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## **TRANSMITTAL**

**DATE:** December 17, 2015

**TO:** Ms. Gayle Garbush  
Washington State Department of Ecology  
3190 - 160th Avenue SE  
Bellevue, Washington 98008

**FROM:** Audrey McIvor

**PROJECT NO:** 40609.001

**RE:** Remedial Investigation and Cleanup Action Report  
Pike Place Market PDA

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Dear Gayle,

Attached is the Remedial Investigation and Cleanup Action report for Pike Place Market – 1901 Western Avenue, Seattle, Washington. Please let me know if there are any questions during your review. Thank you for your time.

Kind regards,  
Audrey

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# Remedial Investigation and Cleanup Action Report

Pike Place Marketfront Project  
1901 Western Avenue  
Seattle, Washington

Prepared for:  
Pike Place Preservation and Development Authority  
85 Pike Street, Room 500  
Seattle, Washington 98101

Project No. 40609.001  
ERTS: 659781  
December 17, 2015

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## **EXECUTIVE SUMMARY**

PBS Engineering and Environmental (PBS) conducted a Remedial Investigation and Cleanup Action on behalf of Pike Place Preservation and Development Authority for the property located at 1901 Western Avenue in Seattle, Washington.

### **Property Description and Site Discovery**

The 0.71-acre property is located at 1901 Western Avenue between Western Avenue and State Route 99 in the Pike Place Market zone of the City of Seattle. Currently, the property is in development as a mixed use space, with commercial, residential, outdoor plazas, and a four level sub-grade parking garage. Approximately 44,600 cubic yards of grading has been completed and the concrete foundation for the lowest level of the parking garage has been built.

Two historical underground storage tanks (USTs) were encountered at the property during site development activities. The first UST was discovered on September 10, 2015. The second UST was discovered on September 19, 2015. Analytical result from the site assessment for the first UST did not indicate evidence of a release. Analytical results from the site assessment for the second UST indicated evidence of a release of leaded gasoline to the soil. On September 29, 2015, a notice of release was reported to Department of Ecology and issued ERTS #659781.

### **Interim and Cleanup Actions**

Environmental investigations and cleanup actions have been conducted at the Site since September 10, 2015. The Site is characterized by a release of leaded gasoline to soil only, with no groundwater encountered. Cleanup actions include decommission by removal of both encountered USTs. Excavation and proper disposal of 53.55 tons of Site soils remediated gasoline impacted soils associated with the second UST. Confirmation soil samples collected and analyzed represent the final excavation depth associated with the new development. Based on current Site characterization information, established cleanup levels, and points of compliance identified for the Site, identified COCs are below cleanup levels.

### **Request for Regulatory Closure**

Analytical results from confirmation soil samples collected at the extents of excavation indicate no contaminants remain at the Site with concentrations above their respective method detection limits, except lead which was detected at background concentrations. Since risk(s) to human, terrestrial, and ecological receptors have been eliminated through cleanup action, PBS requests a No Further Action determination for the Site at the Initial Investigation Stage (WAC 173-340-310(5)(d)).

### **Limitations (Please also refer to 12.0)**

The report should be read in its entirety (text and attachments) before decisions are made based on the information provided in the executive summary. PBS is not responsible for utilization of less than the complete report.

## **1.0 ABBREVIATIONS AND ACRONYMS**

The following abbreviations and acronyms that are commonly used in PBS Remedial Investigation and Environmental Assessment reports. Additional abbreviations and acronyms may be defined within the text.

AMSL - above mean sea level  
AST – aboveground storage tank  
ASTM – American Society for Testing and Materials  
AUL – Activity and Use Limitation  
bgs – below the ground surface  
CA - Cleanup Action  
CEG – conditionally exempt generator (of hazardous waste)  
CERCLA – Comprehensive Environmental Response, Compensation and Liability Act (EPA)  
CMMP – Contaminated Media Management Plan  
COC – Contaminant of Concern  
CSM – Conceptual Site Model  
Ecology – State of Washington Department of Ecology  
ERTS – Environmental Report Tracking System  
EPA – Environmental Protection Agency  
ESA – Environmental Site Assessment  
Feet bgs - feet below ground surface  
FS - Feasibility Study (per 340-173 WAC)  
HOT – heating oil tank  
LUST – leaking underground storage tank  
mg/kg – milligrams per kilogram (equivalent to parts per million, ppm)  
MTCA – Model Toxics Control Act  
NFA – No Further Action determination  
PAH – Poly Aromatic Hydrocarbons  
PCB – polychlorinated biphenyls  
PID - Photoionization Detector  
ppm – parts per million (equivalent to mg/kg)  
RI – Remedial Investigation (per 340-173 WAC)  
RCRA – Resource Conservation and Recovery Act (EPA)  
SEPA - State Environmental Policy Act  
TPH - Total Petroleum Hydrocarbons  
µg/Kg – micrograms per kilogram (equivalent to parts per billion, ppb)  
µg/L – micrograms per Liter (equivalent to ppb)  
UST – underground storage tank

## **2.0 INTRODUCTION**

PBS Engineering and Environmental (PBS) prepared this Remedial Investigation (RI) and Cleanup Action (CA) report on behalf of Pike Place Preservation and Development Authority (Pike Place PDA) for the property located at 1901 Western Avenue in Seattle, Washington (see Vicinity Map; Figure 1). The investigative and cleanup actions were taken in response to an identified release of petroleum hydrocarbons from an underground storage tank (UST) encountered during site development on the project site in September 2015.

### **2.1 Project Information**

Site Name:	Pike Place Marketfront Project
Site Address:	1901 Western Avenue Seattle, Washington 98101 King County tax parcel 1977200330
Current Owner / Operator:	Pike Place Market PDA Mr. Ben Franz-Knight 85 Pike Street, Room 500 Seattle, Washington 98101
Project Consultant Contact Information:	PBS Engineering and Environmental Ms. Audrey McIvor 2517 Eastlake Avenue East , Suite 100 Seattle, WA 98102 Office – 206.223.9639 Mobile – 206.498.6310
Ecology ERTS Number:	659781

### **2.2 Purpose**

This RI/CA report was prepared to meet the requirements of the RI/CA as outlined in the Washington State Model Toxics Control Act (MTCA), chapter 173-340 under Washington Administrative Code (WAC). The intent of this report is to evaluate and document that remedial actions completed at the project site are protective of human health and the environment and meet the substantive requirements of MTCA.

## **3.0 SITE IDENTIFICATION AND DESCRIPTION**

### **3.1 Site Discovery and Regulatory Status**

Two underground storage tanks (USTs) were encountered at the property during site development activities. The first UST was discovered on September 10, 2015. The second UST was discovered on September 19, 2015.

Tank details are summarized below:

Encountered Name	Tank	Discovery Date	Tank Description	Contents
UST #1		9/11/2015	500-gallon single-walled steel	gasoline
UST #2		9/19/2015	1,200-gallon single-walled steel	gasoline

On September 11, 2015, PBS and Marine Vacuum Services Inc. (Marvac) decommissioned the first encountered UST by removal. Analytical results from the site assessment indicated no evidence of a release. Groundwater was not encountered.

On September 28, 2015, PBS and Marvac decommissioned the second encountered UST by removal. Analytical results from the site assessment indicated evidence of a release of leaded gasoline to the soil. Groundwater was not encountered.

Both UST site assessments were conducted by a certified Site Assessor, in accordance with Chapter 173-360-385 through 173-360-395 of WAC and *Guidance for Site Checks and Site Assessments for Underground Storage Tanks* (Publication 90-52, revised 2003). On September 29, 2015, a notice of release at 1901 Western Avenue in Seattle, Washington was reported to Washington State Department of Ecology's (Ecology) NW Regional Office Toxics Cleanup Program and issued ERTS Number 659781.

On October 14, 2015, 53.55 tons of petroleum impacted soil was excavated, removed, and properly disposed of from the Site. Currently, the Site's regulatory status is in the Initial Investigation (WAC 173-340-310) phase of MTCA. Please refer to Section 5.0 for further details on environmental activities conducted at the Site.

### 3.2 Property Description

The property is located at 1901 Western Avenue between Western Avenue and State Route 99 in the Pike Place Market zone of the City of Seattle. City of Seattle Department of Planning and Development also associates 1911 Western Avenue with this property. A legal description of the property is included as Appendix A. The property is further defined as located in the southeast quarter of Section 31, Township 25 North, Range 4 East of the Willamette Base and Meridian (Figure 1). The property is accessed from Western Avenue and is situated on land between Western Avenue and the Alaskan Way Viaduct.

### 3.3 Neighborhood Setting

According to City of Seattle Official Zoning Map Books, accessed online November 3, 2015, the property is zoned PMM-85, a mixed use zone. Adjacent properties include Pike Place Market, with several restaurants and commercial businesses, a parking garage, and a multi-family residential building.

### 3.4 Physiographic Setting / Topography

Subgrade excavation has altered previous topography and the property is generally flat with a steep slope to the west toward Puget Sound (Refer to Figure 2 for Site Plan). The property is

situated on 0.71-acres of land, with an elevation that has been lowered from 80 to 75 feet above mean sea level (AMSL) to approximately 49 feet AMSL. . The site is located in the Central Basin region of the Puget Sound and Elliott Bay is located 550 feet west of the Site. Surface cover at the property is comprised of poured concrete for a subgrade parking garage.

#### **4.0 PROPERTY DEVELOPMENT AND HISTORY**

##### **4.1 Past Property Uses and Facilities**

The area was first platted in 1873, but the steep, ungraded hillside prevented substantial development until the 1920s. Instead multiple wood frame “squatters’ shanties” appear on maps and photographs as early as 1888 and continued to be occupied during the construction of the Great Northern Railway Tunnel in 1903-1905 and the Pike Place Market in 1911. During the railroad tunnel construction an office and three bunkhouses for the railway company were constructed on the south end of the site adjacent to the existing cabins (source: *Cultural Resources Assessment (Northwest Archeological-2013)* Master Use Permit (MUP) Application (MUP #3015514). The BSNF Railway tunnel is located directly beneath the project site. The top of the tunnel is approximately 20 to 30 feet below the surface of the existing parking lot grade (*Geotechnical Report, Shannon & Wilson, Inc.-2013*).

The Municipal Market Building occupied the site from 1921 to 1974. The multi-story reinforced concrete frame building with wood posts contained basements, stores, market stalls, and an automobile garage. Originally two bridges spanned the Western Avenue to connect to the Municipal Market Building; today one bridge remains. The Municipal Market Building was damaged by fire in 1961 and 1974 and subsequently demolished. Foundations from the Market Municipal Building were expected to be encountered during redevelopment activities (*SEPA Checklist, Pike Place PDA, and revised November 15, 2013*).

From between the late 1970s to 2015, the property has been used as a surface parking lot.

##### **4.2 Current Site Uses and Facilities**

The property is currently in the process of redevelopment into a mixed use space, with commercial, residential, outdoor plazas, and a four level subgrade parking garage. Pike Place PDA purchased the property from City of Seattle in June 2015. In 2015, the surface parking lot was demolished when current redevelopment activities began. Plans for the property include a four-story building with 40 residential units above 17,846 square feet of retail space at ground level, and parking for 302 vehicles at and below grade. Approximately 44,600 cubic yards of grading (soil removal and export) has already been completed. The existing access staircase from the market over Western Avenue, associated surface parking, and existing foundations have been demolished.

##### **4.3 Proposed or Potential Future Site Uses**

Planned use of the property is mixed use (commercial, residential, parking).

#### **4.4 Zoning**

According to the City of Seattle Zoning Map (2015), the property is zoned PMM-85 PP, a mixed use zone in Pike Place Market Historic Core Area. Zone PPM is part of the area adopted for the Pike Place Market Urban Renewal Plan.

#### **4.5 Transportation/ Roads**

The rectangular parcel is oriented northwest to southeast and is parallel to and accessed from the east adjoining Western Avenue. State Route 99 (viaduct) borders the western property boundary with Victor Steinbrueck Park to the north and multi-level residential to the south. BNSF tunnel rail lines are located below the property beginning at approximately 50 feet elevation. The new development sits directly above the BNSF tunnel.

#### **4.6 Utilities and Water Supply**

The utilities (main water, storm, and sewer) for the property are being reworked to accommodate development. However, utilities for the new construction are expected to be connected to municipal facilities along Western Avenue. Drinking water for the area is supplied by the City of Seattle, sourced primarily from the Cedar and Tolt Rivers (City of Seattle, 2015).

#### **4.7 Potential Sources of Site Contamination**

The identified source of contamination is UST #2 that was discovered on the property in September 2015. The UST is described in Section 3.1.

#### **4.8 Potential Sources of Contamination from Neighboring Properties**

The property is located in a historic commercially zoned area of Seattle that has been developed since the early 1900's. Several cleanup and hazardous waste generator sites are listed in Ecology's publically searchable databases that are located within one-quarter mile of the property. Those facilities with close proximity, in an upgradient or crossgradient position, and that have reported hazardous waste storage or release(s) are listed below. This is not an exhaustive list listing of potential sources of contamination from neighboring properties:

Facility: First Avenue and Stewart Street Block	FSID #: 14329, 430937
Located approximately 400 feet upgradient, this site is listed as a State Cleanup Site that is in the Voluntary Cleanup Program. Redevelopment and significant excavation for 300 subsurface parking spaces indicates this Site is a low risk for impacting neighboring properties.	

### **5.0 SITE CLEANUP ACTION SUMMARY**

Environmental investigation and cleanup actions have been conducted at the Site since September 10, 2015 and are summarized below. All analytical results were screened to determine if hazardous or petroleum constituents were present at the Site at levels that indicate a risk to human health and the environment. Appropriate cleanup levels for this Site are

selected after the components of the RI have been evaluated and are presented in Section 8.0. Sample locations are presented in Figure 3. Soil analytical results are presented in Table 1. Laboratory analytical reports are presented in Appendix B. UST removal and disposal permits, checklists, soil removal and disposal documentation is included as Appendix C.

***Site Assessment for Discovered UST#1 – 1901 Western Avenue, Seattle, Washington 98102, Tax Parcel No. 1977200330 (PBS, September 11, 2015)***

On September 10, 2015, during property redevelopment activities, an approximately 500-gallon single walled steel gasoline UST was discovered (UST #1). Given active construction at the property, PBS requested and was granted a waiver from Ecology of the 30-day intent to close notification requirement. On September 11, 2015, Marvac properly decommissioned the UST (UST #1) by removal. Ms. Audrey McIvor of PBS, a Washington State Certified Site Assessor, observed the UST decommission and conducted the Site Assessment. Upon excavation, UST #1 appeared in good condition with no holes, pitting, or staining observed. During excavation, soil headspace screening was conducted using a hand held photoionization detector (PID). PID headspace readings give a general indicator of volatiles present in the media and are not chemical or concentration specific. The PID did not detect volatiles in soil headspace readings. Additionally, PBS personnel did not observe field evidence of petroleum impacts. Groundwater was not encountered during this Site Assessment.

Soil samples were collected using procedures specified in Washington Department of Ecology's *Guidance for Site Checks and Site Assessments for Underground Storage Tanks*. Representative samples were placed into laboratory provided glass jars and/or vials and stored on ice, under chain of custody documentation, until delivery to Fremont Analytical in Seattle, Washington.

Five soil samples, from the base and perimeter of the tank excavation pit, were collected and analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX), gasoline range hydrocarbons (NWTPH-Gx), and diesel/oil range hydrocarbons (NWTPH-Dx/Dx Ext.). Initial analytical results from soil samples collected during the Site Assessment indicated the soils within the tank excavation pit were below screening levels. Additional analysis, in accordance with Table 830-1, was not conducted since indicator contaminants (NWTPH-Gx, NWTPH-Dx/Dx Ext., BTEX, Lead) were not present above method detection limits.

***Site Assessment for Discovered UST#2 – 1901 Western Avenue, Seattle, Washington, 98102, Tax Parcel No. 1977200330 (PBS, September 2013)***

On September 21, 2015, during property redevelopment activities, an approximately 1200-gallon single walled steel leaded gasoline UST was discovered (UST #2). Given ongoing construction at the property, PBS requested and was granted a waiver from Ecology of the 30-day intent to close notification requirement.

On September 28, 2015, after obtaining a dangerous waste generator number for disposal of the UST contents (due to lead content), Marvac properly decommissioned the UST by removal.

Ms. Audrey McIvor of PBS, a Washington State Certified Site Assessor, observed the UST decommission and conducted the Site Assessment. Upon excavation, UST #2 exhibited some surface corrosion with no apparent holes or pitting. Stained soil and PID headspace readings indicated petroleum impacts to soil within the tank pit excavation. Groundwater was not encountered during this Site Assessment.

Soil samples were collected using procedures specified in Washington Department of Ecology's *Guidance for Site Checks and Site Assessments for Underground Storage Tanks*. Representative samples were placed into laboratory provided glass jars and/or vials and stored on ice, under chain of custody documentation, until delivery to Fremont Analytical in Seattle, Washington.

Five soil samples, from the base and perimeter of the tank pit, were collected and analyzed for BTEX, NWTPH-Gx, NWTPH-Dx/Dx Ext., and lead. Initial analytical results from soil samples collected during the Site Assessment indicated NWTPH-Gx and BTEX in soils within the tank pit excavation. NWTPH-Dx/Dx Ext. were not detected above laboratory method detection limits.

In accordance with Table 830-1, additional analysis was performed on soil sample DT2-E3. Analytical results from soil sample DT2-E3 indicated the highest reported concentration of NWTPH-Gx and associated constituents. Soil sample DT2-E3 was additionally analyzed for Methyl tert-butyl ether (MTBE), 1,2-Dichloroethane (EDC), 1,2-Dibromoethane (EDB), and Naphthalene. None of the additionally analyzed constituents indicated concentrations above method detection limits with the exception of Naphthalene, detected at 18.4mg/kg. EDB was not detected above the laboratory method detection limit of 0.005mg/kg.

On September 29, 2015, based on the results from the Site Assessment associated with UST #2, Ecology was notified of a release via Ecology's *Environmental Report Tracking System* (ERTS) and issued ERTS ID number 659781.

### ***Site Characterization (PBS September 2015)***

A Sampling and Analysis Plan (SAP) was prepared by PBS on September 29, 2015 to direct the soil "test pit" and interim impacted-soil excavation in an effort to delineate the extent of contaminated soils by means of field screening and confirmation sampling. Soils stockpiled during that activity as potential petroleum contaminated soil (PCS) via field screening were sampled for disposal characterization.

On September 30, 2015, Mr. Mike Bagley of PBS, a Washington State Certified Site Assessor, conducted additional Site Characterization to delineate the extent of petroleum impacted soil at the Site and prepare for a remedial excavation. PBS directed test pit excavations beginning at the location of the removed UST, radiating out from the former UST pit. Soils were screened for volatiles using a handheld PID. With the exception of the southern test pit, exploratory excavations continued until field observations and PID readings indicated very low to no volatility. Four soil samples representing the lateral and vertical extent of petroleum impacted soil were collected and submitted to the laboratory for analysis. Structural steel and other heavy

construction materials were being stored to the south, preventing further test pit exploration in that direction. A soil sample was collected as close to the construction equipment storage as possible. Representative samples were placed into laboratory provided glass jars and/or vials and stored on ice, under chain of custody documentation, until delivery to Fremont Analytical in Seattle, Washington.

The samples collected during this investigation were analyzed for NWTPH-Gx, BTEX, and lead. The analytical results from soil samples collected during this investigation indicated concentrations below laboratory method detection limits with the exception of TP-1, collected from the southern extent of exploration. Analytical results from TP-1 indicated NWTPH-Gx (4,790mg/kg) and BTEX (B: 4.60mg/kg, T: 34mg/kg, E: 15.3mg/kg, and X: 92.6mg/kg).

Based on the analytical results, an estimate of the approximate vertical and lateral extent of petroleum impacted soil at the Site was obtained. Each test pit was subsequently backfilled, pending planned excavation of affected soils. Groundwater was not encountered.

### ***Cleanup Action (PBS October 2015)***

On October 14, 2015, Mr. Bagley of PBS oversaw excavation, removal, and proper disposal of 53.55 tons of petroleum impacted soil from the Site. Based on the "Site Characterization" conducted in September 2015, Mr. Bagley directed excavation and removal of petroleum impacted soil to the greatest extent practicable. Construction equipment storage, that limited test pit excavation to the south, was removed providing additional lateral access in the southern direction.

The removal of affected petroleum contaminated (PCS) soil was conducted in accordance with the *Guidance for Remediation of Petroleum Contaminated Sites* (Ecology Publication 10-09-057, October 2011). PCS was excavated and disposed of at an approved facility or a Subtitle D landfill. The Contractor determined the methods and means for the soil excavation and the excavation sequence was developed directly with PBS.

Contaminated soil management procedures were developed to:

- Segregate uncontaminated soil from PCS for soil disposal;
- Allow direct loading to minimize soil stockpiling to the extent possible;
- Transport soil to the appropriate disposal facility by haulers licensed to transport contaminated soil;
- Contractor provided transporter's permit/qualifications for shipping PCS prior to any waste shipment.

Based on the laboratory results of soil samples representative of the PCS, it was determined that the waste is Category 3 or 4 and is not a dangerous waste. Republic Services, a RCRA Subtitle D landfill, accepted four loads (totaling 53.55 tons) of PCS at the Seattle transfer facility. A manifest was completed and approved by Republic Services (Appendix C).

Excavation and disposal of petroleum impacted soils continued until PID readings indicated very

low to no volatility. Confirmation samples were placed into laboratory provided glass jars and/or vials and stored on ice, under chain of custody documentation, until delivery to Fremont Analytical in Seattle, Washington. Confirmation soil samples representing the lateral and vertical extent of excavation were collected and submitted to the laboratory for analysis.

Six confirmation soil samples were collected, two from the bottom (B-1S and B-2N) and one from each perimeter wall (W-5W, W-3N, W-6S, and W-4E). All soil samples analyzed for BTEX, NWTPH-Gx, and lead. Analytical results from the confirmation soil samples collected in association with the remedial excavation indicated the majority of petroleum impacted soil was removed and properly disposed. However, soil sample W-4E indicated a pocket of petroleum impacted soil with benzene (1.86mg/kg) and NWTPH-Gx (84.5mg/kg) remained at the Site. Soil sample W-4E represents the east wall of the excavation. Further excavation was limited at the east wall due to staging of heavy construction materials. Groundwater was not encountered.

### ***Confirmation Soil Sampling (PBS November 2015)***

On November 24, 2015, Mr. Bagley conducted confirmation soil sampling at the final extents of excavation in the area of former UST #2. Soils associated with development had been excavated and properly disposed by the general contractor, and final grade (approximately 49.5 feet AMSL) had been achieved. The project surveyor, using previously recorded survey data, assisted Mr. Bagley with accurately locating the area of the former UST #2.

Soils were screened for volatiles using a handheld PID. The PID did not detect volatiles in soil headspace readings. Three confirmation soil samples (FG-1N, FG-2E, and FG-3W) representing final grade were collected. The locations of soil samples FG-1N, FG-2E, and FG-3W respectively correspond with the locations of the soil samples W-3N, W-4E, and W-5W that were collected on October 27, 2015. Analytical results from soil samples collected in association with final excavation grade at the property indicate no soils remain in place with concentrations above screening levels. Groundwater was not encountered.

## **6.0 NATURAL CONDITIONS**

### **6.1 Geology**

**Regional Geologic Setting:** The Site is within the Puget Lowland geographic region where landforms were shaped by a combination of repeated advanced and retreats of glacial cover during the Pleistocene, followed by subsequent Holocene fluvial processes (Alt and Hyndman 1995; Easterbrook 1993; Franklin and Dyrness 1973). Recessional fill, outwash, and drift cover the bedrock in the Seattle area to depths up to 1,100 meters (3,700 feet), forming the broad lowland between Puget Sound and the Cascade mountain range (Galster and Laprade 1991). As the land was released from the weight of glacial ice during and immediately following deglaciation, sea levels in the Seattle areas dropped approximately 11 meters (35 feet) before rising gradually to near modern elevation about 5,000 years ago. Tectonic activity along the Seattle fault approximately 1,100 years ago also resulted in uplift and generated a tsunami in Puget Sound, both affected lake and sea elevations, deposition, and drainage patterns in Seattle (Bucknam et al., and Atwater & Moore 1992).

**Property Geologic Conditions:** Site geologic conditions are characterized by urban built up land. Site investigations indicate the Site is underlain by silt from 49.5 feet AMSL to 18 feet AMSL over glacial till, to the extent of exploration, 10 feet AMSL.

### **6.2 Cultural History/ Archaeology**

No reported archaeological sites are associated with, recorded on, or adjacent to the property.

### **6.3 Surface Water**

The nearest surface water is Elliott Bay, located 0.09 miles west. No surface water features are located within the property.

### **6.4 Groundwater**

Based on proximity to Elliot Bay, the shallowest occurrence of groundwater is expected to be between 10-20 feet AMSL. Based on topography, the direction of shallow, unconfined groundwater flow is expected to be toward the west. Groundwater was not encountered in association with the Site. Geotechnical boring/well logs for the property indicate groundwater was not encountered to 15 feet AMSL. Available boring logs are presented as Appendix D.

### **6.5 Natural Resources and Ecological Receptors**

A Terrestrial Ecological Evaluation (TEE) Exclusion Form is included as Appendix E. The Site was determined to qualify for an exclusion from further evaluation, based on the 'barriers to exposure' condition, WAC 173-340-7491(1)(b), which includes;

*All contaminated soil, is or will be covered by physical barriers (such as buildings or paved roads) that prevent exposure to plants and wildlife, and institutional controls are used to manage remaining contamination.*

## **7.0 CONCEPTUAL SITE MODEL**

A Conceptual Site Model (CSM) was developed for the property using information from historical research and previous environmental investigations. The CSM includes a discussion of contaminants of concern, with an evaluation of occurrence and movement in affected or potentially affected media, to identify potential exposure pathways that could affect human health or the environment. Figure 4 presents the CSM via a contaminant pathway evaluation.

### **7.1 Contaminants of Concern and Occurrence**

The following sections discuss Contaminants of Concern (COCs) and their occurrence within each media.

#### **7.1.1 Soil**

Gasoline impacted soils associated with a release from UST #2 was discovered during development activities. The cause of the release is unknown. Soil samples collected across the Site were analyzed for NWTPH-Gx, BTEX, NWTPH-Dx, NWTPH-Dx Ext., EDB, MTBE, EDC, Naphthalene, and lead. NWTPH-Dx, NWTPH-Dx Ext., EDB, MTBE, and EDC have not been detected at concentrations above screening levels in soil, and therefore are not considered COCs at the Site. Although lead was not detected in soil at concentrations of concern, the source of the release was leaded gasoline; therefore, it was included in the SAP for the Site.

Based on the location of former UST #2 and analytical results from soil samples collected at the Site, the constituents of concern (COCs) in soil are NWTPH-Gx, BTEX, lead, and naphthalene.

The Site boundaries (e.g. extent of contamination) have been confirmed to exist within property boundaries. Characterization and confirmation soil samples were collected between 49.5 to 57 feet AMSL, vertically and approximately 21 foot (north-south) by 12 foot (east-west) laterally. Confirmation soil samples collected and analyzed represent the final excavation depth associated with the new development. Excavation and proper disposal of Site soils was conducted, as described in Section 5 of this report, and no soils remain in place above screening levels; therefore, exposure pathways to human or ecological receptors are not complete.

#### **7.2.1 Surface Water**

There is not a surface water body or significant drainage on the Site. Therefore, an evaluation of this media is not necessary.

#### **7.3.1 Groundwater**

Since groundwater has not been encountered at the Site an evaluation of this media is not necessary. Expected groundwater is between 10-15 feet AMSL and current elevation of the Site is 49.5 feet AMSL. Confirmation soil samples collected from the Site indicate COCs below method detection limits, with the exception of lead which was detected at background concentrations. Groundwater is expected at least 30 feet lower than the impacted soil. Based on these site conditions, the soil to groundwater is not considered a complete exposure pathway.

#### **7.4.1 Sediment**

Sediment is not present on the Site. Therefore, an evaluation of this media is not necessary.

#### **7.5.1 Air/ Soil Vapor**

Using Ecology's Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action (Ecology Publication 09-09-047, April 2015) PBS conducted a *preliminary* vapor intrusion assessment for the Site. Since COCs in Site soils have been removed, further evaluation of the vapor intrusion pathway is not necessary.

#### **7.2 Pathway Evaluation**

No complete pathways for human and/or ecological receptors were identified. Please refer to Figure 4 for the CSM.

## **8.0 CLEANUP STANDARDS**

Cleanup standards for soil that are protective of direct contact exposure have been established for Site COCs. Since groundwater is not associated with the Site, Method B Cleanup Levels (Method B), as defined in WAC 173-340-700 and 173-340-760, were selected as the most applicable cleanup criteria for all COCs, except lead. Lead will be compared to the Method A cleanup standard since a standard Cleanup Level and Risk Calculation (CLARC) Method B value is not established. The Site meets established Method A cleanup levels; however, in accordance with MTCA, cleanup levels must be developed based on the identified potential exposure pathways for humans and environmental impacts for current and future planned land use. The property is currently under development as a mixed use building with three levels of parking beneath the building, and future use is not anticipated to change.

As indicated in Section 7, the COCs in soil are NWTPH-Gx, BTEX, lead, and naphthalene. The point of compliance is in soils throughout the Site. MTCA Method B Cleanup levels, based on protection of the direct contact to soil exposure pathway, were obtained using standard CLARC values for BTEX and Naphthalene. The TPH in soil Method B cleanup level was calculated using Ecology's MTCATPH workbook and fractionization analytical data. Appendix F presents the MTCATPH workbook calculation. The following table presents the established soil cleanup levels for Site COCs:

Summary of Site-Specific Soil Cleanup Criteria:

NWTPH-Gx	Benzene	Toluene	Ethylbenzene	Xylenes	Lead	Naphthalene
1,038	18	6400	800	16000	250	1600

Concentrations are in mg/kg

## **9.0 MEDIA CLEANUP CRITERIA**

### **9.1 Constituents of Concern**

If the concentrations of COCs, previously identified for each affected media at the Site, are below selected cleanup levels, then the media cleanup criteria are considered satisfied.

### **9.2 Soil – Vertical and Lateral**

Based on the established point(s) of compliance and the selected cleanup levels for the Site, there are no remaining COCs at the Site. A remedial excavation was conducted to removing and properly disposing of over 53.55 tons of PCS. Analysis from confirmation soil sampling conducted at the extents of excavation at the Site indicates no PCS remains in place above laboratory method detection limits, except lead, which was detected at background concentrations. The point of compliance is in soils throughout the Site.

### **9.3 Groundwater – Vertical and Lateral**

Groundwater media cleanup criteria are not necessary for this Site.

#### **9.4 Sediment**

Sediment media cleanup criteria are not necessary for this Site.

#### **9.5 Surface Water**

Surface water media cleanup criteria are not necessary for this Site.

#### **9.6 Air/ Soil Vapor**

Air/soil vapor media cleanup criteria are not necessary for this Site.

### **10.0 CONCLUSIONS AND RECOMMENDATIONS**

#### ***Conclusions***

PBS presents this Remedial Investigation and Cleanup Action report for 1901 Western Avenue, Pike Place Marketfront Project, Seattle, Washington in accordance with Chapter 173-340 WAC. Based on current Site characterization information, established cleanup levels, and points of compliance identified for the Site, identified COCs are below cleanup levels.

The Site is characterized by a release of leaded gasoline to soil only, with no groundwater encountered. Analytical testing was conducted in accordance with the testing requirements listed in WAC 173-340-900, Table 830-1. Gasoline impacted soil associated with discovered tank UST #2 was remediated via excavation and disposal at an approved landfill. The UST removal and cleanup actions were completed at the Project Site between September 12 and November 24, 2015.

#### ***Request for Regulatory Closure***

Analytical results from confirmation soil samples collected at the extents of excavation indicate no contaminants remain at the Site with concentrations above their respective method detection limits, except lead which was detected at background concentrations. Since risk(s) to human, terrestrial, and ecological receptors have been eliminated through cleanup action, PBS requests a No Further Action determination for the Site at the Initial Investigation Stage (WAC 173-340-310(5)(d)).

## 11.0 **REFERENCES**

Alt, D. & Hyndman, D. (1995). *Northwest Exposures – A Geologic Story of the Northwest*.

Atwater, B.F. & Moore, A.L. (1992). *A Tsunami About 1000 Years Ago in Puget Sound, Washington*. American Association for the Advancement of Science 258: 1614-1617.

*Draft Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action*: Publication No. 09-09-047, October 2009, Revised April 2015.

Easterbrook, D.J. (1993). *Surface Processes and Landforms*. Macmillan Publishing Company.

Franklin, J.F. and C.T., Dyrness. (1973). *Natural Vegetation of Oregon and Washington*. Oregon State University Press, Corvallis.

Galster, R.W. and Laprade, W.T. (1991). *Geology of Seattle, Washington, United States of America*. Bulletin of the Association of Engineering Geologists 28: 235-302.

*Model Toxics Control Act Statute and Regulation; Chapter 70.105D RCW, Chapter 64.70 RCW, Chapter 173-340 WAC*: Publication No. 94-06, Revised 2007.

Waldron, H., Liesch, B., Mullineaux, D., & Crandall, D. (1962). [Map.] *Preliminary Geologic Map of Seattle and Vicinity, Washington*. University of Washington Library, Seattle. Map No. I-354.

*Cultural Resources Assessment (Northwest Archeological-2013) Master Use Permit (MUP) Application (MUP #3015514)*

*Geotechnical Report, Shannon & Wilson, Inc.-2013*

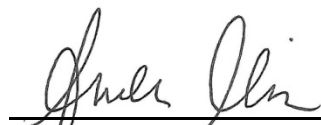
*SEPA Checklist Pike Place PDA, EA Engineering, revised November 15, 2013*

## 12.0 LIMITATIONS

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This investigation was based 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, are 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.

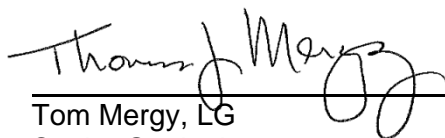
Sincerely,  
PBS Engineering and Environmental Inc.



Audrey McIvor  
Project Geologist

December 17, 2015

Date



Tom Mergy, LG  
Senior Geologist  
Environmental Services Manager

December 17, 2015

Date

THOMAS J. MERGY

## **FIGURES**

---

FIGURE 1 – VICINITY MAP

FIGURE 2 – SITE PLAN

FIGURE 3 – SOIL INVESTIGATION DATA MAP

FIGURE 4 – CONCEPTUAL SITE MODEL

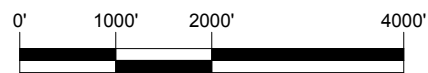
\\upserv\lan\Projects\40500\40609 Pike Place Market\40609.001\DWG\40609.001\_FIG\_1-4 excavation.dwg Dec 03, 2015 03:08pm justind



SOURCE: USGS SEATTLE SOUTHE, WA QUADRANGLE 1983,



WASHINGTON



SCALE: 1" = 2,000'

PREPARED FOR: PIKE PLACE PDA



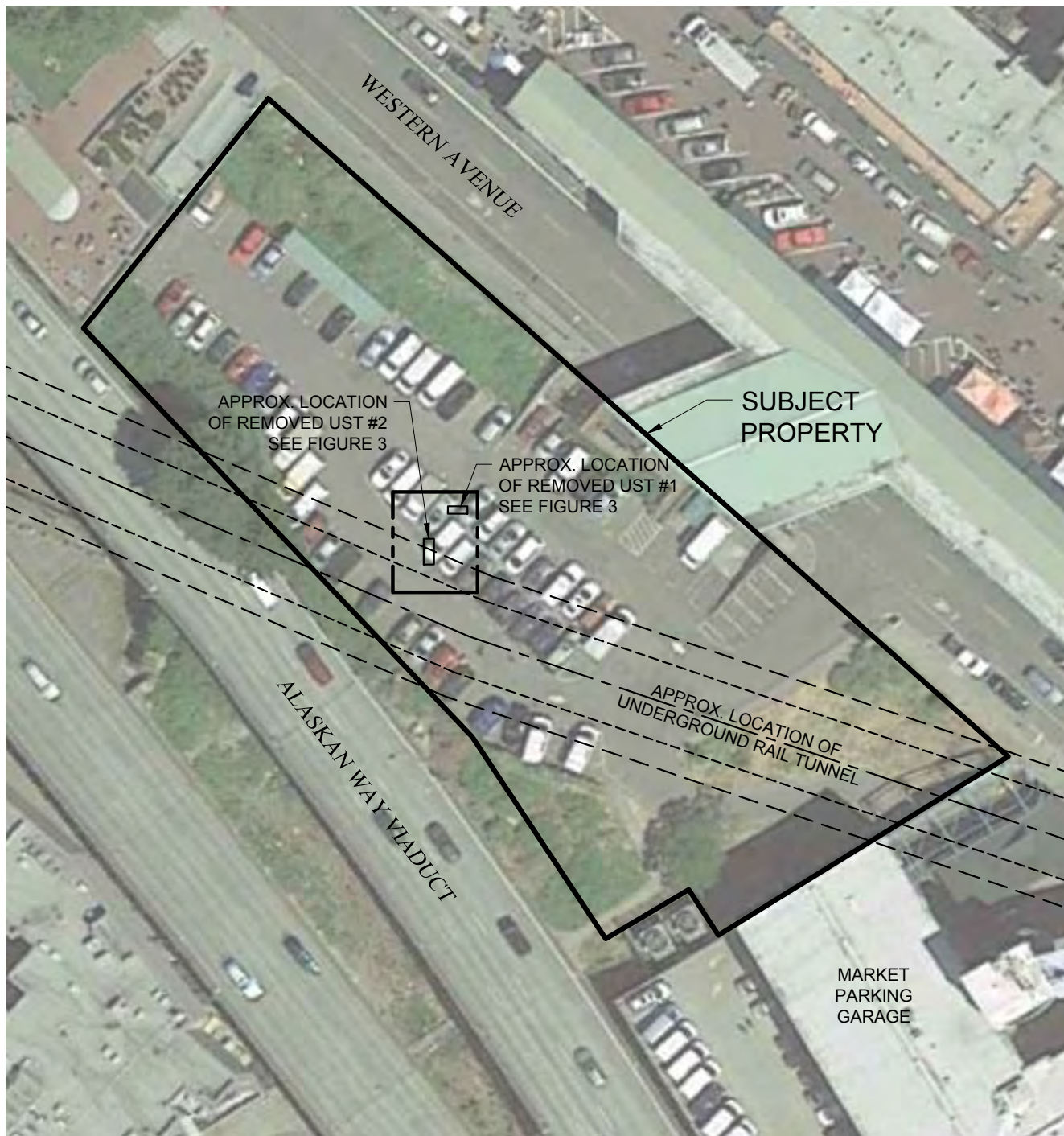
PROJECT #  
40609.001

DATE  
DEC 2015

VICINITY MAP  
1901 WESTERN AVENUE  
SEATTLE, WASHINGTON

FIGURE

1



SOURCE: © 2011 GOOGLE EARTH PRO, © 2012 GOOGLE



SCALE: 1" = 60'

PREPARED FOR: PIKE PLACE PDA



PROJECT #  
40609.001

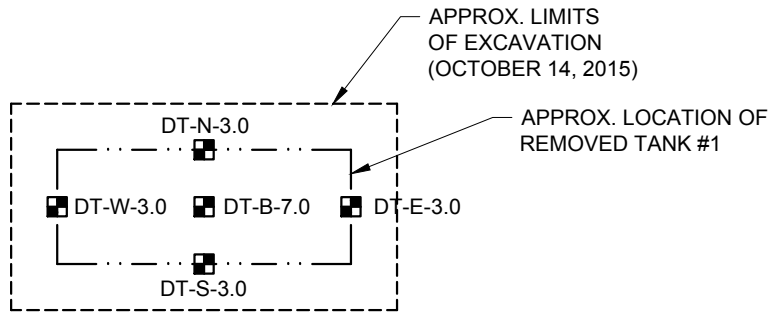
DATE  
DEC 2015

**SITE PLAN**  
1901 WESTERN AVENUE  
SEATTLE, WASHINGTON

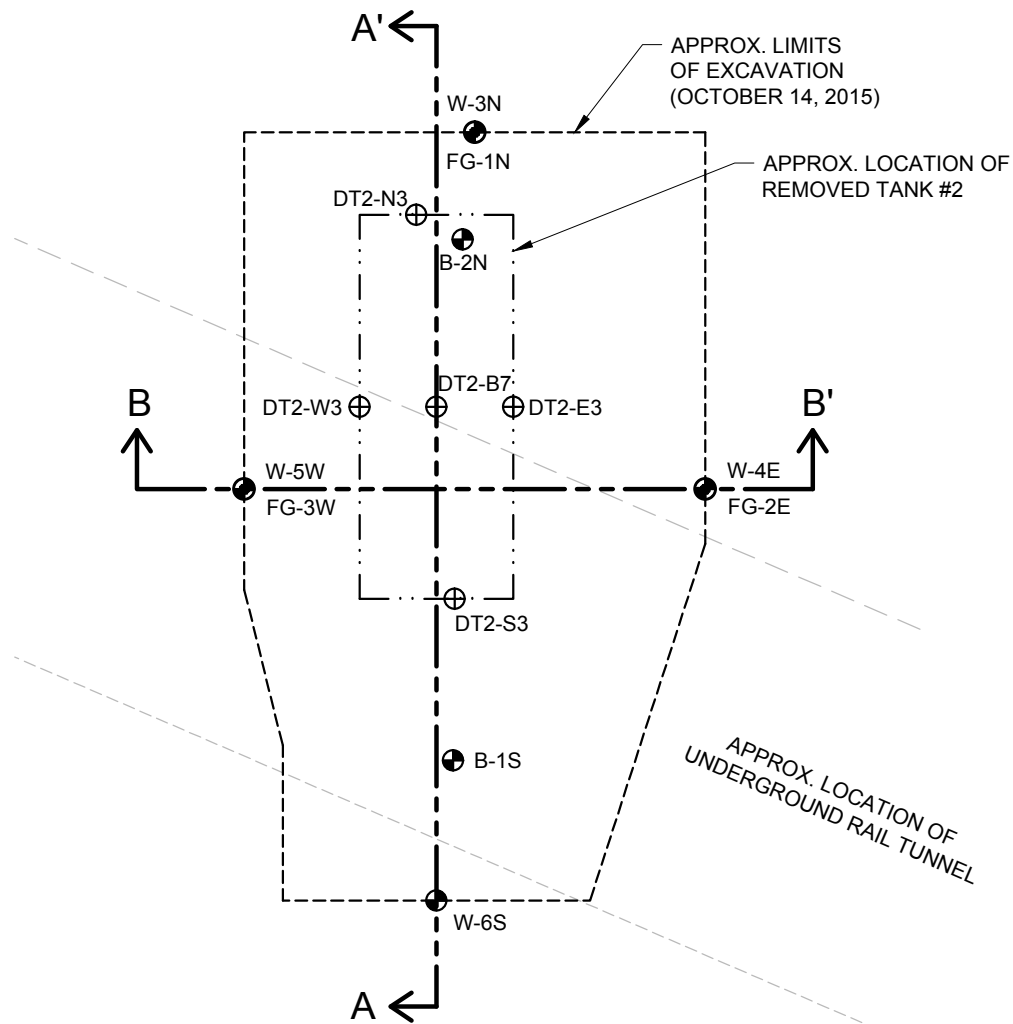
FIGURE

**2**

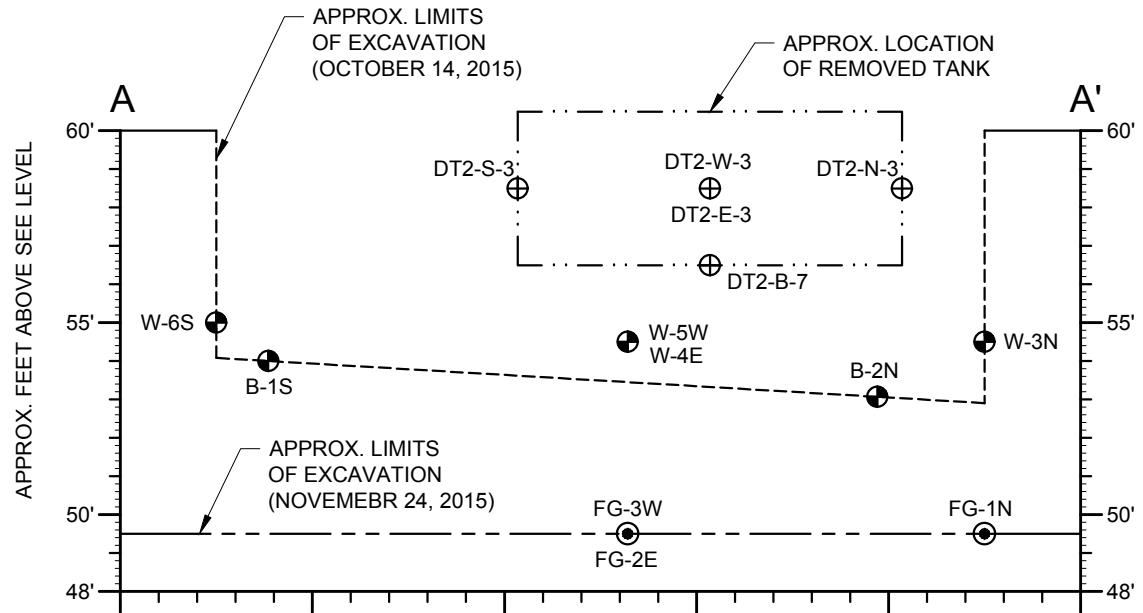
L:\Projects\40500\40609 Pike Place Market\40609.001\DWG\40609.001\_FIG\_1-4 excavation.dwg Dec 11, 2015 10:39am justind



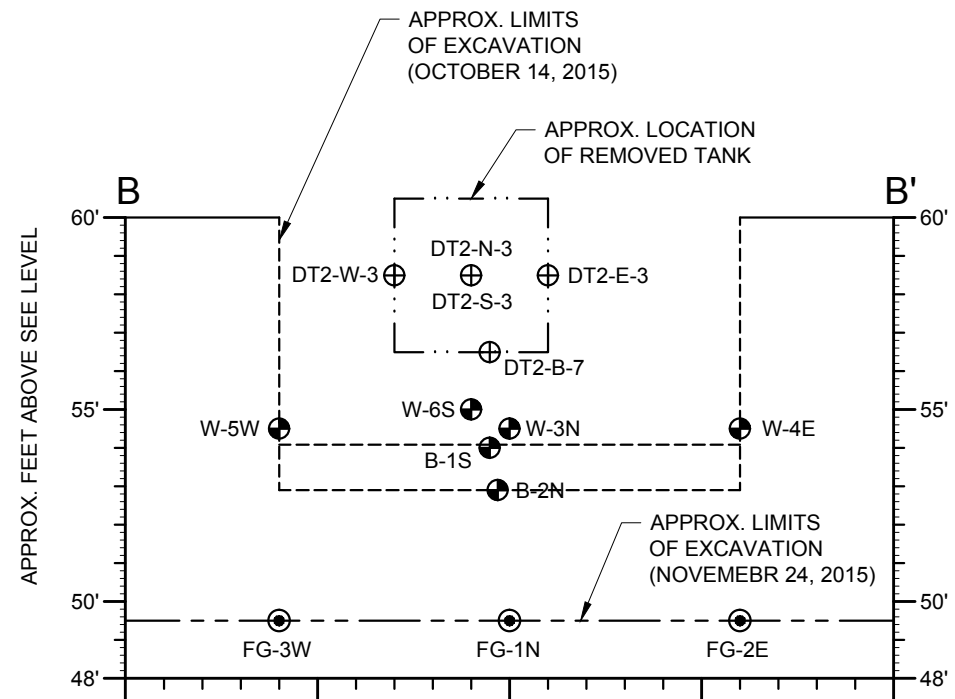
**TANK #1 EXCAVATION SITE PLAN**  
SCALE: 1" = 5'



**TANK #2 EXCAVATION SITE PLAN**  
SCALE: 1" = 5'



**TANK #2 CROSS SECTION A - A'**  
SCALE: 1" = 5'



**TANK #2 CROSS SECTION B - B'**  
SCALE: 1" = 5'

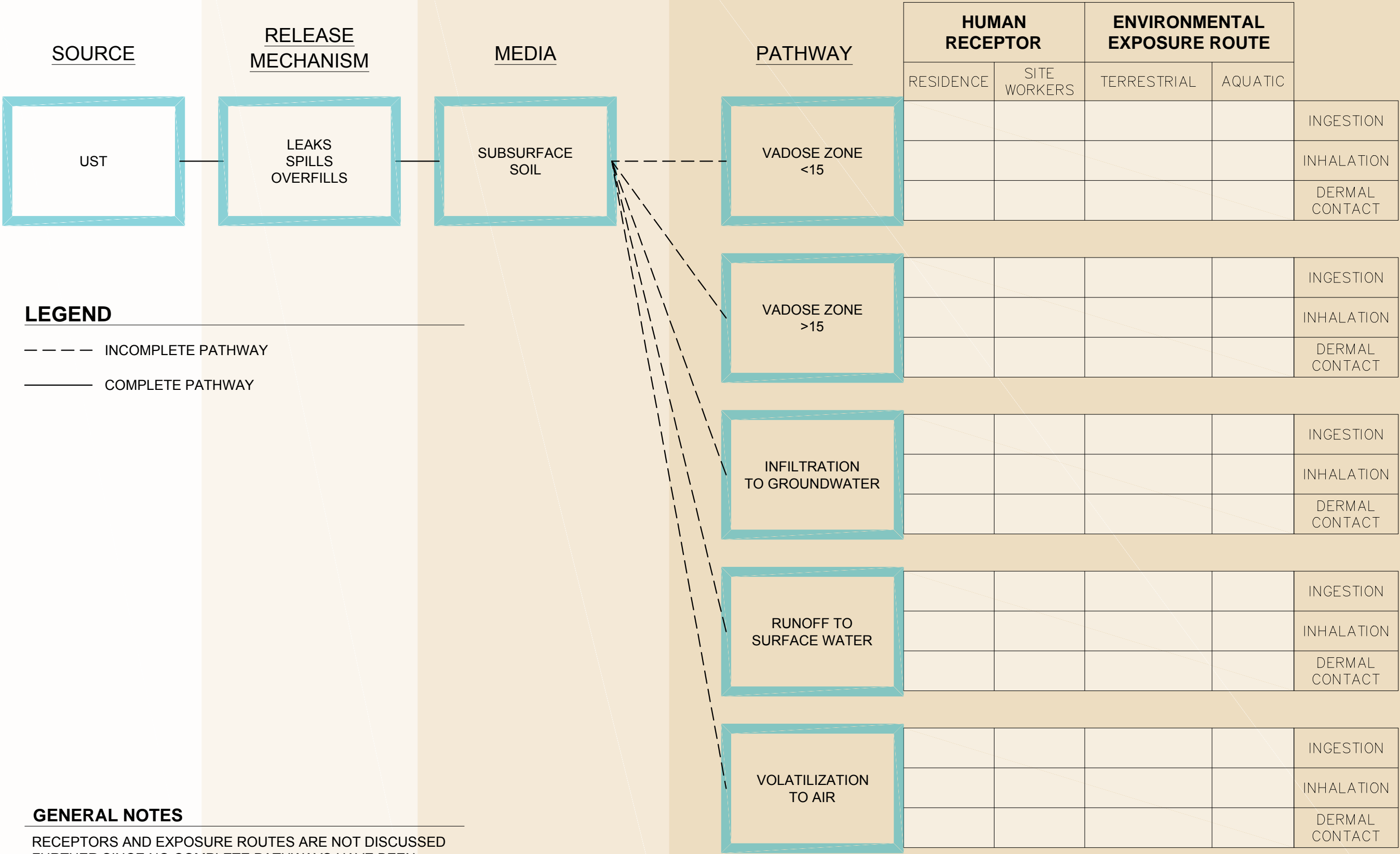
#### LEGEND

- ⊕ DT2-E-3 TANK #2 SITE ASSESSMENT SOIL SAMPLE NUMBER AND LOCATION (PBS SEPT. 2015)
- DT-E-3.0 TANK #1 SITE ASSESSMENT SOIL SAMPLE NUMBER AND LOCATION (PBS SEPT. 2015)
- B-1S CONFIRMATION SOIL SAMPLE NUMBER AND LOCATION (PBS OCT. 2015)
- ⊙ FG-1N CONFIRMATION SOIL SAMPLE NUMBER AND LOCATION (PBS NOV. 2015)

**NOTE:** SOIL SAMPLES COLLECTED IN SEPTEMBER AND OCTOBER 2015 WERE SUBSEQUENTLY OVEREXCAVATED

PREPARED FOR: PIKE PLACE PDA

\\pbsenv.lan\\Projects\\40500\\40609 Pike Place Market\\40609.001\\DWG\\40609.001\_CSM.dwg Dec 03, 2015 03:09pm justind



CONCEPTUAL SITE MODEL

PIKE PLACE MARKET FRONT

1901 WESTERN AVENUE

SEATTLE, WASHINGTON

SITE SPECIFIC	
CSM	
PROJECT:	40609.001
DATE:	DECEMBER 2015
FIGURE:	

## **TABLES**

---

### TABLE 1 – SUMMARY OF SOIL ANALYTICAL DATA



## **APPENDIX A**

---

### **LEGAL DESCRIPTION OF PROPERTY**



Search Kingcounty.gov

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## King County Department of Assessments

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### Department of Assessments

500 Fourth Avenue,  
Suite ADM-AS-0708,  
Seattle, WA 98104

Office Hours:  
Mon - Fri  
8:30 a.m. to  
4:30 p.m.

TEL: 206-296-7300  
FAX: 206-296-5107  
TTY: 206-296-7888

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### PARCEL DATA

Parcel	197720-0330	Jurisdiction	SEATTLE
Name	PIKE PLACE MARKET PDA	Levy Code	0012
Site Address	1501 WESTERN AVE 98101	Property Type	C
Geo Area	30-80	Plat Block / Building Number	36
Spec Area		Plat Lot / Unit Number	5 THRU 12
Property Name	PARKING	Quarter-Section-Township-Range	SE-31-25-4

### Legal Description

DENNYS AA 6TH ADD PORS LOTS 5 THRU 12 & PORS VAC ALLEY & VAC STS ADJ DAF - BEG MOST NLY COR SD LOT 5 BLK 36 TH SWLY ALG NWLY LN SD LOT 5 TO NXN WITH NELY MGN ARMORY WAY TH SELY ALG SD NELY MGN TOP ON A LN PLW & 30 FT NW OF THE NWLY LN OF BLK H AKA A DENNYS 4TH ADD TO CITY OF SEATTLE TH NELY ALG SD PLL LN TO SWLY LN OF WESTERN AVE TH NWLY ALG SD SWLY MGN TO NXN WITH NLY LN LOT 6 BLK 36 SD PLAT TH SWLY ALG NWLY LN SD LOT 6 TO MOST WLY COR THOF TH SWLY ALG SWLY PROD OF NWLY LN SD LOT 6 TO POB LESS POR THOF FOR BNRR TUNNEL ESMT AKA POR PCL B SEA LLA #8800103 REC #8807250812 & AMENDED UNDER REC # 8811290942 SEE ALSO MINOR # 0329  
PLat Block: 36  
Plat Lot: 5 THRU 12

### LAND DATA

Highest & Best Use As If Vacant	COMMERCIAL SERVICE
Highest & Best Use As Improved	OTHER
Present Use	Parking(Commercial Lot)
Land SqFt	30,956
Acres	0.71

Percentage Unusable	0
Unbuildable	NO
Restrictive Size Shape	YES
Zoning	PMM-85
Water	WATER DISTRICT
Sewer/Septic	PUBLIC
Road Access	PUBLIC
Parking	ADEQUATE
Street Surface	

### Views

Rainier	
Territorial	
Olympics	
Cascades	
Seattle Skyline	
Puget Sound	
Lake Washington	
Lake Sammamish	
Lake/River/Creek	
Other View	

### Waterfront

Waterfront Location	
Waterfront Footage	0
Lot Depth Factor	0
Waterfront Bank	
Tide/Shore	
Waterfront Restricted Access	
Waterfront Access Rights	NO
Poor Quality	NO
Proximity Influence	NO

### Designations

Historic Site	
Current Use	(none)
Nbr Bldg Sites	
Adjacent to Golf Fairway	NO
Adjacent to Greenbelt	NO
Other Designation	NO
Deed Restrictions	NO
Development Rights Purchased	NO
Easements	NO
Native Growth Protection Easement	NO
DNR Lease	NO

### Nuisances

Topography	
Traffic Noise	
Airport Noise	
Power Lines	NO
Other Nuisances	NO

### Problems

Water Problems	NO
Transportation Concurrency	NO
Other Problems	NO

### Environmental

Environmental	NO
---------------	----

### BUILDING

### Reference Links:

- [King County Tax Links](#)
- [Property Tax Advisor](#)
- [Washington State Department of Revenue](#) (External link)
- [Washington State Board of Tax Appeals](#) (External link)
- [Board of Appeals/Equalization](#)
- [Districts Report](#)
- [iMap](#)
- [Recorder's Office](#)

[Scanned images of surveys and other map documents](#)

[Scanned images of plats](#)

Notice mailing date:  
07/23/2015

## TAX ROLL HISTORY

Account	Valued Year	Tax Year	Omit Year	Levy Code	Appraised Land Value (\$)	Appraised Imps Value (\$)	Appraised Total Value (\$)	New Dollars (\$)	Taxable Land Value (\$)	Taxable Imps Value (\$)	Taxable Total Value (\$)	Tax Value Reason
197720033004	2015	2016		0012	6,036,400	0	6,036,400	0	0	0	0	EX
197720033004	2014	2015		0010	5,726,800	0	5,726,800	0	0	0	0	EX
197720033004	2013	2014		0010	5,417,300	0	5,417,300	0	0	0	0	EX
197720033004	2012	2013		0010	4,643,400	0	4,643,400	0	0	0	0	EX
197720033004	2011	2012		0010	4,643,400	0	4,643,400	0	0	0	0	EX
197720033004	2010	2011		0010	4,643,400	0	4,643,400	0	0	0	0	EX
197720033004	2009	2010		0010	4,643,400	0	4,643,400	0	0	0	0	EX
197720033004	2008	2009		0010	4,643,400	0	4,643,400	0	0	0	0	EX
197720033004	2007	2008		0010	4,643,400	0	4,643,400	0	0	0	0	EX
197720033004	2006	2007		0010	3,792,100	0	3,792,100	0	0	0	0	EX
197720033004	2005	2006		0010	3,792,100	0	3,792,100	0	0	0	0	EX
197720033004	2004	2005		0010	3,792,100	0	3,792,100	0	0	0	0	EX
197720033004	2003	2004		0010	3,792,100	0	3,792,100	0	0	0	0	EX
197720033004	2002	2003		0010	3,792,100	0	3,792,100	0	0	0	0	EX
197720033004	2001	2002		0010	3,714,700	0	3,714,700	0	0	0	0	EX
197720033004	2000	2001		0010	3,714,700	0	3,714,700	0	0	0	0	EX
197720033004	1999	2000		0010	3,714,700	0	3,714,700	0	0	0	0	EX
197720033004	1997	1998		0010	0	0	0	0	3,095,600	0	3,095,600	
197720033004	1996	1997		0010	0	0	0	0	3,095,600	0	3,095,600	
197720033004	1994	1995		0010	0	0	0	0	3,095,600	0	3,095,600	
197720033004	1992	1993		0010	0	0	0	0	3,095,600	0	3,095,600	
197720033004	1990	1991		0010	0	0	0	0	3,095,600	0	3,095,600	
197720033004	1989	1990		0010	0	0	0	0	3,095,600	0	3,095,600	
197720033004	1988	1989		0010	0	0	0	0	2,169,400	0	2,169,400	
197720033004	1987	1988		0010	0	0	0	0	2,169,400	0	2,169,400	

## SALES HISTORY

Excise Number	Recording Number	Document Date	Sale Price	Seller Name	Buyer Name	Instrument	Sale Reason
2740904	20150702000603	6/1/2015	\$0.00	SEATTLE CITY OF	PIKE PLACE MARKET PRESERVATION & DEVELOPMENT AUTHORITY	Quit Claim Deed	Other

## REVIEW HISTORY

## PERMIT HISTORY

## HOME IMPROVEMENT EXEMPTION

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## **APPENDIX B**

---

### **LABORATORY ANALYTICAL REPORTS**

**UST #1**

---

**SEPTEMBER 11, 2015 - SITE ASSESSMENT LABORATORY REPORT**



3600 Fremont Ave. N.

Seattle, WA 98103

T: (206) 352-3790

F: (206) 352-7178

[info@fremontanalytical.com](mailto:info@fremontanalytical.com)

**PBS Engineering & Environmental**

Audrey Mclvor  
2517 Eastlake Ave, E #100  
Seattle, WA 98102

**RE: Pike Place PDA**

**Lab ID: 1509150**

September 14, 2015

**Attention Audrey Mclvor:**

Fremont Analytical, Inc. received 6 sample(s) on 9/11/2015 for the analyses presented in the following report.

***Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.***

***Gasoline by NWTPH-Gx***

***Sample Moisture (Percent Moisture)***

***Volatile Organic Compounds by EPA Method 8260***

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Chelsea Ward  
Project Manager



Date: 09/14/2015

---

**CLIENT:** PBS Engineering & Environmental  
**Project:** Pike Place PDA  
**Lab Order:** 1509150

---

## Work Order Sample Summary

---

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1509150-001	DT-N-3.0	09/11/2015 2:25 PM	09/11/2015 3:39 PM
1509150-002	DT-S-3.0	09/11/2015 2:35 PM	09/11/2015 3:39 PM
1509150-003	DT-E-3.0	09/11/2015 2:48 PM	09/11/2015 3:39 PM
1509150-004	DT-W-3.0	09/11/2015 2:15 PM	09/11/2015 3:39 PM
1509150-005	DT-B-7.0	09/11/2015 3:03 PM	09/11/2015 3:39 PM
1509150-006	Trip Blank	03/17/2015 4:04 PM	09/11/2015 3:39 PM

---

---

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned



## Case Narrative

WO#: 1509150

Date: 9/14/2015

---

**CLIENT:** PBS Engineering & Environmental

**Project:** Pike Place PDA

---

### I. SAMPLE RECEIPT:

Samples receipt information is recorded on the attached Sample Receipt Checklist.

### II. GENERAL REPORTING COMMENTS:

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

### III. ANALYSES AND EXCEPTIONS:

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

**Qualifiers:**

- \* - Flagged value is not within established control limits
- B - Analyte detected in the associated Method Blank
- D - Dilution was required
- E - Value above quantitation range
- H - Holding times for preparation or analysis exceeded
- I - Analyte with an internal standard that does not meet established acceptance criteria
- J - Analyte detected below LOQ
- N - Tentatively Identified Compound (TIC)
- Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
- S - Spike recovery outside accepted recovery limits
- ND - Not detected at the Reporting Limit

**Acronyms:**

- %Rec - Percent Recovery
- CCB - Continued Calibration Blank
- CCV - Continued Calibration Verification
- DF - Dilution Factor
- HEM - Hexane Extractable Material
- ICV - Initial Calibration Verification
- LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
- MB or MBLANK - Method Blank
- MDL - Method Detection Limit
- MS/MSD - Matrix Spike / Matrix Spike Duplicate
- PDS - Post Digestion Spike
- Ref Val - Reference Value
- RL - Reporting Limit
- RPD - Relative Percent Difference
- SD - Serial Dilution
- SGT - Silica Gel Treatment
- SPK - Spike
- Surr - Surrogate



## Analytical Report

WO#: 1509150

Date Reported: 9/14/2015

**Client:** PBS Engineering & Environmental

**Collection Date:** 9/11/2015 2:25:00 PM

**Project:** Pike Place PDA

**Lab ID:** 1509150-001

**Matrix:** Soil

**Client Sample ID:** DT-N-3.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b><u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u></b>						
				Batch ID: 11814		Analyst: EC
Diesel (Fuel Oil)	ND	24.8		mg/Kg-dry	1	9/12/2015 12:20:00 AM
Heavy Oil	ND	62.1		mg/Kg-dry	1	9/12/2015 12:20:00 AM
Surr: 2-Fluorobiphenyl	90.0	50-150		%REC	1	9/12/2015 12:20:00 AM
Surr: o-Terphenyl	89.5	50-150		%REC	1	9/12/2015 12:20:00 AM
<b><u>Gasoline by NWTPH-Gx</u></b>						
				Batch ID: 11821		Analyst: BC
Gasoline	ND	4.35		mg/Kg-dry	1	9/11/2015 8:26:00 PM
Surr: 4-Bromofluorobenzene	97.4	65-135		%REC	1	9/11/2015 8:26:00 PM
Surr: Toluene-d8	99.7	65-135		%REC	1	9/11/2015 8:26:00 PM
<b><u>Volatile Organic Compounds by EPA Method 8260</u></b>						
				Batch ID: 11821		Analyst: BC
Benzene	ND	0.0174		mg/Kg-dry	1	9/11/2015 8:26:00 PM
Toluene	ND	0.0174		mg/Kg-dry	1	9/11/2015 8:26:00 PM
Ethylbenzene	ND	0.0261		mg/Kg-dry	1	9/11/2015 8:26:00 PM
m,p-Xylene	ND	0.0174		mg/Kg-dry	1	9/11/2015 8:26:00 PM
o-Xylene	ND	0.0174		mg/Kg-dry	1	9/11/2015 8:26:00 PM
Surr: Dibromofluoromethane	97.2	56.5-129		%REC	1	9/11/2015 8:26:00 PM
Surr: Toluene-d8	96.1	64.3-131		%REC	1	9/11/2015 8:26:00 PM
Surr: 1-Bromo-4-fluorobenzene	95.1	63.1-141		%REC	1	9/11/2015 8:26:00 PM
<b><u>Sample Moisture (Percent Moisture)</u></b>						
				Batch ID: R24826		Analyst: CG
Percent Moisture	19.4	0.500		wt%	1	9/11/2015 3:32:04 PM



## Analytical Report

WO#: 1509150

Date Reported: 9/14/2015

**Client:** PBS Engineering & Environmental

**Collection Date:** 9/11/2015 2:35:00 PM

**Project:** Pike Place PDA

**Lab ID:** 1509150-002

**Matrix:** Soil

**Client Sample ID:** DT-S-3.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b><u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u></b>				Batch ID: 11814		Analyst: EC
Diesel (Fuel Oil)	ND	25.5		mg/Kg-dry	1	9/12/2015 12:51:00 AM
Heavy Oil	ND	63.8		mg/Kg-dry	1	9/12/2015 12:51:00 AM
Surr: 2-Fluorobiphenyl	107	50-150		%REC	1	9/12/2015 12:51:00 AM
Surr: o-Terphenyl	103	50-150		%REC	1	9/12/2015 12:51:00 AM
<b><u>Gasoline by NWTPH-Gx</u></b>				Batch ID: 11821		Analyst: BC
Gasoline	ND	3.32		mg/Kg-dry	1	9/11/2015 9:23:00 PM
Surr: 4-Bromofluorobenzene	97.9	65-135		%REC	1	9/11/2015 9:23:00 PM
Surr: Toluene-d8	100	65-135		%REC	1	9/11/2015 9:23:00 PM
<b><u>Volatile Organic Compounds by EPA Method 8260</u></b>				Batch ID: 11821		Analyst: BC
Benzene	ND	0.0133		mg/Kg-dry	1	9/11/2015 9:23:00 PM
Toluene	ND	0.0133		mg/Kg-dry	1	9/11/2015 9:23:00 PM
Ethylbenzene	ND	0.0199		mg/Kg-dry	1	9/11/2015 9:23:00 PM
m,p-Xylene	ND	0.0133		mg/Kg-dry	1	9/11/2015 9:23:00 PM
o-Xylene	ND	0.0133		mg/Kg-dry	1	9/11/2015 9:23:00 PM
Surr: Dibromofluoromethane	96.6	56.5-129		%REC	1	9/11/2015 9:23:00 PM
Surr: Toluene-d8	96.7	64.3-131		%REC	1	9/11/2015 9:23:00 PM
Surr: 1-Bromo-4-fluorobenzene	95.2	63.1-141		%REC	1	9/11/2015 9:23:00 PM
<b><u>Sample Moisture (Percent Moisture)</u></b>				Batch ID: R24826		Analyst: CG
Percent Moisture	21.7	0.500		wt%	1	9/11/2015 3:32:04 PM



## Analytical Report

WO#: 1509150

Date Reported: 9/14/2015

**Client:** PBS Engineering & Environmental

**Collection Date:** 9/11/2015 2:48:00 PM

**Project:** Pike Place PDA

**Lab ID:** 1509150-003

**Matrix:** Soil

**Client Sample ID:** DT-E-3.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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**Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

Batch ID: 11814

Analyst: EC

Diesel (Fuel Oil)	ND	25.1		mg/Kg-dry	1	9/12/2015 1:23:00 AM
Heavy Oil	ND	62.8		mg/Kg-dry	1	9/12/2015 1:23:00 AM
Creosote	271	62.8		mg/Kg-dry	1	9/12/2015 1:23:00 AM
Surr: 2-Fluorobiphenyl	112	50-150		%REC	1	9/12/2015 1:23:00 AM
Surr: o-Terphenyl	106	50-150		%REC	1	9/12/2015 1:23:00 AM

**Gasoline by NWTPH-Gx**

Batch ID: 11821

Analyst: BC

Gasoline	ND	3.97		mg/Kg-dry	1	9/11/2015 9:52:00 PM
Surr: 4-Bromofluorobenzene	98.6	65-135		%REC	1	9/11/2015 9:52:00 PM
Surr: Toluene-d8	99.9	65-135		%REC	1	9/11/2015 9:52:00 PM

**Volatile Organic Compounds by EPA Method 8260**

Batch ID: 11821

Analyst: BC

Benzene	0.0183	0.0159		mg/Kg-dry	1	9/11/2015 9:52:00 PM
Toluene	0.0664	0.0159		mg/Kg-dry	1	9/11/2015 9:52:00 PM
Ethylbenzene	ND	0.0238		mg/Kg-dry	1	9/11/2015 9:52:00 PM
m,p-Xylene	0.0426	0.0159		mg/Kg-dry	1	9/11/2015 9:52:00 PM
o-Xylene	ND	0.0159		mg/Kg-dry	1	9/11/2015 9:52:00 PM
Surr: Dibromofluoromethane	96.3	56.5-129		%REC	1	9/11/2015 9:52:00 PM
Surr: Toluene-d8	97.4	64.3-131		%REC	1	9/11/2015 9:52:00 PM
Surr: 1-Bromo-4-fluorobenzene	96.2	63.1-141		%REC	1	9/11/2015 9:52:00 PM

**Sample Moisture (Percent Moisture)**

Batch ID: R24826

Analyst: CG

Percent Moisture	20.3	0.500		wt%	1	9/11/2015 3:32:04 PM
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## Analytical Report

WO#: 1509150

Date Reported: 9/14/2015

**Client:** PBS Engineering & Environmental

**Collection Date:** 9/11/2015 2:15:00 PM

**Project:** Pike Place PDA

**Lab ID:** 1509150-004

**Matrix:** Soil

**Client Sample ID:** DT-W-3.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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**Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

Batch ID: 11814

Analyst: EC

Diesel (Fuel Oil)	ND	25.4		mg/Kg-dry	1	9/12/2015 1:54:00 AM
Heavy Oil	ND	63.6		mg/Kg-dry	1	9/12/2015 1:54:00 AM
Surr: 2-Fluorobiphenyl	103	50-150		%REC	1	9/12/2015 1:54:00 AM
Surr: o-Terphenyl	99.6	50-150		%REC	1	9/12/2015 1:54:00 AM

**Gasoline by NWTPH-Gx**

Batch ID: 11821

Analyst: BC

Gasoline	ND	4.64		mg/Kg-dry	1	9/11/2015 10:21:00 PM
Surr: 4-Bromofluorobenzene	98.0	65-135		%REC	1	9/11/2015 10:21:00 PM
Surr: Toluene-d8	102	65-135		%REC	1	9/11/2015 10:21:00 PM

**Volatile Organic Compounds by EPA Method 8260**

Batch ID: 11821

Analyst: BC

Benzene	ND	0.0186		mg/Kg-dry	1	9/11/2015 10:21:00 PM
Toluene	ND	0.0186		mg/Kg-dry	1	9/11/2015 10:21:00 PM
Ethylbenzene	ND	0.0278		mg/Kg-dry	1	9/11/2015 10:21:00 PM
m,p-Xylene	ND	0.0186		mg/Kg-dry	1	9/11/2015 10:21:00 PM
o-Xylene	ND	0.0186		mg/Kg-dry	1	9/11/2015 10:21:00 PM
Surr: Dibromofluoromethane	95.7	56.5-129		%REC	1	9/11/2015 10:21:00 PM
Surr: Toluene-d8	96.5	64.3-131		%REC	1	9/11/2015 10:21:00 PM
Surr: 1-Bromo-4-fluorobenzene	95.3	63.1-141		%REC	1	9/11/2015 10:21:00 PM

**Sample Moisture (Percent Moisture)**

Batch ID: R24826

Analyst: CG

Percent Moisture	21.4	0.500		wt%	1	9/11/2015 3:32:04 PM
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## Analytical Report

WO#: 1509150

Date Reported: 9/14/2015

**Client:** PBS Engineering & Environmental

**Collection Date:** 9/11/2015 3:03:00 PM

**Project:** Pike Place PDA

**Lab ID:** 1509150-005

**Matrix:** Soil

**Client Sample ID:** DT-B-7.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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**Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

Batch ID: 11814

Analyst: EC

Diesel (Fuel Oil)	ND	25.3		mg/Kg-dry	1	9/12/2015 2:25:00 AM
Heavy Oil	ND	63.2		mg/Kg-dry	1	9/12/2015 2:25:00 AM
Surr: 2-Fluorobiphenyl	119	50-150		%REC	1	9/12/2015 2:25:00 AM
Surr: o-Terphenyl	116	50-150		%REC	1	9/12/2015 2:25:00 AM

**Gasoline by NWTPH-Gx**

Batch ID: 11821

Analyst: BC

Gasoline	ND	3.29		mg/Kg-dry	1	9/11/2015 10:49:00 PM
Surr: 4-Bromofluorobenzene	96.7	65-135		%REC	1	9/11/2015 10:49:00 PM
Surr: Toluene-d8	102	65-135		%REC	1	9/11/2015 10:49:00 PM

**Volatile Organic Compounds by EPA Method 8260**

Batch ID: 11821

Analyst: BC

Benzene	ND	0.0132		mg/Kg-dry	1	9/11/2015 10:49:00 PM
Toluene	ND	0.0132		mg/Kg-dry	1	9/11/2015 10:49:00 PM
Ethylbenzene	ND	0.0198		mg/Kg-dry	1	9/11/2015 10:49:00 PM
m,p-Xylene	ND	0.0132		mg/Kg-dry	1	9/11/2015 10:49:00 PM
o-Xylene	ND	0.0132		mg/Kg-dry	1	9/11/2015 10:49:00 PM
Surr: Dibromofluoromethane	95.8	56.5-129		%REC	1	9/11/2015 10:49:00 PM
Surr: Toluene-d8	96.5	64.3-131		%REC	1	9/11/2015 10:49:00 PM
Surr: 1-Bromo-4-fluorobenzene	94.1	63.1-141		%REC	1	9/11/2015 10:49:00 PM

**Sample Moisture (Percent Moisture)**

Batch ID: R24826

Analyst: CG

Percent Moisture	20.8	0.500		wt%	1	9/11/2015 3:32:04 PM
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Date: 9/14/2015

Work Order: 1509150  
CLIENT: PBS Engineering & Environmental  
Project: Pike Place PDA

**QC SUMMARY REPORT**  
**Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

Sample ID	MB-11814	SampType:	MBLK	Units:	mg/Kg	Prep Date:	9/11/2015	RunNo:	24829		
Client ID:	MBLKS	Batch ID:	11814			Analysis Date:	9/11/2015	SeqNo:	467851		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	ND	20.0									
Heavy Oil	ND	50.0									
Surr: 2-Fluorobiphenyl	19.0		20.00		94.9	50	150				
Surr: o-Terphenyl	18.1		20.00		90.5	50	150				

Sample ID	LCS-11814		SampType: LCS		Units: mg/Kg		Prep Date: 9/11/2015		RunNo: 24829		
Client ID:	LCSS		Batch ID: 11814		Analysis Date: 9/11/2015				SeqNo: 467850		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	494	20.0	500.0	0	98.7	65	135				
Surr: 2-Fluorobiphenyl	18.1		20.00		90.7	50	150				
Surr: o-Terphenyl	17.2		20.00		85.9	50	150				

Sample ID	1509137-003ADUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	9/11/2015	RunNo:	24829		
Client ID:	BATCH	Batch ID:	11814			Analysis Date:	9/11/2015	SeqNo:	467842		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	ND	18.7						0		30	
Heavy Oil	ND	46.8						0		30	
Surr: 2-Fluorobiphenyl	17.9		18.72		95.4	50	150		0		
Surr: o-Terphenyl	17.0		18.72		90.9	50	150		0		

Sample ID	1509137-016ADUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	9/11/2015	RunNo:	24829		
Client ID:	BATCH	Batch ID:	11814			Analysis Date:	9/11/2015	SeqNo:	468128		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	2,840	19.8						2,774	2.44	30	E
Heavy Oil	ND	49.4						0		30	
Surr: 2-Fluorobiphenyl	23.9		19.77		121	50	150		0		
Surr: o-Terphenyl	21.0		19.77		106	50	150		0		



Date: 9/14/2015

**Work Order:** 1509150  
**CLIENT:** PBS Engineering & Environmental  
**Project:** Pike Place PDA

**QC SUMMARY REPORT**  
**Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

Sample ID	1509137-016ADUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	9/11/2015	RunNo:	24829		
Client ID:	BATCH	Batch ID:	11814			Analysis Date:	9/11/2015	SeqNo:	468128		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual



Date: 9/14/2015

Work Order: 1509150  
CLIENT: PBS Engineering & Environmental  
Project: Pike Place PDA

## QC SUMMARY REPORT

Gasoline by NWTPH-Gx

Sample ID	LCS-11821	SampType: LCS			Units: mg/Kg	Prep Date: 9/11/2015			RunNo: 24840		
Client ID:	LCSS	Batch ID: 11821			Analysis Date: 9/11/2015			SeqNo: 468098			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	24.3	5.00	25.00	0	97.1	65	135				
Surr: Toluene-d8	1.29		1.250		103	65	135				
Surr: 4-Bromofluorobenzene	1.18		1.250		94.4	65	135				

Sample ID	MB-11821	SampType:	MBLK	Units:	mg/Kg	Prep Date:	9/11/2015	RunNo:	24840		
Client ID:	MBLKS	Batch ID:	11821			Analysis Date:	9/11/2015	SeqNo:	468099		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	ND	5.00									
Surr: Toluene-d8	1.29		1.250		104	65	135				
Surr: 4-Bromofluorobenzene	1.15		1.250		92.1	65	135				

Sample ID	1509150-001BDUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	9/11/2015	RunNo:	24840		
Client ID:	DT-N-3.0	Batch ID:	11821			Analysis Date:	9/11/2015	SeqNo:	468091		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	ND	4.35						0		30	
Surr: Toluene-d8	1.09		1.088		100	65	135		0		
Surr: 4-Bromofluorobenzene	1.07		1.088		98.0	65	135		0		



Date: 9/14/2015

Work Order: 1509150  
CLIENT: PBS Engineering & Environmental  
Project: Pike Place PDA

**QC SUMMARY REPORT**  
**Volatile Organic Compounds by EPA Method 8260**

Sample ID	LCS-11821	SampType:	LCS	Units:	mg/Kg	Prep Date:	9/11/2015	RunNo:	24839		
Client ID:	LCSS	Batch ID:	11821			Analysis Date:	9/11/2015	SeqNo:	468087		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	0.963	0.0200	1.000	0	96.3	64.3	133				
Toluene	0.862	0.0200	1.000	0	86.2	67.3	138				
Ethylbenzene	0.963	0.0300	1.000	0	96.3	74	129				
m,p-Xylene	1.89	0.0200	2.000	0	94.5	79.8	128				
o-Xylene	0.948	0.0200	1.000	0	94.8	72.7	124				
Surr: Dibromofluoromethane	1.34		1.250		107	56.5	129				
Surr: Toluene-d8	1.18		1.250		94.5	64.3	131				
Surr: 1-Bromo-4-fluorobenzene	1.17		1.250		93.3	63.1	141				

Sample ID	MB-11821	SampType:	MBLK		Units:	mg/Kg		Prep Date:	9/11/2015		RunNo:	24839	
Client ID:	MBLKS	Batch ID:	11821					Analysis Date:	9/11/2015		SeqNo:	468088	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val		%RPD	RPDLimit	Qual
Benzene		ND	0.0200										
Toluene		ND	0.0200										
Ethylbenzene		ND	0.0300										
m,p-Xylene		ND	0.0200										
o-Xylene		ND	0.0200										
Surr: Dibromofluoromethane		1.31		1.250		105	56.5	129					
Surr: Toluene-d8		1.18		1.250		94.2	64.3	131					
Surr: 1-Bromo-4-fluorobenzene		1.12		1.250		89.8	63.1	141					

Sample ID	1509150-001BDUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	9/11/2015	RunNo:	24839		
Client ID:	DT-N-3.0	Batch ID:	11821			Analysis Date:	9/11/2015	SeqNo:	468079		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.0174						0		30	
Toluene	ND	0.0174						0		30	
Ethylbenzene	ND	0.0261						0		30	
m,p-Xylene	ND	0.0174						0		30	



Date: 9/14/2015

Work Order: 1509150  
CLIENT: PBS Engineering & Environmental  
Project: Pike Place PDA

**QC SUMMARY REPORT**  
**Volatile Organic Compounds by EPA Method 8260**

Sample ID	1509150-001BDUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	9/11/2015	RunNo:	24839		
Client ID:	DT-N-3.0	Batch ID:	11821			Analysis Date:	9/11/2015	SeqNo:	468079		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

o-Xylene	ND	0.0174						0		30	
Surr: Dibromofluoromethane	1.05		1.088		97.0	56.5	129		0		
Surr: Toluene-d8	1.05		1.088		96.8	64.3	131		0		
Surr: 1-Bromo-4-fluorobenzene	1.04		1.088		95.6	63.1	141		0		

Sample ID	1509150-002BMS	SampType:	MS	Units:	mg/Kg-dry	Prep Date:	9/11/2015	RunNo:	24839		
Client ID:	DT-S-3.0	Batch ID:	11821			Analysis Date:	9/11/2015	SeqNo:	468081		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Benzene	0.703	0.0133	0.6636	0	106	63.5	133				
Toluene	0.642	0.0133	0.6636	0.001895	96.4	63.4	132				
Ethylbenzene	0.701	0.0199	0.6636	0.001782	105	54.5	134				
m,p-Xylene	1.39	0.0133	1.327	0.007827	104	53.1	132				
o-Xylene	0.698	0.0133	0.6636	0.002455	105	53.3	139				
Surr: Dibromofluoromethane	0.861		0.8295		104	56.5	129				
Surr: Toluene-d8	0.801		0.8295		96.5	64.3	131				
Surr: 1-Bromo-4-fluorobenzene	0.812		0.8295		97.9	63.1	141				



Date: 9/14/2015

**Work Order:** 1509150  
**CLIENT:** PBS Engineering & Environmental  
**Project:** Pike Place PDA

**QC SUMMARY REPORT**  
**Sample Moisture (Percent Moisture)**

Sample ID	1509137-015ADUP	SampType:	DUP	Units:			wt%	Prep Date:	9/11/2015	RunNo:	24826
Client ID:	BATCH	Batch ID:	R24826	Analysis Date:			9/11/2015	SeqNo:	467719		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	7.09	0.500						8.588	19.2	20	

Sample ID	1509148-001ADUP	SampType:	DUP	Units:	wt%	Prep Date:	9/11/2015	RunNo:	24826		
Client ID:	BATCH	Batch ID:	R24826	Analysis Date:	9/11/2015	SeqNo:	467729				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	51.0	0.500						48.03	6.05	20	

Client Name: **PBS**

 Work Order Number: **1509150**

 Logged by: **Clare Griggs**

 Date Received: **9/11/2015 3:39:00 PM**

## Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
2. How was the sample delivered? Client

## Log In

3. Coolers are present? Yes ☒ No ☐ NA ☐
4. Shipping container/cooler in good condition? Yes ☒ No ☐
5. Custody Seals present on shipping container/cooler?  
(Refer to comments for Custody Seals not intact) Yes ☐ No ☐ Not Required ☒
6. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
7. Were all items received at a temperature of  $>0^{\circ}\text{C}$  to  $10.0^{\circ}\text{C}$  \* Yes ☒ No ☐ NA ☐
8. Sample(s) in proper container(s)? Yes ☒ No ☐
9. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
10. Are samples properly preserved? Yes ☒ No ☐
11. Was preservative added to bottles? Yes ☐ No ☒ NA ☐
12. Is there headspace in the VOA vials? Yes ☐ No ☐ NA ☒
13. Did all samples containers arrive in good condition(unbroken)? Yes ☒ No ☐
14. Does paperwork match bottle labels? Yes ☒ No ☐
15. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
16. Is it clear what analyses were requested? Yes ☒ No ☐
17. Were all holding times able to be met? Yes ☒ No ☐

## Special Handling (if applicable)

18. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified:	<input type="text"/>	Date	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

19. Additional remarks:

## Item Information

Item #	Temp $^{\circ}\text{C}$
Cooler	8.4
Sample	6.2

\* Note: DoD/ELAP and TNI require items to be received at  $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$



# Fremont

ANALYTICAL

## Chain of Custody Record

Laboratory Project No (Internal):

150915D

3600 Fremont Ave N.  
Seattle, WA 98103

Tel: 206-352-3750  
Fax: 206-352-7178

Date: 9/11/2015

Page 1 of 1

Client:

Address:

City, State, Zip

PS Engineering and Environmental  
2517 Eastlake Avenue East, Ste 100  
Seattle, WA 98102

Project Name:

Project No:

Location:

Reports To (PM):

PIKE PLACE PDA

44009.003

P01 Western Ave

Audrey McIVER

Collected by: AUDREY MCIVER

Tel:

Fax:

Email:

audrey.mciver@psenv.com

\*Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, WW = Waste Water, SW = Storm Water

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOC (EPA 8260)	GV/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCD)	Petroleum Hydrocarbon Organics (PH)	Semi-VOL (EPA 8270)	PAH (EPA 8270)	PCBs (EPA 8082)	Metals** (6020 / 301.8)	Total (T) / Preserved (D)	Anions (D)***	ED3 (8011)	Comments/Depth
-------------	-------------	-------------	-----------------------	----------------	---------	------	------------------------------	----------------------------------	-------------------------------------	---------------------	----------------	-----------------	-------------------------	---------------------------	---------------	------------	----------------

1 DT - N - 3.0 9/11 1425 S

X

X

2 DT - S - 3.0 9/11 1435 S

X

X

3 DT - E - 3.0 9/11 1448 S

X

X

4 DT - W - 3.0 9/11 1415 S

X

X

5 DT - B - 7.0 9/11 1503 S

X

X

6

7

8

9

10

\*\*Metals Analysis (Circle): MTCA-5 PCRA-8 Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti U V Zn

\*\*\*Anions (Circle):

Nitrate

Nitrite

Chloride

Sulfate

Bromide

Orthophosphate

Fluoride

Nitrate-Nitrite

Turn-around times for samples received after 4:00pm will begin on the following business day.

Special Remarks:

Results by 10:00A

9/14/2015

TAT -> Same Day / Next Day / 2 Day / 3 Day STD

\*Please coordinate with the lab in advance

Retained/Released

Date/Time

9/11/2015 1539

Received

Date/Time

9/11/2015 1539

Retained/Released

Date/Time

9/11/2015 1539

Received

Date/Time

9/11/2015 1539

## **UST #2**

---

**SEPTEMBER 28, 2015 - SITE ASSESSMENT LABORATORY REPORT**  
**SEPTEMBER 30, 2015 – DELINEATION SOIL SAMPLING LABORATORY REPORT**  
**OCTOBER 14, 2015 – CONFIRMATION SOIL SAMPLING**  
**NOVEMBER 24, 2015 – FINAL GRADE CONFIRMATION SOIL SAMPLING**



3600 Fremont Ave. N.  
Seattle, WA 98103  
T: (206) 352-3790  
F: (206) 352-7178  
info@fremontanalytical.com

**PBS Engineering & Environmental**  
Audrey Mclvor  
2517 Eastlake Ave, E #100  
Seattle, WA 98102

**RE: Pike Place PDA**  
**Lab ID: 1509387**

October 06, 2015

**Attention Audrey Mclvor:**

Fremont Analytical, Inc. received 6 sample(s) on 9/28/2015 for the analyses presented in the following report.

***Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.***  
***Gasoline by NWTPH-Gx***  
***Metals (SW6020) with TCLP Extraction (EPA 1311)***  
***Sample Moisture (Percent Moisture)***  
***Total Metals by EPA Method 6020***  
***Volatile Organic Compounds by EPA Method 8260***  
***Volatile Organic Compounds by SW8260/TCLP ZHE***

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Chelsea Ward  
Project Manager



Date: 10/06/2015

---

**CLIENT:** PBS Engineering & Environmental  
**Project:** Pike Place PDA  
**Lab Order:** 1509387

---

## Work Order Sample Summary

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Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1509387-001	DT2-N-3	09/28/2015 4:08 PM	09/28/2015 5:16 PM
1509387-002	DT2-S-3	09/28/2015 4:29 PM	09/28/2015 5:16 PM
1509387-003	DT2-E-3	09/28/2015 4:14 PM	09/28/2015 5:16 PM
1509387-004	DT2-W-3	09/28/2015 4:20 PM	09/28/2015 5:16 PM
1509387-005	DT2-B-7	09/28/2015 4:39 PM	09/28/2015 5:16 PM
1509387-006	Trip Blank		09/28/2015 5:16 PM

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Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned



## Case Narrative

WO#: 1509387

Date: 10/6/2015

---

**CLIENT:** PBS Engineering & Environmental

**Project:** Pike Place PDA

---

### I. SAMPLE RECEIPT:

Samples receipt information is recorded on the attached Sample Receipt Checklist.

### II. GENERAL REPORTING COMMENTS:

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

### III. ANALYSES AND EXCEPTIONS:

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

**Qualifiers:**

- \* - Flagged value is not within established control limits
- B - Analyte detected in the associated Method Blank
- D - Dilution was required
- E - Value above quantitation range
- H - Holding times for preparation or analysis exceeded
- I - Analyte with an internal standard that does not meet established acceptance criteria
- J - Analyte detected below LOQ
- N - Tentatively Identified Compound (TIC)
- Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
- S - Spike recovery outside accepted recovery limits
- ND - Not detected at the Reporting Limit

**Acronyms:**

- %Rec - Percent Recovery
- CCB - Continued Calibration Blank
- CCV - Continued Calibration Verification
- DF - Dilution Factor
- HEM - Hexane Extractable Material
- ICV - Initial Calibration Verification
- LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
- MB or MBLANK - Method Blank
- MDL - Method Detection Limit
- MS/MSD - Matrix Spike / Matrix Spike Duplicate
- PDS - Post Digestion Spike
- Ref Val - Reference Value
- RL - Reporting Limit
- RPD - Relative Percent Difference
- SD - Serial Dilution
- SGT - Silica Gel Treatment
- SPK - Spike
- Surr - Surrogate



## Analytical Report

WO#: 1509387

Date Reported: 10/6/2015

**Client:** PBS Engineering & Environmental

**Collection Date:** 9/28/2015 4:08:00 PM

**Project:** Pike Place PDA

**Lab ID:** 1509387-001

**Matrix:** Soil

**Client Sample ID:** DT2-N-3

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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**Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

Batch ID: 11981

Analyst: AK

Diesel (Fuel Oil)	ND	22.4		mg/Kg-dry	1	9/29/2015 1:24:00 PM
Heavy Oil	ND	55.9		mg/Kg-dry	1	9/29/2015 1:24:00 PM
Surr: 2-Fluorobiphenyl	106	50-150		%REC	1	9/29/2015 1:24:00 PM
Surr: o-Terphenyl	111	50-150		%REC	1	9/29/2015 1:24:00 PM

**Gasoline by NWTPH-Gx**

Batch ID: 11979

Analyst: EM

Gasoline	ND	3.59		mg/Kg-dry	1	9/29/2015 1:15:00 PM
Surr: 4-Bromofluorobenzene	105	65-135		%REC	1	9/29/2015 1:15:00 PM
Surr: Toluene-d8	97.8	65-135		%REC	1	9/29/2015 1:15:00 PM

**Volatile Organic Compounds by EPA Method 8260**

Batch ID: 11979

Analyst: EM

Benzene	ND	0.0144		mg/Kg-dry	1	9/29/2015 1:15:00 PM
Toluene	ND	0.0144		mg/Kg-dry	1	9/29/2015 1:15:00 PM
Ethylbenzene	ND	0.0215		mg/Kg-dry	1	9/29/2015 1:15:00 PM
m,p-Xylene	ND	0.0144		mg/Kg-dry	1	9/29/2015 1:15:00 PM
o-Xylene	ND	0.0144		mg/Kg-dry	1	9/29/2015 1:15:00 PM
Surr: Dibromofluoromethane	94.2	56.5-129		%REC	1	9/29/2015 1:15:00 PM
Surr: Toluene-d8	98.9	64.3-131		%REC	1	9/29/2015 1:15:00 PM
Surr: 1-Bromo-4-fluorobenzene	101	63.1-141		%REC	1	9/29/2015 1:15:00 PM

**Total Metals by EPA Method 6020**

Batch ID: 11982

Analyst: TN

Lead	3.79	0.190		mg/Kg-dry	1	9/29/2015 4:14:19 PM
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**Sample Moisture (Percent Moisture)**

Batch ID: R25168

Analyst: CG

Percent Moisture	18.5	0.500		wt%	1	9/29/2015 8:14:07 AM
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## Analytical Report

WO#: 1509387

Date Reported: 10/6/2015

**Client:** PBS Engineering & Environmental

**Collection Date:** 9/28/2015 4:29:00 PM

**Project:** Pike Place PDA

**Lab ID:** 1509387-002

**Matrix:** Soil

**Client Sample ID:** DT2-S-3

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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**Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

Batch ID: 11981

Analyst: AK

Diesel (Fuel Oil)	ND	24.9		mg/Kg-dry	1	9/29/2015 2:29:00 PM
Heavy Oil	ND	62.3		mg/Kg-dry	1	9/29/2015 2:29:00 PM
Surr: 2-Fluorobiphenyl	116	50-150		%REC	1	9/29/2015 2:29:00 PM
Surr: o-Terphenyl	122	50-150		%REC	1	9/29/2015 2:29:00 PM

**Gasoline by NWTPH-Gx**

Batch ID: 11979

Analyst: EM

Gasoline	2,890	211	D	mg/Kg-dry	50	9/30/2015 6:06:00 AM
Surr: 4-Bromofluorobenzene	101	65-135	D	%REC	50	9/30/2015 6:06:00 AM
Surr: Toluene-d8	100	65-135	D	%REC	50	9/30/2015 6:06:00 AM

**Volatile Organic Compounds by EPA Method 8260**

Batch ID: 11979

Analyst: EM

Benzene	7.05	0.842	D	mg/Kg-dry	50	9/30/2015 6:06:00 AM
Toluene	51.4	0.842	D	mg/Kg-dry	50	9/30/2015 6:06:00 AM
Ethylbenzene	20.2	1.26	D	mg/Kg-dry	50	9/30/2015 6:06:00 AM
m,p-Xylene	80.6	0.842	D	mg/Kg-dry	50	9/30/2015 6:06:00 AM
o-Xylene	34.0	0.842	D	mg/Kg-dry	50	9/30/2015 6:06:00 AM
Surr: Dibromofluoromethane	102	56.5-129		%REC	1	9/29/2015 2:42:00 PM
Surr: Toluene-d8	95.5	64.3-131	D	%REC	50	9/30/2015 6:06:00 AM
Surr: 1-Bromo-4-fluorobenzene	99.2	63.1-141	D	%REC	50	9/30/2015 6:06:00 AM

**Total Metals by EPA Method 6020**

Batch ID: 11982

Analyst: TN

Lead	4.85	0.199		mg/Kg-dry	1	9/29/2015 4:17:51 PM
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**Sample Moisture (Percent Moisture)**

Batch ID: R25168

Analyst: CG

Percent Moisture	25.1	0.500		wt%	1	9/29/2015 8:14:07 AM
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# Analytical Report

WO#: 1509387

Date Reported: 10/6/2015

Client: PBS Engineering &amp; Environmental

Collection Date: 9/28/2015 4:14:00 PM

Project: Pike Place PDA

Lab ID: 1509387-003

Matrix: Soil

Client Sample ID: DT2-E-3

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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**Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

Batch ID: 11981

Analyst: AK

Diesel (Fuel Oil)	ND	26.5		mg/Kg-dry	1	9/29/2015 3:02:00 PM
Heavy Oil	ND	66.3		mg/Kg-dry	1	9/29/2015 3:02:00 PM
Surr: 2-Fluorobiphenyl	96.1	50-150		%REC	1	9/29/2015 3:02:00 PM
Surr: o-Terphenyl	100	50-150		%REC	1	9/29/2015 3:02:00 PM

**Gasoline by NWTPH-Gx**

Batch ID: 11979

Analyst: EM

Gasoline	3,300	257	D	mg/Kg-dry	50	9/30/2015 6:35:00 AM
Surr: 4-Bromofluorobenzene	101	65-135	D	%REC	50	9/30/2015 6:35:00 AM
Surr: Toluene-d8	101	65-135	D	%REC	50	9/30/2015 6:35:00 AM

**Volatile Organic Compounds by EPA Method 8260**

Batch ID: 11979

Analyst: EM

Methyl tert-butyl ether (MTBE)	ND	0.0514		mg/Kg-dry	1	9/29/2015 3:10:00 PM
1,2-Dichloroethane (EDC)	2.42	0.0308		mg/Kg-dry	1	9/29/2015 3:10:00 PM
Benzene	11.4	1.03	D	mg/Kg-dry	50	9/30/2015 6:35:00 AM
Toluene	50.8	1.03	D	mg/Kg-dry	50	9/30/2015 6:35:00 AM
1,2-Dibromoethane (EDB)	ND	0.00514		mg/Kg-dry	1	9/29/2015 3:10:00 PM
Ethylbenzene	17.9	1.54	D	mg/Kg-dry	50	9/30/2015 6:35:00 AM
m,p-Xylene	72.6	1.03	D	mg/Kg-dry	50	9/30/2015 6:35:00 AM
o-Xylene	30.1	1.03	D	mg/Kg-dry	50	9/30/2015 6:35:00 AM
Naphthalene	18.4	1.54	D	mg/Kg-dry	50	9/30/2015 6:35:00 AM
Surr: Dibromofluoromethane	98.0	56.5-129		%REC	1	9/29/2015 3:10:00 PM
Surr: Toluene-d8	96.6	64.3-131	D	%REC	50	9/30/2015 6:35:00 AM
Surr: 1-Bromo-4-fluorobenzene	99.3	63.1-141	D	%REC	50	9/30/2015 6:35:00 AM

**Volatile Organic Compounds by SW8260/TCLP ZHE**

Batch ID: 12030

Analyst: EM

Benzene	2.23	1.00		µg/L	1	10/5/2015 11:36:00 AM
Surr: 4-Bromofluorobenzene	99.4	83.5-119		%REC	1	10/5/2015 11:36:00 AM
Surr: Dibromofluoromethane	103	80.3-123		%REC	1	10/5/2015 11:36:00 AM
Surr: Toluene-d8	102	67.3-147		%REC	1	10/5/2015 11:36:00 AM

**Total Metals by EPA Method 6020**

Batch ID: 11982

Analyst: TN

Lead	9.05	0.215		mg/Kg-dry	1	9/29/2015 4:21:22 PM
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## Analytical Report

WO#: 1509387

Date Reported: 10/6/2015

**Client:** PBS Engineering & Environmental

**Collection Date:** 9/28/2015 4:14:00 PM

**Project:** Pike Place PDA

**Lab ID:** 1509387-003

**Matrix:** Soil

**Client Sample ID:** DT2-E-3

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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**Metals (SW6020) with TCLP Extraction (EPA 1311)**

Batch ID: 12012

Analyst: TN

Lead	ND	0.200		mg/L	1	10/1/2015 1:47:18 PM
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**Sample Moisture (Percent Moisture)**

Batch ID: R25168

Analyst: CG

Percent Moisture	25.6	0.500		wt%	1	9/29/2015 8:14:07 AM
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## Analytical Report

WO#: 1509387

Date Reported: 10/6/2015

**Client:** PBS Engineering & Environmental

**Collection Date:** 9/28/2015 4:20:00 PM

**Project:** Pike Place PDA

**Lab ID:** 1509387-004

**Matrix:** Soil

**Client Sample ID:** DT2-W-3

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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**Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

Batch ID: 11981

Analyst: AK

Diesel (Fuel Oil)	ND	23.4		mg/Kg-dry	1	9/29/2015 3:35:00 PM
Heavy Oil	ND	58.6		mg/Kg-dry	1	9/29/2015 3:35:00 PM
Surr: 2-Fluorobiphenyl	98.4	50-150		%REC	1	9/29/2015 3:35:00 PM
Surr: o-Terphenyl	105	50-150		%REC	1	9/29/2015 3:35:00 PM

**Gasoline by NWTPH-Gx**

Batch ID: 11979

Analyst: EM

Gasoline	11.4	4.57		mg/Kg-dry	1	9/29/2015 2:13:00 PM
Surr: 4-Bromofluorobenzene	106	65-135		%REC	1	9/29/2015 2:13:00 PM
Surr: Toluene-d8	98.0	65-135		%REC	1	9/29/2015 2:13:00 PM

**Volatile Organic Compounds by EPA Method 8260**

Batch ID: 11979

Analyst: EM

Benzene	0.0911	0.0183		mg/Kg-dry	1	9/29/2015 2:13:00 PM
Toluene	0.268	0.0183		mg/Kg-dry	1	9/29/2015 2:13:00 PM
Ethylbenzene	0.0663	0.0274		mg/Kg-dry	1	9/29/2015 2:13:00 PM
m,p-Xylene	0.270	0.0183		mg/Kg-dry	1	9/29/2015 2:13:00 PM
o-Xylene	0.103	0.0183		mg/Kg-dry	1	9/29/2015 2:13:00 PM
Surr: Dibromofluoromethane	94.6	56.5-129		%REC	1	9/29/2015 2:13:00 PM
Surr: Toluene-d8	99.9	64.3-131		%REC	1	9/29/2015 2:13:00 PM
Surr: 1-Bromo-4-fluorobenzene	101	63.1-141		%REC	1	9/29/2015 2:13:00 PM

**Total Metals by EPA Method 6020**

Batch ID: 11982

Analyst: TN

Lead	5.99	0.191		mg/Kg-dry	1	9/29/2015 4:24:53 PM
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**Sample Moisture (Percent Moisture)**

Batch ID: R25168

Analyst: CG

Percent Moisture	22.2	0.500		wt%	1	9/29/2015 8:14:07 AM
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## Analytical Report

WO#: 1509387

Date Reported: 10/6/2015

**Client:** PBS Engineering & Environmental

**Collection Date:** 9/28/2015 4:39:00 PM

**Project:** Pike Place PDA

**Lab ID:** 1509387-005

**Matrix:** Soil

**Client Sample ID:** DT2-B-7

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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**Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

Batch ID: 11981

Analyst: AK

Diesel (Fuel Oil)	ND	25.5		mg/Kg-dry	1	9/29/2015 4:08:00 PM
Heavy Oil	ND	63.6		mg/Kg-dry	1	9/29/2015 4:08:00 PM
Surr: 2-Fluorobiphenyl	101	50-150		%REC	1	9/29/2015 4:08:00 PM
Surr: o-Terphenyl	107	50-150		%REC	1	9/29/2015 4:08:00 PM

**Gasoline by NWTPH-Gx**

Batch ID: 11979

Analyst: EM

Gasoline	357	48.6	D	mg/Kg-dry	10	9/30/2015 5:38:00 AM
Surr: 4-Bromofluorobenzene	121	65-135		%REC	1	9/29/2015 3:39:00 PM
Surr: Toluene-d8	103	65-135		%REC	1	9/29/2015 3:39:00 PM

**Volatile Organic Compounds by EPA Method 8260**

Batch ID: 11979

Analyst: EM

Benzene	0.540	0.0194		mg/Kg-dry	1	9/29/2015 3:39:00 PM
Toluene	3.49	0.0194	E	mg/Kg-dry	1	9/29/2015 3:39:00 PM
Ethylbenzene	1.50	0.0292		mg/Kg-dry	1	9/29/2015 3:39:00 PM
m,p-Xylene	6.23	0.0194	E	mg/Kg-dry	1	9/29/2015 3:39:00 PM
o-Xylene	2.52	0.0194	E	mg/Kg-dry	1	9/29/2015 3:39:00 PM
Surr: Dibromofluoromethane	96.6	56.5-129		%REC	1	9/29/2015 3:39:00 PM
Surr: Toluene-d8	109	64.3-131		%REC	1	9/29/2015 3:39:00 PM
Surr: 1-Bromo-4-fluorobenzene	103	63.1-141		%REC	1	9/29/2015 3:39:00 PM

**Total Metals by EPA Method 6020**

Batch ID: 11982

Analyst: TN

Lead	19.1	0.204		mg/Kg-dry	1	9/29/2015 4:28:24 PM
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**Sample Moisture (Percent Moisture)**

Batch ID: R25168

Analyst: CG

Percent Moisture	25.9	0.500		wt%	1	9/29/2015 8:14:07 AM
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Date: 10/6/2015

Work Order: 1509387  
CLIENT: PBS Engineering & Environmental  
Project: Pike Place PDA

## QC SUMMARY REPORT

### Total Metals by EPA Method 6020

Sample ID	MB-11982	SampType:	MBLK			Units:	mg/Kg			Prep Date:	9/29/2015		RunNo:	25190	
Client ID:	MBLKS	Batch ID:	11982						Analysis Date:	9/29/2015			SeqNo:	474985	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val		%RPD	RPDLimit	Qual		

Lead	ND	0.200										
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Sample ID	LCS-11982	SampType: LCS			Units: mg/Kg		Prep Date: 9/29/2015			RunNo: 25190		
Client ID:	LCSS	Batch ID: 11982			Analysis Date: 9/29/2015					SeqNo: 474986		
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Lead	23.9	0.200	25.00	0	95.7	80	120					
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Sample ID	1509353-001ADUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	9/29/2015	RunNo:	25190			
Client ID:	BATCH	Batch ID:	11982			Analysis Date:	9/29/2015	SeqNo:	474988			
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Lead	95.3	0.217							88.44	7.48	20	
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Sample ID	1509353-001AMS	SampType:	MS	Units:	mg/Kg-dry	Prep Date:	9/29/2015	RunNo:	25190			
Client ID:	BATCH	Batch ID:	11982			Analysis Date:	9/29/2015	SeqNo:	474990			
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Lead	131	0.217	27.11	88.44	158	75	125					S
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#### NOTES:

S - Outlying spike recoveries observed. A duplicate analysis was performed with similar results indicating a possible matrix effect.

Sample ID	1509353-001AMSD	SampType:	MSD	Units:	mg/Kg-dry	Prep Date:	9/29/2015	RunNo:	25190			
Client ID:	BATCH	Batch ID:	11982			Analysis Date:	9/29/2015	SeqNo:	474991			
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Lead	162	0.217	27.11	88.44	271	75	125	131.1	21.0	20	RS	
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#### NOTES:

SR - Outlying spike recoveries and high RPD due to suspected sample inhomogeneity. The method is in control as indicated by the LCS.



Date: 10/6/2015

Work Order: 1509387  
CLIENT: PBS Engineering & Environmental  
Project: Pike Place PDA

## QC SUMMARY REPORT

### Total Metals by EPA Method 6020

Sample ID	1509353-001APDS	SampType:	PDS	Units:	mg/Kg-dry	Prep Date:	9/29/2015	RunNo:	25190		
Client ID:	BATCH	Batch ID:	11982			Analysis Date:	9/29/2015	SeqNo:	474992		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	135	0.219	27.3	88.4	171	80	120				S

#### NOTES:

S - Outlying spike recovery observed for Pb.



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CLIENT: PBS Engineering & Environmental  
Project: Pike Place PDA

**QC SUMMARY REPORT**  
**Metals (SW6020) with TCLP Extraction (EPA 1311)**

Sample ID	MB-11992FB	SampType:	MBLK			Units:	mg/L			Prep Date:	10/1/2015		RunNo:	25244	
Client ID:	MBLKS	Batch ID:	12012							Analysis Date:	10/1/2015		SeqNo:	476020	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val		%RPD	RPDLimit	Qual		

Lead	ND	0.200										
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Sample ID	MB-12012	SampType:	MBLK			Units:	mg/L		Prep Date:	10/1/2015		RunNo:	25244	
Client ID:	MBLKS	Batch ID:	12012						Analysis Date:	10/1/2015		SeqNo:	476021	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		

Lead	ND	0.200										
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Sample ID	LCS-12012	SampType:	LCS	Units:	mg/L	Prep Date:	10/1/2015	RunNo:	25244			
Client ID:	LCSS	Batch ID:	12012			Analysis Date:	10/1/2015	SeqNo:	476022			
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Lead	2.44	0.200	2.500	0	97.5	65	135					
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Sample ID	1509387-003ADUP	SampType:	DUP	Units:	mg/L	Prep Date:	10/1/2015	RunNo:	25244			
Client ID:	DT2-E-3	Batch ID:	12012			Analysis Date:	10/1/2015	SeqNo:	476024			
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Lead	ND	0.200							0		30	
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Sample ID	1509387-003AMS	SampType:	MS	Units:	mg/L	Prep Date:	10/1/2015	RunNo:	25244			
Client ID:	DT2-E-3	Batch ID:	12012			Analysis Date:	10/1/2015	SeqNo:	476025			
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Lead	2.41	0.200	2.500	0	96.3	65	135					
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**Work Order:** 1509387  
**CLIENT:** PBS Engineering & Environmental  
**Project:** Pike Place PDA

**QC SUMMARY REPORT**  
**Metals (SW6020) with TCLP Extraction (EPA 1311)**

Sample ID	1509387-003AMSD	SampType:	MSD	Units:	mg/L	Prep Date:	10/1/2015	RunNo:	25244		
Client ID:	DT2-E-3	Batch ID:	12012			Analysis Date:	10/1/2015	SeqNo:	476026		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	2.40	0.200	2.500	0	96.0	65	135	2.407	0.248	30	



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Project: Pike Place PDA

**QC SUMMARY REPORT****Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.**

Sample ID	MB-11981	SampType:	MBLK			Units:	mg/Kg			Prep Date:	9/29/2015		RunNo:	25192	
Client ID:	MBLKS	Batch ID:	11981						Analysis Date:	9/29/2015			SeqNo:	475021	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val		%RPD	RPDLimit	Qual		

Diesel (Fuel Oil)	ND	20.0									
Heavy Oil	ND	50.0									
Surr: 2-Fluorobiphenyl	20.0		20.00		100	50	150				
Surr: o-Terphenyl	20.9		20.00		104	50	150				

Sample ID	LCS-11981	SampType:	LCS	Units:	mg/Kg	Prep Date:	9/29/2015	RunNo:	25192		
Client ID:	LCSS	Batch ID:	11981			Analysis Date:	9/29/2015	SeqNo:	475020		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	543	20.0	500.0	0	109	65	135				
Surr: 2-Fluorobiphenyl	21.3		20.00		106	50	150				
Surr: o-Terphenyl	20.9		20.00		104	50	150				

Sample ID	1509387-001ADUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	9/29/2015	RunNo:	25192		
Client ID:	DT2-N-3	Batch ID:	11981			Analysis Date:	9/29/2015	SeqNo:	475014		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	ND	23.3						0		30	
Heavy Oil	ND	58.2						0		30	
Surr: 2-Fluorobiphenyl	22.4		23.27		96.4	50	150		0		
Surr: o-Terphenyl	23.5		23.27		101	50	150		0		



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CLIENT: PBS Engineering & Environmental  
Project: Pike Place PDA

## QC SUMMARY REPORT

Gasoline by NWTPH-Gx

Sample ID	LCS-11979	SampType: LCS			Units: mg/Kg	Prep Date: 9/29/2015			RunNo: 25194		
Client ID:	LCSS	Batch ID: 11979			Analysis Date: 9/29/2015			SeqNo: 475070			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	21.3	5.00	25.00	0	85.2	65	135				
Surr: Toluene-d8	1.23		1.250		98.0	65	135				
Surr: 4-Bromofluorobenzene	1.32		1.250		106	65	135				

Sample ID	MB-11979	SampType:	MBLK	Units:	mg/Kg	Prep Date:	9/29/2015	RunNo:	25194		
Client ID:	MBLKS	Batch ID:	11979			Analysis Date:	9/29/2015	SeqNo:	475071		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	ND	5.00									
Surr: Toluene-d8	1.21		1.250		96.6	65	135				
Surr: 4-Bromofluorobenzene	1.30		1.250		104	65	135				

Sample ID	1509387-001BDUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	9/29/2015	RunNo:	25194		
Client ID:	DT2-N-3	Batch ID:	11979			Analysis Date:	9/29/2015	SeqNo:	475063		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	ND	3.59						0		30	
Surr: Toluene-d8	0.868		0.8976		96.7	65	135		0		
Surr: 4-Bromofluorobenzene	0.940		0.8976		105	65	135		0		



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CLIENT: PBS Engineering & Environmental  
Project: Pike Place PDA

**QC SUMMARY REPORT**  
**Volatile Organic Compounds by EPA Method 8260**

Sample ID	LCS-11979	SampType:	LCS	Units:	mg/Kg	Prep Date:	9/29/2015	RunNo:	25193		
Client ID:	LCSS	Batch ID:	11979			Analysis Date:	9/29/2015	SeqNo:	475058		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	0.907	0.0500	1.000	0	90.7	59.1	138				
1,2-Dichloroethane (EDC)	0.999	0.0300	1.000	0	99.9	61.9	136				
Benzene	1.00	0.0200	1.000	0	100	64.3	133				
Toluene	1.01	0.0200	1.000	0	101	67.3	138				
1,2-Dibromoethane (EDB)	1.19	0.00500	1.000	0	119	70	130				
Ethylbenzene	0.993	0.0300	1.000	0	99.3	74	129				
m,p-Xylene	1.99	0.0200	2.000	0	99.3	79.8	128				
o-Xylene	0.968	0.0200	1.000	0	96.8	72.7	124				
Naphthalene	0.966	0.0300	1.000	0	96.6	62.3	134				
Surr: Dibromofluoromethane	1.31		1.250		104	56.5	129				
Surr: Toluene-d8	1.24		1.250		99.1	64.3	131				
Surr: 1-Bromo-4-fluorobenzene	1.29		1.250		103	63.1	141				

**NOTES:**

S - Outlying spike recovery observed (2,2-Dichloropropane; high bias). There were no detections of this analyte in the following samples. No further action is required.

Sample ID	MB-11979	SampType:	MBLK		Units:	mg/Kg		Prep Date:	9/29/2015		RunNo:	25193	
Client ID:	MBLKS	Batch ID:	11979					Analysis Date:	9/29/2015		SeqNo:	475059	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Methyl tert-butyl ether (MTBE)	ND	0.0500											
1,2-Dichloroethane (EDC)	ND	0.0300											
Benzene	ND	0.0200											
Toluene	ND	0.0200											
1,2-Dibromoethane (EDB)	ND	0.00500											
Ethylbenzene	ND	0.0300											
m,p-Xylene	ND	0.0200											
o-Xylene	ND	0.0200											
Naphthalene	ND	0.0300											
Surr: Dibromofluoromethane	1.21		1.250		97.2	56.5	129						
Surr: Toluene-d8	1.25		1.250		100	64.3	131						
Surr: 1-Bromo-4-fluorobenzene	1.25		1.250		100	63.1	141						



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Work Order: 1509387  
CLIENT: PBS Engineering & Environmental  
Project: Pike Place PDA

**QC SUMMARY REPORT**  
**Volatile Organic Compounds by EPA Method 8260**

Sample ID	1509387-001BDUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	9/29/2015	RunNo:	25193		
Client ID:	DT2-N-3	Batch ID:	11979			Analysis Date:	9/29/2015	SeqNo:	475050		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	ND	0.0359						0		30	
1,2-Dichloroethane (EDC)	ND	0.0215						0		30	
Benzene	ND	0.0144						0		30	
Toluene	ND	0.0144						0		30	
1,2-Dibromoethane (EDB)	ND	0.00359						0		30	
Ethylbenzene	ND	0.0215						0		30	
m,p-Xylene	ND	0.0144						0		30	
o-Xylene	ND	0.0144						0		30	
Naphthalene	ND	0.0215						0		30	
Surr: Dibromofluoromethane	0.863		0.8976		96.1	56.5	129		0		
Surr: Toluene-d8	0.892		0.8976		99.4	64.3	131		0		
Surr: 1-Bromo-4-fluorobenzene	0.906		0.8976		101	63.1	141		0		

Sample ID	1509387-005BMS	SampType:	MS		Units:	mg/Kg-dry		Prep Date:	9/29/2015		RunNo:	25193
Client ID:	DT2-B-7	Batch ID:	11979					Analysis Date:	9/29/2015		SeqNo:	475055
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Methyl tert-butyl ether (MTBE)	0.965	0.0486	0.9721	0	99.3	54.4	132					
1,2-Dichloroethane (EDC)	0.998	0.0292	0.9721	0.04981	97.5	51.3	139					
Benzene	1.51	0.0194	0.9721	0.5396	99.5	63.5	133					
Toluene	4.51	0.0194	0.9721	3.490	105	63.4	132					
1,2-Dibromoethane (EDB)	1.25	0.00486	0.9721	0.01268	128	50.4	136					
Ethylbenzene	2.49	0.0292	0.9721	1.502	102	54.5	134					
m,p-Xylene	8.08	0.0194	1.944	6.227	95.5	53.1	132				E	
o-Xylene	3.48	0.0194	0.9721	2.520	98.9	53.3	139					
Naphthalene	2.81	0.0292	0.9721	1.746	109	52.3	124					
Surr: Dibromofluoromethane	1.24		1.215		102	56.5	129					
Surr: Toluene-d8	1.32		1.215		109	64.3	131					
Surr: 1-Bromo-4-fluorobenzene	1.27		1.215		105	63.1	141					

**NOTES:**

S - Outlying QC recoveries were observed. The method is in control as indicated by the LCS.



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CLIENT: PBS Engineering & Environmental  
Project: Pike Place PDA

**QC SUMMARY REPORT**  
**Volatile Organic Compounds by EPA Method 8260**

Sample ID	1509385-001BDUP	SampType:	DUP	Units: mg/Kg-dry			Prep Date: 9/29/2015			RunNo: 25193		
Client ID:	BATCH	Batch ID:	11979				Analysis Date: 9/29/2015			SeqNo: 475201		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Methyl tert-butyl ether (MTBE)	ND	0.0559						0		30		
1,2-Dichloroethane (EDC)	ND	0.0335						0		30		
Benzene	ND	0.0224						0		30		
Toluene	ND	0.0224						0		30		
1,2-Dibromoethane (EDB)	ND	0.00559						0		30		
Ethylbenzene	ND	0.0335						0		30		
m,p-Xylene	ND	0.0224						0		30		
o-Xylene	ND	0.0224						0		30		
Naphthalene	ND	0.0335						0		30		
Surr: Dibromofluoromethane	1.33		1.397		95.1	56.5	129		0			
Surr: Toluene-d8	1.38		1.397		99.0	64.3	131		0			
Surr: 1-Bromo-4-fluorobenzene	1.43		1.397		102	63.1	141		0			



Date: 10/6/2015

Work Order: 1509387  
CLIENT: PBS Engineering & Environmental  
Project: Pike Place PDA

**QC SUMMARY REPORT****Volatile Organic Compounds by SW8260/TCLP ZHE**

Sample ID	LCS-12030	SampType:	LCS	Units:	µg/L	Prep Date:	10/2/2015	RunNo:	25298		
Client ID:	LCSW	Batch ID:	12030			Analysis Date:	10/5/2015	SeqNo:	477056		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Benzene	19.9	1.00	20.00	0	99.6	73.9	125				
Surr: 4-Bromofluorobenzene	25.3		25.00		101	83.5	119				
Surr: Dibromofluoromethane	25.8		25.00		103	80.3	123				
Surr: Toluene-d8	25.9		25.00		104	67.3	147				

Sample ID	LCSD-12030	SampType:	LCSD	Units:	µg/L	Prep Date:	10/2/2015	RunNo:	25298		
Client ID:	LCSW02	Batch ID:	12030			Analysis Date:	10/5/2015	SeqNo:	477057		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Benzene	19.9	1.00	20.00	0	99.4	73.9	125	19.92	0.201	20	
Surr: 4-Bromofluorobenzene	24.4		25.00		97.5	83.5	119		0	0	
Surr: Dibromofluoromethane	25.9		25.00		104	80.3	123		0	0	
Surr: Toluene-d8	25.4		25.00		101	67.3	147		0	0	

Sample ID	MB-12030	SampType:	MBLK	Units:	µg/L	Prep Date:	10/2/2015	RunNo:	25298		
Client ID:	MBLKW	Batch ID:	12030			Analysis Date:	10/5/2015	SeqNo:	477058		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Benzene	ND	1.00									
Surr: 4-Bromofluorobenzene	25.0		25.00		100	83.5	119				
Surr: Dibromofluoromethane	25.6		25.00		103	80.3	123				
Surr: Toluene-d8	25.5		25.00		102	67.3	147				

Sample ID	1509387-003AREP	SampType:	REP	Units:	µg/L	Prep Date:	10/2/2015	RunNo:	25298		
Client ID:	DT2-E-3	Batch ID:	12030			Analysis Date:	10/5/2015	SeqNo:	477054		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Benzene	2.42	1.00						2.700	10.9	30	
Surr: 4-Bromofluorobenzene	24.2		25.00		96.9	79.2	120		0		
Surr: Dibromofluoromethane	25.4		25.00		102	76	114		0		



Date: 10/6/2015

Work Order: 1509387

CLIENT: PBS Engineering & Environmental

Project: Pike Place PDA

## QC SUMMARY REPORT

### Volatile Organic Compounds by SW8260/TCLP ZHE

Sample ID	1509387-003AREP	SampType:	REP	Units:	µg/L	Prep Date:	10/2/2015	RunNo:	25298		
Client ID:	DT2-E-3	Batch ID:	12030			Analysis Date:	10/5/2015	SeqNo:	477054		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Toluene-d8	25.2		25.00		101	86.8	119		0		



Date: 10/6/2015

**Work Order:** 1509387  
**CLIENT:** PBS Engineering & Environmental  
**Project:** Pike Place PDA

**QC SUMMARY REPORT**  
**Sample Moisture (Percent Moisture)**

Sample ID	1509384-001ADUP	SampType:	DUP	Units:	wt%	Prep Date:	9/29/2015	RunNo:	25168		
Client ID:	BATCH	Batch ID:	R25168			Analysis Date:	9/29/2015	SeqNo:	474519		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	27.3	0.500						28.32	3.77	20	

Sample ID	1509385-006ADUP	SampType:	DUP	Units:	wt%	Prep Date:	9/29/2015	RunNo:	25168		
Client ID:	BATCH	Batch ID:	R25168			Analysis Date:	9/29/2015	SeqNo:	474529		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	12.7	0.500						11.44	10.3	20	

Client Name: **PBS**  
 Logged by: **Erica Silva**

Work Order Number: **1509387**  
 Date Received: **9/28/2015 5:16:00 PM**

## Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐  
 2. How was the sample delivered? Client

## Log In

3. Coolers are present? Yes ☒ No ☐ NA ☐  
 4. Shipping container/cooler in good condition? Yes ☒ No ☐  
 5. Custody Seals present on shipping container/cooler?  
 (Refer to comments for Custody Seals not intact) Yes ☐ No ☐ Not Required ☒  
 6. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐  
 7. Were all items received at a temperature of  $>0^{\circ}\text{C}$  to  $10.0^{\circ}\text{C}$  \* Yes ☒ No ☐ NA ☐  
 8. Sample(s) in proper container(s)? Yes ☒ No ☐  
 9. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐  
 10. Are samples properly preserved? Yes ☒ No ☐  
 11. Was preservative added to bottles? Yes ☐ No ☒ NA ☐  
 12. Is there headspace in the VOA vials? Yes ☐ No ☐ NA ☒  
 13. Did all samples containers arrive in good condition(unbroken)? Yes ☒ No ☐  
 14. Does paperwork match bottle labels? Yes ☒ No ☐  
 15. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐  
 16. Is it clear what analyses were requested? Yes ☒ No ☐  
 17. Were all holding times able to be met? Yes ☒ No ☐

## Special Handling (if applicable)

18. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified:  Date   
 By Whom:  Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person  
 Regarding:   
 Client Instructions:

19. Additional remarks:

## Item Information

Item #	Temp $^{\circ}\text{C}$
Cooler	3.4
Sample	2.1

\* Note: DoD/ELAP and TNI require items to be received at  $4^{\circ}\text{C}$  +/-  $2^{\circ}\text{C}$



# Fremont

Analytical

3600 Fremont Ave N.  
Seattle, WA 98103

Tel: 206-352-3790  
Fax: 206-352-7178

Date: 9/28/2015

Laboratory Project No (Internal):

1509387

## Chain of Custody Record

Page: 1 of 1

Project Name:

Fake Place PDA

Project No:

40609.001

Collected by: A. Melver

Location:

1901 Western Avenue

Report To (PM):

Audrey McIvor

PM Email:

Audrey.mclvor@pbesenv.com

Client:

Address:

City, State, Zip:

Telephone:

PBS Engineering & Environmental  
2519 East Lake Park East Sp100  
Seattle WA 98102  
206 378 6317

\*Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOCs (EPA 8260 / 624)	SVOCs (EPA 8270 / 625)	PCBs (EPA 8270 / 625)	Metals** (EPA 8082 / 606)	Total (T)   Dissolved (D)	Anions (IC)***	EDC (8011)	EDC/Naphthalene/MX	Comments
1 <u>DT2-N-3</u>	<u>9/28</u>	<u>16:08</u>	<u>S</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>EDB Detection limit 0.005 mg/kg</u>
2 <u>DT2-S-3</u>	<u>9/28</u>	<u>16:29</u>	<u>S</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	
3 <u>DT2-E-3</u>	<u>9/28</u>	<u>16:14</u>	<u>S</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	
4 <u>DT2-W-3</u>	<u>9/28</u>	<u>16:20</u>	<u>S</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	
5 <u>DT2-B-7</u>	<u>9/28</u>	<u>16:39</u>	<u>S</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	
6												
7												
8												
9												
10												

\*\*Metals Analysis (Circle): MTCA-5, HCB-8, Priority Pollutants, TAA, Inorganic: Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Hg, K, Mg, Mn, Mo, Na, Ni, Pb, Sb, Se, Si, Sn, Ti, Tl, U, V, Zn

\*\*\*Anions (Circle): Nitrate, Nitrite, Chloride, Sulfate, Bromide, O-Phosphate, Fluoride, Nitrate-Nitrite

Sample Disposal: ☐ Return to Client ☒ Disposal by Lab (a fee may be assessed if samples are retained after 30 days.)

Relinquished: 9/28/2015 17:16 Received: 9/29/2015 17:16

Reference: 9/28/2015 17:16 Date/Time: 9/29/2015 17:16

Special Remarks: EDB on 9/29/15

TAT: 2 Day 3 Day 5 Day 7 Day 10 Day 15 Day 20 Day 30 Day 45 Day 60 Day 90 Day 120 Day 180 Day 240 Day 360 Day 480 Day 600 Day 720 Day 840 Day 960 Day 1080 Day 1200 Day 1440 Day 1680 Day 1920 Day 2160 Day 2400 Day 2640 Day 2880 Day 3120 Day 3360 Day 3600 Day 3840 Day 4080 Day 4320 Day 4560 Day 4800 Day 5040 Day 5280 Day 5520 Day 5760 Day 6000 Day 6240 Day 6480 Day 6720 Day 6960 Day 7200 Day 7440 Day 7680 Day 7920 Day 8160 Day 8400 Day 8640 Day 8880 Day 9120 Day 9360 Day 9600 Day 9840 Day 10080 Day 10320 Day 10560 Day 10800 Day 11040 Day 11280 Day 11520 Day 11760 Day 12000 Day 12240 Day 12480 Day 12720 Day 12960 Day 13200 Day 13440 Day 13680 Day 13920 Day 14160 Day 14400 Day 14640 Day 14880 Day 15120 Day 15360 Day 15600 Day 15840 Day 16080 Day 16320 Day 16560 Day 16800 Day 17040 Day 17280 Day 17520 Day 17760 Day 18000 Day 18240 Day 18480 Day 18720 Day 18960 Day 19200 Day 19440 Day 19680 Day 19920 Day 20160 Day 20400 Day 20640 Day 20880 Day 21120 Day 21360 Day 21600 Day 21840 Day 22080 Day 22320 Day 22560 Day 22800 Day 23040 Day 23280 Day 23520 Day 23760 Day 24000 Day 24240 Day 24480 Day 24720 Day 24960 Day 25200 Day 25440 Day 25680 Day 25920 Day 26160 Day 26400 Day 26640 Day 26880 Day 27120 Day 27360 Day 27600 Day 27840 Day 28080 Day 28320 Day 28560 Day 28800 Day 29040 Day 29280 Day 29520 Day 29760 Day 30000 Day 30240 Day 30480 Day 30720 Day 30960 Day 31200 Day 31440 Day 31680 Day 31920 Day 32160 Day 32400 Day 32640 Day 32880 Day 33120 Day 33360 Day 33600 Day 33840 Day 34080 Day 34320 Day 34560 Day 34800 Day 35040 Day 35280 Day 35520 Day 35760 Day 36000 Day 36240 Day 36480 Day 36720 Day 36960 Day 37200 Day 37440 Day 37680 Day 37920 Day 38160 Day 38400 Day 38640 Day 38880 Day 39120 Day 39360 Day 39600 Day 39840 Day 40080 Day 40320 Day 40560 Day 40800 Day 41040 Day 41280 Day 41520 Day 41760 Day 42000 Day 42240 Day 42480 Day 42720 Day 42960 Day 43200 Day 43440 Day 43680 Day 43920 Day 44160 Day 44400 Day 44640 Day 44880 Day 45120 Day 45360 Day 45600 Day 45840 Day 46080 Day 46320 Day 46560 Day 46800 Day 47040 Day 47280 Day 47520 Day 47760 Day 48000 Day 48240 Day 48480 Day 48720 Day 48960 Day 49200 Day 49440 Day 49680 Day 49920 Day 50160 Day 50400 Day 50640 Day 50880 Day 51120 Day 51360 Day 51600 Day 51840 Day 52080 Day 52320 Day 52560 Day 52800 Day 53040 Day 53280 Day 53520 Day 53760 Day 54000 Day 54240 Day 54480 Day 54720 Day 54960 Day 55200 Day 55440 Day 55680 Day 55920 Day 56160 Day 56400 Day 56640 Day 56880 Day 57120 Day 57360 Day 57600 Day 57840 Day 58080 Day 58320 Day 58560 Day 58800 Day 59040 Day 59280 Day 59520 Day 59760 Day 60000 Day 60240 Day 60480 Day 60720 Day 60960 Day 61200 Day 61440 Day 61680 Day 61920 Day 62160 Day 62400 Day 62640 Day 62880 Day 63120 Day 63360 Day 63600 Day 63840 Day 64080 Day 64320 Day 64560 Day 64800 Day 65040 Day 65280 Day 65520 Day 65760 Day 66000 Day 66240 Day 66480 Day 66720 Day 66960 Day 67200 Day 67440 Day 67680 Day 67920 Day 68160 Day 68400 Day 68640 Day 68880 Day 69120 Day 69360 Day 69600 Day 69840 Day 70080 Day 70320 Day 70560 Day 70800 Day 71040 Day 71280 Day 71520 Day 71760 Day 72000 Day 72240 Day 72480 Day 72720 Day 72960 Day 73200 Day 73440 Day 73680 Day 73920 Day 74160 Day 74400 Day 74640 Day 74880 Day 75120 Day 75360 Day 75600 Day 75840 Day 76080 Day 76320 Day 76560 Day 76800 Day 77040 Day 77280 Day 77520 Day 77760 Day 78000 Day 78240 Day 78480 Day 78720 Day 78960 Day 79200 Day 79440 Day 79680 Day 79920 Day 80160 Day 80400 Day 80640 Day 80880 Day 81120 Day 81360 Day 81600 Day 81840 Day 82080 Day 82320 Day 82560 Day 82800 Day 83040 Day 83280 Day 83520 Day 83760 Day 84000 Day 84240 Day 84480 Day 84720 Day 84960 Day 85200 Day 85440 Day 85680 Day 85920 Day 86160 Day 86400 Day 86640 Day 86880 Day 87120 Day 87360 Day 87600 Day 87840 Day 88080 Day 88320 Day 88560 Day 88800 Day 89040 Day 89280 Day 89520 Day 89760 Day 90000 Day 90240 Day 90480 Day 90720 Day 90960 Day 91200 Day 91440 Day 91680 Day 91920 Day 92160 Day 92400 Day 92640 Day 92880 Day 93120 Day 93360 Day 93600 Day 93840 Day 94080 Day 94320 Day 94560 Day 94800 Day 95040 Day 95280 Day 95520 Day 95760 Day 96000 Day 96240 Day 96480 Day 96720 Day 96960 Day 97200 Day 97440 Day 97680 Day 97920 Day 98160 Day 98400 Day 98640 Day 98880 Day 99120 Day 99360 Day 99600 Day 99840 Day 100000 Day



### Chain of Custody Record

Laboratory Project No (Internal)

1509387

3600 Fremont Ave N. Tel: 206-352-3790  
Seattle, WA 98103 Fax: 206-352-7178

Tel: 206-352-3790  
Fax: 206-352-7178

Date: 9/28/2015

Page 1 of 1

Project Name:

~~File Place Pdf~~

Collected by: A. M. L. W. B.

As Mr. Weber

**Location:**

901 Western Foreman

Reports To (P.M.)

Audrey McIvor

Telephone:

2016 2018 6317

we

Abbreviations: A = Air, ALQ = Aqueous, H = Heat, C = Calor, P = Pressure, S = Soil, SD = Sediment, SI = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Seawater, WW = Waste Water

[illegible]

Distribution: White - Lab, Yellow - File, Pink - Originator

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**PBS Engineering & Environmental**

Audrey Mclvor  
2517 Eastlake Ave, E #100  
Seattle, WA 98102

**RE: Pike Place PDA**

**Lab ID: 1509412**

October 01, 2015

**Attention Audrey Mclvor:**

Fremont Analytical, Inc. received 5 sample(s) on 9/30/2015 for the analyses presented in the following report.

***Gasoline by NWTPH-Gx***

***Sample Moisture (Percent Moisture)***

***Total Metals by EPA Method 6020***

***Volatile Organic Compounds by EPA Method 8260***

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Chelsea Ward  
Project Manager

CC:  
Tom Mergy



Date: 10/01/2015

**CLIENT:** PBS Engineering & Environmental  
**Project:** Pike Place PDA  
**Lab Order:** 1509412

## Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1509412-001	TP-1	09/30/2015 9:00 AM	09/30/2015 10:40 AM
1509412-002	TP-2N	09/30/2015 9:20 AM	09/30/2015 10:40 AM
1509412-003	TP-3E	09/30/2015 10:00 AM	09/30/2015 10:40 AM
1509412-004	TP-4W	09/30/2015 10:15 AM	09/30/2015 10:40 AM
1509412-005	Trip Blank	09/29/2015 3:10 PM	09/30/2015 10:40 AM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

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**CLIENT:** PBS Engineering & Environmental**Project:** Pike Place PDA

---

**I. SAMPLE RECEIPT:**

Samples receipt information is recorded on the attached Sample Receipt Checklist.

**II. GENERAL REPORTING COMMENTS:**

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

**III. ANALYSES AND EXCEPTIONS:**

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

**Qualifiers:**

\* - Flagged value is not within established control limits  
B - Analyte detected in the associated Method Blank  
D - Dilution was required  
E - Value above quantitation range  
H - Holding times for preparation or analysis exceeded  
I - Analyte with an internal standard that does not meet established acceptance criteria  
J - Analyte detected below LOQ  
N - Tentatively Identified Compound (TIC)  
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)  
S - Spike recovery outside accepted recovery limits  
ND - Not detected at the Reporting Limit

**Acronyms:**

%Rec - Percent Recovery  
CCB - Continued Calibration Blank  
CCV - Continued Calibration Verification  
DF - Dilution Factor  
HEM - Hexane Extractable Material  
ICV - Initial Calibration Verification  
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate  
MB or MBLANK - Method Blank  
MDL - Method Detection Limit  
MS/MSD - Matrix Spike / Matrix Spike Duplicate  
PDS - Post Digestion Spike  
Ref Val - Reference Value  
RL - Reporting Limit  
RPD - Relative Percent Difference  
SD - Serial Dilution  
SGT - Silica Gel Treatment  
SPK - Spike  
Surr - Surrogate



## Analytical Report

WO#: 1509412

Date Reported: 10/1/2015

**Client:** PBS Engineering & Environmental

**Collection Date:** 9/30/2015 9:00:00 AM

**Project:** Pike Place PDA

**Lab ID:** 1509412-001

**Matrix:** Soil

**Client Sample ID:** TP-1

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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**Gasoline by NWTPH-Gx**

Batch ID: 12005

Analyst: BC

Gasoline	5,780	321	D	mg/Kg-dry	50	9/30/2015 4:56:00 PM
Surr: 4-Bromofluorobenzene	101	65-135	D	%REC	50	9/30/2015 4:56:00 PM
Surr: Toluene-d8	97.5	65-135	D	%REC	50	9/30/2015 4:56:00 PM

**Volatile Organic Compounds by EPA Method 8260**

Batch ID: 12005

Analyst: BC

Benzene	5.55	1.28	D	mg/Kg-dry	50	9/30/2015 4:56:00 PM
Toluene	41.0	1.28	D	mg/Kg-dry	50	9/30/2015 4:56:00 PM
Ethylbenzene	18.5	1.93	D	mg/Kg-dry	50	9/30/2015 4:56:00 PM
m,p-Xylene	79.2	1.28	D	mg/Kg-dry	50	9/30/2015 4:56:00 PM
o-Xylene	32.5	1.28	D	mg/Kg-dry	50	9/30/2015 4:56:00 PM
Surr: Dibromofluoromethane	90.8	56.5-129	D	%REC	50	9/30/2015 4:56:00 PM
Surr: Toluene-d8	96.1	64.3-131	D	%REC	50	9/30/2015 4:56:00 PM
Surr: 1-Bromo-4-fluorobenzene	103	63.1-141	D	%REC	50	9/30/2015 4:56:00 PM

**Total Metals by EPA Method 6020**

Batch ID: 12004

Analyst: TN

Lead	19.4	0.181		mg/Kg-dry	1	9/30/2015 3:35:18 PM
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**Sample Moisture (Percent Moisture)**

Batch ID: R25200

Analyst: CG

Percent Moisture	17.1	0.500		wt%	1	9/30/2015 11:09:42 AM
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## Analytical Report

WO#: 1509412

Date Reported: 10/1/2015

**Client:** PBS Engineering & Environmental

**Collection Date:** 9/30/2015 9:20:00 AM

**Project:** Pike Place PDA

**Lab ID:** 1509412-002

**Matrix:** Soil

**Client Sample ID:** TP-2N

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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**Gasoline by NWTPH-Gx**

Batch ID: 12005

Analyst: BC

Gasoline	ND	8.05		mg/Kg-dry	1	9/30/2015 2:34:00 PM
Surr: 4-Bromofluorobenzene	98.9	65-135		%REC	1	9/30/2015 2:34:00 PM
Surr: Toluene-d8	94.6	65-135		%REC	1	9/30/2015 2:34:00 PM

**Volatile Organic Compounds by EPA Method 8260**

Batch ID: 12005

Analyst: BC

Benzene	ND	0.0322		mg/Kg-dry	1	9/30/2015 2:34:00 PM
Toluene	0.0434	0.0322		mg/Kg-dry	1	9/30/2015 2:34:00 PM
Ethylbenzene	ND	0.0483		mg/Kg-dry	1	9/30/2015 2:34:00 PM
m,p-Xylene	0.0426	0.0322		mg/Kg-dry	1	9/30/2015 2:34:00 PM
o-Xylene	ND	0.0322		mg/Kg-dry	1	9/30/2015 2:34:00 PM
Surr: Dibromofluoromethane	102	56.5-129		%REC	1	9/30/2015 2:34:00 PM
Surr: Toluene-d8	99.2	64.3-131		%REC	1	9/30/2015 2:34:00 PM
Surr: 1-Bromo-4-fluorobenzene	101	63.1-141		%REC	1	9/30/2015 2:34:00 PM

**Total Metals by EPA Method 6020**

Batch ID: 12004

Analyst: TN

Lead	14.5	0.185		mg/Kg-dry	1	9/30/2015 3:56:25 PM
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**Sample Moisture (Percent Moisture)**

Batch ID: R25200

Analyst: CG

Percent Moisture	18.9	0.500		wt%	1	9/30/2015 11:09:42 AM
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## Analytical Report

WO#: 1509412

Date Reported: 10/1/2015

**Client:** PBS Engineering & Environmental

**Collection Date:** 9/30/2015 10:00:00 AM

**Project:** Pike Place PDA

**Lab ID:** 1509412-003

**Matrix:** Soil

**Client Sample ID:** TP-3E

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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### Gasoline by NWTPH-Gx

Batch ID: 12005

Analyst: BC

Gasoline	ND	5.26		mg/Kg-dry	1	9/30/2015 3:03:00 PM
Surr: 4-Bromofluorobenzene	101	65-135		%REC	1	9/30/2015 3:03:00 PM
Surr: Toluene-d8	92.6	65-135		%REC	1	9/30/2015 3:03:00 PM

### Volatile Organic Compounds by EPA Method 8260

Batch ID: 12005

Analyst: BC

Benzene	ND	0.0210		mg/Kg-dry	1	9/30/2015 3:03:00 PM
Toluene	ND	0.0210		mg/Kg-dry	1	9/30/2015 3:03:00 PM
Ethylbenzene	ND	0.0315		mg/Kg-dry	1	9/30/2015 3:03:00 PM
m,p-Xylene	ND	0.0210		mg/Kg-dry	1	9/30/2015 3:03:00 PM
o-Xylene	ND	0.0210		mg/Kg-dry	1	9/30/2015 3:03:00 PM
Surr: Dibromofluoromethane	101	56.5-129		%REC	1	9/30/2015 3:03:00 PM
Surr: Toluene-d8	98.8	64.3-131		%REC	1	9/30/2015 3:03:00 PM
Surr: 1-Bromo-4-fluorobenzene	104	63.1-141		%REC	1	9/30/2015 3:03:00 PM

### Total Metals by EPA Method 6020

Batch ID: 12004

Analyst: TN

Lead	2.63	0.194		mg/Kg-dry	1	9/30/2015 3:59:56 PM
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### Sample Moisture (Percent Moisture)

Batch ID: R25200

Analyst: CG

Percent Moisture	21.0	0.500		wt%	1	9/30/2015 11:09:42 AM
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## Analytical Report

WO#: 1509412

Date Reported: 10/1/2015

**Client:** PBS Engineering & Environmental

**Collection Date:** 9/30/2015 10:15:00 AM

**Project:** Pike Place PDA

**Lab ID:** 1509412-004

**Matrix:** Soil

**Client Sample ID:** TP-4W

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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### Gasoline by NWTPH-Gx

Batch ID: 12005

Analyst: BC

Gasoline	ND	5.90		mg/Kg-dry	1	9/30/2015 3:59:00 PM
Surr: 4-Bromofluorobenzene	101	65-135		%REC	1	9/30/2015 3:59:00 PM
Surr: Toluene-d8	94.3	65-135		%REC	1	9/30/2015 3:59:00 PM

### Volatile Organic Compounds by EPA Method 8260

Batch ID: 12005

Analyst: BC

Benzene	ND	0.0237		mg/Kg-dry	1	9/30/2015 3:59:00 PM
Toluene	ND	0.0237		mg/Kg-dry	1	9/30/2015 3:59:00 PM
Ethylbenzene	ND	0.0355		mg/Kg-dry	1	9/30/2015 3:59:00 PM
m,p-Xylene	ND	0.0237		mg/Kg-dry	1	9/30/2015 3:59:00 PM
o-Xylene	ND	0.0237		mg/Kg-dry	1	9/30/2015 3:59:00 PM
Surr: Dibromofluoromethane	101	56.5-129		%REC	1	9/30/2015 3:59:00 PM
Surr: Toluene-d8	99.8	64.3-131		%REC	1	9/30/2015 3:59:00 PM
Surr: 1-Bromo-4-fluorobenzene	104	63.1-141		%REC	1	9/30/2015 3:59:00 PM

### Total Metals by EPA Method 6020

Batch ID: 12004

Analyst: TN

Lead	3.99	0.191		mg/Kg-dry	1	9/30/2015 4:10:32 PM
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### Sample Moisture (Percent Moisture)

Batch ID: R25200

Analyst: CG

Percent Moisture	24.8	0.500		wt%	1	9/30/2015 11:09:42 AM
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Date: 10/1/2015

Work Order: 1509412  
CLIENT: PBS Engineering & Environmental  
Project: Pike Place PDA

## QC SUMMARY REPORT

### Total Metals by EPA Method 6020

Sample ID	MB-12004	SampType:	MBLK	Units:	mg/Kg	Prep Date:	9/30/2015	RunNo:	25220		
Client ID:	MBLKS	Batch ID:	12004			Analysis Date:	9/30/2015	SeqNo:	475544		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Lead	ND	0.200									
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Sample ID	LCS-12004	SampType:	LCS	Units:	mg/Kg	Prep Date:	9/30/2015	RunNo:	25220		
Client ID:	LCSS	Batch ID:	12004			Analysis Date:	9/30/2015	SeqNo:	475545		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Lead	21.8	0.200	25.00	0	87.2	80	120				
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Sample ID	1509412-001ADUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	9/30/2015	RunNo:	25220		
Client ID:	TP-1	Batch ID:	12004			Analysis Date:	9/30/2015	SeqNo:	475547		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Lead	27.5	0.183						19.35	34.7	20	R
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#### NOTES:

R - High RPD due to suspected sample inhomogeneity. The method is in control as indicated by the Laboratory Control Sample (LCS).

Sample ID	1509412-001AMS	SampType:	MS	Units:	mg/Kg-dry	Prep Date:	9/30/2015	RunNo:	25220		
Client ID:	TP-1	Batch ID:	12004			Analysis Date:	9/30/2015	SeqNo:	475549		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Lead	37.6	0.183	22.84	19.35	79.8	75	125				
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Sample ID	1509412-001AMSD	SampType:	MSD	Units:	mg/Kg-dry	Prep Date:	9/30/2015	RunNo:	25220		
Client ID:	TP-1	Batch ID:	12004			Analysis Date:	9/30/2015	SeqNo:	475550		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Lead	41.5	0.183	22.84	19.35	97.1	75	125	37.57	10.0	20	
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Date: 10/1/2015

Work Order: 1509412  
CLIENT: PBS Engineering & Environmental  
Project: Pike Place PDA

## QC SUMMARY REPORT

Gasoline by NWTPH-Gx

Sample ID	LCS-12005	SampType: LCS			Units: mg/Kg	Prep Date: 9/30/2015			RunNo: 25223		
Client ID:	LCSS	Batch ID: 12005			Analysis Date: 9/30/2015			SeqNo: 475687			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	24.8	5.00	25.00	0	99.2	65	135				
Surr: Toluene-d8	1.18		1.250		94.4	65	135				
Surr: 4-Bromofluorobenzene	1.25		1.250		99.6	65	135				

Sample ID	MB-12005	SampType:	MBLK			Units:	mg/Kg			Prep Date:	9/30/2015		RunNo:	25223	
Client ID:	MBLKS	Batch ID:	12005						Analysis Date:	9/30/2015			SeqNo:	475689	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val		%RPD	RPDLimit	Qual		

Gasoline	ND	5.00									
Surr: Toluene-d8	1.16		1.250		92.9	65	135				
Surr: 4-Bromofluorobenzene	1.27		1.250		101	65	135				

Sample ID	1509412-003BDUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	9/30/2015	RunNo:	25223		
Client ID:	TP-3E	Batch ID:	12005			Analysis Date:	9/30/2015	SeqNo:	475684		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	ND	5.26						0		30	
Surr: Toluene-d8	1.17		1.313		89.4	65	135		0		
Surr: 4-Bromofluorobenzene	1.29		1.313		98.4	65	135		0		



Date: 10/1/2015

Work Order: 1509412

CLIENT: PBS Engineering &amp; Environmental

Project: Pike Place PDA

## QC SUMMARY REPORT

## Volatile Organic Compounds by EPA Method 8260

Sample ID	LCS-12005		SampType: LCS		Units: mg/Kg		Prep Date: 9/30/2015			RunNo: 25224		
Client ID:	LCSS		Batch ID: 12005					Analysis Date: 9/30/2015			SeqNo: 475701	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Benzene	0.781	0.0200	1.000	0	78.1	64.3	133					
Toluene	0.779	0.0200	1.000	0	77.9	67.3	138					
Ethylbenzene	0.804	0.0300	1.000	0	80.4	74	129					
m,p-Xylene	1.69	0.0200	2.000	0	84.3	79.8	128					
o-Xylene	0.841	0.0200	1.000	0	84.1	72.7	124					
Surr: Dibromofluoromethane	1.24		1.250		99.1	56.5	129					
Surr: Toluene-d8	1.22		1.250		97.4	64.3	131					
Surr: 1-Bromo-4-fluorobenzene	1.30		1.250		104	63.1	141					

Sample ID	MB-12005	SampType:	MBLK		Units:	mg/Kg		Prep Date:	9/30/2015		RunNo:	25224	
Client ID:	MBLKS	Batch ID:	12005					Analysis Date:	9/30/2015		SeqNo:	475702	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Benzene	ND	0.0200											
Toluene	ND	0.0200											
Ethylbenzene	ND	0.0300											
m,p-Xylene	ND	0.0200											
o-Xylene	ND	0.0200											
Surr: Dibromofluoromethane	1.26		1.250		101	56.5	129						
Surr: Toluene-d8	1.22		1.250		97.2	64.3	131						
Surr: 1-Bromo-4-fluorobenzene	1.29		1.250		103	63.1	141						

Sample ID	1509412-003BDUP		SampType: DUP		Units: mg/Kg-dry		Prep Date: 9/30/2015		RunNo: 25224		
Client ID:	TP-3E		Batch ID: 12005				Analysis Date: 9/30/2015		SeqNo: 475697		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.0210						0		30	
Toluene	ND	0.0210						0		30	
Ethylbenzene	ND	0.0315						0		30	
m,p-Xylene	ND	0.0210						0		30	



Date: 10/1/2015

Work Order: 1509412  
CLIENT: PBS Engineering & Environmental  
Project: Pike Place PDA

**QC SUMMARY REPORT**  
**Volatile Organic Compounds by EPA Method 8260**

Sample ID	1509412-003BDUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	9/30/2015	RunNo:	25224		
Client ID:	TP-3E	Batch ID:	12005			Analysis Date:	9/30/2015	SeqNo:	475697		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

o-Xylene	ND	0.0210						0		30	
Surr: Dibromofluoromethane	1.31		1.313		99.9	56.5	129		0		
Surr: Toluene-d8	1.25		1.313		95.3	64.3	131		0		
Surr: 1-Bromo-4-fluorobenzene	1.32		1.313		100	63.1	141		0		

Sample ID	1509412-004BMS	SampType:	MS	Units:	mg/Kg-dry	Prep Date:	9/30/2015	RunNo:	25224		
Client ID:	TP-4W	Batch ID:	12005			Analysis Date:	9/30/2015	SeqNo:	475699		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Benzene	1.17	0.0237	1.182	0	99.4	63.5	133				
Toluene	1.19	0.0237	1.182	0	101	63.4	132				
Ethylbenzene	1.22	0.0355	1.182	0	103	54.5	134				
m,p-Xylene	2.54	0.0237	2.363	0.006499	107	53.1	132				
o-Xylene	1.27	0.0237	1.182	0	107	53.3	139				
Surr: Dibromofluoromethane	1.52		1.477		103	56.5	129				
Surr: Toluene-d8	1.47		1.477		99.4	64.3	131				
Surr: 1-Bromo-4-fluorobenzene	1.52		1.477		103	63.1	141				



Date: 10/1/2015

Work Order: 1509412  
CLIENT: PBS Engineering & Environmental  
Project: Pike Place PDA

## QC SUMMARY REPORT

### Sample Moisture (Percent Moisture)

Sample ID	1509412-004ADUP	SampType:	DUP	Units:	wt%	Prep Date:	9/30/2015	RunNo:	25200		
Client ID:	TP-4W	Batch ID:	R25200			Analysis Date:	9/30/2015	SeqNo:	475239		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	25.1	0.500						24.79	1.11	20	

## Sample Log-In Check List

Client Name: **PBS**  
 Logged by: **Erica Silva**

Work Order Number: **1509412**  
 Date Received: **9/30/2015 10:40:00 AM**

### Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐  
 2. How was the sample delivered? Client

### Log In

3. Coolers are present? Yes ☒ No ☐ NA ☐  
 4. Shipping container/cooler in good condition? Yes ☒ No ☐  
 5. Custody Seals present on shipping container/cooler?  
 (Refer to comments for Custody Seals not intact) Yes ☐ No ☐ Not Required ☒  
 6. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐  
 7. Were all items received at a temperature of >0°C to 10.0°C \* Yes ☐ No ☒ NA ☐

### Samples received straight from field

8. Sample(s) in proper container(s)? Yes ☒ No ☐  
 9. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐  
 10. Are samples properly preserved? Yes ☒ No ☐  
 11. Was preservative added to bottles? Yes ☐ No ☒ NA ☐  
 12. Is there headspace in the VOA vials? Yes ☐ No ☐ NA ☒  
 13. Did all samples containers arrive in good condition(unbroken)? Yes ☒ No ☐  
 14. Does paperwork match bottle labels? Yes ☒ No ☐  
 15. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐  
 16. Is it clear what analyses were requested? Yes ☒ No ☐  
 17. Were all holding times able to be met? Yes ☒ No ☐

### Special Handling (if applicable)

18. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified:  Date   
 By Whom:  Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person  
 Regarding:   
 Client Instructions:

19. Additional remarks:

### Item Information

Item #	Temp °C
Cooler	15.1
Sample	17.1
Temp Blank	18.9

\* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C



# Fremont

ANALYTICAL

3600 Fremont Ave N.  
Seattle, WA 98103

Tel: 206-352-3790  
Fax: 206-352-7178

Date: 9/30/15

Laboratory Project No (Internal):

1509412

Page: 1 of: 1

## Chain of Custody Record

Client:

Address:

City, State, Zip:

Telephone:

PBS  
Seattle

360-830-8359

Fax:

Project Name:

Project No:

Location:

Report To (PM):

PM Email:

Fire Place POA

40004001

Collected by:

A. Miller, T. Werry

\*Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOCs (EPA 8260 / 824)	GV/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (HX)	SVOCs (EPA 8270 / 625)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8270 / 625)	Metal** (EPA 6010 / 200.4)	Total (T) Dissolved (D)	Anions (IC)***	EDB (8011)	Comments	
1 TP-1	9/30	9:00	Soil	X														
2 TP-2N	9/30	9:20	Soil	X														
3 TP-3E	9/30	10:00	Soil	X														
4 TP-4W	9/30	10:15	Soil	X														
5																		
6																		
7																		
8																		
9																		
10																		

\*\*Metals Analysis (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL Individual AE Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Na Ni Pb Sb Se Sr Sn Ti U V Zn

\*\*\*Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide C-Phosphate Fluoride Tetra/nitrite

Sample Disposal: ☐ Return to Client ☒ Disposal by Lab (A fee may be assessed if samples are retained after 90 days)

Refused: ☒ Date/Time: 9/30/15 10:40 Received: ☒ Date/Time: 9/30/15 10:40

Relinquished: ☒ Date/Time: 9/30/15 10:40 Received: ☒ Date/Time: 9/30/15 10:40

TAT → SameDay\* NextDay\* 2 Day 3 Day STD

\*Please coordinate with the lab in advance

Distribution: White - Lab, Yellow - File, Pink - Originator

www.fremontanalytical.com



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Seattle, WA 98103

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F: (206) 352-7178

[info@fremontanalytical.com](mailto:info@fremontanalytical.com)

**PBS Engineering & Environmental**

Audrey Mclvor  
2517 Eastlake Ave, E #100  
Seattle, WA 98102

**RE: Pike Place PDA**

**Lab ID: 1510193**

October 27, 2015

**Attention Audrey Mclvor:**

Fremont Analytical, Inc. received 7 sample(s) on 10/14/2015 for the analyses presented in the following report.

***Gasoline by NWTPH-Gx***

***Sample Moisture (Percent Moisture)***

***Total Metals by EPA Method 6020***

***Volatile Organic Compounds by EPA Method 8260***

***Volatile Petroleum Hydrocarbons by NWVPH***

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Chelsea Ward  
Project Manager

**CC:**

Mike Bagley

Tom Mergy



Date: 10/27/2015

**CLIENT:** PBS Engineering & Environmental  
**Project:** Pike Place PDA  
**Lab Order:** 1510193

## Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1510193-001	B-1S	10/14/2015 11:35 AM	10/14/2015 1:40 PM
1510193-002	B-2N	10/14/2015 12:30 PM	10/14/2015 1:40 PM
1510193-003	W-5W	10/14/2015 12:45 PM	10/14/2015 1:40 PM
1510193-004	W-3N	10/14/2015 12:55 PM	10/14/2015 1:40 PM
1510193-005	W-6S	10/14/2015 1:00 PM	10/14/2015 1:40 PM
1510193-006	W-4E	10/14/2015 1:05 PM	10/14/2015 1:40 PM
1510193-007	Trip Blank	10/01/2015 12:52 PM	10/14/2015 1:40 PM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned



## Case Narrative

WO#: 1510193

Date: 10/27/2015

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**CLIENT:** PBS Engineering & Environmental

**Project:** Pike Place PDA

---

### I. SAMPLE RECEIPT:

Samples receipt information is recorded on the attached Sample Receipt Checklist.

### II. GENERAL REPORTING COMMENTS:

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

### III. ANALYSES AND EXCEPTIONS:

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

**Qualifiers:**

- \* - Flagged value is not within established control limits
- B - Analyte detected in the associated Method Blank
- D - Dilution was required
- E - Value above quantitation range
- H - Holding times for preparation or analysis exceeded
- I - Analyte with an internal standard that does not meet established acceptance criteria
- J - Analyte detected below Reporting Limit
- N - Tentatively Identified Compound (TIC)
- Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
- S - Spike recovery outside accepted recovery limits
- ND - Not detected at the Reporting Limit
- R - High relative percent difference observed

**Acronyms:**

- %Rec - Percent Recovery
- CCB - Continued Calibration Blank
- CCV - Continued Calibration Verification
- DF - Dilution Factor
- HEM - Hexane Extractable Material
- ICV - Initial Calibration Verification
- LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
- MB or MBLANK - Method Blank
- MDL - Method Detection Limit
- MS/MSD - Matrix Spike / Matrix Spike Duplicate
- PDS - Post Digestion Spike
- Ref Val - Reference Value
- RL - Reporting Limit
- RPD - Relative Percent Difference
- SD - Serial Dilution
- SGT - Silica Gel Treatment
- SPK - Spike
- Surr - Surrogate



## Analytical Report

WO#: 1510193

Date Reported: 10/27/2015

**Client:** PBS Engineering & Environmental

**Collection Date:** 10/14/2015 11:35:00 AM

**Project:** Pike Place PDA

**Lab ID:** 1510193-001

**Matrix:** Soil

**Client Sample ID:** B-1S

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<hr/>						
<b><u>Gasoline by NWTPH-Gx</u></b>				Batch ID: 12115		Analyst: BC
Gasoline	ND	5.70		mg/Kg-dry	1	10/15/2015 8:26:00 AM
Surr: 4-Bromofluorobenzene	101	65-135		%REC	1	10/15/2015 8:26:00 AM
Surr: Toluene-d8	99.1	65-135		%REC	1	10/15/2015 8:26:00 AM
<hr/>						
<b><u>Volatile Organic Compounds by EPA Method 8260</u></b>				Batch ID: 12115		Analyst: BC
Benzene	ND	0.0228		mg/Kg-dry	1	10/15/2015 8:26:00 AM
Toluene	ND	0.0228		mg/Kg-dry	1	10/15/2015 8:26:00 AM
Ethylbenzene	ND	0.0342		mg/Kg-dry	1	10/15/2015 8:26:00 AM
m,p-Xylene	ND	0.0228		mg/Kg-dry	1	10/15/2015 8:26:00 AM
o-Xylene	ND	0.0228		mg/Kg-dry	1	10/15/2015 8:26:00 AM
Surr: Dibromofluoromethane	94.9	56.5-129		%REC	1	10/15/2015 8:26:00 AM
Surr: Toluene-d8	99.6	64.3-131		%REC	1	10/15/2015 8:26:00 AM
Surr: 1-Bromo-4-fluorobenzene	99.1	63.1-141		%REC	1	10/15/2015 8:26:00 AM
<hr/>						
<b><u>Total Metals by EPA Method 6020</u></b>				Batch ID: 12114		Analyst: TN
Lead	3.20	0.206		mg/Kg-dry	1	10/14/2015 5:23:32 PM
<hr/>						
<b><u>Sample Moisture (Percent Moisture)</u></b>				Batch ID: R25479		Analyst: SL
Percent Moisture	20.6	0.500		wt%	1	10/14/2015 3:36:15 PM



## Analytical Report

WO#: 1510193

Date Reported: 10/27/2015

**Client:** PBS Engineering & Environmental

**Collection Date:** 10/14/2015 12:30:00 PM

**Project:** Pike Place PDA

**Lab ID:** 1510193-002

**Matrix:** Soil

**Client Sample ID:** B-2N

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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### Gasoline by NWTPH-Gx

Batch ID: 12115

Analyst: BC

Gasoline	ND	6.66		mg/Kg-dry	1	10/15/2015 9:24:00 AM
Surr: 4-Bromofluorobenzene	99.7	65-135		%REC	1	10/15/2015 9:24:00 AM
Surr: Toluene-d8	98.7	65-135		%REC	1	10/15/2015 9:24:00 AM

### Volatile Organic Compounds by EPA Method 8260

Batch ID: 12115

Analyst: BC

Benzene	ND	0.0266		mg/Kg-dry	1	10/15/2015 9:24:00 AM
Toluene	ND	0.0266		mg/Kg-dry	1	10/15/2015 9:24:00 AM
Ethylbenzene	ND	0.0400		mg/Kg-dry	1	10/15/2015 9:24:00 AM
m,p-Xylene	ND	0.0266		mg/Kg-dry	1	10/15/2015 9:24:00 AM
o-Xylene	ND	0.0266		mg/Kg-dry	1	10/15/2015 9:24:00 AM
Surr: Dibromofluoromethane	95.3	56.5-129		%REC	1	10/15/2015 9:24:00 AM
Surr: Toluene-d8	101	64.3-131		%REC	1	10/15/2015 9:24:00 AM
Surr: 1-Bromo-4-fluorobenzene	97.9	63.1-141		%REC	1	10/15/2015 9:24:00 AM

### Total Metals by EPA Method 6020

Batch ID: 12114

Analyst: TN

Lead	6.94	0.214		mg/Kg-dry	1	10/14/2015 5:44:39 PM
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### Sample Moisture (Percent Moisture)

Batch ID: R25479

Analyst: SL

Percent Moisture	25.4	0.500		wt%	1	10/14/2015 3:36:15 PM
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## Analytical Report

WO#: 1510193

Date Reported: 10/27/2015

**Client:** PBS Engineering & Environmental

**Collection Date:** 10/14/2015 12:45:00 PM

**Project:** Pike Place PDA

**Lab ID:** 1510193-003

**Matrix:** Soil

**Client Sample ID:** W-5W

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b><u>Gasoline by NWTPH-Gx</u></b>						
				Batch ID: 12115		Analyst: BC
Gasoline	13.4	6.94		mg/Kg-dry	1	10/15/2015 9:53:00 AM
Surr: 4-Bromofluorobenzene	101	65-135		%REC	1	10/15/2015 9:53:00 AM
Surr: Toluene-d8	98.7	65-135		%REC	1	10/15/2015 9:53:00 AM
<b><u>Volatile Organic Compounds by EPA Method 8260</u></b>						
				Batch ID: 12115		Analyst: BC
Benzene	0.0536	0.0278		mg/Kg-dry	1	10/15/2015 9:53:00 AM
Toluene	ND	0.0278		mg/Kg-dry	1	10/15/2015 9:53:00 AM
Ethylbenzene	ND	0.0416		mg/Kg-dry	1	10/15/2015 9:53:00 AM
m,p-Xylene	ND	0.0278		mg/Kg-dry	1	10/15/2015 9:53:00 AM
o-Xylene	ND	0.0278		mg/Kg-dry	1	10/15/2015 9:53:00 AM
Surr: Dibromofluoromethane	95.2	56.5-129		%REC	1	10/15/2015 9:53:00 AM
Surr: Toluene-d8	101	64.3-131		%REC	1	10/15/2015 9:53:00 AM
Surr: 1-Bromo-4-fluorobenzene	99.0	63.1-141		%REC	1	10/15/2015 9:53:00 AM
<b><u>Total Metals by EPA Method 6020</u></b>						
				Batch ID: 12114		Analyst: TN
Lead	6.87	0.207		mg/Kg-dry	1	10/14/2015 5:48:10 PM
<b><u>Sample Moisture (Percent Moisture)</u></b>						
				Batch ID: R25479		Analyst: SL
Percent Moisture	23.2	0.500		wt%	1	10/14/2015 3:36:15 PM



## Analytical Report

WO#: 1510193

Date Reported: 10/27/2015

**Client:** PBS Engineering & Environmental

**Collection Date:** 10/14/2015 12:55:00 PM

**Project:** Pike Place PDA

**Lab ID:** 1510193-004

**Matrix:** Soil

**Client Sample ID:** W-3N

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b><u>Gasoline by NWTPH-Gx</u></b>						
				Batch ID: 12115		Analyst: BC
Gasoline	ND	4.83		mg/Kg-dry	1	10/15/2015 10:21:00 AM
Surr: 4-Bromofluorobenzene	101	65-135		%REC	1	10/15/2015 10:21:00 AM
Surr: Toluene-d8	98.4	65-135		%REC	1	10/15/2015 10:21:00 AM
<b><u>Volatile Organic Compounds by EPA Method 8260</u></b>						
				Batch ID: 12115		Analyst: BC
Benzene	0.0635	0.0193		mg/Kg-dry	1	10/15/2015 10:21:00 AM
Toluene	0.0724	0.0193		mg/Kg-dry	1	10/15/2015 10:21:00 AM
Ethylbenzene	ND	0.0290		mg/Kg-dry	1	10/15/2015 10:21:00 AM
m,p-Xylene	0.0509	0.0193		mg/Kg-dry	1	10/15/2015 10:21:00 AM
o-Xylene	ND	0.0193		mg/Kg-dry	1	10/15/2015 10:21:00 AM
Surr: Dibromofluoromethane	97.4	56.5-129		%REC	1	10/15/2015 10:21:00 AM
Surr: Toluene-d8	101	64.3-131		%REC	1	10/15/2015 10:21:00 AM
Surr: 1-Bromo-4-fluorobenzene	99.6	63.1-141		%REC	1	10/15/2015 10:21:00 AM
<b><u>Total Metals by EPA Method 6020</u></b>						
				Batch ID: 12114		Analyst: TN
Lead	9.11	0.214		mg/Kg-dry	1	10/14/2015 5:58:46 PM
<b><u>Sample Moisture (Percent Moisture)</u></b>						
				Batch ID: R25479		Analyst: SL
Percent Moisture	25.1	0.500		wt%	1	10/14/2015 3:36:15 PM



## Analytical Report

WO#: 1510193

Date Reported: 10/27/2015

**Client:** PBS Engineering & Environmental

**Collection Date:** 10/14/2015 1:00:00 PM

**Project:** Pike Place PDA

**Lab ID:** 1510193-005

**Matrix:** Soil

**Client Sample ID:** W-6S

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b><u>Gasoline by NWTPH-Gx</u></b>						
				Batch ID: 12115		Analyst: BC
Gasoline	ND	7.09		mg/Kg-dry	1	10/15/2015 10:50:00 AM
Surr: 4-Bromofluorobenzene	101	65-135		%REC	1	10/15/2015 10:50:00 AM
Surr: Toluene-d8	98.3	65-135		%REC	1	10/15/2015 10:50:00 AM
<b><u>Volatile Organic Compounds by EPA Method 8260</u></b>						
				Batch ID: 12115		Analyst: BC
Benzene	ND	0.0284		mg/Kg-dry	1	10/15/2015 10:50:00 AM
Toluene	ND	0.0284		mg/Kg-dry	1	10/15/2015 10:50:00 AM
Ethylbenzene	ND	0.0425		mg/Kg-dry	1	10/15/2015 10:50:00 AM
m,p-Xylene	ND	0.0284		mg/Kg-dry	1	10/15/2015 10:50:00 AM
o-Xylene	ND	0.0284		mg/Kg-dry	1	10/15/2015 10:50:00 AM
Surr: Dibromofluoromethane	95.8	56.5-129		%REC	1	10/15/2015 10:50:00 AM
Surr: Toluene-d8	99.9	64.3-131		%REC	1	10/15/2015 10:50:00 AM
Surr: 1-Bromo-4-fluorobenzene	99.7	63.1-141		%REC	1	10/15/2015 10:50:00 AM
<b><u>Total Metals by EPA Method 6020</u></b>						
				Batch ID: 12114		Analyst: TN
Lead	9.12	0.186		mg/Kg-dry	1	10/14/2015 6:02:17 PM
<b><u>Sample Moisture (Percent Moisture)</u></b>						
				Batch ID: R25479		Analyst: SL
Percent Moisture	22.7	0.500		wt%	1	10/14/2015 3:36:15 PM



## Analytical Report

WO#: 1510193

Date Reported: 10/27/2015

Client: PBS Engineering &amp; Environmental

Collection Date: 10/14/2015 1:05:00 PM

Project: Pike Place PDA

Lab ID: 1510193-006

Matrix: Soil

Client Sample ID: W-4E

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b><u>Gasoline by NWTPH-Gx</u></b>						
				Batch ID: 12115		Analyst: BC
Gasoline	84.5	5.95		mg/Kg-dry	1	10/15/2015 11:19:00 AM
Surr: 4-Bromofluorobenzene	102	65-135		%REC	1	10/15/2015 11:19:00 AM
Surr: Toluene-d8	99.2	65-135		%REC	1	10/15/2015 11:19:00 AM
<b><u>Volatile Organic Compounds by EPA Method 8260</u></b>						
				Batch ID: 12115		Analyst: BC
Methyl tert-butyl ether (MTBE)	ND	0.0595		mg/Kg-dry	1	10/15/2015 11:19:00 AM
Benzene	1.86	0.0238		mg/Kg-dry	1	10/15/2015 11:19:00 AM
Toluene	2.61	0.476	D	mg/Kg-dry	20	10/16/2015 10:35:00 AM
Ethylbenzene	0.640	0.0357		mg/Kg-dry	1	10/15/2015 11:19:00 AM
m,p-Xylene	4.22	0.0238		mg/Kg-dry	1	10/15/2015 11:19:00 AM
o-Xylene	1.78	0.0238		mg/Kg-dry	1	10/15/2015 11:19:00 AM
Naphthalene	0.449	0.0357		mg/Kg-dry	1	10/15/2015 11:19:00 AM
Surr: Dibromofluoromethane	96.1	56.5-129		%REC	1	10/15/2015 11:19:00 AM
Surr: Toluene-d8	101	64.3-131		%REC	1	10/15/2015 11:19:00 AM
Surr: 1-Bromo-4-fluorobenzene	101	63.1-141		%REC	1	10/15/2015 11:19:00 AM
<b><u>Volatile Petroleum Hydrocarbons by NWVPH</u></b>						
				Batch ID: 12197		Analyst: BC
Aliphatic Hydrocarbon (C5-C6)	ND	3.16		mg/Kg-dry	1	10/24/2015 7:28:00 AM
Aliphatic Hydrocarbon (C6-C8)	27.9	3.16		mg/Kg-dry	1	10/24/2015 7:28:00 AM
Aliphatic Hydrocarbon (C8-C10)	10.3	3.16		mg/Kg-dry	1	10/24/2015 7:28:00 AM
Aliphatic Hydrocarbon (C10-C12)	6.68	3.16		mg/Kg-dry	1	10/24/2015 7:28:00 AM
Aromatic Hydrocarbon (C8-C10)	29.7	3.16		mg/Kg-dry	1	10/24/2015 7:28:00 AM
Aromatic Hydrocarbon (C10-C12)	16.1	3.16		mg/Kg-dry	1	10/24/2015 7:28:00 AM
Aromatic Hydrocarbon (C12-C13)	4.08	3.16		mg/Kg-dry	1	10/24/2015 7:28:00 AM
Surr: 1,4-Difluorobenzene	107	65-140		%REC	1	10/24/2015 7:28:00 AM
Surr: Bromofluorobenzene	105	65-140		%REC	1	10/24/2015 7:28:00 AM
<b><u>Total Metals by EPA Method 6020</u></b>						
				Batch ID: 12114		Analyst: TN
Lead	19.4	0.206		mg/Kg-dry	1	10/14/2015 6:05:48 PM
<b><u>Sample Moisture (Percent Moisture)</u></b>						
				Batch ID: R25479		Analyst: SL
Percent Moisture	23.5	0.500		wt%	1	10/14/2015 3:36:15 PM



Date: 10/27/2015

Work Order: 1510193  
CLIENT: PBS Engineering & Environmental  
Project: Pike Place PDA

**QC SUMMARY REPORT**  
**Total Metals by EPA Method 6020**

Sample ID	MB-12114	SampType:	MBLK	Units:	mg/Kg	Prep Date:	10/14/2015	RunNo:	25484			
Client ID:	MBLKS	Batch ID:	12114			Analysis Date:	10/14/2015	SeqNo:	480928			
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Lead	ND	0.200										
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Sample ID	LCS-12114	SampType:	LCS	Units:	mg/Kg	Prep Date:	10/14/2015	RunNo:	25484		
Client ID:	LCSS	Batch ID:	12114			Analysis Date:	10/14/2015	SeqNo:	480929		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Lead	22.6	0.200	25.00	0	90.4	80	120					
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Sample ID	1510193-001ADUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	10/14/2015	RunNo:	25484			
Client ID:	B-1S	Batch ID:	12114			Analysis Date:	10/14/2015	SeqNo:	480931			
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Lead	3.19	0.200							3.202	0.340	20	
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Sample ID	1510193-001AMS	SampType:	MS	Units:	mg/Kg-dry	Prep Date:	10/14/2015	RunNo:	25484			
Client ID:	B-1S	Batch ID:	12114			Analysis Date:	10/14/2015	SeqNo:	480933			
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Lead	24.6	0.195	24.40	3.202	87.8	75	125					
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Sample ID	1510193-001AMSD	SampType:	MSD	Units:	mg/Kg-dry	Prep Date:	10/14/2015	RunNo:	25484			
Client ID:	B-1S	Batch ID:	12114			Analysis Date:	10/14/2015	SeqNo:	480934			
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Lead	25.2	0.195	24.40	3.202	90.3	75	125	24.62	2.46	20		
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Date: 10/27/2015

Work Order: 1510193  
CLIENT: PBS Engineering & Environmental  
Project: Pike Place PDA

**QC SUMMARY REPORT****Gasoline by NWTPH-Gx**

Sample ID	LCS-12115	SampType:	LCS	Units:	mg/Kg	Prep Date:	10/14/2015	RunNo:	25502		
Client ID:	LCSS	Batch ID:	12115			Analysis Date:	10/15/2015	SeqNo:	481183		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	24.5	5.00	25.00	0	97.8	65	135				
Surr: Toluene-d8	1.24		1.250		99.2	65	135				
Surr: 4-Bromofluorobenzene	1.25		1.250		100	65	135				

Sample ID	MB-12115	SampType:	MBLK			Units:	mg/Kg			Prep Date:	10/14/2015		RunNo:	25502	
Client ID:	MBLKS	Batch ID:	12115						Analysis Date:	10/15/2015		SeqNo:	481184		
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual			

Gasoline	ND	5.00									
Surr: Toluene-d8	1.25		1.250		100	65	135				
Surr: 4-Bromofluorobenzene	1.25		1.250		100	65	135				

Sample ID	1510170-014BDUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	10/14/2015	RunNo:	25502		
Client ID:	BATCH	Batch ID:	12115			Analysis Date:	10/15/2015	SeqNo:	481165		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	ND	2.56						0		30	
Surr: Toluene-d8	0.632		0.6389		98.9	65	135		0		
Surr: 4-Bromofluorobenzene	0.645		0.6389		101	65	135		0		

Sample ID	1510193-001BDUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	10/14/2015	RunNo:	25502		
Client ID:	B-1S	Batch ID:	12115			Analysis Date:	10/15/2015	SeqNo:	481175		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	ND	5.70						0		30	
Surr: Toluene-d8	1.41		1.425		98.8	65	135		0		
Surr: 4-Bromofluorobenzene	1.43		1.425		100	65	135		0		



Date: 10/27/2015

Work Order: 1510193  
CLIENT: PBS Engineering & Environmental  
Project: Pike Place PDA

**QC SUMMARY REPORT**  
**Volatile Organic Compounds by EPA Method 8260**

Sample ID	LCS-12115	SampType:	LCS	Units:	mg/Kg	Prep Date:	10/14/2015	RunNo:	25498		
Client ID:	LCSS	Batch ID:	12115			Analysis Date:	10/15/2015	SeqNo:	481130		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	1.04	0.0500	1.000	0	104	59.1	138				
Benzene	1.12	0.0200	1.000	0	112	64.3	133				
Toluene	1.11	0.0200	1.000	0	111	67.3	138				
Ethylbenzene	1.14	0.0300	1.000	0	114	74	129				
m,p-Xylene	2.24	0.0200	2.000	0	112	79.8	128				
o-Xylene	1.14	0.0200	1.000	0	114	72.7	124				
Naphthalene	0.990	0.0300	1.000	0	99.0	62.3	134				
Surr: Dibromofluoromethane	1.31		1.250		105	56.5	129				
Surr: Toluene-d8	1.25		1.250		100	64.3	131				
Surr: 1-Bromo-4-fluorobenzene	1.28		1.250		103	63.1	141				

Sample ID	MB-12115	SampType:	MBLK		Units:	mg/Kg		Prep Date:	10/14/2015		RunNo:	25498
Client ID:	MBLKS	Batch ID:	12115					Analysis Date:	10/15/2015		SeqNo:	481131
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Methyl tert-butyl ether (MTBE)	ND	0.0500										
Benzene	ND	0.0200										
Toluene	ND	0.0200										
Ethylbenzene	ND	0.0300										
m,p-Xylene	ND	0.0200										
o-Xylene	ND	0.0200										
Naphthalene	ND	0.0300										
Surr: Dibromofluoromethane	1.21		1.250		97.0	56.5	129					
Surr: Toluene-d8	1.25		1.250		100	64.3	131					
Surr: 1-Bromo-4-fluorobenzene	1.23		1.250		98.7	63.1	141					



Date: 10/27/2015

Work Order: 1510193  
CLIENT: PBS Engineering & Environmental  
Project: Pike Place PDA

**QC SUMMARY REPORT**  
**Volatile Organic Compounds by EPA Method 8260**

Sample ID	1510170-014BDUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	10/14/2015	RunNo:	25498		
Client ID:	BATCH	Batch ID:	12115			Analysis Date:	10/15/2015	SeqNo:	481125		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	ND	0.0256						0		30	
Benzene	ND	0.0102						0		30	
Toluene	ND	0.0102						0		30	
Ethylbenzene	ND	0.0153						0		30	
m,p-Xylene	ND	0.0102						0		30	
o-Xylene	ND	0.0102						0		30	
Naphthalene	ND	0.0153						0		30	
Surr: Dibromofluoromethane	0.614		0.6389		96.1	56.5	129		0		
Surr: Toluene-d8	0.635		0.6389		99.4	64.3	131		0		
Surr: 1-Bromo-4-fluorobenzene	0.636		0.6389		99.5	63.1	141		0		

Sample ID	1510193-001BDUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	10/14/2015	RunNo:	25498		
Client ID:	B-1S	Batch ID:	12115			Analysis Date:	10/15/2015	SeqNo:	481126		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	ND	0.0570						0		30	
Benzene	ND	0.0228						0		30	
Toluene	ND	0.0228						0		30	
Ethylbenzene	ND	0.0342						0		30	
m,p-Xylene	ND	0.0228						0		30	
o-Xylene	ND	0.0228						0		30	
Naphthalene	ND	0.0342						0		30	
Surr: Dibromofluoromethane	1.37		1.425		95.9	56.5	129		0		
Surr: Toluene-d8	1.42		1.425		99.5	64.3	131		0		
Surr: 1-Bromo-4-fluorobenzene	1.41		1.425		98.6	63.1	141		0		



Date: 10/27/2015

Work Order: 1510193  
CLIENT: PBS Engineering & Environmental  
Project: Pike Place PDA

**QC SUMMARY REPORT**  
**Volatile Organic Compounds by EPA Method 8260**

Sample ID	1510193-002BMS	SampType:	MS	Units:	mg/Kg-dry	Prep Date:	10/14/2015	RunNo:	25498		
Client ID:	B-2N	Batch ID:	12115			Analysis Date:	10/15/2015	SeqNo:	481127		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	1.37	0.0666	1.332	0	102	54.4	132				
Benzene	1.40	0.0266	1.332	0.02491	103	63.5	133				
Toluene	1.36	0.0266	1.332	0.01507	101	63.4	132				
Ethylbenzene	1.39	0.0400	1.332	0.003924	104	54.5	134				
m,p-Xylene	2.73	0.0266	2.665	0.01332	102	53.1	132				
o-Xylene	1.37	0.0266	1.332	0.003837	102	53.3	139				
Naphthalene	1.33	0.0400	1.332	0	100	52.3	124				
Surr: Dibromofluoromethane	1.74		1.665		105	56.5	129				
Surr: Toluene-d8	1.67		1.665		100	64.3	131				
Surr: 1-Bromo-4-fluorobenzene	1.70		1.665		102	63.1	141				



Date: 10/27/2015

Work Order: 1510193  
CLIENT: PBS Engineering & Environmental  
Project: Pike Place PDA

**QC SUMMARY REPORT**  
**Volatile Petroleum Hydrocarbons by NWVPH**

Sample ID	LCS-12197	SampType:	LCS	Units:	mg/Kg	Prep Date:	10/22/2015	RunNo:	25725		
Client ID:	LCSS	Batch ID:	12197			Analysis Date:	10/23/2015	SeqNo:	485670		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aliphatic Hydrocarbon (C5-C6)	30.4	2.00	30.00	0	101	70	130				
Aliphatic Hydrocarbon (C6-C8)	8.68	2.00	10.00	0	86.8	70	130				
Aliphatic Hydrocarbon (C8-C10)	9.88	2.00	10.00	0	98.8	70	130				
Aliphatic Hydrocarbon (C10-C12)	11.3	2.00	10.00	0	113	70	130				
Aromatic Hydrocarbon (C8-C10)	43.9	2.00	40.00	0	110	70	130				
Aromatic Hydrocarbon (C10-C12)	9.75	2.00	10.00	0	97.5	70	130				
Aromatic Hydrocarbon (C12-C13)	7.67	2.00	10.00	0	76.7	70	130				
Surr: 1,4-Difluorobenzene	2.59		2.500		104	65	140				
Surr: Bromofluorobenzene	2.65		2.500		106	65	140				

Sample ID	MB-12197	SampType:	MBLK	Units:	mg/Kg	Prep Date:	10/22/2015	RunNo:	25725		
Client ID:	MBLKS	Batch ID:	12197			Analysis Date:	10/23/2015	SeqNo:	485671		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aliphatic Hydrocarbon (C5-C6)	ND	2.00		0	0						
Aliphatic Hydrocarbon (C6-C8)	ND	2.00		0	0						
Aliphatic Hydrocarbon (C8-C10)	ND	2.00		0	0						
Aliphatic Hydrocarbon (C10-C12)	ND	2.00		0	0						
Aromatic Hydrocarbon (C8-C10)	ND	2.00		0	0						
Aromatic Hydrocarbon (C10-C12)	ND	2.00		0	0						
Aromatic Hydrocarbon (C12-C13)	ND	2.00		0	0						
Surr: 1,4-Difluorobenzene	1.98		2.500		79.1	65	140				
Surr: Bromofluorobenzene	2.25		2.500		89.9	65	140				

Sample ID	1510270-018BDUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	10/22/2015	RunNo:	25725		
Client ID:	BATCH	Batch ID:	12197			Analysis Date:	10/23/2015	SeqNo:	485661		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Aliphatic Hydrocarbon (C5-C6)	ND	0.941		0	0			0		25	
Aliphatic Hydrocarbon (C6-C8)	ND	0.941		0	0			0		25	



Date: 10/27/2015

Work Order: 1510193  
CLIENT: PBS Engineering & Environmental  
Project: Pike Place PDA

## QC SUMMARY REPORT

### Volatile Petroleum Hydrocarbons by NWVPH

Sample ID	1510270-018BDUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	10/22/2015	RunNo:	25725		
Client ID:	BATCH	Batch ID:	12197			Analysis Date:	10/23/2015	SeqNo:	485661		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	ND	0.941		0	0			0		25	
Aliphatic Hydrocarbon (C10-C12)	ND	0.941		0	0			0		25	
Aromatic Hydrocarbon (C8-C10)	ND	0.941		0	0			0		25	
Aromatic Hydrocarbon (C10-C12)	ND	0.941		0	0			0		25	
Aromatic Hydrocarbon (C12-C13)	ND	0.941		0	0			0		25	
Surr: 1,4-Difluorobenzene	0.988		1.176		84.0	65	140		0		
Surr: Bromofluorobenzene	1.09		1.176		92.5	65	140		0	0	

Sample ID	1510227-005BMS	SampType:	MS		Units:	mg/Kg-dry		Prep Date:	10/22/2015		RunNo:	25725
Client ID:	BATCH	Batch ID:	12197		Analysis Date:				10/24/2015		SeqNo:	485657
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Aliphatic Hydrocarbon (C5-C6)	53.3	0.756	11.34	0	470	70	130				SE	
Aliphatic Hydrocarbon (C6-C8)	8.57	0.756	3.780	0	227	70	130				S	
Aliphatic Hydrocarbon (C8-C10)	5.48	0.756	3.780	0.8878	121	70	130					
Aliphatic Hydrocarbon (C10-C12)	14.2	0.756	3.780	11.57	69.3	70	130				S	
Aromatic Hydrocarbon (C8-C10)	19.3	0.756	15.12	1.304	119	70	130					
Aromatic Hydrocarbon (C10-C12)	20.7	0.756	3.780	25.98	-141	70	130				SE	
Aromatic Hydrocarbon (C12-C13)	22.3	0.756	3.780	27.20	-131	70	130				SE	
Surr: 1,4-Difluorobenzene	0.834		0.9449		88.3	65	140					
Surr: Bromofluorobenzene	0.862		0.9449		91.3	65	140					

**NOTES:**

S - Analyte concentration was too high for accurate spike recoveries. The method is in control as demonstrated by the LCS.

Sample ID	1510227-005BMSD	SampType:	MSD	Units:	mg/Kg-dry	Prep Date:	10/22/2015	RunNo:	25725		
Client ID:	BATCH	Batch ID:	12197			Analysis Date:	10/24/2015	SeqNo:	485658		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	46.9	0.756	11.34	0	414	70	130	53.29	12.7	30	S
Aliphatic Hydrocarbon (C6-C8)	8.37	0.756	3.780	0	222	70	130	8.573	2.35	30	S
Aliphatic Hydrocarbon (C8-C10)	5.83	0.756	3.780	0.8878	131	70	130	5.476	6.34	30	S



Date: 10/27/2015

Work Order: 1510193  
CLIENT: PBS Engineering & Environmental  
Project: Pike Place PDA

**QC SUMMARY REPORT**  
**Volatile Petroleum Hydrocarbons by NWVPH**

Sample ID	1510227-005BMSD	SampType:	MSD	Units:			mg/Kg-dry	Prep Date:	10/22/2015	RunNo:			25725
Client ID:	BATCH	Batch ID:	12197	Analysis Date:					10/24/2015	SeqNo:			485658
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Aliphatic Hydrocarbon (C10-C12)	16.1	0.756	3.780	11.57	120	70	130	14.19	12.7	30			
Aromatic Hydrocarbon (C8-C10)	20.5	0.756	15.12	1.304	127	70	130	19.26	6.02	30			
Aromatic Hydrocarbon (C10-C12)	26.9	0.756	3.780	25.98	24.7	70	130	20.66	26.3	30	SE		
Aromatic Hydrocarbon (C12-C13)	19.4	0.756	3.780	27.20	-206	70	130	22.27	13.7	30	SE		
Surr: 1,4-Difluorobenzene	0.828		0.9449		87.6	65	140		0				
Surr: Bromofluorobenzene	0.867		0.9449		91.8	65	140		0	0			

**NOTES:**

S - Analyte concentration was too high for accurate spike recoveries. The method is in control as demonstrated by the LCS.



Date: 10/27/2015

**Work Order:** 1510193  
**CLIENT:** PBS Engineering & Environmental  
**Project:** Pike Place PDA

**QC SUMMARY REPORT**  
**Sample Moisture (Percent Moisture)**

Sample ID	1510188-004ADUP	SampType:	DUP	Units:	wt%	Prep Date:	10/14/2015	RunNo:	25479		
Client ID:	BATCH	Batch ID:	R25479			Analysis Date:	10/14/2015	SeqNo:	480845		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	12.3	0.500						12.73	3.70	20	

Client Name: **PBS**  
 Logged by: **Erica Silva**

Work Order Number: **1510193**  
 Date Received: **10/14/2015 1:40:00 PM**

## Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐  
 2. How was the sample delivered? Client

## Log In

3. Coolers are present? Yes ☒ No ☐ NA ☐  
 4. Shipping container/cooler in good condition? Yes ☒ No ☐  
 5. Custody Seals present on shipping container/cooler?  
 (Refer to comments for Custody Seals not intact) Yes ☐ No ☐ Not Required ☒  
 6. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐  
 7. Were all items received at a temperature of >0°C to 10.0°C \* Yes ☐ No ☒ NA ☐

### Please refer to Item Information

8. Sample(s) in proper container(s)? Yes ☒ No ☐  
 9. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐  
 10. Are samples properly preserved? Yes ☒ No ☐  
 11. Was preservative added to bottles? Yes ☐ No ☒ NA ☐  
 12. Is there headspace in the VOA vials? Yes ☐ No ☐ NA ☒  
 13. Did all samples containers arrive in good condition(unbroken)? Yes ☒ No ☐  
 14. Does paperwork match bottle labels? Yes ☒ No ☐  
 15. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐  
 16. Is it clear what analyses were requested? Yes ☒ No ☐  
 17. Were all holding times able to be met? Yes ☒ No ☐

## Special Handling (if applicable)

18. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified:  Date   
 By Whom:  Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person  
 Regarding:   
 Client Instructions:

19. Additional remarks:

## Item Information

Item #	Temp °C
Cooler	17.7
Sample	18.0
Temp Blank	18.0





# Fremont

## Chain of Custody Record

3600 Fremont Ave N. Tel: 206-352-3790  
Seattle, WA 98103 Fax: 206-352-7178

Date: 10/14/15

Laboratory Project No (internal): 1510193

Page: 1 of 1

Project Name: P1, K2 Place Road

Project No: 46009.001

Collected by: M. Berging

Location:

Report To (PM): A. M. Swer

Report To (PM): M. Berging, T. M. Berging

PM Email:

PM Email:

Client: PB5

Address:

City, State, zip:

Telephone:

Fax:

Matrix Code: A = Air, AQ = Aqueous, B = Bulk, C = Other, F = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

Sample Name

Sample Date

Sample Time

Sample Type

Matrix

VOCs (EPA 4210 / 4211)

SVOCs (EPA 8210 / 8211)

Hydrocarbon Identification (GC)

Hydrocarbon Identification (GC/MS)

SVOCs (EPA 8210 / 8211)

PCBs (EPA 8210 / 8211)

PCBs (EPA 8210 / 8211)

PCBs (EPA 8210 / 8211)

PCBs (EPA 8210 / 8211)

PCBs (EPA 8210 / 8211)

PCBs (EPA 8210 / 8211)

PCBs (EPA 8210 / 8211)

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PCBs (EPA 8210 / 8211)

PCBs (EPA 8210 / 8211)

PCBs (EPA 8210 / 8211)

PCBs (EPA 8210 / 8211)

PCBs (EPA 8210 / 8211)

PCBs (EPA 8210 / 8211)

NOTED for A.M. 10/21/15 day Sat



3600 Fremont Ave. N.  
Seattle, WA 98103  
T: (206) 352-3790  
F: (206) 352-7178  
info@fremontanalytical.com

**PBS Engineering & Environmental**

Audrey McIvor  
2517 Eastlake Ave, E #100  
Seattle, WA 98102

**RE: Pike Place PDA**

**Lab ID: 1511246**

November 25, 2015

**Attention Audrey McIvor:**

Fremont Analytical, Inc. received 3 sample(s) on 11/24/2015 for the analyses presented in the following report.

***Gasoline by NWTPH-Gx***

***Sample Moisture (Percent Moisture)***

***Total Metals by EPA Method 6020***

***Volatile Organic Compounds by EPA Method 8260***

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Chelsea Ward  
Project Manager



Date: 11/25/2015

---

**CLIENT:** PBS Engineering & Environmental  
**Project:** Pike Place PDA  
**Lab Order:** 1511246

---

## Work Order Sample Summary

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Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1511246-001	FG-1N	11/24/2015 8:00 AM	11/24/2015 8:56 AM
1511246-002	FG-2E	11/24/2015 8:10 AM	11/24/2015 8:56 AM
1511246-003	FG-3W	11/24/2015 8:20 AM	11/24/2015 8:56 AM

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Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned



## Case Narrative

WO#: 1511246

Date: 11/25/2015

---

**CLIENT:** PBS Engineering & Environmental

**Project:** Pike Place PDA

---

### WorkOrder Narrative:

#### I. SAMPLE RECEIPT:

Samples receipt information is recorded on the attached Sample Receipt Checklist.

#### II. GENERAL REPORTING COMMENTS:

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

#### III. ANALYSES AND EXCEPTIONS:

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

**Qualifiers:**

- \* - Flagged value is not within established control limits
- B - Analyte detected in the associated Method Blank
- D - Dilution was required
- E - Value above quantitation range
- H - Holding times for preparation or analysis exceeded
- I - Analyte with an internal standard that does not meet established acceptance criteria
- J - Analyte detected below Reporting Limit
- N - Tentatively Identified Compound (TIC)
- Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
- S - Spike recovery outside accepted recovery limits
- ND - Not detected at the Reporting Limit
- R - High relative percent difference observed

**Acronyms:**

- %Rec - Percent Recovery
- CCB - Continued Calibration Blank
- CCV - Continued Calibration Verification
- DF - Dilution Factor
- HEM - Hexane Extractable Material
- ICV - Initial Calibration Verification
- LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
- MB or MBLANK - Method Blank
- MDL - Method Detection Limit
- MS/MSD - Matrix Spike / Matrix Spike Duplicate
- PDS - Post Digestion Spike
- Ref Val - Reference Value
- RL - Reporting Limit
- RPD - Relative Percent Difference
- SD - Serial Dilution
- SGT - Silica Gel Treatment
- SPK - Spike
- Surr - Surrogate



## Analytical Report

WO#: 1511246

Date Reported: 11/25/2015

Client: PBS Engineering & Environmental

Collection Date: 11/24/2015 8:00:00 AM

Project: Pike Place PDA

Lab ID: 1511246-001

Matrix: Soil

Client Sample ID: FG-1N

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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### Gasoline by NWTPH-Gx

Batch ID: 12478

Analyst: BC

Gasoline	ND	8.14		mg/Kg-dry	1	11/25/2015 7:00:00 AM
Surr: 4-Bromofluorobenzene	92.0	65-135		%Rec	1	11/25/2015 7:00:00 AM
Surr: Toluene-d8	93.1	65-135		%Rec	1	11/25/2015 7:00:00 AM

### Volatile Organic Compounds by EPA Method 8260

Batch ID: 12478

Analyst: BC

Benzene	ND	0.0326		mg/Kg-dry	1	11/25/2015 7:00:00 AM
Toluene	ND	0.0326		mg/Kg-dry	1	11/25/2015 7:00:00 AM
Ethylbenzene	ND	0.0489		mg/Kg-dry	1	11/25/2015 7:00:00 AM
m,p-Xylene	ND	0.0326		mg/Kg-dry	1	11/25/2015 7:00:00 AM
o-Xylene	ND	0.0326		mg/Kg-dry	1	11/25/2015 7:00:00 AM
Naphthalene	ND	0.0489		mg/Kg-dry	1	11/25/2015 7:00:00 AM
Surr: Dibromofluoromethane	88.4	56.5-129		%Rec	1	11/25/2015 7:00:00 AM
Surr: Toluene-d8	94.4	64.3-131		%Rec	1	11/25/2015 7:00:00 AM
Surr: 1-Bromo-4-fluorobenzene	94.6	63.1-141		%Rec	1	11/25/2015 7:00:00 AM

### Total Metals by EPA Method 6020

Batch ID: 12456

Analyst: TN

Lead	14.3	0.207		mg/Kg-dry	1	11/24/2015 4:27:35 PM
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### Sample Moisture (Percent Moisture)

Batch ID: R26272

Analyst: CG

Percent Moisture	25.0	0.500		wt%	1	11/24/2015 3:03:57 PM
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## Analytical Report

WO#: 1511246

Date Reported: 11/25/2015

Client: PBS Engineering & Environmental

Collection Date: 11/24/2015 8:10:00 AM

Project: Pike Place PDA

Lab ID: 1511246-002

Matrix: Soil

Client Sample ID: FG-2E

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b><u>Gasoline by NWTPH-Gx</u></b>						
				Batch ID: 12478		Analyst: BC
Gasoline	ND	7.39		mg/Kg-dry	1	11/25/2015 7:29:00 AM
Surr: 4-Bromofluorobenzene	91.3	65-135		%Rec	1	11/25/2015 7:29:00 AM
Surr: Toluene-d8	93.0	65-135		%Rec	1	11/25/2015 7:29:00 AM
<b><u>Volatile Organic Compounds by EPA Method 8260</u></b>						
				Batch ID: 12478		Analyst: BC
Benzene	ND	0.0296		mg/Kg-dry	1	11/25/2015 7:29:00 AM
Toluene	ND	0.0296		mg/Kg-dry	1	11/25/2015 7:29:00 AM
Ethylbenzene	ND	0.0443		mg/Kg-dry	1	11/25/2015 7:29:00 AM
m,p-Xylene	ND	0.0296		mg/Kg-dry	1	11/25/2015 7:29:00 AM
o-Xylene	ND	0.0296		mg/Kg-dry	1	11/25/2015 7:29:00 AM
Naphthalene	ND	0.0443		mg/Kg-dry	1	11/25/2015 7:29:00 AM
Surr: Dibromofluoromethane	88.1	56.5-129		%Rec	1	11/25/2015 7:29:00 AM
Surr: Toluene-d8	95.0	64.3-131		%Rec	1	11/25/2015 7:29:00 AM
Surr: 1-Bromo-4-fluorobenzene	93.6	63.1-141		%Rec	1	11/25/2015 7:29:00 AM
<b><u>Total Metals by EPA Method 6020</u></b>						
				Batch ID: 12456		Analyst: TN
Lead	9.83	0.228		mg/Kg-dry	1	11/24/2015 4:31:06 PM
<b><u>Sample Moisture (Percent Moisture)</u></b>						
				Batch ID: R26272		Analyst: CG
Percent Moisture	28.7	0.500		wt%	1	11/24/2015 3:03:57 PM



## Analytical Report

WO#: 1511246

Date Reported: 11/25/2015

**Client:** PBS Engineering & Environmental

**Collection Date:** 11/24/2015 8:20:00 AM

**Project:** Pike Place PDA

**Lab ID:** 1511246-003

**Matrix:** Soil

**Client Sample ID:** FG-3W

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b><u>Gasoline by NWTPH-Gx</u></b>						
				Batch ID: 12478		Analyst: BC
Gasoline	ND	6.90		mg/Kg-dry	1	11/25/2015 7:57:00 AM
Surr: 4-Bromofluorobenzene	91.6	65-135		%Rec	1	11/25/2015 7:57:00 AM
Surr: Toluene-d8	92.6	65-135		%Rec	1	11/25/2015 7:57:00 AM
<b><u>Volatile Organic Compounds by EPA Method 8260</u></b>						
				Batch ID: 12478		Analyst: BC
Benzene	ND	0.0276		mg/Kg-dry	1	11/25/2015 7:57:00 AM
Toluene	ND	0.0276		mg/Kg-dry	1	11/25/2015 7:57:00 AM
Ethylbenzene	ND	0.0414		mg/Kg-dry	1	11/25/2015 7:57:00 AM
m,p-Xylene	ND	0.0276		mg/Kg-dry	1	11/25/2015 7:57:00 AM
o-Xylene	ND	0.0276		mg/Kg-dry	1	11/25/2015 7:57:00 AM
Naphthalene	ND	0.0414		mg/Kg-dry	1	11/25/2015 7:57:00 AM
Surr: Dibromofluoromethane	88.4	56.5-129		%Rec	1	11/25/2015 7:57:00 AM
Surr: Toluene-d8	94.4	64.3-131		%Rec	1	11/25/2015 7:57:00 AM
Surr: 1-Bromo-4-fluorobenzene	94.0	63.1-141		%Rec	1	11/25/2015 7:57:00 AM
<b><u>Total Metals by EPA Method 6020</u></b>						
				Batch ID: 12456		Analyst: TN
Lead	14.7	0.203		mg/Kg-dry	1	11/24/2015 4:34:38 PM
<b><u>Sample Moisture (Percent Moisture)</u></b>						
				Batch ID: R26272		Analyst: CG
Percent Moisture	27.1	0.500		wt%	1	11/24/2015 3:03:57 PM



Date: 11/25/2015

**Work Order:** 1511246  
**CLIENT:** PBS Engineering & Environmental  
**Project:** Pike Place PDA

## QC SUMMARY REPORT

### Total Metals by EPA Method 6020

Sample ID	MB-12456	SampType: MBLK			Units: mg/Kg		Prep Date: 11/24/2015		RunNo: 26279		
Client ID:	MBLKS	Batch ID: 12456			Analysis Date: 11/24/2015				SeqNo: 496216		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Lead	ND	0.200									
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Sample ID	LCS-12456	SampType:	LCS	Units:	mg/Kg	Prep Date:	11/24/2015	RunNo:	26279		
Client ID:	LCSS	Batch ID:	12456			Analysis Date:	11/24/2015	SeqNo:	496217		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Lead	25.1	0.200	25.00	0	101	80	120				
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Sample ID	1511223-025ADUP	SampType:	DUP	Units:	mg/Kg	Prep Date:	11/24/2015	RunNo:	26279		
Client ID:	BATCH	Batch ID:	12456			Analysis Date:	11/24/2015	SeqNo:	496219		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Lead	6.38	0.163						6.298	1.33	20	
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Sample ID	1511223-025AMS	SampType:	MS	Units:	mg/Kg	Prep Date:	11/24/2015	RunNo:	26279		
Client ID:	BATCH	Batch ID:	12456			Analysis Date:	11/24/2015	SeqNo:	496221		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Lead	26.9	0.163	20.33	6.298	101	75	125				
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Sample ID	1511223-025AMSD	SampType:	MSD	Units:	mg/Kg	Prep Date:	11/24/2015	RunNo:	26279		
Client ID:	BATCH	Batch ID:	12456	Analysis Date:				11/24/2015	SeqNo:	496222	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Lead	27.1	0.167	20.83	6.298	100	75	125	26.86	1.03	20	
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Date: 11/25/2015

Work Order: 1511246  
CLIENT: PBS Engineering & Environmental  
Project: Pike Place PDA

**QC SUMMARY REPORT****Gasoline by NWTPH-Gx**

Sample ID	LCS-12478	SampType:	LCS	Units:	mg/Kg	Prep Date:	11/24/2015	RunNo:	26296		
Client ID:	LCSS	Batch ID:	12478			Analysis Date:	11/24/2015	SeqNo:	496551		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	24.4	5.00	25.00	0	97.5	65	135				
Surr: Toluene-d8	1.16		1.250		92.9	65	135				
Surr: 4-Bromofluorobenzene	1.14		1.250		91.6	65	135				

Sample ID	MB-12478	SampType:	MBLK			Units:	mg/Kg			Prep Date:	11/24/2015		RunNo:	26296	
Client ID:	MBLKS	Batch ID:	12478						Analysis Date:	11/24/2015			SeqNo:	496552	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val		%RPD	RPDLimit	Qual		

Gasoline	ND	5.00									
Surr: Toluene-d8	1.16		1.250		92.6	65	135				
Surr: 4-Bromofluorobenzene	1.15		1.250		91.7	65	135				

Sample ID	1511210-004BDUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	11/24/2015	RunNo:	26296		
Client ID:	BATCH	Batch ID:	12478			Analysis Date:	11/25/2015	SeqNo:	496530		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	ND	5.42						0		30	
Surr: Toluene-d8	1.26		1.354		93.0	65	135		0		
Surr: 4-Bromofluorobenzene	1.23		1.354		91.1	65	135		0		

Sample ID	1511252-001BDUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	11/24/2015	RunNo:	26296		
Client ID:	BATCH	Batch ID:	12478			Analysis Date:	11/25/2015	SeqNo:	496542		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	ND	4.52						0		30	
Surr: Toluene-d8	1.06		1.129		93.6	65	135		0		
Surr: 4-Bromofluorobenzene	1.04		1.129		91.7	65	135		0		



Date: 11/25/2015

Work Order: 1511246  
CLIENT: PBS Engineering & Environmental  
Project: Pike Place PDA

**QC SUMMARY REPORT**  
**Volatile Organic Compounds by EPA Method 8260**

Sample ID	LCS-12478	SampType:	LCS	Units:	mg/Kg	Prep Date:	11/24/2015	RunNo:	26294		
Client ID:	LCSS	Batch ID:	12478			Analysis Date:	11/24/2015	SeqNo:	496513		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	0.925	0.0200	1.000	0	92.5	64.3	133				
Toluene	0.974	0.0200	1.000	0	97.4	67.3	138				
Ethylbenzene	0.995	0.0300	1.000	0	99.5	74	129				
m,p-Xylene	1.97	0.0200	2.000	0	98.7	79.8	128				
o-Xylene	0.996	0.0200	1.000	0	99.6	72.7	124				
Naphthalene	1.00	0.0300	1.000	0	100	62.3	134				
Surr: Dibromofluoromethane	1.23		1.250		98.1	56.5	129				
Surr: Toluene-d8	1.16		1.250		93.0	64.3	131				
Surr: 1-Bromo-4-fluorobenzene	1.20		1.250		96.0	63.1	141				

Sample ID	MB-12478	SampType:	MBLK		Units:	mg/Kg		Prep Date:	11/24/2015		RunNo:	26294
Client ID:	MBLKS	Batch ID:	12478					Analysis Date:	11/24/2015		SeqNo:	496514
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Benzene	ND	0.0200										
Toluene	ND	0.0200										
Ethylbenzene	ND	0.0300										
m,p-Xylene	ND	0.0200										
o-Xylene	ND	0.0200										
Naphthalene	ND	0.0300										
Surr: Dibromofluoromethane	1.12		1.250		90.0	56.5	129					
Surr: Toluene-d8	1.16		1.250		93.0	64.3	131					
Surr: 1-Bromo-4-fluorobenzene	1.18		1.250		94.2	63.1	141					

Sample ID	1511210-004BDUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	11/24/2015	RunNo:	26294		
Client ID:	BATCH	Batch ID:	12478			Analysis Date:	11/25/2015	SeqNo:	496496		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.0217						0		30	
Toluene	ND	0.0217						0		30	



Date: 11/25/2015

Work Order: 1511246

CLIENT: PBS Engineering &amp; Environmental

Project: Pike Place PDA

## QC SUMMARY REPORT

## Volatile Organic Compounds by EPA Method 8260

Sample ID	1511210-004BDUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	11/24/2015	RunNo:	26294		
Client ID:	BATCH	Batch ID:	12478			Analysis Date:	11/25/2015	SeqNo:	496496		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethylbenzene	ND	0.0325						0		30	
m,p-Xylene	ND	0.0217						0		30	
o-Xylene	ND	0.0217						0		30	
Naphthalene	ND	0.0325						0		30	
Surr: Dibromofluoromethane	1.20		1.354		88.3	56.5	129		0		
Surr: Toluene-d8	1.27		1.354		93.8	64.3	131		0		
Surr: 1-Bromo-4-fluorobenzene	1.27		1.354		93.5	63.1	141		0		

Sample ID	1511252-001BDUP	SampType:	DUP	Units: mg/Kg-dry			Prep Date: 11/24/2015			RunNo: 26294		
Client ID:	BATCH	Batch ID:	12478	Analysis Date: 11/25/2015					SeqNo: 496509			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Benzene	ND	0.0181						0		30		
Toluene	ND	0.0181						0		30		
Ethylbenzene	ND	0.0271						0		30		
m,p-Xylene	ND	0.0181						0		30		
o-Xylene	ND	0.0181						0		30		
Naphthalene	ND	0.0271						0		30		
Surr: Dibromofluoromethane	0.991		1.129		87.8	56.5	129		0			
Surr: Toluene-d8	1.07		1.129		95.2	64.3	131		0			
Surr: 1-Bromo-4-fluorobenzene	1.06		1.129		94.3	63.1	141		0			

Sample ID	1511252-004BMS	SampType:	MS	Units:	mg/Kg-dry	Prep Date:	11/24/2015	RunNo:	26294		
Client ID:	BATCH	Batch ID:	12478			Analysis Date:	11/25/2015	SeqNo:	496620		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	0.819	0.0169	0.8442	0	97.0	63.5	133				
Toluene	0.867	0.0169	0.8442	0	103	63.4	132				
Ethylbenzene	0.867	0.0253	0.8442	0	103	54.5	134				
m,p-Xylene	1.72	0.0169	1.688	0	102	53.1	132				



Date: 11/25/2015

Work Order: 1511246  
CLIENT: PBS Engineering & Environmental  
Project: Pike Place PDA

**QC SUMMARY REPORT**  
**Volatile Organic Compounds by EPA Method 8260**

Sample ID	1511252-004BMS	SampType:	MS	Units:	mg/Kg-dry	Prep Date:	11/24/2015	RunNo:	26294		
Client ID:	BATCH	Batch ID:	12478			Analysis Date:	11/25/2015	SeqNo:	496620		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
o-Xylene	0.856	0.0169	0.8442	0	101	53.3	139				
Naphthalene	0.840	0.0253	0.8442	0	99.5	52.3	124				
Surr: Dibromofluoromethane	1.03		1.055		97.8	56.5	129				
Surr: Toluene-d8	1.02		1.055		96.4	64.3	131				
Surr: 1-Bromo-4-fluorobenzene	1.03		1.055		97.7	63.1	141				



Date: 11/25/2015

**Work Order:** 1511246  
**CLIENT:** PBS Engineering & Environmental  
**Project:** Pike Place PDA

## QC SUMMARY REPORT

### Sample Moisture (Percent Moisture)

Sample ID	1511246-001ADUP	SampType:	DUP	Units:	wt%	Prep Date:	11/24/2015	RunNo:	26272		
Client ID:	FG-1N	Batch ID:	R26272			Analysis Date:	11/24/2015	SeqNo:	496045		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	25.7	0.500						24.98	2.87	20	

Sample ID	1511252-003ADUP	SampType:	DUP	Units:	wt%	Prep Date:	11/24/2015	RunNo:	26272		
Client ID:	BATCH	Batch ID:	R26272			Analysis Date:	11/24/2015	SeqNo:	496055		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	10.4	0.500						10.47	0.631	20	



## Sample Log-In Check List

Client Name: **PBS**

Work Order Number: **1511246**

Logged by: **Clare Griggs**

Date Received: **11/24/2015 8:56:00 AM**

### Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
2. How was the sample delivered? Client

### Log In

3. Coolers are present? Yes ☒ No ☐ NA ☐
4. Shipping container/cooler in good condition? Yes ☒ No ☐
5. Custody Seals present on shipping container/cooler?  
(Refer to comments for Custody Seals not intact) Yes ☐ No ☐ Not Required ☒
6. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
7. Were all items received at a temperature of  $>0^{\circ}\text{C}$  to  $10.0^{\circ}\text{C}$  \* Yes ☒ No ☐ NA ☐
8. Sample(s) in proper container(s)? Yes ☒ No ☐
9. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
10. Are samples properly preserved? Yes ☒ No ☐
11. Was preservative added to bottles? Yes ☐ No ☒ NA ☐
12. Is there headspace in the VOA vials? Yes ☐ No ☐ NA ☒
13. Did all samples containers arrive in good condition(unbroken)? Yes ☒ No ☐
14. Does paperwork match bottle labels? Yes ☒ No ☐
15. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
16. Is it clear what analyses were requested? Yes ☒ No ☐
17. Were all holding times able to be met? Yes ☒ No ☐

### Special Handling (if applicable)

18. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified:  Date

By Whom:  Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

19. Additional remarks:

### Item Information

Item #	Temp $^{\circ}\text{C}$
Cooler	7.3
Sample	7.8

\* Note: DoD/ELAP and TNI require items to be received at  $4^{\circ}\text{C}$  +/-  $2^{\circ}\text{C}$



### Chain of Custody Record

151124h

Page: 1 of 1

Collected by: Mr. Gary Perry

A. M. Ivers, M. Bagley

\*Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, C = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

[illegible]

Distribution: White - Lab, Yellow - File, Pink - Originator

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Date: 11/24/15

Laboratory Project No. (internal): 1511246  
 Page: 1 of 1

### Chain of Custody Record

Address:

360-830-8359

**Film:**

Report To (PM):  
PM Email:

A. McIvor, M. Bagley

Pike Place PDH  
40609-00 Collect

Collected by: M. G. Bayley

\* Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOCs (EPA 8260 / 824)	SVOCs (EPA 8210 / 825)	PCBs (EPA 8210 / 825)	Metals** (EPA 8210 / 825)	Total (T) / Dissolved (D)	Anions (IC)***	EDR (8011)	Comments
1 FG-IN	11/24	8:00	So.1	X							Add per M. Boyer 11/24/15
2 FG-2E	11/24	8:10	So.1	X							
3 FG-3W	11/24	8:20	So.1	X							
4											
5											
6											
7											
8											
9											
10											

\*\*\*Metals Analysis (Circle):

MTC-A-5

RCDA-8

Priority Pollutants

TAL

Indochinof

Ag

Al

As

B

Ba

Be

Ca

Cd

Co

Cr

Cu

Pb

Hg

K

Mg

Mn

Mb

Nb

Ni

Pb

Sb

Se

Sr

Sn

Ti

Tl

U

Zn

\*\*\*Anions (Circle):

Nitrate

Nitrite

Chloride

Sulfate

Bromide

O-Phosphate

Fluoride

Nitrate-Nitrite

Sample Disposal:

☐ Return to Client

☒ Disposed by Lab (a fee may be assessed if samples are not analyzed within 30 days.)

Received:

11/24/15 8:56

11/24/15 8:56

Special Remarks:

Time around times for samples received after 4:00pm will begin on the following business day

TAT -> SameDay\* NextDay\* 2 Day 3 Day STD

\*Please coordinate with the lab in advance

Distribution: White - Lab, Yellow - File, Pink - Originator

[www.fremontanalytical.com](http://www.fremontanalytical.com)

## **APPENDIX C**

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### **UST PERMITS, AND REMOVAL AND DISPOSAL DOCUMENTATION**



# SITE CHECK/SITE ASSESSMENT CHECKLIST FOR UNDERGROUND STORAGE TANKS

UST ID #: N/A

County: KING

*This checklist certifies that site check or site assessment activities were performed in accordance with Chapter 173-360 WAC. Instructions are found on the last page.*

I. UST FACILITY		II. OWNER/OPERATOR INFORMATION	
Facility Compliance Tag #:	<u>N/A</u>	Owner/Operator Name:	<u>PIKE PLACE MARKET PDA</u>
UST ID #:	<u>N/A</u>	Business Name:	<u>N/A</u>
Site Name:	<u>PIKE PLACE DEVELOPMENT</u>	Address:	<u>85 PIKE STREET, Room 500</u>
Site Address:	<u>1901 Western Avenue</u>	City:	<u>SEATTLE</u> State: <u>WA</u> Zip: <u>98101</u>
City:	<u>Seattle</u>	Phone:	<u>206.793.6547</u>
Phone:	<u>N/A</u>	Email:	<u>cholmes@axispda.com</u>
III. CERTIFIED SITE ASSESSOR			
Service Provider Name: <u>TOM MYLER-UST #1 / MIKE SCHIRMER-UST #2</u>		Company Name: <u>MARINE VACUUM SERVICES</u>	
Cell Phone: <u>206.762.0240</u> Email: <u>tmyler@marinevacuum.com</u> <u>mikes@marinevacuum.com</u>		Address: <u>1516 S. Graham St</u>	
Certification #:	Exp. Date: <u>TOM 10/11/2016</u> <u>MIKE 1/28/2016</u>	City:	<u>SEATTLE</u> State: <u>WA</u> Zip: <u>98124</u>
IV. TANK INFORMATION			
TANK ID	TANK CAPACITY	LAST SUBSTANCE STORED	DATE SITE CHECK OR ASSESSMENT CONDUCTED
<u>UST #1</u>	<u>500</u>	<u>UNLEAD GASOLINE</u>	<u>9/11/2015</u>
<u>UST #2</u>	<u>1200</u>	<u>LEAD GASOLINE</u>	<u>9/28/2015</u>
V. REASON FOR CONDUCTING SITE CHECK/SITE ASSESSMENT (check one)			
<input checked="" type="checkbox"/> Release investigation following permanent UST system closure (i.e. tank removal or closure-in-place).			
<input type="checkbox"/> Release investigation following a failed tank and/or line tightness test.			
<input type="checkbox"/> Release investigation following discovery of contaminated soil and/or groundwater.			
<input type="checkbox"/> Release investigation directed by Ecology to determine if the UST system is the source of offsite impacts.			
<input type="checkbox"/> UST system is undergoing a "change-in-service", which is changing from storing a regulated substance (e.g. gasoline) to storing a non-regulated substance (e.g. water).			
<input type="checkbox"/> Directed by Ecology for UST system permanently closed or abandoned before 12/22/1988.			
<input type="checkbox"/> Other (describe):			

## VI. CHECKLIST

The site assessor must check each of the following items and include it in the report.  
Sections referenced below can be found in the Ecology publication  
*Guidance for Site Checks and Site Assessments for Underground Storage Tanks.*


	YES	NO
1. The location of the UST site is shown on a vicinity map.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. A brief summary of information obtained during the site inspection is provided (Section 3.2)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. A summary of UST system data is provided (Section 3.1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. The soils characteristics at the UST site are described. (Section 5.2)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Is there any apparent groundwater in the tank excavation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6. A brief description of the surrounding land use is provided. (Section 3.1)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. The name and address of the laboratory used to perform analyses is provided. The methods used to collect and analyze the samples, including the number and types of samples collected, are also documented in the report. The data from the laboratory is appended to the report.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8. The following items are provided in one or more sketches:		
• Location and ID number for all field samples collected	<input checked="" type="checkbox"/>	<input type="checkbox"/>
• If applicable, groundwater samples are distinguished from soil samples <span style="float: right;">N/A</span>	<input type="checkbox"/>	<input type="checkbox"/>
• Location of samples collected from stockpiled excavated soil	<input checked="" type="checkbox"/>	<input type="checkbox"/>
• Tank and piping locations and limits of excavation pit	<input checked="" type="checkbox"/>	<input type="checkbox"/>
• Adjacent structures and streets	<input checked="" type="checkbox"/>	<input type="checkbox"/>
• Approximate locations of any on-site and nearby utilities	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9. If sampling procedures are different from those specified in the guidance, has justification for using these alternative sampling procedures been provided? (Section 3.4) <span style="float: right;">N/A</span>	<input type="checkbox"/>	<input type="checkbox"/>
10. A table is provided showing laboratory results for each sample collected including; sample ID number, constituents analyzed for and corresponding concentration, analytical method, and detection limit for that method. Any sample exceeding MTCA Method A cleanup standards are highlighted or bolded.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11. Any factors that may have compromised the quality of the data or validity of the results are described.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
12. The results of this site check/site assessment indicate that a confirmed release of a regulated substance has occurred. The requirements for reporting confirmed releases can be found in WAC 173-360-372.	<input type="checkbox"/>	<input type="checkbox"/>

## VII. REQUIRED SIGNATURES

*Signature acknowledges the Site Check or Site Assessment complies with UST regulations WAC 173-360-360 through -395.*

AUDREY MCIVOR

Print or Type Name



Signature of Certified Site Assessor

10/19/2015

Date

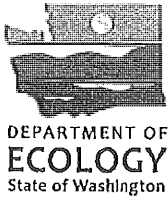
QUESTION  
#12

Yes - UST #2  
No - UST #1

**UST #1**

---

**PERMITS, REMOVAL, AND DISPOSAL DOCUMENTATION**



# 30-DAY NOTICE FOR UNDERGROUND STORAGE TANKS

UST ID #: \_\_\_\_\_  
County: KING

This form provides Ecology 30-days' advanced notice for the following projects, as required by Chapter 173-360 WAC.

Instructions are found on the back page.

Please ✓ the appropriate box: ☐ Intent to Install ☒ Intent to Close ☐ Change-in-Service

I. SITE INFORMATION		II. OWNER/OPERATOR INFORMATION	
Tag or UBI # (if applicable):	<u>N/A</u>	Owner/Operator Name:	<u>Carrie Holmes</u>
UST ID # (if applicable):	<u>N/A</u>	Business Name:	<u>Authorized owner representatives</u>
Site Name:	<u>PIKE PLACE PDA</u>	Mailing Address:	<u>PIKE PLACE PDA 500 P 48 Pike Street</u>
Site Address:	<u>1901 Western Avenue</u>	City:	<u>Seattle</u>
City:	<u>Seattle</u>	State:	<u>WA</u>
Phone:	<u>N/A Construction Site</u>	Zip:	<u>Room 500 98101</u>
		Phone:	<u>206.793.6547</u>
		Email:	<u>cholmes@axispnd.com</u>
III. CERTIFIED SERVICE PROVIDER(S) Check the appropriate boxes. If more than one service provider is required for this project, fill out both sections.			
Note: Individuals performing UST services MUST be ICC-certified or have passed another qualifying exam approved by the Department of Ecology.			
1) <input type="checkbox"/> Installer <input checked="" type="checkbox"/> Decommissioner <input type="checkbox"/> Site Assessor			
Company Name:	<u>MAR-VAC</u>	Certification Type:	<u>UST Decommissioning (10/11/2016)</u>
Service Provider Name:	<u>Thomas Myler</u>	Cert. No.:	<u>tmyler@marine</u>
Provider Phone:	<u>206.762.0240</u>	Exp. Date:	<u>5</u>
		Provider Email:	<u>vacuum.com</u>
2) <input type="checkbox"/> Installer <input type="checkbox"/> Decommissioner <input checked="" type="checkbox"/> Site Assessor			
Company Name:	<u>PBS Engineering + Environmental</u>	Certification Type:	<u>WA Site Assessor</u>
Service Provider Name:	<u>Andrey Mcivor</u>	Cert. No.:	<u>8345857</u>
Provider Phone:	<u>206.348.6317</u>	Exp. Date:	<u>4/25/2017</u>
		Provider Email:	<u>andrey.mcivor@pbsenv.com</u>
IV. TANK INFORMATION			
TANK ID	SUBSTANCE STORED	TANK CAPACITY	DATE PROJECT IS EXPECTED TO BEGIN
<u>1</u>	<u>GAS</u>	<u>2000 ga</u>	<u>9/11/2015</u>
Discovered abandoned tank during excavation by Sellen Construction. Emergency removal. Seattle Fire Marshal will be on-site.			

Requesting a waiver from the 30-DAY NOTICE REQUIREMENT

is an acknowledgment that a Bill of Lading has been issued and is not Original Bill of Lading, nor a copy or duplicate, covering the property named herein, and is intended solely for filing or record.

Carrier No. 4209

Date 7-11-2014

Page \_\_\_\_\_ of \_\_\_\_\_

MARINE VACUUM SERVICE, INC.

(Name of carrier)

(SCAC)

On Collect on Delivery shipments, the letters "COD" must appear before consignee's name or as otherwise provided in Item 430, Sec.1.

TO: MARINE VACUUM SERVICE INC  
Consignee

Street 1518 S. GRAHAM ST

City **SEATTLE** State **WA** Zip Code **98108**

**FROM:**  
Shipper

Street

City

State

Zip Code

24 hr. Emergency Contact Tel. No. 800-540-7491

Route

Vehicle  
Number[illegible]PLACARDS TENDERED: YES ☐ NO ☐

**Note —** (1) Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property, as follows: "The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding \_\_\_\_\_ per \_\_\_\_\_."

(2) Where the applicable tariff provisions specify a limitation of the carrier's liability absent a release or a value declaration by the shipper and the shipper does not release the carrier's liability or declare a value, the carrier's liability shall be limited to the extent provided by such provisions. See NMFC Item 172.

(3) Commodities requiring special or additional care or attention in handling or stowing must be so marked and packaged as to ensure safe transportation. See Section 2(e) of item 360, Bills of Lading, Freight Bills and Statements of Charges and Section 1(a) of the Contract Terms and Conditions for a list of such articles.

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Signature

REMIT  
C.O.D. TO:  
ADDRESS

COD

Amt: \$

C.O.D. FEE:  
PREPAID ☐  
COLLECT ☐ \$

TOTAL CHARGES	\$
---------------	----

FREIGHT CHARGES	
-----------------	--

**FREIGHT PREPAID** Check box if charges  
except when box at are to be  
right is checked ☐ collect

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of, said property over all or any portion of said route to des-

tinuation and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the bill of lading terms and conditions in the governing classification on the date of shipment.

Shipper hereby certifies that he is familiar with all the lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

SHIPPER

CARRIER MARINE VACUUM SERVICE, INC.

PER

PER

DATE \_\_\_\_\_

Permanent post-office address of shipper.

STYLE F375-4 © 2012 LABELMASTER® (800) 621-5808 [www.labelmaster.com](http://www.labelmaster.com)

40609.001

# Marine Vacuum Service, Inc.

GENERAL CONTRACTOR

CONTRACTORS LICENSE # MARINVS097JA

P.O. Box 24263 Seattle, Washington 98124

Telephone (206) 762-0240

FAX (206) 763-8084

1-800-540-7491

## AST/UST STORAGE TANK PUMP & RINSE CERTIFICATE

Tank Size: 500 GAL

Last Contents water

Tank Location: 1901 Western AVE  
Seattle WA

Marine Vacuum Service, Inc. certifies that the above mentioned tank(s) have been triple rinsed in accordance with the industry standard as outlined in 40 CFR PART 280.70, WAC 173-360-380(I), API 1604, API 2015 and that all residual product and rinsate has been disposed of in accordance with Federal, State and Local regulations. Tanks listed above are **NOT GAS FREE** or **NOT SAFE FOR HOT WORK**

Tank Owner: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Contractor: Sellen, J. G. J.  
\_\_\_\_\_  
\_\_\_\_\_

M.V.S. Representative: [Signature]  
\_\_\_\_\_

Date: 9-11-2015

Notes:

DBE # D4M1302341

EPA # WAD980974521

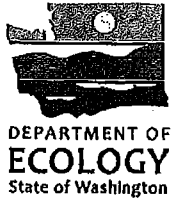
A MINORITY BUSINESS ENTERPRISE ID # D4M1302341

40609.001

**UST #2**

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**PERMITS, REMOVAL, AND DISPOSAL DOCUMENTATION**



# 30-DAY NOTICE FOR UNDERGROUND STORAGE TANKS

UST ID #: \_\_\_\_\_  
County: KING

*This form provides Ecology 30-days' advanced notice for the following projects, as required by Chapter 173-360 WAC.  
Instructions are found on the back page.*

Please ✓ the appropriate box: ☐ Intent to Install ☒ Intent to Close ☐ Change-In-Service

I. SITE INFORMATION		II. OWNER/OPERATOR INFORMATION		
Tag or UBI # (if applicable):	<u>N/A</u>	Owner/Operator Name:	<u>Carrie Holmes -</u>	
UST ID # (if applicable):	<u>N/A</u>	Business Name:	<u>PIKE PLACE PDA</u> <small>Authorized owner representative</small>	
Site Name:	<u>PIKE PLACE PDA</u>	Mailing Address:	<u>85 PIKE STREET ROOM 500</u>	
Site Address:	<u>1901 Western Avenue</u>	City:	<u>SEATTLE</u> State: <u>WA</u> Zip: <u>98101</u>	
City:	<u>Seattle</u>	Phone:	<u>206.793.6547</u>	
Phone:	<u>N/A Construction Site</u>	Email:	<u>cholmes@axispnd.com</u>	
<b>III. CERTIFIED SERVICE PROVIDER(S)</b> Check the appropriate boxes: If more than one service provider is required for this project, fill out both sections. <i>Note: Individuals performing UST services MUST be ICC-certified or have passed another qualifying exam approved by the Department of Ecology.</i>				
1) <input type="checkbox"/> Installer <input checked="" type="checkbox"/> Decommissioner <input type="checkbox"/> Site Assessor				
Company Name:		Certification Type:		
<u>MAR-VAC</u>		<u>UST Decommissioning</u>		
Service Provider Name:		Cert. No.: <u># not listed on ICC</u> Exp. Date: <u>1/28/2016</u>		
<u>Mike Schirmer</u>				
Provider Phone:		Provider Email:		
<u>206.762.0240</u>		<u>mikes@marinevacuum.com</u> <small>website</small>		
2) <input type="checkbox"/> Installer <input type="checkbox"/> Decommissioner <input checked="" type="checkbox"/> Site Assessor				
Company Name:		Certification Type:		
<u>PBS Engineering and Environmental</u>		<u>WA Site Assessor</u>		
Service Provider Name:		Cert. No.: <u>8345857</u> Exp. Date: <u>4/25/2017</u>		
<u>Andrey McIvor</u>				
Provider Phone:		Provider Email:		
<u>206.348.6317</u>		<u>andrey.mclvor@pbsenv.com</u>		
<b>IV. TANK INFORMATION</b>				
TANK ID	SUBSTANCE STORED	TANK CAPACITY	DATE PROJECT IS EXPECTED TO BEGIN	COMMENTS
<u>1</u>	<u>GAS</u>	<u>1200</u>	<u>9/22/2015</u>	<u>Discovered abandoned tank during excavation by Sellen Construction. Emergency removal. Seattle Fire Marshal will be on-site. We are requesting a waiver from the 30-day notice requirement.</u>

PBS # 40609.001

**Generator's Waste Profile 724763-00**

Status : PENDING

Starts : 23 SEP 2015

Sales Rep 220 Rahim Mohideen

Expires: 30 SEP 2016

Acct Mngr 985 Chris Hunter

**A: GENERATOR ( 500552 ) SITE INFORMATION**

Pike Place Market PDA Seattle  
1901 Western Ave  
Seattle, WA 98101

EPA WAH000049665

NAICS 9999 Neshap N

Phone (206) 255-8174

**B: CUSTOMER ( 4288 ) INFORMATION**

MARINE VACUUM SERVICE INC-SEAT

P.O. BOX 24263

SEATTLE, WA 98124

> Contact Mike Schirmer  
TSDF Approval List No

**C: WASTE INFORMATION**

On File &gt;

MSDS No

Analysis Yes

Sample No

Waste Name GASOLINE CONTAMINATED WITH LEAD

Process OFF-SPEC MATERIAL

Unused Commercial Product Yes Spill Residue No

**D: PHYSICAL CHARACTERISTICS OF WASTE**

Phys States L-Liq Top Color VARIES  
Mid Color  
Bot Color  
% Ash  
% Water

Odor Strong gasoline  
Layers Single Phased  
Spec Grav 0.8-1  
BTU/Lbs  
% Halogens

PH Range 4.1-10  
Free Liq % 100  
Flash Test Gen Knowledge  
Flash Rnge <85F  
Viscosity Low  
Pumpable Yes

**E: CHEMICAL COMPOSITION OF WASTE**

OFF-SPEC GASOLINE

( 100 %

) LEAD

( 250 ppm )

PCB's NS

Cyanides NS

Phenolics NS

Sulfides NS

Dioxins NS

TOC &gt;10%

VOC &gt;500 PPM

Information Provided By Generator

**F: METALS METHOD TCLP**

Arsenic &lt;5

Merc TCLP &lt;0.2

Selenium &lt;1

Nickel

Copper

Barium &lt;100

Lead &gt;5

Merc Tot

Thallium

Chrome-6

**G: OTHER CHARACTERISTICS OF WASTE**

Ign. Solid	No	Oxidizer	No	Explosive	No	Shock Sensitive	No	Cyanide Reactive	No	Sulfide Reactive	No
Explosive	N/A	Asbestos	N/A	Radioactive	No	Water Reactive	No	Reactive (Other)	No		
Herbicides	NS	Pesticides	NS	Ammonia	NS	Infectious	No	Medical	No		

**H: EPA / STATE WASTE IDENTIFICATION**

Form W219	Source G11	Origin 1	EPA Waste Yes	State Waste No	TSCA No	Waste Water No	Universal Waste No
			SubPart CC Yes	NESHAPS No	CERCLA No	Debris No	Reg. Organics No

EPA Codes D001 D008

State Codes

UHC

Categorical Discharge Standards No

CTW Category N/A

DW/EHW: DW

**I: SHIPPING INFORMATION**

Marine Pollutant No

Containers TT Tank Trucks

Qty to Ship Now GALLON

Projected Volume 660/Onetime

DOT Descrip UN1203 WASTE GASOLINE MIXTURE 3 PGII ERG(128)

Add Descrip ONE TIME SHIPMENT OF 660G

**J: SPECIAL DISPOSAL INSTRUCTIONS**

**Generator's Waste Profile 724763-00**

Status : PENDING

Starts : 23 SEP 2015

Sales Rep 220 Rahim Mohideen

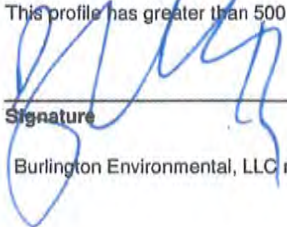
Expires: 30 SEP 2016

Acct Mngr 985 Chris Hunter

**GENERATOR CERTIFICATION**

I hereby certify, as an authorized representative of the Generator named above, that Burlington Environmental, LLC has been fully informed of all information known about this waste, including but not limited to, the waste's generation process, composition, and physical characteristics, necessary to identify proper treatment and disposal of waste and this information is true and accurate. If this is an existing profile which is being renewed, I hereby certify that there have been no changes in this waste, chemical, physical, or regulatory designation since full characterization by sample testing.

This profile has greater than 500 ppm volatile organic compounds and is subject to Subpart CC of the RCRA regulations.

 Ben Franz-Knight Executive Director 9/24/15  
Signature Printed Name Title Date

Burlington Environmental, LLC maintains the appropriate permits for and will accept the dangerous waste the generator is shipping as required by WAC 173-303-290(3).

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

<b>UNIFORM HAZARDOUS WASTE MANIFEST</b>		1. Generator ID Number <b>WAHD000049665</b>	2. Page 1 of <b>1</b>	3. Emergency Response Phone <b>(877) 577-2669</b>	4. Manifest Tracking Number <b>000120512 DAT</b>					
5. Generator's Name and Mailing Address <b>Pike Place Market PMA Seattle 85 Pike Street, Room 508 Seattle WA 98101 (206)255-8174</b>			Generator's Site Address (if different than mailing address) <b>Pike Place Market PMA Seattle 1901 Western Ave Seattle WA 98101 (206)255-8174</b>							
6. Transporter 1 Company Name <b>Marine Vacuum Service</b>			U.S. EPA ID Number <b>WAD980974521</b>							
7. Transporter 2 Company Name			U.S. EPA ID Number							
8. Designated Facility Name and Site Address <b>BURLINGTON ENVIRONMENTAL, LLC. TACOMA PLANT 1701 EAST ALEXANDER AVENUE TACOMA, WA 98421 (253) 627-7560</b>			U.S. EPA ID Number <b>WAD020257945</b>							
9a. HM			9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))		10. Containers		11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes	
				No.	Type					
1. <b>X</b>		1. <b>UNIDENTIFIED WASTE GASOLINE MIXTURE 3 PGL</b>		1	TT	700	G		0001	0000
2.										
3.										
4.										
14. Special Handling Instructions and Additional Information <b>(1) 724763-00 - ERG(120) GASOLINE CONTAMINATE</b>										
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.										
Generator's/Officer's Printed/Typed Name <i>Carrie Helmer</i>					Signature <i>P. Helmer</i>			Month Day Year <b>07 28 15</b>		
16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: Date leaving U.S.:										
17. Transporter Acknowledgment of Receipt of Materials										
Transporter 1 Printed/Typed Name <i>Isaac Jacob Huey</i>					Signature <i>Isaac Jacob Huey</i>			Month Day Year		
Transporter 2 Printed/Typed Name					Signature			Month Day Year		
18. Discrepancy										
18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection										
Manifest Reference Number:										
18b. Alternate Facility (or Generator) U.S. EPA ID Number										
Facility's Phone:										
18c. Signature of Alternate Facility (or Generator) Month Day Year										
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)										
1.		2.		3.		4.				
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a										
Printed/Typed Name					Signature			Month Day Year		

SITE	REGIONAL DISPOSAL INTERMODAL 3rd and lander Seattle, WA
CUSTOMER	014857 PBS Engineering & Environmental 2517 Eastlake Ave. E., Ste. 100 Seattle, WA 98102 LW-15257

SITE	TICKET #	CELL
01	930158	
WEIGHMASTER		
IN - Kim L. OUT - Drinda L.		
DATE/TIME IN	DATE/TIME OUT	
10-14-2015 9:29 am	10-14-2015 9:36 am	
VEHICLE	CONTAINER	
C-113/CECCANTI		INVOICE
BILL OF LADING		

SCALE IN	GROSS WEIGHT	32,500	NET TONS	11.16	
SCALE OUT	TARE WEIGHT	30,180	NET WEIGHT	22,320	INBOUND

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.00	YD	TRACKING QTY				
11.16	TN	SW-CONT SOIL W/FUEL SEATTLE/KING				

The undersigned individual signing this document on behalf of Customer acknowledges that he or she has read and understands the terms and conditions on the reverse side and that he or she has the authority to sign this document on behalf of the customer.

RS-F042UPR (07/12)

SIGNATURE

*JOANNE*

NET AMOUNT

TENDERED

CHANGE

CHECK#

SITE	REGIONAL DISPOSAL INTERMODAL 3rd and lander Seattle, WA
CUSTOMER	014857 PBS Engineering & Environmental 2517 Eastlake Ave. E., Ste. 100 Seattle, WA 98102 LW-15257

SITE	TICKET #	CELL
01	930167	
WEIGHMASTER		
IN - JAMIE E. OUT - Kim L.		
DATE/TIME IN	DATE/TIME OUT	
10-14-2015 10:37 am	10-14-2015 10:47 am	
VEHICLE	CONTAINER	
C-103		INVOICE
BILL OF LADING		

SCALE IN	GROSS WEIGHT	58,360	NET TONS	14.57	
SCALE OUT	TARE WEIGHT	29,220	NET WEIGHT	29,140	INBOUND

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.00	YD	TRACKING QTY				
14.57	TN	SW-CONT SOIL W/FUEL SEATTLE/KING				

The undersigned individual signing this document on behalf of Customer acknowledges that he or she has read and understands the terms and conditions on the reverse side and that he or she has the authority to sign this document on behalf of the customer.

RS-F042UPR (07/12)

2/21

SIGNATURE

*Chun*

NET AMOUNT

TENDERED

CHANGE

CHECK#

SITE	REGIONAL DISPOSAL INTERMODAL 3rd and lander Seattle, WA
CUSTOMER	014857 PBS Engineering & Environmental 2517 Eastlake Ave. E., Ste. 100 Seattle, WA 98102 LW-15257

SITE	TICKET #	CELL
01	930196	
WEIGHMASTER		
DATE/TIME IN		DATE/TIME OUT
10-14-2015 4:04 pm		10-14-2015 4:11 pm
VEHICLE		CONTAINER
C-104 CECCINTI		INVOICE
BILL OF LADING		

SCALE IN	GROSS WEIGHT	NET TONS	SCALE OUT	TARE WEIGHT	NET WEIGHT	INBOUND
	39,560	14.96		29,640	29,920	
QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.00	YD	TRACKING QTY				
14.96	TN	SW-CONT SOIL W/FUEL SEATTLE/KING				

The undersigned individual signing this document on behalf of Customer acknowledges that he or she has read and understands the terms and conditions on the reverse side and that he or she has the authority to sign this document on behalf of the customer.

RS-F042UPR (07/12)

2/21

SIGNATURE

NET AMOUNT

TENDERED

CHANGE

CHECK#

SITE	REGIONAL DISPOSAL INTERMODAL 3rd and lander Seattle, WA
CUSTOMER	014857 PBS Engineering & Environmental 2517 Eastlake Ave. E., Ste. 100 Seattle, WA 98102 LW-15257

SITE	TICKET #	CELL
01	930197	
WEIGHMASTER		
DATE/TIME IN		DATE/TIME OUT
10-14-2015 4:11 pm		10-14-2015 4:33 pm
VEHICLE		CONTAINER
C-113 CECCINTI		INVOICE
BILL OF LADING		

SCALE IN	GROSS WEIGHT	NET TONS	SCALE OUT	TARE WEIGHT	NET WEIGHT	INBOUND
	55,580	12.86		29,860	25,720	
QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.00	YD	TRACKING QTY				
12.86	TN	SW-CONT SOIL W/FUEL SEATTLE/KING				

The undersigned individual signing this document on behalf of Customer acknowledges that he or she has read and understands the terms and conditions on the reverse side and that he or she has the authority to sign this document on behalf of the customer.

RS-F042UPR (07/12)

2/21

SIGNATURE

NET AMOUNT

TENDERED

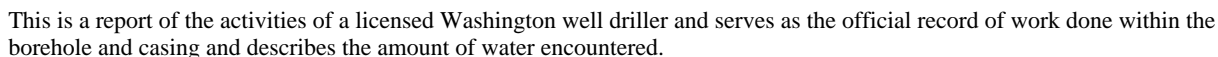
CHANGE

CHECK#

## **APPENDIX D**

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### **AVAILABLE BORING LOGS**



**Type of Well:** Geotech Soil Boring  
**Number of Wells in Group 1:** 1 well  
**Type of Work:** New  
**Method:** Auger  
**Drilling Start Date:** 7/30/2015  
**Drilling Completion Date:** 7/30/2015  
**Received by Ecology:** 8/21/2015 1:46 PM

Borehole Diameter: 5 in  
Depth of completed well: 60 ft 0 in

From Depth	To Depth	Type	Diameter	Stickup
N/A				

Type	Size	Total Perforations	From Depth	To Depth
N/A				

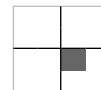
Manufacturer	Type	Dia- meter	Slot Size	From Depth	To Depth
N/A					

Material	From Depth	To Depth
N/A		

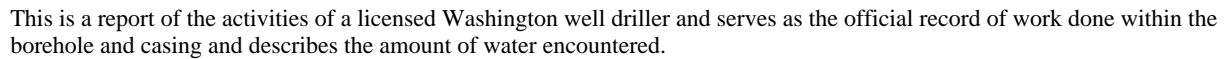
Well	Driller's Identifier	Water Level
1		Dry Hole

## None

## Tax parcel No.:

[illegible]

City, State, Zip: SPOKANE, WA, 99224



## Decommissioning

**Dimensions:**  
Diameter of borehole before decommissioning: 5 in  
Well depth before decommissioning: 60 ft 0 in

From Depth	To Depth	Type	Diameter	Stickup
N/A				

Type	Size	Total Perforations	From Depth	To Depth
N/A				

Manufacturer	Type	Dia- meter	Slot Size	From Depth	To Depth
N/A					

Material	From Depth	To Depth
N/A		

Well	Driller's Identifier	Decom Sealing Materials
1		Bentonite

## None

A 2x2 grid with the bottom-right cell shaded gray.

[illegible]

City, State, Zip: SPOKANE, WA, 99224

## **APPENDIX E**

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### **TERRESTRIAL ECOLOGICAL EVALUATION**



# Voluntary Cleanup Program

## Washington State Department of Ecology Toxics Cleanup Program

### TERRESTRIAL ECOLOGICAL EVALUATION FORM

Under the Model Toxics Control Act (MTCA), a terrestrial ecological evaluation is necessary if hazardous substances are released into the soils at a Site. In the event of such a release, you must take one of the following three actions as part of your investigation and cleanup of the Site:

1. Document an exclusion from further evaluation using the criteria in WAC 173-340-7491.
2. Conduct a simplified evaluation as set forth in WAC 173-340-7492.
3. Conduct a site-specific evaluation as set forth in WAC 173-340-7493.

When requesting a written opinion under the Voluntary Cleanup Program (VCP), you must complete this form and submit it to the Department of Ecology (Ecology). The form documents the type and results of your evaluation.

***Completion of this form is not sufficient to document your evaluation. You still need to document your analysis and the basis for your conclusion in your cleanup plan or report.***

If you have questions about how to conduct a terrestrial ecological evaluation, please contact the Ecology site manager assigned to your Site. For additional guidance, please refer to [www.ecy.wa.gov/programs/tcp/policies/terrestrial/TEEHome.htm](http://www.ecy.wa.gov/programs/tcp/policies/terrestrial/TEEHome.htm).

#### Step 1: IDENTIFY HAZARDOUS WASTE SITE

Please identify below the hazardous waste site for which you are documenting an evaluation.

Facility/Site Name: Pike Place MarketFront

Facility/Site Address: 1901 Western Avenue, Seattle, Washington

Facility/Site No: ERTS 659781

VCP Project No.:

#### Step 2: IDENTIFY EVALUATOR

Please identify below the person who conducted the evaluation and their contact information.

Name: Audrey McIvor

Title: Project Geologist

Organization: PBS Engineering + Environmental

Mailing address: 2517 Eastlake Avenue East, Suite 100

City: Seattle

State: WA

Zip code: 98102

Phone: 206.766.7631

Fax: 866.727.0140

E-mail: [audrey.mcivor@pbsenv.com](mailto:audrey.mcivor@pbsenv.com)

### Step 3: DOCUMENT EVALUATION TYPE AND RESULTS

#### A. Exclusion from further evaluation.

##### 1. Does the Site qualify for an exclusion from further evaluation?

- ☒ Yes     *If you answered "YES," then answer **Question 2**.*
- ☐ No or Unknown     *If you answered "NO" or "UNKNOWN," then skip to **Step 3B** of this form.*

##### 2. What is the basis for the exclusion? Check all that apply. Then skip to **Step 4** of this form.

Point of Compliance: WAC 173-340-7491(1)(a)

- ☐ All soil contamination is, or will be,\* at least 15 feet below the surface.
- ☐ All soil contamination is, or will be,\* at least 6 feet below the surface (or alternative depth if approved by Ecology), and institutional controls are used to manage remaining contamination.

Barriers to Exposure: WAC 173-340-7491(1)(b)

- ☒ All contaminated soil, is or will be,\* covered by physical barriers (such as buildings or paved roads) that prevent exposure to plants and wildlife, and institutional controls are used to manage remaining contamination.

Undeveloped Land: WAC 173-340-7491(1)(c)

- ☐ There is less than 0.25 acres of contiguous<sup>#</sup> undeveloped<sup>±</sup> land on or within 500 feet of any area of the Site and any of the following chemicals is present: chlorinated dioxins or furans, PCB mixtures, DDT, DDE, DDD, aldrin, chlordane, dieldrin, endosulfan, endrin, heptachlor, heptachlor epoxide, benzene hexachloride, toxaphene, hexachlorobenzene, pentachlorophenol, or pentachlorobenzene.
- ☒ For sites not containing any of the chemicals mentioned above, there is less than 1.5 acres of contiguous<sup>#</sup> undeveloped<sup>±</sup> land on or within 500 feet of any area of the Site.

Background Concentrations: WAC 173-340-7491(1)(d)

- ☐ Concentrations of hazardous substances in soil do not exceed natural background levels as described in WAC 173-340-200 and 173-340-709.

\* An exclusion based on future land use must have a completion date for future development that is acceptable to Ecology.

<sup>±</sup> "Undeveloped land" is land that is not covered by building, roads, paved areas, or other barriers that would prevent wildlife from feeding on plants, earthworms, insects, or other food in or on the soil.

<sup>#</sup> "Contiguous" undeveloped land is an area of undeveloped land that is not divided into smaller areas of highways, extensive paving, or similar structures that are likely to reduce the potential use of the overall area by wildlife.

## Step 4: SUBMITTAL

Please mail your completed form to the Ecology site manager assigned to your Site. If a site manager has not yet been assigned, please mail your completed form to the Ecology regional office for the County in which your Site is located.



<b>Northwest Region:</b> Attn: VCP Coordinator 3190 160 <sup>th</sup> Ave. SE Bellevue, WA 98008-5452	<b>Central Region:</b> Attn: VCP Coordinator 15 W. Yakima Ave., Suite 200 Yakima, WA 98902
<b>Southwest Region:</b> Attn: VCP Coordinator P.O. Box 47775 Olympia, WA 98504-7775	<b>Eastern Region:</b> Attn: VCP Coordinator N. 4601 Monroe Spokane WA 99205-1295

If you need this publication in an alternate format, please call the Toxics Cleanup Program at 360-407-7170. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.

# 500 ft Radius Map

Terrestrial Ecological Exclusion

## Legend

- 1901 Western Ave
- AMC Pacific Place 11
- APN:
- APN:
- APN:
- APN:
- APN:
- APN:
- Avis Seattle Downtown - 5th Ave Rent-A-Car
- Circle Measure
- Consulate General of Canada
- Feature 9
- Hotel
- Jiffy Lube
- Melbourne Tower, Seattle Office Space
- Seattle Aquarium
- Seattle Art Museum
- US Post Office
- Verizon Wireless
- Westlake

Google earth

© 2015 Google

1000 ft

## **APPENDIX F**

---

### **METHOD B WORKBOOK (MTCA VERSION 11.1)**

# A1 Soil Cleanup Levels: Worksheet for Soil Data Entry: Refer to WAC 173-340-720, 740,745, 747, 750

## 1. Enter Site Information

Date: 10/29/15

Site Name: Pike Place Market PDA

Sample Name: W-4E

## 2. Enter Soil Concentration Measured

Chemical of Concern or Equivalent Carbon Group	Measured Soil Conc dry basis mg/kg	Composition Ratio %
<b><u>Petroleum EC Fraction</u></b>		
AL_EC >5-6	0	0.00%
AL_EC >6-8	27.9	26.24%
AL_EC >8-10	10.3	9.69%
AL_EC >10-12	6.68	6.28%
AL_EC >12-16		0.00%
AL_EC >16-21		0.00%
AL_EC >21-34		0.00%
AR_EC >8-10	29.7	27.93%
AR_EC >10-12	16.1	15.14%
AR_EC >12-16	4.08	3.84%
AR_EC >16-21		0.00%
AR_EC >21-34		0.00%
Benzene	1.86	1.75%
Toluene	2.61	2.45%
Ethylbenzene	0.64	0.60%
Total Xylenes	6	5.64%
Naphthalene	0.449	0.42%
1-Methyl Naphthalene		0.00%
2-Methyl Naphthalene		0.00%
n-Hexane		0.00%
MTBE		0.00%
Ethylene Dibromide (EDB)		0.00%
1,2 Dichloroethane (EDC)		0.00%
Benzo(a)anthracene		0.00%
Benzo(b)fluoranthene		0.00%
Benzo(k)fluoranthene		0.00%
Benzo(a)pyrene		0.00%
Chrysene		0.00%
Dibenz(a,h)anthracene		0.00%
Indeno(1,2,3-cd)pyrene		0.00%
<b>Sum</b>	<b>106.319</b>	<b>100.00%</b>

## 3. Enter Site-Specific Hydrogeological Data

Total soil porosity:	0.43	Unitless
Volumetric water content:	0.3	Unitless
Volumetric air content:	0.13	Unitless
Soil bulk density measured:	1.5	kg/L
Fraction Organic Carbon:	0.001	Unitless
Dilution Factor:	20	Unitless

## 4. Target TPH Ground Water Concentration (if adjusted)

If you adjusted the target TPH ground water

concentration, enter adjusted value here: 500 ug/L

Notes for Data Entry

Set Default Hydrogeology

Clear All Soil Concentration Data Entry Cells

Restore All Soil Concentration Data cleared previously

REMARK:

No groundwater encountered.

## A2 Soil Cleanup Levels: Calculation and Summary of Results. Refer to WAC 173-340-720, 740, 745, 747, 750

### Site Information

Date: 10/29/2015

Site Name: Pike Place Market PDA

Sample Name:

Measured Soil TPH Concentration, mg/kg: 106.319

### 1. Summary of Calculation Results

Exposure Pathway	Method/Goal	Protective Soil TPH Conc, mg/kg	With Measured Soil Conc		Does Measured Soil Conc Pass or Fail?
			RISK @	HI @	
Protection of Soil Direct Contact: Human Health	Method B	1,038	1.02E-07	3.14E-02	Pass
	Method C	66,984	1.37E-08	1.59E-03	Pass
Protection of Method B Ground Water Quality (Leaching)	Potable GW: Human Health Protection	2	3.90E-04	1.23E+01	Fail
	Target TPH GW Conc. @ 500 ug/L	19	NA	NA	Fail

### 2. Results for Protection of Soil Direct Contact Pathway: Human Health

	Method B: Unrestricted Land Use	Method C: Industrial Land Use
Protective Soil Concentration, TPH mg/kg	1,038.08	66,984.09
Most Stringent Criterion	Risk of Benzene= 1E-6	HI =1

Soil Criteria	Protective Soil Concentration @Method B				Protective Soil Concentration @Method C			
	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @
HI =1	NO	3.39E+03	3.26E-06	1.00E+00	YES	6.70E+04	8.64E-06	1.00E+00
Total Risk=1E-5	NO	1.04E+04	1.00E-05	3.06E+00	NO	7.75E+04	1.00E-05	1.16E+00
Risk of Benzene= 1E-6	YES	1.04E+03	1.00E-06	3.06E-01	NA			
Risk of cPAHs mixture= 1E-6	NA		NA	NA				
EDB	NA		NA	NA				
EDC	NA		NA	NA				

### 3. Results for Protection of Ground Water Quality (Leaching Pathway)

#### 3.1. Protection of Potable Ground Water Quality (Method B): Human Health Protection

Most Stringent Criterion	Benzene MCL = 5 ug/L
Protective Ground Water Concentration, ug/L	41.93
Protective Soil Concentration, mg/kg	1.61

Ground Water Criteria	Protective Potable Ground Water Concentration @Method B				Protective Soil Conc, mg/kg
	Most Stringent?	TPH Conc, ug/L	RISK @	HI @	
HI=1	NO	1.91E+02	2.87E-05	1.00E+00	7.35E+00
Total Risk = 1E-5	NO	6.67E+01	1.00E-05	3.49E-01	2.56E+00
Total Risk = 1E-6	YES	6.67E+00	1.00E-06	3.49E-02	2.56E-01
Risk of cPAHs mixture= 1E-5	NA	NA	NA	NA	NA
Benzene MCL = 5 ug/L	YES	4.19E+01	6.29E-06	2.19E-01	1.61E+00
MTBE = 20 ug/L	NA	NA	NA	NA	NA

#### 3.2 Protection of Ground Water Quality for TPH Ground Water Concentration previously adjusted and entered

Ground Water Criteria	Protective Ground Water Concentration			Protective Soil Conc, mg/kg
	TPH Conc, ug/L	Risk @	HI @	
Target TPH GW Conc = 500 ug/L	5.00E+02	7.50E-05	2.61E+00	1.92E+01