



Engineering +
Environmental

Phase II Environmental Site Assessment

Hawthorne Bridgehead
Portland, Oregon 97204

Prepared for:
Multnomah County
401 NE Dixon Avenue, Suite 274
Portland, Oregon 97227

March 2015
Project No. 15194.869, Phase 0001, Task 003

4412 SW Corbett Avenue, Portland, OR 97239
503.248.1939 Main
866.727.0140 Fax
888.248.1939 Toll-Free
www.pbseenv.com

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EXECUTIVE SUMMARY

PBS Engineering and Environmental Inc. (PBS) completed a Phase II Environmental Site Assessment (Phase II ESA) at the Hawthorne Bridgehead located at the corner of SW Naito Parkway and Jefferson Street in Portland, Oregon.

PBS performed the assessment to evaluate the following:

- Determine whether the drainpipe located east of the Jefferson Station building is connected to the municipal stormwater system or to an on-site stormwater management system.
- Test soil at the terminus of the drainpipe if stormwater is discharged to an on-site system.
- Test the soil in areas of undocumented fill to determine proper reuse or disposal options.

The proposed scope of work for the current investigation consisted of the following:

- Complete a geophysical survey of the drainpipe to determine where it discharges.
- Collect soil samples of the undocumented fill material and analyze for petroleum hydrocarbons and heavy metals.
- Interpret the findings with respect to Oregon risk-based cleanup levels for contaminated sites (Oregon Administrative Rule [OAR] 340-122).

The geophysical survey found the drainpipe located east of the Jefferson Station building discharges to the municipal stormwater system.

No evidence of soil contamination was noted during advancement of soil borings installed at the site. Although arsenic in one soil sample slightly exceeded DEQ risk-based concentrations protective of direct contact for occupational receptors, based on the depth of this sample, completion of this pathway is unlikely. In addition, the concentration of arsenic exceeded a regional background concentration for arsenic used to qualify the material as “clean fill.” As the average concentration of arsenic in soil samples (arsenic was only detected in one of five soil samples) would be below this background concentration, this material would meet the criteria of clean fill established by DEQ defined under OAR 340-093-0030(18)] which allows for the unrestricted disposal of this material with the exception of placement within or near waters of the state. As low levels of contaminants are present in one or more soil samples, prior authorization from receiving parties is recommended.

No further assessment is recommended.

1.0 INTRODUCTION

PBS Engineering and Environmental Inc. (PBS) completed a Phase II Environmental Site Assessment (Phase II ESA) at the Hawthorne Bridgehead located at the corner of SW Naito Parkway and Jefferson Street in Portland, Oregon. This report summarizes the previous work performed at the site, and presents the results of the current investigation and PBS' conclusions.

1.1 Site Description and Topography

The property (site) is listed by the Multnomah County Assessor as Tax Lots 700, 800, 1300, and 1400 in the southeast one-quarter of the northwest one-quarter of Section 3, Township 1 South, Range 1 East, of the Willamette Base and Meridian (Figure 1). The site is bounded to the north by Three World Trade Center (offices); to the east by SW Front Street; to the south by Veritable Quandary (restaurant), Jefferson Station (former PGE transformer/substation), Umpqua Bank (office building), and a parking structure; and to the west by One Main Place (offices), First and Main building (offices), and a parking structure. The site is currently vacant.

The site is located in an area of Portland that slopes gently to the northeast toward the Willamette River. The site is located at the west end of the Hawthorne Bridge, and is approximately 40 feet above mean sea level.

1.2 Site Ownership and History

The site is currently owned by Multnomah County. Historical uses of the site include multiple commercial buildings. Later uses included a scrap metal storage yard and a small machine shop. The use of the site for retail shops, boarding, and warehouses was relatively unchanged until the 1960s when structures on segments of the property were removed in order to realign the ramps from the Hawthorne Bridge, work that included the placement of imported fill to raise the grade of the ramps. The site has remained vacant since that time, but has been used as staging areas for construction on adjacent properties to the west.

2.0 PREVIOUS ENVIRONMENTAL ASSESSMENTS

2.1 Phase I & II Environmental Site Assessments (GRI, May 19, 1999)

In May of 1999, GRI completed Phase I & II Environmental Site Assessments (ESA) of the site for Multnomah County and had the following findings:

- GRI identified historical uses of the site that included a paint shop on the north portion, and historical placement of fill material as part of the construction of the Hawthorne Bridge ramp. GRI completed a limited geophysical survey of the site and identified magnetic anomalies near the east side of the Jefferson Station building, which were considered to potentially be associated with an underground storage tank (UST) within the embankment, and magnetic anomalies in the areas of the former paint shop. No tank-like anomalies were found adjacent to SW Madison Street. Soil samples were collected from two boreholes located in the area of the suspect UST, and at the location of the former paint shop. Laboratory analysis showed no gasoline- or diesel-range petroleum contaminants present above method detection limits (MDLs). Polychlorinated biphenyls (PCBs) were not detected, and metals were detected at regional background concentrations.
- GRI recommended test-pit examination of the possible UST area in the embankment east of the Jefferson Station building, and anticipation of possible contamination in debris used as fill material on the site.

2.2 Phase I Environmental Site Assessment (PBS, January 2015)

In January 2015, PBS completed a Phase I ESA of the site for Multnomah County and had the following findings:

- A former Portland General Electric (PGE) substation/transformer building was located adjacent to the south portion of the site. The areas of the site located nearest the substation/transformer building were previously occupied by commercial buildings that were removed in the 1960s when the bridge ramps were altered, and the substation ceased operation in about 1977. PBS determined that there is a potential for polychlorinated biphenyl (PCB) contamination to be present on the portion of the site located nearest to the substation/transformer building, including via a storm drain on the east side of the building.
- PBS determined that there is potential for a historical heating oil tank(s) to be present at the site associated with historical buildings that were removed in the 1960s.
- PBS stated that the site appears to contain fill material used to elevate portions of the Hawthorne Bridge ramps. The source of this fill material was not known at the time of completing the Phase I ESA.

PBS recommended that shallow soil testing be performed in the portion of the site located nearest the former PGE substation/transformer building to evaluate the potential for the presence of PCBs, and to determine proper disposal of soils during site redevelopment. Soil testing was also recommended in the areas where undocumented fill material was placed in order to determine proper reuse or disposal. A geophysical survey was recommended to determine whether the exterior drain on the east side of the Jefferson Station building connects to the municipal stormwater system or to an on-site stormwater-management feature.

3.0 REGIONAL GEOLOGY AND HYDROGEOLOGY

As summarized in PBS' Phase I ESA, the site is underlain predominantly by Urban Land, 0 to 3 percent slopes. In most areas of this complex, the soils have been graded, cut, filled, or otherwise disturbed. This complex is present on broad terraces that have long, convex slopes.

Surface soils are underlain by alternating sands, clays, and gravels deposited by the Willamette River. Sediments deposited during Pleistocene catastrophic flood events are present beneath the river sediments, with sand and gravels of the Troutdale Formation underlying the flood deposits. The sedimentary deposits together reach depths of over 700 feet in the area of the site. Columbia River Basalts are present at depth.^{1,2}

4.0 PURPOSE AND SCOPE

The purpose of the current investigation was the following:

- Determine whether the drainpipe located east of the Jefferson Station building is connected to the municipal stormwater system or to an on-site stormwater-management system.
- Test soil at the terminus of the drainpipe if stormwater is discharged to an on-site system.

¹ <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>

² Beeson, M. H., et al. (1991). [Map.] Geologic Map of the Portland Quadrangle, Multnomah and Washington Counties, Oregon, and Clark County, Washington, 1:24,000. Oregon Department of Geology and Mineral Industries (DOGAMI).

- Test the soil in areas of undocumented fill to determine proper reuse or disposal options.

The proposed scope of work for the current investigation consisted of the following:

- Complete a geophysical survey of the drainpipe to determine where it discharges.
- Collect soil samples at the terminus of the drainpipe if it discharges on site and analyze for PCBs.
- Collect soil samples of the undocumented fill material and analyze for petroleum hydrocarbons and heavy metals.
- Interpret the findings with respect to Oregon risk-based cleanup levels for contaminated sites (Oregon Administrative Rule [OAR] 340-122).

5.0 GEOPHYSICAL SURVEY

On February 18, 2015, a geophysical survey of the drainpipe was completed by Pacific Geophysics of Portland, Oregon. They used ground penetrating radar (GPR) to trace the pipe and found it discharged to the municipal stormwater system.

6.0 SOIL AND GROUNDWATER SAMPLING

Prior to beginning the drilling investigation, PBS filed a public utility notification request. A site-specific health and safety plan (HASP) was prepared and reviewed with all field personnel and subcontractors prior to beginning work.

On February 17, 2015, PBS supervised Pacific Northwest Locating Inc. of Portland, Oregon, while they conducted borehole clearance for subsurface obstructions. PBS was on site on February 20, 2015, to conduct the drilling investigation, with Pacific Soil and Water of Tigard, Oregon, providing the drilling services. A direct-push drill rig was used to advance all borings.

Five boreholes were advanced to a maximum depth of 20 feet below ground surface on the abandoned bridge approach to collect samples of the undocumented fill material. A single sample was collected from each boring.

Figure 2 shows the location of the temporary boreholes advanced at the site. In all borings, soils were logged continuously, noting grain size, color, odor, and moisture. Photoionization detector (PID) measurements were taken to assess for the presence of volatile contaminants. For the PID screening, soil was collected at approximately 5-foot intervals and placed into a disposable zipper-type plastic bag that was sealed, gently shaken, and the PID tip inserted into the bag to measure total volatile compounds.

All samples were collected in laboratory-supplied containers, placed on ice in a cooler, and transported to ESC Lab Sciences in Mt. Juliet, Tennessee, with chain-of-custody documentation. Analyses were conducted under normal turnaround time. All samples were analyzed for gasoline-range hydrocarbons by Northwest Total Petroleum Hydrocarbons (NWTPH) method NWTPH-Gx, diesel-range hydrocarbons by method NWTPH-Dx, and Resource Conservation and Recovery Act (RCRA) eight metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) by Environmental Protection Agency (EPA) Method 6020/7471. Sample SB3-8 was also analyzed for volatile organic compounds (VOCs) by EPA Method 6020.

Sampling equipment and drill rods were decontaminated between borings using a detergent wash and tap water rinse. PBS personnel wore new disposable nitrile gloves when collecting samples.

Upon completion of sampling, temporary boreholes were backfilled and sealed with bentonite to 6 inches below grade, and the surface restored to match the surrounding area.

7.0 INVESTIGATION-DERIVED WASTES

Gloves, tubing, and other disposable field supplies were disposed of as solid waste. Soil cuttings, purged groundwater, and decontamination water were placed in a 55-gallon drum that was sealed, labeled, and picked up by WasteXpress of Portland, Oregon, on February 20, 2015, for proper disposal at Hillsboro Landfill in Hillsboro, Oregon. A copy of the certificate of disposal is provided in Appendix A.

8.0 FINDINGS

8.1 Soil and Groundwater Field Observations

The surface of most of the site was covered with grass or vegetation, with the center of the site intersected by an asphalt-paved entrance ramp for the Hawthorne Bridge (closed). Generally, the subsurface across the site consisted of silt or sand to depths of approximately 18 feet bgs, below which was a stiff brown clay to the maximum depth explored of 20 feet bgs. Groundwater was not encountered in any of the boreholes. Graphic boring logs are provided in Appendix B.

The soils encountered did not exhibit evidence of staining or odor. PID readings of soil headspace ranged from zero parts per million (ppm) to 0.1 ppm.

8.2 Soil Analytical Results

Laboratory testing revealed no detectable petroleum hydrocarbons except in sample SB3-8, in which gasoline-range petroleum organics were detected at a concentration of 0.14 milligrams per kilogram (mg/kg). Additional VOC analysis for this sample indicated that VOCs were not present at concentrations above the laboratory method detection limit.

The metals arsenic, barium, chromium, lead, mercury, and/or selenium were detected in the soil samples. The detected concentrations of metals were within the range for background concentrations of metals in the Portland Basin established by the Oregon Department of Environmental Quality (DEQ), with the exception of one occurrence of arsenic at a concentration of 15 mg/kg in soil sample SB1-3 (the background concentration is 8.8 mg/kg). Table 1 summarizes the analytical results; the laboratory report is provided in Appendix C.

9.0 DATA EVALUATION AND EXPOSURE ASSESSMENT

DEQ risk-based concentrations (RBC) for potentially complete exposure pathways are provided in Table 1.

One soil sample collected from boring SB-1 at a depth of 3 feet contained arsenic at a concentration (15 mg/kg) that exceeds the RBC for direct contact for occupational receptors of 13 mg/kg. The concentration is well below the RBC for construction and excavation worker exposure scenarios. It is unlikely that an occupational worker would come into contact with this subsurface soil at 3 feet bgs, so this is not of concern unless future property use changes. The detection of arsenic in soil samples was limited to this sample, indicating that this occurrence is likely to be anomalous and not representative of overall site conditions. In addition, the detected concentration of arsenic exceeds the regional background concentration of 8.8 mg/kg established by DEQ for soil in the Portland Basin. However, as the four other samples analyzed for metals did not contain arsenic above MDLs, the average of arsenic in site soils would be well below 8.8 mg/kg, qualifying this material as suitable clean fill per DEQ's July 2014 Clean Fill guidance document. No other soil samples exceed an applicable RBC.

10.0 CONCLUSIONS AND RECOMMENDATIONS

10.1 Conclusions

The geophysical survey found the drainpipe located east of the Jefferson Station building discharges to the municipal stormwater system.

No evidence of soil contamination was noted in soil borings installed at the site. The soil samples collected at the site appear to meet the criteria for clean fill established by DEQ defined under OAR 340-093-0030(18)] which allows for the unrestricted disposal of this material with the exception of placement within or near waters of the state. As low levels of contaminants are present in one or more soil samples, prior authorization from receiving parties is recommended.

No further assessment is recommended.

11.0 LIMITATIONS

PBS has prepared this report for use by Multnomah County. This report is for the exclusive use of the client and is not to be relied upon by other parties. It is not to be photographed, photocopied, or similarly reproduced in total or in part without the express written consent of the client and PBS.

This study was limited to the tests, locations, and depths as indicated to determine the absence or presence of certain contaminants. The site as a whole may have other contamination that was not characterized by this study. The findings and conclusions of this report are not scientific certainties but, rather, probabilities based on professional judgment concerning the significance of the data gathered during the course of this investigation. PBS is not able to represent that the site or adjoining land contain no hazardous waste, oil, or other latent conditions beyond that detected or observed by PBS. Groundwater data collected from temporary borings is considered preliminary; detections may need confirmation by installation of permanent wells.

PBS Engineering and Environmental Inc.



Scott Braunsten, RG, CES
Project Geologist

3/17/15

Date



Dennis Terzian, RG
Senior Geologist

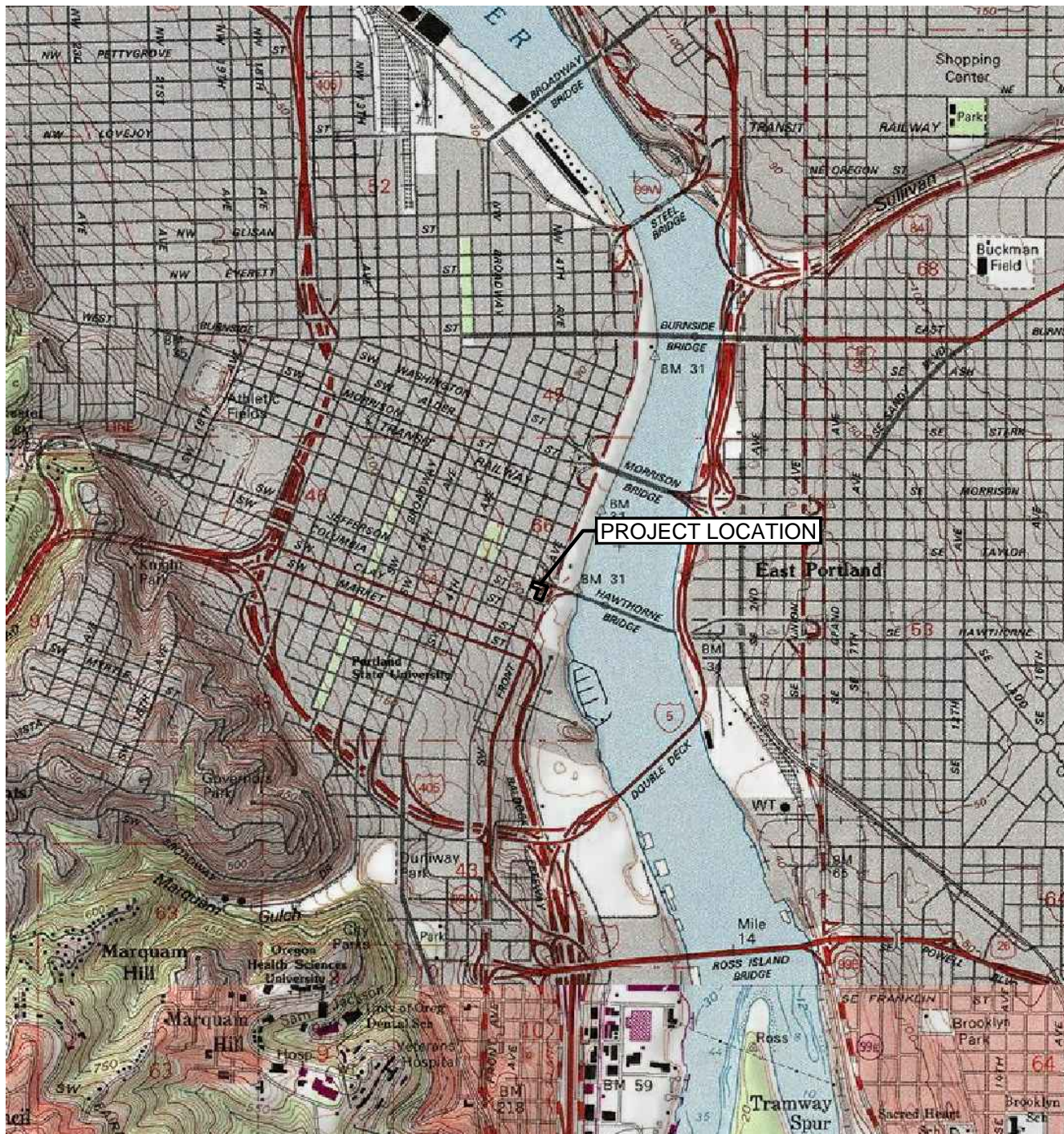
3/17/15

Date

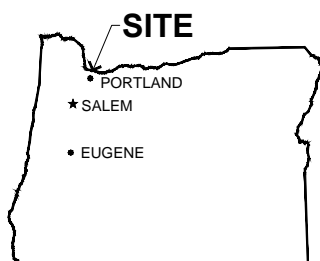


FIGURES

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SOURCE: USGS PORTLAND, OR WA QUADRANGLE 1990,



OREGON



SCALE: 1" = 2,000'

PREPARED FOR: MULTNOMAH COUNTY



PROJECT #
15194.869

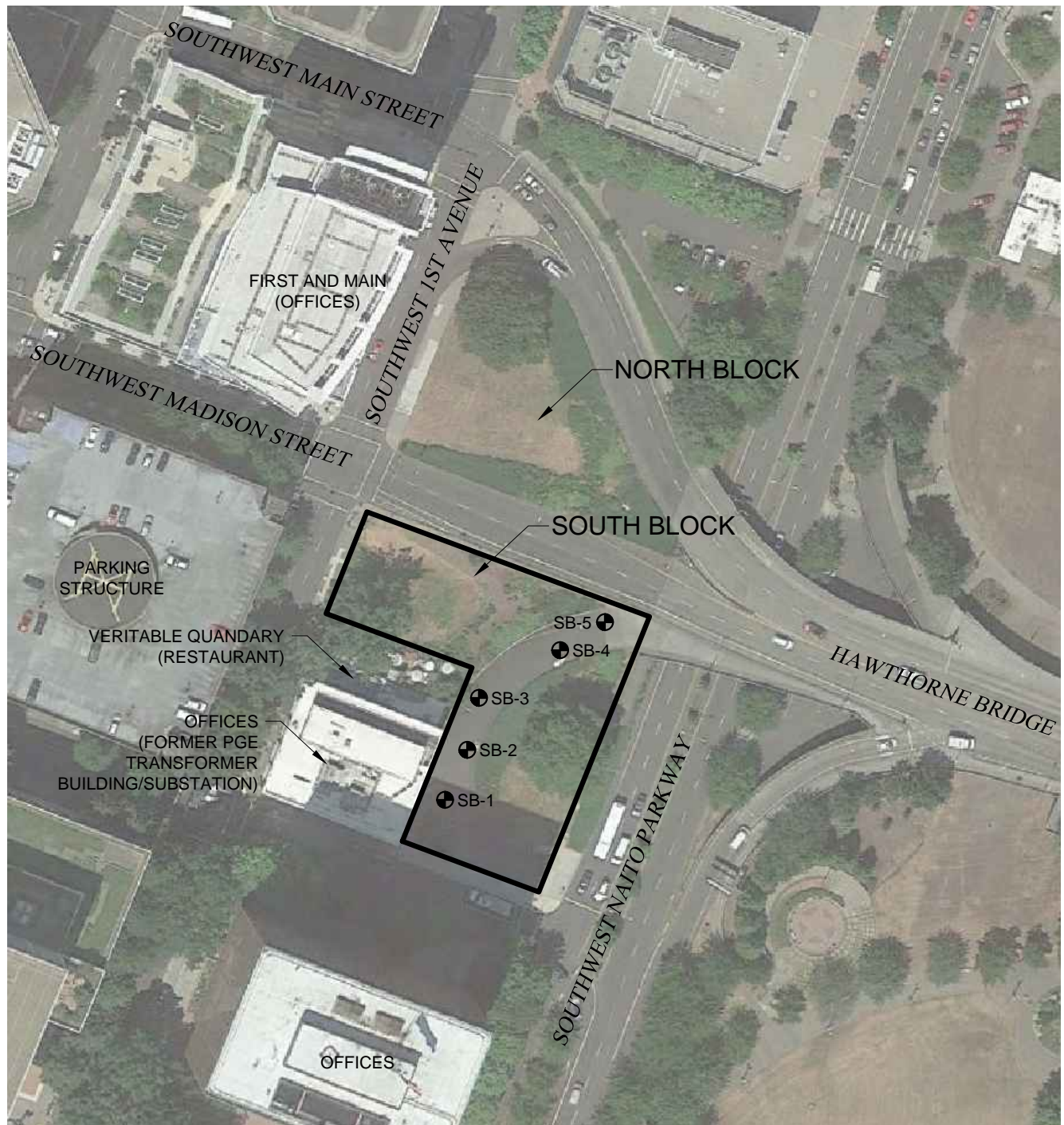
DATE
MAR 2015

VICINITY MAP
140 SOUTHWEST COLUMBIA STREET
PORTLAND, OREGON

FIGURE

1

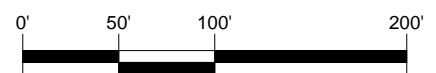
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SOURCE: © 2011 GOOGLE EARTH PRO, © 2012 GOOGLE

LEGEND

● SB-1 SOIL BORING NUMBER AND LOCATION



SCALE: 1" = 100'

PREPARED FOR: MULTNOMAH COUNTY



PROJECT #
15194.869

DATE
MAR 2015

SITE PLAN
140 SOUTHWEST COLUMBIA STREET
PORTLAND, OREGON

FIGURE

2

TABLES

Table 1 - Soil Sample Analytical Results
Hawthorne Bridgehead
Portland, Oregon

			Petroleum Hydrocarbons			VOCs	Metals					
Sample ID	Sample Date	Sampling Depth	Gasoline	Diesel	Heavy Oil	All VOCs	Mercury	Arsenic	Barium	Chromium	Lead	Selenium
		feet bgs										
SB1-3	02/20/15	3	<0.13	<5.3	<13	--	<0.026	15	300	20	18	2.8
SB2-4	02/20/15	4	<0.10	<4.2	<10	--	<0.021	<2.1	36	3.3	3.1	<2.1
SB3-8	02/20/15	8	0.14	<4.4	<11	ND	0.030	<2.2	34	3.8	3.3	<2.2
SB4-8	02/20/15	8	<0.16	<5.6	<14	--	<0.028	<2.8	86	12	5.8	<2.8
SB5-13	02/20/15	13	<0.11	<4.3	<11	--	<0.022	<2.2	36	3.6	2.9	<2.2
Oregon RBC - Ingestion, Dermal Contact, Inhalation ¹		Occupational	20,000	14,000	36,000	Varies	310	1.7	190,000	>MAX	800	NS
		Construction Worker	9,700	4,600	11,000	Varies	93	13	60,000	460,000	800	NS
		Excavation Worker	>MAX	>MAX		Varies	2,600	370	>MAX	>MAX	800	NS
Oregon RBC - Volatilization to Outdoor Air ¹		Occupational	69,000	>MAX		Varies	NV	NV	NV	NV	NV	NS
Oregon RBC - Vapor Intrusion into Buildings ¹		Occupational	>MAX	>MAX		Varies	NV	NV	NV	NV	NV	NS
Oregon RBC - Leaching to Groundwater ¹		Occupational	130	>MAX		Varies	*	*	*	*	30	NS
Regional Default Background Concentrations of Metals in Soil							0.23	8.8	790	76	79	0.71

See laboratory report for full list of analytes.

VOCs: Volatile Organic Compounds

bgs: below ground surface

mg/kg: milligrams per kilogram

Bold text indicates an exceedance of one or more of the cleanup levels.

-- : sample not tested

<: no detection of analyte above laboratory reporting limits

ND: no detection of analyte above laboratory reporting limits

*: Leaching-to-Groundwater RBCs are not provided for inorganic chemicals

NV: Compound not volatile so pathway is not valid

NS: Not set for this compound

>MAX: The constituent RBC for this pathway is greater than 100,000 mg/kg or 100,000 mg/L (MAX Value)

¹ Oregon Risk-Based Decision-Making for the Remediation of Petroleum-Contaminated Sites , Oregon DEQ September 2003, Revised RBCs June 2012

APPENDIX A

Soil Disposal Receipts

Certificate of Treatment/Disposal/Recycling

WasteXpress certifies that the items received from

MULTNOMAH COUNTY

HAWTHORNE BRIDGE

Portland, OR

On a Non-Hazardous Manifest #21512 dated **2-20-15** have been properly treated/disposed/recycled at WasteXpress' affiliated facilities in compliance with all applicable regulatory standards as set forth by the Environmental Protection Agency (EPA) and the Oregon Department of Environmental Quality (DEQ)

Dated: *March 4, 2015*

Sworn and attested by

WasteXpress Environmental Services












By *B. Lengel*

APPENDIX B

Boring Logs

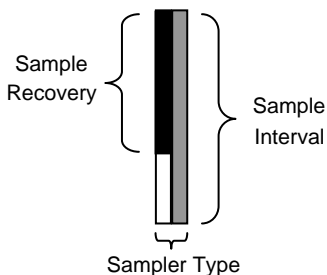
Key To Test Pit and Boring Log Symbols

SAMPLING DESCRIPTIONS

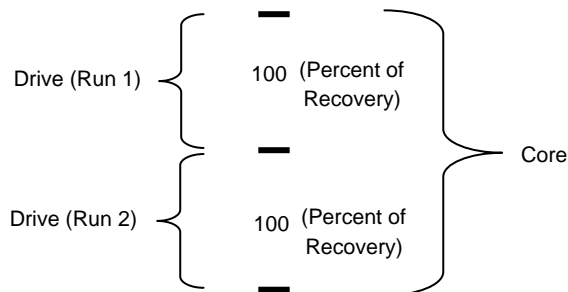
SPT Drive Sampler Standard Penetration Test ASTM D 1586	Shelby Tube Push Sampler ASTM D 1587	Specialized Drive Samplers (Details in Comments)	Grab Sample	Environmental Soil Sample	Asbestos Sample	Biosolid Sample	Screen (Water or Air Sampling)	Free Product (Hydrocarbons)	Water Level During Drilling/Excavation	Water Level After Drilling/Excavation
										

LOG GRAPHICS

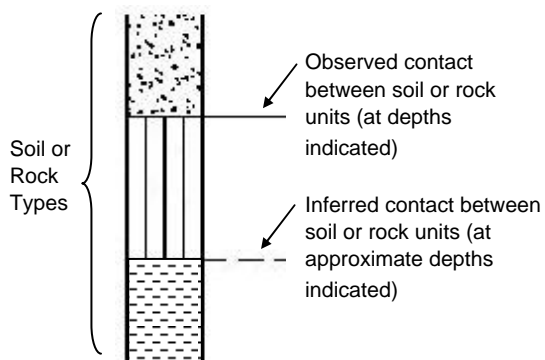
Sampling Symbols



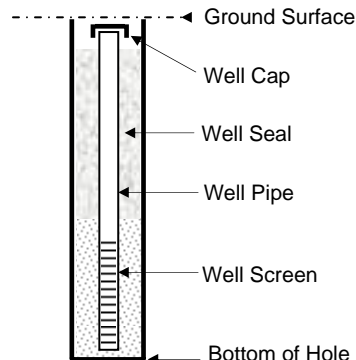
Direct Push, Geoprobe®, Sonic, Vibracore Drilling



Soil and Rock



Well Detail



ENVIRONMENTAL TESTING EXPLANATIONS

ATD	At Time of Drilling	PPM	Parts Per Million
BGS	Below Ground Surface	VOC	Volatile Organic Compounds
MSL	Mean Sea Level	ND	Not Detected
MW	Monitoring Well (Water Sampling)	NS	No Sheen
NWTPH-Gx	Gasoline-Range Petroleum Hydrocarbon Testing	SS	Slight Sheen
OD	Outside Diameter	MS	Moderate Sheen
PID	Photoionization Detector Headspace Analysis	HS	High Sheen








4412 SW Corbett Avenue
Portland, Oregon 97239
Phone: 503.248.1939
Fax: 866.727.0140

HAWTHORNE BRIDGEHEAD
PORTLAND, OREGON

BORING SB-1

PBS PROJECT NUMBER:
15194.869

BORING SB-1 LOCATION:
(See Site Plan)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND- WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0		ASPHALT						
		Loose dark brown well-graded SAND (SW); no odor; dry						
2.0		Stiff brown SILT with sand (ML); low plasticity, no odor; damp					100	
4.0				0.0	SB1-3			
6.0								
8.0		Stiff brown to gray-brown lean CLAY (CL); low plasticity, no odor; damp					100	
10.0				0.1				No groundwater observed to the depth explored
		Final depth 10.0 feet bgs; boring backfilled with hydrated bentonite chips						
12.0								
14.0								
16.0								
18.0								
20.0								

BORING METHOD: Push Probe
DRILLED BY: Pacific Soil & Water, LLC
BORING BIT DIAMETER: 2¼-inch OD

LOGGED BY: S. Braunsten
COMPLETED: 2/20/15

BORING LOG-ENV CORE 15194.869, SB1-5, 022415.GPJ DATATMPL.GDT PRINT DATE: 2/24/15RSD



4412 SW Corbett Avenue
Portland, Oregon 97239
Phone: 503.248.1939
Fax: 866.727.0140

HAWTHORNE BRIDGEHEAD
PORTLAND, OREGON

BORING SB-2

PBS PROJECT NUMBER:
15194.869

BORING SB-2 LOCATION:
(See Site Plan)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND- WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0		ASPHALT						
2.0		Loose black-brown well-graded SAND (SW); no odor; damp					60	
6.0		(grades to) Stiff brown silty SAND (SM); no odor; dry		0.0	SB2-4			
8.0		brick Stiff brown elastic SILT (MH); medium plasticity, no odor; damp					100	
10.0		Final depth 10.0 feet bgs; boring backfilled with hydrated bentonite chips		0.0				No groundwater observed to the depth explored
12.0								
14.0								
16.0								
18.0								
20.0								

BORING METHOD: Push Probe
DRILLED BY: Pacific Soil & Water, LLC
BORING BIT DIAMETER: 2¼-inch OD

LOGGED BY: S. Braunsten
COMPLETED: 2/20/15



4412 SW Corbett Avenue
Portland, Oregon 97239
Phone: 503.248.1939
Fax: 866.727.0140

HAWTHORNE BRIDGEHEAD
PORTLAND, OREGON

BORING SB-3

PBS PROJECT NUMBER:
15194.869

BORING SB-3 LOCATION:
(See Site Plan)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND- WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0		ASPHALT						
2.0		Loose black-brown SAND (SW); no odor; damp					10	
4.0		sand with approximately 1% to 5% gravel		0.0				Sand fell out of sampler
6.0								
8.0							100	
10.0		dark staining and wood fragment Stiff brown SILT (ML); low plasticity, no odor; damp		0.1	SB3-8			No groundwater observed to the depth explored
12.0		Final depth 10.0 feet bgs; boring backfilled with hydrated bentonite chips						
14.0								
16.0								
18.0								
20.0								

BORING METHOD: Push Probe
DRILLED BY: Pacific Soil & Water, LLC
BORING BIT DIAMETER: 2¼-inch OD

LOGGED BY: S. Braunsten
COMPLETED: 2/20/15




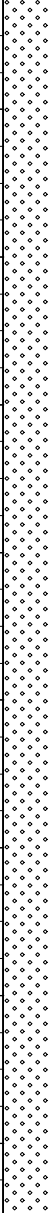


4412 SW Corbett Avenue
Portland, Oregon 97239
Phone: 503.248.1939
Fax: 866.727.0140

HAWTHORNE BRIDGEHEAD
PORTLAND, OREGON

BORING SB-4

PBS PROJECT NUMBER:
15194.869

BORING SB-4 LOCATION:
(See Site Plan)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND- WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0		ASPHALT						
2.0		Loose black-brown SAND (SW); no odor; damp sand with approximately 1% to 5% gravel		0.1			50	
4.0								
6.0								
8.0					SB4-8		80	
10.0				0.1				
12.0							60	
14.0								
16.0				0.0				
18.0		Medium stiff, gray-brown grading to brown fat CLAY (CH); medium plasticity, no odor; moist concrete piece at 17.5 feet bgs					90	
20.0		Final depth 20.0 feet bgs; boring backfilled with hydrated bentonite chips		0.1				No groundwater observed to the depth explored

BORING METHOD: Push Probe
DRILLED BY: Pacific Soil & Water, LLC
BORING BIT DIAMETER: 2¼-inch OD

LOGGED BY: S. Braunsten
COMPLETED: 2/20/15







4412 SW Corbett Avenue
Portland, Oregon 97239
Phone: 503.248.1939
Fax: 866.727.0140

HAWTHORNE BRIDGEHEAD
PORTLAND, OREGON

BORING SB-5

PBS PROJECT NUMBER:
15194.869

BORING SB-5 LOCATION:
(See Site Plan)

DEPTH FEET	GRAPHIC LOG	MATERIAL DESCRIPTION	GROUND- WATER	PID (PPM)	SAMPLE NUMBER	SAMPLE/ TEMPORARY WELL(S)	RECOVERY (%)	COMMENTS/ WELL INSTALLATION
0.0		ASPHALT						
2.0		Loose black-brown SAND (SW) with gravel; no odor; damp					40	
4.0				0.1				
6.0								
8.0							70	
10.0				0.0				
12.0					SB5-13		80	
14.0				0.0				
16.0								
18.0							70	
20.0		concrete piece at 19.0 feet bgs Medium stiff brown fat clay (CH); medium plasticity, no odor; moist		0.0				No groundwater observed to the depth explored
		Final depth 20.0 feet bgs; boring backfilled with hydrated bentonite chips						

BORING METHOD: Push Probe
DRILLED BY: Pacific Soil & Water, LLC
BORING BIT DIAMETER: 2¼-inch OD

LOGGED BY: S. Braunsten
COMPLETED: 2/20/15

APPENDIX C

Laboratory Reports
Chain-of-Custody Documentation



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Scott Braunsten
PBS Engineering & Environmental
4412 SW Corbett Ave
Portland, OR 97239

Report Summary

Thursday February 26, 2015

Report Number: L749881


Samples Received: 02/21/15

Client Project: 15194.869

Description: Hawthorne Bridgehead

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:


Jared Willis , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197,
FL - E87487, GA - 923, IN - C-IN-01, KY - 90010, KYUST - 0016,
NC - ENV375/DW21704/BIO041, ND - R-140, NJ - TN002, NJ NELAP - TN002,
SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612,
MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1,
TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

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REPORT OF ANALYSIS

February 26, 2015

Scott Braunsten
PBS Engineering & Environmental
4412 SW Corbett Ave
Portland, OR 97239

Date Received : February 21, 2015
Description : Hawthorne Bridgehead

Sample ID : SB1-3

Collected By : Scott Brunston
Collection Date : 02/20/15 09:29

ESC Sample # : L749881-01

Site ID :

Project # : 15194.869

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	75.3		%	2540 G-2011	02/25/15	1
Mercury	BDL	0.026	mg/kg	7471A	02/26/15	1
Arsenic	15.	2.6	mg/kg	6010B	02/25/15	1
Barium	300	0.66	mg/kg	6010B	02/25/15	1
Cadmium	BDL	0.66	mg/kg	6010B	02/25/15	1
Chromium	20.	1.3	mg/kg	6010B	02/25/15	1
Lead	18.	0.66	mg/kg	6010B	02/25/15	1
Selenium	2.8	2.6	mg/kg	6010B	02/25/15	1
Silver	BDL	1.3	mg/kg	6010B	02/25/15	1
Gasoline Range Organics-NWTPH	BDL	0.13	mg/kg	NWTPHGX	02/23/15	1
Surrogate Recovery						
a,a,a-Trifluorotoluene(FID)	100.		% Rec.	NWTPHGX	02/23/15	1
Diesel Range Organics (DRO)	BDL	5.3	mg/kg	NWTPHDX	02/25/15	1
Residual Range Organics (RRO)	BDL	13.	mg/kg	NWTPHDX	02/25/15	1
Surrogate Recovery						
o-Terphenyl	68.4		% Rec.	NWTPHDX	02/25/15	1

Results listed are dry weight basis.

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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February 26, 2015

Scott Braunsten
PBS Engineering & Environmental
4412 SW Corbett Ave
Portland, OR 97239

Date Received : February 21, 2015
Description : Hawthorne Bridgehead

Sample ID : SB2-4

Collected By : Scott Brunston
Collection Date : 02/20/15 09:51

ESC Sample # : L749881-02

Site ID :

Project # : 15194.869

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	94.4		%	2540 G-2011	02/25/15	1
Mercury	BDL	0.021	mg/kg	7471A	02/26/15	1
Arsenic	BDL	2.1	mg/kg	6010B	02/25/15	1
Barium	36.	0.53	mg/kg	6010B	02/25/15	1
Cadmium	BDL	0.53	mg/kg	6010B	02/25/15	1
Chromium	3.3	1.0	mg/kg	6010B	02/25/15	1
Lead	3.1	0.53	mg/kg	6010B	02/25/15	1
Selenium	BDL	2.1	mg/kg	6010B	02/25/15	1
Silver	BDL	1.0	mg/kg	6010B	02/25/15	1
Gasoline Range Organics-NWTPH	BDL	0.10	mg/kg	NWTPHGX	02/23/15	1
Surrogate Recovery						
a,a,a-Trifluorotoluene(FID)	99.6		% Rec.	NWTPHGX	02/23/15	1
Diesel Range Organics (DRO)	BDL	4.2	mg/kg	NWTPHDX	02/25/15	1
Residual Range Organics (RRO)	BDL	10.	mg/kg	NWTPHDX	02/25/15	1
Surrogate Recovery						
o-Terphenyl	90.0		% Rec.	NWTPHDX	02/25/15	1

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February 26, 2015

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PBS Engineering & Environmental
4412 SW Corbett Ave
Portland, OR 97239

Date Received : February 21, 2015
Description : Hawthorne Bridgehead

Sample ID : SB3-8

Collected By : Scott Brunston
Collection Date : 02/20/15 10:08

ESC Sample # : L749881-03

Site ID :

Project # : 15194.869

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	90.4		%	2540 G-2011	02/25/15	1
Mercury	0.030	0.022	mg/kg	7471A	02/26/15	1
Arsenic	BDL	2.2	mg/kg	6010B	02/25/15	1
Barium	34.	0.55	mg/kg	6010B	02/25/15	1
Cadmium	BDL	0.55	mg/kg	6010B	02/25/15	1
Chromium	3.8	1.1	mg/kg	6010B	02/25/15	1
Lead	3.3	0.55	mg/kg	6010B	02/25/15	1
Selenium	BDL	2.2	mg/kg	6010B	02/25/15	1
Silver	BDL	1.1	mg/kg	6010B	02/25/15	1
Gasoline Range Organics-NWTPH	0.14	0.12	mg/kg	NWTPHGX	02/23/15	1.09
Surrogate Recovery						
a,a,a-Trifluorotoluene(FID)	99.5		% Rec.	NWTPHGX	02/23/15	1
Diesel Range Organics (DRO)	BDL	4.4	mg/kg	NWTPHDX	02/25/15	1
Residual Range Organics (RRO)	BDL	11.	mg/kg	NWTPHDX	02/25/15	1
Surrogate Recovery						
o-Terphenyl	89.4		% Rec.	NWTPHDX	02/25/15	1

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BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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February 26, 2015

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Portland, OR 97239

Date Received : February 21, 2015
Description : Hawthorne Bridgehead

Sample ID : SB4-8

Collected By : Scott Brunston
Collection Date : 02/20/15 10:28

ESC Sample # : L749881-04

Site ID :

Project # : 15194.869

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	70.9		%	2540 G-2011	02/25/15	1
Mercury	BDL	0.028	mg/kg	7471A	02/26/15	1
Arsenic	BDL	2.8	mg/kg	6010B	02/25/15	1
Barium	86.	0.70	mg/kg	6010B	02/25/15	1
Cadmium	BDL	0.70	mg/kg	6010B	02/25/15	1
Chromium	12.	1.4	mg/kg	6010B	02/25/15	1
Lead	5.8	0.70	mg/kg	6010B	02/25/15	1
Selenium	BDL	2.8	mg/kg	6010B	02/25/15	1
Silver	BDL	1.4	mg/kg	6010B	02/25/15	1
Gasoline Range Organics-NWTPH	BDL	0.16	mg/kg	NWTPHGX	02/23/15	1.1
Surrogate Recovery						
a,a,a-Trifluorotoluene(FID)	99.1		% Rec.	NWTPHGX	02/23/15	1
Diesel Range Organics (DRO)	BDL	5.6	mg/kg	NWTPHDX	02/25/15	1
Residual Range Organics (RRO)	BDL	14.	mg/kg	NWTPHDX	02/25/15	1
Surrogate Recovery						
o-Terphenyl	81.2		% Rec.	NWTPHDX	02/25/15	1

Results listed are dry weight basis.

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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Date Received : February 21, 2015
Description : Hawthorne Bridgehead
Sample ID : SB5-13
Collected By : Scott Brunston
Collection Date : 02/20/15 11:05

ESC Sample # : L749881-05

Site ID :

Project # : 15194.869

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	92.9		%	2540 G-2011	02/25/15	1
Mercury	BDL	0.022	mg/kg	7471A	02/26/15	1
Arsenic	BDL	2.2	mg/kg	6010B	02/25/15	1
Barium	36.	0.54	mg/kg	6010B	02/25/15	1
Cadmium	BDL	0.54	mg/kg	6010B	02/25/15	1
Chromium	3.6	1.1	mg/kg	6010B	02/25/15	1
Lead	2.9	0.54	mg/kg	6010B	02/25/15	1
Selenium	BDL	2.2	mg/kg	6010B	02/25/15	1
Silver	BDL	1.1	mg/kg	6010B	02/25/15	1
Gasoline Range Organics-NWTPH	BDL	0.11	mg/kg	NWTPHGX	02/23/15	1
Surrogate Recovery						
a,a,a-Trifluorotoluene(FID)	99.6		% Rec.	NWTPHGX	02/23/15	1
Diesel Range Organics (DRO)	BDL	4.3	mg/kg	NWTPHDX	02/25/15	1
Residual Range Organics (RRO)	BDL	11.	mg/kg	NWTPHDX	02/25/15	1
Surrogate Recovery						
o-Terphenyl	83.0		% Rec.	NWTPHDX	02/25/15	1

Results listed are dry weight basis.

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

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Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L749881-02	WG771788	SAMP	Residual Range Organics (RRO)	R3021787	J6

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods, it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.

Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Difference.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromatography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.

TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.



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Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
Gasoline Range Organics-NWTPH	< .1	mg/kg			WG771640	02/23/15 08:42
a,a,a-Trifluorotoluene(FID)		% Rec.	101.0	59-128	WG771640	02/23/15 08:42
Total Solids	< .1	%			WG771930	02/25/15 07:17
Total Solids	< .1	%			WG771932	02/25/15 08:26
Diesel Range Organics (DRO)	< 4	mg/kg			WG771788	02/25/15 18:20
Residual Range Organics (RRO)	< 10	mg/kg			WG771788	02/25/15 18:20
o-Terphenyl		% Rec.	78.60	50-150	WG771788	02/25/15 18:20
Arsenic	< 2	mg/kg			WG771836	02/25/15 16:07
Barium	< .5	mg/kg			WG771836	02/25/15 16:07
Cadmium	< .5	mg/kg			WG771836	02/25/15 16:07
Chromium	< 1	mg/kg			WG771836	02/25/15 16:07
Lead	< .5	mg/kg			WG771836	02/25/15 16:07
Selenium	< 2	mg/kg			WG771836	02/25/15 16:07
Silver	< 1	mg/kg			WG771836	02/25/15 16:07
Mercury	< .02	mg/kg			WG771853	02/26/15 09:02

Analyte	Units	Result	Duplicate		Limit	Ref Samp	Batch
			Duplicate	RPD			
Total Solids	%	81.7	80.9	0.954	5	L749866-08	WG771930
Total Solids	%	76.4	75.9	0.621	5	L749889-05	WG771932

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Gasoline Range Organics-NWTPH	mg/kg	5.5	5.18	94.2	62.2-127	WG771640
a,a,a-Trifluorotoluene(FID)				110.0	59-128	WG771640
Total Solids	%	50	50.0	100.	85-115	WG771930
Total Solids	%	50	50.0	100.	85-115	WG771932
Diesel Range Organics (DRO)	mg/kg	30	25.9	86.2	50-150	WG771788
Residual Range Organics (RRO)	mg/kg	30	19.5	65.1	50-150	WG771788
o-Terphenyl				91.50	50-150	WG771788
Arsenic	mg/kg	100	103.	103.	80-120	WG771836
Barium	mg/kg	100	106.	106.	80-120	WG771836
Cadmium	mg/kg	100	105.	105.	80-120	WG771836
Chromium	mg/kg	100	104.	104.	80-120	WG771836
Lead	mg/kg	100	107.	107.	80-120	WG771836
Selenium	mg/kg	100	105.	105.	80-120	WG771836
Silver	mg/kg	100	106.	106.	80-120	WG771836

* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



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Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Mercury	mg/kg	.458	0.487	106.	80-120	WG771853

Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
Gasoline Range Organics-NWTPH	mg/kg	5.17	5.18	94.0	62.2-127	0.200	20	WG771640
a,a,a-Trifluorotoluene(FID)				110.0	59-128			WG771640
Diesel Range Organics (DRO)	mg/kg	24.1	25.9	80.0	50-150	7.05	20	WG771788
Residual Range Organics (RRO)	mg/kg	18.2	19.5	60.0	50-150	7.31	20	WG771788
o-Terphenyl				87.00	50-150			WG771788
Arsenic	mg/kg	96.9	103.	97.0	80-120	6.00	20	WG771836
Barium	mg/kg	99.5	106.	100.	80-120	6.00	20	WG771836
Cadmium	mg/kg	99.1	105.	99.0	80-120	6.00	20	WG771836
Chromium	mg/kg	98.4	104.	98.0	80-120	6.00	20	WG771836
Lead	mg/kg	101.	107.	101.	80-120	6.00	20	WG771836
Selenium	mg/kg	99.9	105.	100.	80-120	5.00	20	WG771836
Silver	mg/kg	100.	106.	100.	80-120	6.00	20	WG771836
Mercury	mg/kg	0.493	0.487	108.	80-120	1.00	20	WG771853

Analyte	Units	Matrix Spike			% Rec	Limit	Ref Samp	Batch
		MS Res	Ref Res	TV				
Gasoline Range Organics-NWTPH	mg/kg	4.51	0.0141	5.5	82.0	20.5-134	L749881-05	WG771640
a,a,a-Trifluorotoluene(FID)					108.0	59-128		WG771640
Diesel Range Organics (DRO)	mg/kg	21.4	0.0	30	71.0	50-150	L749881-02	WG771788
Residual Range Organics (RRO)	mg/kg	15.0	0.0	30	50.0*	50-150	L749881-02	WG771788
o-Terphenyl					77.80	50-150		WG771788
Arsenic	mg/kg	98.4	0.628	100	98.0	75-125	L749907-02	WG771836
Barium	mg/kg	112.	13.0	100	99.0	75-125	L749907-02	WG771836
Cadmium	mg/kg	101.	-0.00665	100	100.	75-125	L749907-02	WG771836
Chromium	mg/kg	99.8	1.27	100	99.0	75-125	L749907-02	WG771836
Lead	mg/kg	103.	0.553	100	100.	75-125	L749907-02	WG771836
Selenium	mg/kg	96.3	0.556	100	96.0	75-125	L749907-02	WG771836
Silver	mg/kg	102.	0.0243	100	100.	75-125	L749907-02	WG771836
Mercury	mg/kg	0.562	0.00650	.458	120.	75-125	L749881-01	WG771853

Analyte	Units	Matrix Spike Duplicate			Limit	RPD	Limit	Ref Samp	Batch
		MSD	Ref	%Rec					
Gasoline Range Organics-NWTPH	mg/kg	4.29	4.51	77.8	20.5-134	4.96	23.8	L749881-05	WG771640
a,a,a-Trifluorotoluene(FID)				108.0	59-128				WG771640
Diesel Range Organics (DRO)	mg/kg	24.6	21.4	81.8	50-150	13.8	20	L749881-02	WG771788
Residual Range Organics (RRO)	mg/kg	16.4	15.0	54.6	50-150	9.19	20	L749881-02	WG771788
o-Terphenyl				85.70	50-150				WG771788

* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



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Est. 1970

February 26, 2015

Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
Arsenic	mg/kg	97.2	98.4	96.6	75-125	1.00	20	L749907-02	WG771836
Barium	mg/kg	111.	112.	97.9	75-125	1.00	20	L749907-02	WG771836
Cadmium	mg/kg	99.3	101.	99.3	75-125	1.00	20	L749907-02	WG771836
Chromium	mg/kg	98.7	99.8	97.4	75-125	1.00	20	L749907-02	WG771836
Lead	mg/kg	101.	103.	101.	75-125	2.00	20	L749907-02	WG771836
Selenium	mg/kg	97.8	96.3	97.2	75-125	2.00	20	L749907-02	WG771836
Silver	mg/kg	100.	102.	100.	75-125	2.00	20	L749907-02	WG771836

Mercury	mg/kg	0.545	0.562	118.	75-125	3.00	20	L749881-01	WG771853
---------	-------	-------	-------	------	--------	------	----	------------	----------

Post Spike

Serial Dilution

Batch number /Run number / Sample number cross reference

WG771640: R3021286: L749881-01 02 03 04 05
WG771930: R3021561: L749881-01 02
WG771932: R3021578: L749881-03 04 05
WG771836: R3021786: L749881-01 02 03 04 05
WG771788: R3021787: L749881-01 02 03 04 05
WG771853: R3021932: L749881-01 02 03 04 05

* * Calculations are performed prior to rounding of reported values.

* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



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PBS Engineering & Environmental
Scott Braunsten
4412 SW Corbett Ave

Portland, OR 97239

Quality Assurance Report
Level II

L749881

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

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Est. 1970

February 26, 2015

The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.

PBS Engineering & Environmental

4412 SW Corbett Ave
Portland, OR 97239

Billing Information:

Accounts Payable
4412 SW Corbett Ave
Portland, OR 97239

Report to:
Scott Braunsten

Email To: Scott.Braunsten@pbsenv.com

Project
Description: **Hawthorne Bridgehead**

City/State
Collected:

Phone: **503-248-1939**
Fax: **503-248-0223**

Client Project #
15194.869

Lab Project #
PBSENGPOR-15194869

Collected by (print):
Scott Braunsten

Site/Facility ID #

P.O. #

Collected by (signature):
[Signature]

Rush? (Lab MUST Be Notified)

Same Day200%
Next Day100%
Two Day50%
Three Day25%

Date Results Needed

Email? ☐ No ☒ Yes

FAX? ☐ No ☐ Yes

No.
of
Cntrs

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time															
SB1-3	Grab	SS	3'	2/20/15	0929	6	X	X	X	X										
SB2-4	Grab	SS	4'	2/20/15	0951	6	X	X	X	X										
SB3-8	Grab	SS	8'	2/20/15	1008	6	X	X	X	X										
SB4-8	Grab	SS	8'	2/20/15	1028	6	X	X	X	X										
SB5-13	Grab	SS	13'	2/20/15	1105	6	X	X	X	X										
		SS				6														
		SS				6														
		SS				6														
		SS				6														
		SS				6														
		SS				6														

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other

Remarks: PCBs, PAHSIM, VOCs, and TCLP Metals will be on HOLD pending other results.

pH _____ Temp _____

Flow _____ Other _____

6272 8610 6440

Relinquished by: (Signature)
[Signature]

Date: 2/20/15

Time: 1200

Received by: (Signature)
[Signature]

Samples returned via: ☐ UPS

☒ FedEx ☐ Courier ☐ _____

Condition: (lab use only)

Relinquished by: (Signature)
[Signature]

Date:

Time:

Received by: (Signature)
[Signature]

Temp: _____ °C Bottles Received:

3.1 30

COC Seal Intact: ☐ Y ☐ N ☐ NA

Relinquished by: (Signature)
[Signature]

Date:

Time:

Received for lab by: (Signature)
[Signature]

Date: 2/21/15

Time: 1045

pH Checked:

NCF:

Analysis / Container / Preservative

HOLD for follow-ups 4ozClr-NoPres

NWTPHDX / TS 4ozClr-NoPres

NWTPHGX 40ml/NaHSO4/Syr/MeOH

RCRA8 Metals 4ozClr-NoPres

Chain of Custody Page 1 of 1



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Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859



L# L749881

H135

Acctnum: PBSENGPOR

Template: T100292

Prelogin: P499400

TSR: 358 - Jarred Willis

PB:

Shipped Via: FedEX Ground

Rem./Contaminant Sample # (lab only)



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Scott Braunsten
PBS Engineering & Environmental
4412 SW Corbett Ave
Portland, OR 97239

Report Summary

Thursday March 05, 2015

Report Number: L750535

Samples Received: 02/21/15

Client Project: 15194.869

Description: Hawthorne Bridgehead

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:


Jared Willis, ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197,
FL - E87487, GA - 923, IN - C-IN-01, KY - 90010, KYUST - 0016,
NC - ENV375/DW21704/BIO041, ND - R-140, NJ - TN002, NJ NELAP - TN002,
SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612,
MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1,
TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

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Fax (615) 758-5859

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REPORT OF ANALYSIS

March 05, 2015

Scott Braunsten
PBS Engineering & Environmental
4412 SW Corbett Ave
Portland, OR 97239

Date Received : February 21, 2015
Description : Hawthorne Bridgehead

Sample ID : SB3-8

Collected By : Scott Brunston
Collection Date : 02/20/15 10:08

ESC Sample # : L750535-01

Site ID :

Project # : 15194.869

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
Total Solids	90.4		%	2540 G-2011	02/25/15	1
Volatile Organics						
Acetone	BDL	0.055	mg/kg	8260B	03/04/15	1
Acrylonitrile	BDL	0.011	mg/kg	8260B	03/04/15	1
Benzene	BDL	0.0011	mg/kg	8260B	03/04/15	1
Bromobenzene	BDL	0.0011	mg/kg	8260B	03/04/15	1
Bromodichloromethane	BDL	0.0011	mg/kg	8260B	03/04/15	1
Bromoform	BDL	0.0011	mg/kg	8260B	03/04/15	1
Bromomethane	BDL	0.0055	mg/kg	8260B	03/04/15	1
n-Butylbenzene	BDL	0.0011	mg/kg	8260B	03/04/15	1
sec-Butylbenzene	BDL	0.0011	mg/kg	8260B	03/04/15	1
tert-Butylbenzene	BDL	0.0011	mg/kg	8260B	03/04/15	1
Carbon tetrachloride	BDL	0.0011	mg/kg	8260B	03/04/15	1
Chlorobenzene	BDL	0.0011	mg/kg	8260B	03/04/15	1
Chlorodibromomethane	BDL	0.0011	mg/kg	8260B	03/04/15	1
Chloroethane	BDL	0.0055	mg/kg	8260B	03/04/15	1
2-Chloroethyl vinyl ether	BDL	0.055	mg/kg	8260B	03/04/15	1
Chloroform	BDL	0.0055	mg/kg	8260B	03/04/15	1
Chloromethane	BDL	0.0028	mg/kg	8260B	03/04/15	1
2-Chlorotoluene	BDL	0.0011	mg/kg	8260B	03/04/15	1
4-Chlorotoluene	BDL	0.0011	mg/kg	8260B	03/04/15	1
1,2-Dibromo-3-Chloropropane	BDL	0.0055	mg/kg	8260B	03/04/15	1
1,2-Dibromoethane	BDL	0.0011	mg/kg	8260B	03/04/15	1
Dibromomethane	BDL	0.0011	mg/kg	8260B	03/04/15	1
1,2-Dichlorobenzene	BDL	0.0011	mg/kg	8260B	03/04/15	1
1,3-Dichlorobenzene	BDL	0.0011	mg/kg	8260B	03/04/15	1
1,4-Dichlorobenzene	BDL	0.0011	mg/kg	8260B	03/04/15	1
Dichlorodifluoromethane	BDL	0.0055	mg/kg	8260B	03/04/15	1
1,1-Dichloroethane	BDL	0.0011	mg/kg	8260B	03/04/15	1
1,2-Dichloroethane	BDL	0.0011	mg/kg	8260B	03/04/15	1
1,1-Dichloroethene	BDL	0.0011	mg/kg	8260B	03/04/15	1
cis-1,2-Dichloroethene	BDL	0.0011	mg/kg	8260B	03/04/15	1
trans-1,2-Dichloroethene	BDL	0.0011	mg/kg	8260B	03/04/15	1
1,2-Dichloropropane	BDL	0.0011	mg/kg	8260B	03/04/15	1
1,1-Dichloropropene	BDL	0.0011	mg/kg	8260B	03/04/15	1
1,3-Dichloropropane	BDL	0.0011	mg/kg	8260B	03/04/15	1
cis-1,3-Dichloropropene	BDL	0.0011	mg/kg	8260B	03/04/15	1
trans-1,3-Dichloropropene	BDL	0.0011	mg/kg	8260B	03/04/15	1
2,2-Dichloropropane	BDL	0.0011	mg/kg	8260B	03/04/15	1
Di-isopropyl ether	BDL	0.0011	mg/kg	8260B	03/04/15	1
Ethylbenzene	BDL	0.0011	mg/kg	8260B	03/04/15	1
Hexachloro-1,3-butadiene	BDL	0.0011	mg/kg	8260B	03/04/15	1
Isopropylbenzene	BDL	0.0011	mg/kg	8260B	03/04/15	1

Results listed are dry weight basis.

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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The reported analytical results relate only to the sample submitted



12065 Lebanon Rd.
Mt. Juliet, TN 37122
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REPORT OF ANALYSIS

Scott Braunsten
PBS Engineering & Environmental
4412 SW Corbett Ave
Portland, OR 97239

March 05,2015

Date Received : February 21, 2015
Description : Hawthorne Bridgehead

ESC Sample # : L750535-01

Sample ID : SB3-8

Site ID :

Collected By : Scott Brunston
Collection Date : 02/20/15 10:08

Project # : 15194.869

Parameter	Dry Result	Det. Limit	Units	Method	Date	Dil.
p-Isopropyltoluene	BDL	0.0011	mg/kg	8260B	03/04/15	1
2-Butanone (MEK)	BDL	0.011	mg/kg	8260B	03/04/15	1
Methylene Chloride	BDL	0.0055	mg/kg	8260B	03/04/15	1
4-Methyl-2-pentanone (MIBK)	BDL	0.011	mg/kg	8260B	03/04/15	1
Methyl tert-butyl ether	BDL	0.0011	mg/kg	8260B	03/04/15	1
Naphthalene	BDL	0.0055	mg/kg	8260B	03/04/15	1
n-Propylbenzene	BDL	0.0011	mg/kg	8260B	03/04/15	1
Styrene	BDL	0.0011	mg/kg	8260B	03/04/15	1
1,1,1,2-Tetrachloroethane	BDL	0.0011	mg/kg	8260B	03/04/15	1
1,1,2,2-Tetrachloroethane	BDL	0.0011	mg/kg	8260B	03/04/15	1
1,1,2-Trichlorotrifluoroethane	BDL	0.0011	mg/kg	8260B	03/04/15	1
Tetrachloroethene	BDL	0.0011	mg/kg	8260B	03/04/15	1
Toluene	BDL	0.0055	mg/kg	8260B	03/04/15	1
1,2,3-Trichlorobenzene	BDL	0.0011	mg/kg	8260B	03/04/15	1
1,2,4-Trichlorobenzene	BDL	0.0011	mg/kg	8260B	03/04/15	1
1,1,1-Trichloroethane	BDL	0.0011	mg/kg	8260B	03/04/15	1
1,1,2-Trichloroethane	BDL	0.0011	mg/kg	8260B	03/04/15	1
Trichloroethene	BDL	0.0011	mg/kg	8260B	03/04/15	1
Trichlorofluoromethane	BDL	0.0055	mg/kg	8260B	03/04/15	1
1,2,3-Trichloropropane	BDL	0.0028	mg/kg	8260B	03/04/15	1
1,2,4-Trimethylbenzene	BDL	0.0011	mg/kg	8260B	03/04/15	1
1,2,3-Trimethylbenzene	BDL	0.0011	mg/kg	8260B	03/04/15	1
1,3,5-Trimethylbenzene	BDL	0.0011	mg/kg	8260B	03/04/15	1
Vinyl chloride	BDL	0.0011	mg/kg	8260B	03/04/15	1
Xylenes, Total	BDL	0.0033	mg/kg	8260B	03/04/15	1
Surrogate Recovery						
Toluene-d8	103.		% Rec.	8260B	03/04/15	1
Dibromofluoromethane	106.		% Rec.	8260B	03/04/15	1
4-Bromofluorobenzene	94.0		% Rec.	8260B	03/04/15	1

Results listed are dry weight basis.

BDL - Below Detection Limit

Det. Limit - Practical Quantitation Limit(PQL)

Note:

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The reported analytical results relate only to the sample submitted

Reported: 03/05/15 12:05 Printed: 03/05/15 12:17

Attachment A
List of Analytes with QC Qualifiers

Sample Number	Work Group	Sample Type	Analyte	Run ID	Qualifier
L750535-01	WG772725	SAMP	Chloroethane	R3022940	J4
	WG772725	SAMP	2-Chloroethyl vinyl ether	R3022940	J4
	WG772725	SAMP	Styrene	R3022940	J4

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
J4	The associated batch QC was outside the established quality control range for accuracy.

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods, it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable "unless qualified as 'R' (Rejected)."

Definitions

Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.

Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Difference.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromatography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.

TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.



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Est. 1970

March 05, 2015

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
Total Solids	< .1	%			WG771932	02/25/15 08:26
1,1,1,2-Tetrachloroethane	< .001	mg/kg			WG772725	03/04/15 11:32
1,1,1-Trichloroethane	< .001	mg/kg			WG772725	03/04/15 11:32
1,1,2,2-Tetrachloroethane	< .001	mg/kg			WG772725	03/04/15 11:32
1,1,2-Trichloroethane	< .001	mg/kg			WG772725	03/04/15 11:32
1,1,2-Trichlorotrifluoroethane	< .001	mg/kg			WG772725	03/04/15 11:32
1,1-Dichloroethane	< .001	mg/kg			WG772725	03/04/15 11:32
1,1-Dichloroethene	< .001	mg/kg			WG772725	03/04/15 11:32
1,1-Dichloropropene	< .001	mg/kg			WG772725	03/04/15 11:32
1,2,3-Trichlorobenzene	< .001	mg/kg			WG772725	03/04/15 11:32
1,2,3-Trichloropropane	< .0025	mg/kg			WG772725	03/04/15 11:32
1,2,3-Trimethylbenzene	< .001	mg/kg			WG772725	03/04/15 11:32
1,2,4-Trichlorobenzene	< .001	mg/kg			WG772725	03/04/15 11:32
1,2,4-Trimethylbenzene	< .001	mg/kg			WG772725	03/04/15 11:32
1,2-Dibromo-3-Chloropropane	< .005	mg/kg			WG772725	03/04/15 11:32
1,2-Dibromoethane	< .001	mg/kg			WG772725	03/04/15 11:32
1,2-Dichlorobenzene	< .001	mg/kg			WG772725	03/04/15 11:32
1,2-Dichloroethane	< .001	mg/kg			WG772725	03/04/15 11:32
1,2-Dichloropropane	< .001	mg/kg			WG772725	03/04/15 11:32
1,3,5-Trimethylbenzene	< .001	mg/kg			WG772725	03/04/15 11:32
1,3-Dichlorobenzene	< .001	mg/kg			WG772725	03/04/15 11:32
1,3-Dichloropropane	< .001	mg/kg			WG772725	03/04/15 11:32
1,4-Dichlorobenzene	< .001	mg/kg			WG772725	03/04/15 11:32
2,2-Dichloropropane	< .001	mg/kg			WG772725	03/04/15 11:32
2-Butanone (MEK)	< .01	mg/kg			WG772725	03/04/15 11:32
2-Chloroethyl vinyl ether	< .05	mg/kg			WG772725	03/04/15 11:32
2-Chlorotoluene	< .001	mg/kg			WG772725	03/04/15 11:32
4-Chlorotoluene	< .001	mg/kg			WG772725	03/04/15 11:32
4-Methyl-2-pentanone (MIBK)	< .01	mg/kg			WG772725	03/04/15 11:32
Acetone	< .05	mg/kg			WG772725	03/04/15 11:32
Acrylonitrile	< .01	mg/kg			WG772725	03/04/15 11:32
Benzene	< .001	mg/kg			WG772725	03/04/15 11:32
Bromobenzene	< .001	mg/kg			WG772725	03/04/15 11:32
Bromodichloromethane	< .001	mg/kg			WG772725	03/04/15 11:32
Bromoform	< .001	mg/kg			WG772725	03/04/15 11:32
Bromomethane	< .005	mg/kg			WG772725	03/04/15 11:32
Carbon tetrachloride	< .001	mg/kg			WG772725	03/04/15 11:32
Chlorobenzene	< .001	mg/kg			WG772725	03/04/15 11:32
Chlorodibromomethane	< .001	mg/kg			WG772725	03/04/15 11:32
Chloroethane	< .005	mg/kg			WG772725	03/04/15 11:32
Chloroform	< .005	mg/kg			WG772725	03/04/15 11:32
Chloromethane	< .0025	mg/kg			WG772725	03/04/15 11:32
cis-1,2-Dichloroethene	< .001	mg/kg			WG772725	03/04/15 11:32
cis-1,3-Dichloropropene	< .001	mg/kg			WG772725	03/04/15 11:32
Di-isopropyl ether	< .001	mg/kg			WG772725	03/04/15 11:32
Dibromomethane	< .001	mg/kg			WG772725	03/04/15 11:32
Dichlorodifluoromethane	< .005	mg/kg			WG772725	03/04/15 11:32
Ethylbenzene	< .001	mg/kg			WG772725	03/04/15 11:32
Hexachloro-1,3-butadiene	< .001	mg/kg			WG772725	03/04/15 11:32
Isopropylbenzene	< .001	mg/kg			WG772725	03/04/15 11:32
Methyl tert-butyl ether	< .001	mg/kg			WG772725	03/04/15 11:32
Methylene Chloride	< .005	mg/kg			WG772725	03/04/15 11:32
n-Butylbenzene	< .001	mg/kg			WG772725	03/04/15 11:32
n-Propylbenzene	< .001	mg/kg			WG772725	03/04/15 11:32
Naphthalene	< .005	mg/kg			WG772725	03/04/15 11:32
p-Isopropyltoluene	< .001	mg/kg			WG772725	03/04/15 11:32
sec-Butylbenzene	< .001	mg/kg			WG772725	03/04/15 11:32

* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



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Tax I.D. 62-0814289

Est. 1970

March 05, 2015

Analyte	Result	Laboratory Blank		Limit	Batch	Date Analyzed
		Units	% Rec			
Styrene	< .001	mg/kg			WG772725	03/04/15 11:32
tert-Butylbenzene	< .001	mg/kg			WG772725	03/04/15 11:32
Tetrachloroethene	< .001	mg/kg			WG772725	03/04/15 11:32
Toluene	< .005	mg/kg			WG772725	03/04/15 11:32
trans-1,2-Dichloroethene	< .001	mg/kg			WG772725	03/04/15 11:32
trans-1,3-Dichloropropene	< .001	mg/kg			WG772725	03/04/15 11:32
Trichloroethene	< .001	mg/kg			WG772725	03/04/15 11:32
Trichlorofluoromethane	< .005	mg/kg			WG772725	03/04/15 11:32
Vinyl chloride	< .001	mg/kg			WG772725	03/04/15 11:32
Xylenes, Total	< .003	mg/kg			WG772725	03/04/15 11:32
4-Bromofluorobenzene		% Rec.	92.00	71-126	WG772725	03/04/15 11:32
Dibromofluoromethane		% Rec.	109.0	78.3-121	WG772725	03/04/15 11:32
Toluene-d8		% Rec.	103.0	88.5-111	WG772725	03/04/15 11:32

Analyte	Units	Duplicate		RPD	Limit	Ref Samp	Batch
		Result	Duplicate				
Total Solids	%	76.4	75.9	0.621	5	L749889-05	WG771932

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Total Solids	%	50	50.0	100.	85-115	WG771932
1,1,1,2-Tetrachloroethane	mg/kg	.025	0.0230	91.8	72.9-124	WG772725
1,1,1-Trichloroethane	mg/kg	.025	0.0233	93.1	73.7-124	WG772725
1,1,2,2-Tetrachloroethane	mg/kg	.025	0.0255	102.	69.4-122	WG772725
1,1,2-Trichloroethane	mg/kg	.025	0.0220	88.1	79.1-118	WG772725
1,1,2-Trichlorotrifluoroethane	mg/kg	.025	0.0239	95.7	70-146	WG772725
1,1-Dichloroethane	mg/kg	.025	0.0242	97.0	75-124	WG772725
1,1-Dichloroethene	mg/kg	.025	0.0238	95.2	70.4-129	WG772725
1,1-Dichloropropene	mg/kg	.025	0.0237	94.8	74.9-124	WG772725
1,2,3-Trichlorobenzene	mg/kg	.025	0.0241	96.5	69.3-131	WG772725
1,2,3-Trichloropropane	mg/kg	.025	0.0220	88.2	71.4-123	WG772725
1,2,3-Trimethylbenzene	mg/kg	.025	0.0225	90.1	73.6-113	WG772725
1,2,4-Trichlorobenzene	mg/kg	.025	0.0243	97.3	71.9-137	WG772725
1,2,4-Trimethylbenzene	mg/kg	.025	0.0202	80.6	75.5-122	WG772725
1,2-Dibromo-3-Chloropropane	mg/kg	.025	0.0234	93.4	62.8-133	WG772725
1,2-Dibromoethane	mg/kg	.025	0.0224	89.4	78.6-120	WG772725
1,2-Dichlorobenzene	mg/kg	.025	0.0225	90.0	78.3-118	WG772725
1,2-Dichloroethane	mg/kg	.025	0.0218	87.3	70.1-124	WG772725
1,2-Dichloropropane	mg/kg	.025	0.0253	101.	77.9-119	WG772725
1,3,5-Trimethylbenzene	mg/kg	.025	0.0208	83.1	75.9-124	WG772725
1,3-Dichlorobenzene	mg/kg	.025	0.0207	82.9	72-126	WG772725
1,3-Dichloropropane	mg/kg	.025	0.0215	85.9	79.1-117	WG772725
1,4-Dichlorobenzene	mg/kg	.025	0.0223	89.2	78.3-117	WG772725
2,2-Dichloropropane	mg/kg	.025	0.0229	91.7	61.3-136	WG772725
2-Butanone (MEK)	mg/kg	.125	0.128	103.	53.7-153	WG772725
2-Chloroethyl vinyl ether	mg/kg	.125	0.0473	37.9	37.7-157	WG772725
2-Chlorotoluene	mg/kg	.025	0.0205	81.9	75.6-121	WG772725
4-Chlorotoluene	mg/kg	.025	0.0212	85.0	77.3-120	WG772725
4-Methyl-2-pentanone (MIBK)	mg/kg	.125	0.135	108.	70.4-137	WG772725
Acetone	mg/kg	.125	0.113	90.4	35.1-175	WG772725
Acrylonitrile	mg/kg	.125	0.132	105.	56.4-128	WG772725
Benzene	mg/kg	.025	0.0215	86.0	77.1-121	WG772725
Bromobenzene	mg/kg	.025	0.0221	88.5	78.2-115	WG772725
Bromodichloromethane	mg/kg	.025	0.0238	95.1	74.9-115	WG772725
Bromoform	mg/kg	.025	0.0237	94.9	65.9-132	WG772725

* Performance of this Analyte is outside of established criteria.

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Quality Assurance Report
Level II

L750535

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

March 05, 2015

Analyte	Units	Laboratory Control Sample		% Rec	Limit	Batch
		Known Val	Result			
Bromomethane	mg/kg	.025	0.0343	137.	48.7-165	WG772725
Carbon tetrachloride	mg/kg	.025	0.0267	107.	70-124	WG772725
Chlorobenzene	mg/kg	.025	0.0213	85.2	79.1-119	WG772725
Chlorodibromomethane	mg/kg	.025	0.0226	90.4	73.5-121	WG772725
Chloroethane	mg/kg	.025	0.0389	155.*	66.2-132	WG772725
Chloroform	mg/kg	.025	0.0221	88.6	76.7-122	WG772725
Chloromethane	mg/kg	.025	0.0265	106.	63.4-131	WG772725
cis-1,2-Dichloroethene	mg/kg	.025	0.0233	93.3	78.2-119	WG772725
cis-1,3-Dichloropropene	mg/kg	.025	0.0235	93.9	79.6-120	WG772725
Di-isopropyl ether	mg/kg	.025	0.0271	108.	70.4-133	WG772725
Dibromomethane	mg/kg	.025	0.0236	94.5	79.4-120	WG772725
Dichlorodifluoromethane	mg/kg	.025	0.0219	87.6	57.1-137	WG772725
Ethylbenzene	mg/kg	.025	0.0211	84.6	79.7-122	WG772725
Hexachloro-1,3-butadiene	mg/kg	.025	0.0254	102.	68.2-123	WG772725
Isopropylbenzene	mg/kg	.025	0.0212	84.7	80-135	WG772725
Methyl tert-butyl ether	mg/kg	.025	0.0226	90.6	73-129	WG772725
Methylene Chloride	mg/kg	.025	0.0214	85.6	72.6-120	WG772725
n-Butylbenzene	mg/kg	.025	0.0243	97.4	77.5-126	WG772725
n-Propylbenzene	mg/kg	.025	0.0217	86.7	77.9-123	WG772725
Naphthalene	mg/kg	.025	0.0224	89.8	69.8-128	WG772725
p-Isopropyltoluene	mg/kg	.025	0.0214	85.6	75.8-129	WG772725
sec-Butylbenzene	mg/kg	.025	0.0211	84.6	75.8-126	WG772725
Styrene	mg/kg	.025	0.0215	86.0	82.4-126	WG772725
tert-Butylbenzene	mg/kg	.025	0.0213	85.1	76.4-126	WG772725
Tetrachloroethene	mg/kg	.025	0.0216	86.4	73.9-125	WG772725
Toluene	mg/kg	.025	0.0220	88.0	79.7-118	WG772725
trans-1,2-Dichloroethene	mg/kg	.025	0.0231	92.5	73.8-122	WG772725
trans-1,3-Dichloropropene	mg/kg	.025	0.0240	96.0	75.9-124	WG772725
Trichloroethene	mg/kg	.025	0.0211	84.2	77.9-118	WG772725
Trichlorofluoromethane	mg/kg	.025	0.0263	105.	67.7-131	WG772725
Vinyl chloride	mg/kg	.025	0.0268	107.	66.7-130	WG772725
Xylenes, Total	mg/kg	.075	0.0627	83.6	78.8-121	WG772725
4-Bromofluorobenzene				95.30	71-126	WG772725
Dibromofluoromethane				108.0	78.3-121	WG772725
Toluene-d8				104.0	88.5-111	WG772725

Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
1,1,1,2-Tetrachloroethane	mg/kg	0.0224	0.0230	90.0	72.9-124	2.22	20	WG772725
1,1,1-Trichloroethane	mg/kg	0.0226	0.0233	90.0	73.7-124	2.82	20	WG772725
1,1,2,2-Tetrachloroethane	mg/kg	0.0244	0.0255	98.0	69.4-122	4.45	20	WG772725
1,1,2-Trichloroethane	mg/kg	0.0213	0.0220	85.0	79.1-118	3.43	20	WG772725
1,1,2-Trichlorotrifluoroethane	mg/kg	0.0239	0.0239	96.0	70-146	0.0600	20	WG772725
1,1-Dichloroethane	mg/kg	0.0242	0.0242	97.0	75-124	0.100	20	WG772725
1,1-Dichloroethene	mg/kg	0.0239	0.0238	96.0	70.4-129	0.330	20	WG772725
1,1-Dichloropropene	mg/kg	0.0232	0.0237	93.0	74.9-124	2.10	20	WG772725
1,2,3-Trichlorobenzene	mg/kg	0.0240	0.0241	96.0	69.3-131	0.750	20	WG772725
1,2,3-Trichloropropane	mg/kg	0.0213	0.0220	85.0	71.4-123	3.63	20	WG772725
1,2,3-Trimethylbenzene	mg/kg	0.0223	0.0225	89.0	73.6-113	1.19	20	WG772725
1,2,4-Trichlorobenzene	mg/kg	0.0241	0.0243	96.0	71.9-137	0.710	20	WG772725
1,2,4-Trimethylbenzene	mg/kg	0.0192	0.0202	77.0	75.5-122	5.03	20	WG772725
1,2-Dibromo-3-Chloropropane	mg/kg	0.0226	0.0234	90.0	62.8-133	3.10	20	WG772725
1,2-Dibromoethane	mg/kg	0.0219	0.0224	88.0	78.6-120	2.01	20	WG772725
1,2-Dichlorobenzene	mg/kg	0.0224	0.0225	90.0	78.3-118	0.540	20	WG772725
1,2-Dichloroethane	mg/kg	0.0215	0.0218	86.0	70.1-124	1.45	20	WG772725
1,2-Dichloropropane	mg/kg	0.0247	0.0253	99.0	77.9-119	2.49	20	WG772725
1,3,5-Trimethylbenzene	mg/kg	0.0199	0.0208	80.0	75.9-124	4.16	20	WG772725
1,3-Dichlorobenzene	mg/kg	0.0198	0.0207	79.0	72-126	4.54	20	WG772725

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Analyte	Units	Laboratory Control Sample Duplicate			Limit	RPD	Limit	Batch
		Result	Ref	%Rec				
1,3-Dichloropropane	mg/kg	0.0207	0.0215	83.0	79.1-117	3.95	20	WG772725
1,4-Dichlorobenzene	mg/kg	0.0221	0.0223	88.0	78.3-117	0.840	20	WG772725
2,2-Dichloropropane	mg/kg	0.0229	0.0229	91.0	61.3-136	0.290	20	WG772725
2-Butanone (MEK)	mg/kg	0.132	0.128	105.	53.7-153	2.54	21.2	WG772725
2-Chloroethyl vinyl ether	mg/kg	0.0412	0.0473	33*	37.7-157	13.9	20	WG772725
2-Chlorotoluene	mg/kg	0.0196	0.0205	78.0	75.6-121	4.52	20	WG772725
4-Chlorotoluene	mg/kg	0.0200	0.0212	80.0	77.3-120	5.82	20	WG772725
4-Methyl-2-pentanone (MIBK)	mg/kg	0.135	0.135	108.	70.4-137	0.0100	20	WG772725
Acetone	mg/kg	0.117	0.113	94.0	35.1-175	3.62	26.1	WG772725
Acrylonitrile	mg/kg	0.131	0.132	105.	56.4-128	0.670	20	WG772725
Benzene	mg/kg	0.0215	0.0215	86.0	77.1-121	0.0500	20	WG772725
Bromobenzene	mg/kg	0.0208	0.0221	83.0	78.2-115	6.22	20	WG772725
Bromodichloromethane	mg/kg	0.0234	0.0238	94.0	74.9-115	1.62	20	WG772725
Bromoform	mg/kg	0.0225	0.0237	90.0	65.9-132	5.40	20	WG772725
Bromomethane	mg/kg	0.0340	0.0343	136.	48.7-165	0.740	20	WG772725
Carbon tetrachloride	mg/kg	0.0267	0.0267	107.	70-124	0.210	20	WG772725
Chlorobenzene	mg/kg	0.0209	0.0213	84.0	79.1-119	1.99	20	WG772725
Chlorodibromomethane	mg/kg	0.0219	0.0226	87.0	73.5-121	3.40	20	WG772725
Chloroethane	mg/kg	0.0375	0.0389	150*	66.2-132	3.66	20	WG772725
Chloroform	mg/kg	0.0221	0.0221	88.0	76.7-122	0.0400	20	WG772725
Chloromethane	mg/kg	0.0261	0.0265	104.	63.4-131	1.62	20	WG772725
cis-1,2-Dichloroethene	mg/kg	0.0230	0.0233	92.0	78.2-119	1.21	20	WG772725
cis-1,3-Dichloropropene	mg/kg	0.0231	0.0235	92.0	79.6-120	1.45	20	WG772725
Di-isopropyl ether	mg/kg	0.0268	0.0271	107.	70.4-133	0.830	20	WG772725
Dibromomethane	mg/kg	0.0234	0.0236	93.0	79.4-120	1.17	20	WG772725
Dichlorodifluoromethane	mg/kg	0.0221	0.0219	88.0	57.1-137	0.870	20	WG772725
Ethylbenzene	mg/kg	0.0203	0.0211	81.0	79.7-122	4.06	20	WG772725
Hexachloro-1,3-butadiene	mg/kg	0.0252	0.0254	101.	68.2-123	0.890	20	WG772725
Isopropylbenzene	mg/kg	0.0205	0.0212	82.0	80-135	3.36	20	WG772725
Methyl tert-butyl ether	mg/kg	0.0224	0.0226	90.0	73-129	1.16	20	WG772725
Methylene Chloride	mg/kg	0.0214	0.0214	86.0	72.6-120	0.120	20	WG772725
n-Butylbenzene	mg/kg	0.0238	0.0243	95.0	77.5-126	2.29	20	WG772725
n-Propylbenzene	mg/kg	0.0207	0.0217	83.0	77.9-123	4.34	20	WG772725
Naphthalene	mg/kg	0.0226	0.0224	90.0	69.8-128	0.890	20	WG772725
p-Isopropyltoluene	mg/kg	0.0205	0.0214	82.0	75.8-129	4.33	20	WG772725
sec-Butylbenzene	mg/kg	0.0203	0.0211	81.0	75.8-126	3.90	20	WG772725
Styrene	mg/kg	0.0204	0.0215	82*	82.4-126	5.09	20	WG772725
tert-Butylbenzene	mg/kg	0.0207	0.0213	83.0	76.4-126	2.67	20	WG772725
Tetrachloroethene	mg/kg	0.0204	0.0216	82.0	73.9-125	5.56	20	WG772725
Toluene	mg/kg	0.0216	0.0220	86.0	79.7-118	2.03	20	WG772725
trans-1,2-Dichloroethene	mg/kg	0.0227	0.0231	91.0	73.8-122	1.82	20	WG772725
trans-1,3-Dichloropropene	mg/kg	0.0227	0.0240	91.0	75.9-124	5.52	20	WG772725
Trichloroethene	mg/kg	0.0212	0.0211	85.0	77.9-118	0.520	20	WG772725
Trichlorofluoromethane	mg/kg	0.0258	0.0263	103.	67.7-131	1.90	20	WG772725
Vinyl chloride	mg/kg	0.0267	0.0268	107.	66.7-130	0.320	20	WG772725
Xylenes, Total	mg/kg	0.0606	0.0627	81.0	78.8-121	3.44	20	WG772725
4-Bromofluorobenzene				92.20	71-126			WG772725
Dibromofluoromethane				107.0	78.3-121			WG772725
Toluene-d8				103.0	88.5-111			WG772725

Analyte	Units	MS Res	Matrix Spike		% Rec	Limit	Ref Samp	Batch
			Ref Res	TV				
1,1,1,2-Tetrachloroethane	mg/kg	0.111	0.0	.025	89.0	64-128	L750566-01	WG772725
1,1,1-Trichloroethane	mg/kg	0.117	0.0	.025	94.0	58.7-134	L750566-01	WG772725
1,1,2,2-Tetrachloroethane	mg/kg	0.124	0.0	.025	100.	56-132	L750566-01	WG772725
1,1,2-Trichloroethane	mg/kg	0.107	0.0	.025	86.0	66.3-125	L750566-01	WG772725
1,1,2-Trichlorotrifluoroethane	mg/kg	0.123	0.0	.025	98.0	54.8-154	L750566-01	WG772725
1,1-Dichloroethane	mg/kg	0.122	0.0	.025	98.0	58.5-132	L750566-01	WG772725

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Analyte	Units	MS Res	Matrix Spike		% Rec	Limit	Ref Samp	Batch
			Ref Res	TV				
1,1-Dichloroethene	mg/kg	0.118	0.0	.025	94.0	51.1-140	L750566-01	WG772725
1,1-Dichloropropene	mg/kg	0.116	0.0	.025	93.0	57.3-136	L750566-01	WG772725
1,2,3-Trichlorobenzene	mg/kg	0.118	0.00105	.025	94.0	59.1-138	L750566-01	WG772725
1,2,3-Trichloropropane	mg/kg	0.108	0.0	.025	87.0	61.4-128	L750566-01	WG772725
1,2,3-Trimethylbenzene	mg/kg	0.112	0.000354	.025	90.0	61.3-122	L750566-01	WG772725
1,2,4-Trichlorobenzene	mg/kg	0.121	0.000796	.025	97.0	63.6-143	L750566-01	WG772725
1,2,4-Trimethylbenzene	mg/kg	0.0977	0.000327	.025	78.0	57.4-137	L750566-01	WG772725
1,2-Dibromo-3-Chloropropane	mg/kg	0.112	0.0	.025	90.0	57.3-136	L750566-01	WG772725
1,2-Dibromoethane	mg/kg	0.109	0.0	.025	88.0	67.1-125	L750566-01	WG772725
1,2-Dichlorobenzene	mg/kg	0.112	0.0	.025	90.0	68.2-123	L750566-01	WG772725
1,2-Dichloroethane	mg/kg	0.108	0.0	.025	86.0	60-126	L750566-01	WG772725
1,2-Dichloropropane	mg/kg	0.124	0.0	.025	99.0	64.2-123	L750566-01	WG772725
1,3,5-Trimethylbenzene	mg/kg	0.101	0.0	.025	80.0	63.6-132	L750566-01	WG772725
1,3-Dichlorobenzene	mg/kg	0.0997	0.000391	.025	79.0	63.1-131	L750566-01	WG772725
1,3-Dichloropropane	mg/kg	0.103	0.0	.025	82.0	67.9-121	L750566-01	WG772725
1,4-Dichlorobenzene	mg/kg	0.112	0.0	.025	90.0	68.6-123	L750566-01	WG772725
2,2-Dichloropropane	mg/kg	0.119	0.0	.025	95.0	50.5-144	L750566-01	WG772725
2-Butanone (MEK)	mg/kg	0.665	0.0	.125	110.	22.4-138	L750566-01	WG772725
2-Chloroethyl vinyl ether	mg/kg	0.225	0.0	.125	36.0	10-155	L750566-01	WG772725
2-Chlorotoluene	mg/kg	0.100	0.0	.025	80.0	63.6-128	L750566-01	WG772725
4-Chlorotoluene	mg/kg	0.102	0.0	.025	82.0	65.7-127	L750566-01	WG772725
4-Methyl-2-pentanone (MIBK)	mg/kg	0.680	0.0	.125	110.	60.8-140	L750566-01	WG772725
Acetone	mg/kg	0.599	0.00332	.125	95.0	10-130	L750566-01	WG772725
Acrylonitrile	mg/kg	0.671	0.0	.125	110.	49.4-133	L750566-01	WG772725
Benzene	mg/kg	0.105	0.0	.025	84.0	54.3-133	L750566-01	WG772725
Bromobenzene	mg/kg	0.106	0.0	.025	85.0	63.9-124	L750566-01	WG772725
Bromodichloromethane	mg/kg	0.118	0.0	.025	95.0	63.9-121	L750566-01	WG772725
Bromoform	mg/kg	0.113	0.0	.025	90.0	59.5-134	L750566-01	WG772725
Bromomethane	mg/kg	0.157	0.0	.025	130.	41.7-155	L750566-01	WG772725
Carbon tetrachloride	mg/kg	0.134	0.0	.025	110.	55.7-134	L750566-01	WG772725
Chlorobenzene	mg/kg	0.103	0.0	.025	82.0	67-125	L750566-01	WG772725
Chlorodibromomethane	mg/kg	0.110	0.0	.025	88.0	64.3-125	L750566-01	WG772725
Chloroethane	mg/kg	0.185	0.0	.025	150.*	51.5-136	L750566-01	WG772725
Chloroform	mg/kg	0.114	0.0	.025	91.0	63-129	L750566-01	WG772725
Chloromethane	mg/kg	0.117	0.0	.025	94.0	42.4-135	L750566-01	WG772725
cis-1,2-Dichloroethene	mg/kg	0.116	0.0	.025	93.0	59.2-129	L750566-01	WG772725
cis-1,3-Dichloropropene	mg/kg	0.116	0.0	.025	93.0	66.4-125	L750566-01	WG772725
Di-isopropyl ether	mg/kg	0.134	0.0	.025	110.	56.9-136	L750566-01	WG772725
Dibromomethane	mg/kg	0.114	0.0	.025	91.0	68.2-124	L750566-01	WG772725
Dichlorodifluoromethane	mg/kg	0.103	0.0	.025	82.0	40.6-144	L750566-01	WG772725
Ethylbenzene	mg/kg	0.102	0.0	.025	81.0	61.4-133	L750566-01	WG772725
Hexachloro-1,3-butadiene	mg/kg	0.125	0.0	.025	100.	55.1-136	L750566-01	WG772725
Isopropylbenzene	mg/kg	0.104	0.0	.025	83.0	66.8-141	L750566-01	WG772725
Methyl tert-butyl ether	mg/kg	0.114	0.0	.025	91.0	57.7-134	L750566-01	WG772725
Methylene Chloride	mg/kg	0.106	0.0	.025	85.0	58.1-122	L750566-01	WG772725
n-Butylbenzene	mg/kg	0.122	0.000569	.025	98.0	62.7-140	L750566-01	WG772725
n-Propylbenzene	mg/kg	0.105	0.0	.025	84.0	10-176	L750566-01	WG772725
Naphthalene	mg/kg	0.109	0.00101	.025	86.0	58-135	L750566-01	WG772725
p-Isopropyltoluene	mg/kg	0.104	0.000374	.025	83.0	63.2-139	L750566-01	WG772725
sec-Butylbenzene	mg/kg	0.103	0.000317	.025	82.0	62.2-136	L750566-01	WG772725
Styrene	mg/kg	0.104	0.0	.025	83.0	66.8-133	L750566-01	WG772725
tert-Butylbenzene	mg/kg	0.104	0.000327	.025	83.0	63.3-134	L750566-01	WG772725
Tetrachloroethene	mg/kg	0.103	0.0	.025	82.0	53-139	L750566-01	WG772725
Toluene	mg/kg	0.108	0.0	.025	86.0	61.4-130	L750566-01	WG772725
trans-1,2-Dichloroethene	mg/kg	0.113	0.0	.025	91.0	56.5-129	L750566-01	WG772725
trans-1,3-Dichloropropene	mg/kg	0.120	0.0	.025	96.0	64.1-128	L750566-01	WG772725
Trichloroethene	mg/kg	0.103	0.0	.025	83.0	44.1-149	L750566-01	WG772725
Trichlorofluoromethane	mg/kg	0.127	0.0	.025	100.	49.6-145	L750566-01	WG772725
Vinyl chloride	mg/kg	0.124	0.0	.025	99.0	47.8-137	L750566-01	WG772725

* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



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Level II

L750535

12065 Lebanon Rd.
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1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

March 05, 2015

Analyte	Units	MS Res	Matrix Spike		% Rec	Limit	Ref Samp	Batch
			Ref Res	TV				
Xylenes, Total	mg/kg	0.305	0.0	.075	81.0	63.3-131	L750566-01	WG772725
4-Bromofluorobenzene					91.50	71-126		WG772725
Dibromofluoromethane					110.0	78.3-121		WG772725
Toluene-d8					104.0	88.5-111		WG772725

Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref Samp	Batch
			Ref	%Rec					
1,1,1,2-Tetrachloroethane	mg/kg	0.115	0.111	92.3	64-128	3.74	20	L750566-01	WG772725
1,1,1-Trichloroethane	mg/kg	0.117	0.117	93.3	58.7-134	0.300	20	L750566-01	WG772725
1,1,2,2-Tetrachloroethane	mg/kg	0.133	0.124	106.	56-132	6.41	22.2	L750566-01	WG772725
1,1,2-Trichloroethane	mg/kg	0.111	0.107	89.0	66.3-125	3.57	20	L750566-01	WG772725
1,1,2-Trichlorotrifluoroethane	mg/kg	0.120	0.123	96.2	54.8-154	2.08	22.5	L750566-01	WG772725
1,1-Dichloroethane	mg/kg	0.123	0.122	98.0	58.5-132	0.110	20	L750566-01	WG772725
1,1-Dichloroethene	mg/kg	0.116	0.118	92.7	51.1-140	1.74	20.2	L750566-01	WG772725
1,1-Dichloropropene	mg/kg	0.114	0.116	91.2	57.3-136	1.44	20	L750566-01	WG772725
1,2,3-Trichlorobenzene	mg/kg	0.121	0.118	95.6	59.1-138	2.10	23.7	L750566-01	WG772725
1,2,3-Trichloropropane	mg/kg	0.112	0.108	89.9	61.4-128	3.58	22.4	L750566-01	WG772725
1,2,3-Trimethylbenzene	mg/kg	0.112	0.112	89.3	61.3-122	0.270	20	L750566-01	WG772725
1,2,4-Trichlorobenzene	mg/kg	0.122	0.121	97.3	63.6-143	0.770	21.9	L750566-01	WG772725
1,2,4-Trimethylbenzene	mg/kg	0.0994	0.0977	79.2	57.4-137	1.68	20	L750566-01	WG772725
1,2-Dibromo-3-Chloropropane	mg/kg	0.120	0.112	95.8	57.3-136	6.39	27	L750566-01	WG772725
1,2-Dibromoethane	mg/kg	0.113	0.109	90.5	67.1-125	3.46	20	L750566-01	WG772725
1,2-Dichlorobenzene	mg/kg	0.113	0.112	90.4	68.2-123	0.590	20	L750566-01	WG772725
1,2-Dichloroethane	mg/kg	0.108	0.108	86.3	60-126	0.0300	20	L750566-01	WG772725
1,2-Dichloropropane	mg/kg	0.126	0.124	100.	64.2-123	1.23	20	L750566-01	WG772725
1,3,5-Trimethylbenzene	mg/kg	0.103	0.101	82.4	63.6-132	2.40	20.5	L750566-01	WG772725
1,3-Dichlorobenzene	mg/kg	0.103	0.0997	82.0	63.1-131	3.17	20	L750566-01	WG772725
1,3-Dichloropropane	mg/kg	0.106	0.103	84.5	67.9-121	2.74	20	L750566-01	WG772725
1,4-Dichlorobenzene	mg/kg	0.112	0.112	89.7	68.6-123	0.100	20	L750566-01	WG772725
2,2-Dichloropropane	mg/kg	0.118	0.119	94.4	50.5-144	1.11	21.9	L750566-01	WG772725
2-Butanone (MEK)	mg/kg	0.695	0.665	111.	22.4-138	4.48	27	L750566-01	WG772725
2-Chloroethyl vinyl ether	mg/kg	0.210	0.225	33.7	10-155	6.49	40	L750566-01	WG772725
2-Chlorotoluene	mg/kg	0.102	0.100	81.9	63.6-128	2.20	20	L750566-01	WG772725
4-Chlorotoluene	mg/kg	0.104	0.102	83.2	65.7-127	1.92	20	L750566-01	WG772725
4-Methyl-2-pentanone (MIBK)	mg/kg	0.707	0.680	113.	60.8-140	3.95	25.1	L750566-01	WG772725
Acetone	mg/kg	0.623	0.599	99.2	10-130	4.02	27.9	L750566-01	WG772725
Acrylonitrile	mg/kg	0.691	0.671	110.	49.4-133	2.84	25.3	L750566-01	WG772725
Benzene	mg/kg	0.107	0.105	85.4	54.3-133	1.41	20	L750566-01	WG772725
Bromobenzene	mg/kg	0.108	0.106	86.6	63.9-124	1.79	20	L750566-01	WG772725
Bromodichloromethane	mg/kg	0.120	0.118	95.8	63.9-121	1.28	20	L750566-01	WG772725
Bromoform	mg/kg	0.121	0.113	96.6	59.5-134	6.86	20.8	L750566-01	WG772725
Bromomethane	mg/kg	0.157	0.157	126.	41.7-155	0.100	20.5	L750566-01	WG772725
Carbon tetrachloride	mg/kg	0.133	0.134	106.	55.7-134	0.570	20.3	L750566-01	WG772725
Chlorobenzene	mg/kg	0.104	0.103	83.5	67-125	1.45	20	L750566-01	WG772725
Chlorodibromomethane	mg/kg	0.116	0.110	92.7	64.3-125	4.73	20	L750566-01	WG772725
Chloroethane	mg/kg	0.183	0.185	146.*	51.5-136	1.43	20.8	L750566-01	WG772725
Chloroform	mg/kg	0.113	0.114	90.6	63-129	0.590	20	L750566-01	WG772725
Chloromethane	mg/kg	0.114	0.117	90.8	42.4-135	3.12	20	L750566-01	WG772725
cis-1,2-Dichloroethene	mg/kg	0.114	0.116	90.8	59.2-129	2.59	20	L750566-01	WG772725
cis-1,3-Dichloropropene	mg/kg	0.118	0.116	94.1	66.4-125	1.55	20	L750566-01	WG772725
Di-isopropyl ether	mg/kg	0.136	0.134	108.	56.9-136	0.840	20	L750566-01	WG772725
Dibromomethane	mg/kg	0.118	0.114	94.5	68.2-124	3.34	20	L750566-01	WG772725
Dichlorodifluoromethane	mg/kg	0.0979	0.103	78.3	40.6-144	5.01	20.2	L750566-01	WG772725
Ethylbenzene	mg/kg	0.105	0.102	84.0	61.4-133	3.26	20	L750566-01	WG772725
Hexachloro-1,3-butadiene	mg/kg	0.120	0.125	95.7	55.1-136	4.41	23.6	L750566-01	WG772725
Isopropylbenzene	mg/kg	0.105	0.104	84.2	66.8-141	1.32	20	L750566-01	WG772725
Methyl tert-butyl ether	mg/kg	0.116	0.114	92.6	57.7-134	1.56	20	L750566-01	WG772725
Methylene Chloride	mg/kg	0.105	0.106	84.2	58.1-122	0.810	20	L750566-01	WG772725

* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



YOUR LAB OF CHOICE

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Scott Braunsten
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Portland, OR 97239

Quality Assurance Report
Level II

L750535

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
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Est. 1970

March 05, 2015

Analyte	Units	MSD	Matrix Spike Duplicate		Limit	RPD	Limit	Ref	Samp	Batch
			Ref	%Rec						
n-Butylbenzene	mg/kg	0.120	0.122	95.7	62.7-140	1.93	20	L750566-01	WG772725	
n-Propylbenzene	mg/kg	0.106	0.105	85.0	10-176	1.14	26.6	L750566-01	WG772725	
Naphthalene	mg/kg	0.113	0.109	89.5	58-135	3.76	25.5	L750566-01	WG772725	
p-Isopropyltoluene	mg/kg	0.105	0.104	83.9	63.2-139	1.39	20.4	L750566-01	WG772725	
sec-Butylbenzene	mg/kg	0.105	0.103	83.8	62.2-136	2.00	20.3	L750566-01	WG772725	
Styrene	mg/kg	0.105	0.104	84.2	66.8-133	1.41	20	L750566-01	WG772725	
tert-Butylbenzene	mg/kg	0.106	0.104	84.8	63.3-134	2.39	20.3	L750566-01	WG772725	
Tetrachloroethene	mg/kg	0.105	0.103	83.8	53-139	2.08	20	L750566-01	WG772725	
Toluene	mg/kg	0.109	0.108	86.9	61.4-130	0.670	20	L750566-01	WG772725	
trans-1,2-Dichloroethene	mg/kg	0.110	0.113	88.0	56.5-129	3.06	20	L750566-01	WG772725	
trans-1,3-Dichloropropene	mg/kg	0.122	0.120	97.4	64.1-128	1.02	20	L750566-01	WG772725	
Trichloroethene	mg/kg	0.105	0.103	84.2	44.1-149	1.88	20	L750566-01	WG772725	
Trichlorofluoromethane	mg/kg	0.125	0.127	100.	49.6-145	1.43	21.2	L750566-01	WG772725	
Vinyl chloride	mg/kg	0.120	0.124	96.2	47.8-137	2.77	20	L750566-01	WG772725	
Xylenes, Total	mg/kg	0.308	0.305	82.1	63.3-131	1.07	20	L750566-01	WG772725	
4-Bromofluorobenzene				93.70	71-126				WG772725	
Dibromofluoromethane				108.0	78.3-121				WG772725	
Toluene-d8				105.0	88.5-111				WG772725	

Batch number /Run number / Sample number cross reference

WG771932: R3021578: L750535-01
WG772725: R3022940: L750535-01

* * Calculations are performed prior to rounding of reported values.

* Performance of this Analyte is outside of established criteria.

For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'



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The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.

PBS Engineering & Environmental

4412 SW Corbett Ave
Portland, OR 97239

Billing Information:

Accounts Payable
4412 SW Corbett Ave
Portland, OR 97239

Report to:
Scott Braunsten

Email To: Scott.Braunsten@pbsenv.com

Project
Description: **Hawthorne Bridgehead**

City/State
Collected:

Phone: **503-248-1939**
Fax: **503-248-0223**

Client Project #
15194.869

Lab Project #
PBSENGPOR-15194869

Collected by (print):
Scott Braunsten

Site/Facility ID #

P.O. #

Collected by (signature):
[Signature]

Rush? (Lab MUST Be Notified)
Same Day 200%
Next Day 100%
Two Day 50%
Three Day 25%

Date Results Needed

Email? ☐ No ☒ Yes

FAX? ☐ No ☐ Yes

No.
of
Cntrs

Immediately
Packed on Ice: N ☐ Y ☒

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	Cntrs	HOLD for follow-ups 4ozClr-NoPres	NWTPHDX / TS 4ozClr-NoPres	NWTPHGX 40ml/NaHSO4/Syr/MeOH	RCRA8 Metals 4ozClr-NoPres										
SB1-3	Grab	SS	3'	2/20/15	0929	6	X	X	X	X										
SB2-4	Grab	SS	4'	2/20/15	0951	6	X	X	X	X										
SB3-8	Grab	SS	8'	2/20/15	1009	6	X	X	X	X										
SB4-8	Grab	SS	8'	2/20/15	1028	6	X	X	X	X										
SB5-13	Grab	SS	13'	2/20/15	1105	6	X	X	X	X										
		SS				6														
		SS				6														
		SS				6														
		SS				6														
		SS				6														

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other

Remarks: PCBs, PAHSIM, VOCs, and TCLP Metals will be on HOLD pending other results.

pH _____ Temp _____

Flow _____ Other _____

Relinquished by: (Signature)

Date: **2/20/15** Time: **1200**

Received by: (Signature)

Samples returned via: ☒ UPS ☐ FedEx ☐ Courier ☐ _____

Relinquished by: (Signature)

Date: _____ Time: _____

Received by: (Signature)

Temp: _____ °C Bottles Received: **30**

Relinquished by: (Signature)

Date: _____ Time: _____

Received for lab by: (Signature)

Date: **2/21/15** Time: **1045**

Hold # _____

Condition: (lab use only)

COC Seal Intact: ☒ Y ☐ N ☐ NA

pH Checked: _____ NCP: _____

Chain of Custody Page **1** of **1**

ESC
LAB SCIENCES

12065 Lebanon Rd
Norcross, GA 30092
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

QR CODE

H135
L750535

Account: **PBSENGPOR**
Template: **T100292**
Prelogin: **P499400**
TSR: **358 - Jarred Wilks**
PB: _____

Shipped Via: **FedEX Ground**

Rem./Container: _____ Sample # (lab only): _____

6272 8610 6440

Andy Vann

From: Jarred Willis
Sent: Thursday, February 26, 2015 2:28 PM
To: Login
Subject: L749881-03 - PBSENGPOR - relog for V8260, TS, QC2MODCN

Please relog L749881-03 from *PBSENGPOR* for V8260, TS (transfer from original sample), and QC2MODCN. Relog to a new L# on standard TAT.

Thanks,
Jarred

-----Original Message-----

From: Scott Braunsten [<mailto:Scott.Braunsten@pbsenv.com>]
Sent: Thursday, February 26, 2015 2:10 PM
To: Jarred Willis
Cc: Marsha Walker
Subject: RE: ESC Lab Sciences Login for 15194.869 Hawthorne Bridgehead L749881

Jarred,

I took a look at the preliminary results. It looks like there was a Gx detection in sample SB3-8 (L749881-03). Please add VOC analysis for this sample.

Thanks,

Scott Braunsten, RG, LG, CES
Project Geologist
Scott.Braunsten@pbsenv.com
503.417.7737
503.939.7910 mobile

PBS Engineering + Environmental
Engineering | Natural Resources | Environmental | Health and Safety www.pbsenv.com
4412 SW Corbett Avenue, Portland, OR 97239
ph: 503.248.1939 : fax: 866.727.0140