Memo

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to: Bill Evans (Port of Tacoma)

from: Stacy Munson

cc: Chris Waldron

date: September 13, 2012

subject: Port of Tacoma: 1940 East 11th Street Building Soil Excavation Sampling and Documentation

Per your request, PIONEER Technologies Corporation (PIONEER) provided field support during a limited soil excavation event that was conducted in August 2012, near the approximately 117,000-square foot, two-story, vacant building located at 1940 East 11th Street in Tacoma, Washington (see Figure 1)[1]. Three rounds of excavation activities were conducted by the Port of Tacoma's (the Port's) maintenance department personnel. Round one was conducted on August 15, 2012, round two was conducted on August 21, 2012, and round three was conducted on August 28, 2012. PIONEER documented the excavation activities in photographs and field notes, and collected soil confirmation samples for polychlorinated biphenyls (PCBs) following each round of excavation. In addition, PIONEER participated in several infrastructure maintenance and improvement activities near the building. This memorandum presents a summary of the excavation activities, confirmation sampling results, and the miscellaneous maintenance and improvement activities.

Background – Previous Investigations

PIONEER conducted a soil characterization event at the building in July 2012 (PIONEER 2012a). Results of that characterization event showed concentrations of PCBs in soil which exceeded the Model Toxics Control Act (MTCA) Method A Unrestricted Land Use soil cleanup level (CUL) of 1 mg/kg (WAC 173-340-740(2)) (Washington State Department of Ecology [Ecology] 2012). Exceedances in soil were located adjacent to the building, and in one location at the south end of the building in an open gravel area (SL_20) (see Figure 2). The excavation activities described in this memo were initiated to remediate the soil exceedances located in the open gravel area only. Other soil exceedances will be remediated during future building demolition and cleanup activities.

Excavation Activities and Confirmation Sampling Results

A photographic log of the excavation and sampling activities is presented in Attachment 1. Field notes are presented in Attachment 2.

- Excavation Round 1

  A 400-square foot area (20 ft x 20 ft) surrounding the sample location with the exceedance identified during the soil characterization event (SL_20) was excavated on August 15th, 2012 (see Photos 1 & 2 and Figure 3). The excavation was advanced to a depth of one foot. A small section of buried concrete was encountered along the northeast side of the excavation footprint, though it did not run the entire length of the sidewall. Approximately 15 cubic yards of soil was excavated and stockpiled beneath 6-mil black plastic near the loading docks (see Photo 8 and Figure 4).

  Following the excavation, PIONEER collected four discrete sidewall confirmation soil samples and two discrete bottom confirmation soil samples. Soil samples were collected using a stainless steel hand trowel and homogenized in a stainless steel bowl before being placed into jars. Sampling equipment was decontaminated between each sampling location. Samples were submitted under industry-standard chain-of-custody

[1] The Brown & Haley Company was last building tenant; therefore, several previous investigations refer to the building as the Brown & Haley building.

procedures to ARI in Tukwila, Washington for analysis of PCB aroclors using United States Environmental Protection Agency (USEPA) Method SW846-8082A. Table 1 and Figure 3 present the total PCB concentrations and sample locations for each confirmation sample, respectively. Attachment 3 presents the analytical laboratory reports for all samples.

One sample collected from the northwest excavation sidewall (SW3) had a concentration greater than the MTCA Method A CUL of 1 mg/kg (see Table 1). Based on the results of this sample, a second excavation was conducted to remove the soil which exceeded the CUL.

- Excavation Round 2

  Round 2 excavation activities commenced on August 21st, 2012 on the northwest excavation sidewall (see Photos 3 & 4 and Figure 3). The approximately 5 x 20 foot excavation was advanced to one foot, extending northwest of the existing excavation sidewall. Approximately four cubic yards of soil were excavated and added to the existing soil stockpile near the loading docks (see Photo 8 and Figure 4).

  Following the excavation, PIONEER collected one discrete sidewall confirmation soil sample on the newly-extended northwest excavation sidewall (SW3_1.0_082112). The soil sample was collected using a stainless steel hand trowel and homogenized in a stainless steel bowl before being placed into jars. The sample was submitted under industry-standard chain-of-custody procedures to ARI for analysis of PCB aroclors using USEPA Method SW846-8082A.

  The total PCB concentration from sample SW3_1.0_082112 was greater than the MTCA Method A CUL. Based on the results of this sample, a third excavation was conducted to remove the soil which exceeded the CUL.

- Excavation Round 3

  Round 3 excavation activities commenced on August 28th, 2012 on the northwest excavation sidewall (see Photos 5 & 6 and Figure 3). The approximately 5 x 20 foot excavation was advanced to one foot, extending northwest of the existing excavation sidewall. Approximately four cubic yards of soil were excavated and added to the existing soil stockpile near the loading docks (see Photo 8 and Figure 4).

  Following the excavation, PIONEER collected two discrete sidewall confirmation soil samples on the newly-extended northwest excavation sidewall. Soil samples were collected using a stainless steel hand trowel and homogenized in a stainless steel bowl before being placed into jars. Sampling equipment was decontaminated between each sample. Samples were submitted under industry-standard chain-of-custody procedures to ARI for analysis of PCB Aroclors using USEPA Method SW846-8082A. One of the samples (SW3_1.0_082812) was analyzed and the other was held for possible future analysis. The sample that was held was later discarded.

  The total PCB concentration from sample SW3_1.0_082812 was lower than the MTCA Method A CUL. Based on the results of this sample, no further excavations were necessary. The open excavation footprint was backfilled with clean gravel, and returned to the original grade.

SUPPLEMENTAL CATCH-BASIN DOCUMENTATION

In addition to the excavation activities described above, PIONEER participated in several infrastructure maintenance and improvement activities recently conducted at the building:

- Nine sediment catch basins, located to the west and north of the building, were cleaned out on August 14th, 2012 using a vacuum truck. Sediments from eight of the nine catch basins were sampled by PIONEER in April 2012 and of the eight catch basins, two had concentrations of PCBs above the MTCA Method A CUL (PIONEER 2012b). On August 15th 2012, in between excavation activities, PIONEER confirmed that each catch basin had been sufficiently cleaned (see Photo 9). Less than one cubic yard of sediment was removed from the catch basins and stockpiled near the loading docks (i.e., this soil was the bottom layer of the excavation soil stockpile

[see Photo 7]). The soil stockpile will be disposed of in accordance will all applicable state and federal waste disposal regulations.

- PIONEER also documented the current structural state of each catch basin, and recommended that the concrete seal around the southernmost catch basin be repaired. Following the August 28th, 2012 excavation activities, PIONEER confirmed that the catch basin (CB_01) had been repaired as recommended (see Photo 10 and Figure 4).

REFERENCES:

Ecology. 2012. Cleanup Levels and Risk Calculation database, queried on May 15, 2012.

PIONEER. 2012a. 1940 East 11th Street Building Additional Soil Characterization Sampling. Port of Tacoma, Washington. August 22.

PIONEER. 2012b. 1940 East 11th Street Building Materials and Soil/Sediment Characterization Sampling. Port of Tacoma, Washington. June 6.

ENCLOSURES

Figure 1: Building Location

Figure 2: July 2012 Soil Characterization Event Sample Locations and Results

Figure 3: Soil Excavation Area and Confirmation Sample Results

Figure 4: Excavation, Stockpile, and Catch Basin Locations

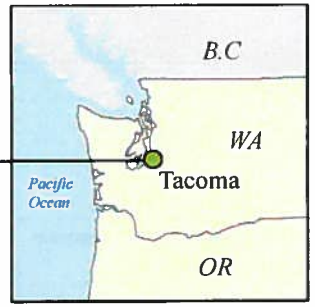
Table 1: Soil Excavation Confirmation Sample Results

Attachment 1: Photographic Log

Attachment 2: Field Notes

Attachment 3: Analytical Laboratory Reports

Figures



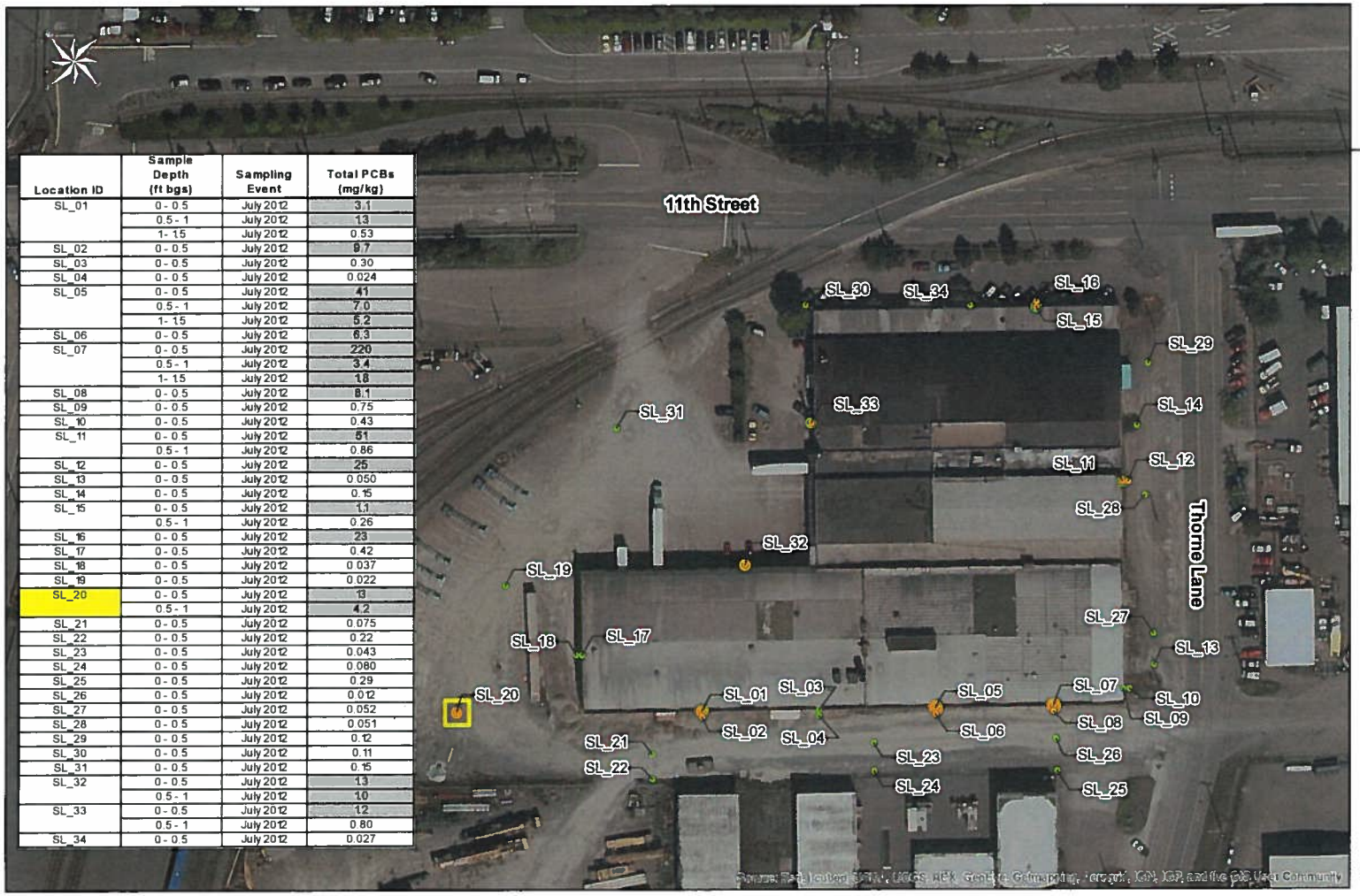
0 0.25 0.5 Miles

G:\Projects\Port of Tacoma\Maps\August 2012\Fig1_Bldg_Haley_Excavation_Aug2012.mxd Author: SM Date Saved: 9/12/2012

PIONEER TECHNOLOGIES CORPORATION

Building Location
1940 East 11th Street Building Soil Excavation Sampling and Documentation
Port of Tacoma, Tacoma, Washington

Figure 1



Location ID	Sample Depth (ft bgs)	Sampling Event	Total PCBs (mg/kg)
SL_01	0 - 0.5	July 2012	3.1
	0.5 - 1	July 2012	13
	1- 1.5	July 2012	0.53
SL_02	0 - 0.5	July 2012	9.7
SL_03	0 - 0.5	July 2012	0.30
SL_04	0 - 0.5	July 2012	0.024
SL_05	0 - 0.5	July 2012	41
	0.5 - 1	July 2012	7.0
	1- 1.5	July 2012	5.2
SL_06	0 - 0.5	July 2012	6.3
SL_07	0 - 0.5	July 2012	220
	0.5 - 1	July 2012	3.4
	1- 1.5	July 2012	1.8
SL_08	0 - 0.5	July 2012	8.1
SL_09	0 - 0.5	July 2012	0.75
SL_10	0 - 0.5	July 2012	0.43
SL_11	0 - 0.5	July 2012	51
	0.5 - 1	July 2012	0.86
SL_12	0 - 0.5	July 2012	25
SL_13	0 - 0.5	July 2012	0.050
SL_14	0 - 0.5	July 2012	0.15
SL_15	0 - 0.5	July 2012	1.1
	0.5 - 1	July 2012	0.26
SL_16	0 - 0.5	July 2012	23
SL_17	0 - 0.5	July 2012	0.42
SL_18	0 - 0.5	July 2012	0.037
SL_19	0 - 0.5	July 2012	0.022
SL_20	0 - 0.5	July 2012	13
	0.5 - 1	July 2012	4.2
SL_21	0 - 0.5	July 2012	0.075
SL_22	0 - 0.5	July 2012	0.22
SL_23	0 - 0.5	July 2012	0.043
SL_24	0 - 0.5	July 2012	0.080
SL_25	0 - 0.5	July 2012	0.29
SL_26	0 - 0.5	July 2012	0.012
SL_27	0 - 0.5	July 2012	0.052
SL_28	0 - 0.5	July 2012	0.051
SL_29	0 - 0.5	July 2012	0.12
SL_30	0 - 0.5	July 2012	0.11
SL_31	0 - 0.5	July 2012	0.15
SL_32	0 - 0.5	July 2012	13
	0.5 - 1	July 2012	1.0
SL_33	0 - 0.5	July 2012	12
	0.5 - 1	July 2012	0.80
SL_34	0 - 0.5	July 2012	0.027

Legend

Area Chosen for Excavation

Surface Samples (0-0.5 ft bgs)
- Total PCBs < 1.0 mg/kg
- Total PCBS >= 1.0 mg/kg

Intermediate Subsurface Samples (0.5-1 ft bgs)
- Total PCBs < 1.0 mg/kg
- Total PCBS >= 1.0 mg/kg

Deep Subsurface Samples (1-1.5 ft bgs)
- Total PCBs < 1.0 mg/kg
- Total PCBS >= 1.0 mg/kg

Notes:
Highlighted cells denote those samples which had a Total PCB concentration greater than or equal to the MTCA Method A Soil Screening Level (1.0 mg/kg) (WAC 173-340-740(2))
ft bgs: feet below ground surface
PCBs: Polychlorinated biphenyls

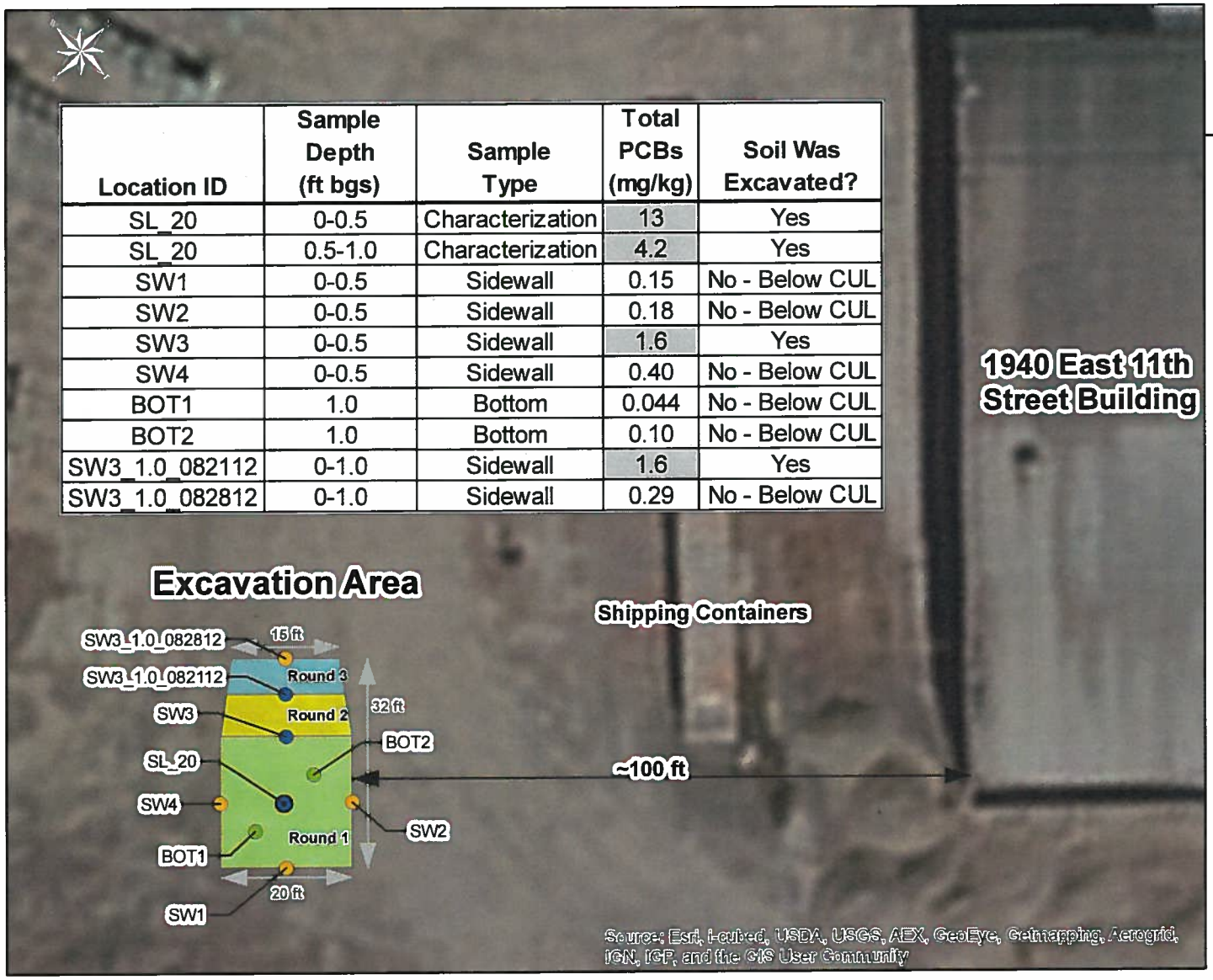
0 50 100 200 Feet

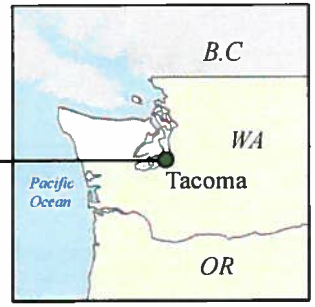
PIONEER TECHNOLOGIES CORPORATION

July 2012 Soil Characterization Event Sample Locations and Results
1940 East 11th Street Building Soil Excavation Sampling andDocumentation
Port of Tacoma, Tacoma, Washington

Figure 2

Location ID	Sample Depth (ft bgs)	Sample Type	Total PCBs (mg/kg)	Soil Was Excavated?
SL_20	0-0.5	Characterization	13	Yes
SL_20	0.5-1.0	Characterization	4.2	Yes
SW1	0-0.5	Sidewall	0.15	No - Below CUL
SW2	0-0.5	Sidewall	0.18	No - Below CUL
SW3	0-0.5	Sidewall	1.6	Yes
SW4	0-0.5	Sidewall	0.40	No - Below CUL
BOT1	1.0	Bottom	0.044	No - Below CUL
BOT2	1.0	Bottom	0.10	No - Below CUL
SW3_1.0_082112	0-1.0	Sidewall	1.6	Yes
SW3_1.0_082812	0-1.0	Sidewall	0.29	No - Below CUL





Legend

Soil Samples

- Confirmation - Bottom
- Confirmation - Sidewall
- Confirmation - Sidewall -Exceeded CUL (Excavated)
- Original SL_20 Location -Exceeded CUL (Excavated)

Excavations By Date

- 8/15/2012, Round 1
- 8/21/2012, Round 2
- 8/28/2012, Round 3

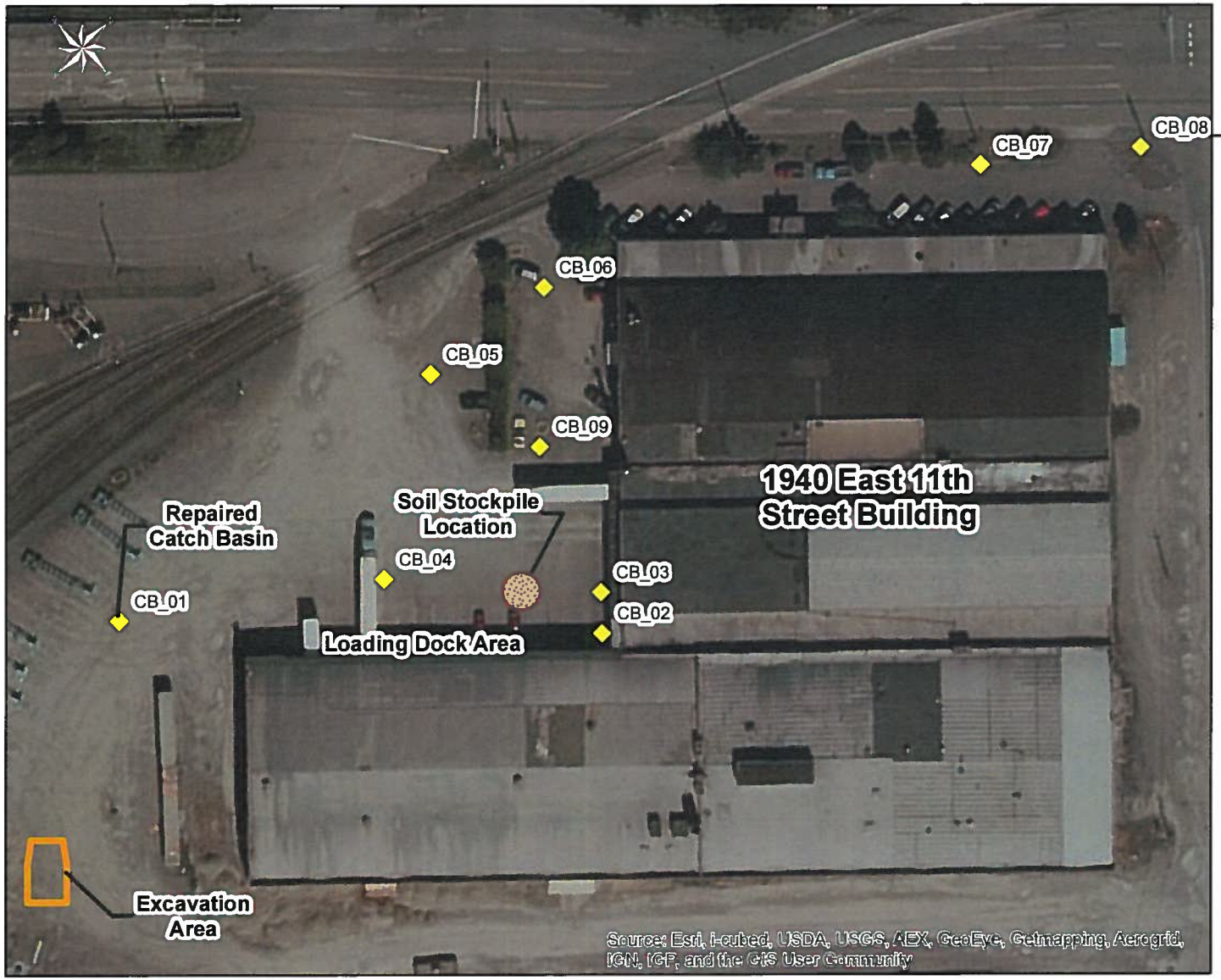
Notes:
The excavation area was advanced to 1.0 ft bgs.
The excavation area shown is approximate.
Shaded cells denote samples with Total PCB concentrations greater than or equal to the CUL.
CUL: MTCA Method A Soil PCB Cleanup Level (1.0 mg/kg) (WAC 173-340-740(2))
ft bgs: feet below ground surface
mg/kg: milligrams per kilogram
PCBs: polychlorinated biphenyls

0 20 40 Feet

PIONEER TECHNOLOGIES CORPORATION

Soil Excavation Area and Confirmation Sample Results
1940 East 11th Street Building Soil Excavation Sampling and Documentation
Port of Tacoma, Tacoma, Washington

Figure 3



Legend

- Excavation Area
- Catch Basins
- Soil Stockpile

Notes:
The excavation area shown is approximate.

0 50 100 Feet

PIONEER TECHNOLOGIES CORPORATION

Excavation, Stockpile, and Catch Basin Locations
1940 East 11th Street Building Soil Excavation Sampling and Documentation
Port of Tacoma, Tacoma, Washington

Figure 4

Tables

Table 1: Soil Excavation Confirmation Sample Results

Sample	Sample Depth (ft bgs)	Date Collected	Excavation Round	Sample Location	MTCA Method A Unrestricted[1] Soil PCB Cleanup Level (mg/kg)	PCB Aroclor Results (mg/kg)										Soil Was Excavated ?
						Aroclor 1016	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Aroclor 1221	Aroclor 1232	Aroclor 1262	Aroclor 1268	Total PCBs	
PoT_BH_SW1_0_0.5_081512	0-0.5	8/15/2012	Round 1	Sidewall 1 (southeast sidewall)	1.0	0.0086 U	0.0086 U	0.054 Y	**0.12**	**0.030**	0.0086 U	0.0086 U	0.0086 U	0.0086 U	0.15	--
PoT_BH_SW2_0_0.5_081512	0-0.5	8/15/2012		Sidewall 2 (northeast sidewall)	1.0	0.0086 U	0.0086 U	0.034 Y	**0.094**	**0.024**	0.0086 U	0.0086 U	0.0086 U	0.0086 U	0.18	--
PoT_BH_SW3_0_0.5_081512	0-0.5	8/15/2012		Sidewall 3 (northwest sidewall)	1.0	0.086 U	0.086 U	0.43 Y	**1.4**	**0.22**	0.086 U	0.086 U	0.086 U	0.086 U	1.6	Yes (During Round 2)
PoT_BH_SW4_0_0.5_081512	0-0.5	8/15/2012		Sidewall 4 (southwest sidewall)	1.0	0.0087 U	0.0087 U	0.087 Y	**0.29**	**0.11**	0.0087 U	0.0087 U	0.0087 U	0.0087 U	0.40	--
PoT_BH_BOT1_1.0_081512	1	8/15/2012		Bottom 1 (south side of excavation)	1.0	0.0086 U	0.0086 U	0.013 Y	**0.032**	**0.012**	0.0086 U	0.0086 U	0.0086 U	0.0086 U	0.044	--
PoT_BH_BOT2_1.0_081512	1	8/15/2012		Bottom 2 (north side of excavation)	1.0	0.0086 U	0.0086 U	0.013 Y	**0.068**	**0.033**	0.0086 U	0.0086 U	0.0086 U	0.0086 U	0.10	--
PoT_BH_SW3_0_1.0_082112	0-1.0	8/21/2012	Round 2	Extended Sidewall 3 (northwest sidewall)	1.0	0.085 U	0.085 U	0.43 Y	**1.6**	0.17 Y	0.085 U	0.085 U	0.085 U	0.085 U	1.6	Yes (During Round 3)
PoT_BH_SW3_0_1.0_082812	0-1.0	8/28/2012	Round 3	Extended Sidewall 3 (northwest sidewall)	1.0	0.041 U	0.041 U	0.052 Y	**0.29**	0.052 Y	0.041 U	0.041 U	0.041 U	0.041 U	0.29	--

Notes:

ft bgs: feet below ground surface

mg/kg: milligrams per kilogram

PCBs: Polychlorinated biphenyls

[1]Model Toxics Control Act (MTCA) Method A Unrestricted Land Use PCB Soil Cleanup Level. See Washington Administrative Code (WAC) 173-340-740(2). Value is presented in MTCA Cleanup Regulation Table 740-1.

Results are shown as two significant figures, unless result is greater than 100.

Bolded values denote detected Aroclors. Shaded cells denote samples with a total PCB concentration greater than the MTCA Method A cleanup level.

Laboratory analytical results are presented in Attachment 3.

Screening level(s) presented in this table were included for comparison purposes only and may or may not be directly applicable to the analytical data presented in this memo.

Qualifiers: U=analyte was non-detect at the shown concentration
Y=analyte was non-detect at the shown concentration, reporting limit is raised due to chromatograph interference

Attachment 1

Attachment 1: Photographic Log

Photo No. 1: Site Condition	
Date: 8/15/12	
Direction Photo Taken: South	
Description: Round 1 Excavation – 20 ft x 20 ft excavation boundary, centered around former SL_20 sampling location.	

Photo No. 2: Site Condition	
Date: 8/15/12	
Direction Photo Taken: Southwest	
Description: Round 1 Excavation – 20 ft x 20 ft excavation, nearly completed to depth of 1 ft.	

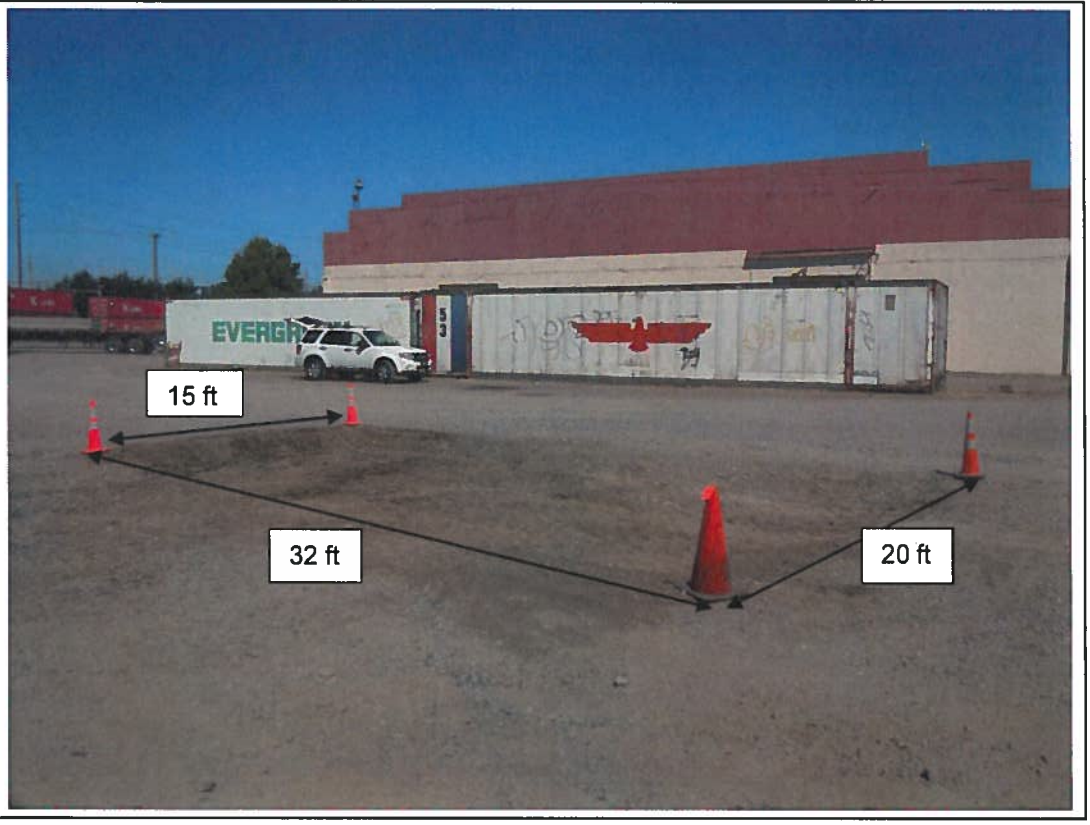
Attachment 1: Photographic Log

Photo No. 3: Site Condition **Date:** 8/21/12 **Direction Photo Taken:** North **Description:** Round 2 Excavation – Excavation limits following northwest sidewall extension, and collection of sample SW3_1.0_082112.	

Photo No. 4: Site Condition **Date:** 8/21/12 **Direction Photo Taken:** North **Description:** Round 2 Excavation – Newly-extended northwest sidewall, and SW3_1.0_082112 sample location.	

Attachment 1: Photographic Log

Photo No. 5: Site Condition	
Date: 8/28/12	
Direction Photo Taken: West	
Description: Round 3 Excavation – Orange paint shows final northwest sidewall extension area.	

Photo No. 6: Site Condition	
Date: 8/28/12	
Direction Photo Taken: North	
Description: Round 3 Excavation – Final excavation extent. Excavation area is 1 ft deep.	

Attachment 1: Photographic Log

Photo No. 7: Site Condition **Date:** 8/15/12 **Direction Photo Taken:** N/A **Description:** Less than 1 cubic yard of sediment removed from catch-basins during August 14th, 2012 vacuum truck cleanout. (The bottom layer of the soil stockpile.)	

Photo No. 8: Site Condition **Date:** 8/31/12 **Direction Photo Taken:** Northeast **Description:** Final soil stockpile, located near loading docks.	

Attachment 1: Photographic Log

Photo No. 9: Site Condition **Date:** 8/15/12 **Direction Photo Taken:** N/A **Description:** An example catch basin located outside the building. Note that the catch basin is completely devoid of sediment.	

Photo No. 10: Site Condition **Date:** 8/28/12 **Direction Photo Taken:** N/A **Description:** Southernmost catch basin (CB_01) (PIONEER 2012b) with newly-repaired concrete footing.	

Attachment 2

PIONEER
DAILY FIELD REPORT

Date: 8/15/12 Site Location: Brown & Haley Bldg Site Arrival Time: 7:45 Site Departure Time: 11:45

WEATHER

Clear Sun	Overcast	Drizzle	Rain	Snow
TEMPERATURE				
16-32	32-50	50-70	70-85	85 Up
WIND				
Calm	Med.	Strong	Severe	

PEOPLE PRESENT ON-SITE

NAME	ASSOCIATION	TIME ON-SITE AND OFF-SITE
Stacy Munson	PTC	
Tim Malatesta	PoT	
Bill Evans	PoT	

NOTES ON WORK COMPLETED

7:45 Meet Bill on site, quick Health & Safety discussion.

8:00 Port Maintance personnell arrive. Bill talks H&S with them. Marked out 20' x 20' excavation footprint.

8:15 Quick logistics talk with everyone, go over excavation area, and stockpile area.

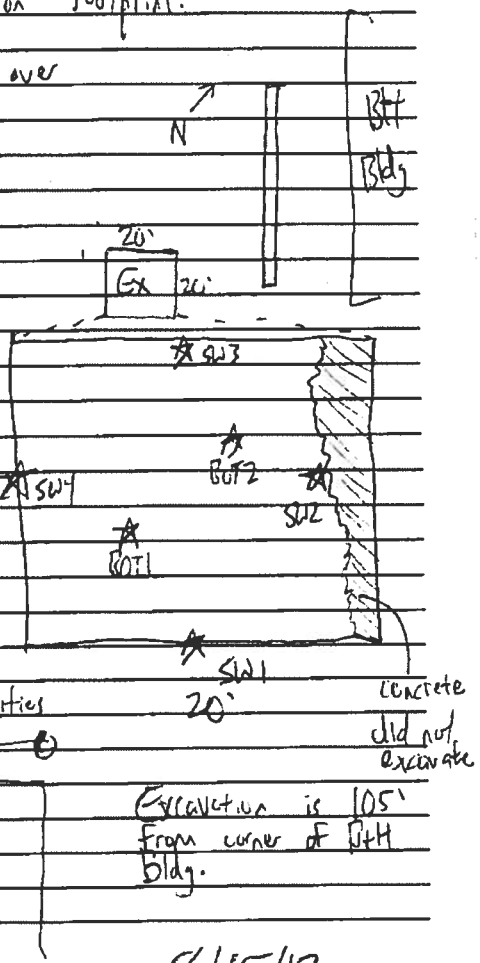
9:30 Begin Excavating in footprint. Soils directly loaded into dump for transport to stockpile.

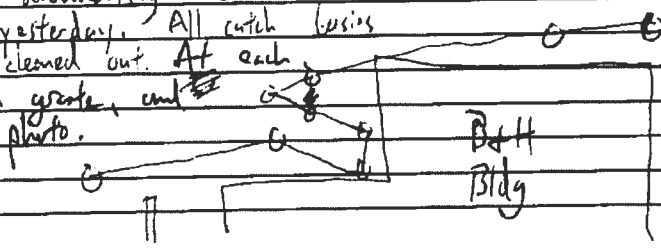
9:30 Finish excavating, squaring off sidewalls and corners. Final extention has rough concrete present on side nearest to B+H Building. Concrete extends the length of the excavation.

10:00 Finish collecting samples, as shown at right. 5 sidewalls, and 2 bottom samples. Label and log samples on COC, prep for pickup. Pickup @ 11:30

10:15 Begin documenting catch basin clean out activities from yesterday. All catch basins appear cleaned out. At each removed grate, and took photo.

11:45





SIGNATURE: [signature] DATE: 8/15/12

PIONEER
DAILY FIELD REPORT

Date: 8/21/12 Site Location: Brown & Haley Alley Site Arrival Time: 2:00 Site Departure Time: 3:00

WEATHER
TEMPERATURE
WIND

Clear Sun	(Overcast)	Drizzle	Rain	Snow
To 32	32-50	(50-70)	70-85	85 Up
(Calm)	Med.	Strong	Severe	

PEOPLE PRESENT ON-SITE

NAME	ASSOCIATION	TIME ON-SITE AND OFF-SITE
Stacy Munson	PTC	2:00 - 3:00

NOTES ON WORK COMPLETED

2:00 Arrive on-site, quick Health + Safety review.
Setup decon station for sample equipment, and don Level D PPE

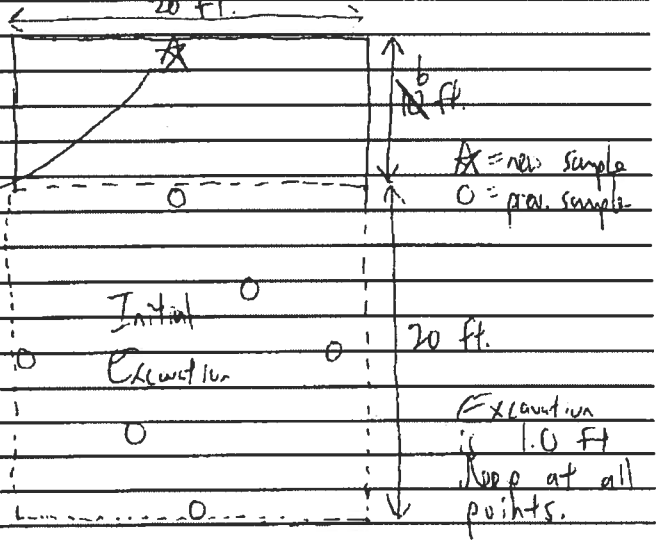
2:15 Used shovel to clear off NW sidewall of newly excavated portion of excavation (sidewall 3) to reach undisturbed soil.

2:45 Collected Sample (soil) from new sidewall 3, to be analyzed for PCBs by 8082.

Sample Collected at 1.0 Ft bgs.

Transferred sample custody to Bill Evans of PeT, then decon'ed sampling equipment and packed up other gear.

3:00 Off-site.



SIGNATURE: Stacy Munson DATE: 8/21/12

PIONEER
DAILY FIELD REPORT

Date: 8/28/12 Site Location: Brown + Haley Bldg Site Arrival Time: 12:00 Site Departure Time: 1:45

WEATHER
TEMPERATURE
WIND

Clear Sun	Overcast	Drizzle	Rain	Snow
To 32	32-50	50-70	70-85	85 Up
Calm	Med.	Strong	Severe	

PEOPLE PRESENT ON-SITE

NAME	ASSOCIATION	TIME ON-SITE AND OFF-SITE
Stacy Munson	PTC	12:00 - 1:45
Bill Evans	PoT	12:00 - 1:00
PoT Maint. Staff	PoT	12:00 - 1:15

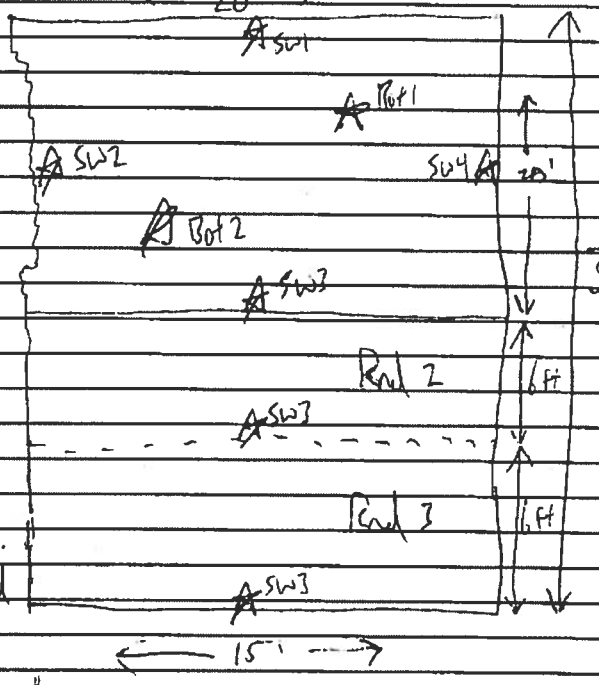
NOTES ON WORK COMPLETED

12:00 Arrive on-site, meet with Bill Evans

PoT maint staff marks out excavation boundary, additional 5 Ft section, NW side of excavation, on SW3.

12:30 Documenting excavation with photos, and discussing sampling plan with Bill Evans. Will collect 2 samples, one of entire sidewall (1 ft), and one of sidewall bottom (6.5 in - 12 in), for future analysis.

1:00 Excavation complete, collected 2 sidewall soil samples using stainless steel, dedicated sampling equipment.



1:15 Documented Catch Basin 1 repairs (newly poured concrete), and measured final excavation boundary using tape.

1:30 Meet sample courier from ARI Lab, transfer COC.

1:45 Off-site.

SIGNATURE: Stacy Munson DATE: 8/28/12

Attachment 3

Analytical Resources, Incorporated
Analytical Chemists and Consultants

August 17, 2012

Stacy Munson
Pioneer Tech. Corp.
5205 Corporate Ctr. Ct. SE, Ste. A
Olympia, WA 98503-5901

RE: Project: Brown and Haley Bldg - Soil Excavation
ARI Job No.; VF99

Dear Stacy:

Please find enclosed the original Chain-of-Custody record (COC), sample receipt documentation, and final results for samples from the project referenced above. Analytical Resources, Inc. (ARI) accepted six soil samples on August 15, 2012. There were no discrepancies in the paperwork. For further details regarding sample receipt, please refer to the enclosed Cooler Receipt Form.

The samples were analyzed for PCBs, as requested on the COC.

The analysis proceeded without incident of note.

An electronic copy of this report and all associated raw data will remain on file at ARI. If you have any questions or require further information, please contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Cheronne Oreiro
Project Manager
-For-
Kelly Bottem
Client Services Manager
206/695-6211
kellyb@arilabs.com

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: VF99	Turn-around Requested: 2 day	Page: 1 of 1	
ARI Client Company: Port of Tacoma	Phone: 253-593-4563	Date: 8/15/12	Ice Present?
Client Contact: Bill Evans		No. of Coolers:	Cooler Temps:
Client Project Name: Brown & Haley Bldg - Soil Excavation			
Client Project #:	Samplers: Stacy Munson (PTC)		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: 8082 PCBs	Notes/Comments
PoT_BH_SW1_0_0.5_081512	8/15/12	10:00	Soil	1	X	
PoT_BH_SW2_0_0.5_081512		10:05		1	X	
PoT_BH_SW3_0_0.5_081512		10:10		1	X	
PoT_BH_SW4_0_0.5_081512		10:15		1	X	
PoT_BH_BOT1_1.0_081512		10:20		1	X	
PoT_BH_BOT2_1.0_081512		10:25		1	X	

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Stacy Munson	Printed Name: Chris Friedli	Printed Name:	Printed Name:
	Company: Pioneer Technologies Corp	Company: ARI	Company:	Company:
	Date & Time: 8/15/12 11:30	Date & Time: 8/15/12 1130	Date & Time:	Date & Time:

VF99:00002

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Port of Tacoma Project Name: Brandt Hurley Bldg - Soil Excavation

COC No(s): _____ (NA) Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: VF99 Tracking No: _____ (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): 4.9

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: Fluke 62 77

Cooler Accepted by: CA Date: 8/15/12 Time: 1130

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
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: _____

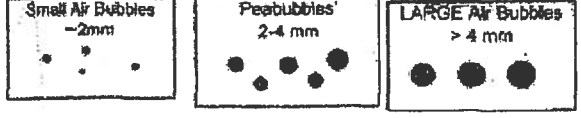
Samples Logged by: AV Date: 8/15/12 Time: 1720

***** 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"

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: VF99
Client: Port of Tacoma
Project Event: N/A
Project Name: Brown & Haley Bldg-Soil Excavation

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	POT_BH_SW1_0_0.5_081512	VF99A	12-15417	Soil	08/15/12 10:00	08/15/12 11:30
2.	POT_BH_SW2_0_0.5_081512	VF99B	12-15418	Soil	08/15/12 10:05	08/15/12 11:30
3.	POT_BH_SW3_0_0.5_081512	VF99C	12-15419	Soil	08/15/12 10:10	08/15/12 11:30
4.	POT_BH_SW4_0_0.5_081512	VF99D	12-15420	Soil	08/15/12 10:15	08/15/12 11:30
5.	POT_BH_BOT1_1.0_081512	VF99E	12-15421	Soil	08/15/12 10:20	08/15/12 11:30
6.	POT_BH_BOT2_1.0_081512	VF99F	12-15422	Soil	08/15/12 10:25	08/15/12 11:30

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Data Reporting Qualifiers

Effective 2/14/2011

Inorganic Data

U	Indicates that the target analyte was not detected at the reported concentration
*	Duplicate RPD is not within established control limits
B	Reported value is less than the CRDL but ≥ the Reporting Limit
N	Matrix Spike recovery not within established control limits
NA	Not Applicable, analyte not spiked
H	The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible
L	Analyte concentration is ≤5 times the Reporting Limit and the replicate control limit defaults to ±1 RL instead of the normal 20% RPD

Organic Data

U	Indicates that the target analyte was not detected at the reported concentration
*	Flagged value is not within established control limits
B	Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.
J	Estimated concentration when the value is less than ARI's established reporting limits
D	The spiked compound was not detected due to sample extract dilution
E	Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
Q	Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20%Drift or minimum RRF).

S — Indicates an analyte response that has saturated the detector. The calculated concentration is not valid; a dilution is required to obtain valid quantification of the analyte

NA — The flagged analyte was not analyzed for

NR — Spiked compound recovery is not reported due to chromatographic interference

NS — The flagged analyte was not spiked into the sample

M — Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters. This flag is used only for GC-MS analyses

M2 — The sample contains PCB congeners that do not match any standard Aroclor pattern. The PCBs are identified and quantified as the Aroclor whose pattern most closely matches that of the sample. The reported value is an estimate.

N — The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"

Y — The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit.

EMPC — Estimated Maximum Possible Concentration (EMPC) defined in EPA Statement of Work DLM02.2 as a value "calculated for 2,3,7,8-substituted isomers for which the quantitation and /or confirmation ion(s) has signal to noise in excess of 2.5, but does not meet identification criteria" **(Dioxin/Furan analysis only)**

C — The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column

P — The analyte was detected on both chromatographic columns but the quantified values differ by ≥40% RPD with no obvious chromatographic interference

X — Analyte signal includes interference from polychlorinated diphenyl ethers. **(Dioxin/Furan analysis only)**

Z — Analyte signal includes interference from the sample matrix or perfluorokerosene ions. **(Dioxin/Furan analysis only)**

Geotechnical Data

A	The total of all fines fractions. This flag is used to report total fines when only sieve analysis is requested and balances total grain size with sample weight.
F	Samples were frozen prior to particle size determination
SM	Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations
SS	Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis
W	Weight of sample in some pipette aliquots was below the level required for accurate weighting

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD
Extraction Method: SW3546
Page 1 of 1

Sample ID: POT_BH_SW1_0_0.5_081512
SAMPLE

Lab Sample ID: VF99A
LIMS ID: 12-15417
Matrix: Soil
Data Release Authorized:
Reported: 08/16/12

QC Report No: VF99-Port of Tacoma
Project: Brown & Haley Bldg-Soil Excavation

Date Sampled: 08/15/12
Date Received: 08/15/12

Date Extracted: 08/15/12
Date Analyzed: 08/16/12 12:55
Instrument/Analyst: ECD7/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 5.84 g-dry-wt
Final Extract Volume: 2.50 mL
Dilution Factor: 1.00
Silica Gel: No

Percent Moisture: 3.5%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	8.6	< 8.6 U
53469-21-9	Aroclor 1242	8.6	< 8.6 U
12672-29-6	Aroclor 1248	54	< 54 Y
11097-69-1	**Aroclor 1254**	**8.6**	**120**
11096-82-5	**Aroclor 1260**	**8.6**	**30**
11104-28-2	Aroclor 1221	8.6	< 8.6 U
11141-16-5	Aroclor 1232	8.6	< 8.6 U
37324-23-5	Aroclor 1262	8.6	< 8.6 U
11100-14-4	Aroclor 1268	8.6	< 8.6 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	102%
Tetrachlorometaxylene	98.5%

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD
Extraction Method: SW3546
Page 1 of 1

Sample ID: POT_BH_SW2_0_0.5_081512
SAMPLE

Lab Sample ID: VF99B
LIMS ID: 12-15418
Matrix: Soil
Data Release Authorized:
Reported: 08/16/12

QC Report No: VF99-Port of Tacoma
Project: Brown & Haley Bldg-Soil Excavation

Date Sampled: 08/15/12
Date Received: 08/15/12

Date Extracted: 08/15/12
Date Analyzed: 08/16/12 13:16
Instrument/Analyst: ECD7/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 5.79 g-dry-wt
Final Extract Volume: 2.50 mL
Dilution Factor: 1.00
Silica Gel: No

Percent Moisture: 3.8%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	8.6	< 8.6 U
53469-21-9	Aroclor 1242	8.6	< 8.6 U
12672-29-6	Aroclor 1248	34	< 34 Y
11097-69-1	**Aroclor 1254**	**8.6**	**94**
11096-82-5	**Aroclor 1260**	**8.6**	**24**
11104-28-2	Aroclor 1221	8.6	< 8.6 U
11141-16-5	Aroclor 1232	8.6	< 8.6 U
37324-23-5	Aroclor 1262	8.6	< 8.6 U
11100-14-4	Aroclor 1268	8.6	< 8.6 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	100%
Tetrachlorometaxylene	96.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD
Extraction Method: SW3546
Page 1 of 1

Sample ID: POT_BH_SW3_0_0.5_081512
SAMPLE

Lab Sample ID: VF99C
LIMS ID: 12-15419
Matrix: Soil
Data Release Authorized:
Reported: 08/16/12

QC Report No: VF99-Port of Tacoma
Project: Brown & Haley Bldg-Soil Excavation

Date Sampled: 08/15/12
Date Received: 08/15/12

Date Extracted: 08/15/12
Date Analyzed: 08/16/12 13:36
Instrument/Analyst: ECD7/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 5.79 g-dry-wt
Final Extract Volume: 2.50 mL
Dilution Factor: 1.00
Silica Gel: No

Percent Moisture: 4.1%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	8.6	< 8.6 U
53469-21-9	Aroclor 1242	8.6	< 8.6 U
12672-29-6	Aroclor 1248	340	< 340 Y
11097-69-1	**Aroclor 1254**	**8.6**	**1,300 E**
11096-82-5	**Aroclor 1260**	**8.6**	**160**
11104-28-2	Aroclor 1221	8.6	< 8.6 U
11141-16-5	Aroclor 1232	8.6	< 8.6 U
37324-23-5	Aroclor 1262	8.6	< 8.6 U
11100-14-4	Aroclor 1268	8.6	< 8.6 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	104%
Tetrachlorometaxylene	96.8%

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD
Extraction Method: SW3546
Page 1 of 1

Sample ID: POT_BH_SW3_0_0.5_081512
DILUTION

Lab Sample ID: VF99C
LIMS ID: 12-15419
Matrix: Soil
Data Release Authorized:
Reported: 08/17/12

QC Report No: VF99-Port of Tacoma
Project: Brown & Haley Bldg-Soil Excavation

Date Sampled: 08/15/12
Date Received: 08/15/12

Date Extracted: 08/15/12
Date Analyzed: 08/16/12 15:00
Instrument/Analyst: ECD7/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 5.79 g-dry-wt
Final Extract Volume: 2.50 mL
Dilution Factor: 10.0
Silica Gel: No

Percent Moisture: 4.1%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	86	< 86 U
53469-21-9	Aroclor 1242	86	< 86 U
12672-29-6	Aroclor 1248	430	< 430 Y
11097-69-1	**Aroclor 1254**	**86**	**1,400**
11096-82-5	**Aroclor 1260**	**86**	**220**
11104-28-2	Aroclor 1221	86	< 86 U
11141-16-5	Aroclor 1232	86	< 86 U
37324-23-5	Aroclor 1262	86	< 86 U
11100-14-4	Aroclor 1268	86	< 86 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	123%
Tetrachlorometaxylene	100%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD
Extraction Method: SW3546
Page 1 of 1

Sample ID: POT_BH_SW4_0_0.5_081512
SAMPLE

Lab Sample ID: VF99D
LIMS ID: 12-15420
Matrix: Soil
Data Release Authorized:
Reported: 08/16/12

QC Report No: VF99-Port of Tacoma
Project: Brown & Haley Bldg-Soil Excavation

Date Sampled: 08/15/12
Date Received: 08/15/12

Date Extracted: 08/15/12
Date Analyzed: 08/16/12 13:57
Instrument/Analyst: ECD7/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 5.73 g-dry-wt
Final Extract Volume: 2.50 mL
Dilution Factor: 1.00
Silica Gel: No

Percent Moisture: 4.6%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	8.7	< 8.7 U
53469-21-9	Aroclor 1242	8.7	< 8.7 U
12672-29-6	Aroclor 1248	87	< 87 Y
11097-69-1	**Aroclor 1254**	**8.7**	**290**
11096-82-5	**Aroclor 1260**	**8.7**	**110**
11104-28-2	Aroclor 1221	8.7	< 8.7 U
11141-16-5	Aroclor 1232	8.7	< 8.7 U
37324-23-5	Aroclor 1262	8.7	< 8.7 U
11100-14-4	Aroclor 1268	8.7	< 8.7 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	121%
Tetrachlorometaxylene	102%

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD
Extraction Method: SW3546
Page 1 of 1

Sample ID: POT_BH_BOT1_1.0_081512
SAMPLE

Lab Sample ID: VF99E
LIMS ID: 12-15421
Matrix: Soil
Data Release Authorized:
Reported: 08/16/12

QC Report No: VF99-Port of Tacoma
Project: Brown & Haley Bldg-Soil Excavation

Date Sampled: 08/15/12
Date Received: 08/15/12

Date Extracted: 08/15/12
Date Analyzed: 08/16/12 14:18
Instrument/Analyst: ECD7/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 5.80 g-dry-wt
Final Extract Volume: 2.50 mL
Dilution Factor: 1.00
Silica Gel: No

Percent Moisture: 3.9%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	8.6	< 8.6 U
53469-21-9	Aroclor 1242	8.6	< 8.6 U
12672-29-6	Aroclor 1248	13	< 13 Y
11097-69-1	**Aroclor 1254**	**8.6**	**32**
11096-82-5	**Aroclor 1260**	**8.6**	**12**
11104-28-2	Aroclor 1221	8.6	< 8.6 U
11141-16-5	Aroclor 1232	8.6	< 8.6 U
37324-23-5	Aroclor 1262	8.6	< 8.6 U
11100-14-4	Aroclor 1268	8.6	< 8.6 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	102%
Tetrachlorometaxylene	92.0%

FORM I

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD
Extraction Method: SW3546
Page 1 of 1

Sample ID: POT_BH_BOT2_1.0_081512
SAMPLE

Lab Sample ID: VF99F
LIMS ID: 12-15422
Matrix: Soil
Data Release Authorized:
Reported: 08/16/12

QC Report No: VF99-Port of Tacoma
Project: Brown & Haley Bldg-Soil Excavation

Date Sampled: 08/15/12
Date Received: 08/15/12

Date Extracted: 08/15/12
Date Analyzed: 08/16/12 14:39
Instrument/Analyst: ECD7/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 5.79 g-dry-wt
Final Extract Volume: 2.50 mL
Dilution Factor: 1.00
Silica Gel: No

Percent Moisture: 4.1%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	8.6	< 8.6 U
53469-21-9	Aroclor 1242	8.6	< 8.6 U
12672-29-6	Aroclor 1248	13	< 13 Y
11097-69-1	**Aroclor 1254**	**8.6**	**68**
11096-82-5	**Aroclor 1260**	**8.6**	**33**
11104-28-2	Aroclor 1221	8.6	< 8.6 U
11141-16-5	Aroclor 1232	8.6	< 8.6 U
37324-23-5	Aroclor 1262	8.6	< 8.6 U
11100-14-4	Aroclor 1268	8.6	< 8.6 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	103%
Tetrachlorometaxylene	91.8%

FORM I

ANALYTICAL RESOURCES INCORPORATED

SW8082/PCB SOIL/SEDIMENT SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: VF99-Port of Tacoma
Project: Brown & Haley Bldg-Soil Excavation

Client ID	DCBP % REC	DCBP LCL-UCL	TCMX % REC	TCMX LCL-UCL	TOT OUT
MB-081512	107%	48-123	91.5%	43-107	0
LCS-081512	93.2%	48-123	81.0%	43-107	0
LCSD-081512	105%	48-123	94.0%	43-107	0
POT_BH_SW1_0_0.5_081512	102%	24-127	98.5%	34-109	0
POT_BH_SW2_0_0.5_081512	100%	24-127	96.0%	34-109	0
POT_BH_SW3_0_0.5_081512	104%	24-127	96.8%	34-109	0
POT_BH_SW3_0_0.5_081512 DL	123%	24-127	100%	34-109	0
POT_BH_SW4_0_0.5_081512	121%	24-127	102%	34-109	0
POT_BH_BOT1_1.0_081512	102%	24-127	92.0%	34-109	0
POT_BH_BOT2_1.0_081512	103%	24-127	91.8%	34-109	0

Microwave (MARS) Control Limits PCBSMM
Prep Method: SW3546
Log Number Range: 12-15417 to 12-15422

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD
Page 1 of 1

Sample ID: LCS-081512
LCS/LCSD

Lab Sample ID: LCS-081512
LIMS ID: 12-15417
Matrix: Soil
Data Release Authorized: MW
Reported: 08/17/12

QC Report No: VF99-Port of Tacoma
Project: Brown & Haley Bldg-Soil Excavation

Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 08/15/12

Date Analyzed LCS: 08/16/12 15:42
LCSD: 08/16/12 16:03
Instrument/Analyst LCS: ECD7/JGR
LCSD: ECD7/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount LCS: 5.00 g-dry-wt
LCSD: 5.00 g-dry-wt
Final Extract Volume LCS: 2.50 mL
LCSD: 2.50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00
Silica Gel: No

Percent Moisture: NA

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Aroclor 1016	204	252	81.0%	243	252	96.4%	17.4%
Aroclor 1260	225	252	89.3%	264	252	105%	16.0%

PCB Surrogate Recovery

	LCS	LCSD
Decachlorobiphenyl	93.2%	105%
Tetrachlorometaxylene	81.0%	94.0%

Results reported in µg/kg (ppb)
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD
Extraction Method: SW3546
Page 1 of 1

Sample ID: MB-081512
METHOD BLANK

Lab Sample ID: MB-081512
LIMS ID: 12-15417
Matrix: Soil
Data Release Authorized:
Reported: 08/17/12

QC Report No: VF99-Port of Tacoma
Project: Brown & Haley Bldg-Soil Excavation

Date Sampled: NA
Date Received: NA

Date Extracted: 08/15/12
Date Analyzed: 08/16/12 15:21
Instrument/Analyst: ECD7/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 5.00 g
Final Extract Volume: 2.50 mL
Dilution Factor: 1.00
Silica Gel: No

Percent Moisture: NA

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	10	< 10 U
53469-21-9	Aroclor 1242	10	< 10 U
12672-29-6	Aroclor 1248	10	< 10 U
11097-69-1	Aroclor 1254	10	< 10 U
11096-82-5	Aroclor 1260	10	< 10 U
11104-28-2	Aroclor 1221	10	< 10 U
11141-16-5	Aroclor 1232	10	< 10 U
37324-23-5	Aroclor 1262	10	< 10 U
11100-14-4	Aroclor 1268	10	< 10 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	107%
Tetrachlorometaxylene	91.5%

Analytical Resources, Incorporated
Analytical Chemists and Consultants

August 23, 2012

Stacy Munson
Pioneer Tech. Corp.
5205 Corporate Ctr. Ct. SE, Ste. A
Olympia, WA 98503-5901

RE: Project: Brown and Haley Bldg - Soil Excavation
ARI Job No.; VG69

Dear Stacy:

Please find enclosed the original Chain-of-Custody record (COC), sample receipt documentation, and final results for samples from the project referenced above. Analytical Resources, Inc. (ARI) accepted one soil sample on August 22, 2012. There were no discrepancies in the paperwork. For further details regarding sample receipt, please refer to the enclosed Cooler Receipt Form.

The sample was analyzed for PCBs, as requested on the COC.

The analysis proceeded without incident of note.

An electronic copy of this report and all associated raw data will remain on file at ARI. If you have any questions or require further information, please contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Kelly Bottem
Client Services Manager
206/695-6211
kellyb@arilabs.com

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: VG69	Turn-around Requested: ☆Rush 24 Hr.☆	Page: 1 of 1	
ARI Client Company: Port of Tacoma	Phone: 253-593-4563	Date: 8/21/12	Ice Present? Y
Client Contact: Bill Evans		No. of Coolers: 1	Cooler Temps: 2.3
Client Project Name: Brown + Haley Bldg - Soil Excavation			
Client Project #:	Samplers: Stacy Munson		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: 8082 PCBs	Notes/Comments
PoT_BH_SW3_I.D_082112	8/21/12	2:45p	Soil	1	X	

Comments/Special Instructions

Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
Printed Name: Stacy Munson	Printed Name: Bill Evans	Printed Name: Kaitlin Orcutt	Printed Name: Chris Atwell
Company: Pioneer Technologies Corp	Company: Port of Tacoma	Company: Port of Tacoma	Company: ARI
Date & Time: 8/21/12 7:15	Date & Time: 8/21/12 3:15	Date & Time: 10/22/12 10:50am	Date & Time: 8/22/12 1047

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Port of Tacoma Project Name: Brown + Haley Bldg - Soil Excavation

COC No(s): _____ (NA) Delivered by: Fed-Ex UPS (Courier) Hand Delivered Other: _____

Assigned ARI Job No: VG69 Tracking No: _____ (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) 23		
If cooler temperature is out of compliance fill out form 00070F	Temp Gun ID#: 90941619	

Cooler Accepted by: JM (for CA) Date: 8/22/12 Time: 1047

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
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: _____

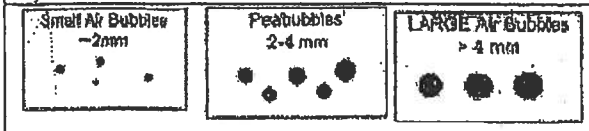
Samples Logged by: JM Date: 8/22/12 Time: 1203

***** 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"

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: VG69
Client: Port of Tacoma
Project Event: N/A
Project Name: Brown & Haley Bldg -Soil Excavation

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	POT_BH_SW3_1.0_082112	VG69A	12-15867	Soil	08/21/12 14:45	08/22/12 10:47

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD
Extraction Method: SW3546

Sample ID: POT_BH_SW3_1.0_082112
SAMPLE

Lab Sample ID: VG69A
LIMS ID: 12-15867
Matrix: Soil
Data Release Authorized: VD
Reported: 08/23/12

QC Report No: VG69-Port of Tacoma
Project: Brown & Haley Bldg -Soil Excavation

Date Sampled: 08/21/12
Date Received: 08/22/12

Date Extracted: 08/22/12
Date Analyzed: 08/23/12 09:13
Instrument/Analyst: ECD5/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 5.87 g-dry-wt
Final Extract Volume: 2.50 mL
Dilution Factor: 1.00
Silica Gel: No

Percent Moisture: 3.7%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	8.5	< 8.5 U
53469-21-9	Aroclor 1242	8.5	< 8.5 U
12672-29-6	Aroclor 1248	170	< 170 Y
11097-69-1	**Aroclor 1254**	**8.5**	**1,100 E**
11096-82-5	Aroclor 1260	110	< 110 Y
11104-28-2	Aroclor 1221	8.5	< 8.5 U
11141-16-5	Aroclor 1232	8.5	< 8.5 U
37324-23-5	Aroclor 1262	8.5	< 8.5 U
11100-14-4	Aroclor 1268	8.5	< 8.5 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery	
Decachlorobiphenyl	75.5%
Tetrachlorometaxylene	82.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD
Extraction Method: SW3546
Page 1 of 1

Sample ID: POT_BH_SW3_1.0_082112
DILUTION

Lab Sample ID: VG69A
LIMS ID: 12-15867
Matrix: Soil
Data Release Authorized: MW
Reported: 08/23/12

QC Report No: VG69-Port of Tacoma
Project: Brown & Haley Bldg -Soil Excavation

Date Sampled: 08/21/12
Date Received: 08/22/12

Date Extracted: 08/22/12
Date Analyzed: 08/23/12 09:51
Instrument/Analyst: ECD5/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 5.87 g-dry-wt
Final Extract Volume: 2.50 mL
Dilution Factor: 10.0
Silica Gel: No

Percent Moisture: 3.7%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	85	< 85 U
53469-21-9	Aroclor 1242	85	< 85 U
12672-29-6	Aroclor 1248	430	< 430 Y
11097-69-1	**Aroclor 1254**	**85**	**1,600**
11096-82-5	Aroclor 1260	170	< 170 Y
11104-28-2	Aroclor 1221	85	< 85 U
11141-16-5	Aroclor 1232	85	< 85 U
37324-23-5	Aroclor 1262	85	< 85 U
11100-14-4	Aroclor 1268	85	< 85 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	98.0%
Tetrachlorometaxylene	91.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD
Extraction Method: SW3546
Page 1 of 1

Sample ID: MB-082212
METHOD BLANK

Lab Sample ID: MB-082212
LIMS ID: 12-15867
Matrix: Soil
Data Release Authorized:
Reported: 08/23/12

QC Report No: VG69-Port of Tacoma
Project: Brown & Haley Bldg -Soil Excavation
Date Sampled: NA
Date Received: NA

Date Extracted: 08/22/12
Date Analyzed: 08/23/12 08:35
Instrument/Analyst: ECD5/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 5.00 g
Final Extract Volume: 2.50 mL
Dilution Factor: 1.00
Silica Gel: No

Percent Moisture: NA

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	10	< 10 U
53469-21-9	Aroclor 1242	10	< 10 U
12672-29-6	Aroclor 1248	10	< 10 U
11097-69-1	Aroclor 1254	10	< 10 U
11096-82-5	Aroclor 1260	10	< 10 U
11104-28-2	Aroclor 1221	10	< 10 U
11141-16-5	Aroclor 1232	10	< 10 U
37324-23-5	Aroclor 1262	10	< 10 U
11100-14-4	Aroclor 1268	10	< 10 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	83.2%
Tetrachlorometaxylene	80.2%

ANALYTICAL RESOURCES INCORPORATED

SW8082/PCB SOIL/SEDIMENT SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: VG69-Port of Tacoma
Project: Brown & Haley Bldg -Soil Excavation

Client ID	DCBP % REC	DCBP LCL-UCL	TCMX % REC	TCMX LCL-UCL	TOT OUT
MB-082212	83.2%	48-123	80.2%	43-107	0
LCS-082212	82.8%	48-123	79.2%	43-107	0
POT_BH_SW3_1.0_082112	75.5%	24-127	82.0%	34-109	0
POT_BH_SW3_1.0_082112 DL	98.0%	24-127	91.0%	34-109	0

Microwave (MARS) Control Limits PCBSMM
Prep Method: SW3546
Log Number Range: 12-15867 to 12-15867

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD

Sample ID: LCS-082212
LAB CONTROL

Lab Sample ID: LCS-082212
LIMS ID: 12-15867
Matrix: Soil
Data Release Authorized: VB
Reported: 08/23/12

QC Report No: VG69-Port of Tacoma
Project: Brown & Haley Bldg -Soil Excavation
Date Sampled: NA
Date Received: NA

Date Extracted: 08/22/12
Date Analyzed: 08/23/12 08:54
Instrument/Analyst: ECD5/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 5.00 g-dry-wt
Final Extract Volume: 2.50 mL
Dilution Factor: 1.00
Silica Gel: No

Percent Moisture: NA

Analyte	Lab Control	Spike Added	Recovery
Aroclor 1016	211	252	83.7%
Aroclor 1260	218	252	86.5%

PCB Surrogate Recovery

Decachlorobiphenyl	82.8%
Tetrachlorometaxylene	79.2%

Results reported in µg/kg (ppb)

Analytical Resources, Incorporated
Analytical Chemists and Consultants

August 30, 2012

Stacy Munson
Pioneer Tech. Corp.
5205 Corporate Ctr. Ct. SE, Ste. A
Olympia, WA 98503-5901

RE: Project: Brown and Haley Bldg – Excavation Round 3
ARI Job No.VH30

Dear Stacy:

Please find enclosed the original Chain-of-Custody record (COC), sample receipt documentation, and final results for samples from the project referenced above. Analytical Resources, Inc. (ARI) accepted two soil samples on August 28, 2012. There were no discrepancies in the paperwork. For further details regarding sample receipt, please refer to the enclosed Cooler Receipt Form. One sample was placed on hold pending further instructions.

The sample was analyzed for PCBs, as requested on the COC.

The analysis proceeded without incident of note.

An electronic copy of this report and all associated raw data will remain on file at ARI. If you have any questions or require further information, please contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Kelly Bottem
Client Services Manager
206/695-6211
kellyb@arilabs.com

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: VH30	Turn-around Requested: 24 hour	Page: 1 of 1	
ARI Client Company: Port of Tacoma	Phone: 253-359-4563	Date: 8/28/12	Ice Present?
Client Contact: Bill Evans		No. of Coolers:	Cooler Temps:
Client Project Name: Brown + Haley Bldg - Excavation Round 3			
Client Project #:	Samplers: Stacy Munson		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

Sample ID	Date	Time	Matrix	No Containers	Analysis Requested: 8082 PCBs	Notes/Comments
POT_BH_SW3_0_1.0_082812	8/28/12	1100 p	Soil	1	X	Run
POT_BH_SW3_0.5_1.0_082812	8/28/12	1115 p	Soil	1	X	HOLD

Comments/Special Instructions	Relinquished by (Signature)	Received by (Signature)	Relinquished by (Signature)	Received by (Signature)
Hold samples marked "Hold" for potential future analysis	Printed Name: Stacy Munson	Printed Name: Jennifer Mills	Printed Name.	Printed Name
	Company: Pioneer Technologies Corp	Company: ARI	Company	Company
	Date & Time: 8/28/12 1310	Date & Time: 8/28/12 1340	Date & Time	Date & Time

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client Port of Tacoma

COC No(s) _____ (NA)

Assigned ARI Job No ~~VH29~~ VH30

Project Name Brown & Haley Bldg - Excavation Round 3

Delivered by Fed-Ex UPS (Courier) Hand Delivered Other _____

Tracking No _____ (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) 4.8		
If cooler temperature is out of compliance fill out form 00070F	Temp Gun ID#	90877952

Cooler Accepted by JM Date 8/28/12 Time 1340

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
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: _____

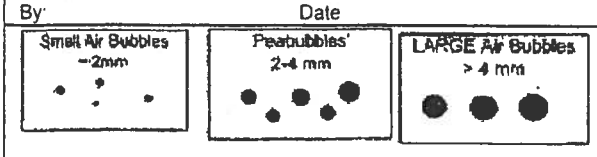
Samples Logged by AV Date: 8/28/12 Time 1440

*** 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"

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: VH30
Client: Port of Tacoma
Project Event: N/A
Project Name: Brown & Haley Bldg-Excavation Round

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	POT_BH_SW3_0_1.0_082812	VH30A	12-16314	Soil	08/28/12 13:00	08/28/12 13:40
2.	POT_BH_SW3_0.5_1.0_08281	VH30B	12-16315	Soil	08/28/12 13:15	08/28/12 13:40

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD
Extraction Method: SW3550C
Page 1 of 1

Sample ID: POT_BH_SW3_0_1.0_082812
SAMPLE

Lab Sample ID: VH30A
LIMS ID: 12-16314
Matrix: Soil
Data Release Authorized:
Reported: 08/29/12

QC Report No: VH30-Port of Tacoma
Project: Brown & Haley Bldg-Excavation Round

Date Sampled: 08/28/12
Date Received: 08/28/12

Date Extracted: 08/29/12
Date Analyzed: 08/29/12 12:45
Instrument/Analyst: ECD5/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 6.06 g-dry-wt
Final Extract Volume: 2.50 mL
Dilution Factor: 5.00
Silica Gel: No

Percent Moisture: 3.4%

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	41	< 41 U
53469-21-9	Aroclor 1242	41	< 41 U
12672-29-6	Aroclor 1248	52	< 52 Y
11097-69-1	**Aroclor 1254**	**41**	**290**
11096-82-5	Aroclor 1260	52	< 52 Y
11104-28-2	Aroclor 1221	41	< 41 U
11141-16-5	Aroclor 1232	41	< 41 U
37324-23-5	Aroclor 1262	41	< 41 U
11100-14-4	Aroclor 1268	41	< 41 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	99.5%
Tetrachlorometaxylene	97.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD
Extraction Method: SW3550C
Page 1 of 1

Sample ID: MB-082912
METHOD BLANK

Lab Sample ID: MB-082912
LIMS ID: 12-16314
Matrix: Soil
Data Release Authorized: MW
Reported: 08/30/12

QC Report No: VH30-Port of Tacoma
Project: Brown & Haley Bldg-Excavation Round
Date Sampled: NA
Date Received: NA

Date Extracted: 08/29/12
Date Analyzed: 08/29/12 13:42
Instrument/Analyst: ECD5/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount: 5.00 g
Final Extract Volume: 2.50 mL
Dilution Factor: 1.00
Silica Gel: No
Percent Moisture: NA

CAS Number	Analyte	RL	Result
12674-11-2	Aroclor 1016	10	< 10 U
53469-21-9	Aroclor 1242	10	< 10 U
12672-29-6	Aroclor 1248	10	< 10 U
11097-69-1	Aroclor 1254	10	< 10 U
11096-82-5	Aroclor 1260	10	< 10 U
11104-28-2	Aroclor 1221	10	< 10 U
11141-16-5	Aroclor 1232	10	< 10 U
37324-23-5	Aroclor 1262	10	< 10 U
11100-14-4	Aroclor 1268	10	< 10 U

Reported in µg/kg (ppb)

PCB Surrogate Recovery

Decachlorobiphenyl	83.8%
Tetrachlorometaxylene	77.2%

ANALYTICAL RESOURCES INCORPORATED

SW8082/PCB SOIL/SEDIMENT SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: VH30-Port of Tacoma
Project: Brown & Haley Bldg-Excavation Round

Client ID	DCBP % REC	DCBP LCL-UCL	TCMX % REC	TCMX LCL-UCL	TOT OUT
MB-082912	83.8%	49-126	77.2%	53-108	0
LCS-082912	85.2%	49-126	83.8%	53-108	0
LCSD-082912	84.2%	49-126	82.2%	53-108	0
POT_BH_SW3_0_1.0_082812	99.5%	31-140	97.6%	39-122	0

Standard Sonication Control Limits
Prep Method: SW3550C
Log Number Range: 12-16314 to 12-16314

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PSDDA PCB by GC/ECD
Page 1 of 1

Sample ID: LCS-082912
LCS/LCSD

Lab Sample ID: LCS-082912
LIMS ID: 12-16314
Matrix: Soil
Data Release Authorized:
Reported: 08/30/12

QC Report No: VH30-Port of Tacoma
Project: Brown & Haley Bldg-Excavation Round

Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 08/29/12

Date Analyzed LCS: 08/29/12 14:00
LCSD: 08/29/12 14:20
Instrument/Analyst LCS: ECD5/JGR
LCSD: ECD5/JGR
GPC Cleanup: No
Sulfur Cleanup: Yes
Acid Cleanup: Yes
Florisil Cleanup: No

Sample Amount LCS: 5.00 g-dry-wt
LCSD: 5.00 g-dry-wt
Final Extract Volume LCS: 2.50 mL
LCSD: 2.50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00
Silica Gel: No

Percent Moisture: NA

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Aroclor 1016	253	252	100%	228	252	90.5%	10.4%
Aroclor 1260	216	252	85.7%	211	252	83.7%	2.3%

PCB Surrogate Recovery

	LCS	LCSD
Decachlorobiphenyl	85.2%	84.2%
Tetrachlorometaxylene	83.8%	82.2%

Results reported in µg/kg (ppb)
RPD calculated using sample concentrations per SW846.