Method Blank ID	BLANK-26482	Analyzed	10/01/2010 22:58

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	9.073	3.02	2.0	1.08	54
13C-4-MoCB	3	12.511	3.09	2.0	1.24	62
13C-2,2'-DiCB	4	12.846	1.67	2.0	1.31	66
13C-4,4'-DiCB	15	21.030	1.66	2.0	1.26	63
13C-2,2',6-TrCB	19	17.303	1.02	2.0	1.31	66
13C-3,4,4'-TrCB	37	29.343	1.07	2.0	1.59	80
13C-2,2',6,6'-TeCB	54	21.327	0.79	2.0	1.34	67
13C-3,4,4',5-TeCB	81	36.637	0.77	2.0	1.61	80
13C-3,3',4,4'-TeCB	77	37.207	0.78	2.0	1.65	83
13C-2,2',4,6,6'-PeCB	104	27.867	1.68	2.0	1.44	72
13C-2,3,3',4,4'-PeCB	105	40.813	1.57	2.0	1.40	70
13C-2,3,4,4',5-PeCB	114	40.125	1.56	2.0	1.42	71
13C-2,3',4,4',5-PeCB	118	39.588	1.56	2.0	1.37	68
13C-2,3',4,4',5'-PeCB	123	39.253	1.51	2.0	1.38	69
13C-3,3',4,4',5-PeCB	126	43.998	1.51	2.0	1.38	69
13C-2,2',4,4',6,6'-HxCB	155	34.088	1.23	2.0	1.70	85
13C-HxCB (156/157)	156/157	47.034	1.26	4.0	2.67	67
13C-2,3',4,4',5,5'-HxCB	167	45.809	1.23	2.0	1.36	68
13C-3,3',4,4',5,5'-HxCB	169	50.354	1.30	2.0	1.43	72
13C-2,2',3,4',5,6,6'-HpCB	188	40.041	1.08	2.0	1.86	93
13C-2,3,3',4,4',5,5'-HpCB	189	52.919	1.01	2.0	1.59	79
13C-2,2',3,3',5,5',6,6'-OxCB	202	45.491	0.90	2.0	1.79	90
13C-2,3,3',4,4',5,5',6-OxCB	205	55.872	0.90	2.0	1.65	83
13C-2,2',3,3',4,4',5,5',6-NoCB	206	58.222	0.77	2.0	1.77	88
13C-2,2',3,3',4,4',5,5',6-NoCB	208	52.316	0.78	2.0	1.70	85
13C--DeCB	209	60.679	0.69	2.0	1.64	82
Cleanup Standards						
13C-2,4,4'-TrCB	28	24.731	1.05	2.0	1.68	84
13C-2,3,3',5,5'-PeCB	111	37.207	1.58	2.0	1.76	88
13C-2,2',3,3',5,5',6-HpCB	178	43.177	0.99	2.0	2.03	102
Recovery Standards						
13C-2,5-DiCB	9	15.758	1.56	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	26.827	0.76	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	34.373	1.52	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	42.758	1.21	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	55.269	0.91	2.0	NA	NA

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

Client Sample ID PTI0491-02 (FO105891)
Lab Sample ID 10138174002
Filename P101001B_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
1		---	---	ND	---	24.0
2		---	---	ND	---	24.0
3		12.523	3.40	25.0	---	24.0
4		12.858	1.56	32.1	---	24.0
5		---	---	ND	---	24.0
6		---	---	ND	---	24.0
7		---	---	ND	---	24.0
8		16.944	1.34	78.8	---	24.0
9		---	---	ND	---	24.0
10		---	---	ND	---	24.0
11		20.251	1.53	1500	---	144
12	12/13	---	---	ND	---	47.9
13	12/13	---	---	ND	---	47.9
14		---	---	ND	---	24.0
15		21.042	1.36	116	---	24.0
16		20.934	1.00	65.6	---	24.0
17		20.359	1.10	71.5	---	24.0
18	18/30	19.844	1.06	168	---	47.9
19		17.315	1.16	26.1	---	24.0
20	20/28	24.748	1.03	341	---	47.9
21	21/33	25.016	1.03	157	---	47.9
22		25.469	1.08	116	---	24.0
23		---	---	ND	---	24.0
24		---	---	ND	---	24.0
25		24.027	1.05	27.8	---	24.0
26	26/29	23.742	1.01	51.0	---	47.9
27		---	---	ND	---	24.0
28	20/28	24.748	1.03	(341)	---	47.9
29	26/29	23.742	1.01	(51.0)	---	47.9
30	18/30	19.844	1.06	(168)	---	47.9
31		24.413	1.00	313	---	24.0
32		21.612	1.05	74.9	---	24.0
33	21/33	25.016	1.03	(157)	---	47.9
34		---	---	ND	---	24.0
35		28.924	0.95	36.8	---	24.0
36		---	---	ND	---	24.0
37		29.360	1.00	248	---	24.0
38		---	---	ND	---	24.0
39		---	---	ND	---	24.0
40	40/41/71	29.125	0.78	1070	---	144
41	40/41/71	29.125	0.78	(1070)	---	144
42		28.571	0.80	448	---	47.9
43	43/73	---	---	ND	---	95.9
44	44/47/65	27.985	0.77	2800	---	144
45	45/51	24.798	0.76	298	---	95.9
46		25.167	0.79	112	---	47.9
47	44/47/65	27.985	0.77	(2800)	---	144
48		27.733	0.80	190	---	47.9

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PTI0491-02 (FO105891)
Lab Sample ID 10138174002
Filename P101001B_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
49	49/69	27.414	0.77	1450	---	95.9
50	50/53	24.027	0.79	293	---	95.9
51	45/51	24.798	0.76	(298)	---	95.9
52		26.861	0.78	6830	---	47.9
53	50/53	24.027	0.79	(293)	---	95.9
54		---	---	ND	---	47.9
55		---	---	ND	---	47.9
56		33.267	0.78	927	---	47.9
57		---	---	ND	---	47.9
58		---	---	ND	---	47.9
59	59/62/75	28.353	0.78	149	---	144
60		33.502	0.78	327	---	47.9
61	61/70/74/76	32.194	0.79	4860	---	192
62	59/62/75	28.353	0.78	(149)	---	144
63		31.841	0.77	58.2	---	47.9
64		29.376	0.78	912	---	47.9
65	44/47/65	27.985	0.77	(2800)	---	144
66		32.563	0.79	2080	---	47.9
67		---	---	ND	---	47.9
68		---	---	ND	---	47.9
69	49/69	27.414	0.77	(1450)	---	95.9
70	61/70/74/76	32.194	0.79	(4860)	---	192
71	40/41/71	29.125	0.78	(1070)	---	144
72		---	---	ND	---	47.9
73	43/73	---	---	ND	---	95.9
74	61/70/74/76	32.194	0.79	(4860)	---	192
75	59/62/75	28.353	0.78	(149)	---	144
76	61/70/74/76	32.194	0.79	(4860)	---	192
77		37.241	0.79	460	---	47.9
78		---	---	ND	---	47.9
79		35.531	0.77	147	---	47.9
80		---	---	ND	---	47.9
81		---	---	ND	---	47.9
82		36.805	1.55	2040	---	47.9
83		34.877	1.58	956	---	47.9
84		32.395	1.56	4460	---	47.9
85	85/116/117	36.302	1.72	2490	---	144
86	86/87/97/108/119/125	35.631	1.56	10500	---	288
87	86/87/97/108/119/125	35.631	1.56	(10500)	---	288
88	88/91	32.160	1.56	2060	---	95.9
89		32.915	1.59	171	---	47.9
90	90/101/113	34.390	1.57	14100	---	144
91	88/91	32.160	1.56	(2060)	---	95.9
92		33.770	1.56	2840	---	47.9
93	93/98/100/102	31.607	1.61	457	---	192
94		30.735	1.59	71.3	---	47.9
95		31.221	1.57	13100	---	47.9
96		28.320	1.61	89.9	---	47.9

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PTI0491-02 (FO105891)
Lab Sample ID 10138174002
Filename P101001B_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
97	86/87/97/108/119/125	35.631	1.56	(10500)	---	288
98	93/98/100/102	31.607	1.61	(457)	---	192
99		35.011	1.56	5560	---	47.9
100	93/98/100/102	31.607	1.61	(457)	---	192
101	90/101/113	34.390	1.57	(14100)	---	144
102	93/98/100/102	31.607	1.61	(457)	---	192
103		30.500	1.53	62.4	---	47.9
104		---	---	ND	---	47.9
105		40.829	1.55	5260	---	47.9
106		---	---	ND	---	47.9
107	107/124	38.901	1.50	631	---	95.9
108	86/87/97/108/119/125	35.631	1.56	(10500)	---	288
109		39.152	1.50	855	---	47.9
110	110/115	36.470	1.55	18900	---	95.9
111		---	---	ND	---	47.9
112		---	---	ND	---	47.9
113	90/101/113	34.390	1.57	(14100)	---	144
114		40.175	1.36	282	---	47.9
115	110/115	36.470	1.55	(18900)	---	95.9
116	85/116/117	36.302	1.72	(2490)	---	144
117	85/116/117	36.302	1.72	(2490)	---	144
118		39.605	1.55	12200	---	47.9
119	86/87/97/108/119/125	35.631	1.56	(10500)	---	288
120		---	---	ND	---	47.9
121		---	---	ND	---	47.9
122		39.957	1.49	215	---	47.9
123		39.270	1.58	273	---	47.9
124	107/124	38.901	1.50	(631)	---	95.9
125	86/87/97/108/119/125	35.631	1.56	(10500)	---	288
126		44.066	1.56	272	---	47.9
127		---	---	ND	---	47.9
128	128/166	44.066	1.35	3230	---	95.9
129	129/138/163	42.774	1.26	19800	---	144
130		42.120	1.24	1300	---	47.9
131		39.203	1.23	323	---	47.9
132		39.689	1.25	6770	---	47.9
133		40.209	1.25	230	---	47.9
134	134/143	38.582	1.25	1140	---	95.9
135	135/151	37.442	1.27	5090	---	95.9
136		34.893	1.26	2230	---	47.9
137		42.338	1.22	1170	---	47.9
138	129/138/163	42.774	1.26	(19800)	---	144
139	139/140	39.002	1.26	367	---	95.9
140	139/140	39.002	1.26	(367)	---	95.9
141		41.701	1.26	2980	---	47.9
142		---	---	ND	---	47.9
143	134/143	38.582	1.25	(1140)	---	95.9
144		38.012	1.25	822	---	47.9

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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 PTI0491-02 (FO105891)
Lab Sample ID 10138174002
Filename P101001B_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
145		---	---	ND	---	47.9
146		40.863	1.24	2270	---	47.9
147	147/149	38.381	1.25	13100	---	95.9
148		---	---	ND	---	47.9
149	147/149	38.381	1.25	(13100)	---	95.9
150		---	---	ND	---	47.9
151	135/151	37.442	1.27	(5090)	---	95.9
152		---	---	ND	---	47.9
153	153/168	41.500	1.25	13000	---	95.9
154		37.677	1.25	118	---	47.9
155		---	---	ND	---	47.9
156	156/157	47.017	1.25	2500	---	95.9
157	156/157	47.017	1.25	(2500)	---	95.9
158		43.177	1.24	1900	---	47.9
159		---	---	ND	---	47.9
160		---	---	ND	---	47.9
161		---	---	ND	---	47.9
162		---	---	ND	---	47.9
163	129/138/163	42.774	1.26	(19800)	---	144
164		42.456	1.24	1170	---	47.9
165		---	---	ND	---	47.9
166	128/166	44.066	1.35	(3230)	---	95.9
167		45.860	1.24	869	---	47.9
168	153/168	41.500	1.25	(13000)	---	95.9
169		---	---	ND	---	47.9
170		49.700	1.05	3200	---	47.9
171	171/173	46.078	1.01	978	---	95.9
172		47.738	1.03	542	---	47.9
173	171/173	46.078	1.01	(978)	---	95.9
174		44.988	1.00	2690	---	47.9
175		43.848	1.02	139	---	47.9
176		41.332	1.06	387	---	47.9
177		45.440	1.03	1660	---	47.9
178		43.210	1.02	552	---	47.9
179		40.427	1.05	1150	---	47.9
180	180/193	48.409	1.03	6110	---	95.9
181		---	---	ND	---	47.9
182		---	---	ND	---	47.9
183	183/185	44.736	1.06	2050	---	95.9
184		---	---	ND	---	47.9
185	183/185	44.736	1.06	(2050)	---	95.9
186		---	---	ND	---	47.9
187		44.116	1.02	3050	---	47.9
188		---	---	ND	---	47.9
189		52.919	1.02	144	---	47.9
190		50.253	1.05	622	---	47.9
191		48.761	1.03	134	---	47.9
192		---	---	ND	---	47.9

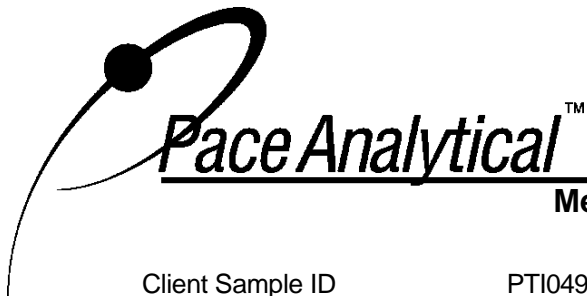
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PTI0491-02 (FO105891)
Lab Sample ID 10138174002
Filename P101001B_07

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
193	180/193	48.409	1.03	(6110)	---	95.9
194		55.312	0.89	1270	---	71.9
195		52.617	0.88	533	---	71.9
196		51.041	0.89	757	---	71.9
197	197/200	47.503	0.89	235	---	144
198	198/199	50.371	0.91	1510	---	144
199	198/199	50.371	0.91	(1510)	---	144
200	197/200	47.503	0.89	(235)	---	144
201		46.463	0.93	179	---	71.9
202		45.524	0.89	254	---	71.9
203		51.243	0.90	930	---	71.9
204		---	---	ND	---	71.9
205		55.937	0.90	78.8	---	71.9
206		58.243	0.78	614	---	71.9
207		53.329	0.79	82.6	---	71.9
208		52.337	0.79	152	---	71.9
209		60.722	0.69	196	---	71.9

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PTI0491-02 (FO105891)
Lab Sample ID 10138174002
Filename P101001B_07

Congener Group	Concentration ng/Kg
Total Monochloro Biphenyls	25.0
Total Dichloro Biphenyls	1730
Total Trichloro Biphenyls	1700
Total Tetrachloro Biphenyls	23400
Total Pentachloro Biphenyls	97800
Total Hexachloro Biphenyls	80400
Total Heptachloro Biphenyls	23400
Total Octachloro Biphenyls	5750
Total Nonachloro Biphenyls	849
Decachloro Biphenyls	196
Total PCBs	235000

ND = Not Detected

Results reported on a total weight basis

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PTI0491-03 (FO105892)		
Lab Sample ID	10138174003		
Filename	P101001B_08		
Injected By	CVS		
Total Amount Extracted	11.0 g	Matrix	Solid
% Moisture	7.7	Dilution	5
Dry Weight Extracted	10.1 g	Collected	09/14/2010 10:41
ICAL ID	P101001B02	Received	09/16/2010 09:57
CCal Filename(s)	P101001B_01	Extracted	09/29/2010 14:40
Method Blank ID	BLANK-26482	Analyzed	10/02/2010 00:03

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	9.061	3.19	2.0	0.888	44
13C-4-MoCB	3	12.487	2.89	2.0	1.03	52
13C-2,2'-DiCB	4	12.835	1.62	2.0	1.12	56
13C-4,4'-DiCB	15	21.018	1.62	2.0	1.07	54
13C-2,2',6-TrCB	19	17.292	1.15	2.0	1.03	52
13C-3,4,4'-TrCB	37	29.326	1.10	2.0	1.47	74
13C-2,2',6,6'-TeCB	54	21.311	0.82	2.0	1.18	59
13C-3,4,4',5-TeCB	81	36.603	0.81	2.0	1.41	71
13C-3,3',4,4'-TeCB	77	37.190	0.80	2.0	1.47	74
13C-2,2',4,6,6'-PeCB	104	27.850	1.46	2.0	1.21	61
13C-2,3,3',4,4'-PeCB	105	40.778	1.53	2.0	1.22	61
13C-2,3,4,4',5-PeCB	114	40.124	1.56	2.0	1.24	62
13C-2,3',4,4',5-PeCB	118	39.571	1.59	2.0	1.24	62
13C-2,3',4,4',5'-PeCB	123	39.236	1.55	2.0	1.23	61
13C-3,3',4,4',5-PeCB	126	43.981	1.49	2.0	1.28	64
13C-2,2',4,4',6,6'-HxCB	155	34.071	1.25	2.0	1.50	75
13C-HxCB (156/157)	156/157	46.999	1.28	4.0	2.53	63
13C-2,3',4,4',5,5'-HxCB	167	45.825	1.24	2.0	1.27	63
13C-3,3',4,4',5,5'-HxCB	169	50.336	1.26	2.0	1.30	65
13C-2,2',3,4',5,6,6'-HpCB	188	40.024	1.05	2.0	1.60	80
13C-2,3,3',4,4',5,5'-HpCB	189	52.897	1.03	2.0	1.38	69
13C-2,2',3,3',5,5',6'-OxCB	202	45.490	0.88	2.0	1.48	74
13C-2,3,3',4,4',5,5',6-OxCB	205	55.871	0.92	2.0	1.44	72
13C-2,2',3,3',4,4',5,5',6-NoCB	206	58.199	0.84	2.0	1.56	78
13C-2,2',3,3',4,4',5,5',6'-NoCB	208	52.293	0.84	2.0	1.47	74
13C--DeCB	209	60.634	0.72	2.0	1.32	66
Cleanup Standards						
13C-2,4,4'-TrCB	28	24.698	1.06	2.0	1.57	79
13C-2,3,3',5,5'-PeCB	111	37.190	1.57	2.0	1.71	85
13C-2,2',3,3',5,5',6-HpCB	178	43.176	1.04	2.0	1.95	97
Recovery Standards						
13C-2,5-DiCB	9	15.746	1.53	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	26.827	0.77	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	34.356	1.62	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	42.723	1.29	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	55.246	0.91	2.0	NA	NA

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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 PTI0491-03 (FO105892)
Lab Sample ID 10138174003
Filename P101001B_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
1		---	---	ND	---	24.7
2		12.247	3.02	26.4	---	24.7
3		12.523	2.96	28.0	---	24.7
4		12.859	1.60	51.3	---	24.7
5		---	---	ND	---	24.7
6		---	---	ND	---	24.7
7		---	---	ND	---	24.7
8		16.944	1.58	94.3	---	24.7
9		---	---	ND	---	24.7
10		---	---	ND	---	24.7
11		20.227	1.51	1890	---	148
12	12/13	---	---	ND	---	49.4
13	12/13	---	---	ND	---	49.4
14		---	---	ND	---	24.7
15		21.042	1.55	180	---	24.7
16		20.934	1.01	105	---	24.7
17		20.335	1.05	113	---	24.7
18	18/30	19.820	1.04	265	---	49.4
19		17.316	1.11	43.8	---	24.7
20	20/28	24.731	1.03	547	---	49.4
21	21/33	24.999	1.09	230	---	49.4
22		25.469	1.04	185	---	24.7
23		---	---	ND	---	24.7
24		---	---	ND	---	24.7
25		24.010	1.04	40.7	---	24.7
26	26/29	23.708	0.99	79.9	---	49.4
27		20.611	1.06	31.3	---	24.7
28	20/28	24.731	1.03	(547)	---	49.4
29	26/29	23.708	0.99	(79.9)	---	49.4
30	18/30	19.820	1.04	(265)	---	49.4
31		24.379	1.05	523	---	24.7
32		21.596	1.02	148	---	24.7
33	21/33	24.999	1.09	(230)	---	49.4
34		---	---	ND	---	24.7
35		28.873	1.10	48.6	---	24.7
36		---	---	ND	---	24.7
37		29.342	1.03	393	---	24.7
38		---	---	ND	---	24.7
39		---	---	ND	---	24.7
40	40/41/71	29.124	0.78	2540	---	148
41	40/41/71	29.124	0.78	(2540)	---	148
42		28.571	0.78	1050	---	49.4
43	43/73	---	---	ND	---	98.8
44	44/47/65	27.967	0.78	5260	---	148
45	45/51	24.798	0.79	552	---	98.8
46		25.184	0.80	198	---	49.4
47	44/47/65	27.967	0.78	(5260)	---	148
48		27.699	0.76	399	---	49.4

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PTI0491-03 (FO105892)
Lab Sample ID 10138174003
Filename P101001B_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
49	49/69	27.414	0.79	2750	---	98.8
50	50/53	24.010	0.78	485	---	98.8
51	45/51	24.798	0.79	(552)	---	98.8
52		26.844	0.78	11600	---	49.4
53	50/53	24.010	0.78	(485)	---	98.8
54		---	---	ND	---	49.4
55		---	---	ND	---	49.4
56		33.266	0.79	2090	---	49.4
57		---	---	ND	---	49.4
58		---	---	ND	---	49.4
59	59/62/75	28.336	0.79	336	---	148
60		33.501	0.78	589	---	49.4
61	61/70/74/76	32.176	0.78	8750	---	198
62	59/62/75	28.336	0.79	(336)	---	148
63		31.841	0.77	109	---	49.4
64		29.359	0.78	2230	---	49.4
65	44/47/65	27.967	0.78	(5260)	---	148
66		32.545	0.78	4320	---	49.4
67		31.556	0.73	71.9	---	49.4
68		---	---	ND	---	49.4
69	49/69	27.414	0.79	(2750)	---	98.8
70	61/70/74/76	32.176	0.78	(8750)	---	198
71	40/41/71	29.124	0.78	(2540)	---	148
72		---	---	ND	---	49.4
73	43/73	---	---	ND	---	98.8
74	61/70/74/76	32.176	0.78	(8750)	---	198
75	59/62/75	28.336	0.79	(336)	---	148
76	61/70/74/76	32.176	0.78	(8750)	---	198
77		37.223	0.77	826	---	49.4
78		36.301	0.76	180	---	49.4
79		35.614	0.75	681	---	49.4
80		---	---	ND	---	49.4
81		---	---	ND	---	49.4
82		36.787	1.55	3610	---	49.4
83		34.859	1.69	1470	---	49.4
84		32.377	1.56	7030	---	49.4
85	85/116/117	36.284	1.55	4480	---	148
86	86/87/97/108/119/125	35.630	1.56	17300	---	296
87	86/87/97/108/119/125	35.630	1.56	(17300)	---	296
88	88/91	32.143	1.57	3570	---	98.8
89		32.897	1.60	303	---	49.4
90	90/101/113	34.373	1.57	22800	---	148
91	88/91	32.143	1.57	(3570)	---	98.8
92		33.752	1.57	4630	---	49.4
93	93/98/100/102	31.589	1.57	817	---	198
94		30.717	1.58	118	---	49.4
95		31.204	1.57	20200	---	49.4
96		28.303	1.53	179	---	49.4

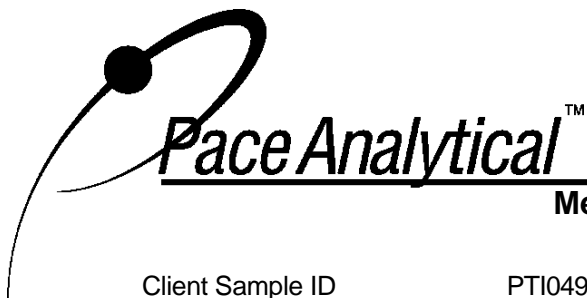
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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PTI0491-03 (FO105892)
Lab Sample ID 10138174003
Filename P101001B_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
97	86/87/97/108/119/125	35.630	1.56	(17300)	---	296
98	93/98/100/102	31.589	1.57	(817)	---	198
99		34.993	1.57	9760	---	49.4
100	93/98/100/102	31.589	1.57	(817)	---	198
101	90/101/113	34.373	1.57	(22800)	---	148
102	93/98/100/102	31.589	1.57	(817)	---	198
103		30.483	1.56	96.0	---	49.4
104		---	---	ND	---	49.4
105		40.812	1.55	9100	---	49.4
106		---	---	ND	---	49.4
107	107/124	38.883	1.53	1030	---	98.8
108	86/87/97/108/119/125	35.630	1.56	(17300)	---	296
109		39.135	1.55	1320	---	49.4
110	110/115	36.469	1.57	31200	---	98.8
111		---	---	ND	---	49.4
112		---	---	ND	---	49.4
113	90/101/113	34.373	1.57	(22800)	---	148
114		40.141	1.47	409	---	49.4
115	110/115	36.469	1.57	(31200)	---	98.8
116	85/116/117	36.284	1.55	(4480)	---	148
117	85/116/117	36.284	1.55	(4480)	---	148
118		39.604	1.55	19700	---	49.4
119	86/87/97/108/119/125	35.630	1.56	(17300)	---	296
120		---	---	ND	---	49.4
121		---	---	ND	---	49.4
122		39.940	1.54	374	---	49.4
123		39.252	1.52	605	---	49.4
124	107/124	38.883	1.53	(1030)	---	98.8
125	86/87/97/108/119/125	35.630	1.56	(17300)	---	296
126		43.981	1.82 I	---	75.9	49.4
127		42.338	1.30 I	---	61.2	49.4
128	128/166	44.048	1.25	4870	---	98.8
129	129/138/163	42.757	1.26	30000	---	148
130		42.103	1.24	1880	---	49.4
131		39.202	1.25	458	---	49.4
132		39.671	1.25	10100	---	49.4
133		40.191	1.26	329	---	49.4
134	134/143	38.565	1.25	1700	---	98.8
135	135/151	37.408	1.26	7990	---	98.8
136		34.876	1.27	3450	---	49.4
137		42.304	1.25	1360	---	49.4
138	129/138/163	42.757	1.26	(30000)	---	148
139	139/140	38.984	1.23	520	---	98.8
140	139/140	38.984	1.23	(520)	---	98.8
141		41.684	1.26	4790	---	49.4
142		---	---	ND	---	49.4
143	134/143	38.565	1.25	(1700)	---	98.8
144		37.995	1.27	1290	---	49.4

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PTI0491-03 (FO105892)
Lab Sample ID 10138174003
Filename P101001B_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
145		---	---	ND	---	49.4
146		40.862	1.26	3450	---	49.4
147	147/149	38.364	1.26	20200	---	98.8
148		---	---	ND	---	49.4
149	147/149	38.364	1.26	(20200)	---	98.8
150		---	---	ND	---	49.4
151	135/151	37.408	1.26	(7990)	---	98.8
152		---	---	ND	---	49.4
153	153/168	41.482	1.26	20700	---	98.8
154		37.659	1.30	171	---	49.4
155		---	---	ND	---	49.4
156	156/157	46.999	1.26	3640	---	98.8
157	156/157	46.999	1.26	(3640)	---	98.8
158		43.159	1.26	2860	---	49.4
159		---	---	ND	---	49.4
160		---	---	ND	---	49.4
161		---	---	ND	---	49.4
162		45.322	1.21	67.7	---	49.4
163	129/138/163	42.757	1.26	(30000)	---	148
164		42.455	1.27	1900	---	49.4
165		---	---	ND	---	49.4
166	128/166	44.048	1.25	(4870)	---	98.8
167		45.842	1.24	1260	---	49.4
168	153/168	41.482	1.26	(20700)	---	98.8
169		---	---	ND	---	49.4
170		49.682	1.04	5220	---	49.4
171	171/173	46.060	1.03	1630	---	98.8
172		47.720	1.03	909	---	49.4
173	171/173	46.060	1.03	(1630)	---	98.8
174		44.970	1.03	4600	---	49.4
175		43.830	1.06	236	---	49.4
176		41.315	1.07	683	---	49.4
177		45.423	1.03	2830	---	49.4
178		43.193	1.05	949	---	49.4
179		40.409	1.05	2040	---	49.4
180	180/193	48.391	1.05	10400	---	98.8
181		45.842	1.08	52.6	---	49.4
182		---	---	ND	---	49.4
183	183/185	44.735	1.04	3620	---	98.8
184		---	---	ND	---	49.4
185	183/185	44.735	1.04	(3620)	---	98.8
186		---	---	ND	---	49.4
187		44.115	1.05	5240	---	49.4
188		---	---	ND	---	49.4
189		52.897	1.07	234	---	49.4
190		50.219	1.03	1040	---	49.4
191		48.760	1.03	227	---	49.4
192		---	---	ND	---	49.4

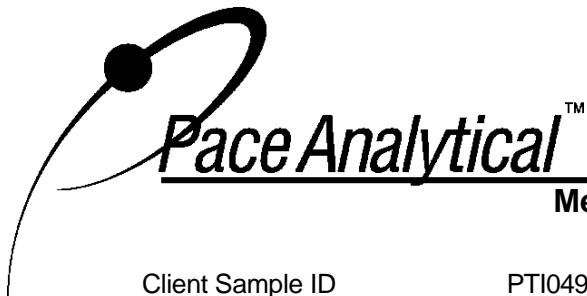
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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PTI0491-03 (FO105892)
Lab Sample ID 10138174003
Filename P101001B_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
193	180/193	48.391	1.05	(10400)	---	98.8
194		55.268	0.89	2200	---	74.1
195		52.617	0.90	947	---	74.1
196		51.024	0.91	1280	---	74.1
197	197/200	47.486	0.90	414	---	148
198	198/199	50.370	0.90	2530	---	148
199	198/199	50.370	0.90	(2530)	---	148
200	197/200	47.486	0.90	(414)	---	148
201		46.446	0.91	317	---	74.1
202		45.524	0.92	444	---	74.1
203		51.225	0.90	1570	---	74.1
204		---	---	ND	---	74.1
205		55.893	0.93	131	---	74.1
206		58.220	0.79	902	---	74.1
207		53.306	0.77	139	---	74.1
208		52.315	0.73	231	---	74.1
209		60.677	0.66	419	---	74.1

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PTI0491-03 (FO105892)
Lab Sample ID 10138174003
Filename P101001B_08

Congener Group	Concentration ng/Kg
Total Monochloro Biphenyls	54.4
Total Dichloro Biphenyls	2220
Total Trichloro Biphenyls	2750
Total Tetrachloro Biphenyls	45000
Total Pentachloro Biphenyls	160000
Total Hexachloro Biphenyls	123000
Total Heptachloro Biphenyls	39900
Total Octachloro Biphenyls	9830
Total Nonachloro Biphenyls	1270
Decachloro Biphenyls	419
Total PCBs	385000

ND = Not Detected

Results reported on a total weight basis

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PTI0491-04 (FO105893)		
Lab Sample ID	10138174004		
Filename	P101001B_09		
Injected By	CVS		
Total Amount Extracted	11.8 g	Matrix	Solid
% Moisture	11.0	Dilution	5
Dry Weight Extracted	10.5 g	Collected	09/14/2010 11:18
ICAL ID	P101001B02	Received	09/16/2010 09:57
CCal Filename(s)	P101001B_01	Extracted	09/29/2010 14:40
Method Blank ID	BLANK-26482	Analyzed	10/02/2010 01:09

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	9.073	3.02	2.0	0.940	47
13C-4-MoCB	3	12.499	3.06	2.0	1.07	54
13C-2,2'-DiCB	4	12.835	1.62	2.0	1.13	56
13C-4,4'-DiCB	15	21.029	1.55	2.0	1.07	54
13C-2,2',6-TrCB	19	17.303	1.02	2.0	1.01	50
13C-3,4,4'-TrCB	37	29.341	1.15	2.0	1.30	65
13C-2,2',6,6'-TeCB	54	21.326	0.83	2.0	1.15	57
13C-3,4,4',5-TeCB	81	36.619	0.80	2.0	1.33	66
13C-3,3',4,4'-TeCB	77	37.189	0.79	2.0	1.39	70
13C-2,2',4,6,6'-PeCB	104	27.866	1.62	2.0	1.19	59
13C-2,3,3',4,4'-PeCB	105	40.795	1.53	2.0	1.22	61
13C-2,3,4,4',5-PeCB	114	40.124	1.65	2.0	1.21	60
13C-2,3',4,4',5-PeCB	118	39.587	1.49	2.0	1.21	61
13C-2,3',4,4',5'-PeCB	123	39.235	1.56	2.0	1.22	61
13C-3,3',4,4',5-PeCB	126	43.964	1.57	2.0	1.23	61
13C-2,2',4,4',6,6'-HxCB	155	34.070	1.22	2.0	1.46	73
13C-HxCB (156/157)	156/157	46.999	1.23	4.0	2.39	60
13C-2,3',4,4',5,5'-HxCB	167	45.825	1.28	2.0	1.22	61
13C-3,3',4,4',5,5'-HxCB	169	50.335	1.26	2.0	1.19	59
13C-2,2',3,4',5,6,6'-HpCB	188	40.040	1.05	2.0	1.63	82
13C-2,3,3',4,4',5,5'-HpCB	189	52.896	1.04	2.0	1.39	69
13C-2,2',3,3',5,5',6'-OxCB	202	45.490	0.91	2.0	1.49	75
13C-2,3,3',4,4',5,5',6-OxCB	205	55.849	0.87	2.0	1.41	71
13C-2,2',3,3',4,4',5,5',6-NoCB	206	58.198	0.77	2.0	1.43	71
13C-2,2',3,3',4,4',5,5',6'-NoCB	208	52.271	0.78	2.0	1.43	71
13C--DeCB	209	60.634	0.71	2.0	1.27	64
Cleanup Standards						
13C-2,4,4'-TrCB	28	24.713	1.10	2.0	1.54	77
13C-2,3,3',5,5'-PeCB	111	37.189	1.54	2.0	1.79	89
13C-2,2',3,3',5,5',6-HpCB	178	43.176	1.02	2.0	1.94	97
Recovery Standards						
13C-2,5-DiCB	9	15.746	1.54	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	26.826	0.80	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	34.355	1.59	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	42.723	1.26	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	55.245	0.90	2.0	NA	NA

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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 PTI0491-04 (FO105893)
Lab Sample ID 10138174004
Filename P101001B_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
1		---	---	ND	---	23.9
2		12.236	2.82	24.8	---	23.9
3		12.511	2.88	25.1	---	23.9
4		12.870	1.63	32.9	---	23.9
5		---	---	ND	---	23.9
6		---	---	ND	---	23.9
7		---	---	ND	---	23.9
8		16.932	1.37	68.5	---	23.9
9		---	---	ND	---	23.9
10		---	---	ND	---	23.9
11		20.238	1.53	1100	---	143
12	12/13	---	---	ND	---	47.8
13	12/13	---	---	ND	---	47.8
14		---	---	ND	---	23.9
15		21.041	1.42	122	---	23.9
16		20.933	1.16	57.4	---	23.9
17		20.346	1.10	67.4	---	23.9
18	18/30	19.819	1.08	155	---	47.8
19		---	---	ND	---	23.9
20	20/28	24.730	1.07	278	---	47.8
21	21/33	24.998	1.03	136	---	47.8
22		25.485	1.06	98.8	---	23.9
23		---	---	ND	---	23.9
24		---	---	ND	---	23.9
25		---	---	ND	---	23.9
26	26/29	---	---	ND	---	47.8
27		---	---	ND	---	23.9
28	20/28	24.730	1.07	(278)	---	47.8
29	26/29	---	---	ND	---	47.8
30	18/30	19.819	1.08	(155)	---	47.8
31		24.395	1.02	266	---	23.9
32		21.611	1.03	69.3	---	23.9
33	21/33	24.998	1.03	(136)	---	47.8
34		---	---	ND	---	23.9
35		28.889	1.20	28.3	---	23.9
36		---	---	ND	---	23.9
37		29.358	1.04	178	---	23.9
38		---	---	ND	---	23.9
39		---	---	ND	---	23.9
40	40/41/71	29.123	0.78	703	---	143
41	40/41/71	29.123	0.78	(703)	---	143
42		28.570	0.79	306	---	47.8
43	43/73	---	---	ND	---	95.5
44	44/47/65	27.966	0.79	2110	---	143
45	45/51	24.797	0.80	184	---	95.5
46		25.183	0.74	69.8	---	47.8
47	44/47/65	27.966	0.79	(2110)	---	143
48		27.715	0.77	129	---	47.8

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PTI0491-04 (FO105893)
Lab Sample ID 10138174004
Filename P101001B_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
49	49/69	27.413	0.77	1090	---	95.5
50	50/53	24.009	0.80	201	---	95.5
51	45/51	24.797	0.80	(184)	---	95.5
52		26.860	0.78	5410	---	47.8
53	50/53	24.009	0.80	(201)	---	95.5
54		---	---	ND	---	47.8
55		---	---	ND	---	47.8
56		33.265	0.79	633	---	47.8
57		---	---	ND	---	47.8
58		---	---	ND	---	47.8
59	59/62/75	---	---	ND	---	143
60		33.500	0.79	231	---	47.8
61	61/70/74/76	32.192	0.79	3540	---	191
62	59/62/75	---	---	ND	---	143
63		---	---	ND	---	47.8
64		29.375	0.78	686	---	47.8
65	44/47/65	27.966	0.79	(2110)	---	143
66		32.544	0.78	1430	---	47.8
67		---	---	ND	---	47.8
68		---	---	ND	---	47.8
69	49/69	27.413	0.77	(1090)	---	95.5
70	61/70/74/76	32.192	0.79	(3540)	---	191
71	40/41/71	29.123	0.78	(703)	---	143
72		---	---	ND	---	47.8
73	43/73	---	---	ND	---	95.5
74	61/70/74/76	32.192	0.79	(3540)	---	191
75	59/62/75	---	---	ND	---	143
76	61/70/74/76	32.192	0.79	(3540)	---	191
77		37.223	0.78	283	---	47.8
78		36.284	0.78	85.9	---	47.8
79		35.512	0.72	97.8	---	47.8
80		---	---	ND	---	47.8
81		---	---	ND	---	47.8
82		36.787	1.55	1530	---	47.8
83		34.858	1.45	601	---	47.8
84		32.393	1.57	3240	---	47.8
85	85/116/117	36.300	1.58	1980	---	143
86	86/87/97/108/119/125	35.630	1.57	8040	---	287
87	86/87/97/108/119/125	35.630	1.57	(8040)	---	287
88	88/91	32.159	1.57	1550	---	95.5
89		32.896	1.51	122	---	47.8
90	90/101/113	34.389	1.57	10700	---	143
91	88/91	32.159	1.57	(1550)	---	95.5
92		33.768	1.56	2100	---	47.8
93	93/98/100/102	31.588	1.64	327	---	191
94		30.700	1.69	53.3	---	47.8
95		31.220	1.56	9660	---	47.8
96		28.285	1.56	73.7	---	47.8

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

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

Client Sample ID PTI0491-04 (FO105893)
Lab Sample ID 10138174004
Filename P101001B_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
97	86/87/97/108/119/125	35.630	1.57	(8040)	---	287
98	93/98/100/102	31.588	1.64	(327)	---	191
99		34.993	1.56	4460	---	47.8
100	93/98/100/102	31.588	1.64	(327)	---	191
101	90/101/113	34.389	1.57	(10700)	---	143
102	93/98/100/102	31.588	1.64	(327)	---	191
103		---	---	ND	---	47.8
104		---	---	ND	---	47.8
105		40.811	1.54	4310	---	47.8
106		---	---	ND	---	47.8
107	107/124	38.883	1.55	464	---	95.5
108	86/87/97/108/119/125	35.630	1.57	(8040)	---	287
109		39.134	1.59	601	---	47.8
110	110/115	36.468	1.55	14900	---	95.5
111		---	---	ND	---	47.8
112		---	---	ND	---	47.8
113	90/101/113	34.389	1.57	(10700)	---	143
114		40.157	1.47	201	---	47.8
115	110/115	36.468	1.55	(14900)	---	95.5
116	85/116/117	36.300	1.58	(1980)	---	143
117	85/116/117	36.300	1.58	(1980)	---	143
118		39.604	1.57	9630	---	47.8
119	86/87/97/108/119/125	35.630	1.57	(8040)	---	287
120		---	---	ND	---	47.8
121		---	---	ND	---	47.8
122		39.956	1.64	164	---	47.8
123		39.235	1.58	264	---	47.8
124	107/124	38.883	1.55	(464)	---	95.5
125	86/87/97/108/119/125	35.630	1.57	(8040)	---	287
126		43.997	1.48	66.3	---	47.8
127		---	---	ND	---	47.8
128	128/166	44.048	1.26	2570	---	95.5
129	129/138/163	42.756	1.25	15700	---	143
130		42.102	1.25	976	---	47.8
131		39.185	1.24	235	---	47.8
132		39.671	1.26	5220	---	47.8
133		40.191	1.26	174	---	47.8
134	134/143	38.581	1.28	783	---	95.5
135	135/151	37.424	1.24	3920	---	95.5
136		34.875	1.23	1750	---	47.8
137		42.320	1.27	866	---	47.8
138	129/138/163	42.756	1.25	(15700)	---	143
139	139/140	38.984	1.27	273	---	95.5
140	139/140	38.984	1.27	(273)	---	95.5
141		41.683	1.26	2320	---	47.8
142		---	---	ND	---	47.8
143	134/143	38.581	1.28	(783)	---	95.5
144		37.994	1.23	619	---	47.8

Conc = Concentration
EML = Method Specified Reporting Limit (1668A)
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ND = Not Detected
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Minneapolis, MN 55414

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Fax: 612- 607-6444

**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PTI0491-04 (FO105893)
Lab Sample ID 10138174004
Filename P101001B_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
145		---	---	ND	---	47.8
146		40.845	1.26	1770	---	47.8
147	147/149	38.363	1.25	10300	---	95.5
148		---	---	ND	---	47.8
149	147/149	38.363	1.25	(10300)	---	95.5
150		---	---	ND	---	47.8
151	135/151	37.424	1.24	(3920)	---	95.5
152		---	---	ND	---	47.8
153	153/168	41.482	1.26	10200	---	95.5
154		37.659	1.43	88.7	---	47.8
155		---	---	ND	---	47.8
156	156/157	46.999	1.23	1930	---	95.5
157	156/157	46.999	1.23	(1930)	---	95.5
158		43.159	1.24	1480	---	47.8
159		44.987	1.20	121	---	47.8
160		---	---	ND	---	47.8
161		---	---	ND	---	47.8
162		45.422	1.22	110	---	47.8
163	129/138/163	42.756	1.25	(15700)	---	143
164		42.438	1.26	927	---	47.8
165		---	---	ND	---	47.8
166	128/166	44.048	1.26	(2570)	---	95.5
167		45.842	1.23	660	---	47.8
168	153/168	41.482	1.26	(10200)	---	95.5
169		---	---	ND	---	47.8
170		49.682	1.03	2550	---	47.8
171	171/173	46.060	1.07	787	---	95.5
172		47.720	1.05	444	---	47.8
173	171/173	46.060	1.07	(787)	---	95.5
174		44.970	1.06	2180	---	47.8
175		43.830	1.02	110	---	47.8
176		41.314	1.03	317	---	47.8
177		45.422	1.06	1340	---	47.8
178		43.192	1.08	452	---	47.8
179		40.409	1.06	961	---	47.8
180	180/193	48.390	1.05	5020	---	95.5
181		---	---	ND	---	47.8
182		---	---	ND	---	47.8
183	183/185	44.735	1.05	1740	---	95.5
184		---	---	ND	---	47.8
185	183/185	44.735	1.05	(1740)	---	95.5
186		---	---	ND	---	47.8
187		44.115	1.05	2540	---	47.8
188		---	---	ND	---	47.8
189		52.896	1.03	117	---	47.8
190		50.235	1.01	501	---	47.8
191		48.743	1.08	113	---	47.8
192		---	---	ND	---	47.8

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R = Recovery outside of Method 1668A control limits
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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PTI0491-04 (FO105893)
Lab Sample ID 10138174004
Filename P101001B_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
193	180/193	48.390	1.05	(5020)	---	95.5
194		55.267	0.90	1040	---	71.7
195		52.616	0.91	440	---	71.7
196		51.023	0.91	599	---	71.7
197	197/200	47.485	0.88	207	---	143
198	198/199	50.352	0.92	1210	---	143
199	198/199	50.352	0.92	(1210)	---	143
200	197/200	47.485	0.88	(207)	---	143
201		46.462	0.92	156	---	71.7
202		45.506	0.92	221	---	71.7
203		51.241	0.88	742	---	71.7
204		---	---	ND	---	71.7
205		---	---	ND	---	71.7
206		58.220	0.75	444	---	71.7
207		---	---	ND	---	71.7
208		52.314	0.81	107	---	71.7
209		60.720	0.64	263	---	71.7

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PTI0491-04 (FO105893)
Lab Sample ID 10138174004
Filename P101001B_09

Congener Group	Concentration ng/Kg
Total Monochloro Biphenyls	49.9
Total Dichloro Biphenyls	1320
Total Trichloro Biphenyls	1330
Total Tetrachloro Biphenyls	17200
Total Pentachloro Biphenyls	75000
Total Hexachloro Biphenyls	63000
Total Heptachloro Biphenyls	19200
Total Octachloro Biphenyls	4620
Total Nonachloro Biphenyls	551
Decachloro Biphenyls	263
Total PCBs	183000

ND = Not Detected

Results reported on a total weight basis

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PTI0491-05 (FO105894)		
Lab Sample ID	10138174005		
Filename	P101001B_10		
Injected By	CVS		
Total Amount Extracted	10.9 g	Matrix	Solid
% Moisture	6.5	Dilution	5
Dry Weight Extracted	10.2 g	Collected	09/14/2010 13:20
ICAL ID	P101001B02	Received	09/16/2010 09:57
CCal Filename(s)	P101001B_01	Extracted	09/29/2010 14:40
Method Blank ID	BLANK-26482	Analyzed	10/02/2010 02:15

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	9.049	2.85	2.0	0.809	40
13C-4-MoCB	3	12.475	2.97	2.0	0.958	48
13C-2,2'-DiCB	4	12.834	1.58	2.0	1.00	50
13C-4,4'-DiCB	15	21.005	1.63	2.0	0.991	50
13C-2,2',6-TrCB	19	17.279	1.06	2.0	0.930	47
13C-3,4,4'-TrCB	37	29.324	1.16	2.0	1.16	58
13C-2,2',6,6'-TeCB	54	21.309	0.82	2.0	0.969	48
13C-3,4,4',5-TeCB	81	36.617	0.76	2.0	1.12	56
13C-3,3',4,4'-TeCB	77	37.187	0.81	2.0	1.15	58
13C-2,2',4,6,6'-PeCB	104	27.848	1.55	2.0	1.15	57
13C-2,3,3',4,4'-PeCB	105	40.792	1.61	2.0	1.03	52
13C-2,3,4,4',5-PeCB	114	40.105	1.57	2.0	1.06	53
13C-2,3',4,4',5-PeCB	118	39.568	1.63	2.0	1.06	53
13C-2,3',4,4',5'-PeCB	123	39.233	1.56	2.0	1.04	52
13C-3,3',4,4',5-PeCB	126	43.995	1.61	2.0	1.08	54
13C-2,2',4,4',6,6'-HxCB	155	34.069	1.31	2.0	1.20	60
13C-HxCB (156/157)	156/157	46.996	1.27	4.0	2.03	51
13C-2,3',4,4',5,5'-HxCB	167	45.823	1.30	2.0	1.05	52
13C-3,3',4,4',5,5'-HxCB	169	50.350	1.18	2.0	1.15	58
13C-2,2',3,4',5,6,6'-HpCB	188	40.038	0.99	2.0	1.19	59
13C-2,3,3',4,4',5,5'-HpCB	189	52.915	1.04	2.0	1.09	55
13C-2,2',3,3',5,5',6'-OxCB	202	45.504	0.84	2.0	1.18	59
13C-2,3,3',4,4',5,5',6-OxCB	205	55.867	0.89	2.0	1.18	59
13C-2,2',3,3',4,4',5,5',6-NoCB	206	58.217	0.79	2.0	1.29	64
13C-2,2',3,3',4,4',5,5',6'-NoCB	208	52.311	0.78	2.0	1.19	60
13C--DeCB	209	60.674	0.73	2.0	1.09	55
Cleanup Standards						
13C-2,4,4'-TrCB	28	24.696	1.02	2.0	1.62	81
13C-2,3,3',5,5'-PeCB	111	37.204	1.57	2.0	1.80	90
13C-2,2',3,3',5,5',6-HpCB	178	43.173	1.00	2.0	1.88	94
Recovery Standards						
13C-2,5-DiCB	9	15.745	1.57	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	26.825	0.78	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	34.354	1.59	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	42.754	1.27	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	55.286	0.87	2.0	NA	NA

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Pace AnalyticalTM

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1700 Elm Street - Suite 200
Minneapolis, MN 55414

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

Client Sample ID PTI0491-05 (FO105894)
Lab Sample ID 10138174005
Filename P101001B_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
1		---	---	ND	---	24.5
2		---	---	ND	---	24.5
3		---	---	ND	---	24.5
4		12.870	1.45	73.8	---	24.5
5		---	---	ND	---	24.5
6		---	---	ND	---	24.5
7		---	---	ND	---	24.5
8		16.919	1.51	72.6	---	24.5
9		---	---	ND	---	24.5
10		---	---	ND	---	24.5
11		20.226	1.44	522	---	147
12	12/13	---	---	ND	---	49.0
13	12/13	---	---	ND	---	49.0
14		---	---	ND	---	24.5
15		21.029	1.47	194	---	24.5
16		20.909	1.07	175	---	24.5
17		20.334	1.09	166	---	24.5
18	18/30	19.819	1.08	420	---	49.0
19		17.303	1.11	171	---	24.5
20	20/28	24.729	1.01	459	---	49.0
21	21/33	24.981	1.07	230	---	49.0
22		25.467	1.04	163	---	24.5
23		---	---	ND	---	24.5
24		---	---	ND	---	24.5
25		23.992	1.07	40.8	---	24.5
26	26/29	23.707	1.00	65.2	---	49.0
27		20.609	1.16	59.1	---	24.5
28	20/28	24.729	1.01	(459)	---	49.0
29	26/29	23.707	1.00	(65.2)	---	49.0
30	18/30	19.819	1.08	(420)	---	49.0
31		24.377	1.07	425	---	24.5
32		21.577	1.07	158	---	24.5
33	21/33	24.981	1.07	(230)	---	49.0
34		---	---	ND	---	24.5
35		28.888	1.11	24.9	---	24.5
36		---	---	ND	---	24.5
37		29.357	1.04	218	---	24.5
38		---	---	ND	---	24.5
39		---	---	ND	---	24.5
40	40/41/71	29.106	0.76	974	---	147
41	40/41/71	29.106	0.76	(974)	---	147
42		28.552	0.77	448	---	49.0
43	43/73	---	---	ND	---	98.0
44	44/47/65	27.965	0.77	2270	---	147
45	45/51	24.797	0.78	719	---	98.0
46		25.165	0.78	290	---	49.0
47	44/47/65	27.965	0.77	(2270)	---	147
48		27.714	0.81	245	---	49.0

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PTI0491-05 (FO105894)
Lab Sample ID 10138174005
Filename P101001B_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
49	49/69	27.395	0.77	1250	---	98.0
50	50/53	24.008	0.79	633	---	98.0
51	45/51	24.797	0.78	(719)	---	98.0
52		26.842	0.78	5080	---	49.0
53	50/53	24.008	0.79	(633)	---	98.0
54		---	---	ND	---	49.0
55		---	---	ND	---	49.0
56		33.264	0.80	540	---	49.0
57		---	---	ND	---	49.0
58		---	---	ND	---	49.0
59	59/62/75	28.334	0.80	152	---	147
60		33.499	0.78	210	---	49.0
61	61/70/74/76	32.174	0.77	2980	---	196
62	59/62/75	28.334	0.80	(152)	---	147
63		---	---	ND	---	49.0
64		29.357	0.79	663	---	49.0
65	44/47/65	27.965	0.77	(2270)	---	147
66		32.543	0.78	1240	---	49.0
67		---	---	ND	---	49.0
68		---	---	ND	---	49.0
69	49/69	27.395	0.77	(1250)	---	98.0
70	61/70/74/76	32.174	0.77	(2980)	---	196
71	40/41/71	29.106	0.76	(974)	---	147
72		---	---	ND	---	49.0
73	43/73	---	---	ND	---	98.0
74	61/70/74/76	32.174	0.77	(2980)	---	196
75	59/62/75	28.334	0.80	(152)	---	147
76	61/70/74/76	32.174	0.77	(2980)	---	196
77		37.221	0.80	278	---	49.0
78		---	---	ND	---	49.0
79		35.511	0.71	80.6	---	49.0
80		---	---	ND	---	49.0
81		---	---	ND	---	49.0
82		36.785	1.60	1300	---	49.0
83		34.857	1.65	572	---	49.0
84		32.375	1.56	2940	---	49.0
85	85/116/117	36.282	1.56	1460	---	147
86	86/87/97/108/119/125	35.611	1.56	6730	---	294
87	86/87/97/108/119/125	35.611	1.56	(6730)	---	294
88	88/91	32.141	1.54	1300	---	98.0
89		32.895	1.57	121	---	49.0
90	90/101/113	34.387	1.56	8960	---	147
91	88/91	32.141	1.54	(1300)	---	98.0
92		33.750	1.59	1740	---	49.0
93	93/98/100/102	31.587	1.54	282	---	196
94		---	---	ND	---	49.0
95		31.202	1.56	8550	---	49.0
96		28.301	1.51	72.5	---	49.0

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PTI0491-05 (FO105894)
Lab Sample ID 10138174005
Filename P101001B_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
97	86/87/97/108/119/125	35.611	1.56	(6730)	---	294
98	93/98/100/102	31.587	1.54	(282)	---	196
99		34.991	1.57	3280	---	49.0
100	93/98/100/102	31.587	1.54	(282)	---	196
101	90/101/113	34.387	1.56	(8960)	---	147
102	93/98/100/102	31.587	1.54	(282)	---	196
103		---	---	ND	---	49.0
104		---	---	ND	---	49.0
105		40.826	1.58	3710	---	49.0
106		---	---	ND	---	49.0
107	107/124	38.881	1.58	401	---	98.0
108	86/87/97/108/119/125	35.611	1.56	(6730)	---	294
109		39.132	1.58	555	---	49.0
110	110/115	36.466	1.56	12400	---	98.0
111		---	---	ND	---	49.0
112		---	---	ND	---	49.0
113	90/101/113	34.387	1.56	(8960)	---	147
114		40.138	1.56	172	---	49.0
115	110/115	36.466	1.56	(12400)	---	98.0
116	85/116/117	36.282	1.56	(1460)	---	147
117	85/116/117	36.282	1.56	(1460)	---	147
118		39.602	1.57	7750	---	49.0
119	86/87/97/108/119/125	35.611	1.56	(6730)	---	294
120		---	---	ND	---	49.0
121		---	---	ND	---	49.0
122		39.954	1.69	126	---	49.0
123		39.250	1.52	160	---	49.0
124	107/124	38.881	1.58	(401)	---	98.0
125	86/87/97/108/119/125	35.611	1.56	(6730)	---	294
126		43.995	1.53	72.9	---	49.0
127		---	---	ND	---	49.0
128	128/166	44.062	1.25	2690	---	98.0
129	129/138/163	42.771	1.25	16000	---	147
130		42.100	1.25	1020	---	49.0
131		39.199	1.20	236	---	49.0
132		39.669	1.26	5020	---	49.0
133		40.189	1.21	176	---	49.0
134	134/143	38.579	1.26	836	---	98.0
135	135/151	37.422	1.24	3770	---	98.0
136		34.874	1.29	1540	---	49.0
137		42.318	1.23	792	---	49.0
138	129/138/163	42.771	1.25	(16000)	---	147
139	139/140	38.981	1.35	240	---	98.0
140	139/140	38.981	1.35	(240)	---	98.0
141		41.681	1.25	2510	---	49.0
142		---	---	ND	---	49.0
143	134/143	38.579	1.26	(836)	---	98.0
144		37.992	1.20	605	---	49.0

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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 PTI0491-05 (FO105894)
Lab Sample ID 10138174005
Filename P101001B_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
145		---	---	ND	---	49.0
146		40.859	1.26	1790	---	49.0
147	147/149	38.361	1.25	9690	---	98.0
148		---	---	ND	---	49.0
149	147/149	38.361	1.25	(9690)	---	98.0
150		---	---	ND	---	49.0
151	135/151	37.422	1.24	(3770)	---	98.0
152		---	---	ND	---	49.0
153	153/168	41.480	1.25	10400	---	98.0
154		37.674	1.22	93.0	---	49.0
155		---	---	ND	---	49.0
156	156/157	47.013	1.23	2160	---	98.0
157	156/157	47.013	1.23	(2160)	---	98.0
158		43.173	1.24	1520	---	49.0
159		---	---	ND	---	49.0
160		---	---	ND	---	49.0
161		---	---	ND	---	49.0
162		---	---	ND	---	49.0
163	129/138/163	42.771	1.25	(16000)	---	147
164		42.452	1.26	986	---	49.0
165		---	---	ND	---	49.0
166	128/166	44.062	1.25	(2690)	---	98.0
167		45.839	1.23	713	---	49.0
168	153/168	41.480	1.25	(10400)	---	98.0
169		---	---	ND	---	49.0
170		49.696	1.03	3110	---	49.0
171	171/173	46.057	1.02	893	---	98.0
172		47.734	1.06	536	---	49.0
173	171/173	46.057	1.02	(893)	---	98.0
174		44.984	1.05	2510	---	49.0
175		43.844	1.04	126	---	49.0
176		41.329	1.02	330	---	49.0
177		45.437	1.04	1560	---	49.0
178		43.190	1.04	521	---	49.0
179		40.407	1.03	997	---	49.0
180	180/193	48.388	1.04	6060	---	98.0
181		---	---	ND	---	49.0
182		---	---	ND	---	49.0
183	183/185	44.733	1.05	1870	---	98.0
184		---	---	ND	---	49.0
185	183/185	44.733	1.05	(1870)	---	98.0
186		---	---	ND	---	49.0
187		44.112	1.04	3000	---	49.0
188		---	---	ND	---	49.0
189		52.915	1.02	141	---	49.0
190		50.232	1.02	619	---	49.0
191		48.774	1.11	127	---	49.0
192		---	---	ND	---	49.0

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PTI0491-05 (FO105894)
Lab Sample ID 10138174005
Filename P101001B_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
193	180/193	48.388	1.04	(6060)	---	98.0
194		55.307	0.90	1300	---	73.5
195		52.635	0.91	519	---	73.5
196		51.037	0.89	721	---	73.5
197	197/200	47.499	0.91	228	---	147
198	198/199	50.366	0.90	1570	---	147
199	198/199	50.366	0.90	(1570)	---	147
200	197/200	47.499	0.91	(228)	---	147
201		46.460	0.90	182	---	73.5
202		45.521	0.95	292	---	73.5
203		51.255	0.88	965	---	73.5
204		---	---	ND	---	73.5
205		---	---	ND	---	73.5
206		58.281	0.76	739	---	73.5
207		53.303	0.76	97.5	---	73.5
208		52.333	0.76	204	---	73.5
209		60.760	0.72	366	---	73.5

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PTI0491-05 (FO105894)
Lab Sample ID 10138174005
Filename P101001B_10

Congener Group	Concentration ng/Kg
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	862
Total Trichloro Biphenyls	2780
Total Tetrachloro Biphenyls	18100
Total Pentachloro Biphenyls	62700
Total Hexachloro Biphenyls	62800
Total Heptachloro Biphenyls	22400
Total Octachloro Biphenyls	5780
Total Nonachloro Biphenyls	1040
Decachloro Biphenyls	366
Total PCBs	177000

ND = Not Detected

Results reported on a total weight basis

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PTI0491-06 (FO105895)		
Lab Sample ID	10138174006		
Filename	P101009A_08		
Injected By	BAL		
Total Amount Extracted	15.9 g	Matrix	Solid
% Moisture	36.3	Dilution	5
Dry Weight Extracted	10.1 g	Collected	09/14/2010 14:11
ICAL ID	P101009A02	Received	09/16/2010 09:57
CCal Filename(s)	P101009A_01	Extracted	10/06/2010 16:40
Method Blank ID	BLANK-26574	Analyzed	10/09/2010 08:33

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	8.402	2.95	2.0	1.38	69
13C-4-MoCB	3	11.744	2.68	2.0	1.62	81
13C-2,2'-DiCB	4	12.092	1.64	2.0	1.50	75
13C-4,4'-DiCB	15	20.166	1.54	2.0	1.20	60
13C-2,2',6-TrCB	19	16.488	1.08	2.0	1.51	76
13C-3,4,4'-TrCB	37	28.476	1.08	2.0	1.66	83
13C-2,2',6,6'-TeCB	54	20.478	0.81	2.0	1.64	82
13C-3,4,4',5-TeCB	81	35.787	0.84	2.0	1.37	68
13C-3,3',4,4'-TeCB	77	36.374	0.78	2.0	1.36	68
13C-2,2',4,6,6'-PeCB	104	27.017	1.67	2.0	1.78	89
13C-2,3,3',4,4'-PeCB	105	39.980	1.54	2.0	1.31	66
13C-2,3,4,4',5-PeCB	114	39.309	1.54	2.0	1.33	66
13C-2,3',4,4',5-PeCB	118	38.739	1.58	2.0	1.32	66
13C-2,3',4,4',5'-PeCB	123	38.437	1.60	2.0	1.36	68
13C-3,3',4,4',5-PeCB	126	43.182	1.60	2.0	1.25	63
13C-2,2',4,4',6,6'-HxCB	155	33.239	1.28	2.0	1.96	98
13C-HxCB (156/157)	156/157	46.217	1.28	4.0	2.92	73
13C-2,3',4,4',5,5'-HxCB	167	45.044	1.33	2.0	1.47	74
13C-3,3',4,4',5,5'-HxCB	169	49.571	1.28	2.0	1.42	71
13C-2,2',3,4',5,6,6'-HpCB	188	39.208	1.06	2.0	2.03	101
13C-2,3,3',4,4',5,5'-HpCB	189	52.134	1.09	2.0	1.74	87
13C-2,2',3,3',5,5',6'-OxCB	202	44.692	0.93	2.0	1.93	97
13C-2,3,3',4,4',5,5',6-OxCB	205	54.957	0.85	2.0	1.61	80
13C-2,2',3,3',4,4',5,5',6-NoCB	206	57.220	0.84	2.0	1.92	96
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	51.487	0.84	2.0	1.65	83
13C--DeCB	209	59.462	0.73	2.0	1.35	68
Cleanup Standards						
13C-2,4,4'-TrCB	28	23.848	1.12	2.0	1.85	93
13C-2,3,3',5,5'-PeCB	111	36.391	1.57	2.0	1.36	68
13C-2,2',3,3',5,5',6-HpCB	178	42.378	1.07	2.0	1.62	81
Recovery Standards						
13C-2,5-DiCB	9	14.955	1.61	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	25.995	0.80	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	33.524	1.58	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	41.942	1.30	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	54.375	0.95	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 PTI0491-06 (FO105895)
Lab Sample ID 10138174006
Filename P101009A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
1		---	---	ND	---	24.7
2		---	---	ND	---	24.7
3		---	---	ND	---	24.7
4		12.104	1.47	28.6	---	24.7
5		---	---	ND	---	24.7
6		---	---	ND	---	24.7
7		---	---	ND	---	24.7
8		16.117	1.54	77.8	---	24.7
9		---	---	ND	---	24.7
10		---	---	ND	---	24.7
11		19.400	1.55	950	---	148
12	12/13	---	---	ND	---	49.4
13	12/13	---	---	ND	---	49.4
14		---	---	ND	---	24.7
15		20.190	1.61	200	---	24.7
16		20.082	1.12	58.2	---	24.7
17		19.531	1.08	54.9	---	24.7
18	18/30	18.968	1.02	96.5	---	49.4
19		16.500	1.12	29.3	---	24.7
20	20/28	23.882	1.01	323	---	49.4
21	21/33	24.133	1.07	135	---	49.4
22		24.620	1.09	102	---	24.7
23		---	---	ND	---	24.7
24		---	---	ND	---	24.7
25		---	---	ND	---	24.7
26	26/29	---	---	ND	---	49.4
27		19.795	1.08	29.1	---	24.7
28	20/28	23.882	1.01	(323)	---	49.4
29	26/29	---	---	ND	---	49.4
30	18/30	18.968	1.02	(96.5)	---	49.4
31		23.530	1.04	244	---	24.7
32		20.763	1.09	85.2	---	24.7
33	21/33	24.133	1.07	(135)	---	49.4
34		---	---	ND	---	24.7
35		28.024	0.99	43.9	---	24.7
36		---	---	ND	---	24.7
37		28.493	1.03	274	---	24.7
38		---	---	ND	---	24.7
39		---	---	ND	---	24.7
40	40/41/71	28.258	0.77	560	---	148
41	40/41/71	28.258	0.77	(560)	---	148
42		27.705	0.78	209	---	49.4
43	43/73	---	---	ND	---	98.7
44	44/47/65	27.101	0.78	869	---	148
45	45/51	23.932	0.76	194	---	98.7
46		24.301	0.73	73.0	---	49.4
47	44/47/65	27.101	0.78	(869)	---	148
48		26.866	0.79	104	---	49.4

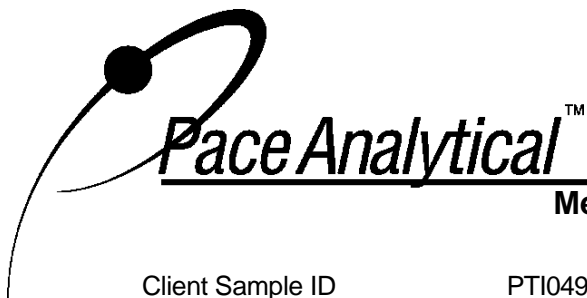
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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PTI0491-06 (FO105895)
Lab Sample ID 10138174006
Filename P101009A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
49	49/69	26.565	0.79	446	---	98.7
50	50/53	23.144	0.82	156	---	98.7
51	45/51	23.932	0.76	(194)	---	98.7
52		26.011	0.78	1630	---	49.4
53	50/53	23.144	0.82	(156)	---	98.7
54		---	---	ND	---	49.4
55		---	---	ND	---	49.4
56		32.400	0.76	428	---	49.4
57		---	---	ND	---	49.4
58		---	---	ND	---	49.4
59	59/62/75	---	---	ND	---	148
60		32.652	0.74	203	---	49.4
61	61/70/74/76	31.344	0.78	1640	---	197
62	59/62/75	---	---	ND	---	148
63		---	---	ND	---	49.4
64		28.510	0.80	514	---	49.4
65	44/47/65	27.101	0.78	(869)	---	148
66		31.713	0.78	877	---	49.4
67		---	---	ND	---	49.4
68		---	---	ND	---	49.4
69	49/69	26.565	0.79	(446)	---	98.7
70	61/70/74/76	31.344	0.78	(1640)	---	197
71	40/41/71	28.258	0.77	(560)	---	148
72		---	---	ND	---	49.4
73	43/73	---	---	ND	---	98.7
74	61/70/74/76	31.344	0.78	(1640)	---	197
75	59/62/75	---	---	ND	---	148
76	61/70/74/76	31.344	0.78	(1640)	---	197
77		36.391	0.78	272	---	49.4
78		---	---	ND	---	49.4
79		---	---	ND	---	49.4
80		---	---	ND	---	49.4
81		---	---	ND	---	49.4
82		35.938	1.56	470	---	49.4
83		34.010	1.50	264	---	49.4
84		31.511	1.58	1190	---	49.4
85	85/116/117	35.452	1.55	540	---	148
86	86/87/97/108/119/125	34.781	1.62	2970	---	296
87	86/87/97/108/119/125	34.781	1.62	(2970)	---	296
88	88/91	31.293	1.59	562	---	98.7
89		32.014	1.62	54.3	---	49.4
90	90/101/113	33.557	1.58	4490	---	148
91	88/91	31.293	1.59	(562)	---	98.7
92		32.937	1.57	805	---	49.4
93	93/98/100/102	---	---	ND	---	197
94		---	---	ND	---	49.4
95		30.371	1.57	3710	---	49.4
96		---	---	ND	---	49.4

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PTI0491-06 (FO105895)
Lab Sample ID 10138174006
Filename P101009A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
97	86/87/97/108/119/125	34.781	1.62	(2970)	---	296
98	93/98/100/102	---	---	ND	---	197
99		34.178	1.56	1410	---	49.4
100	93/98/100/102	---	---	ND	---	197
101	90/101/113	33.557	1.58	(4490)	---	148
102	93/98/100/102	---	---	ND	---	197
103		---	---	ND	---	49.4
104		---	---	ND	---	49.4
105		39.996	1.57	1610	---	49.4
106		---	---	ND	---	49.4
107	107/124	38.068	1.54	152	---	98.7
108	86/87/97/108/119/125	34.781	1.62	(2970)	---	296
109		38.320	1.53	186	---	49.4
110	110/115	35.637	1.58	4410	---	98.7
111		---	---	ND	---	49.4
112		---	---	ND	---	49.4
113	90/101/113	33.557	1.58	(4490)	---	148
114		39.326	1.56	77.7	---	49.4
115	110/115	35.637	1.58	(4410)	---	98.7
116	85/116/117	35.452	1.55	(540)	---	148
117	85/116/117	35.452	1.55	(540)	---	148
118		38.789	1.57	3490	---	49.4
119	86/87/97/108/119/125	34.781	1.62	(2970)	---	296
120		---	---	ND	---	49.4
121		---	---	ND	---	49.4
122		---	---	ND	---	49.4
123		38.420	1.51	101	---	49.4
124	107/124	38.068	1.54	(152)	---	98.7
125	86/87/97/108/119/125	34.781	1.62	(2970)	---	296
126		43.216	1.63	109	---	49.4
127		---	---	ND	---	49.4
128	128/166	43.233	1.24	906	---	98.7
129	129/138/163	41.958	1.24	6420	---	148
130		41.304	1.26	378	---	49.4
131		38.370	1.41	85.2	---	49.4
132		38.839	1.27	2000	---	49.4
133		39.393	1.24	74.3	---	49.4
134	134/143	37.733	1.24	272	---	98.7
135	135/151	36.592	1.25	1800	---	98.7
136		34.027	1.22	912	---	49.4
137		41.522	1.19	336	---	49.4
138	129/138/163	41.958	1.24	(6420)	---	148
139	139/140	---	---	ND	---	98.7
140	139/140	---	---	ND	---	98.7
141		40.868	1.25	1100	---	49.4
142		---	---	ND	---	49.4
143	134/143	37.733	1.24	(272)	---	98.7
144		37.129	1.28	112	---	49.4

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
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B = Less than 10 times higher than method blank level
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Pace AnalyticalTM

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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 PTI0491-06 (FO105895)
Lab Sample ID 10138174006
Filename P101009A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
145		---	---	ND	---	49.4
146		40.063	1.21	777	---	49.4
147	147/149	37.548	1.23	4130	---	98.7
148		---	---	ND	---	49.4
149	147/149	37.548	1.23	(4130)	---	98.7
150		---	---	ND	---	49.4
151	135/151	36.592	1.25	(1800)	---	98.7
152		---	---	ND	---	49.4
153	153/168	40.701	1.24	4810	---	98.7
154		---	---	ND	---	49.4
155		---	---	ND	---	49.4
156	156/157	46.201	1.25	879	---	98.7
157	156/157	46.201	1.25	(879)	---	98.7
158		42.361	1.24	594	---	49.4
159		---	---	ND	---	49.4
160		---	---	ND	---	49.4
161		---	---	ND	---	49.4
162		44.608	1.31	57.5	---	49.4
163	129/138/163	41.958	1.24	(6420)	---	148
164		41.656	1.22	361	---	49.4
165		---	---	ND	---	49.4
166	128/166	43.233	1.24	(906)	---	98.7
167		45.060	1.23	324	---	49.4
168	153/168	40.701	1.24	(4810)	---	98.7
169		---	---	ND	---	49.4
170		48.900	1.04	1740	---	49.4
171	171/173	45.262	1.04	523	---	98.7
172		46.955	1.01	324	---	49.4
173	171/173	45.262	1.04	(523)	---	98.7
174		44.172	1.02	1590	---	49.4
175		43.031	1.16	71.7	---	49.4
176		40.483	1.05	206	---	49.4
177		44.624	1.03	974	---	49.4
178		42.394	1.05	319	---	49.4
179		39.577	1.02	641	---	49.4
180	180/193	47.609	1.05	3720	---	98.7
181		---	---	ND	---	49.4
182		---	---	ND	---	49.4
183	183/185	43.954	1.06	1210	---	98.7
184		---	---	ND	---	49.4
185	183/185	43.954	1.06	(1210)	---	98.7
186		---	---	ND	---	49.4
187		43.317	1.04	1790	---	49.4
188		---	---	ND	---	49.4
189		52.155	1.01	77.7	---	49.4
190		49.470	1.03	353	---	49.4
191		47.978	1.06	72.2	---	49.4
192		---	---	ND	---	49.4

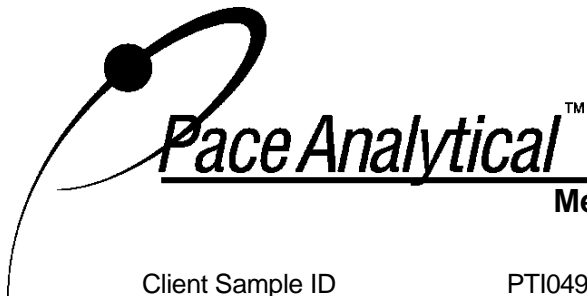
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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PTI0491-06 (FO105895)
Lab Sample ID 10138174006
Filename P101009A_08

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
193	180/193	47.609	1.05	(3720)	---	98.7
194		54.418	0.92	909	---	74.0
195		51.810	0.89	357	---	74.0
196		50.258	0.89	479	---	74.0
197	197/200	---	---	ND	---	148
198	198/199	49.588	0.91	956	---	148
199	198/199	49.588	0.91	(956)	---	148
200	197/200	---	---	ND	---	148
201		45.647	0.86	125	---	74.0
202		44.708	0.90	208	---	74.0
203		50.460	0.89	600	---	74.0
204		---	---	ND	---	74.0
205		---	---	ND	---	74.0
206		57.199	0.80	353	---	74.0
207		---	---	ND	---	74.0
208		51.530	0.81	112	---	74.0
209		59.527	0.63	161	---	74.0

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PTI0491-06 (FO105895)
Lab Sample ID 10138174006
Filename P101009A_08

Congener Group	Concentration ng/Kg
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	1260
Total Trichloro Biphenyls	1480
Total Tetrachloro Biphenyls	8180
Total Pentachloro Biphenyls	26600
Total Hexachloro Biphenyls	26300
Total Heptachloro Biphenyls	13600
Total Octachloro Biphenyls	3630
Total Nonachloro Biphenyls	465
Decachloro Biphenyls	161
Total PCBs	81700

ND = Not Detected

Results reported on a total weight basis

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PTI0491-07 (FO105896)		
Lab Sample ID	10138174007		
Filename	P101009A_09		
Injected By	BAL		
Total Amount Extracted	16.4 g	Matrix	Solid
% Moisture	36.2	Dilution	5
Dry Weight Extracted	10.5 g	Collected	09/14/2010 13:51
ICAL ID	P101009A02	Received	09/16/2010 09:57
CCal Filename(s)	P101009A_01	Extracted	10/06/2010 16:40
Method Blank ID	BLANK-26574	Analyzed	10/09/2010 09:37

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	8.438	3.41	2.0	1.26	63
13C-4-MoCB	3	11.793	2.98	2.0	1.45	73
13C-2,2'-DiCB	4	12.116	1.57	2.0	1.40	70
13C-4,4'-DiCB	15	20.169	1.63	2.0	0.933	47
13C-2,2',6-TrCB	19	16.514	1.01	2.0	1.34	67
13C-3,4,4'-TrCB	37	28.496	1.10	2.0	1.66	83
13C-2,2',6,6'-TeCB	54	20.497	0.79	2.0	1.23	62
13C-3,4,4',5-TeCB	81	35.807	0.81	2.0	1.36	68
13C-3,3',4,4'-TeCB	77	36.411	0.84	2.0	1.41	70
13C-2,2',4,6,6'-PeCB	104	27.020	1.58	2.0	1.50	75
13C-2,3,3',4,4'-PeCB	105	40.000	1.63	2.0	1.15	57
13C-2,3,4,4',5-PeCB	114	39.346	1.56	2.0	1.16	58
13C-2,3',4,4',5-PeCB	118	38.809	1.60	2.0	1.20	60
13C-2,3',4,4',5'-PeCB	123	38.440	1.54	2.0	1.22	61
13C-3,3',4,4',5-PeCB	126	43.219	1.53	2.0	1.09	54
13C-2,2',4,4',6,6'-HxCB	155	33.258	1.29	2.0	2.07	104
13C-HxCB (156/157)	156/157	46.255	1.27	4.0	2.59	65
13C-2,3',4,4',5,5'-HxCB	167	45.064	1.24	2.0	1.38	69
13C-3,3',4,4',5,5'-HxCB	169	49.642	1.26	2.0	1.19	60
13C-2,2',3,4',5,6,6'-HpCB	188	39.245	1.05	2.0	2.26	113
13C-2,3,3',4,4',5,5'-HpCB	189	52.143	1.07	2.0	1.51	75
13C-2,2',3,3',5,5',6,6'-OxCB	202	44.712	0.91	2.0	1.96	98
13C-2,3,3',4,4',5,5',6-OxCB	205	54.988	0.94	2.0	1.60	80
13C-2,2',3,3',4,4',5,5',6-NoCB	206	57.187	0.81	2.0	1.70	85
13C-2,2',3,3',4,4',5,5',6-NoCB	208	51.539	0.79	2.0	1.43	71
13C--DeCB	209	59.536	0.73	2.0	1.24	62
Cleanup Standards						
13C-2,4,4'-TrCB	28	23.885	1.13	2.0	1.68	84
13C-2,3,3',5,5'-PeCB	111	36.428	1.59	2.0	1.39	69
13C-2,2',3,3',5,5',6-HpCB	178	42.415	1.02	2.0	1.62	81
Recovery Standards						
13C-2,5-DiCB	9	15.004	1.60	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	26.014	0.83	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	33.560	1.60	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	41.979	1.33	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	54.406	0.91	2.0	NA	NA

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PTI0491-07 (FO105896)
Lab Sample ID 10138174007
Filename P101009A_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
1		---	---	ND	---	23.9
2		---	---	ND	---	23.9
3		---	---	ND	---	23.9
4		12.152	1.74	26.3	---	23.9
5		---	---	ND	---	23.9
6		---	---	ND	---	23.9
7		---	---	ND	---	23.9
8		16.167	1.43	75.6	---	23.9
9		---	---	ND	---	23.9
10		---	---	ND	---	23.9
11		19.450	1.57	5820	---	143
12	12/13	---	---	ND	---	47.8
13	12/13	---	---	ND	---	47.8
14		---	---	ND	---	23.9
15		20.181	1.51	144	---	23.9
16		20.109	1.08	55.4	---	23.9
17		19.558	1.12	50.9	---	23.9
18	18/30	19.031	1.09	87.2	---	47.8
19		16.550	1.17	26.2	---	23.9
20	20/28	23.901	1.03	336	---	47.8
21	21/33	24.170	1.01	166	---	47.8
22		24.639	1.08	124	---	23.9
23		---	---	ND	---	23.9
24		---	---	ND	---	23.9
25		23.180	1.05	25.6	---	23.9
26	26/29	---	---	ND	---	47.8
27		---	---	ND	---	23.9
28	20/28	23.901	1.03	(336)	---	47.8
29	26/29	---	---	ND	---	47.8
30	18/30	19.031	1.09	(87.2)	---	47.8
31		23.549	1.06	261	---	23.9
32		20.782	1.00	51.0	---	23.9
33	21/33	24.170	1.01	(166)	---	47.8
34		---	---	ND	---	23.9
35		28.060	0.98	85.1	---	23.9
36		26.500	1.06	36.7	---	23.9
37		28.530	1.06	274	---	23.9
38		---	---	ND	---	23.9
39		---	---	ND	---	23.9
40	40/41/71	28.278	0.76	521	---	143
41	40/41/71	28.278	0.76	(521)	---	143
42		27.725	0.78	203	---	47.8
43	43/73	---	---	ND	---	47.8
44	44/47/65	27.138	0.80	944	---	143
45	45/51	23.985	0.81	159	---	95.6
46		24.304	0.76	58.9	---	47.8
47	44/47/65	27.138	0.80	(944)	---	143
48		26.886	0.79	106	---	47.8

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PTI0491-07 (FO105896)
Lab Sample ID 10138174007
Filename P101009A_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
49	49/69	26.584	0.79	509	---	95.6
50	50/53	23.180	0.77	129	---	95.6
51	45/51	23.985	0.81	(159)	---	95.6
52		26.031	0.79	1850	---	47.8
53	50/53	23.180	0.77	(129)	---	95.6
54		---	---	ND	---	47.8
55		---	---	ND	---	47.8
56		32.437	0.77	404	---	47.8
57		---	---	ND	---	47.8
58		---	---	ND	---	47.8
59	59/62/75	---	---	ND	---	143
60		32.655	0.82	178	---	47.8
61	61/70/74/76	31.364	0.78	1810	---	191
62	59/62/75	---	---	ND	---	143
63		---	---	ND	---	47.8
64		28.530	0.79	387	---	47.8
65	44/47/65	27.138	0.80	(944)	---	143
66		31.732	0.81	866	---	47.8
67		---	---	ND	---	47.8
68		---	---	ND	---	47.8
69	49/69	26.584	0.79	(509)	---	95.6
70	61/70/74/76	31.364	0.78	(1810)	---	191
71	40/41/71	28.278	0.76	(521)	---	143
72		---	---	ND	---	47.8
73	43/73	---	---	ND	---	47.8
74	61/70/74/76	31.364	0.78	(1810)	---	191
75	59/62/75	---	---	ND	---	143
76	61/70/74/76	31.364	0.78	(1810)	---	191
77		36.428	0.77	218	---	47.8
78		---	---	ND	---	47.8
79		---	---	ND	---	47.8
80		---	---	ND	---	47.8
81		---	---	ND	---	47.8
82		35.958	1.58	500	---	47.8
83		34.030	1.49	244	---	47.8
84		31.548	1.56	1350	---	47.8
85	85/116/117	35.472	1.53	630	---	143
86	86/87/97/108/119/125	34.801	1.55	3510	---	287
87	86/87/97/108/119/125	34.801	1.55	(3510)	---	287
88	88/91	31.313	1.62	598	---	95.6
89		32.051	1.48	52.8	---	47.8
90	90/101/113	33.577	1.57	5170	---	143
91	88/91	31.313	1.62	(598)	---	95.6
92		32.957	1.59	930	---	47.8
93	93/98/100/102	---	---	ND	---	191
94		---	---	ND	---	47.8
95		30.374	1.59	4180	---	47.8
96		---	---	ND	---	47.8

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PTI0491-07 (FO105896)
Lab Sample ID 10138174007
Filename P101009A_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
97	86/87/97/108/119/125	34.801	1.55	(3510)	---	287
98	93/98/100/102	---	---	ND	---	191
99		34.181	1.58	1690	---	47.8
100	93/98/100/102	---	---	ND	---	191
101	90/101/113	33.577	1.57	(5170)	---	143
102	93/98/100/102	---	---	ND	---	191
103		---	---	ND	---	47.8
104		---	---	ND	---	47.8
105		40.033	1.55	1550	---	47.8
106		---	---	ND	---	47.8
107	107/124	38.088	1.64	151	---	95.6
108	86/87/97/108/119/125	34.801	1.55	(3510)	---	287
109		38.356	1.57	196	---	47.8
110	110/115	35.656	1.60	4820	---	95.6
111		---	---	ND	---	47.8
112		---	---	ND	---	47.8
113	90/101/113	33.577	1.57	(5170)	---	143
114		39.362	1.45	74.8	---	47.8
115	110/115	35.656	1.60	(4820)	---	95.6
116	85/116/117	35.472	1.53	(630)	---	143
117	85/116/117	35.472	1.53	(630)	---	143
118		38.826	1.56	3410	---	47.8
119	86/87/97/108/119/125	34.801	1.55	(3510)	---	287
120		---	---	ND	---	47.8
121		---	---	ND	---	47.8
122		39.161	1.67	48.7	---	47.8
123		38.457	1.74	85.5	---	47.8
124	107/124	38.088	1.64	(151)	---	95.6
125	86/87/97/108/119/125	34.801	1.55	(3510)	---	287
126		43.270	1.46	103	---	47.8
127		---	---	ND	---	47.8
128	128/166	43.270	1.25	936	---	95.6
129	129/138/163	41.995	1.25	6450	---	143
130		41.325	1.26	393	---	47.8
131		38.390	1.32	85.8	---	47.8
132		38.859	1.26	1990	---	47.8
133		39.430	1.18	74.4	---	47.8
134	134/143	37.753	1.39	278	---	95.6
135	135/151	36.612	1.23	2000	---	95.6
136		34.047	1.29	977	---	47.8
137		41.543	1.28	246	---	47.8
138	129/138/163	41.995	1.25	(6450)	---	143
139	139/140	---	---	ND	---	95.6
140	139/140	---	---	ND	---	95.6
141		40.905	1.27	1070	---	47.8
142		---	---	ND	---	47.8
143	134/143	37.753	1.39	(278)	---	95.6
144		37.216	1.23	186	---	47.8

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
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R = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

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ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
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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 PTI0491-07 (FO105896)
Lab Sample ID 10138174007
Filename P101009A_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
145		---	---	ND	---	47.8
146		40.084	1.23	810	---	47.8
147	147/149	37.568	1.25	4330	---	95.6
148		---	---	ND	---	47.8
149	147/149	37.568	1.25	(4330)	---	95.6
150		---	---	ND	---	47.8
151	135/151	36.612	1.23	(2000)	---	95.6
152		---	---	ND	---	47.8
153	153/168	40.721	1.25	4860	---	95.6
154		---	---	ND	---	47.8
155		---	---	ND	---	47.8
156	156/157	46.255	1.23	856	---	95.6
157	156/157	46.255	1.23	(856)	---	95.6
158		42.381	1.27	602	---	47.8
159		---	---	ND	---	47.8
160		---	---	ND	---	47.8
161		---	---	ND	---	47.8
162		44.645	1.20	59.1	---	47.8
163	129/138/163	41.995	1.25	(6450)	---	143
164		41.677	1.24	408	---	47.8
165		---	---	ND	---	47.8
166	128/166	43.270	1.25	(936)	---	95.6
167		45.097	1.32	331	---	47.8
168	153/168	40.721	1.25	(4860)	---	95.6
169		---	---	ND	---	47.8
170		48.938	1.07	1650	---	47.8
171	171/173	45.299	1.03	523	---	95.6
172		46.976	1.07	322	---	47.8
173	171/173	45.299	1.03	(523)	---	95.6
174		44.192	1.00	1700	---	47.8
175		43.069	1.04	79.9	---	47.8
176		40.503	1.04	217	---	47.8
177		44.645	1.05	1010	---	47.8
178		42.431	1.17	444	---	47.8
179		39.614	1.05	700	---	47.8
180	180/193	47.646	1.04	3630	---	95.6
181		---	---	ND	---	47.8
182		---	---	ND	---	47.8
183	183/185	43.974	1.10	1170	---	95.6
184		---	---	ND	---	47.8
185	183/185	43.974	1.10	(1170)	---	95.6
186		---	---	ND	---	47.8
187		43.354	1.05	1850	---	47.8
188		---	---	ND	---	47.8
189		52.164	1.20	86.9	---	47.8
190		49.491	1.05	330	---	47.8
191		48.032	1.10	68.8	---	47.8
192		---	---	ND	---	47.8

Conc = Concentration
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EMPC = Estimated Maximum Possible Concentration
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R = Recovery outside of Method 1668A control limits
Nn = Value obtained from additional analyses

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PTI0491-07 (FO105896)
Lab Sample ID 10138174007
Filename P101009A_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
193	180/193	47.646	1.04	(3630)	---	95.6
194		54.428	0.88	890	---	71.7
195		51.863	0.95	323	---	71.7
196		50.279	0.89	421	---	71.7
197	197/200	---	---	ND	---	143
198	198/199	49.625	0.90	861	---	143
199	198/199	49.625	0.90	(861)	---	143
200	197/200	---	---	ND	---	143
201		45.684	0.93	119	---	71.7
202		44.745	0.90	208	---	71.7
203		50.480	0.85	525	---	71.7
204		---	---	ND	---	71.7
205		---	---	ND	---	71.7
206		57.230	0.79	377	---	71.7
207		---	---	ND	---	71.7
208		51.561	0.82	108	---	71.7
209		59.514	0.69	162	---	71.7

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PTI0491-07 (FO105896)
Lab Sample ID 10138174007
Filename P101009A_09

Congener Group	Concentration ng/Kg
Total Monochloro Biphenyls	ND
Total Dichloro Biphenyls	6070
Total Trichloro Biphenyls	1580
Total Tetrachloro Biphenyls	8340
Total Pentachloro Biphenyls	29300
Total Hexachloro Biphenyls	26900
Total Heptachloro Biphenyls	13800
Total Octachloro Biphenyls	3350
Total Nonachloro Biphenyls	485
Decachloro Biphenyls	162
Total PCBs	90000

ND = Not Detected

Results reported on a total weight basis

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PTI0491-08 (FO105897)		
Lab Sample ID	10138174008		
Filename	P101009A_10		
Injected By	BAL		
Total Amount Extracted	17.2 g	Matrix	Solid
% Moisture	41.3	Dilution	5
Dry Weight Extracted	10.1 g	Collected	09/14/2010 14:53
ICAL ID	P101009A02	Received	09/16/2010 09:57
CCal Filename(s)	P101009A_01	Extracted	10/06/2010 16:40
Method Blank ID	BLANK-26574	Analyzed	10/09/2010 10:42

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	8.414	3.43	2.0	1.17	58
13C-4-MoCB	3	11.769	3.04	2.0	1.41	71
13C-2,2'-DiCB	4	12.105	1.43	2.0	1.32	66
13C-4,4'-DiCB	15	20.168	1.61	2.0	0.931	47
13C-2,2',6-TrCB	19	16.514	1.06	2.0	1.33	67
13C-3,4,4'-TrCB	37	28.512	1.07	2.0	1.70	85
13C-2,2',6,6'-TeCB	54	20.497	0.77	2.0	1.26	63
13C-3,4,4',5-TeCB	81	35.823	0.79	2.0	1.29	65
13C-3,3',4,4'-TeCB	77	36.393	0.78	2.0	1.35	68
13C-2,2',4,6,6'-PeCB	104	27.020	1.65	2.0	1.71	85
13C-2,3,3',4,4'-PeCB	105	40.015	1.58	2.0	1.26	63
13C-2,3,4,4',5-PeCB	114	39.328	1.58	2.0	1.31	66
13C-2,3',4,4',5-PeCB	118	38.791	1.53	2.0	1.29	64
13C-2,3',4,4',5'-PeCB	123	38.439	1.60	2.0	1.36	68
13C-3,3',4,4',5-PeCB	126	43.235	1.52	2.0	1.17	58
13C-2,2',4,4',6,6'-HxCB	155	33.274	1.20	2.0	2.09	104
13C-HxCB (156/157)	156/157	46.253	1.23	4.0	2.22	56
13C-2,3',4,4',5,5'-HxCB	167	45.063	1.27	2.0	1.17	58
13C-3,3',4,4',5,5'-HxCB	169	49.624	1.23	2.0	1.07	54
13C-2,2',3,4',5,6,6'-HpCB	188	39.244	1.05	2.0	2.69	135
13C-2,3,3',4,4',5,5'-HpCB	189	52.136	1.02	2.0	1.58	79
13C-2,2',3,3',5,5',6,6'-OxCB	202	44.710	0.89	2.0	1.91	96
13C-2,3,3',4,4',5,5',6-OxCB	205	54.960	0.92	2.0	1.62	81
13C-2,2',3,3',4,4',5,5',6-NoCB	206	57.201	0.84	2.0	1.88	94
13C-2,2',3,3',4,4',5,5',6-NoCB	208	51.533	0.83	2.0	1.55	78
13C--DeCB	209	59.486	0.63	2.0	1.28	64
Cleanup Standards						
13C-2,4,4'-TrCB	28	23.884	0.97	2.0	1.68	84
13C-2,3,3',5,5'-PeCB	111	36.427	1.57	2.0	1.52	76
13C-2,2',3,3',5,5',6-HpCB	178	42.396	1.08	2.0	1.65	83
Recovery Standards						
13C-2,5-DiCB	9	14.992	1.57	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	26.013	0.81	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	33.559	1.67	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	41.960	1.30	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	54.378	0.87	2.0	NA	NA

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

**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PTI0491-08 (FO105897)
Lab Sample ID 10138174008
Filename P101009A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
1		---	---	ND	---	24.8
2		---	---	ND	---	24.8
3		11.781	3.09	32.5	---	24.8
4		12.117	1.49	29.5	---	24.8
5		---	---	ND	---	24.8
6		---	---	ND	---	24.8
7		---	---	ND	---	24.8
8		16.167	1.57	88.9	---	24.8
9		---	---	ND	---	24.8
10		---	---	ND	---	24.8
11		19.438	1.56	2370	---	149
12	12/13	19.833	1.59	50.0	---	49.6
13	12/13	19.833	1.59	(50.0)	---	49.6
14		---	---	ND	---	24.8
15		20.180	1.56	172	---	24.8
16		20.097	1.06	54.4	---	24.8
17		19.545	1.04	51.2	---	24.8
18	18/30	19.006	1.04	85.2	---	49.6
19		16.538	1.20	27.6	---	24.8
20	20/28	23.917	1.04	385	---	49.6
21	21/33	24.186	1.04	173	---	49.6
22		24.638	1.05	132	---	24.8
23		---	---	ND	---	24.8
24		---	---	ND	---	24.8
25		23.196	1.02	28.3	---	24.8
26	26/29	22.894	1.10	59.1	---	49.6
27		---	---	ND	---	24.8
28	20/28	23.917	1.04	(385)	---	49.6
29	26/29	22.894	1.10	(59.1)	---	49.6
30	18/30	19.006	1.04	(85.2)	---	49.6
31		23.548	1.03	291	---	24.8
32		20.782	1.05	71.6	---	24.8
33	21/33	24.186	1.04	(173)	---	49.6
34		---	---	ND	---	24.8
35		28.076	0.98	50.7	---	24.8
36		---	---	ND	---	24.8
37		28.529	1.02	288	---	24.8
38		---	---	ND	---	24.8
39		---	---	ND	---	24.8
40	40/41/71	28.277	0.81	535	---	149
41	40/41/71	28.277	0.81	(535)	---	149
42		27.724	0.79	204	---	49.6
43	43/73	---	---	ND	---	99.2
44	44/47/65	27.137	0.78	897	---	149
45	45/51	23.968	0.77	173	---	99.2
46		24.337	0.78	66.4	---	49.6
47	44/47/65	27.137	0.78	(897)	---	149
48		26.885	0.82	115	---	49.6

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PTI0491-08 (FO105897)
Lab Sample ID 10138174008
Filename P101009A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
49	49/69	26.584	0.79	464	---	99.2
50	50/53	23.196	0.77	147	---	99.2
51	45/51	23.968	0.77	(173)	---	99.2
52		26.030	0.80	1900	---	49.6
53	50/53	23.196	0.77	(147)	---	99.2
54		---	---	ND	---	49.6
55		---	---	ND	---	49.6
56		32.436	0.78	452	---	49.6
57		---	---	ND	---	49.6
58		---	---	ND	---	49.6
59	59/62/75	---	---	ND	---	149
60		32.687	0.79	213	---	49.6
61	61/70/74/76	31.379	0.79	1860	---	198
62	59/62/75	---	---	ND	---	149
63		---	---	ND	---	49.6
64		28.545	0.79	520	---	49.6
65	44/47/65	27.137	0.78	(897)	---	149
66		31.732	0.78	907	---	49.6
67		---	---	ND	---	49.6
68		---	---	ND	---	49.6
69	49/69	26.584	0.79	(464)	---	99.2
70	61/70/74/76	31.379	0.79	(1860)	---	198
71	40/41/71	28.277	0.81	(535)	---	149
72		---	---	ND	---	49.6
73	43/73	---	---	ND	---	99.2
74	61/70/74/76	31.379	0.79	(1860)	---	198
75	59/62/75	---	---	ND	---	149
76	61/70/74/76	31.379	0.79	(1860)	---	198
77		36.427	0.78	247	---	49.6
78		---	---	ND	---	49.6
79		---	---	ND	---	49.6
80		---	---	ND	---	49.6
81		---	---	ND	---	49.6
82		35.974	1.60	543	---	49.6
83		34.046	1.55	292	---	49.6
84		31.547	1.61	1520	---	49.6
85	85/116/117	35.471	1.55	598	---	149
86	86/87/97/108/119/125	34.800	1.56	3640	---	297
87	86/87/97/108/119/125	34.800	1.56	(3640)	---	297
88	88/91	31.329	1.60	640	---	99.2
89		32.067	1.48	56.2	---	49.6
90	90/101/113	33.576	1.57	5470	---	149
91	88/91	31.329	1.60	(640)	---	99.2
92		32.956	1.58	1010	---	49.6
93	93/98/100/102	---	---	ND	---	198
94		---	---	ND	---	49.6
95		30.390	1.57	4600	---	49.6
96		---	---	ND	---	49.6

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PTI0491-08 (FO105897)
Lab Sample ID 10138174008
Filename P101009A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
97	86/87/97/108/119/125	34.800	1.56	(3640)	---	297
98	93/98/100/102	---	---	ND	---	198
99		34.196	1.54	1690	---	49.6
100	93/98/100/102	---	---	ND	---	198
101	90/101/113	33.576	1.57	(5470)	---	149
102	93/98/100/102	---	---	ND	---	198
103		---	---	ND	---	49.6
104		---	---	ND	---	49.6
105		40.032	1.58	1780	---	49.6
106		---	---	ND	---	49.6
107	107/124	38.104	1.61	177	---	99.2
108	86/87/97/108/119/125	34.800	1.56	(3640)	---	297
109		38.355	1.56	253	---	49.6
110	110/115	35.655	1.60	5440	---	99.2
111		---	---	ND	---	49.6
112		---	---	ND	---	49.6
113	90/101/113	33.576	1.57	(5470)	---	149
114		39.378	1.69	86.5	---	49.6
115	110/115	35.655	1.60	(5440)	---	99.2
116	85/116/117	35.471	1.55	(598)	---	149
117	85/116/117	35.471	1.55	(598)	---	149
118		38.825	1.57	4040	---	49.6
119	86/87/97/108/119/125	34.800	1.56	(3640)	---	297
120		---	---	ND	---	49.6
121		---	---	ND	---	49.6
122		---	---	ND	---	49.6
123		38.489	1.53	71.6	---	49.6
124	107/124	38.104	1.61	(177)	---	99.2
125	86/87/97/108/119/125	34.800	1.56	(3640)	---	297
126		---	---	ND	---	49.6
127		---	---	ND	---	49.6
128	128/166	43.285	1.26	1150	---	99.2
129	129/138/163	41.994	1.25	7760	---	149
130		41.340	1.19	472	---	49.6
131		38.389	1.11	103	---	49.6
132		38.858	1.26	2430	---	49.6
133		39.412	1.24	85.4	---	49.6
134	134/143	37.785	1.05	346	---	99.2
135	135/151	36.611	1.28	2180	---	99.2
136		34.046	1.23	1110	---	49.6
137		41.541	1.31	360	---	49.6
138	129/138/163	41.994	1.25	(7760)	---	149
139	139/140	38.204	1.27	106	---	99.2
140	139/140	38.204	1.27	(106)	---	99.2
141		40.904	1.27	1260	---	49.6
142		---	---	ND	---	49.6
143	134/143	37.785	1.05	(346)	---	99.2
144		37.131	1.19	61.5	---	49.6

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PTI0491-08 (FO105897)
Lab Sample ID 10138174008
Filename P101009A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
145		---	---	ND	---	49.6
146		40.082	1.23	901	---	49.6
147	147/149	37.567	1.31	5010	---	99.2
148		---	---	ND	---	49.6
149	147/149	37.567	1.31	(5010)	---	99.2
150		---	---	ND	---	49.6
151	135/151	36.611	1.28	(2180)	---	99.2
152		---	---	ND	---	49.6
153	153/168	40.719	1.25	5680	---	99.2
154		---	---	ND	---	49.6
155		---	---	ND	---	49.6
156	156/157	46.253	1.26	970	---	99.2
157	156/157	46.253	1.26	(970)	---	99.2
158		42.396	1.26	737	---	49.6
159		---	---	ND	---	49.6
160		---	---	ND	---	49.6
161		---	---	ND	---	49.6
162		---	---	ND	---	49.6
163	129/138/163	41.994	1.25	(7760)	---	149
164		41.675	1.27	450	---	49.6
165		---	---	ND	---	49.6
166	128/166	43.285	1.26	(1150)	---	99.2
167		45.096	1.22	343	---	49.6
168	153/168	40.719	1.25	(5680)	---	99.2
169		---	---	ND	---	49.6
170		48.919	1.03	1410	---	49.6
171	171/173	45.297	0.99	438	---	99.2
172		46.974	1.04	265	---	49.6
173	171/173	45.297	0.99	(438)	---	99.2
174		44.207	1.02	1410	---	49.6
175		43.067	1.08	73.6	---	49.6
176		40.518	1.02	230	---	49.6
177		44.643	1.05	820	---	49.6
178		42.430	1.12	359	---	49.6
179		39.613	1.05	702	---	49.6
180	180/193	47.628	1.05	3090	---	99.2
181		---	---	ND	---	49.6
182		---	---	ND	---	49.6
183	183/185	43.973	1.11	1010	---	99.2
184		---	---	ND	---	49.6
185	183/185	43.973	1.11	(1010)	---	99.2
186		---	---	ND	---	49.6
187		43.352	1.03	1820	---	49.6
188		---	---	ND	---	49.6
189		52.179	1.12	80.6	---	49.6
190		49.490	1.08	290	---	49.6
191		47.997	1.02	59.9	---	49.6
192		---	---	ND	---	49.6

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

Results reported on a total weight basis

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
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ng's = Nanograms

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PTI0491-08 (FO105897)
Lab Sample ID 10138174008
Filename P101009A_10

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
193	180/193	47.628	1.05	(3090)	---	99.2
194		54.421	0.89	864	---	74.4
195		51.856	0.94	335	---	74.4
196		50.278	0.93	442	---	74.4
197	197/200	---	---	ND	---	149
198	198/199	49.607	0.90	919	---	149
199	198/199	49.607	0.90	(919)	---	149
200	197/200	---	---	ND	---	149
201		45.683	0.89	122	---	74.4
202		44.744	0.93	208	---	74.4
203		50.479	0.93	552	---	74.4
204		---	---	ND	---	74.4
205		---	---	ND	---	74.4
206		57.201	0.81	358	---	74.4
207		---	---	ND	---	74.4
208		51.554	0.84	115	---	74.4
209		59.572	0.73	189	---	74.4

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PTI0491-08 (FO105897)
Lab Sample ID 10138174008
Filename P101009A_10

Congener Group	Concentration ng/Kg
Total Monochloro Biphenyls	32.5
Total Dichloro Biphenyls	2710
Total Trichloro Biphenyls	1700
Total Tetrachloro Biphenyls	8700
Total Pentachloro Biphenyls	31900
Total Hexachloro Biphenyls	31500
Total Heptachloro Biphenyls	12100
Total Octachloro Biphenyls	3440
Total Nonachloro Biphenyls	473
Decachloro Biphenyls	189
Total PCBs	92700

ND = Not Detected

Results reported on a total weight basis

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client - Test America

Client's Sample ID	PTI0491-09 (FO105899)		
Lab Sample ID	10138174009		
Filename	P101001B_11		
Injected By	CVS		
Total Amount Extracted	10.5 g	Matrix	Solid
% Moisture	3.7	Dilution	5
Dry Weight Extracted	10.1 g	Collected	09/14/2010
ICAL ID	P101001B02	Received	09/16/2010 09:57
CCal Filename(s)	P101001B_01	Extracted	09/29/2010 14:40
Method Blank ID	BLANK-26482	Analyzed	10/02/2010 03:20

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	9.072	3.07	2.0	0.927	46
13C-4-MoCB	3	12.499	2.88	2.0	1.06	53
13C-2,2'-DiCB	4	12.846	1.54	2.0	1.08	54
13C-4,4'-DiCB	15	21.017	1.57	2.0	1.10	55
13C-2,2',6-TrCB	19	17.303	1.01	2.0	1.11	55
13C-3,4,4'-TrCB	37	29.341	1.10	2.0	1.34	67
13C-2,2',6,6'-TeCB	54	21.326	0.80	2.0	1.11	56
13C-3,4,4',5-TeCB	81	36.619	0.77	2.0	1.36	68
13C-3,3',4,4'-TeCB	77	37.222	0.78	2.0	1.38	69
13C-2,2',4,6,6'-PeCB	104	27.866	1.61	2.0	1.28	64
13C-2,3,3',4,4'-PeCB	105	40.811	1.55	2.0	1.16	58
13C-2,3,4,4',5-PeCB	114	40.123	1.59	2.0	1.17	59
13C-2,3',4,4',5-PeCB	118	39.587	1.54	2.0	1.15	58
13C-2,3',4,4',5'-PeCB	123	39.235	1.54	2.0	1.19	59
13C-3,3',4,4',5-PeCB	126	43.980	1.50	2.0	1.20	60
13C-2,2',4,4',6,6'-HxCB	155	34.087	1.27	2.0	1.47	74
13C-HxCB (156/157)	156/157	47.015	1.27	4.0	2.42	60
13C-2,3',4,4',5,5'-HxCB	167	45.808	1.24	2.0	1.25	62
13C-3,3',4,4',5,5'-HxCB	169	50.351	1.29	2.0	1.22	61
13C-2,2',3,4',5,6,6'-HpCB	188	40.039	1.06	2.0	1.48	74
13C-2,3,3',4,4',5,5'-HpCB	189	52.895	1.01	2.0	1.29	64
13C-2,2',3,3',5,5',6'-OxCB	202	45.506	0.86	2.0	1.40	70
13C-2,3,3',4,4',5,5',6-OxCB	205	55.891	0.87	2.0	1.38	69
13C-2,2',3,3',4,4',5,5',6-NoCB	206	58.218	0.79	2.0	1.43	71
13C-2,2',3,3',4,4',5,5',6-NoCB	208	52.291	0.81	2.0	1.39	70
13C--DeCB	209	60.675	0.69	2.0	1.33	66
Cleanup Standards						
13C-2,4,4'-TrCB	28	24.713	1.05	2.0	1.58	79
13C-2,3,3',5,5'-PeCB	111	37.206	1.55	2.0	1.72	86
13C-2,2',3,3',5,5',6-HpCB	178	43.175	1.07	2.0	1.94	97
Recovery Standards						
13C-2,5-DiCB	9	15.757	1.53	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	26.826	0.80	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	34.372	1.57	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	42.739	1.26	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	55.244	0.90	2.0	NA	NA

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Pace AnalyticalTM

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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 PTI0491-09 (FO105899)
Lab Sample ID 10138174009
Filename P101001B_11

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
1		9.084	3.14	28.2	---	24.7
2		12.235	3.19	31.6	---	24.7
3		12.511	2.97	31.2	---	24.7
4		12.882	1.41	41.0	---	24.7
5		---	---	ND	---	24.7
6		---	---	ND	---	24.7
7		---	---	ND	---	24.7
8		16.932	1.34	90.6	---	24.7
9		---	---	ND	---	24.7
10		---	---	ND	---	24.7
11		20.238	1.51	1710	---	148
12	12/13	---	---	ND	---	49.3
13	12/13	---	---	ND	---	49.3
14		---	---	ND	---	24.7
15		21.041	1.34	151	---	24.7
16		20.921	0.91	79.9	---	24.7
17		20.358	1.07	92.6	---	24.7
18	18/30	19.819	1.05	214	---	49.3
19		17.351	1.17	39.0	---	24.7
20	20/28	24.730	1.02	492	---	49.3
21	21/33	24.998	1.03	198	---	49.3
22		25.485	1.07	160	---	24.7
23		---	---	ND	---	24.7
24		---	---	ND	---	24.7
25		24.026	1.05	36.2	---	24.7
26	26/29	23.724	1.05	71.4	---	49.3
27		20.621	0.98	25.1	---	24.7
28	20/28	24.730	1.02	(492)	---	49.3
29	26/29	23.724	1.05	(71.4)	---	49.3
30	18/30	19.819	1.05	(214)	---	49.3
31		24.395	1.03	424	---	24.7
32		21.611	1.05	105	---	24.7
33	21/33	24.998	1.03	(198)	---	49.3
34		---	---	ND	---	24.7
35		28.889	1.08	46.2	---	24.7
36		---	---	ND	---	24.7
37		29.375	1.04	342	---	24.7
38		---	---	ND	---	24.7
39		---	---	ND	---	24.7
40	40/41/71	29.123	0.79	1440	---	148
41	40/41/71	29.123	0.79	(1440)	---	148
42		28.553	0.76	563	---	49.3
43	43/73	---	---	ND	---	98.6
44	44/47/65	27.966	0.79	3070	---	148
45	45/51	24.797	0.79	434	---	98.6
46		25.183	0.78	160	---	49.3
47	44/47/65	27.966	0.79	(3070)	---	148
48		27.715	0.81	238	---	49.3

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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PTI0491-09 (FO105899)
Lab Sample ID 10138174009
Filename P101001B_11

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
49	49/69	27.413	0.78	1670	---	98.6
50	50/53	24.026	0.78	403	---	98.6
51	45/51	24.797	0.79	(434)	---	98.6
52		26.860	0.77	6910	---	49.3
53	50/53	24.026	0.78	(403)	---	98.6
54		---	---	ND	---	49.3
55		---	---	ND	---	49.3
56		33.265	0.80	1050	---	49.3
57		---	---	ND	---	49.3
58		---	---	ND	---	49.3
59	59/62/75	28.352	0.81	213	---	148
60		33.500	0.78	388	---	49.3
61	61/70/74/76	32.192	0.78	5040	---	197
62	59/62/75	28.352	0.81	(213)	---	148
63		31.840	0.76	62.4	---	49.3
64		29.375	0.79	1070	---	49.3
65	44/47/65	27.966	0.79	(3070)	---	148
66		32.561	0.77	2400	---	49.3
67		---	---	ND	---	49.3
68		---	---	ND	---	49.3
69	49/69	27.413	0.78	(1670)	---	98.6
70	61/70/74/76	32.192	0.78	(5040)	---	197
71	40/41/71	29.123	0.79	(1440)	---	148
72		---	---	ND	---	49.3
73	43/73	---	---	ND	---	98.6
74	61/70/74/76	32.192	0.78	(5040)	---	197
75	59/62/75	28.352	0.81	(213)	---	148
76	61/70/74/76	32.192	0.78	(5040)	---	197
77		37.239	0.78	584	---	49.3
78		36.300	0.71	115	---	49.3
79		35.512	0.88	106	---	49.3
80		---	---	ND	---	49.3
81		---	---	ND	---	49.3
82		36.803	1.56	2300	---	49.3
83		34.875	1.56	1060	---	49.3
84		32.393	1.56	4700	---	49.3
85	85/116/117	36.300	1.55	2600	---	148
86	86/87/97/108/119/125	35.629	1.56	10100	---	296
87	86/87/97/108/119/125	35.629	1.56	(10100)	---	296
88	88/91	32.158	1.57	2260	---	98.6
89		32.896	1.54	221	---	49.3
90	90/101/113	34.389	1.56	14100	---	148
91	88/91	32.158	1.57	(2260)	---	98.6
92		33.768	1.56	2840	---	49.3
93	93/98/100/102	31.605	1.57	519	---	197
94		30.716	1.46	75.7	---	49.3
95		31.219	1.57	13300	---	49.3
96		28.318	1.66	109	---	49.3

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PTI0491-09 (FO105899)
Lab Sample ID 10138174009
Filename P101001B_11

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
97	86/87/97/108/119/125	35.629	1.56	(10100)	---	296
98	93/98/100/102	31.605	1.57	(519)	---	197
99		35.009	1.55	5640	---	49.3
100	93/98/100/102	31.605	1.57	(519)	---	197
101	90/101/113	34.389	1.56	(14100)	---	148
102	93/98/100/102	31.605	1.57	(519)	---	197
103		30.482	1.59	69.8	---	49.3
104		---	---	ND	---	49.3
105		40.828	1.61	5640	---	49.3
106		---	---	ND	---	49.3
107	107/124	38.899	1.55	665	---	98.6
108	86/87/97/108/119/125	35.629	1.56	(10100)	---	296
109		39.134	1.54	848	---	49.3
110	110/115	36.468	1.56	19500	---	98.6
111		---	---	ND	---	49.3
112		---	---	ND	---	49.3
113	90/101/113	34.389	1.56	(14100)	---	148
114		40.157	1.38	289	---	49.3
115	110/115	36.468	1.56	(19500)	---	98.6
116	85/116/117	36.300	1.55	(2600)	---	148
117	85/116/117	36.300	1.55	(2600)	---	148
118		39.603	1.55	12300	---	49.3
119	86/87/97/108/119/125	35.629	1.56	(10100)	---	296
120		---	---	ND	---	49.3
121		---	---	ND	---	49.3
122		39.939	1.63	245	---	49.3
123		39.268	1.57	368	---	49.3
124	107/124	38.899	1.55	(665)	---	98.6
125	86/87/97/108/119/125	35.629	1.56	(10100)	---	296
126		43.980	1.53	58.4	---	49.3
127		---	---	ND	---	49.3
128	128/166	44.064	1.24	3430	---	98.6
129	129/138/163	42.773	1.27	20600	---	148
130		42.119	1.26	1350	---	49.3
131		39.201	1.25	315	---	49.3
132		39.687	1.26	6870	---	49.3
133		40.190	1.23	235	---	49.3
134	134/143	38.581	1.27	1100	---	98.6
135	135/151	37.424	1.26	5250	---	98.6
136		34.875	1.28	2210	---	49.3
137		42.337	1.24	1240	---	49.3
138	129/138/163	42.773	1.27	(20600)	---	148
139	139/140	38.983	1.25	363	---	98.6
140	139/140	38.983	1.25	(363)	---	98.6
141		41.700	1.26	3370	---	49.3
142		---	---	ND	---	49.3
143	134/143	38.581	1.27	(1100)	---	98.6
144		38.010	1.25	851	---	49.3

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PTI0491-09 (FO105899)
Lab Sample ID 10138174009
Filename P101001B_11

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
145		---	---	ND	---	49.3
146		40.861	1.25	2390	---	49.3
147	147/149	38.379	1.25	13400	---	98.6
148		---	---	ND	---	49.3
149	147/149	38.379	1.25	(13400)	---	98.6
150		---	---	ND	---	49.3
151	135/151	37.424	1.26	(5250)	---	98.6
152		---	---	ND	---	49.3
153	153/168	41.498	1.25	13600	---	98.6
154		37.675	1.29	124	---	49.3
155		---	---	ND	---	49.3
156	156/157	47.015	1.24	2540	---	98.6
157	156/157	47.015	1.24	(2540)	---	98.6
158		43.175	1.28	1970	---	49.3
159		44.986	1.25	162	---	49.3
160		---	---	ND	---	49.3
161		---	---	ND	---	49.3
162		45.439	1.24	156	---	49.3
163	129/138/163	42.773	1.27	(20600)	---	148
164		42.454	1.26	1190	---	49.3
165		---	---	ND	---	49.3
166	128/166	44.064	1.24	(3430)	---	98.6
167		45.841	1.24	910	---	49.3
168	153/168	41.498	1.25	(13600)	---	98.6
169		---	---	ND	---	49.3
170		49.698	1.05	3680	---	49.3
171	171/173	46.076	1.02	1110	---	98.6
172		47.736	1.05	651	---	49.3
173	171/173	46.076	1.02	(1110)	---	98.6
174		44.986	1.04	3120	---	49.3
175		43.846	1.06	163	---	49.3
176		41.314	1.05	439	---	49.3
177		45.439	1.04	1920	---	49.3
178		43.209	1.16	678	---	49.3
179		40.425	1.04	1290	---	49.3
180	180/193	48.390	1.02	7160	---	98.6
181		---	---	ND	---	49.3
182		---	---	ND	---	49.3
183	183/185	44.735	1.04	2310	---	98.6
184		---	---	ND	---	49.3
185	183/185	44.735	1.04	(2310)	---	98.6
186		---	---	ND	---	49.3
187		44.114	1.06	3550	---	49.3
188		---	---	ND	---	49.3
189		52.916	1.00	172	---	49.3
190		50.251	1.06	734	---	49.3
191		48.775	1.02	157	---	49.3
192		---	---	ND	---	49.3

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

Results reported on a total weight basis

ND = Not Detected
NA = Not Applicable
NC = Not Calculated
* = See Discussion
X = Outside QC Limits
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ng's = Nanograms

REPORT OF LABORATORY ANALYSIS

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**Method 1668A Polychlorobiphenyl
Sample Analysis Results**

Client Sample ID PTI0491-09 (FO105899)
Lab Sample ID 10138174009
Filename P101001B_11

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
193	180/193	48.390	1.02	(7160)	---	98.6
194		55.309	0.91	1510	---	74.0
195		52.615	0.89	627	---	74.0
196		51.039	0.94	849	---	74.0
197	197/200	47.501	0.93	275	---	148
198	198/199	50.368	0.90	1690	---	148
199	198/199	50.368	0.90	(1690)	---	148
200	197/200	47.501	0.93	(275)	---	148
201		46.478	0.90	207	---	74.0
202		45.523	0.90	297	---	74.0
203		51.240	0.88	1010	---	74.0
204		---	---	ND	---	74.0
205		55.934	0.89	90.1	---	74.0
206		58.261	0.79	572	---	74.0
207		53.326	0.79	84.6	---	74.0
208		52.335	0.79	135	---	74.0
209		60.718	0.69	171	---	74.0

Conc = Concentration
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A = Limit of Detection based on signal to noise
B = Less than 10 times higher than method blank level
R = Recovery outside of Method 1668A control limits
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Method 1668A Polychlorobiphenyl Sample Analysis Results

Client Sample ID PTI0491-09 (FO105899)
Lab Sample ID 10138174009
Filename P101001B_11

Congener Group	Concentration ng/Kg
Total Monochloro Biphenyls	91.0
Total Dichloro Biphenyls	1990
Total Trichloro Biphenyls	2330
Total Tetrachloro Biphenyls	25900
Total Pentachloro Biphenyls	99800
Total Hexachloro Biphenyls	83600
Total Heptachloro Biphenyls	27100
Total Octachloro Biphenyls	6560
Total Nonachloro Biphenyls	792
Decachloro Biphenyls	171
Total PCBs	248000

ND = Not Detected

Results reported on a total weight basis

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyl Blank Analysis Results

Lab Sample ID	BLANK-26482		
Filename	P100930B_09		
Injected By	BAL	Matrix	Solid
Total Amount Extracted	10.4 g	Extracted	09/29/2010 14:40
ICAL ID	P100930B02	Analyzed	09/30/2010 22:55
CCal Filename(s)	P100930B_01	Dilution	NA

PCB Isomer	IUPAC	RT	Ratio	ng's Added	ng's Found	% Recovery
Labeled Analytes						
13C-2-MoCB	1	9.061	3.18	2.0	1.30	65
13C-4-MoCB	3	12.487	3.06	2.0	1.42	71
13C-2,2'-DiCB	4	12.834	1.59	2.0	1.62	81
13C-4,4'-DiCB	15	21.006	1.54	2.0	1.43	71
13C-2,2',6-TrCB	19	17.279	1.08	2.0	1.67	83
13C-3,4,4'-TrCB	37	29.359	1.06	2.0	1.49	74
13C-2,2',6,6'-TeCB	54	21.310	0.79	2.0	1.54	77
13C-3,4,4',5-TeCB	81	36.837	0.82	2.0	0.553	28
13C-3,3',4,4'-TeCB	77	37.441	0.80	2.0	0.540	27
13C-2,2',4,6,6'-PeCB	104	27.883	1.58	2.0	4.44	222 R
13C-2,3,3',4,4'-PeCB	105	41.046	1.60	2.0	1.43	71
13C-2,3,4,4',5-PeCB	114	40.375	1.56	2.0	1.37	68
13C-2,3',4,4',5-PeCB	118	39.839	1.66	2.0	1.26	63
13C-2,3',4,4',5'-PeCB	123	39.504	1.52	2.0	1.29	65
13C-3,3',4,4',5-PeCB	126	44.165	1.49	2.0	2.07	103
13C-2,2',4,4',6,6'-HxCB	155	34.255	1.23	2.0	1.58	79
13C-HxCB (156/157)	156/157	47.116	1.26	4.0	5.41	135
13C-2,3',4,4',5,5'-HxCB	167	45.959	1.24	2.0	2.45	122
13C-3,3',4,4',5,5'-HxCB	169	50.386	1.26	2.0	2.90	145
13C-2,2',3,4',5,6,6'-HpCB	188	40.275	1.09	2.0	0.770	38
13C-2,3,3',4,4',5,5'-HpCB	189	52.896	1.06	2.0	1.77	89
13C-2,2',3,3',5,5',6,6'-OxCB	202	45.641	0.91	2.0	1.58	79
13C-2,3,3',4,4',5,5',6-OxCB	205	55.827	0.90	2.0	1.82	91
13C-2,2',3,3',4,4',5,5',6-NoCB	206	58.177	0.77	2.0	1.88	94
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	52.314	0.79	2.0	1.85	92
13C--DeCB	209	60.634	0.69	2.0	1.77	88
Cleanup Standards						
13C-2,4,4'-TrCB	28	24.714	1.05	2.0	1.65	83
13C-2,3,3',5,5'-PeCB	111	37.458	1.60	2.0	1.34	67
13C-2,2',3,3',5,5',6-HpCB	178	43.377	1.08	2.0	2.06	103
Recovery Standards						
13C-2,5-DiCB	9	15.734	1.57	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	26.844	0.79	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	34.523	1.62	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	42.941	1.25	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OxCB	194	55.224	0.91	2.0	NA	NA

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

Results reported on a dry weight basis

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

REPORT OF LABORATORY ANALYSIS

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-26482
Filename P100930B_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
1		---	---	ND	---	24.1
2		---	---	ND	---	24.1
3		---	---	ND	---	24.1
4		---	---	ND	---	24.1
5		---	---	ND	---	24.1
6		---	---	ND	---	24.1
7		---	---	ND	---	24.1
8		---	---	ND	---	24.1
9		---	---	ND	---	24.1
10		---	---	ND	---	24.1
11		---	---	ND	---	144
12	12/13	---	---	ND	---	48.1
13	12/13	---	---	ND	---	48.1
14		---	---	ND	---	24.1
15		---	---	ND	---	24.1
16		---	---	ND	---	24.1
17		---	---	ND	---	24.1
18	18/30	---	---	ND	---	48.1
19		---	---	ND	---	24.1
20	20/28	---	---	ND	---	48.1
21	21/33	---	---	ND	---	48.1
22		---	---	ND	---	24.1
23		---	---	ND	---	24.1
24		---	---	ND	---	24.1
25		---	---	ND	---	24.1
26	26/29	---	---	ND	---	48.1
27		---	---	ND	---	24.1
28	20/28	---	---	ND	---	48.1
29	26/29	---	---	ND	---	48.1
30	18/30	---	---	ND	---	48.1
31		---	---	ND	---	24.1
32		---	---	ND	---	24.1
33	21/33	---	---	ND	---	48.1
34		---	---	ND	---	24.1
35		---	---	ND	---	24.1
36		---	---	ND	---	24.1
37		---	---	ND	---	24.1
38		---	---	ND	---	24.1
39		---	---	ND	---	24.1
40	40/41/71	---	---	ND	---	144
41	40/41/71	---	---	ND	---	144
42		---	---	ND	---	48.1
43	43/73	---	---	ND	---	96.2
44	44/47/65	---	---	ND	---	144
45	45/51	---	---	ND	---	96.2

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
EMPC = Estimated Maximum Possible Concentration
A = Limit of Detection based on signal to noise
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R = Recovery outside of Method 1668A control limits
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Results reported on a dry weight basis

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-26482
Filename P100930B_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
46		---	---	ND	---	48.1
47	44/47/65	---	---	ND	---	144
48		---	---	ND	---	48.1
49	49/69	---	---	ND	---	96.2
50	50/53	---	---	ND	---	96.2
51	45/51	---	---	ND	---	96.2
52		---	---	ND	---	48.1
53	50/53	---	---	ND	---	96.2
54		---	---	ND	---	48.1
55		---	---	ND	---	48.1
56		---	---	ND	---	48.1
57		---	---	ND	---	48.1
58		---	---	ND	---	48.1
59	59/62/75	---	---	ND	---	144
60		---	---	ND	---	48.1
61	61/70/74/76	---	---	ND	---	192
62	59/62/75	---	---	ND	---	144
63		---	---	ND	---	48.1
64		---	---	ND	---	48.1
65	44/47/65	---	---	ND	---	144
66		---	---	ND	---	48.1
67		---	---	ND	---	48.1
68		---	---	ND	---	48.1
69	49/69	---	---	ND	---	96.2
70	61/70/74/76	---	---	ND	---	192
71	40/41/71	---	---	ND	---	144
72		---	---	ND	---	48.1
73	43/73	---	---	ND	---	96.2
74	61/70/74/76	---	---	ND	---	192
75	59/62/75	---	---	ND	---	144
76	61/70/74/76	---	---	ND	---	192
77		---	---	ND	---	48.1
78		---	---	ND	---	48.1
79		---	---	ND	---	48.1
80		---	---	ND	---	48.1
81		---	---	ND	---	48.1
82		---	---	ND	---	48.1
83		---	---	ND	---	48.1
84		---	---	ND	---	48.1
85	85/116/117	---	---	ND	---	144
86	86/87/97/108/119/125	---	---	ND	---	289
87	86/87/97/108/119/125	---	---	ND	---	289
88	88/91	---	---	ND	---	96.2
89		---	---	ND	---	48.1
90	90/101/113	---	---	ND	---	144

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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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-26482
Filename P100930B_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
91	88/91	---	---	ND	---	96.2
92		---	---	ND	---	48.1
93	93/98/100/102	---	---	ND	---	192
94		---	---	ND	---	48.1
95		---	---	ND	---	48.1
96		---	---	ND	---	48.1
97	86/87/97/108/119/125	---	---	ND	---	289
98	93/98/100/102	---	---	ND	---	192
99		---	---	ND	---	48.1
100	93/98/100/102	---	---	ND	---	192
101	90/101/113	---	---	ND	---	144
102	93/98/100/102	---	---	ND	---	192
103		---	---	ND	---	48.1
104		---	---	ND	---	48.1
105		---	---	ND	---	48.1
106		---	---	ND	---	48.1
107	107/124	---	---	ND	---	96.2
108	86/87/97/108/119/125	---	---	ND	---	289
109		---	---	ND	---	48.1
110	110/115	---	---	ND	---	96.2
111		---	---	ND	---	48.1
112		---	---	ND	---	48.1
113	90/101/113	---	---	ND	---	144
114		---	---	ND	---	48.1
115	110/115	---	---	ND	---	96.2
116	85/116/117	---	---	ND	---	144
117	85/116/117	---	---	ND	---	144
118		---	---	ND	---	48.1
119	86/87/97/108/119/125	---	---	ND	---	289
120		---	---	ND	---	48.1
121		---	---	ND	---	48.1
122		---	---	ND	---	48.1
123		---	---	ND	---	48.1
124	107/124	---	---	ND	---	96.2
125	86/87/97/108/119/125	---	---	ND	---	289
126		---	---	ND	---	48.1
127		---	---	ND	---	48.1
128	128/166	---	---	ND	---	96.2
129	129/138/163	---	---	ND	---	144
130		---	---	ND	---	48.1
131		---	---	ND	---	48.1
132		---	---	ND	---	48.1
133		---	---	ND	---	48.1
134	134/143	---	---	ND	---	96.2
135	135/151	---	---	ND	---	96.2

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

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-26482
Filename P100930B_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
136		---	---	ND	---	48.1
137		---	---	ND	---	48.1
138	129/138/163	---	---	ND	---	144
139	139/140	---	---	ND	---	96.2
140	139/140	---	---	ND	---	96.2
141		---	---	ND	---	48.1
142		---	---	ND	---	48.1
143	134/143	---	---	ND	---	96.2
144		---	---	ND	---	48.1
145		---	---	ND	---	48.1
146		---	---	ND	---	48.1
147	147/149	---	---	ND	---	96.2
148		---	---	ND	---	48.1
149	147/149	---	---	ND	---	96.2
150		---	---	ND	---	48.1
151	135/151	---	---	ND	---	96.2
152		---	---	ND	---	48.1
153	153/168	---	---	ND	---	96.2
154		---	---	ND	---	48.1
155		---	---	ND	---	48.1
156	156/157	---	---	ND	---	96.2
157	156/157	---	---	ND	---	96.2
158		---	---	ND	---	48.1
159		---	---	ND	---	48.1
160		---	---	ND	---	48.1
161		---	---	ND	---	48.1
162		---	---	ND	---	48.1
163	129/138/163	---	---	ND	---	144
164		---	---	ND	---	48.1
165		---	---	ND	---	48.1
166	128/166	---	---	ND	---	96.2
167		---	---	ND	---	48.1
168	153/168	---	---	ND	---	96.2
169		---	---	ND	---	48.1
170		---	---	ND	---	48.1
171	171/173	---	---	ND	---	96.2
172		---	---	ND	---	48.1
173	171/173	---	---	ND	---	96.2
174		---	---	ND	---	48.1
175		---	---	ND	---	48.1
176		---	---	ND	---	48.1
177		---	---	ND	---	48.1
178		---	---	ND	---	48.1
179		---	---	ND	---	48.1
180	180/193	---	---	ND	---	96.2

Conc = Concentration
EML =Method Specified Reporting Limit (1668A)
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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-26482
Filename P100930B_09

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
181		---	---	ND	---	48.1
182		---	---	ND	---	48.1
183	183/185	---	---	ND	---	96.2
184		---	---	ND	---	48.1
185	183/185	---	---	ND	---	96.2
186		---	---	ND	---	48.1
187		---	---	ND	---	48.1
188		---	---	ND	---	48.1
189		---	---	ND	---	48.1
190		---	---	ND	---	48.1
191		---	---	ND	---	48.1
192		---	---	ND	---	48.1
193	180/193	---	---	ND	---	96.2
194		---	---	ND	---	72.2
195		---	---	ND	---	72.2
196		---	---	ND	---	72.2
197	197/200	---	---	ND	---	144
198	198/199	---	---	ND	---	144
199	198/199	---	---	ND	---	144
200	197/200	---	---	ND	---	144
201		---	---	ND	---	72.2
202		---	---	ND	---	72.2
203		---	---	ND	---	72.2
204		---	---	ND	---	72.2
205		---	---	ND	---	72.2
206		---	---	ND	---	72.2
207		---	---	ND	---	72.2
208		---	---	ND	---	72.2
209		---	---	ND	---	72.2

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

Results reported on a dry weight basis

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

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Client Sample ID DFBLKNV
Lab Sample ID BLANK-26482
Filename P100930B_09

Congener Group	Concentration ng/Kg
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

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-26574	Matrix	Solid
Filename	P101008A_04	Extracted	10/06/2010 16:40
Injected By	BAL	Analyzed	10/08/2010 16:25
Total Amount Extracted	10.4 g	Dilution	NA
ICAL ID	P101008A02		
CCal Filename(s)	P101008A_01		

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

Labeled Analytes

13C-2-MoCB	1	8.390	3.12	2.0	1.32	66
13C-4-MoCB	3	11.733	3.11	2.0	1.46	73
13C-2,2'-DiCB	4	12.057	1.58	2.0	1.45	73
13C-4,4'-DiCB	15	20.109	1.54	2.0	1.32	66
13C-2,2',6-TrCB	19	16.442	1.04	2.0	1.49	75
13C-3,4,4'-TrCB	37	28.412	1.11	2.0	1.40	70
13C-2,2',6,6'-TeCB	54	20.413	0.79	2.0	1.56	78
13C-3,4,4',5-TeCB	81	35.823	0.83	2.0	0.787	39
13C-3,3',4,4'-TeCB	77	36.410	0.79	2.0	0.808	40
13C-2,2',4,6,6'-PeCB	104	26.953	1.59	2.0	2.87	144
13C-2,3,3',4,4'-PeCB	105	39.999	1.61	2.0	1.42	71
13C-2,3,4,4',5-PeCB	114	39.345	1.57	2.0	1.43	72
13C-2,3',4,4',5-PeCB	118	38.792	1.62	2.0	1.36	68
13C-2,3',4,4',5'-PeCB	123	38.473	1.61	2.0	1.40	70
13C-3,3',4,4',5-PeCB	126	43.118	1.54	2.0	1.79	90
13C-2,2',4,4',6,6'-HxCB	155	33.274	1.22	2.0	1.55	77
13C-HxCB (156/157)	156/157	46.086	1.27	4.0	4.10	103
13C-2,3',4,4',5,5'-HxCB	167	44.929	1.24	2.0	1.94	97
13C-3,3',4,4',5,5'-HxCB	169	49.339	1.26	2.0	2.36	118
13C-2,2',3,4',5,6,6'-HpCB	188	39.261	1.07	2.0	0.960	48
13C-2,3,3',4,4',5,5'-HpCB	189	51.835	1.06	2.0	1.64	82
13C-2,2',3,3',5,5',6-OcCB	202	44.627	0.92	2.0	1.37	68
13C-2,3,3',4,4',5,5',6-OcCB	205	54.594	0.87	2.0	1.73	87
13C-2,2',3,3',4,4',5,5',6-NoCB	206	56.749	0.80	2.0	1.59	79
13C-2,2',3,3',4,5,5',6,6'-NoCB	208	51.275	0.80	2.0	1.63	82
13C--DeCB	209	59.013	0.70	2.0	1.44	72

Cleanup Standards

13C-2,4,4'-TrCB	28	23.784	1.03	2.0	1.61	80
13C-2,3,3',5,5'-PeCB	111	36.461	1.57	2.0	1.39	69
13C-2,2',3,3',5,5',6-HpCB	178	42.363	1.02	2.0	1.80	90

Recovery Standards

13C-2,5-DiCB	9	14.968	1.57	2.0	NA	NA
13C-2,2',5,5'-TeCB	52	25.913	0.79	2.0	NA	NA
13C-2,2',4,5,5'-PeCB	101	33.543	1.60	2.0	NA	NA
13C-2,2',3,4,4',5'-HxCB	138	41.927	1.27	2.0	NA	NA
13C-2,2',3,3',4,4',5,5'-OcCB	194	54.034	0.88	2.0	NA	NA

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

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

Results reported on a total weight basis

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-26574
Filename P101008A_04

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
1		---	---	ND	---	24.0
2		---	---	ND	---	24.0
3		---	---	ND	---	24.0
4		---	---	ND	---	24.0
5		---	---	ND	---	24.0
6		---	---	ND	---	24.0
7		---	---	ND	---	24.0
8		---	---	ND	---	24.0
9		---	---	ND	---	24.0
10		---	---	ND	---	24.0
11		---	---	ND	---	144
12	12/13	---	---	ND	---	48.0
13	12/13	---	---	ND	---	48.0
14		---	---	ND	---	24.0
15		---	---	ND	---	24.0
16		---	---	ND	---	24.0
17		---	---	ND	---	24.0
18	18/30	---	---	ND	---	48.0
19		---	---	ND	---	24.0
20	20/28	---	---	ND	---	48.0
21	21/33	---	---	ND	---	48.0
22		---	---	ND	---	24.0
23		---	---	ND	---	24.0
24		---	---	ND	---	24.0
25		---	---	ND	---	24.0
26	26/29	---	---	ND	---	48.0
27		---	---	ND	---	24.0
28	20/28	---	---	ND	---	48.0
29	26/29	---	---	ND	---	48.0
30	18/30	---	---	ND	---	48.0
31		---	---	ND	---	24.0
32		---	---	ND	---	24.0
33	21/33	---	---	ND	---	48.0
34		---	---	ND	---	24.0
35		---	---	ND	---	24.0
36		---	---	ND	---	24.0
37		---	---	ND	---	24.0
38		---	---	ND	---	24.0
39		---	---	ND	---	24.0
40	40/41/71	---	---	ND	---	144
41	40/41/71	---	---	ND	---	144
42		---	---	ND	---	48.0
43	43/73	---	---	ND	---	96.1
44	44/47/65	---	---	ND	---	144
45	45/51	---	---	ND	---	96.1

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

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

Results reported on a total weight basis

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-26574
Filename P101008A_04

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
46		---	---	ND	---	48.0
47	44/47/65	---	---	ND	---	144
48		---	---	ND	---	48.0
49	49/69	---	---	ND	---	96.1
50	50/53	---	---	ND	---	96.1
51	45/51	---	---	ND	---	96.1
52		---	---	ND	---	48.0
53	50/53	---	---	ND	---	96.1
54		---	---	ND	---	48.0
55		---	---	ND	---	48.0
56		---	---	ND	---	48.0
57		---	---	ND	---	48.0
58		---	---	ND	---	48.0
59	59/62/75	---	---	ND	---	144
60		---	---	ND	---	48.0
61	61/70/74/76	---	---	ND	---	192
62	59/62/75	---	---	ND	---	144
63		---	---	ND	---	48.0
64		---	---	ND	---	48.0
65	44/47/65	---	---	ND	---	144
66		---	---	ND	---	48.0
67		---	---	ND	---	48.0
68		---	---	ND	---	48.0
69	49/69	---	---	ND	---	96.1
70	61/70/74/76	---	---	ND	---	192
71	40/41/71	---	---	ND	---	144
72		---	---	ND	---	48.0
73	43/73	---	---	ND	---	96.1
74	61/70/74/76	---	---	ND	---	192
75	59/62/75	---	---	ND	---	144
76	61/70/74/76	---	---	ND	---	192
77		---	---	ND	---	48.0
78		---	---	ND	---	48.0
79		---	---	ND	---	48.0
80		---	---	ND	---	48.0
81		---	---	ND	---	48.0
82		---	---	ND	---	48.0
83		---	---	ND	---	48.0
84		---	---	ND	---	48.0
85	85/116/117	---	---	ND	---	144
86	86/87/97/108/119/125	---	---	ND	---	288
87	86/87/97/108/119/125	---	---	ND	---	288
88	88/91	---	---	ND	---	96.1
89		---	---	ND	---	48.0
90	90/101/113	---	---	ND	---	144

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

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

Results reported on a total weight basis

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-26574
Filename P101008A_04

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
91	88/91	---	---	ND	---	96.1
92		---	---	ND	---	48.0
93	93/98/100/102	---	---	ND	---	192
94		---	---	ND	---	48.0
95		---	---	ND	---	48.0
96		---	---	ND	---	48.0
97	86/87/97/108/119/125	---	---	ND	---	288
98	93/98/100/102	---	---	ND	---	192
99		---	---	ND	---	48.0
100	93/98/100/102	---	---	ND	---	192
101	90/101/113	---	---	ND	---	144
102	93/98/100/102	---	---	ND	---	192
103		---	---	ND	---	48.0
104		---	---	ND	---	48.0
105		---	---	ND	---	48.0
106		---	---	ND	---	48.0
107	107/124	---	---	ND	---	96.1
108	86/87/97/108/119/125	---	---	ND	---	288
109		---	---	ND	---	48.0
110	110/115	---	---	ND	---	96.1
111		---	---	ND	---	48.0
112		---	---	ND	---	48.0
113	90/101/113	---	---	ND	---	144
114		---	---	ND	---	48.0
115	110/115	---	---	ND	---	96.1
116	85/116/117	---	---	ND	---	144
117	85/116/117	---	---	ND	---	144
118		---	---	ND	---	48.0
119	86/87/97/108/119/125	---	---	ND	---	288
120		---	---	ND	---	48.0
121		---	---	ND	---	48.0
122		---	---	ND	---	48.0
123		---	---	ND	---	48.0
124	107/124	---	---	ND	---	96.1
125	86/87/97/108/119/125	---	---	ND	---	288
126		---	---	ND	---	48.0
127		---	---	ND	---	48.0
128	128/166	---	---	ND	---	96.1
129	129/138/163	---	---	ND	---	144
130		---	---	ND	---	48.0
131		---	---	ND	---	48.0
132		---	---	ND	---	48.0
133		---	---	ND	---	48.0
134	134/143	---	---	ND	---	96.1
135	135/151	---	---	ND	---	96.1

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

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

Results reported on a total weight basis

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-26574
Filename P101008A_04

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
136		---	---	ND	---	48.0
137		---	---	ND	---	48.0
138	129/138/163	---	---	ND	---	144
139	139/140	---	---	ND	---	96.1
140	139/140	---	---	ND	---	96.1
141		---	---	ND	---	48.0
142		---	---	ND	---	48.0
143	134/143	---	---	ND	---	96.1
144		---	---	ND	---	48.0
145		---	---	ND	---	48.0
146		---	---	ND	---	48.0
147	147/149	---	---	ND	---	96.1
148		---	---	ND	---	48.0
149	147/149	---	---	ND	---	96.1
150		---	---	ND	---	48.0
151	135/151	---	---	ND	---	96.1
152		---	---	ND	---	48.0
153	153/168	---	---	ND	---	96.1
154		---	---	ND	---	48.0
155		---	---	ND	---	48.0
156	156/157	---	---	ND	---	96.1
157	156/157	---	---	ND	---	96.1
158		---	---	ND	---	48.0
159		---	---	ND	---	48.0
160		---	---	ND	---	48.0
161		---	---	ND	---	48.0
162		---	---	ND	---	48.0
163	129/138/163	---	---	ND	---	144
164		---	---	ND	---	48.0
165		---	---	ND	---	48.0
166	128/166	---	---	ND	---	96.1
167		---	---	ND	---	48.0
168	153/168	---	---	ND	---	96.1
169		---	---	ND	---	48.0
170		---	---	ND	---	48.0
171	171/173	---	---	ND	---	96.1
172		---	---	ND	---	48.0
173	171/173	---	---	ND	---	96.1
174		---	---	ND	---	48.0
175		---	---	ND	---	48.0
176		---	---	ND	---	48.0
177		---	---	ND	---	48.0
178		---	---	ND	---	48.0
179		---	---	ND	---	48.0
180	180/193	---	---	ND	---	96.1

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

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

Results reported on a total weight basis

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Lab Sample ID BLANK-26574
Filename P101008A_04

IUPAC	Co-elutions	RT	Ratio	Concentration ng/Kg	EMPC ng/Kg	EML ng/Kg
181		---	---	ND	---	48.0
182		---	---	ND	---	48.0
183	183/185	---	---	ND	---	96.1
184		---	---	ND	---	48.0
185	183/185	---	---	ND	---	96.1
186		---	---	ND	---	48.0
187		---	---	ND	---	48.0
188		---	---	ND	---	48.0
189		---	---	ND	---	48.0
190		---	---	ND	---	48.0
191		---	---	ND	---	48.0
192		---	---	ND	---	48.0
193	180/193	---	---	ND	---	96.1
194		---	---	ND	---	72.0
195		---	---	ND	---	72.0
196		---	---	ND	---	72.0
197	197/200	---	---	ND	---	144
198	198/199	---	---	ND	---	144
199	198/199	---	---	ND	---	144
200	197/200	---	---	ND	---	144
201		---	---	ND	---	72.0
202		---	---	ND	---	72.0
203		---	---	ND	---	72.0
204		---	---	ND	---	72.0
205		---	---	ND	---	72.0
206		---	---	ND	---	72.0
207		---	---	ND	---	72.0
208		---	---	ND	---	72.0
209		---	---	ND	---	72.0

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

Results reported on a total weight basis

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

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**Method 1668A Polychlorobiphenyl
Blank Analysis Results**

Client Sample ID DFBLKOO
Lab Sample ID BLANK-26574
Filename P101008A_04

Congener Group	Concentration ng/Kg
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

Results reported on a total weight basis

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Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID	LCS-26483	
Filename	P100930B_10	Matrix
Total Amount Extracted	10.2 g	Solid
ICAL ID	P100930B02	Dilution
CCal Filename(s)	P100930B_01	Extracted
Method Blank ID	BLANK-26482	Analyzed
		Injected By

PCB Isomer	Native Analytes			Labeled Analytes			
	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recovery	
1	1.0	0.990	99	2.0	1.47	73	
3	1.0	1.06	106	2.0	1.54	77	
4	1.0	0.979	98	2.0	1.72	86	
15	1.0	1.14	114	2.0	1.41	70	
19	1.0	0.876	88	2.0	1.66	83	
37	1.0	0.992	99	2.0	1.52	76	
54	1.0	0.962	96	2.0	1.59	79	
81	1.0	1.06	106	2.0	0.680	34	
77	1.0	0.953	95	2.0	0.663	33	
104	1.0	0.955	96	2.0	3.37	169	R
105	1.0	1.02	102	2.0	1.39	69	
114	1.0	1.09	109	2.0	1.31	66	
118	1.0	1.14	114	2.0	1.24	62	
123	1.0	1.06	106	2.0	1.22	61	
126	1.0	1.01	101	2.0	1.95	97	
155	1.0	0.955	96	2.0	1.66	83	
156/157	2.0	2.11	105	4.0	4.28	107	
167	1.0	1.06	106	2.0	2.11	106	
169	1.0	1.05	105	2.0	2.24	112	
188	1.0	1.02	102	2.0	0.939	47	
189	1.0	1.06	106	2.0	1.66	83	
202	1.0	0.970	97	2.0	1.79	90	
205	1.0	1.01	101	2.0	1.75	88	
206	1.0	0.978	98	2.0	1.80	90	
208	1.0	1.03	103	2.0	1.73	86	
209	1.0	1.32	132	2.0	1.62	81	

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

REPORT OF LABORATORY ANALYSIS

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

Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID	LCS-26575	Matrix	Solid
Filename	P101009A_04	Dilution	NA
Total Amount Extracted	10.2 g	Extracted	10/06/2010 16:40
ICAL ID	P101009A02	Analyzed	10/09/2010 04:14
CCal Filename(s)	P101009A_01	Injected By	BAL
Method Blank ID	BLANK-26574		

PCB Isomer	Native Analytes			Labeled Analytes		
	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recovery
1	1.0	1.11	111	2.0	1.34	67
3	1.0	1.13	113	2.0	1.52	76
4	1.0	0.992	99	2.0	1.45	72
15	1.0	1.13	113	2.0	1.71	85
19	1.0	1.01	101	2.0	1.36	68
37	1.0	1.07	107	2.0	1.71	85
54	1.0	0.983	98	2.0	1.67	83
81	1.0	1.04	104	2.0	1.01	51
77	1.0	1.01	101	2.0	1.05	53
104	1.0	1.02	102	2.0	2.13	107
105	1.0	1.10	110	2.0	1.42	71
114	1.0	1.03	103	2.0	1.39	69
118	1.0	1.24	124	2.0	1.32	66
123	1.0	1.10	110	2.0	1.36	68
126	1.0	1.04	104	2.0	1.72	86
155	1.0	1.00	100	2.0	1.62	81
156/157	2.0	2.17	109	4.0	3.40	85
167	1.0	1.10	110	2.0	1.70	85
169	1.0	1.03	103	2.0	1.70	85
188	1.0	1.00	100	2.0	1.45	73
189	1.0	1.08	108	2.0	1.70	85
202	1.0	0.979	98	2.0	1.92	96
205	1.0	1.05	105	2.0	1.66	83
206	1.0	1.02	102	2.0	1.77	89
208	1.0	0.983	98	2.0	1.65	82
209	1.0	1.21	121	2.0	1.63	81

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

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID	LCSD-26484	
Filename	P100930B_11	Matrix
Total Amount Extracted	10.4 g	Solid
ICAL ID	P100930B02	Dilution
CCal Filename(s)	P100930B_01	Extracted
Method Blank ID	BLANK-26482	Analyzed
		10/01/2010 01:06
		Injected By
		BAL

PCB Isomer	Native Analytes			Labeled Analytes			
	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recovery	
1	1.0	1.04	104	2.0	1.42	71	
3	1.0	1.05	105	2.0	1.53	76	
4	1.0	1.06	106	2.0	1.71	85	
15	1.0	1.11	111	2.0	1.44	72	
19	1.0	0.977	98	2.0	1.58	79	
37	1.0	1.02	102	2.0	1.60	80	
54	1.0	0.984	98	2.0	1.62	81	
81	1.0	1.07	107	2.0	0.736	37	
77	1.0	0.989	99	2.0	0.698	35	
104	1.0	0.943	94	2.0	3.48	174	R
105	1.0	1.09	109	2.0	1.46	73	
114	1.0	1.07	107	2.0	1.37	68	
118	1.0	1.14	114	2.0	1.29	64	
123	1.0	1.09	109	2.0	1.30	65	
126	1.0	1.01	101	2.0	2.02	101	
155	1.0	1.01	101	2.0	1.64	82	
156/157	2.0	2.18	109	4.0	4.30	108	
167	1.0	1.10	110	2.0	2.13	107	
169	1.0	1.06	106	2.0	2.31	115	
188	1.0	1.05	105	2.0	0.981	49	
189	1.0	1.07	107	2.0	1.81	90	
202	1.0	0.960	96	2.0	1.96	98	
205	1.0	1.01	101	2.0	1.86	93	
206	1.0	0.990	99	2.0	1.95	97	
208	1.0	0.976	98	2.0	1.88	94	
209	1.0	1.36	136	2.0	1.78	89	

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

REPORT OF LABORATORY ANALYSIS

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Method 1668A Polychlorobiphenyls Laboratory Control Spike Analysis Results

Lab Sample ID	LCSD-26576	Matrix	Solid
Filename	P101009A_05	Dilution	NA
Total Amount Extracted	10.2 g	Extracted	10/06/2010 16:40
ICAL ID	P101009A02	Analyzed	10/09/2010 05:19
CCal Filename(s)	P101009A_01	Injected By	BAL
Method Blank ID	BLANK-26574		

PCB Isomer	Native Analytes			Labeled Analytes		
	Spiked (ng)	Found (ng)	% Recovery	Spiked (ng)	Found (ng)	% Recovery
1	1.0	1.14	114	2.0	1.45	73
3	1.0	1.19	119	2.0	1.59	79
4	1.0	1.02	102	2.0	1.53	77
15	1.0	0.991	99	2.0	1.48	74
19	1.0	1.01	101	2.0	1.43	72
37	1.0	1.09	109	2.0	1.62	81
54	1.0	1.01	101	2.0	1.26	63
81	1.0	1.05	105	2.0	0.925	46
77	1.0	1.02	102	2.0	0.957	48
104	1.0	1.01	101	2.0	2.54	127
105	1.0	1.11	111	2.0	1.24	62
114	1.0	1.08	108	2.0	1.34	67
118	1.0	1.19	119	2.0	1.34	67
123	1.0	1.15	115	2.0	1.33	66
126	1.0	1.07	107	2.0	1.26	63
155	1.0	1.01	101	2.0	2.04	102
156/157	2.0	2.21	111	4.0	3.64	91
167	1.0	1.11	111	2.0	1.76	88
169	1.0	1.09	109	2.0	2.14	107
188	1.0	0.994	99	2.0	1.36	68
189	1.0	1.07	107	2.0	1.68	84
202	1.0	1.03	103	2.0	1.23	61
205	1.0	0.997	100	2.0	1.71	85
206	1.0	0.979	98	2.0	1.71	85
208	1.0	1.04	104	2.0	1.56	78
209	1.0	1.28	128	2.0	1.84	92

R = Recovery outside of method 1668A control limits

Nn = Result obtained from alternate analysis

ND = Not Detected

NA = Not Applicable

NC = Not Calculated

* = See Discussion

ng = Nanograms

I = Interference

REPORT OF LABORATORY ANALYSIS

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Method 1668A

Spike Recovery Relative Percent Difference (RPD) Results

Client Test America

Spike 1 ID LCS-26483
Spike 1 Filename P100930B_10

Spike 2 ID LCSD-26484
Spike 2 Filename P100930B_11

Compound	IUPAC	Spike 1 %REC	Spike 2 %REC	%RPD
2-MoCB	1	99	104	4.9
4-MoCB	3	106	105	0.9
2,2'-DiCB	4	98	106	7.8
4,4'-DiCB	15	114	111	2.7
2,2',6-TrCB	19	88	98	10.8
3,4,4'-TrCB	37	99	102	3.0
2,2',6,6'-TeCB	54	96	98	2.1
3,3',4,4'-TeCB	77	95	99	4.1
3,4,4',5-TeCB	81	106	107	0.9
2,2',4,6,6'-PeCB	104	96	94	2.1
2,3,3',4,4'-PeCB	105	102	109	6.6
2,3,4,4',5-PeCB	114	109	107	1.9
2,3',4,4',5-PeCB	118	114	114	0.0
2,3,4,4',5'-PeCB	123	106	109	2.8
3,3',4,4',5-PeCB	126	101	101	0.0
2,2',4,4',6,6'-HxCB	155	96	101	5.1
(156/157)	156/157	105	109	3.7
2,3',4,4',5,5'-HxCB	167	106	110	3.7
3,3',4,4',5,5'-HxCB	169	105	106	0.9
2,2',3,4',5,6,6'-HpCB	188	102	105	2.9
2,3,3',4,4',5,5'-HpCB	189	106	107	0.9
2,2',3,3',5,5',6,6'-OcCB	202	97	96	1.0
2,3,3',4,4',5,5',6-OcCB	205	101	101	0.0
2,2',3,3',4,4',5,5',6-NoCB	206	98	99	1.0
2,2',3,3',4,5,5',6,6'-NoCB	208	103	98	5.0
Decachlorobiphenyl	209	132	136	3.0

%REC = Percent Recovered

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

REPORT OF LABORATORY ANALYSIS

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Method 1668A

Spike Recovery Relative Percent Difference (RPD) Results

Client Test America

Spike 1 ID LCS-26575
Spike 1 Filename P101009A_04

Spike 2 ID LCSD-26576
Spike 2 Filename P101009A_05

Compound	IUPAC	Spike 1 %REC	Spike 2 %REC	%RPD
2-MoCB	1	111	114	2.7
4-MoCB	3	113	119	5.2
2,2'-DiCB	4	99	102	3.0
4,4'-DiCB	15	113	99	13.2
2,2',6-TrCB	19	101	101	0.0
3,4,4'-TrCB	37	107	109	1.9
2,2',6,6'-TeCB	54	98	101	3.0
3,3',4,4'-TeCB	77	101	102	1.0
3,4,4',5-TeCB	81	104	105	1.0
2,2',4,6,6'-PeCB	104	102	101	1.0
2,3,3',4,4'-PeCB	105	110	111	0.9
2,3,4,4',5-PeCB	114	103	108	4.7
2,3',4,4',5-PeCB	118	124	119	4.1
2,3,4,4',5'-PeCB	123	110	115	4.4
3,3',4,4',5-PeCB	126	104	107	2.8
2,2',4,4',6,6'-HxCB	155	100	101	1.0
(156/157)	156/157	109	111	1.8
2,3',4,4',5,5'-HxCB	167	110	111	0.9
3,3',4,4',5,5'-HxCB	169	103	109	5.7
2,2',3,4',5,6,6'-HpCB	188	100	99	1.0
2,3,3',4,4',5,5'-HpCB	189	108	107	0.9
2,2',3,3',5,5',6,6'-OcCB	202	98	103	5.0
2,3,3',4,4',5,5',6-OcCB	205	105	100	4.9
2,2',3,3',4,4',5,5',6-NoCB	206	102	98	4.0
2,2',3,3',4,5,5',6,6'-NoCB	208	98	104	5.9
Decachlorobiphenyl	209	121	128	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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October 06, 2010

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


RE: Portland Harbor Inline

Enclosed are the results of analyses for samples received by the laboratory on 09/15/10 13:20.
The following list is a summary of the Work Orders contained in this report, generated on 10/06/10 15:22.

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

<u>Work Order</u>	<u>Project</u>	<u>ProjectNumber</u>
PTI0491	Portland Harbor Inline	30001516

TestAmerica Portland



Darrell Auvil, 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 Inline

Project Number:

30001516

Report Created:

Project Manager:

Jennifer Shackelford

10/06/10 15:22

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FO105890	PTI0491-01	Soil	09/14/10 09:42	09/15/10 13:20
FO105891	PTI0491-02	Soil	09/14/10 10:04	09/15/10 13:20
FO105892	PTI0491-03	Soil	09/14/10 10:41	09/15/10 13:20
FO105893	PTI0491-04	Soil	09/14/10 11:18	09/15/10 13:20
FO105894	PTI0491-05	Soil	09/14/10 13:20	09/15/10 13:20
FO105895	PTI0491-06	Soil	09/14/10 14:11	09/15/10 13:20
FO105896	PTI0491-07	Soil	09/14/10 13:51	09/15/10 13:20
FO105897	PTI0491-08	Soil	09/14/10 14:53	09/15/10 13:20
FO105899	PTI0491-09	Soil	09/14/10 00:00	09/15/10 13:20

TestAmerica Portland



Darrell Auvil, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name:

Portland Harbor Inline

Project Number:

30001516

Project Manager:

Jennifer Shackelford

Report Created:

10/06/10 15:22

Organic Carbon, Total (TOC)

TestAmerica Connecticut

Analyte	Method	Result	MDL *	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
PTI0491-01 (FO105890)			Soil				Sampled: 09/14/10 09:42			
Total Organic Carbon - Duplicates	9060	11100	30.0	100	mg/Kg	1x	43025	09/22/10 13:18	09/22/10 13:18	
PTI0491-02 (FO105891)			Soil				Sampled: 09/14/10 10:04			
Total Organic Carbon - Duplicates	9060	8520	30.0	100	mg/Kg	1x	43025	09/22/10 13:32	09/22/10 13:32	
PTI0491-03 (FO105892)			Soil				Sampled: 09/14/10 10:41			
Total Organic Carbon - Duplicates	9060	12600	30.0	100	mg/Kg	1x	43025	09/22/10 13:45	09/22/10 13:45	
PTI0491-04 (FO105893)			Soil				Sampled: 09/14/10 11:18			
Total Organic Carbon - Duplicates	9060	20200	30.0	100	mg/Kg	1x	43025	09/22/10 13:58	09/22/10 13:58	
PTI0491-05 (FO105894)			Soil				Sampled: 09/14/10 13:20			
Total Organic Carbon - Duplicates	9060	40300	30.0	100	mg/Kg	1x	43025	09/22/10 14:46	09/22/10 14:46	
PTI0491-06 (FO105895)			Soil				Sampled: 09/14/10 14:11			
Total Organic Carbon - Duplicates	9060	102000	30.0	100	mg/Kg	1x	43025	09/22/10 15:00	09/22/10 15:00	
PTI0491-07 (FO105896)			Soil				Sampled: 09/14/10 13:51			
Total Organic Carbon - Duplicates	9060	84000	30.0	100	mg/Kg	1x	43025	09/22/10 15:15	09/22/10 15:15	
PTI0491-08 (FO105897)			Soil				Sampled: 09/14/10 14:53			
Total Organic Carbon - Duplicates	9060	111000	30.0	100	mg/Kg	1x	43025	09/22/10 15:29	09/22/10 15:29	
PTI0491-09 (FO105899)			Soil				Sampled: 09/14/10 00:00			
Total Organic Carbon - Duplicates	9060	9930	30.0	100	mg/Kg	1x	43025	09/22/10 16:04	09/22/10 16:04	

TestAmerica Portland



Darrell Auvil, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name:

Portland Harbor Inline

Project Number:

30001516

Project Manager:

Jennifer Shackelford

Report Created:

10/06/10 15:22

Organic Carbon, Total (TOC) - Laboratory Quality Control Results

TestAmerica Connecticut

QC Batch: 43025

Soil Preparation Method: NA

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Matrix Spike Dup (133434D)			QC Source: PTI0491-04					Extracted: 09/22/10 14:39						
Total Organic Carbon - Duplicates	9060	127000	30.0	100	mg/Kg	1x	20200	110000	98%	(75-125)	3%	(20)	09/22/10 14:39	
Matrix Spike (133434S)			QC Source: PTI0491-04					Extracted: 09/22/10 14:29						
Total Organic Carbon - Duplicates	9060	131400	30.0	100	mg/Kg	1x	20200	114000	98%	(75-125)	--	--	09/22/10 14:29	
LCS (220-43025-5)			QC Source:					Extracted: 09/22/10 13:05						
Total Organic Carbon - Duplicates	9060	5238	30.0	100	mg/Kg	1x	--	4110	127%	(28-172)	--	--	09/22/10 13:05	
Blank (220-43025-6)			QC Source:					Extracted: 09/22/10 13:11						
Total Organic Carbon - Duplicates	9060	ND	30.0	100	mg/Kg	1x	--	--	--	--	--	--	09/22/10 13:11	

TestAmerica Portland



Darrell Auvil, Project Manager

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City of Portland Water Pollution Laboratory

6543 N. Burlington Ave.
Portland, OR 97203

Project Name:

Portland Harbor Inline

Project Number:

30001516

Project Manager:

Jennifer Shackelford

Report Created:

10/06/10 15:22

Notes and Definitions

Report Specific Notes:

None

Laboratory Reporting Conventions:

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

TestAmerica Portland



Darrell Auvil, Project Manager

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CERTIFICATION SUMMARY

Subcontracted Laboratories

Pace Analytical Services, Inc - Minneapolis

1700 Elm Street Suite 200 - Minneapolis, MN 55414

Analysis Performed: 1668 PCB 209 Congeners - SUB

Samples: PTI0491-01, PTI0491-02, PTI0491-03, PTI0491-04, PTI0491-05, PTI0491-06, PTI0491-07, PTI0491-08,
PTI0491-09


TestAmerica Connecticut

128 Long Hill Cross Road - Shelton, CT 06484

Method Performed: 9060

Samples: PTI0491-01, PTI0491-02, PTI0491-03, PTI0491-04, PTI0491-05, PTI0491-06, PTI0491-07, PTI0491-08,
PTI0491-09

TestAmerica Portland



Darrell Auvil, Project Manager

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THE I EADER 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

[illegible]

CHAIN OF CUSTODY REPORT

Work Order #:

[illegible]

TestAmerica Portland
Sample Receiving Checklist

Work Order #: PT10491 Date/Time Received: 9/15/10 1320
Client Name and Project: COP

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

Unpacking Checks:

Cooler #(s): 19
Temperatures: 19
Digi #1 ☐ Digi #2 ☐ IR ☒ ☐ Plastic ☒ Glass

Temperature out of Range:

☐ Not enough or No Ice
☐ Ice Melted
☐ W/in 4 Hrs of collection
Other: dm

N/A Yes No

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

TestAmerica Portland
Sample Receiving Checklist

Work Order #: PT10491

Login Checks:

Initials: dm

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: dm

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).

APPENDIX D

**Outfall Basin 18 East-Central Subbasin
2011 Sediment Trap and
Inline Solids Investigation
Data Summary Report**

Appendix D

Outfall Basin 18 East-Central Subbasin 2011 Sediment Trap and Inline Solids Investigation Data Summary Report

Introduction

This report summarizes the results of the City of Portland 2010 - 2011 sediment trap and inline solids investigation in the east-central subbasin of Outfall Basin 18. This subbasin was identified as having upland sources of polychlorinated biphenyls (PCBs), pesticides, and metals based on results of sediment trap and inline solids samples collected between 2007 and 2009 (BES, 2010a; BES, 2012a). In response to these detections, the City cleaned the stormwater main lines of the east-central branch along and near NW 35th Avenue (between manholes AAX374 and AAX261) in summer 2010 (BES, 2012b). Following completion of line cleaning activities and implementation of source controls at a known source to this branch¹, the City conducted this investigation to determine whether there are ongoing sources of PCBs, pesticides, and metals in the upper portion of the east-central subbasin.

Between December 2000 and June 2011, the City deployed two sediment traps in the upper portion of the east-central subbasin, upstream and downstream of the Columbia American Plating connection. At the time of sediment trap removal, inline solids samples were collected from accumulated solids at the two sediment trap locations and one additional location to supplement the investigation.

This inline solids investigation is part of the City's ongoing Remedial Investigation associated with the Portland Harbor City of Portland Outfalls Project being conducted pursuant to the August 13, 2003, Intergovernmental Agreement between DEQ and the City. The data collected under this investigation support ongoing work by DEQ and the City to characterize and control discharges to the stormwater pathway from sites within Basin 18.

Sampling Activities and Analytical Approach

2010-2011 Sediment Trap Deployment. The City sediment trap sampling activities were completed in accordance with the Sampling and Analysis Plan (SAP) submitted to DEQ in December 2010 (BES, 2010b). The sediment trap locations were selected to investigate potential current sources of PCBs, pesticides, and metals in areas upstream and downstream of the former Columbia American Plating site (an identified upland source of PCBs and metals) following removal of legacy stormwater solids from this site and from the City conveyance system in 2010; see Figure D-1).

¹ The Columbia American Plating site cleaned out the onsite stormwater system, replaced onsite catch basins and associated stormwater lines, installed stormwater treatment, paved the site, and consolidated site connection to NW 35th Avenue into one new connection in 2009 – early 2011 (O'Gara, 2009; Wohlers, 2011).

The City deployed two Screened Inline flow-Through (SIFT®)² flow-through sediment traps on December 21, 2010, at the locations shown on Figure D-1 and summarized below.

Station Identification	Manhole	Description
ST6	AAX318	Installed downstream of manhole in 24-inch main line
ST7	AAX278	Installed upstream of manhole in 30-inch main line

The sediment traps were inspected monthly to assess the volume of trapped solids, note general conditions, and remove any debris that might be obstructing the openings of the trap chambers. Accumulated solids were removed as needed during the monthly field inspections and archived. Photographs of the sediment traps in their installed locations are provided in Attachment D-1. Field notes taken during sediment trap installation, monitoring and removal activities are provided in Attachment D-2.

The sediment traps were removed and accumulated solids collected on June 9, 2011. The accumulated solids from each trap were combined with the previously archived solids from that trap and homogenized in the laboratory. Collection and processing procedures are described in detail in the field notes (Attachment D-2).

The samples collected from ST6 and ST7 were analyzed for PCB Aroclors, organochlorine pesticides, metals, total organic carbon (TOC), and total solids (TS), as proposed in the SAP.

June 2011 Inline Solids Sampling. In conjunction with removal of the sediment traps on June 9, 2011, field personnel also collected inline solids samples from the manholes where the sediment traps were located. In addition, an inline solids sample was collected from manhole AAX376, which is just upstream of manhole AAX318 (ST 6 sampling manhole). The inline solids sampling locations are shown on Figure D-1 and summarized below.

Sampling Location	Description
Manhole AAX376	Sample was collected at the manhole.
Manhole AAX318	The samples was collected in the 15-inch main line downstream of the manhole.
Manhole AAX278	Sample was collected in 30-inch main line downstream of manhole.

Sample collection and handling procedures were conducted using the applicable standard operating procedures (SOPs)³ included in the City's *Amended Programmatic Sampling and Analysis Plan* for collection of water and solids samples for the City of Portland Outfalls Project (BES,

² 2009 City of Portland. Proprietary and patent pending. These traps were designed by the City for use in smaller pipe diameters and low-flow depth conditions.

³ The SOPs were established by the City's Field Operations section to standardize the data collection methodologies for a wide range of monitoring activities and thereby maintain comparability and representativeness of the data produced.

2007a) and in accordance with the *Amended Programmatic Quality Assurance Project Plan* for the project (BES, 2007b). Photographs taken during the inline solids sampling activities are provided in Attachment D-1. Field notes taken during the sampling activities are provided in Attachment D-2.

The inline solids samples were submitted with the sediment trap samples for laboratory analysis of PCB Aroclors, pesticides, metals, TOC and TS.

Summary of Results

The analytical results indicate pesticides and metals are present in solids upstream and downstream of the CAP site and that PCBs are present at the downstream location.

PCBs were detected in the inline solids sample from manhole AAX278 but were not detected in the sediment trap sample from this location (ST7) or in the other sediment trap or inline solids samples. Pesticides and metals were detected in all of the sediment trap and inline solids samples. Table D-1 summarizes the laboratory analytical results for the 2011 sediment trap and inline solids samples and includes the JSCS SLVs for reference. The laboratory reports and data review memoranda for the samples are provided in Attachment D-3.

References

- BES. 2007a. *Amended Programmatic Quality Assurance Project Plan*, City of Portland Outfalls Project, Revision to Programmatic Source Control Remedial Investigation Work Plan Appendix D. Prepared by the City of Portland, Bureau of Environmental Services, Portland Harbor Program. August 2007.
- BES. 2007b. *Amended Programmatic Sampling and Analysis Plan*, City of Portland Outfalls Remedial Investigation/Source Control Measures Project. Prepared by the City of Portland, Bureau of Environmental Services, Portland Harbor Program. August 2007.
- BES. 2010a. Technical Memorandum No. OF18-2, Outfall Basin 18 Inline Solids Investigation. July 20, 2010.
- BES. 2010b. Subject: City of Portland Outfall Project, Source Investigations for Basins 18, 43, 53A, S-1, S-2, and S-6, Winter 2010-11 Sampling and Analysis Plan. Letter to K. Tarnow (DEQ) from L. Scheffler (BES). December 6, 2010.
- BES. 2012a. Outfall Basin 18 East-Central Subbasin, Fall 2009 Inline Solids Sampling, Data Summary Report. Appendix A to Outfall Basin 18, East-Central Subbasin Source Investigation Report. May 2012.
- BES. 2012b. NW 35th Ave. Line Cleaning Spoils Management CSA# 1120. Memorandum from J. O'Donovan (BES Coordinated Site Analysis Program) to L. Scheffler (BES). October 18, 2010. Appendix B to Outfall Basin 18, East-Central Subbasin Source Investigation Report. May 2012.
- DEQ/EPA. 2005. Portland Harbor Joint Source Control Strategy, Final, dated December 2005 (updated July 2007).

O’Gara. 2009. Re: On-site stormwater sewer cleanout, former Columbia American Plating site. Letter report submitted to DEQ. Prepared by Tim O’Gara, R.G., Consulting Hydrogeologist. September 29, 2009.

Wohlers. 2011. Stormwater Assessment Workplan, Former Columbia American Plating Facility, 3003 N.W. 35th Avenue, Portland, Oregon. Prepared for 3003 NW 35th LLC (c/o Carson Oil Company) by Wohlers Environmental Services. July 22, 2011.

Table

Table D-1 – *Basin 18 East-Central Subbasin 2011 Inline Solids Results*

Figure

Figure D-1 – *Basin 18 2011 Sediment Trap and Inline Solids Sampling Locations*

Attachments

Attachment D-1 – *Field Photographs*

Attachment D-2 – *Field Data Sheets*

Attachment D-3 – *Laboratory Results*

Table D-1
Basin 18 East-Central Subbasin 2011 Inline Solids Results

		Downstream -----> Upstream						
		Manhole AAX278		Manhole AAX318		Manhole AAX376		
		Sediment Trap	Inline Solids	Sediment Trap	Inline Solids	Inline Solids		
		Downstream of Manhole in 30" Line ST7: W11F059-04	Downstream of Manhole in 30" Line W11F059-05	Downstream of Manhole in 15" Line ST6: W11F059-01	Downstream of Manhole in 15" Line W11F059-02	Within Manhole W11F059-03	JSCS ⁽¹⁾ Screening Level Value	
Class	Analyte	Units	6/9/2011	6/9/2011	6/9/2011	6/9/2011	Toxicity	Bioaccumulation
Total Organic Carbon (ASTM D2216-80)								
	TOC	mg/Kg	96,000	23,000	72,000	12,000	30,000	
Total Solids (SM 2540G)								
	TS	%	43.8	75.7	57.9	83.3	72.5	--
Grain Size (ASTM D421/422)								
	Gravel (>4750 um)	Fract %	NA	NA	NA	22.6	1.4	--
	Coarse Sand (4750-2000 um)	Fract %	NA	NA	NA	30.1	5.4	--
	Medium Sand (2000-425 um)	Fract %	NA	NA	NA	31.3	33.7	--
	Fine Sand (425-75 um)	Fract %	NA	NA	NA	9.9	30.9	--
	Silt (75-3.2 um)	Fract %	NA	NA	NA	4.9	25.8	--
	Clay (<3.2 um)	Fract %	NA	NA	NA	1.4	2.6	--
Metals (EPA 6020)								
	Arsenic	mg/Kg	4.65	2.91	3.91	1.14	3.97	33
	Cadmium	mg/Kg	3.02	6.08	2.01	0.524	1.22	4.98
	Chromium	mg/Kg	93.6	100	106	52.4	554	111
	Copper	mg/Kg	134	92.7	110	33.7	149	149
	Lead	mg/Kg	175	252	160	23.7	100	128
	Mercury	mg/Kg	0.169	0.405	0.111	0.0154	0.0520	1.06
	Nickel	mg/Kg	47.7	53.8	45.5	16.9	124.0	48.6
	Silver	mg/Kg	0.609	1.28	0.261	0.100 U	0.234	5
	Zinc	mg/Kg	730	478	558	131	343	459
Organochlorine Pesticides (EPA 8081A)								
	4,4'-DDD	µg/Kg	4.1	36	2.5	0.86	1.1 U	28
	4,4'-DDE	µg/Kg	4.5	43	2.0	1.0	0.98	31.3
	4,4'-DDT	µg/Kg	23 U	18 U	8.6 U	2.0 U	5.7 U	62.9
	Estimated Total DDx ⁽²⁾	µg/Kg	8.6	79	4.5	1.9	0.98	0.33
	Aldrin	µg/Kg	1.5 J	8.5	0.98 U	0.60 U	0.76 U	40
	alpha-BHC (α-BHC)	µg/Kg	2.5 U	0.72 U	0.98 U	0.60 U	0.76 U	--
	beta-BHC (β-BHC)	µg/Kg	2.5 U	0.72 U	3.6 U	0.60 U	0.91 U	--
	delta-BHC (δ-BHC)	µg/Kg	2.5 U	2.7 U	0.98 U	0.60 U	0.76 U	--
	gamma-BHC (γ-BHC, Lindane)	µg/Kg	7.6 U	2.0 U	0.98 U	0.60 U	1.8 U	4.99
	alpha-Chlordane ⁽³⁾	µg/Kg	6.1	4.9	3.7	0.47 J	0.98	--
	beta-Chlordane ⁽³⁾	µg/Kg	11 U	11	6.4	0.85	2.1	--
	Total Chlordane ⁽⁴⁾	µg/Kg	6.1	16	10	1.3	3.1	17.6
	Dieldrin	µg/Kg	3.8 U	4.9 U	3.6 U	0.37 J	1.9 U	61.8
	Endosulfan I	µg/Kg	2.5 U	3.8	0.98 U	0.17 J	0.76 U	--
	Endosulfan II	µg/Kg	5.5 U	5.9 U	2.1 U	0.33 J	0.76 U	--
	Endosulfan sulfate	µg/Kg	24 U	0.72 U	1.5	0.60 U	0.76 U	--
	Endrin	µg/Kg	2.5 U	1.2 U	0.98 U	0.60 U	0.76 U	207
	Endrin aldehyde	µg/Kg	1.3 J	0.72 U	0.98 U	0.60 U	0.76 U	--
	Endrin ketone	µg/Kg	1.5 J	0.54 J	0.97 J	0.60 U	0.34 J	--
	Heptachlor	µg/Kg	2.5 U	0.72 U	0.98 U	0.60 U	0.86 U	10
	Heptachlor epoxide	µg/Kg	2.5 U	0.72 U	0.98 U	0.60 U	0.76 U	16
	Methoxychlor	µg/Kg	2.5 U	3.8 U	1.2 U	0.60 U	2.4 U	--
	Toxaphene	µg/Kg	390 U	240 U	350 U	30 U	330 U	--
Polychlorinated Biphenyls (PCBs) (EPA 8082)								
	Aroclor 1016	µg/Kg	22.8 U	10.0 U	17.3 U	10.0 U	10.0 U	530
	Aroclor 1221	µg/Kg	45.7 U	20.0 U	34.5 U	20.0 U	20.0 U	--
	Aroclor 1232	µg/Kg	22.8 U	10.0 U	17.3 U	10.0 U	10.0 U	--
	Aroclor 1242	µg/Kg	22.8 U	10.0 U	17.3 U	10.0 U	10.0 U	--
	Aroclor 1248	µg/Kg	22.8 U	365	17.3 U	10.0 U	10.0 U	1500
	Aroclor 1254	µg/Kg	22.8 U	10.0 U	17.3 U	10.0 U	10.0 U	300
	Aroclor 1260	µg/Kg	22.8 U	69.4 ⁽⁵⁾	17.3 U	10.0 U	10.0 U	200
	Aroclor 1262	µg/Kg	22.8 U	10.0 U	17.3 U	10.0 U	10.0 U	--
	Aroclor 1268	µg/Kg	22.8 U	10.0 U	17.3 U	10.0 U	10.0 U	--
	Total PCBs ⁽⁶⁾	µg/Kg	ND	434	ND	ND	ND	676

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.

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

⁽³⁾ Alpha-chlordane is also known as cis-Chlordane. Beta-Chlordane is also known as trans-chlordane and gamma-chlordane.

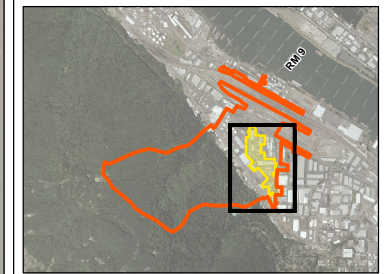
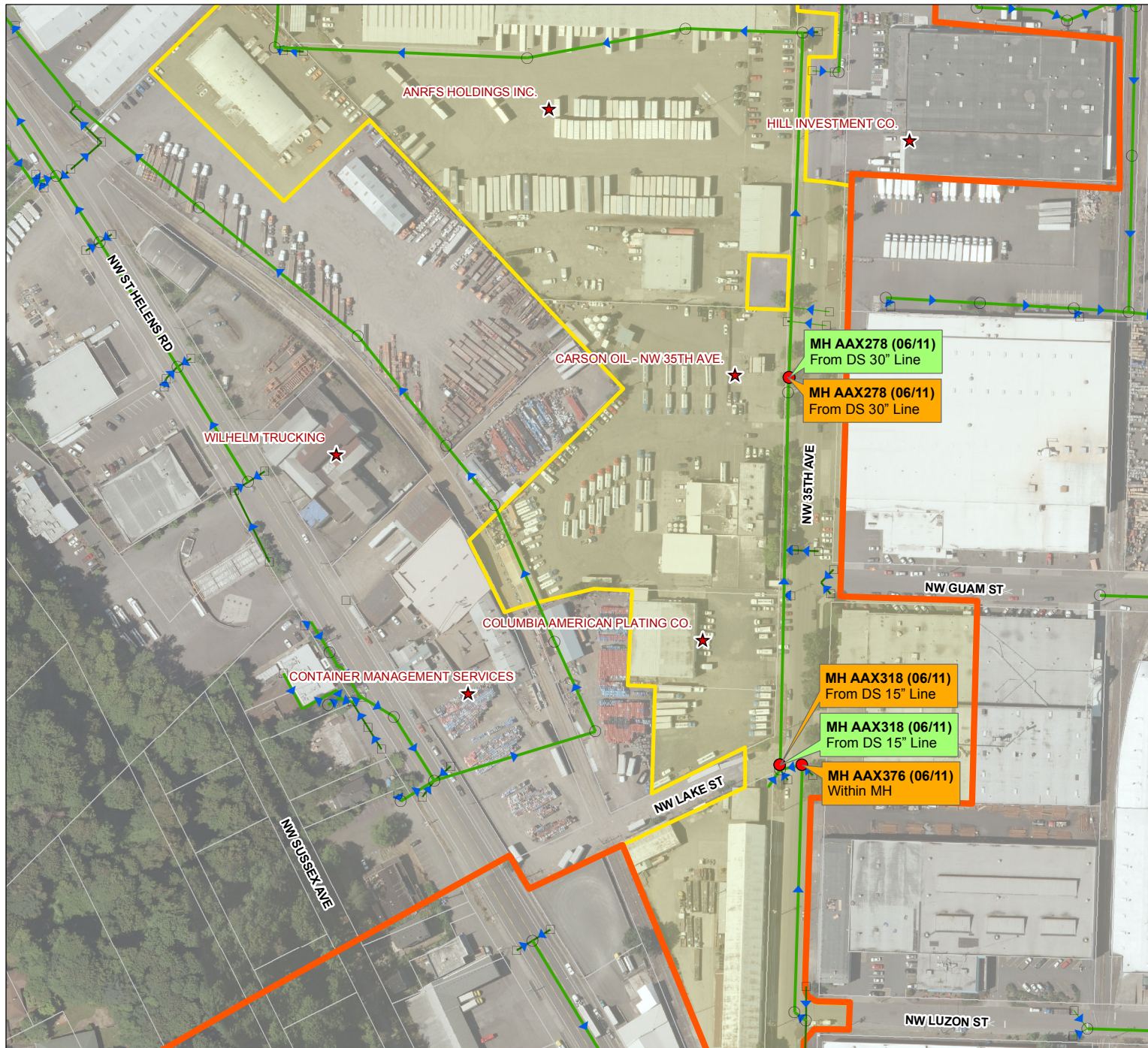
⁽⁴⁾ Total Chlordane is the sum of alpha- and beta-isomers.

⁽⁵⁾ The analytical laboratory reports that the Aroclor 1260 detection may include some Aroclor 1254.

⁽⁶⁾ Total PCBs are calculated by assigning "0" to undetected constituents.

█ = concentration exceeds JSCS Toxicity Screening Level Value.

bold = concentration exceeds JSCS Bioaccumulation Screening Level Value.



LEGEND

- Sample Location
- Outfall Basin 18
- East-Central Subbasin
- Sample Types**
- Inline Solids Sample
- Sediment Trap Sample
- All Other Features**
- Storm Line
- Manhole (MH)
- Catch Basin (CB)
- ★ DEQ ECSI Site
- Tax Lot

NOTES:

DS = Downstream
US = Upstream



0 55 110 165 220
Feet

FIGURE D-1

Basin 18 East-Central Subbasin 2011 Sediment Trap & Inline Solids Sampling Locations

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:
May 9, 2012
005_SCR/IOF_Basin_18\
OF18_EastSubbasin_
Report

Source:
City of Portland BES,
Aerial Photo 2010

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

Attachment D-1

Field Photographs

2010-2011 Sediment Trap Deployment and Sampling



Photo 1 (December 21, 2010). Manhole AAX318 (ST6) and surrounding area at time of sediment trap deployment.



Photo 2 (December 21, 2010). Deployed SIFT© sediment trap at sampling location ST6 (Manhole AAX318).



Photo 3 (January 26, 2011). Primary trap chamber and accumulated solids at time of first monthly field check.



Photo 4 (January 26, 2011). Secondary trap chamber and accumulated solids at time of first monthly field check.



Photo 5 (June 9, 2011). ST6 sediment trap in place at time of removal.



Photo 6 (December 21, 2010). Manhole AAX278 (ST7) and surrounding area at time of sediment trap deployment.



Photo 7 (December 21, 2010). Deployed SIFT© sediment trap in the outgoing 30-inch line at Manhole AAX278 (ST7).



Photo 8 (May 23, 2011). Secondary trap chamber and accumulated solids during monthly field check at sample location ST7 (Manhole AAX278).

June 2011 Inline Solids Sampling



Photo 9 (June 9, 2011). Sampling setup at Manhole AAX318.



Photo 10 (June 9, 2011). Solids at bottom of Manhole AAX318 before sampling.



Photo 11 (June 9, 2011). Final composited inline solids sample from manhole AAX318.



Photo 12 (June 9, 2011). Sampling setup at Manhole AAX376.



Photo 13 (June 9, 2011). Solids at the bottom of Manhole AAX376 before sampling.



Photo 14 (June 9, 2011). Final homogenized sample from Manhole AAX376.



Photo 15 (June 9, 2011). Sampling setup at Manhole AAX278.



Photo 16 (June 9, 2011). Solids in outgoing 30-inch line from Manhole AAX278 before sampling.

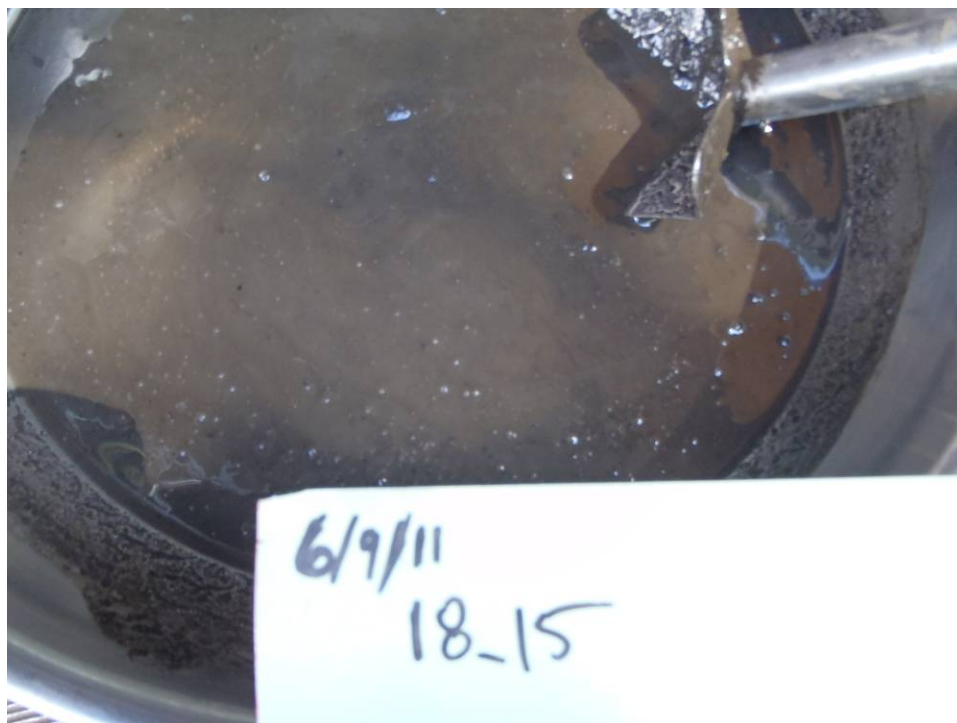


Photo 17 (June 9, 2011). Final composited inline solids sample from Manhole AAX278.

Attachment D-2

Field Notes

Collected By: MJS, PTB, PHA

Matrix: Sediment

Requested Analyses

<u>Relinquished By:</u>		<u>Received By:</u>		<u>Relinquished By:</u>		<u>Received By:</u>	
Signature: <i>Peter Bryant</i>	Date: 6/9/11	Signature: <i>Mackenzie Zirk</i>	Date: 6/9/11	Signature:	Date:	Signature:	Date:
Printed Name: Peter Bryant	Time: 1440	Printed Name: Mackenzie Zirk	Time: 1440	Printed Name:	Time:	Printed Name:	Time:



Page 1 of 1

Project PORTLAND HARBOR

Project No.

Location BASIN 18.

Date 12/21/10

Subject Low Flow Dam + SIFT INSTALLS

By MJS, PTR

1030 Arrive on-site AAX318. MH is buried by gravel. Located MH and dug it out. Set up for entry to evaluate pipe conditions to install dam.

1055 Entrant observes sediment in line. 1.3" max deep and average of 1" deep across MH chamber floor. Standing water in pipe is 1.2 in depth. Finer seds mixed with coarse in main ds line. Coarse sands in dead end. US line has mix of fine & coarse. Seds extend 3' ds in main line. Seds extend as far as can be seen in US line. There is a sag in this line so water gets deeper as you move US. Photos of US, ds lines.

Concrete - Outlet pipe is 24" in diameter. ^{HDPE} Inlet line is 12" diameter. CB inlet is 9.5" diameter HDPE. Inlet line from W is 10" concrete.

Entrant confirmed MH chamber floor is 12" above line invert. CB inlet from S is 22" above line invert.

1245 Decision made per conversation with PHA + LAS to install SIFTS in both AAX318 + AAX278 and give them a check after the next big storm to make sure inundation occurred and sediment was captured.

1315 Installed SIFT ~6 m. ds of EOP

1335 Arrive on-site AAX278. Assembled SIFT & band. Entrant observes no inputs into MH chamber. Flowing water at 0.25 in & 0.5 fps. Sag in pipe ds of MH chamber. Seds present 6 ft ds of EOP ^{as far as can be seen} ~~11 ft ds of EOP~~ & 3 in wide. In ds pipe depth of water is 1.5 in. with a max depth of 2 in. No water velocity observed in ds line. Installed SIFT 36" ds of center of node. Attachments as there are no inputs and flow is likely to be deeper here.



Page 1 of

Project Portland Harbor SIFT
Location Basin 18
Subject Daily Field notes

Project No.
Date 1-26-11
By PTB AJA

1115 Arrive on site for first check of site 18-ST6
Good accumulation of fines in secondary, 0.1" in
primary. No seds collected from SIFT. Re installed
as before check.

Note that Manhole Lid is always covered by
gravel at this site.

1150 Arrive at 18-ST7 for first monthly check.
Some flowing water in pipe. SIFT is free and clear
of debris. Small amounts in both chambers (fines).
Oddly, there is seds on the top (roof) of secondary
(also invert and screen) but not on side walls.
Did not take seds for archive.

Re installed SIFT ~~as~~ as before.



Page 1 of 1

Project PORTLAND HARBOR

Project No. _____

Location BASIN 180

Date 3-7-11

Subject SILT CHECK

By WCR PTD

1210 ARRIVE @ 18-STG, HW LAKE; 35°F.

- LOTS OF GRAVEL ON MH LID.
- MH CHAMBER: ^{COARSE} SAND N 2" DEEP, 12" WIDE, 14" LONG IN INVERT
- EVIDENCE OF SURCHINING.
- WHITE SAND IN PLACES AROUND; BELIEVED LATERAL COMING FROM HW(?)
- IN MAIN UOSTREAM PIPE THERE IS ABOUT 1 3/4" FINE MUCK
- REINSTALL SIKT, NO COLLECTION OF SEDS

1250 DEPART



Page 1 of 1

Project PORTLAND HARBOR

Project No. _____

Location 18-ST7 3125 NW

Date 3-7-11

Subject SILT CHECK

By WCR/PTB

1248 ARR @ 18-ST7, 3125 NW 35^F

- TRICKLE OR FLOW, SOME SUDS IN H₂O

- TAKE PHOTOS

- REINSTALL SILT

1313 - DEPART

Attachments



Page 1 of 1

Project PORTLAND HARBOR
Location Basin 18
Subject SIFT CHECKS

Project No. _____
Date 4/18/11
By JLM, PTB

1315 Arrive on-site 18-ST6. ~~MH covered with gravel~~ MH covered with gravel as seen before at this site. MH chamber has similar seed accumulations in dead end, vs line and around the SIFT as seen here during the last check.

1347 Collected seeds into Archive jar

1352 Depart site

1354 Arrive on-site 18-ST7.

1415 Collected seeds into Archive jar.

1422 Departed site

Attachments



Page 1 of 1

Project Portland Harbor Sed traps
Location Basin 18
Subject Monthly check

Project No. _____
Date 5/23/11
By PTB

1220 arrived on site at NW Lake + 35th Ave 18-ST6

1225 Entry made to remove trap for sediment collection.
photos taken.

- upstream of Sift: gravel and sand $\frac{1}{4}$ " , standing H₂O $\frac{1}{2}$ "
- immediately downstream of Sift: gravel and sand 2" deep x 8" wide x as far as can ~~be~~ be seen.
- main upstream like: fine sediment 2" with H₂O $\frac{1}{10}$ " over sed.
- manhole chamber dead end: fines + sands with some gravel 2 $\frac{3}{4}$ " deep x 12" wide x ~~2~~¹⁶" long.

~~1237~~ ~~Trap removed~~

leaf ~~build~~ build up around the base of Sift.

1238 Trap removed and sediments collected
Seds placed in jars.

1250 Trap put back in place.

1255 Departed site

1305 Arrived on site - 3125 NW 35th Ave 18-ST7

1309 Entry made to remove trap for sediment collection

Standing water 2" deep at SIFT, no flow.

Water flowing 2.5' upstream of Sift at a rate of 0.5 f.p.s.

- trace fine seds along invert of pipe, upstream of Sift
- Immediately downstream of SIFT: trace fine Sedi and deepens 1.5' downstream to 1.5" deep (coarse sand)
10" wide.

1318 Trap removed and sediments placed in jar.

1327 Trap put back in place

1340 Departed site.

Attachments



Page 1 of 1

Project PORTLAND HARBOR
Location Basin 18
Subject SIFT Removal + Inline Sampling

Project No. _____
Date 6/9/11
By MJS, PTB

0940 Arrive on-site AAX278. Removed SIFT.
1005 Collected seeds from SIFT into archive jar and homogenized seeds using spatula. Given Point code 18-ST7.
1020 Collected inline seeds downstream of SIFT location and MH chamber.
1030 Homogenized sample and filled jars. Used point code 18-15.
1045 Arrive on-site AAX376.
1055 Collected inline seeds from MH chamber of AAX376.
1105 Homogenized sample and filled jars. Used point code 18-14.
1115 Arrive on-site AAX318. Removed SIFT.
1130 Collected seeds from SIFT into archive jar and homogenized seeds using spatula. Given point code 18-ST6.
1155 Collected inline seeds from MH chamber and ~2' ds of MH chamber of AAX318.
1205 Homogenized sample and filled jars. Used point code 18-13.

Attachments



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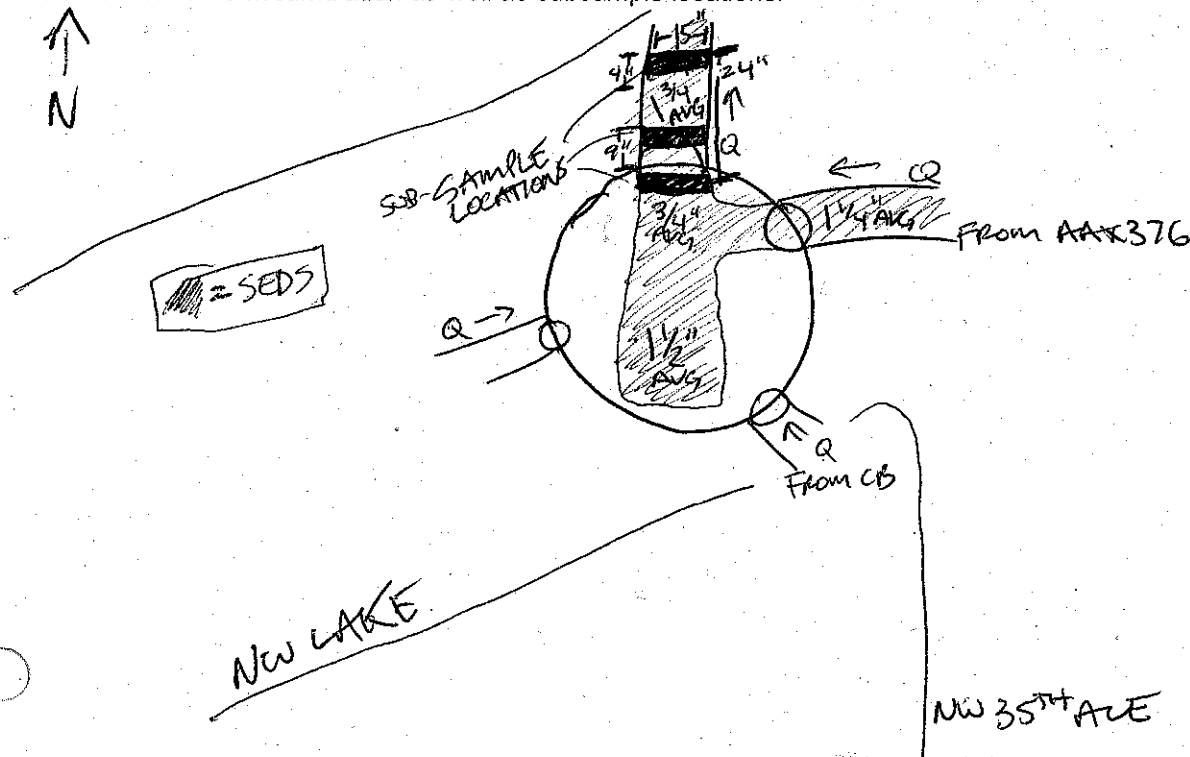
INLINE SEDIMENT SAMPLING FIELD DATA SHEET

Project Name: <u>PORTLAND HARBOR</u>		Sample ID: <u>W11F059-02</u>	
Sampling Team: <u>USS, PTB</u>	Date: <u>6/9/11</u>	Arrival Time: <u>1115</u>	Point Code: <u>18-13</u>
Basin: <u>18</u>	Node: <u>AAx318</u>	Address: <u>NW 35TH + LAKE ST</u>	
Current weather: <u>Sunny</u>			
Date and time of last known rainfall:			

SECTION 1 - PRE-SAMPLING VISUAL OBSERVATION REPORT

Is there water inline? Yes or <u>No</u>	If present, water is: Flowing or Standing Depth of water = _____ in Rate of flow = _____ fps		
Does river back up to this location? Yes or <u>No</u>	If river is backed up:	Water Color <input type="checkbox"/> Brown <input type="checkbox"/> Grey <input type="checkbox"/> Clear	Water Odor <input type="checkbox"/> Hydrocarbon <input type="checkbox"/> Sanitary <input type="checkbox"/> Other _____
Are sediments observed in the line? <u>Yes</u> or No	Are recoverable quantities of sediments present in the line? <u>Yes</u> or No		
If sediments present: Avg Depth of seds = <u>1 1/4</u> in Sed Depth Range = <u>3/4</u> in. to <u>1 3/4</u> in.			
Estimated dimensions of sediment deposit: <u>24</u> in. by _____ in. OR <u>X</u> As far as can be seen			

SITE DIAGRAM: Include street intersections/main lines/laterals/catch basins/MH's/pipe sizes/ flow direction/ driveways cuts and extent of solids accumulation as well as subsample locations.



Date: <u>6/9/11</u>		SECTION 2 - SAMPLE COLLECTION REPORT		Node: <u>AAX318</u>	Point Code: <u>18-13</u>
Sampling Equipment: <input checked="" type="checkbox"/> Stainless steel utensil & stainless steel receptacle <input type="checkbox"/> Other (Describe)					
Equipment Decontamination process: <input checked="" type="checkbox"/> Per SOP7.01a <input type="checkbox"/> Deviations (Describe)					
Sample date: <u>6/9/11</u>	Sample time: <u>1205</u>	Sample Identification Code (IL-XX-NNNNNN-mmyy) <u>IL-18-AAX318-0611</u>			
Sample location: <input checked="" type="checkbox"/> From MH chamber <input checked="" type="checkbox"/> From line		If from line, segment is From Node <u>AAX318</u> To Node _____			
Sample collection technique: <input checked="" type="checkbox"/> Per SOP5.01e <input type="checkbox"/> Deviations (describe below)					
Visual and olfactory observations:		<input type="checkbox"/> Odor _____ <input type="checkbox"/> Sheen _____ <input type="checkbox"/> Discoloration _____			
		<input checked="" type="checkbox"/> Brown <input type="checkbox"/> Grey <input type="checkbox"/> Other (describe) _____			
Sample composition/particle size distribution (estimated percentages):		Silt/Clay <u>5</u> Sand <u>10</u> Fine Gravel <u>20</u> Coarse Gravel <u>65</u> Debris _____ Decomposed Organics _____ Other (describe) _____			
If present, type of debris in sample		<input type="checkbox"/> Wood <input checked="" type="checkbox"/> Large rocks <input type="checkbox"/> Metal <input type="checkbox"/> Plastic <input type="checkbox"/> Organics <input type="checkbox"/> Paper			
		Removed debris? <input checked="" type="checkbox"/> Yes (Type & Amount) <u>Most coarse gravel removed</u> <input type="checkbox"/> No			
Compositing notes <input checked="" type="checkbox"/> Per SOP5.01e <input type="checkbox"/> Deviations (describe)					
Sample Jars Collected (number, size, full or partial)? <u>5 full 4 oz jars (1 for archive)</u> <u>1 full 8 oz jar</u>					
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). <div style="border: 1px solid black; padding: 5px; width: fit-content;"> W11F059-02 Portland Harbor 18_13 Sampled: 06/09/11 12:05 Field Data Sheet </div>		Jar Size	Amount Full	Target Analyses	
		Duplicate sample collected? <input checked="" type="checkbox"/> <u>Y/N</u>			
Duplicate sample identification # on COC:		Dup ID Here			

SECTION 3 - PHOTOGRAPH LOG	
Overview of node showing drainage area	Filename(s): <u>Yes.</u>
Plan view of sediments inline	Filename: <u>Yes.</u>
Homogenized sample (sediment in bowl)	Filename: <u>Yes. Before & After exclusion.</u>
Other?	Filename(s):



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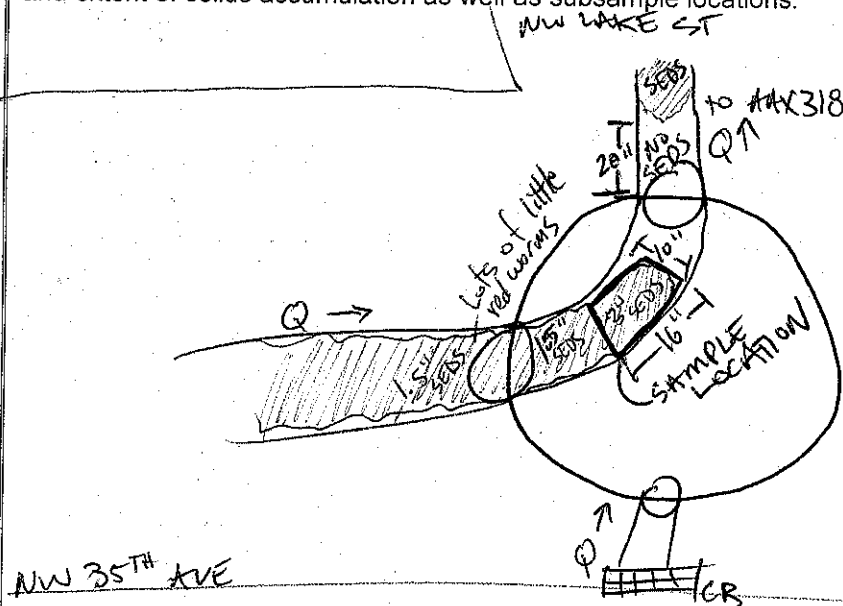
INLINE SEDIMENT SAMPLING FIELD DATA SHEET

Project Name: <u>PORTLAND HARBOR</u>			Sample ID: <u>W11F059-03</u>	
Sampling Team: <u>MJS, PTB, PHA</u>	Date: <u>6/9/11</u>	Arrival Time: <u>1045</u>	Point Code: <u>18-14</u>	
Basin: <u>18</u>	Node: <u>AA x376</u>		Address:	
Current weather: <u>Sunny</u>				
Date and time of last known rainfall:				

SECTION 1 - PRE-SAMPLING VISUAL OBSERVATION REPORT

Is there water inline? <u>Yes</u> or No	If present, water is: Flowing or <u>Standing</u> Depth of water = <u>2</u> in Rate of flow = <u>0</u> fps			
Does river back up to this location? Yes or <u>No</u>	If river is backed up:	Water Color <input type="checkbox"/> Brown <input type="checkbox"/> Grey <input type="checkbox"/> Clear	Water Odor	<input type="checkbox"/> Hydrocarbon <input type="checkbox"/> Sanitary <input type="checkbox"/> Other
Are sediments observed in the line? <u>Yes</u> or No	Are recoverable quantities of sediments present in the line? Yes or No			
If sediments present: Avg Depth of seds = <u>2</u> in Sed Depth Range = <u>1</u> in. to <u>3</u> in.				
Estimated dimensions of sediment deposit: <u>10</u> in. by _____ in. OR <u>X</u> As far as can be seen				

SITE DIAGRAM: Include street intersections/main lines/laterals/catch basins/MH's/pipe sizes/ flow direction/ driveways cuts and extent of solids accumulation as well as subsample locations.



Date: <u>6/9/11</u>		SECTION 2 - SAMPLE COLLECTION REPORT		Node: <u>AA376</u>		Point Code: <u>18-H</u>	
Sampling Equipment: <input checked="" type="checkbox"/> Stainless steel utensil & stainless steel receptacle <input type="checkbox"/> Other (Describe)							
Equipment Decontamination process: <input checked="" type="checkbox"/> Per SOP7.01a <input type="checkbox"/> Deviations (Describe)							
Sample date: <u>6/9/11</u>		Sample time: <u>1105</u>		Sample Identification Code (IL-XX-NNNNNN-mmyy) <u>18-18-AA376-0611</u>			
Sample location: <input checked="" type="checkbox"/> From MH chamber <input type="checkbox"/> From line				If from line, segment is From Node _____ To Node _____			
Sample collection technique: <input checked="" type="checkbox"/> Per SOP5.01e <input type="checkbox"/> Deviations (describe below)							
Visual and olfactory observations:				<input type="checkbox"/> Odor _____ <input type="checkbox"/> Sheen _____ <input type="checkbox"/> Discoloration _____			
Sample composition/particle size distribution (estimated percentages):		Silt/Clay <u>10</u> Sand <u>10</u>		Fine Gravel _____ Coarse Gravel <u>5</u> Debris _____		Decomposed Organics <u>5</u> Other (describe) _____	
If present, type of debris in sample		<input type="checkbox"/> Wood <input type="checkbox"/> Large rocks <input type="checkbox"/> Metal <input type="checkbox"/> Plastic <input checked="" type="checkbox"/> Organics <input type="checkbox"/> Paper		Removed debris? <input checked="" type="checkbox"/> Yes (Type & Amount) <u>5</u> <input type="checkbox"/> No			
Compositing notes <input checked="" type="checkbox"/> Per SOP5.01e <input type="checkbox"/> Deviations (describe)							
Sample Jars Collected (number, size, full or partial)? <u>5 full 4oz. jars (1 for archive)</u> <u>1 full 8 oz. jar</u>							
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). <div style="border: 1px solid black; padding: 5px; width: fit-content;"> W11F059-03 Portland Harbor 18 14 Sampled: 06/09/11 11:05 Field Data Sheet </div>		Jar Size		Amount Full		Target Analyses	
		Duplicate sample collected? Y/ <input checked="" type="radio"/> N					
Duplicate sample identification # on COC:		Dup ID Here					

SECTION 3 - PHOTOGRAPH LOG	
Overview of node showing drainage area	Filename(s): <u>Yes</u>
Plan view of sediments inline	Filename: <u>Yes</u>
Homogenized sample (sediment in bowl)	Filename: <u>Yes</u>
Other?	Filename(s):



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INLINE SEDIMENT SAMPLING FIELD DATA SHEET

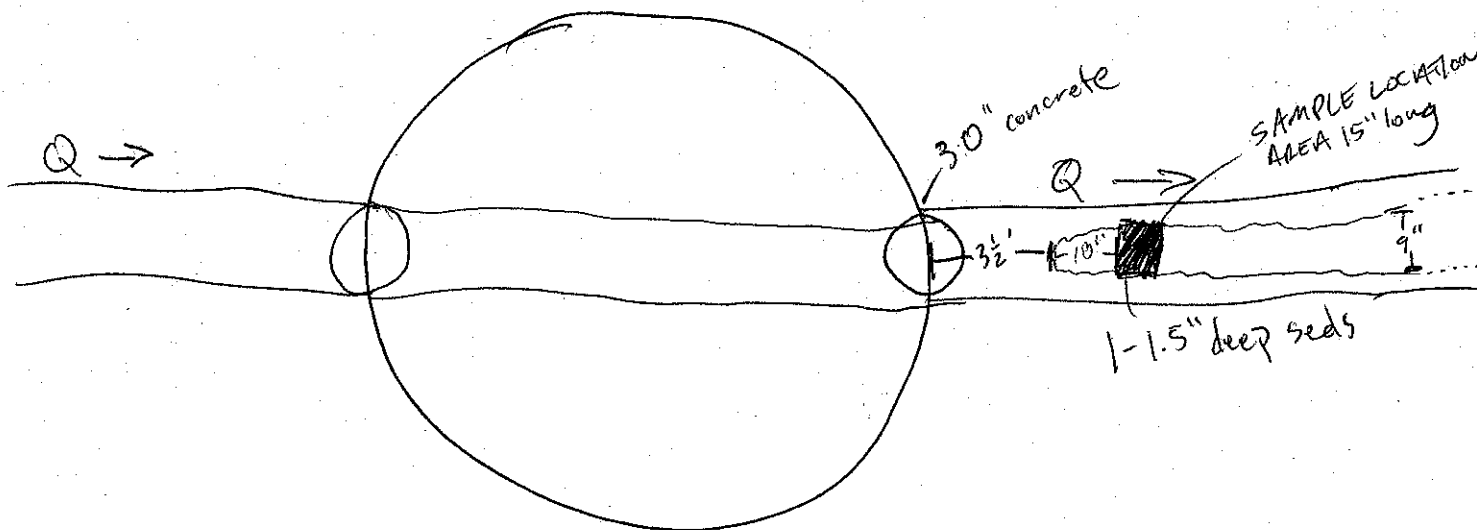
Project Name: PORTLAND HARBOR Sample ID: W11F059-05
Sampling Team: MSS, PTB Date: 6/1/11 Arrival Time: 0940 Point Code: 18-15
Basin: 18 Node: AAx278 Address: 3125 NW 35TH AVE
Current weather: Sunny
Date and time of last known rainfall:

SECTION 1 - PRE-SAMPLING VISUAL OBSERVATION REPORT

Is there water inline? Yes or No If present, water is: Flowing or Standing Depth of water = 1 in Rate of flow = 0 fps
Does river back up to this location? Yes or No If river is backed up: Water Color ☐ Brown ☐ Grey ☐ Clear Water Odor ☐ Hydrocarbon ☐ Sanitary ☐ Other
Are sediments observed in the line? Yes or No Are recoverable quantities of sediments present in the line? Yes or No
If sediments present: Avg Depth of seds = 1.5 in Sed Depth Range = 1 in. to 1.5 in.
Estimated dimensions of sediment deposit: 9 in. by _____ in. OR ☒ As far as can be seen

SITE DIAGRAM: Include street intersections/main lines/laterals/catch basins/MH's/pipe sizes/ flow direction/ driveways cuts and extent of solids accumulation as well as subsample locations.

N →



Date: <u>6/9/11</u>	SECTION 2 - SAMPLE COLLECTION REPORT		Node: <u>AAV278</u>	Point Code: <u>18-15</u>
Sampling Equipment: <input checked="" type="checkbox"/> Stainless steel utensil & stainless steel receptacle <input type="checkbox"/> Other (Describe)				
Equipment Decontamination process: <input checked="" type="checkbox"/> Per SOP7.01a <input type="checkbox"/> Deviations (Describe)				
Sample date: <u>6/9/11</u>	Sample time: <u>1030</u>	Sample Identification Code (IL-XX-NNNNNN-mmyy) <u>IL-18-AAV278-0611</u>		
Sample location: <input type="checkbox"/> From MH chamber <input checked="" type="checkbox"/> From line		If from line, segment is From Node <u>AAV278</u> To Node _____		
Sample collection technique: <input checked="" type="checkbox"/> Per SOP5.01e <input type="checkbox"/> Deviations (describe below)				
Visual and olfactory observations:		Color of sample		
<input type="checkbox"/> Odor _____ <input type="checkbox"/> Sheen _____ <input type="checkbox"/> Discoloration _____		<input type="checkbox"/> Brown <input checked="" type="checkbox"/> Grey <input type="checkbox"/> Other (describe) _____		
Sample composition/particle size distribution (estimated percentages):		Silt/Clay <u>10</u> Sand <u>90</u> Fine Gravel _____ Coarse Gravel _____ Debris _____ Decomposed Organics _____ Other (describe) _____		
If present, type of debris in sample		Removed debris? <input type="checkbox"/> Yes (Type & Amount) <input checked="" type="checkbox"/> No		
<input type="checkbox"/> Wood <input type="checkbox"/> Large rocks <input type="checkbox"/> Metal <input type="checkbox"/> Plastic <input type="checkbox"/> Organics <input type="checkbox"/> Paper				
Compositing notes <input checked="" type="checkbox"/> Per SOP5.01e <input type="checkbox"/> Deviations (describe)				
Sample Jars Collected (number, size, full or partial)? <u>5 full 4oz. jars (1 for Archive) 1 full 8oz jar</u>				
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). <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> W11F059-05 Portland Harbor 18 15 Sampled: 06/09/11 10:30 Field Data Sheet </div>	Jar Size	Amount Full	Target Analyses	
		Duplicate sample collected? <input checked="" type="checkbox"/> Y <input type="checkbox"/> N		
Duplicate sample identification # on COC:		Dup ID Here		

SECTION 3 - PHOTOGRAPH LOG	
Overview of node showing drainage area	Filename(s): <u>Yes</u>
Plan view of sediments inline	Filename: <u>Yes</u>
Homogenized sample (sediment in bowl)	Filename: <u>Yes</u>
Other?	Filename(s):



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INLINE SEDIMENT TRAP FIELD DATA SHEET

Project Name: Portland Harbor	Date: 12/21/10	Personnel: MS S, PTB	Point Code: 18-ST6
Site Address: NW LAKE 135 TH Ave DS of MH	Basin: 18	Hansen ID: AAX318	

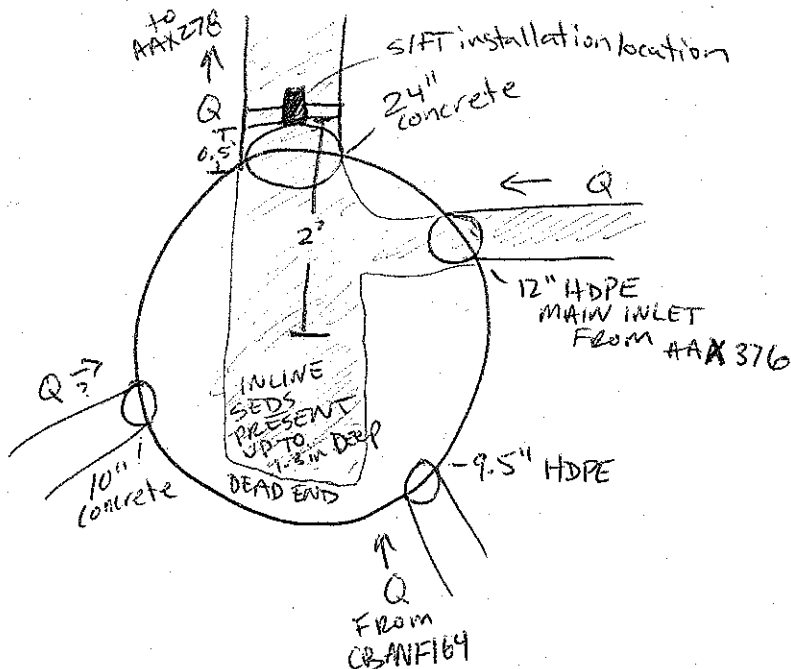
SECTION 1 - INSTALLATION INFORMATION

Traffic control and/or site access concerns: MH is located near curb on gravel road near intersection with NW 35 TH Ave. Park vehicle on NW lake and cone around MH and vehicle allowing room for traffic to get on and off NW lake.		Flowing water: Y or <input checked="" type="radio"/> N	Standing water: <input checked="" type="radio"/> Y or N
		If flowing: Depth of flow = 1 in. Rate of flow = NA fps	
		Does river appear to back up to this location: Y or <input checked="" type="radio"/> N	
Are sediments present inline? <input checked="" type="radio"/> Y or N	If Yes, Avg Depth of seds = 1 in Sed Depth Range = Trace in to 1.3 in		
Estimated dimensions of sediment deposit: ^{DS} 10 in. by ~36 in. OR ^{DS} <input checked="" type="checkbox"/> As far as can be seen			
Sed Trap Installed in: 24 in. Pipe On Upstream or <u>Downstream</u> side of MH (circle one) 205 ft from center of MH node			

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:

SIFT installed at 5° angle with 3" S.I. from invert floor to ^{top} bottom of weir.



Pl. Code: 10-516		SECTION 2 - MONTHLY FIELD CHECK INFORMATION		Hansen ID: AAX310
Date: 1-26-11	Average sed. depth per chamber: Primary = 0.1 in Secondary = 0.25 in	Sediments removed? Yes or <u>No</u> If Yes, from Primary / Secondary	Archived ID:	
By: PTR ASA	Final Removal? Yes or <u>No</u>	Face occluded? Yes or <u>No</u>	<div style="border: 1px solid black; border-radius: 50%; width: 60px; height: 60px; margin: 0 auto; text-align: center; line-height: 60px;">Holding Sticker</div>	
Sediment Trap Status Observations 1.5" standing water with 2" of gravel and sand				
Housing: Gravels accumulated around base of SIFT. Larger gravels are from the gravel road where manhole is located				
Primary Chamber: Primary has 0.1" inch accumulated seds, 2" wide in invert.				
Secondary Chamber: Secondary chamber has 0.25" depth of fines, 3" wide along invert. Good fines accumulation. <u>SIFT was reinstalled as before its check</u>				
Photos Taken? <u>Y</u> N 1 Overview, 1 primary, 1 secondary. <u>No seds collected for Archive</u>				
Describe:				
Date: 3-7-11	Average sed. depth per chamber: Primary = 1/4" in Secondary = 1/4" in	Sediments removed? Yes or <u>No</u> If Yes, from Primary / Secondary	Date:	
By: UCR/PTR	Final Removal? Yes or <u>No</u>	Face occluded? Yes or <u>No</u>	<div style="border: 1px solid black; border-radius: 50%; width: 60px; height: 60px; margin: 0 auto; text-align: center; line-height: 60px;">Holding Sticker</div>	
Sediment Trap Status Observations <u>N 1 1/2" SEDS AROUND BASE, EXTRUDING D.S. AS FAR AS CAN BE SEEN</u>				
Housing: <u>LEAKS BUILT UP AROUND TRAP.</u>				
Primary Chamber: <u>1/4" OF SEDIMENT, IN 2 1/2" BAND</u>				
Secondary Chamber: <u>NO APPARENT ADDIT'L ACCUMULATION FROM LAST VISIT, ARE FINES. 1/4" OF WATER, 1/4" OF SEDS, 3" WIDE @ INVERT</u>				
Photos Taken? <u>Y</u> N <u>SEDIMENT IN MH CHAMBER, TRAP, PRIMARY CHAMBER, SECONDARY</u>				
Describe:				
Date: 4/18/11	Average sed. depth per chamber: Primary = 0.25 in Secondary = 0.5 in	Sediments removed? <u>Yes</u> or No If Yes, from <u>Primary</u> / <u>Secondary</u>	Date:	
By: JIM PTR	Final Removal? Yes or <u>No</u>	Face occluded? Yes or <u>No</u>	<div style="border: 1px solid black; border-radius: 50%; width: 60px; height: 60px; margin: 0 auto; text-align: center; line-height: 60px;">Holding Sticker</div>	
Sediment Trap Status Observations				
Housing: Gravel & seds accumulated around base of SIFT. (similar to last time). 2" in depth.				
Primary Chamber: 1/4" accumulation of fines & gravels in 2.5" wide band along invert.				
Secondary Chamber: 0.6" at screen-side adjacent to primary sloping to 0.4" toward back screen in 3" wide band consisting of fines.				
Photos Taken? <u>Y</u> N In-situ, Primary & Secondary				
Describe:				



Portland Harbor SIFT Sediment Trap
Sediment Accumulation Tracking Sheet

Basin 18 Site 18-ST6/4A318



DATE	TOTAL WEIGHT SEDS + JAR + LID (g)	TARE WEIGHT OF JAR + LID (g)	TOTAL COLLECTED WEIGHT (g)	WEIGHT OF PREVIOUSLY COLLECTED SEDS (g)	DEPLOYMENT'S SED ACCUMULATION (g)
4/18/11	330.3	- 208.0	= 122.3	NA	= 122.3
5/23/11	452.7	- 208.0	= 244.7	- 122.3	= 122.4
6/9/11	488.0	- 208.0	= 280.0	- 244.7	= 35.3
		-	=	-	=
		-	=	-	=

Homogenization Procedure: In a Single Jar OR In a Bowl from Multiple Jars (then parceled out into new clean jars)

Total Weight Sed + Jar + Lid after homogenization	Tare Weight of Jar + Lid	Sed Weight After Homogenization (At Submittal)
<u>=</u>	<u>-</u>	<u>=</u>

COC Time (time composite jar is capped): 1130 Number of Sample Jars Collected (size & fullness): 1 full 8oz jar

Visual Description of Final Composite Sample: Brown consisting primarily of fine sed

Sample ID: W11F059-01 Duplicate Collected? Y/(N) Dup ID: —

Total Solids (%) per Lab Analysis = — Total Weight Available for Analysis = —

Comments: Sample homogenized in jar at time of last collection



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INLINE SEDIMENT TRAP FIELD DATA SHEET

Project Name: Portland Harbor	Date: 12/21/10	Personnel: MSS, PTB	Point Code: 10-ST7
Site Address: 3125 NW 35TH AVE	Basin: 10	Hansen ID: AAX278	

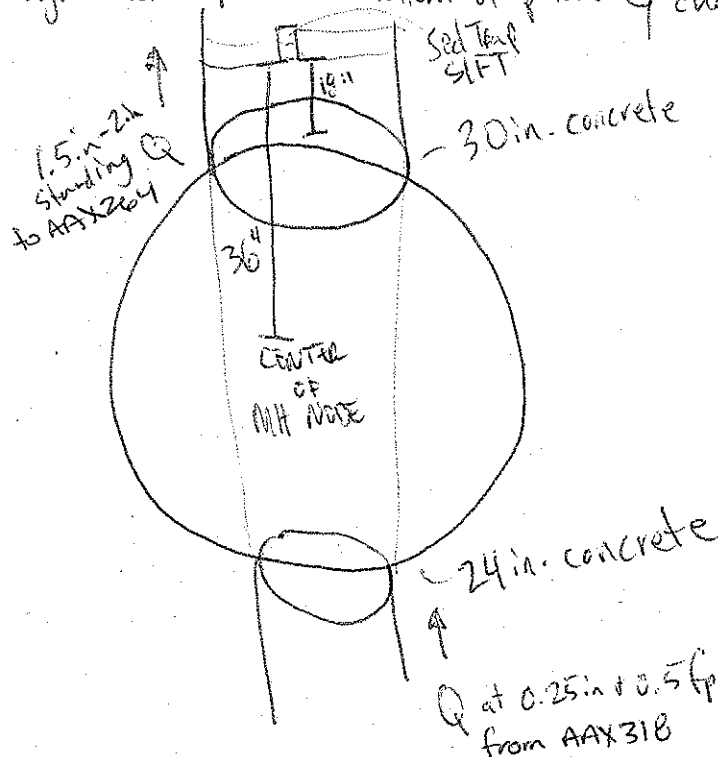
SECTION 1 - INSTALLATION INFORMATION

Traffic control and/or site access concerns: No site access concerns. No runs in MH but shallow. Parkings Park next to MH on street if available. If not the other side is fine unless asked to move.		Flowing water: <input checked="" type="radio"/> or N	Standing water: <input checked="" type="radio"/> or N ^{in 1.5-2 in.}
		If flowing: Depth of flow = 0.5 in. Rate of flow = 0.5 fps	
		Does river appear to back up to this location: Y or <input checked="" type="radio"/> N	
Are sediments present inline? <input checked="" type="radio"/> or N	If Yes, Avg Depth of seds = 0.5 in Sed Depth Range = 1 in to 1 in		
Estimated dimensions of sediment deposit: 3 in. by in. OR <input checked="" type="checkbox"/> As far as can be seen			
Sed Trap Installed in: 30 in. Pipe On Upstream or <u>Downstream</u> side of MH (circle one) 3 ft from center of MH node			

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):

SIFT installed @ 12° angle with 4.5 in to bottom of primary chamber.



Pt. Code: 10-557		SECTION 2 - MONTHLY FIELD CHECK INFORMATION		Hansen ID: AAX278	
Date: 1-26-11	Average sed. depth per chamber: Primary = <u>Trace</u> in Secondary = <u>Trace</u> in	Sediments removed? Yes or <u>No</u> If Yes, from Primary / Secondary	Archived ID:		
By: PTB AJA	Final Removal? Yes or <u>No</u>	Face occluded? Yes or <u>No</u>	<div style="border: 1px solid black; border-radius: 50%; width: 50px; height: 50px; display: flex; align-items: center; justify-content: center;"> Holding Sticker </div>		
Sediment Trap Status Observations Housing: Housing is free and clear. Flowing water present in pipe, 1.25" deep Primary Chamber: Small area of trace fines in invert Secondary Chamber: Fines accumulated on screen and invert and top, suggesting full inundation. Thin layer.					
Photos Taken? <u>YN</u> 1. Overview 2. Secondary 3. primary Describe:					
Date: 3-7-11	Average sed. depth per chamber: Primary = <u>1/10</u> in Secondary = <u>1/8</u> in	Sediments removed? Yes or <u>No</u> If Yes, from Primary / Secondary	Date:		
By: WCR/PTB	Final Removal? Yes or <u>No</u>	Face occluded? Yes or <u>No</u>	<div style="border: 1px solid black; border-radius: 50%; width: 50px; height: 50px; display: flex; align-items: center; justify-content: center;"> Holding Sticker </div>		
Sediment Trap Status Observations <u>SIDS IN FLOW, (TRICKLE) ~ 1/4" / SEC., 1/4"</u> Housing: <u>DEEP</u> Primary Chamber: <u>TRACE SEDS ON SCREEN, AND IN INVERT</u> Secondary Chamber: <u>BUT MORE SEDS THAN LAST VISIT, ~ 1/8" @ BOTTOM, 1/16" @ TOP,</u>					
Photos Taken? <u>YN</u> PRIMARY, SECONDARY CHAMBERS Describe:					
Date: 4/18/11	Average sed. depth per chamber: Primary = <u>0.1</u> in Secondary = <u>0.25</u> in	Sediments removed? <u>Yes</u> or No If Yes, from <u>Primary</u> / <u>Secondary</u>	Date:		
By: <u>WCR/PTB</u>	Final Removal? Yes or <u>No</u>	Face occluded? Yes or <u>No</u>	<div style="border: 1px solid black; border-radius: 50%; width: 50px; height: 50px; display: flex; align-items: center; justify-content: center;"> Holding Sticker </div>		
Sediment Trap Status Observations <u>STANDING WATER @ 1 1/4" in depth</u> Housing: <u>No obstructions. Trace fines up stream of SIFT. 2' ds of SIFT seeds accumulated to 1" in depth ~ 6" wide extending as far as can be seen</u> Primary Chamber: <u>standing water observed in-situ (even though water level is well below SIFT) Sed in primary are a fine trace (~ 1/10") across screen on invert</u> Secondary Chamber: <u>1/4" along invert + top of chamber w/ a trace on the screen. All fines.</u>					
Photos Taken? <u>YN</u> PRIMARY, SECONDARY CHAMBERS + IN-SITU SIFT Describe: <u>PHOTO OF SEDS DS OF SIFT</u>					

Pt. Code: 18-ST7		SECTION 2 – MONTHLY FIELD CHECK INFORMATION		Hansen ID: AAX278
Date: 5/23/11	Estimated sed. depth per chamber: Primary = 0.1 in Secondary = 0.1 ^{0.25} in	Sediments removed? Yes or No If Yes, from Primary / Secondary	Date:	
By: PRB CJR	Final Removal? Yes or No	Face occluded? Yes or No	Holding Sticker	
Sediment Trap Status Observations: While SIFT insitu water in primary chamber even though water level below SIFT.				
Housing: No debris around housing.				
Primary Chamber: Evidence remains of last times Scrapping 0.1" deep sediment 1" long x 2" wide.				
Secondary Chamber: 0.1" deep to 0.25" deep at screen, trace sediment on top of SIFT 2" wide on floor.				
Photos Taken? Y/N insitu SIFT, Primary chamber, secondary chamber, Sediment downstream.				
Describe:				
Date: 6/9/11	Estimated sed. depth per chamber: Primary = Trace in Secondary = 1/8 in	Sediments removed? Yes or No If Yes, from Primary / Secondary	Date:	
By: MSS, PRB	Final Removal? Yes or No	Face occluded? Yes or No	Holding Sticker	
Sediment Trap Status Observations: Some debris around housing including leaves and some fines. Water level at SIFT 1" deep and stagnant				
Housing: Evidence remains of last sampling. Trace seds accumulation.				
Secondary Chamber: 1/8" of accumulation in secondary chamber. along invert.				
Photos Taken? Y/N SIFT in-situ, Primary Chamber, Secondary chamber				
Describe:				

SECTION 3 – COMPOSITE SAMPLE		
Sample ID: W11F059-04 Portland Harbor 18_ST7 Sampled: 06/09/11 10:05 Field Data Sheet	Duplicate sample collected at this site? Y/N	DUPLICATE ID: —
	Any deviations from standard operating procedures? Y/N	
Describe:		
Comments: All archived solids were homogenized in the archive jar at the time of the last collection.		



Portland Harbor SIFT Sediment Trap Sediment Accumulation Tracking Sheet

Basin 18 Site B-ST7/AAX278



DATE	TOTAL WEIGHT SEDS + JAR + LID (g)	TARE WEIGHT OF JAR + LID (g)	TOTAL COLLECTED WEIGHT (g)	WEIGHT OF PREVIOUSLY COLLECTED SEDS (g)	DEPLOYMENT'S SED ACCUMULATION (g)
4/16/11	241.8	- 208.3	= 33.5	NA	= 33.5
5/23/11	268.1	- 208.3	= 59.8	- 33.5	= 26.3
6/9/11	274.7	- 208.3	= 66.4	- 59.8	= 6.6
		-	=	-	=
		-	=	-	=

Homogenization Procedure: In a Single Jar OR In a Bowl from Multiple Jars (then parceled out into new clean jars)

Total Weight Seds + Jar + Lid after homogenization	Tare Weight of Jar + Lid	Sed Weight After Homogenization (At Submittal)
_____	_____	_____

COC Time (time composite jar is capped): 1335 Number of Sample Jars Collected (size & fullness): 1 half full 8 oz. jar

Visual Description of Final Composite Sample: brown consisting primarily of fine seeds

Sample ID: W11F059-04

Duplicate Collected? Y / (N)

Dup ID: —

Total Solids (%) per Lab Analysis = —

Total Weight Available for Analysis = —

Comments: Sample homogenized in jar at time of last collection.

Attachment D-3

Laboratory Reports and Data Review Memoranda (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 Sediment Trap and Inline Solids Sampling Outfall Basin 18 East-Central Subbasin

To: File
From: Andrew Davidson, GSI Water Solutions, Inc.
Date: September 27, 2011

This memorandum presents a quality assurance/quality control (QA/QC) review of the laboratory data generated from a sampling event conducted by the City of Portland (City) in the east-central subbasin of Outfall (OF) Basin 18. Two sediment traps were deployed on December 21, 2010. Sediment trap samples (W11F059-01 and W11F059-04) and three inline solids samples (W11F059-02, W11F059-03, and W11F059-05) were collected on June 9, 2011 and submitted for analyses.

The laboratory analyses for these solids 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 below:

- BES WPCL
 - Total Solids (TS) – SM 2540G
 - Metals – EPA 6020
 - Polychlorinated Biphenyls (PCBs) Aroclors – EPA 8082
- Test America (TA)
 - Total Organic Carbon (TOC) – EPA 9060 MOD
- Analytical Resources, Inc.
 - Grain Size Distribution – ASTM D422
- Columbia Analytical Services (CAS)
 - Pesticides – EPA 8081B

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

The following QA/QC review of the analytical data is based on the available documentation provided by WPCL and the subcontracted laboratories. The QA/QC review of the analytical data consisted of reviewing the following elements for each laboratory report, if applicable and/or available:

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

The results from the QA/QC review of the available information in the laboratory reports are presented below.

Chain-of-Custody

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

Analysis Holding Times

Samples for all analyses were extracted and analyzed within the recommended method-specific holding times.

Method Blanks

Method blanks were processed during WPCL's analyses of metals and PCB Aroclors and during the subcontracted laboratory analyses of TOC and organochlorine pesticides. Low concentrations of copper and nickel were detected in the method blank processed with the two sediment trap samples. However, concentrations of copper and nickel in the sediment trap samples were greater than ten times the concentrations detected in the method blank and the data are not qualified further. No analytes were detected in any of the remaining method blanks.

Surrogate Recoveries

Surrogate chemicals were analyzed during the analysis of PCB Aroclors and organochlorine pesticides. All surrogate recoveries were within acceptance limits.

Matrix Spike/Matrix Spike Duplicates (MS/MSD)

MS samples were processed during the analyses of metals, PCB Aroclors, TOC, and organochlorine pesticides. MSD samples also were processed during the analyses of PCB Aroclors and organochlorine pesticides. The MS sample recovery for the TOC analysis was below laboratory control limits. However, LC sample recoveries during the TOC analysis were within acceptance limits, and the data are not qualified further. MS/MSD results for 4,4'-DDT in the organochlorine pesticide analysis are not applicable due to possible contributions from non-target background constituents. However, the magnitude of these constituents appears to be minimal and the data are not qualified further. All other MS/MSD sample recoveries were within laboratory control limits. Relative percent differences (RPDs) between MS/MSD samples processed during the PCB Aroclor and organochlorine analysis were within acceptance criteria.

Laboratory Control/Laboratory Control Duplicate Sample (LC/LCD)

LC samples were processed during the laboratory analyses of metals, TOC, and organochlorine pesticides. All LC sample recoveries were within laboratory control limits. WPCL comments that LC sample recovery data are not available for the PCB Aroclor analysis, and that the MS/MSD samples demonstrate accuracy and precision for the analysis.

Laboratory Duplicate Samples

Laboratory duplicate samples were processed during the analyses of TS, metals, and TOC. RPDs for all laboratory duplicate samples were within laboratory control limits.

Other

WPCL reports that the Aroclor 1260 concentration in sample W11F059-05 may include some Aroclor 1254. Additionally, WPCL reports that reporting limits were elevated in the PCB Aroclor analysis of samples W11F059-01 and W11F059-04 due to a low solids percentage.

CAS reports that sample W11F059-05 required dilution due to the presence of elevated levels of target analyte. Reporting limits were adjusted to reflect the dilution. For several target analytes in the pesticide analysis, CAS reports that results from the primary and verification columns varied by more than 40 percent; the lower of the two values was reported and the data are not qualified further. Additionally, CAS reports that some analytes were recovered at levels greater than the method detection limit but less than the method reporting limit. These values are qualified as estimates ("J").



City of Portland
Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656



July 12, 2011

Linda Scheffler
Director's Office

Work Order
W11F059

Project
Portland Harbor

Received
06/09/11 14:40

Enclosed are the results of analysis for the above work order. If you have questions concerning this report, please contact your project coordinator Peter Abrams at 503-823-5533.

Renee Chauvin
Laboratory Coordinator QA/QC



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



LABORATORY ANALYSIS REPORT

Project: **Portland Harbor**
Work Order: **W11F059**
Received: 6/9/11 14:40
Submitted By: Field Operations

Client: Director's Office
Project Mgr: Linda Scheffler
WQDB #: Janus329

Sample	Laboratory ID	Matrix	Type	Sample Collection Date		Qualifier
				Start	End	
18_ST6	W11F059-01	Sediment	Composite	12/21/10 13:15	06/09/11 11:30	
18_13	W11F059-02	Sediment	Composite	06/09/11 12:05	06/09/11 12:05	
18_14	W11F059-03	Sediment	Composite	06/09/11 11:05	06/09/11 11:05	
18_ST7	W11F059-04	Sediment	Composite	12/21/10 13:35	06/09/11 10:05	
18_15	W11F059-05	Sediment	Composite	06/09/11 10:30	06/09/11 10:30	

Case Narrative

PCB Aroclor analysis QC:
LCS recovery data not available. The MS and MSD demonstrate accuracy and precision for the analysis.

Sample -05, PCB Aroclor analysis:
PCB quantified as Aroclor 1260 may include some Aroclor 1254.

Analyte	Result	Units	MRL	Dilution	Batch	Prepared	Analyzed	Method	Qualifier
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General Chemistry

Total Solids

18_ST6 : W11F059-01									
Total solids	57.9	% W/W	0.01		B11F151	06/09/11	06/10/11	SM 2540G	
18_13 : W11F059-02									
Total solids	83.3	% W/W	0.01		B11F151	06/09/11	06/10/11	SM 2540G	
18_14 : W11F059-03									
Total solids	72.5	% W/W	0.01		B11F151	06/09/11	06/10/11	SM 2540G	
18_ST7 : W11F059-04									
Total solids	43.8	% W/W	0.01		B11F151	06/09/11	06/10/11	SM 2540G	
18_15 : W11F059-05									
Total solids	75.7	% W/W	0.01		B11F151	06/09/11	06/10/11	SM 2540G	

Reported: 07/12/11 13:42

Renee Chauvin, Laboratory Coordinator QA/QC

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City of Portland
Water Pollution Control Laboratory

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Project: **Portland Harbor**
Work Order: **W11F059**

Client: **Director's Office**
Project Mgr: **Linda Scheffler**

Analyte	Result	Units	MRL	Dilution	Batch	Prepared	Analyzed	Method	Qualifier
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Total Metals

Total Metals by ICPMS

18_ST6 : W11F059-01

Arsenic	3.91	mg/kg dry	0.500	20	B11F234	06/15/11	06/16/11	EPA 6020
Cadmium	2.01	mg/kg dry	0.100	20	B11F234	06/15/11	06/16/11	EPA 6020
Chromium	106	mg/kg dry	0.500	80	B11F234	06/15/11	06/16/11	EPA 6020
Copper	110	mg/kg dry	0.200	20	B11F234	06/15/11	06/16/11	EPA 6020
Lead	160	mg/kg dry	0.100	80	B11F234	06/15/11	06/16/11	EPA 6020
Mercury	0.111	mg/kg dry	0.0100	20	B11F234	06/15/11	06/16/11	EPA 6020
Nickel	45.5	mg/kg dry	0.200	20	B11F234	06/15/11	06/16/11	EPA 6020
Silver	0.261	mg/kg dry	0.100	20	B11F234	06/15/11	06/16/11	EPA 6020
Zinc	558	mg/kg dry	0.500	80	B11F234	06/15/11	06/16/11	EPA 6020

18_13 : W11F059-02

Arsenic	1.14	mg/kg dry	0.500	20	B11F160	06/10/11	06/15/11	EPA 6020
Cadmium	0.524	mg/kg dry	0.100	20	B11F160	06/10/11	06/15/11	EPA 6020
Chromium	52.4	mg/kg dry	0.500	40	B11F160	06/10/11	06/15/11	EPA 6020
Copper	33.7	mg/kg dry	0.200	20	B11F160	06/10/11	06/15/11	EPA 6020
Lead	23.7	mg/kg dry	0.100	20	B11F160	06/10/11	06/15/11	EPA 6020
Mercury	0.0154	mg/kg dry	0.0100	20	B11F160	06/10/11	06/15/11	EPA 6020
Nickel	16.9	mg/kg dry	0.200	20	B11F160	06/10/11	06/15/11	EPA 6020
Silver	ND	mg/kg dry	0.100	20	B11F160	06/10/11	06/15/11	EPA 6020
Zinc	131	mg/kg dry	0.500	20	B11F160	06/10/11	06/15/11	EPA 6020

18_14 : W11F059-03

Arsenic	3.97	mg/kg dry	0.500	20	B11F160	06/10/11	06/15/11	EPA 6020
Cadmium	1.22	mg/kg dry	0.100	20	B11F160	06/10/11	06/15/11	EPA 6020
Chromium	554	mg/kg dry	0.500	300	B11F160	06/10/11	06/15/11	EPA 6020
Copper	149	mg/kg dry	0.200	60	B11F160	06/10/11	06/15/11	EPA 6020
Lead	100	mg/kg dry	0.100	60	B11F160	06/10/11	06/15/11	EPA 6020
Mercury	0.0520	mg/kg dry	0.0100	20	B11F160	06/10/11	06/15/11	EPA 6020
Nickel	124	mg/kg dry	0.200	60	B11F160	06/10/11	06/15/11	EPA 6020
Silver	0.234	mg/kg dry	0.100	20	B11F160	06/10/11	06/15/11	EPA 6020
Zinc	343	mg/kg dry	0.500	60	B11F160	06/10/11	06/15/11	EPA 6020

18_ST7 : W11F059-04

Arsenic	4.65	mg/kg dry	0.500	20	B11F234	06/15/11	06/16/11	EPA 6020
Cadmium	3.02	mg/kg dry	0.100	20	B11F234	06/15/11	06/16/11	EPA 6020
Chromium	93.6	mg/kg dry	0.500	80	B11F234	06/15/11	06/16/11	EPA 6020
Copper	134	mg/kg dry	0.200	20	B11F234	06/15/11	06/16/11	EPA 6020
Lead	175	mg/kg dry	0.100	80	B11F234	06/15/11	06/16/11	EPA 6020
Mercury	0.169	mg/kg dry	0.0100	20	B11F234	06/15/11	06/16/11	EPA 6020
Nickel	47.7	mg/kg dry	0.200	20	B11F234	06/15/11	06/16/11	EPA 6020
Silver	0.609	mg/kg dry	0.100	20	B11F234	06/15/11	06/16/11	EPA 6020
Zinc	730	mg/kg dry	0.500	80	B11F234	06/15/11	06/16/11	EPA 6020

Reported: 07/12/11 13:42

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Renee Chauvin, Laboratory Coordinator QA/QC



City of Portland
Water Pollution Control Laboratory

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Project: **Portland Harbor**
Work Order: **W11F059**

Client: Director's Office
Project Mgr: Linda Scheffler

Analyte	Result	Units	MRL	Dilution	Batch	Prepared	Analyzed	Method	Qualifier
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Total Metals

Total Metals by ICPMS

18_15 : W11F059-05

Arsenic	2.91	mg/kg dry	0.500	20	B11F160	06/10/11	06/15/11	EPA 6020
Cadmium	6.08	mg/kg dry	0.100	20	B11F160	06/10/11	06/15/11	EPA 6020
Chromium	100	mg/kg dry	0.500	80	B11F160	06/10/11	06/15/11	EPA 6020
Copper	92.7	mg/kg dry	0.200	80	B11F160	06/10/11	06/15/11	EPA 6020
Lead	252	mg/kg dry	0.100	80	B11F160	06/10/11	06/15/11	EPA 6020
Mercury	0.405	mg/kg dry	0.0100	20	B11F160	06/10/11	06/15/11	EPA 6020
Nickel	53.8	mg/kg dry	0.200	20	B11F160	06/10/11	06/15/11	EPA 6020
Silver	1.28	mg/kg dry	0.100	20	B11F160	06/10/11	06/15/11	EPA 6020
Zinc	478	mg/kg dry	0.500	80	B11F160	06/10/11	06/15/11	EPA 6020

Reported: 07/12/11 13:42

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Water Pollution Control Laboratory

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Project: **Portland Harbor**
Work Order: **W11F059**

Client: **Director's Office**
Project Mgr: **Linda Scheffler**

Analyte	Result	Units	MRL	Dilution	Batch	Prepared	Analyzed	Method	Qualifier
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Polychlorinated Biphenyls (PCBs)

PCB Aroclors by GC-ECD

18_ST6 : W11F059-01

Z0

Aroclor 1016/1242	ND	ug/kg dry	17.3	1	B11F198	06/13/11	06/16/11	EPA 8082
Aroclor 1221	ND	ug/kg dry	34.5	1	B11F198	06/13/11	06/16/11	EPA 8082
Aroclor 1232	ND	ug/kg dry	17.3	1	B11F198	06/13/11	06/16/11	EPA 8082
Aroclor 1248	ND	ug/kg dry	17.3	1	B11F198	06/13/11	06/16/11	EPA 8082
Aroclor 1254	ND	ug/kg dry	17.3	1	B11F198	06/13/11	06/16/11	EPA 8082
Aroclor 1260	ND	ug/kg dry	17.3	1	B11F198	06/13/11	06/16/11	EPA 8082
Aroclor 1262	ND	ug/kg dry	17.3	1	B11F198	06/13/11	06/16/11	EPA 8082
Aroclor 1268	ND	ug/kg dry	17.3	1	B11F198	06/13/11	06/16/11	EPA 8082

Surrogate	Result	Expected	%Rec	Limits(%)				
Tetrachloro-m-xylene	15.9	16.3	98%	62.5-132	B11F198	06/13/11	06/16/11	EPA 8082
Decachlorobiphenyl	15.1	16.3	93%	43.5-150	B11F198	06/13/11	06/16/11	EPA 8082

18_13 : W11F059-02

Aroclor 1016/1242	ND	ug/kg dry	10.0	1	B11F198	06/13/11	06/16/11	EPA 8082
Aroclor 1221	ND	ug/kg dry	20.0	1	B11F198	06/13/11	06/16/11	EPA 8082
Aroclor 1232	ND	ug/kg dry	10.0	1	B11F198	06/13/11	06/16/11	EPA 8082
Aroclor 1248	ND	ug/kg dry	10.0	1	B11F198	06/13/11	06/16/11	EPA 8082
Aroclor 1254	ND	ug/kg dry	10.0	1	B11F198	06/13/11	06/16/11	EPA 8082
Aroclor 1260	ND	ug/kg dry	10.0	1	B11F198	06/13/11	06/16/11	EPA 8082
Aroclor 1262	ND	ug/kg dry	10.0	1	B11F198	06/13/11	06/16/11	EPA 8082
Aroclor 1268	ND	ug/kg dry	10.0	1	B11F198	06/13/11	06/16/11	EPA 8082

Surrogate	Result	Expected	%Rec	Limits(%)				
Tetrachloro-m-xylene	10.6	11.4	93%	62.5-132	B11F198	06/13/11	06/16/11	EPA 8082
Decachlorobiphenyl	11.0	11.4	96%	43.5-150	B11F198	06/13/11	06/16/11	EPA 8082

18_14 : W11F059-03

Aroclor 1016/1242	ND	ug/kg dry	10.0	1	B11F198	06/13/11	06/16/11	EPA 8082
Aroclor 1221	ND	ug/kg dry	20.0	1	B11F198	06/13/11	06/16/11	EPA 8082
Aroclor 1232	ND	ug/kg dry	10.0	1	B11F198	06/13/11	06/16/11	EPA 8082
Aroclor 1248	ND	ug/kg dry	10.0	1	B11F198	06/13/11	06/16/11	EPA 8082
Aroclor 1254	ND	ug/kg dry	10.0	1	B11F198	06/13/11	06/16/11	EPA 8082
Aroclor 1260	ND	ug/kg dry	10.0	1	B11F198	06/13/11	06/16/11	EPA 8082
Aroclor 1262	ND	ug/kg dry	10.0	1	B11F198	06/13/11	06/16/11	EPA 8082
Aroclor 1268	ND	ug/kg dry	10.0	1	B11F198	06/13/11	06/16/11	EPA 8082

Surrogate	Result	Expected	%Rec	Limits(%)				
Tetrachloro-m-xylene	13.0	13.1	99%	62.5-132	B11F198	06/13/11	06/16/11	EPA 8082
Decachlorobiphenyl	12.7	13.1	97%	43.5-150	B11F198	06/13/11	06/16/11	EPA 8082

18_ST7 : W11F059-04

Z0

Aroclor 1016/1242	ND	ug/kg dry	22.8	1	B11F198	06/13/11	06/21/11	EPA 8082
Aroclor 1221	ND	ug/kg dry	45.7	1	B11F198	06/13/11	06/21/11	EPA 8082
Aroclor 1232	ND	ug/kg dry	22.8	1	B11F198	06/13/11	06/21/11	EPA 8082

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Renee Chauvin, Laboratory Coordinator QA/QC



City of Portland
Water Pollution Control Laboratory

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Project: **Portland Harbor**
Work Order: **W11F059**

Client: Director's Office
Project Mgr: Linda Scheffler

Analyte	Result	Units	MRL	Dilution	Batch	Prepared	Analyzed	Method	Qualifier
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Polychlorinated Biphenyls (PCBs)

PCB Aroclors by GC-ECD

18_ST7 : W11F059-04

Z0

Aroclor 1248	ND	ug/kg dry	22.8	1	B11F198	06/13/11	06/21/11	EPA 8082
Aroclor 1254	ND	ug/kg dry	22.8	1	B11F198	06/13/11	06/21/11	EPA 8082
Aroclor 1260	ND	ug/kg dry	22.8	1	B11F198	06/13/11	06/21/11	EPA 8082
Aroclor 1262	ND	ug/kg dry	22.8	1	B11F198	06/13/11	06/21/11	EPA 8082
Aroclor 1268	ND	ug/kg dry	22.8	1	B11F198	06/13/11	06/21/11	EPA 8082

Surrogate	Result	Expected	%Rec	Limits(%)				
Tetrachloro-m-xylene	20.7	21.6	96%	62.5-132	B11F198	06/13/11	06/21/11	EPA 8082
Decachlorobiphenyl	21.5	21.6	100%	43.5-150	B11F198	06/13/11	06/21/11	EPA 8082

18_15 : W11F059-05

N

Aroclor 1016/1242	ND	ug/kg dry	10.0	1	B11F198	06/13/11	06/16/11	EPA 8082
Aroclor 1221	ND	ug/kg dry	20.0	1	B11F198	06/13/11	06/16/11	EPA 8082
Aroclor 1232	ND	ug/kg dry	10.0	1	B11F198	06/13/11	06/16/11	EPA 8082
Aroclor 1248	365	ug/kg dry	50.0	5	B11F198	06/13/11	06/16/11	EPA 8082
Aroclor 1254	ND	ug/kg dry	10.0	1	B11F198	06/13/11	06/16/11	EPA 8082
Aroclor 1260	69.4	ug/kg dry	10.0	1	B11F198	06/13/11	06/16/11	EPA 8082
Aroclor 1262	ND	ug/kg dry	10.0	1	B11F198	06/13/11	06/16/11	EPA 8082
Aroclor 1268	ND	ug/kg dry	10.0	1	B11F198	06/13/11	06/16/11	EPA 8082

Surrogate	Result	Expected	%Rec	Limits(%)				
Tetrachloro-m-xylene	10.7	12.2	87%	62.5-132	B11F198	06/13/11	06/16/11	EPA 8082
Decachlorobiphenyl	12.5	12.2	102%	43.5-150	B11F198	06/13/11	06/16/11	EPA 8082

Reported: 07/12/11 13:42

Renee Chauvin, Laboratory Coordinator QA/QC

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City of Portland
Water Pollution Control Laboratory

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Project: **Portland Harbor**
Work Order: **W11F059**

Client: Director's Office
Project Mgr: Linda Scheffler

Quality Control Report

General Chemistry - QC

Analyte	Result	Units	MRL	Spike Level	Source Result	%Rec (Limits)	RPD (Limit)	Prepared: Analyzed	Qualifier
Total Solids - Batch B11F151									
Duplicate (B11F151-DUP1)			Source: W11F059-05						
Total solids	77.0	% W/W	0.01		75.7		2 (20)	06/09/11 :06/10/11	

Total Metals - QC

Analyte	Result	Units	MRL	Spike Level	Source Result	%Rec (Limits)	RPD (Limit)	Prepared: Analyzed	Qualifier
Total Metals by ICPMS - Batch B11F160									
Blank (B11F160-BLK1)									
Arsenic	ND	mg/kg wet	0.500					06/10/11 :06/15/11	
Cadmium	ND	mg/kg wet	0.100					06/10/11 :06/15/11	
Chromium	ND	mg/kg wet	0.500					06/10/11 :06/15/11	
Copper	ND	mg/kg wet	0.200					06/10/11 :06/15/11	
Lead	ND	mg/kg wet	0.100					06/10/11 :06/15/11	
Mercury	ND	mg/kg wet	0.0100					06/10/11 :06/15/11	
Nickel	ND	mg/kg wet	0.200					06/10/11 :06/15/11	
Silver	ND	mg/kg wet	0.100					06/10/11 :06/15/11	
Zinc	ND	mg/kg wet	0.500					06/10/11 :06/15/11	

Standard Reference Material (B11F160-SRM1)

Arsenic	197	mg/kg wet	0.500	225		88 (75-125)		06/10/11 :06/15/11	
Cadmium	67.7	mg/kg wet	0.100	69.1		98 (75-125)		06/10/11 :06/15/11	
Chromium	128	mg/kg wet	0.500	124		103 (75-125)		06/10/11 :06/15/11	
Copper	70.1	mg/kg wet	0.200	78.8		89 (75-125)		06/10/11 :06/15/11	
Lead	240	mg/kg wet	0.100	223		107 (75-125)		06/10/11 :06/15/11	
Mercury	4.962	mg/kg wet	0.0100	5.15		96 (75-125)		06/10/11 :06/15/11	
Nickel	173	mg/kg wet	0.200	172		101 (75-125)		06/10/11 :06/15/11	
Silver	35.1	mg/kg wet	0.100	35.2		100 (75-125)		06/10/11 :06/15/11	
Zinc	387	mg/kg wet	0.500	349		111 (75-125)		06/10/11 :06/15/11	

Duplicate (B11F160-DUP1)

Source: W11F043-01

Arsenic	4.52	mg/kg dry	0.500		4.49		0.7 (20)	06/10/11 :06/15/11	
Cadmium	2.81	mg/kg dry	0.100		2.75		2 (20)	06/10/11 :06/15/11	
Chromium	64.3	mg/kg dry	0.500		63.6		1 (20)	06/10/11 :06/15/11	
Copper	363	mg/kg dry	0.200		366		0.7 (20)	06/10/11 :06/15/11	
Lead	114	mg/kg dry	0.100		116		1 (20)	06/10/11 :06/15/11	
Mercury	0.8964	mg/kg dry	0.0100		0.8140		10 (20)	06/10/11 :06/15/11	
Nickel	50.3	mg/kg dry	0.200		48.5		4 (20)	06/10/11 :06/15/11	
Silver	13.1	mg/kg dry	0.100		13.2		0.8 (20)	06/10/11 :06/15/11	
Zinc	1060	mg/kg dry	0.500		1070		1 (20)	06/10/11 :06/15/11	

Reported: 07/12/11 13:42

Renee Chauvin, Laboratory Coordinator QA/QC

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City of Portland
Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656



Project: **Portland Harbor**
Work Order: **W11F059**

Client: Director's Office
Project Mgr: Linda Scheffler

Total Metals - QC

Analyte	Result	Units	MRL	Spike Level	Source Result	%Rec (Limits)	RPD (Limit)	Prepared: Analyzed	Qualifier
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Total Metals by ICPMS - Batch B11F160

Matrix Spike (B11F160-MS1)

Source: W11F043-01

Arsenic	63.1	mg/kg dry	0.500	58.4	4.49	101 (75-125)		06/10/11 :06/15/11	
Cadmium	59.5	mg/kg dry	0.100	58.4	2.75	97 (75-125)		06/10/11 :06/15/11	
Chromium	234	mg/kg dry	0.500	175	63.6	97 (75-125)		06/10/11 :06/15/11	
Copper	677	mg/kg dry	0.200	292	366	106 (75-125)		06/10/11 :06/15/11	
Lead	411	mg/kg dry	0.100	292	116	101 (75-125)		06/10/11 :06/15/11	
Mercury	3.945	mg/kg dry	0.0100	2.92	0.8140	107 (75-125)		06/10/11 :06/15/11	
Nickel	335	mg/kg dry	0.200	292	48.5	98 (75-125)		06/10/11 :06/15/11	
Silver	69.2	mg/kg dry	0.100	58.4	13.2	96 (75-125)		06/10/11 :06/15/11	
Zinc	1390	mg/kg dry	0.500	292	1070	110 (75-125)		06/10/11 :06/15/11	

Total Metals by ICPMS - Batch B11F234

Blank (B11F234-BLK1)

Arsenic	ND	mg/kg wet	0.500					06/15/11 :06/16/11	
Cadmium	ND	mg/kg wet	0.100					06/15/11 :06/16/11	
Chromium	ND	mg/kg wet	0.500					06/15/11 :06/16/11	
Copper	0.202	mg/kg wet	0.200					06/15/11 :06/16/11	B2
Lead	ND	mg/kg wet	0.100					06/15/11 :06/16/11	
Mercury	ND	mg/kg wet	0.0100					06/15/11 :06/16/11	
Nickel	0.233	mg/kg wet	0.200					06/15/11 :06/16/11	B2
Silver	ND	mg/kg wet	0.100					06/15/11 :06/16/11	
Zinc	ND	mg/kg wet	0.500					06/15/11 :06/16/11	

Standard Reference Material (B11F234-SRM1)

Arsenic	215	mg/kg wet	0.500	225		96 (75-125)		06/15/11 :06/16/11	
Cadmium	70.6	mg/kg wet	0.100	69.1		102 (75-125)		06/15/11 :06/16/11	
Chromium	143	mg/kg wet	0.500	124		115 (75-125)		06/15/11 :06/16/11	
Copper	70.9	mg/kg wet	0.200	78.8		90 (75-125)		06/15/11 :06/16/11	
Lead	245	mg/kg wet	0.100	223		110 (75-125)		06/15/11 :06/16/11	
Mercury	5.110	mg/kg wet	0.0100	5.15		99 (75-125)		06/15/11 :06/16/11	
Nickel	179	mg/kg wet	0.200	172		104 (75-125)		06/15/11 :06/16/11	
Silver	38.6	mg/kg wet	0.100	35.2		110 (75-125)		06/15/11 :06/16/11	
Zinc	383	mg/kg wet	0.500	349		110 (75-125)		06/15/11 :06/16/11	

Duplicate (B11F234-DUP1)

Source: W11F059-01

Arsenic	4.04	mg/kg dry	0.500		3.91		3 (20)	06/15/11 :06/16/11	
Cadmium	1.96	mg/kg dry	0.100		2.01		2 (20)	06/15/11 :06/16/11	
Chromium	110	mg/kg dry	0.500		106		4 (20)	06/15/11 :06/16/11	
Copper	111	mg/kg dry	0.200		110		1 (20)	06/15/11 :06/16/11	
Lead	161	mg/kg dry	0.100		160		0.7 (20)	06/15/11 :06/16/11	
Mercury	0.1191	mg/kg dry	0.0100		0.1111		7 (20)	06/15/11 :06/16/11	
Nickel	45.3	mg/kg dry	0.200		45.5		0.3 (20)	06/15/11 :06/16/11	
Silver	0.291	mg/kg dry	0.100		0.261		11 (20)	06/15/11 :06/16/11	
Zinc	546	mg/kg dry	0.500		558		2 (20)	06/15/11 :06/16/11	

Reported: 07/12/11 13:42

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Renee Chauvin, Laboratory Coordinator QA/QC



City of Portland
Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656



Project: **Portland Harbor**
Work Order: **W11F059**

Client: Director's Office
Project Mgr: Linda Scheffler

Total Metals - QC

Analyte	Result	Units	MRL	Spike Level	Source Result	%Rec (Limits)	RPD (Limit)	Prepared: Analyzed	Qualifier
Total Metals by ICPMS - Batch B11F234									
Matrix Spike (B11F234-MS1)			Source: W11F059-01						
Arsenic	38.2	mg/kg dry	0.500	33.5	3.91	102 (75-125)		06/15/11 :06/16/11	
Cadmium	35.4	mg/kg dry	0.100	33.5	2.01	100 (75-125)		06/15/11 :06/16/11	
Chromium	213	mg/kg dry	0.500	101	106	107 (75-125)		06/15/11 :06/16/11	
Copper	277	mg/kg dry	0.200	168	110	100 (75-125)		06/15/11 :06/16/11	
Lead	333	mg/kg dry	0.100	168	160	103 (75-125)		06/15/11 :06/16/11	
Mercury	1.010	mg/kg dry	0.0100	0.838	0.1111	107 (75-125)		06/15/11 :06/16/11	
Nickel	212	mg/kg dry	0.200	168	45.5	99 (75-125)		06/15/11 :06/16/11	
Silver	33.3	mg/kg dry	0.100	33.5	0.261	98 (75-125)		06/15/11 :06/16/11	
Zinc	731	mg/kg dry	0.500	168	558	103 (75-125)		06/15/11 :06/16/11	

Polychlorinated Biphenyls (PCBs) - QC

Analyte	Result	Units	MRL	Spike Level	Source Result	%Rec (Limits)	RPD (Limit)	Prepared: Analyzed	Qualifier
PCB Aroclors by GC-ECD - Batch B11F198									
Blank (B11F198-BLK1)									
Aroclor 1016/1242	ND	ug/kg wet	10.0					06/13/11 :06/16/11	
Aroclor 1221	ND	ug/kg wet	20.0					06/13/11 :06/16/11	
Aroclor 1232	ND	ug/kg wet	10.0					06/13/11 :06/16/11	
Aroclor 1248	ND	ug/kg wet	10.0					06/13/11 :06/16/11	
Aroclor 1254	ND	ug/kg wet	10.0					06/13/11 :06/16/11	
Aroclor 1260	ND	ug/kg wet	10.0					06/13/11 :06/16/11	
Aroclor 1262	ND	ug/kg wet	10.0					06/13/11 :06/16/11	
Aroclor 1268	ND	ug/kg wet	10.0					06/13/11 :06/16/11	
Surrogate									
Tetrachloro-m-xylene	9.78	ug/kg wet	10.0			98		06/13/11 :06/16/11	
Decachlorobiphenyl	10.7	ug/kg wet	10.0			107		06/13/11 :06/16/11	
Matrix Spike (B11F198-MS1)			Source: W11F059-03						
Aroclor 1016/1242	125.3	ug/kg dry	10.0	131	ND	95 (55.2-135.4)		06/13/11 :06/16/11	
Aroclor 1260	160.6	ug/kg dry	10.0	131	ND	122 (19.6-166.5)		06/13/11 :06/16/11	
Surrogate									
Tetrachloro-m-xylene	12.7	ug/kg dry	13.1			96 (62.5-132)		06/13/11 :06/16/11	
Decachlorobiphenyl	13.0	ug/kg dry	13.1			99 (43.5-150)		06/13/11 :06/16/11	
Matrix Spike Dup (B11F198-MSD1)			Source: W11F059-03						
Aroclor 1016/1242	137.1	ug/kg dry	10.0	131	ND	105 (55.2-135.4)	9 (20)	06/13/11 :06/16/11	
Aroclor 1260	137.2	ug/kg dry	10.0	131	ND	105 (19.6-166.5)	16 (20)	06/13/11 :06/16/11	
Surrogate									
Tetrachloro-m-xylene	12.1	ug/kg dry	13.1			92 (62.5-132)		06/13/11 :06/16/11	
Decachlorobiphenyl	11.6	ug/kg dry	13.1			88 (43.5-150)		06/13/11 :06/16/11	

Reported: 07/12/11 13:42

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Renee Chauvin, Laboratory Coordinator QA/QC



City of Portland
Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656



Project: **Portland Harbor**
Work Order: **W11F059**

Client: Director's Office
Project Mgr: Linda Scheffler

Qualifiers

B2 Analyte was detected in the Method Blank, but at a concentration less than one tenth the amount in the sample(s).
N Refer to case narrative.
Z0 Reporting limits are raised for this sample due to low % solids.

Definitions

DET	Analyte Detected	ND	Analyte Not Detected at or above the reporting limit
MRL	Method Reporting Limit	MDL	Method Detection Limit
NR	Not Reportable	dry	Sample results reported on a dry weight basis
% Rec.	Percent Recovery	RPD	Relative Percent Difference

Reported: 07/12/11 13:42

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Renee Chauvin, Laboratory Coordinator QA/QC

**City of Portland
Office of Custody
Bureau of Environmental Services**




Work Order #: W11F059
Collected By: MJS, PTB, PHA

Client Name: Director's Office
Project Name: Portland Harbor

Matrix: Sediment

Requested Analyses

Basin 18 Sediment Traps							
Lab Number	* WPCL - Caré should be taken during TS analysis to retain sample volume for other analyses.						
	Location ID	Install Date	Install Time	Sample Date	Sample Time	Sample Type	
01	18_ST6	12/21/2010	1315	6/9/2011	1130	C	
02	18_13			6/9/2011	1205	C	
03	18_14			6/9/2011	1105	C	
04	18_ST7	12/21/2010	1335	6/9/2011	1005	C	
05	18_15			6/9/2011	1030	C	

Acquired By: 
 Signature: 
 Name: 

Date: 6/9/11

Received By: _____
Signature: _____
Printed Name: _____

Date: 6/9/11

Relinquished By:
Signature:
Printed Name:

Received By: _____
Signature: _____
Printed Name: _____

Date: _____
Time: _____

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Portland
9405 SW Nimbus Ave.
Beaverton, OR 97008
Tel: (503) 906-9200

TestAmerica Job ID: PUF0461

Client Project/Site: W11F059
Client Project Description: Portland Harbor

For:

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

Attn: Renee Chauvin



Authorized for release by:
06/28/2011 11:04:14 AM

Darrell Auvil
Project Manager
darrell.auvil@testamericainc.com

LINKS

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www.testamericainc.com

Results relate only to the items tested and the sample(s) as received by the laboratory. The test results in this report meet all 2003 NELAC requirements for accredited parameters, exceptions are noted in this report. Pursuant to NELAC, this report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Sample Summary

Client: City of Portland Water Pollution Laboratory
Project/Site: W11F059

TestAmerica Job ID: PUF0461

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
PUF0461-01	W11F059-01 (18_ST6)	Sediment	06/09/11 11:30	06/13/11 14:45
PUF0461-02	W11F059-02 (18_13)	Sediment	06/09/11 12:05	06/13/11 14:45
PUF0461-03	W11F059-03 (18_14)	Sediment	06/09/11 11:05	06/13/11 14:45
PUF0461-04	W11F059-04 (18_ST7)	Sediment	06/09/11 10:05	06/13/11 14:45
PUF0461-05	W11F059-05 (18_15)	Sediment	06/09/11 10:30	06/13/11 14:45

- 1
- 2
- 3
- 4
- 5
- 6

Definitions/Glossary

Client: City of Portland Water Pollution Laboratory
Project/Site: W11F059

TestAmerica Job ID: PUF0461

Qualifiers

General Chemistry

Qualifier	Qualifier Description
F	MS or MSD exceeds the control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis.
EPA	United States Environmental Protection Agency
ND	Not Detected above the reporting level.
MDL	Method Detection Limit
RL	Reporting Limit
RE, RE1 (etc.)	Indicates a Re-extraction or Reanalysis of the sample.
%R	Percent Recovery
RPD	Relative Percent Difference, a measure of the relative difference between two points.

1

2

3

4

5

6

Client Sample Results

Client: City of Portland Water Pollution Laboratory
Project/Site: W11F059

TestAmerica Job ID: PUF0461

Client Sample ID: W11F059-01 (18_ST6)

Lab Sample ID: PUF0461-01

Date Collected: 06/09/11 11:30

Matrix: Sediment

Date Received: 06/13/11 14:45

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	72000		2000		mg/Kg			06/22/11 16:12	1

Method: ASTM D2216-80 - Percent Dry Weight (Solids) per ASTM D2216-80

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
% Solids	57.9		0.0100		% by Weight		06/13/11 16:39	06/13/11 16:40	1.00

Client Sample Results

Client: City of Portland Water Pollution Laboratory
Project/Site: W11F059

TestAmerica Job ID: PUF0461

Client Sample ID: W11F059-02 (18_13)

Lab Sample ID: PUF0461-02

Date Collected: 06/09/11 12:05

Matrix: Sediment

Date Received: 06/13/11 14:45

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	12000		2000		mg/Kg			06/22/11 16:12	1

Method: ASTM D2216-80 - Percent Dry Weight (Solids) per ASTM D2216-80

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
% Solids	85.3		0.0100		% by Weight		06/13/11 17:43	06/14/11 07:30	1.00

Client Sample Results

Client: City of Portland Water Pollution Laboratory
Project/Site: W11F059

TestAmerica Job ID: PUF0461

Client Sample ID: W11F059-03 (18_14)

Lab Sample ID: PUF0461-03

Date Collected: 06/09/11 11:05

Matrix: Sediment

Date Received: 06/13/11 14:45

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	30000		2000		mg/Kg			06/22/11 16:12	1

Method: ASTM D2216-80 - Percent Dry Weight (Solids) per ASTM D2216-80

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
% Solids	60.2		0.0100		% by Weight		06/13/11 17:43	06/14/11 07:30	1.00

Client Sample Results

Client: City of Portland Water Pollution Laboratory
Project/Site: W11F059

TestAmerica Job ID: PUF0461

Client Sample ID: W11F059-04 (18_ST7)

Lab Sample ID: PUF0461-04

Date Collected: 06/09/11 10:05

Matrix: Sediment

Date Received: 06/13/11 14:45

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	96000		2000		mg/Kg			06/22/11 16:12	1

Method: ASTM D2216-80 - Percent Dry Weight (Solids) per ASTM D2216-80

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
% Solids	43.8		0.0100		% by Weight		06/13/11 16:39	06/13/11 16:40	1.00

Client Sample Results

Client: City of Portland Water Pollution Laboratory
Project/Site: W11F059

TestAmerica Job ID: PUF0461

Client Sample ID: W11F059-05 (18_15)

Lab Sample ID: PUF0461-05

Date Collected: 06/09/11 10:30

Matrix: Sediment

Date Received: 06/13/11 14:45

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	23000		2000		mg/Kg			06/23/11 14:10	1

Method: ASTM D2216-80 - Percent Dry Weight (Solids) per ASTM D2216-80

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
% Solids	69.2		0.0100		% by Weight		06/13/11 17:43	06/14/11 07:30	1.00

QC Sample Results

Client: City of Portland Water Pollution Laboratory
Project/Site: W11F059

TestAmerica Job ID: PUF0461

Method: 9060 - Organic Carbon, Total (TOC)

Lab Sample ID: MB 580-88604/17
Matrix: Solid
Analysis Batch: 88604

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		2000		mg/Kg			06/22/11 16:12	1

Lab Sample ID: MB 580-88604/3
Matrix: Solid
Analysis Batch: 88604

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		2000		mg/Kg			06/22/11 16:12	1

Lab Sample ID: LCS 580-88604/18
Matrix: Solid
Analysis Batch: 88604

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Total Organic Carbon	2720	4200		mg/Kg		154	34 - 166

Lab Sample ID: LCS 580-88604/4
Matrix: Solid
Analysis Batch: 88604

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Total Organic Carbon	2720	4200		mg/Kg		154	34 - 166

Lab Sample ID: 580-26836-1 MS
Matrix: Solid
Analysis Batch: 88604

Client Sample ID: PUF0461-01
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	% Rec	% Rec. Limits
Total Organic Carbon	72000		19800	80600	F	mg/Kg		44	76 - 128

Lab Sample ID: 580-26836-1 DU
Matrix: Solid
Analysis Batch: 88604

Client Sample ID: PUF0461-01
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Organic Carbon	72000		66700		mg/Kg		8	50

Method: ASTM D2216-80 - Percent Dry Weight (Solids) per ASTM D2216-80

Lab Sample ID: 11F0414-DUP1
Matrix: Soil
Analysis Batch: 11F0414

Client Sample ID: Duplicate
Prep Type: Total
Prep Batch: 11F0414_P

Analyte	Sample Result	Sample Qualifier	Duplicate Result	Duplicate Qualifier	Unit	D	RPD	RPD Limit
% Solids	93.2		93.3		% by Weight		0.121	20

SUBCONTRACT ORDER
City of Portland Water Pollution Control Lab
W11F059

PUF0461

SENDING LABORATORY:

City of Portland Water Pollution Control Lab
6543 N. Burlington Ave
Portland, OR 97203
Phone: 503-823-5600
Fax: 503-823-5656
Invoice To: Charles Lytle using P.O.# 30001516

RECEIVING LABORATORY:

TestAmerica
9405 SW Nimbus Ave
Beaverton, OR 97008
Phone: (503) 906-9200
Fax: (503) 906-9210

WPCL Project Name
Portland Harbor

☒ Standard
☐ Rush _ day(s)

TURNAROUND REQUEST

Analysis	Due	Expires	Laboratory ID	Comments
Sample ID: W11F059-01				
Out-TOC Solid	Solid	Sampled:06/09/11 11:30		
	06/23/11 17:00	06/23/11 11:30		limited volume, do not use for QC. Use our TS result
Containers Supplied: G jar 4 oz (B)				
total Solids = 57.9%				
Sample ID: W11F059-02				
Out-TOC Solid	Solid	Sampled:06/09/11 12:05		
	06/23/11 17:00	06/23/11 12:05		
Out-Grain Size ASTM (ARI)	06/23/11 17:00	06/23/11 12:05		
Containers Supplied: G jar amber 8 oz (A)				
Sample ID: W11F059-03				
Out-TOC Solid	Solid	Sampled:06/09/11 11:05		
	06/23/11 17:00	06/23/11 11:05		
Out-Grain Size ASTM (ARI)	06/23/11 17:00	06/23/11 11:05		
Containers Supplied: G jar amber 8 oz (A)				
Sample ID: W11F059-04				
Out-TOC Solid	Solid	Sampled:06/09/11 10:05		
	06/23/11 17:00	06/23/11 10:05		limited volume, do not use for QC. Use our TS result
Containers Supplied: G jar 4 oz (B)				
total Solids = 43.8%				
Sample ID: W11F059-05				
Out-TOC Solid	Solid	Sampled:06/09/11 10:30		
	06/23/11 17:00	06/23/11 10:30		
Containers Supplied: G jar amber 8 oz (A)				

Released By

Date

Received By

Date

Released By

Date

Received By

Date

5.7%

Page 2 of 2

Portland Sample Control Checklist

Work Order #: PuF0461 Date/Time Received: 6-13-11 1445
 Client Name: CITY OF PORTLAND
 Project Name: PORTLAND HARBOR W11F059
 Time Zone: ☐ EDT/EST ☐ CDT/CST ☐ MDT/MST ☒ PDT/PST ☐ AK ☐ HI ☐ OTHER

Unpacking Checks:

Cooler (s): 1
 Temperature (s): 5.7°C
 Digi #1 ☐ Digi #2 ☐ IR Gun ☐ (☐ Plastic ☐ Glass)

Raytek

☒ (☒ Plastic ☐ Glass)

Ice used: (circle one) GEL LOOSE BLUE NONE OTHER: _____

N/A Yes No

- ☒ ☐ ☐ 1. If ESI client, were temp blanks received? If no, document on NOD.
- ☒ ☐ ☐ 2. Cooler Seals intact? (N/A if hand delivered) if no and ESI client, document on NOD.
- ☒ ☐ ☐ 3. Chain of Custody present? If no, document on NOD. Along with "received by" & "relinquished by" signatures with date & time?
- ☒ ☐ ☐ 4. Bottles received intact? If no, document on NOD.
- ☒ ☐ ☐ 5. Sample is not multiphasic? If no, document on NOD.
- ☐ ☒ ☐ 6. Sampler name/signature documented on COC?
- ☒ ☐ ☐ 7. Proper Container and preservatives used? If no, document on NOD.
- ☒ ☐ ☐ 8. pH for HN03/ESI samples checked and meet requirements? If no, document on NOD.
- ☒ ☐ ☐ 9. Cyanide samples checked for sulfides and meet requirements? If no, notify PM.
- ☒ ☐ ☐ 10. HF Dilution required?
- ☒ ☐ ☐ 11. Sufficient volume provided for all analysis and requested MS/MSD? If no, document on NOD and consult PM before proceeding.
- ☒ ☐ ☐ 12. Did chain of custody agree with samples received? If no, document on NOD.
- ☒ ☐ ☐ 13. Were VOA samples received without headspace?
- ☐ ☒ ☐ 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. Are analyses with short holding times received in hold?
- ☒ ☐ ☐ 18. Were special log-in instructions read and followed?

Checklist Reviewed: _____ Log-in initials: _____ Labeler initials: _____

Temperature out of Range:

☐ Not enough or No Ice
☐ Ice Melted
☐ W/in 4 Hrs of collection
☐ Ice Not Needed
☐ Other: _____

Initials: K



Analytical Resources, Incorporated
Analytical Chemists and Consultants

23 June 2011

Darrell Auvil
Test America
9405 SW Nimbus Ave.
Beaverton, OR 97008

RE: Project: PUF0461
ARI Job No. TA66

Dear Darrell:

Please find enclosed the original Chain-of-Custody record and the final results for the samples from the project referenced above. Analytical Resources, Inc. accepted two sediment samples on June 15, 2011. The samples were analyzed for grain size as requested.

A copy of these reports will remain on file at ARI. Should you have any questions regarding these results, please contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Mark D. Harris
Project Manager
206/695-6210
markh@arilabs.com

Enclosures

cc: file TA66

MDH/bc

Subcontract Order - TestAmerica Portland (PUF0461)

TALC

SENDING LABORATORY:

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

RECEIVING LABORATORY:

Analytical Resources, Inc. (ARI)
4611 S 134th Place, Suite 100
Tukwilla, WA 98168
Phone : (206) 621-6490
Fax: 206-621-7523
Project Location: Oregon
Receipt Temperature: _____ °C Ice: Y / N

W11F059 Autolog from WPCL 06/13/11 15:44

Standard TAT is requested unless specific due date is requested. => Due Date: 6/23/11 Initials: dm

Analysis	Units	Expires	Comments
----------	-------	---------	----------

Sample ID: PUF0461-02 (W11F059-02 (18_13) - Sediment)

Sampled: 06/09/11 12:05

Grain Size (ASTM) - SUB	ug/l	12/06/11 12:05	sub to Analytical Resources Inc (ARI)
-------------------------	------	----------------	---------------------------------------

Containers Supplied:

8 oz. jar (A)

Sample ID: PUF0461-03 (W11F059-03 (18_14) - Sediment)

Sampled: 06/09/11 11:05

Grain Size (ASTM) - SUB	ug/l	12/06/11 11:05	sub to Analytical Resources Inc (ARI)
-------------------------	------	----------------	---------------------------------------

Containers Supplied:

8 oz. jar (A)

PLM h
Released By

6/14/11
Date/Time

[Signature]
Received By

6/15/11 1000
Date/Time

Released By

Date/Time

Received By

Date/Time

TAGG:

Page 24 of 62



Cooler Receipt Form

ARI Client: Tesi America

COC No(s): _____ (NA)

Assigned ARI Job No: TA106

Project Name: _____

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Tracking No: 4861 9423374 NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? (YES) NO

Were custody papers included with the cooler? (YES) NO

Were custody papers properly filled out (ink, signed, etc.) (YES) NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) 30

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 79411619

Cooler Accepted by: AV Date: 6/15/11 Time: 1000

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? (NO) YES

What kind of packing material was used? Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____

Was sufficient ice used (if appropriate)? (NA) YES NO

Were all bottles sealed in individual plastic bags? (NA) YES NO

Did all bottles arrive in good condition (unbroken)? (YES) NO

Were all bottle labels complete and legible? (YES) NO

Did the number of containers listed on COC match with the number of containers received? (YES) NO

Did all bottle labels and tags agree with custody papers? (YES) NO

Were all bottles used correct for the requested analyses? (YES) NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)... (NA) YES NO

Were all VOC vials free of air bubbles? (NA) YES NO

Was sufficient amount of sample sent in each bottle? (YES) NO

Date VOC Trip Blank was made at ARI: (NA)

Was Sample Split by ARI: (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

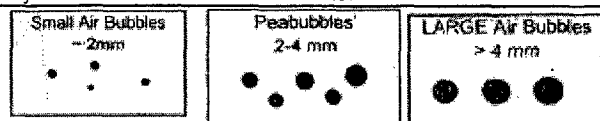
Samples Logged by: AV Date: 6/15/11 Time: 1010

**** Notify Project Manager of discrepancies or concerns ****

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

Additional Notes, Discrepancies, & Resolutions:

By: _____ Date: _____



Small → "sm"
Peabubbles → "pb"
Large → "lg"
Headspace → "hs"



Client: Test America, Inc.


ARI Job No.: TA66

Client Project No.: PUF0461

Case Narrative

1. Two samples were submitted for analysis on June 15, 2011, 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 hydrometer calculations.
4. A standard milkshake mixer type device was used to disperse the fine fraction sample.
5. One sample from another job was chosen for triplicate analysis. The triplicate data can be found on the QA summary table.
6. One sample required curve fitting between the sand and silt fractions. Due to the sandy nature of the sample, there was not enough fine material to acquire accurate hydrometer readings.
7. The data is provided in summary tables and plots.
8. There were no further anomalies in the samples or test method.

Approved by: _____


Technician

Date: June 23, 2011

Sample ID Cross Reference Report



ARI Job No: TA66
Client: Test America, Inc.
Project Event: PUF0461
Project Name: N/A

Sample ID		ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	PUF0461-02	TA66A	11-12986	Sediment	06/09/11 12:05	06/15/11 10:00
2.	PUF0461-03	TA66B	11-12987	Sediment	06/09/11 11:05	06/15/11 10:00

Printed 06/15/11

Test America, Inc.
PUF0461

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
SW21G	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.2	98.5	97.9	97.4	95.7	79.0	68.6	54.7	49.5	38.2	21.7	13.0
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	98.8	97.9	97.3	96.8	94.7	78.0	66.6	53.5	43.0	34.2	19.3	10.5
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.8	99.0	98.2	97.6	97.1	94.7	76.4	65.9	52.9	44.3	34.7	19.1	11.3
PUF0461-02	100.0	100.0	100.0	100.0	100.0	100.0	95.0	77.4	47.3	26.8	16.1	10.5	7.9	6.2	6.1	5.0	4.4	3.9	1.7	1.4	0.0
PUF0461-03	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.6	93.2	76.9	59.4	44.1	35.8	28.5	22.5	17.2	15.9	11.9	5.3	2.6	0.0

Testing performed according to ASTM D421/D422

TA66

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"-4750	4750-2000	2000-850	850-425	425-250	250-150	150-75	75-32	32-22	22-13	13-9	9-7	7-3.2	3.2-1.7	1.7-0.75	0.75-0.425	0.425-0.25	0.25-0.15	0.15-0.075	0.075-0.0425	0.0425-0.025	0.025-0.015	0.015-0.0075
Particle Size (microns)																													
SW21G	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.7	0.7	0.6	0.5	1.8	16.7	10.4	13.9	5.2	11.3	16.5	21.7									
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.1	0.9	0.6	0.5	2.1	16.7	11.4	13.2	10.5	8.8	14.9	19.3									
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.9	0.7	0.6	0.5	2.4	18.3	10.4	13.0	8.7	9.5	15.6	19.1									
PUF0461-02	0.0	0.0	0.0	0.0	0.0	5.0	17.6	30.1	20.5	10.8	5.6	2.6	1.7	0.1	1.1	0.6	0.6	2.2	0.3	1.4									
PUF0461-03	0.0	0.0	0.0	0.0	0.0	0.0	1.4	5.4	16.2	17.5	15.3	8.3	7.3	6.0	5.3	1.3	4.0	6.6	2.6	2.6									

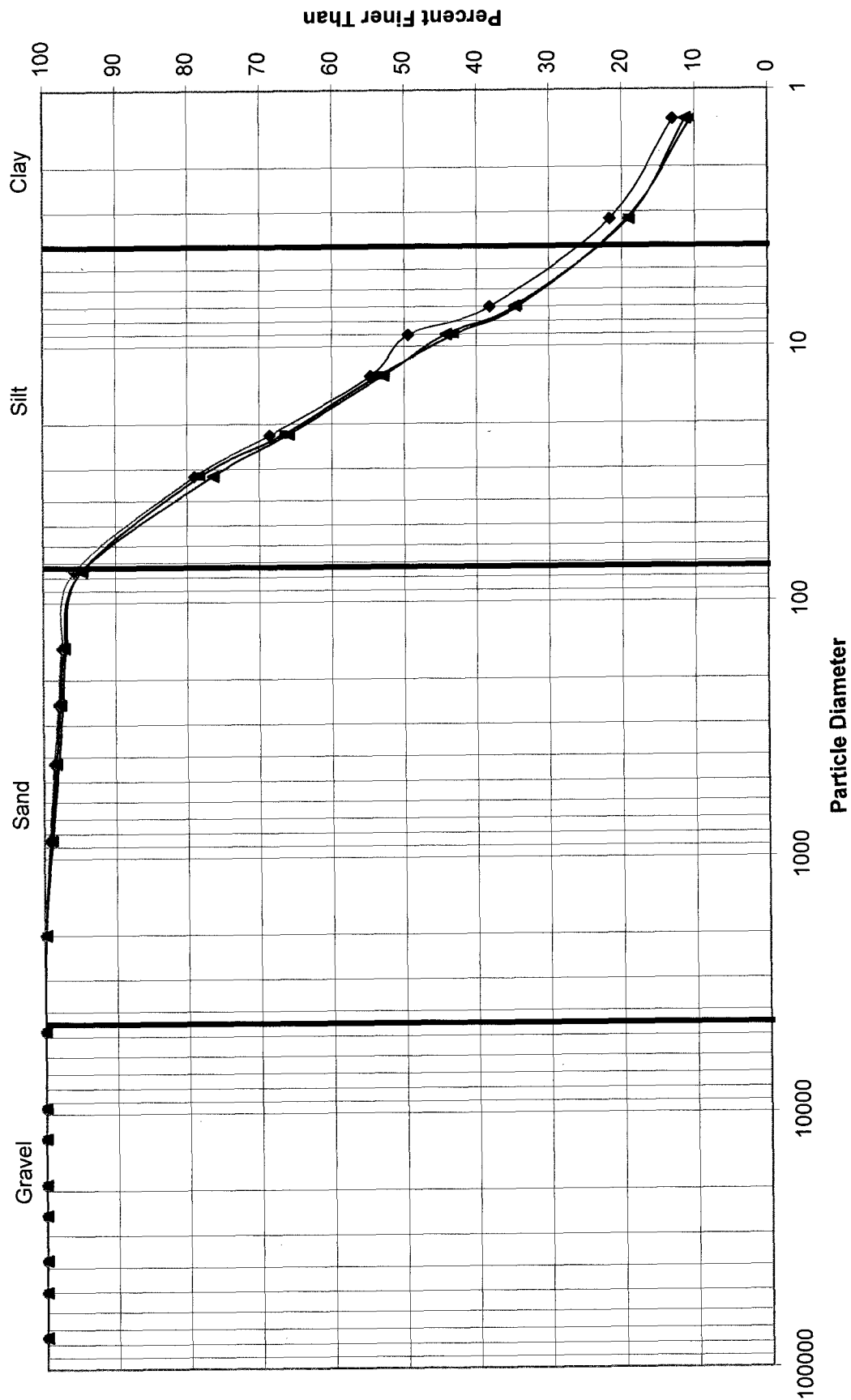
TA66

Test America, Inc.
PUF0461

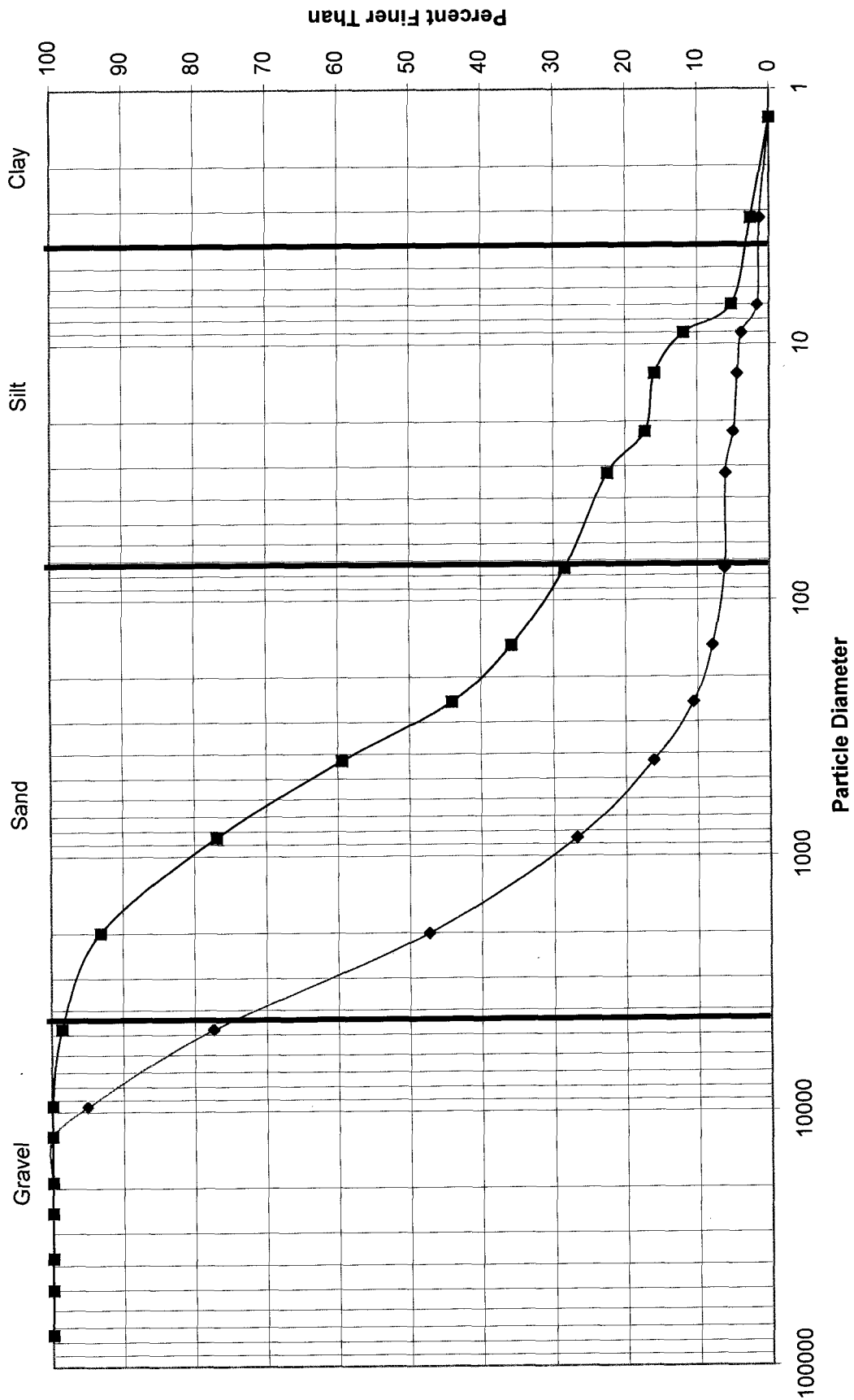
LIMS data entry

Particle Size (microns)	2" (50K)	1.5" (37.5K)	1" (25K)	3/4" (19000)	1/2" (12500)	3/8" (9500)	#4 (4750)	#10 (2000)	#20 (850)	#40 (425)	#60 (250)	#100 (150)	#200 (75)	32	22	13	9	7	3.2	1.3	<1.3
SW21G	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.7	0.7	0.6	0.5	1.8	16.7	10.4	13.9	5.2	11.3	16.5	8.7	13.0
PUF0461-02	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.9	0.7	0.6	0.5	2.4	18.3	10.4	13.0	8.7	9.5	15.6	7.8	11.3
PUF0461-03	0.0	0.0	0.0	0.0	0.0	5.0	17.6	30.1	20.5	10.8	5.6	2.6	1.7	0.1	1.1	0.6	0.6	2.2	0.3	1.4	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	1.4	5.4	16.2	17.5	15.3	8.3	7.3	6.0	5.3	1.3	4.0	6.6	2.6	2.6	0.0

Grain Size Distribution by Hydrometer



Grain Size Distribution by Hydrometer





Analytical Resources, Incorporated
Analytical Chemists and Consultants

6 July 2011

Darrell Auvil
Test America
9405 SW Nimbus Ave.
Beaverton, OR 97008

RE: Project: PUF0461
ARI Job No. TB12

Dear Darrell:

Please find enclosed the original Chain-of-Custody record and the final results for the sample from the project referenced above. Analytical Resources, Inc. accepted one sediment sample on June 17, 2011. The sample was analyzed for grain size as requested.

A copy of these reports will remain on file at ARI. Should you have any questions regarding these results, please contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.


Mark D. Harris
Project Manager
206/695-6210
markh@arilabs.com

Enclosures

cc: file TB12

MDH/bc

Subcontract Order - TestAmerica Portland (PUF0461)

SENDING LABORATORY:

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

RECEIVING LABORATORY:

Analytical Resources, Inc. (ARI)
4611 S 134th Place, Suite 100
Tukwilla, WA 98168
Phone : (206) 621-6490
Fax: 206-621-7523
Project Location: Oregon
Receipt Temperature: _____ °C Ice: Y / N

W11F059 Autolog from WPCL 06/13/11 15:44

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

Analysis	Units	Expires	Comments
----------	-------	---------	----------

Sample ID: PUF0461-02 (W11F059-02 (18_13) - Sediment) Sampled: 06/09/11 12:05

Grain Size (ASTM) - SUB	ug/l	12/06/11 12:05	sub to Analytical Resources Inc (ARI)
-------------------------	------	----------------	---------------------------------------

Containers Supplied:
8 oz. jar (A)

Sample ID: PUF0461-03 (W11F059-03 (18_14) - Sediment) Sampled: 06/09/11 11:05

Grain Size (ASTM) - SUB	ug/l	12/06/11 11:05	sub to Analytical Resources Inc (ARI)
-------------------------	------	----------------	---------------------------------------

Containers Supplied:
8 oz. jar (A)

Sample ID: PUF0461-05 (W11F059-05 (18_15) - Sediment) Sampled: 06/09/11 10:30

Grain Size (ASTM) - SUB	ug/l	12/06/11 10:30	sub to Analytical Resources Inc (ARI)
-------------------------	------	----------------	---------------------------------------

Containers Supplied:

Released By _____ Date/Time _____

Released By _____ Date/Time _____

Received By _____ Date/Time _____

Received By _____ Date/Time _____

Page 1 of 1

Subcontract Order - TestAmerica Portland (PUF0461)

SENDING LABORATORY:

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

RECEIVING LABORATORY:

Analytical Resources, Inc. (ARI)
4611 S 134th Place, Suite 100
Tukwilla, WA 98168
Phone : (206) 621-6490
Fax: 206-621-7523
Project Location: Oregon
Receipt Temperature: _____ °C Ice: Y / N

W11F059 Autolog from WPCL 06/13/11 15:44

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

Analysis	Units	Expires	Comments
----------	-------	---------	----------

Sample ID: PUF0461-02 (W11F059-02 (18_13) - Sediment)

Sampled: 06/09/11 12:05

Grain Size (ASTM) - SUB	ug/l	12/06/11 12:05	sub to Analytical Resources Inc (ARI)
-------------------------	------	----------------	---------------------------------------

Containers Supplied:

8 oz. jar (A)

Sample ID: PUF0461-03 (W11F059-03 (18_14) - Sediment)

Sampled: 06/09/11 11:05

Grain Size (ASTM) - SUB	ug/l	12/06/11 11:05	sub to Analytical Resources Inc (ARI)
-------------------------	------	----------------	---------------------------------------

Containers Supplied:

8 oz. jar (A)

Sample ID: PUF0461-05 (W11F059-05 (18_15) - Sediment)

Sampled: 06/09/11 10:30

Grain Size (ASTM) - SUB	ug/l	12/06/11 10:30	sub to Analytical Resources Inc (ARI)
-------------------------	------	----------------	---------------------------------------

Containers Supplied:

Released By

Date/Time

Received By

Date/Time

Released By

Date/Time

Received By

Date/Time

Page 1 of 1



Cooler Receipt Form

ARI Client: Test America

Project Name: _____

COC No(s): _____ NA

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: TB12

Tracking No: 794874461014 NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES NO

Were custody papers included with the cooler? YES NO

Were custody papers properly filled out (ink, signed, etc.) YES NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) 3.1

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: 90041679

Cooler Accepted by: MM Date: 6/17/11 Time: 0640

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES NO

What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____

Was sufficient ice used (if appropriate)? NA YES NO

Were all bottles sealed in individual plastic bags? YES NO

Did all bottles arrive in good condition (unbroken)? YES NO

Were all bottle labels complete and legible? YES NO

Did the number of containers listed on COC match with the number of containers received? YES NO TS

Did all bottle labels and tags agree with custody papers? YES NO

Were all bottles used correct for the requested analyses? YES NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)... NA YES NO

Were all VOC vials free of air bubbles? NA YES NO

Was sufficient amount of sample sent in each bottle? YES NO

Date VOC Trip Blank was made at ARI... NA

Was Sample Split by ARI: NA YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: TS Date: 6-17-11 Time: 1450

**** Notify Project Manager of discrepancies or concerns ****

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

Additional Notes, Discrepancies, & Resolutions:

only 1 of 3 samples received
sample PUF0461-05 FW11F059-05 (18-15)

By: TS Date: 6-20-11

<p>Small Air Bubbles ~2mm</p>	<p>Peabubbles 2-4 mm</p>	<p>LARGE Air Bubbles > 4 mm</p>	<p>Small → "sm"</p> <p>Peabubbles → "pb"</p> <p>Large → "lg"</p> <p>Headspace → "hs"</p>
-----------------------------------	------------------------------	--	--

Sample ID Cross Reference Report



ARI Job No: TB12
Client: Test America, Inc.
Project Event: PUF0461
Project Name: N/A

Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1. PUF0461-03(W11F059-02)	(1TB12A	11-13381	Sediment	06/09/11 10:30	06/17/11 06:40

Printed 06/17/11



Client: Test America, Inc.

ARI Job No.: TB12

Client Project: PUF0461

Case Narrative

1. One sample was submitted for grain size analysis on June 17, 2011, and was in good condition.
2. The sample was submitted for grain size distribution according to ASTM D422. The sample was prepared according to ASTM D421.
3. An assumed specific gravity of 2.65 was used in the hydrometer calculations.
4. A standard milkshake mixer type device was used to disperse the fine fraction sample.
5. One sample from another job was chosen for triplicate analysis. The triplicate data can be found on the QA summary table.
6. The data is provided in summary tables and plots.
7. There were no further anomalies in the samples or test method.

Approved by: _____

Geotechnical Laboratory Manager

Date: _____

7/5/11

TB12

Testing performed according to ASTM D421/D422

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"-4750	4750-2000	2000-850	850-425	425-250	250-150	150-75	75-32	32-22	22-13	13-9	9-7	7-3.2	<3.2
Particle Size (microns)	3-2"			1-3/4"																
	0.0	0.0	0.0	0.0	2.5	2.7	4.9	8.9	13.3	12.8	15.9	9.8	7.1	8.6	4.0	1.0	1.5	1.0	2.5	3.5
	0.0	0.0	0.0	0.0	0.0	2.2	10.3	10.0	12.4	12.6	15.4	9.7	7.1	7.8	3.4	1.4	1.9	0.5	2.4	2.9
TA22 A	0.0	0.0	0.0	0.0	0.0	0.0	8.6	10.0	12.8	13.1	16.2	10.0	7.3	8.8	4.0	1.5	1.5	1.0	2.5	2.5
	0.0	0.0	0.0	0.0	0.0	0.0	0.6	2.0	8.7	14.8	23.8	16.8	10.0	6.3	6.1	3.7	1.8	1.2	3.1	1.2
	PUF0461-05(W11F059-05)(18 15)	0.0	0.0	0.0	0.0	0.0	0.0	0.6	2.0	8.7	14.8	23.8	16.8	10.0	6.3	6.1	3.7	1.8	1.2	3.1

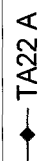
TB12

Client:	Test America, Inc.	Project No.:	PUF0461
ARI Triplicate Sample ID:	TA22 A	Batch No.:	TB12-01
		Page:	1 of 1

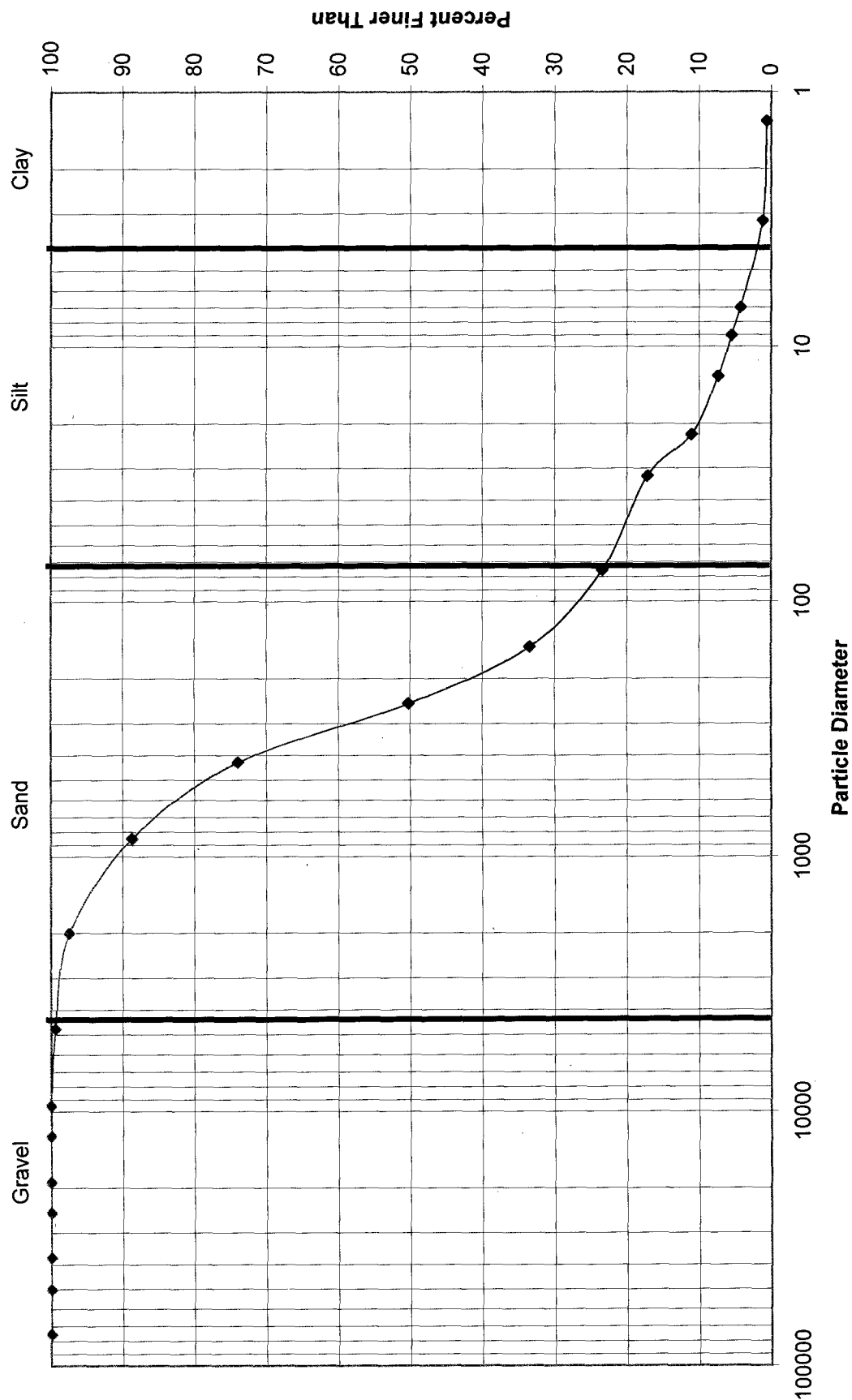
Sample ID	75000				37500				25000				19000				12500				9500				4750				relative standard deviation, σ/μ				relative standard deviation, σ/μ			
	75000	50000	37500	25000	19000	12500	9500	4750	850	425	250	150	75	32	22	13	9	7	3.2	1.3																
TAZ2 A	100.0	100.0	100.0	100.0	100.0	97.5	94.9	89.9	81.1	67.7	54.9	38.1	29.2	22.1	13.6	9.6	8.6	7.0	6.0	3.5	2.5															
TAZ2 A	100.0	100.0	100.0	100.0	100.0	100.0	97.8	97.8	87.5	65.1	52.6	37.1	27.4	20.3	12.5	9.1	7.7	5.8	5.3	2.9	1.9															
TAZ2 A	100.0	100.0	100.0	100.0	100.0	100.0	100.0	91.4	81.4	68.6	55.5	39.2	29.2	21.9	13.0	9.0	7.5	6.0	5.0	2.5	1.5															
AVE	100.00	100.00	100.00	100.00	100.00	99.18	97.56	89.62	79.99	67.15	54.31	38.47	28.61	21.43	13.04	9.24	7.92	6.28	5.45	2.97	1.98															
STDEV	0.00	0.00	0.00	0.00	0.00	1.42	2.57	1.94	2.13	1.82	1.55	1.15	1.03	1.00	0.55	0.28	0.55	0.68	0.53	0.51	0.51															
%RSD	0.00	0.00	0.00	0.00	0.00	1.43	2.64	2.17	2.66	2.72	2.85	2.99	3.62	4.64	4.19	3.03	6.96	10.77	9.70	17.24	25.63															

This Triplicate applies to the Batch Containing the Following Samples

Sample ID	Date Sampled	Date Set up	Date Started	Date Complete	Data Qualifiers
TA22 A	6/8/2011	6/15/2011	6/22/2011	6/24/2011	
	6/8/2011	6/15/2011	6/22/2011	6/24/2011	
	6/8/2011	6/15/2011	6/22/2011	6/24/2011	
	6/9/2011	6/27/2011	6/30/2011	7/5/2011	



Grain Size Distribution by Hydrometer



—◆— PUF0461-05(W11F059-05)(18_15)

July 8, 2011

Analytical Report for Service Request No: K1105301

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

RE: Portland Harbor


Dear Jennifer:

Enclosed are the results of the samples submitted to our laboratory on June 13, 2011. For your reference, these analyses have been assigned our service request number K1105301.

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

Please call if you have any questions. My extension is 3364. You may also contact me via Email at HHolmes@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.
Howard Holmes
Project Chemist

HH/ln

Page 1 of 18

Acronyms

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

Inorganic Data Qualifiers

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

Metals Data Qualifiers

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

Organic Data Qualifiers

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

Additional Petroleum Hydrocarbon Specific Qualifiers

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

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

Agency	Number
Alaska DEC UST	UST-040
Arizona DHS	AZ0339
Arkansas - DEQ	88-0637
California DHS	2286
Florida DOH	E87412
Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
Louisiana DEQ	3016
Louisiana DHH	LA050010
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon - DEQ	WA100010
South Carolina DHEC	61002
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-

COLUMBIA ANALYTICAL SERVICES, INC.

Client: City of Portland
Project: Portland Harbor
Sample Matrix: Sediment

Service Request No.: K1105301
Date Received: 6/13/11

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 Control Sample (LCS).

Sample Receipt

Five sediment samples were received for analysis at Columbia Analytical Services on 6/13/11. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Organochlorine Pesticides by EPA Method 8081A

Elevated Detection Limits:

Sample W11F059-05 required dilution due to the presence of elevated levels of target analyte. The reporting limits were adjusted to reflect the dilution.

Sample Confirmation Notes:


The confirmation comparison criterion of 40% difference for some analyte was exceeded in all samples. The lower of the two values was reported because of an apparent interference on the alternate column that produced the higher value.

Matrix Spike Recovery Exceptions:

The control criteria for the matrix spike recovery of 4,4'-DDT for sample W11F059-02 were not applicable. The chromatogram indicated non-target matrix background components contributed to the reported matrix spike concentrations. Thus, the reported recoveries contained a high bias. Based on the magnitude of background contribution, the interference appeared to be minimal.

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

Approved by

 Date 7-11-11

PROJECT NAME

Portland Harbor

PROJECT NUMBER

PROJECT MANAGER

COMPANY ADDRESS

Jennifer Shadelford
City of Portland

CITY/STATE/ZIP

E-MAIL ADDRESS

PHONE #

FAX #

SAMPLER'S SIGNATURE

SAMPLE I.D.

DATE

TIME

LAB I.D.

MATRIX

W11F-059-01

6/9/11

1130

Sed. 1

NUMBER OF CONTAINERS

Semivolatile Organics by GC/MS
625 ☐ 8270 ☐ 8270LL ☐

Volatile Organics
624 ☐ 8260 ☐ 8021 ☐ BTEX ☐

Hydrocarbons (*see below)
Gas ☐ Diesel ☐ Oil ☐

Fuel Fingerprint (FIQ)
Oil & Grease/TRPH
1664 HEM ☐ 1664 SGT ☐

PCB's
Aroclors ☐ Congeners ☐

Pesticides
Herbicides ☐ low level

Chlorophenolics - 8151M
Tri ☐ Tetra ☐ PCP ☐

PAHS 8310 ☐ SIM ☐

Metals, Total or Dissolved
(See list below)

Cyanide ☐ Hex-Chrom ☐

pH, Cond, Cl, SO₄, PO₄, F, NO₂, NO₃, BOD, TSS, TDS (circle)

NH₃-N, COD, Total-P, TKN, TOC, DOC (circle) NO₂+NO₃

TOX 9020 ☐ AOX 1650 ☐ 506 ☐

REMARKS

TS = 57.9

TS = 43.8

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

Request Report Date

Circle which metals are to be analyzed:

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

Use our TS result please for -01, -04 limited volume for these samples

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

Signature [Signature]

Date/Time 6/16/11

City of Portland

Signature [Signature]

Date/Time 6/13/11

City of Portland

Signature [Signature]

Date/Time 6/13/11

City of Portland

Signature [Signature]

Date/Time 6/13/11

City of Portland

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC H2

Client / Project: City of Portland Service Request K11 5301
 Received: 6/13/11 Opened: 6/13/11 By: [Signature] Unloaded: 6/13/11 By: [Signature]

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

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID	NA	Tracking Number	NA	Filed
<u>nm</u>							

7. Packing material used. *Inserts Baggies Bubble Wrap Gel Packs Wet Ice Sleeves Other none*
8. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
14. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
15. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

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

Notes, Discrepancies, & Resolutions: _____

Analytical Results

Client: Portland, City of
Project: Portland Harbor
Sample Matrix: Sediment

Service Request: K1105301

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
W11F059-01	K1105301-001	06/09/2011	06/13/2011	06/14/2011	57.9	
W11F059-02	K1105301-002	06/09/2011	06/13/2011	06/14/2011	83.5	
W11F059-03	K1105301-003	06/09/2011	06/13/2011	06/14/2011	65.9	
W11F059-04	K1105301-004	06/09/2011	06/13/2011	06/14/2011	43.8	
W11F059-05	K1105301-005	06/09/2011	06/13/2011	06/14/2011	70.0	

QA/QC Report

Client: Portland, City of
Project: Portland Harbor
Sample Matrix: Sediment

Service Request: K1105301
Date Collected: 06/09/2011
Date Received: 06/13/2011
Date Analyzed: 06/14/2011

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
W11F059-02	K1105301-002	83.5	83.2	83.4	<1	

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor
Sample Matrix: Sediment

Service Request: K1105301
Date Collected: 06/09/2011
Date Received: 06/13/2011

Organochlorine Pesticides

Sample Name: W11F059-01
Lab Code: K1105301-001
Extraction Method: EPA 3541
Analysis Method: 8081B

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	Ui	0.98	0.34	1	06/14/11	06/30/11	KWG1105513	
beta-BHC	ND	Ui	3.6	3.6	1	06/14/11	06/30/11	KWG1105513	
gamma-BHC (Lindane)	ND	U	0.98	0.080	1	06/14/11	06/30/11	KWG1105513	
delta-BHC	ND	U	0.98	0.074	1	06/14/11	06/30/11	KWG1105513	
Heptachlor	ND	Ui	0.98	0.98	1	06/14/11	06/30/11	KWG1105513	
Aldrin	ND	Ui	0.98	0.43	1	06/14/11	06/30/11	KWG1105513	
Heptachlor Epoxide	ND	Ui	0.98	0.34	1	06/14/11	06/30/11	KWG1105513	
gamma-Chlordane†	6.4		0.98	0.090	1	06/14/11	06/30/11	KWG1105513	
Endosulfan I	ND	Ui	0.98	0.98	1	06/14/11	06/30/11	KWG1105513	
alpha-Chlordane	3.7		0.98	0.10	1	06/14/11	06/30/11	KWG1105513	
Dieldrin	ND	Ui	3.6	3.6	1	06/14/11	06/30/11	KWG1105513	
4,4'-DDE	2.0		0.98	0.11	1	06/14/11	06/30/11	KWG1105513	
Endrin	ND	Ui	0.98	0.98	1	06/14/11	06/30/11	KWG1105513	
Endosulfan II	ND	Ui	2.1	2.1	1	06/14/11	06/30/11	KWG1105513	
4,4'-DDD	2.5		0.98	0.11	1	06/14/11	06/30/11	KWG1105513	
Endrin Aldehyde	ND	Ui	0.98	0.98	1	06/14/11	06/30/11	KWG1105513	
Endosulfan Sulfate	1.5	P	0.98	0.11	1	06/14/11	06/30/11	KWG1105513	
4,4'-DDT	ND	Ui	8.6	8.6	1	06/14/11	06/30/11	KWG1105513	
Endrin Ketone	0.97	J	0.98	0.093	1	06/14/11	06/30/11	KWG1105513	
Methoxychlor	ND	Ui	1.2	1.2	1	06/14/11	06/30/11	KWG1105513	
Toxaphene	ND	Ui	350	350	1	06/14/11	06/30/11	KWG1105513	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	57	21-112	06/30/11	Acceptable
Decachlorobiphenyl	101	15-130	06/30/11	Acceptable

† Analyte Comments

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

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor
Sample Matrix: Sediment

Service Request: K1105301
Date Collected: 06/09/2011
Date Received: 06/13/2011

Organochlorine Pesticides

Sample Name: W11F059-02
Lab Code: K1105301-002
Extraction Method: EPA 3541
Analysis Method: 8081B

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	0.60	0.11	1	06/14/11	06/30/11	KWG1105513	
beta-BHC	ND	Ui	0.60	0.60	1	06/14/11	06/30/11	KWG1105513	
gamma-BHC (Lindane)	ND	Ui	0.60	0.093	1	06/14/11	06/30/11	KWG1105513	
delta-BHC	ND	U	0.60	0.074	1	06/14/11	06/30/11	KWG1105513	
Heptachlor	ND	U	0.60	0.12	1	06/14/11	06/30/11	KWG1105513	
Aldrin	ND	Ui	0.60	0.29	1	06/14/11	06/30/11	KWG1105513	
Heptachlor Epoxide	ND	Ui	0.60	0.60	1	06/14/11	06/30/11	KWG1105513	
gamma-Chlordane†	0.85		0.60	0.090	1	06/14/11	06/30/11	KWG1105513	
Endosulfan I	0.17	JP	0.60	0.063	1	06/14/11	06/30/11	KWG1105513	
alpha-Chlordane	0.47	J	0.60	0.10	1	06/14/11	06/30/11	KWG1105513	
Dieldrin	0.37	J	0.60	0.14	1	06/14/11	06/30/11	KWG1105513	
4,4'-DDE	1.0		0.60	0.11	1	06/14/11	06/30/11	KWG1105513	
Endrin	ND	U	0.60	0.094	1	06/14/11	06/30/11	KWG1105513	
Endosulfan II	0.33	JP	0.60	0.14	1	06/14/11	06/30/11	KWG1105513	
4,4'-DDD	0.86		0.60	0.11	1	06/14/11	06/30/11	KWG1105513	
Endrin Aldehyde	ND	Ui	0.60	0.60	1	06/14/11	06/30/11	KWG1105513	
Endosulfan Sulfate	ND	U	0.60	0.11	1	06/14/11	06/30/11	KWG1105513	
4,4'-DDT	ND	Ui	2.0	2.0	1	06/14/11	06/30/11	KWG1105513	
Endrin Ketone	ND	U	0.60	0.093	1	06/14/11	06/30/11	KWG1105513	
Methoxychlor	ND	U	0.60	0.19	1	06/14/11	06/30/11	KWG1105513	
Toxaphene	ND	Ui	30	30	1	06/14/11	06/30/11	KWG1105513	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	53	21-112	06/30/11	Acceptable
Decachlorobiphenyl	54	15-130	06/30/11	Acceptable

† Analyte Comments

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

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor
Sample Matrix: Sediment

Service Request: K1105301
Date Collected: 06/09/2011
Date Received: 06/13/2011

Organochlorine Pesticides

Sample Name: W11F059-03
Lab Code: K1105301-003
Extraction Method: EPA 3541
Analysis Method: 8081B

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	Ui	0.76	0.18	1	06/14/11	06/30/11	KWG1105513	
beta-BHC	ND	Ui	0.91	0.91	1	06/14/11	06/30/11	KWG1105513	
gamma-BHC (Lindane)	ND	Ui	1.8	1.8	1	06/14/11	06/30/11	KWG1105513	
delta-BHC	ND	U	0.76	0.074	1	06/14/11	06/30/11	KWG1105513	
Heptachlor	ND	Ui	0.86	0.86	1	06/14/11	06/30/11	KWG1105513	
Aldrin	ND	Ui	0.76	0.26	1	06/14/11	06/30/11	KWG1105513	
Heptachlor Epoxide	ND	Ui	0.76	0.29	1	06/14/11	06/30/11	KWG1105513	
gamma-Chlordane†	2.1		0.76	0.090	1	06/14/11	06/30/11	KWG1105513	
Endosulfan I	ND	Ui	0.76	0.76	1	06/14/11	06/30/11	KWG1105513	
alpha-Chlordane	0.98		0.76	0.10	1	06/14/11	06/30/11	KWG1105513	
Dieldrin	ND	Ui	1.9	1.9	1	06/14/11	06/30/11	KWG1105513	
4,4'-DDE	0.98	P	0.76	0.11	1	06/14/11	06/30/11	KWG1105513	
Endrin	ND	Ui	0.76	0.76	1	06/14/11	06/30/11	KWG1105513	
Endosulfan II	ND	Ui	0.76	0.76	1	06/14/11	06/30/11	KWG1105513	
4,4'-DDD	ND	Ui	1.1	1.1	1	06/14/11	06/30/11	KWG1105513	
Endrin Aldehyde	ND	Ui	0.76	0.76	1	06/14/11	06/30/11	KWG1105513	
Endosulfan Sulfate	ND	Ui	0.76	0.33	1	06/14/11	06/30/11	KWG1105513	
4,4'-DDT	ND	Ui	5.7	5.7	1	06/14/11	06/30/11	KWG1105513	
Endrin Ketone	0.34	JP	0.76	0.093	1	06/14/11	06/30/11	KWG1105513	
Methoxychlor	ND	Ui	2.4	2.4	1	06/14/11	06/30/11	KWG1105513	
Toxaphene	ND	Ui	330	330	1	06/14/11	06/30/11	KWG1105513	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	49	21-112	06/30/11	Acceptable
Decachlorobiphenyl	62	15-130	06/30/11	Acceptable

† Analyte Comments

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

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor
Sample Matrix: Sediment

Service Request: K1105301
Date Collected: 06/09/2011
Date Received: 06/13/2011

Organochlorine Pesticides

Sample Name: W11F059-04
Lab Code: K1105301-004
Extraction Method: EPA 3541
Analysis Method: 8081B

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	Ui	2.5	0.65	1	06/14/11	06/30/11	KWG1105513	
beta-BHC	ND	U	2.5	0.45	1	06/14/11	06/30/11	KWG1105513	
gamma-BHC (Lindane)	ND	Ui	7.6	7.6	1	06/14/11	06/30/11	KWG1105513	
delta-BHC	ND	Ui	2.5	0.43	1	06/14/11	06/30/11	KWG1105513	
Heptachlor	ND	Ui	2.5	2.5	1	06/14/11	06/30/11	KWG1105513	
Aldrin	1.5	J	2.5	0.40	1	06/14/11	06/30/11	KWG1105513	
Heptachlor Epoxide	ND	Ui	2.5	0.60	1	06/14/11	06/30/11	KWG1105513	
gamma-Chlordane†	ND	Ui	11	11	1	06/14/11	06/30/11	KWG1105513	
Endosulfan I	ND	Ui	2.5	2.5	1	06/14/11	06/30/11	KWG1105513	
alpha-Chlordane	6.1		2.5	0.25	1	06/14/11	06/30/11	KWG1105513	
Dieldrin	ND	Ui	3.8	3.8	1	06/14/11	06/30/11	KWG1105513	
4,4'-DDE	4.5		2.5	0.28	1	06/14/11	06/30/11	KWG1105513	
Endrin	ND	U	2.5	0.24	1	06/14/11	06/30/11	KWG1105513	
Endosulfan II	ND	Ui	5.5	5.5	1	06/14/11	06/30/11	KWG1105513	
4,4'-DDD	4.1		2.5	0.28	1	06/14/11	06/30/11	KWG1105513	
Endrin Aldehyde	1.3	JP	2.5	0.30	1	06/14/11	06/30/11	KWG1105513	
Endosulfan Sulfate	ND	Ui	24	24	1	06/14/11	06/30/11	KWG1105513	
4,4'-DDT	ND	Ui	23	23	1	06/14/11	06/30/11	KWG1105513	
Endrin Ketone	1.5	JP	2.5	0.23	1	06/14/11	06/30/11	KWG1105513	
Methoxychlor	ND	Ui	2.5	0.53	1	06/14/11	06/30/11	KWG1105513	
Toxaphene	ND	Ui	390	390	1	06/14/11	06/30/11	KWG1105513	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	47	21-112	06/30/11	Acceptable
Decachlorobiphenyl	72	15-130	06/30/11	Acceptable

† Analyte Comments

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

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor
Sample Matrix: Sediment

Service Request: K1105301
Date Collected: 06/09/2011
Date Received: 06/13/2011

Organochlorine Pesticides

Sample Name: W11F059-05
Lab Code: K1105301-005
Extraction Method: EPA 3541
Analysis Method: 8081B

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	Ui	0.72	0.65	1	06/14/11	06/30/11	KWG1105513	
beta-BHC	ND	Ui	0.72	0.72	1	06/14/11	06/30/11	KWG1105513	
gamma-BHC (Lindane)	ND	Ui	2.0	2.0	1	06/14/11	06/30/11	KWG1105513	
delta-BHC	ND	Ui	2.7	2.7	1	06/14/11	06/30/11	KWG1105513	
Heptachlor	ND	Ui	0.72	0.72	1	06/14/11	06/30/11	KWG1105513	
Aldrin	8.5	P	0.72	0.16	1	06/14/11	06/30/11	KWG1105513	
Heptachlor Epoxide	ND	Ui	0.72	0.72	1	06/14/11	06/30/11	KWG1105513	
gamma-Chlordane†	11	P	0.72	0.090	1	06/14/11	06/30/11	KWG1105513	
Endosulfan I	3.8	P	0.72	0.063	1	06/14/11	06/30/11	KWG1105513	
alpha-Chlordane	4.9		0.72	0.10	1	06/14/11	06/30/11	KWG1105513	
Dieldrin	ND	Ui	4.9	4.9	5	06/14/11	07/01/11	KWG1105513	
4,4'-DDE	43	D	3.6	0.55	5	06/14/11	07/01/11	KWG1105513	
Endrin	ND	Ui	1.2	1.2	1	06/14/11	06/30/11	KWG1105513	
Endosulfan II	ND	Ui	5.9	5.9	1	06/14/11	06/30/11	KWG1105513	
4,4'-DDD	36	D	3.6	0.55	5	06/14/11	07/01/11	KWG1105513	
Endrin Aldehyde	ND	Ui	0.72	0.72	1	06/14/11	06/30/11	KWG1105513	
Endosulfan Sulfate	ND	Ui	0.72	0.72	1	06/14/11	06/30/11	KWG1105513	
4,4'-DDT	ND	Ui	18	18	1	06/14/11	06/30/11	KWG1105513	
Endrin Ketone	0.54	JP	0.72	0.093	1	06/14/11	06/30/11	KWG1105513	
Methoxychlor	ND	Ui	3.8	3.8	1	06/14/11	06/30/11	KWG1105513	
Toxaphene	ND	Ui	240	240	1	06/14/11	06/30/11	KWG1105513	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	96	21-112	06/30/11	Acceptable
Decachlorobiphenyl	51	15-130	06/30/11	Acceptable

† Analyte Comments

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

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Portland, City of
Project: Portland Harbor
Sample Matrix: Sediment

Service Request: K1105301
Date Collected: NA
Date Received: NA

Organochlorine Pesticides

Sample Name: Method Blank
Lab Code: KWG1105513-4
Extraction Method: EPA 3541
Analysis Method: 8081B

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	06/14/11	06/30/11	KWG1105513	
beta-BHC	ND	U	0.50	0.18	1	06/14/11	06/30/11	KWG1105513	
gamma-BHC (Lindane)	ND	U	0.50	0.080	1	06/14/11	06/30/11	KWG1105513	
delta-BHC	ND	U	0.50	0.074	1	06/14/11	06/30/11	KWG1105513	
Heptachlor	ND	U	0.50	0.12	1	06/14/11	06/30/11	KWG1105513	
Aldrin	ND	U	0.50	0.16	1	06/14/11	06/30/11	KWG1105513	
Heptachlor Epoxide	ND	U	0.50	0.084	1	06/14/11	06/30/11	KWG1105513	
gamma-Chlordane†	ND	U	0.50	0.090	1	06/14/11	06/30/11	KWG1105513	
Endosulfan I	ND	U	0.50	0.063	1	06/14/11	06/30/11	KWG1105513	
alpha-Chlordane	ND	U	0.50	0.10	1	06/14/11	06/30/11	KWG1105513	
Dieldrin	ND	U	0.50	0.14	1	06/14/11	06/30/11	KWG1105513	
4,4'-DDE	ND	U	0.50	0.11	1	06/14/11	06/30/11	KWG1105513	
Endrin	ND	U	0.50	0.094	1	06/14/11	06/30/11	KWG1105513	
Endosulfan II	ND	U	0.50	0.14	1	06/14/11	06/30/11	KWG1105513	
4,4'-DDD	ND	U	0.50	0.11	1	06/14/11	06/30/11	KWG1105513	
Endrin Aldehyde	ND	U	0.50	0.12	1	06/14/11	06/30/11	KWG1105513	
Endosulfan Sulfate	ND	U	0.50	0.11	1	06/14/11	06/30/11	KWG1105513	
4,4'-DDT	ND	U	0.50	0.17	1	06/14/11	06/30/11	KWG1105513	
Endrin Ketone	ND	U	0.50	0.093	1	06/14/11	06/30/11	KWG1105513	
Methoxychlor	ND	U	0.50	0.19	1	06/14/11	06/30/11	KWG1105513	
Toxaphene	ND	U	25	4.8	1	06/14/11	06/30/11	KWG1105513	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Tetrachloro-m-xylene	66	21-112	06/30/11	Acceptable
Decachlorobiphenyl	68	15-130	06/30/11	Acceptable

† Analyte Comments

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

Comments:

Client: Portland, City of
Project: Portland Harbor
Sample Matrix: Sediment

Service Request: K1105301

**Surrogate Recovery Summary
Organochlorine Pesticides**

Extraction Method: EPA 3541
Analysis Method: 8081B

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>
W11F059-01	K1105301-001	57	101
W11F059-02	K1105301-002	53	54
W11F059-03	K1105301-003	49	62
W11F059-04	K1105301-004	47	72
W11F059-05	K1105301-005	96	51
Method Blank	KWG1105513-4	66	68
W11F059-02MS	KWG1105513-1	56	57
W11F059-02DMS	KWG1105513-2	51	54
Lab Control Sample	KWG1105513-3	63	68

Surrogate Recovery Control Limits (%)

Sur1 = Tetrachloro-m-xylene	21-112
Sur2 = Decachlorobiphenyl	15-130

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: Sediment

Service Request: K1105301
Date Extracted: 06/14/2011
Date Analyzed: 06/30/2011

Matrix Spike/Duplicate Matrix Spike Summary
Organochlorine Pesticides

Sample Name: W11F059-02
Lab Code: K1105301-002
Extraction Method: EPA 3541
Analysis Method: 8081B

Units: ug/Kg
Basis: Dry
Level: Low
Extraction Lot: KWG1105513

Analyte Name	Sample Result	W11F059-02MS KWG1105513-1 Matrix Spike			W11F059-02DMS KWG1105513-2 Duplicate Matrix Spike			%Rec Limits	RPD	RPD Limit
		Result	Expected	%Rec	Result	Expected	%Rec			
alpha-BHC	ND	7.42	12.0	62	6.97	11.9	58	23-133	6	40
beta-BHC	ND	6.83	12.0	57	6.43	11.9	54	22-142	6	40
gamma-BHC (Lindane)	ND	7.90	12.0	66	7.77	11.9	65	26-135	2	40
delta-BHC	ND	7.87	12.0	66	7.38	11.9	62	25-148	7	40
Heptachlor	ND	8.10	12.0	68	7.73	11.9	65	21-136	5	40
Aldrin	ND	7.46	12.0	62	7.02	11.9	59	22-135	6	40
Heptachlor Epoxide	ND	7.71	12.0	64	7.28	11.9	61	25-129	6	40
gamma-Chlordane	0.85	7.77	12.0	58	7.47	11.9	55	24-133	4	40
Endosulfan I	0.17	6.14	12.0	50	6.06	11.9	49	15-119	1	40
alpha-Chlordane	0.47	7.30	12.0	57	7.04	11.9	55	24-132	4	40
Dieldrin	0.37	7.56	12.0	60	7.53	11.9	60	26-133	0	40
4,4'-DDE	1.0	8.56	12.0	63	8.27	11.9	61	22-142	3	40
Endrin	ND	7.60	12.0	64	7.26	11.9	61	22-145	5	40
Endosulfan II	0.33	6.76	12.0	54	6.75	11.9	54	13-129	0	40
4,4'-DDD	0.86	8.38	12.0	63	7.88	11.9	59	19-143	6	40
Endrin Aldehyde	ND	7.01	12.0	59	6.33	11.9	53	10-129	10	40
Endosulfan Sulfate	ND	7.04	12.0	59	6.37	11.9	53	20-134	10	40
4,4'-DDT	ND	10.0	12.0	84 #	10.1	11.9	85 #	19-154	1	40
Endrin Ketone	ND	7.57	12.0	63	7.28	11.9	61	19-139	4	40
Methoxychlor	ND	8.77	12.0	73	8.23	11.9	69	24-151	6	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.

Client: Portland, City of
Project: Portland Harbor
Sample Matrix: Sediment

Service Request: K1105301
Date Extracted: 06/14/2011
Date Analyzed: 06/30/2011

**Lab Control Spike Summary
Organochlorine Pesticides**

Extraction Method: EPA 3541
Analysis Method: 8081B

Units: ug/Kg
Basis: Dry
Level: Low
Extraction Lot: KWG1105513

Analyte Name	Lab Control Sample KWG1105513-3 Lab Control Spike			%Rec Limits
	Result	Expected	%Rec	
alpha-BHC	13.6	20.0	68	36-139
beta-BHC	12.8	20.0	64	38-142
gamma-BHC (Lindane)	13.7	20.0	68	40-142
delta-BHC	14.3	20.0	72	48-145
Heptachlor	13.9	20.0	70	39-135
Aldrin	12.6	20.0	63	37-134
Heptachlor Epoxide	14.2	20.0	71	45-118
gamma-Chlordane	13.4	20.0	67	41-135
Endosulfan I	12.0	20.0	60	35-121
alpha-Chlordane	13.2	20.0	66	41-134
Dieldrin	13.9	20.0	70	46-136
4,4'-DDE	13.6	20.0	68	46-141
Endrin	14.1	20.0	70	40-152
Endosulfan II	12.8	20.0	64	39-128
4,4'-DDD	14.5	20.0	73	46-146
Endrin Aldehyde	13.3	20.0	67	32-132
Endosulfan Sulfate	14.1	20.0	70	43-138
4,4'-DDT	16.0	20.0	80	46-151
Endrin Ketone	15.5	20.0	78	47-135
Methoxychlor	15.2	20.0	76	42-147

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.