

FOCUSED SITE INVESTIGATION

LAKESIDE SERVICE STATION
16835 LEWIS RIVER ROAD
COUGAR, WASHINGTON 98616



Prepared for:

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ENW Project No. 1162-17001-02

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May 22, 2017

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ACRONYMS AND ABBREVIATIONS

bgs	below ground surface
Client	Ed and Ruth Cunliffe
CULs	cleanup levels
ENW	EVREN Northwest, Inc.
EPA	US Environmental Protection Agency
ESA	Environmental Site Assessment
FSI	Focused Site Investigation
GRO	gasoline-range organics
GPR	ground-penetrating radar
mg/Kg	milligrams per Kilogram
PID	photoionization detector
PQL	practical quantification limit
Ecology	Washington Department of Ecology
MTCA	Model Toxics Control Act
RSLs	regional screening levels
SOW	scope of work
USTs	underground storage tanks
VOCs	volatile organic constituents
WAC	Washington Administrative Code

1.0 INTRODUCTION

At the request of Ed and Ruth Cunliffe (Client), EVREN Northwest, Inc. (ENW) conducted a Focused Site Investigation (FSI) for the Lakeside Service Station property (Lakeside 24-Hour Fuel, LLC) located at 16835 Lewis River Road Cougar, Washington 98616 (subject property; see Figures 1 and 2). This FSI was conducted to evaluate whether historical land has resulted in adverse environmental conditions on the subject site.

1.1 Background

In March 2017, ENW performed a Phase I Environmental Site Assessment (ESA) at the subject property as part of due diligence on the part of a prospective buyer of the property. The Phase I ESA identified both past and present fuel dispensing systems on the property, including underground storage tanks (USTs) associated with a former gasoline station. The Client elected to assess subsurface conditions beneath the site to investigate the potential for environmental impacts that could pose a human health concern or present a potential cleanup liability.

1.2 Purpose

The purpose of this FSI was to quantitatively assess, through sampling and laboratory analysis, whether petroleum related chemical impacts to soils are present beneath the subject property. ENW understands this information will be used in support of fee title transfer of ownership of the property.

1.3 Scope of Work

ENW conducted the following scope of work (SOW) for this FSI; this work was approved by the Client on March 9, 2017:

- Conducted a geophysical survey of the subject property to clear for utilities near each of the borings and look for other features of environmental concern.
- Prepared an appropriate Sampling and Analysis Plan based on results of the geophysical survey and other available information.
- Advanced eight (8) direct-push borings using a hydraulic direct-push drill rig and collected soil samples using accepted industry standards.
- Analyzed discrete soil samples for the presence of chemical impacts using a Washington-certified laboratory.
- Evaluated analytical results with respect to Washington regulatory standards and Washington Department of Ecology (Ecology) guidance documents.
- Prepared this report documenting site conditions.

2.0 SITE DESCRIPTION AND SETTING

2.1 Site and Vicinity General Description

The 0.36-acre subject property is identified by Cowlitz County Assessor's Office as Tax Identification No. ES3410001, Township 7N, Range 4E, Section 34, and lies near the northwest shore of Yale Lake in Cowlitz County, in the unincorporated community of Cougar, Washington. The rectangular-shaped property is bordered to the northwest by Lewis River Road, to the southwest by Fire Station #2, to the southeast by a vacant lot, and to the northeast by residential property.

The subject property, which is in a commercial and residential section of Cougar, is developed with a card lock and public gasoline station and a single building with a convenience store. Site features are illustrated on the Site Plan on Figure 2.

2.2 Geographic Setting

The subject site is located within the US Geological Survey Cougar, Washington 7.5-minute quadrangle at an approximate elevation of 583 feet above mean sea level (Figure 1). The surface topography of the subject property is generally level. Surface topography near the subject site slopes to the east and south, towards Yale Lake. There is a steep upward rise to the north and west of the subject site.

2.3 Geologic Setting

The subject site is located in Cowlitz County at the foothills of Mt. St. Helens. According to the US Department of Agriculture soil survey of the area, the soil is classified as part of the Solo series, which is a gravelly loamy sand, with 0 to 8 percent slopes. Soils are described as moderately well drained.

Interactive maps produced by the Washington Division of Geology and Earth Resources indicate that the geology of the site is Quaternary fragmental volcanic rocks and deposits from the Quaternary age. These volcanics are dacitic to andesitic pyroclastic flow deposits of the 1980 Mount St. Helens eruptions, which consist mostly of poorly sorted, ash-sized, crudely graded deposits of glass shards, pumice, broken phenocrysts, and lithic fragments and lesser lapilli- to block-sized pumice and lithic fragments.

Soils encountered during this investigation included surface fill materials of gravel and sand overlying sands and gravels of alluvial origin to the maximum depth explored of 20 feet below ground surface (bgs).

2.4 Surface Water

The subject property is generally level. Surface topography in the vicinity of the subject site slopes to the east and south, towards Yale Lake. Consequently, surface drainage in the surrounding areas is expected to be directed southeast. No surface waters are present on site. The nearest surface body of water is Yale Lake, approximately 400 feet to the east.

2.5 Ground Water

Information gathered from Ecology's Water Resources online well log database identifies depth to ground water in the vicinity of the subject site at approximately 105 feet bgs. Ground water was not encountered in borings advanced during this FSI. The direction of ground water flow in the subject area is generally expected to be to the southeast, based on the local topography.

3.0 LAND USE AND PREVIOUS INVESTIGATIONS

Information on the historical use of the subject property and results of previous investigations was gathered during ENW's March 2017 Phase I ESA, which included historical records research, an environmental database search, interviews, and site reconnaissance survey of the property. Although records were reviewed related to the removal of previous USTs at the subject site, the Phase I ESA found no evidence of previous environmental assessment at the site.

3.1 Historical and Current Land Use

The subject property was first developed as a gas station and convenience store in the mid-1960s. Property use has remained the same up to the present time.

3.2 ENW's 2016 Phase I ESA Findings

Based on the findings of ENW's 2017 Phase I ESA, the following evidence of a *recognized environmental condition* was found in connection with the subject property:

Three (3) former USTs at the site were removed from the property in 1996 and replaced with the current 15,000-gallon split UST. No documentation was available to indicate whether soil samples were collected and analyzed for the presence of petroleum hydrocarbon impacts during decommissioning activities and therefore the potential for impacts on site remains. ENW recommends an investigation into subsurface conditions on site in relation to these former USTs.

The scope of work for this FSI was developed based on these findings.

4.0 FIELD METHODS

This section describes the field investigation activities completed during this FSI. Field activities were performed on April 28, 2017, and May 2, 2017. Photos of field work are presented in Appendix A. Figure 2 shows the site plan.

4.1 Field Preparation

Prior to subsurface field activities, ENW:

- Placed a call with One Call Utility Notification Service to identify and locate all public utilities near each of the sampling locations.
- Prepared a Sampling and Analysis Plan for the project.

4.2 Geophysical Survey

ENW contracted with GeoPotential of Clackamas, Oregon to conduct a geophysical survey of selected areas of the subject property to: 1) confirm the location of private utilities not covered by One Call; and, 2) scan the perimeter of the site building, UST farm, and pump island for additional buried tanks or other environmental features of concern. The survey was conducted on April 28, 2017, and utilized an Aqua-Tronics Electronic Tracer, magnetometer, and ground penetrating radar (GPR) to identify subsurface “anomalies.” Here are descriptions of each of these instruments used during this survey.

Aqua-Tronics Electronic Tracer – electromagnetic sensing equipment designed to identify subsurface anomalies. In the inductive mode, the equipment is used to sense metallic objects in the subsurface. A conductive mode allows for tracing electrical conduit and metallic pipelines.

Magnetometer – used as a complement to the Aqua-Tronics instrument, the magnetometer senses horizontal variations in the local magnetic field caused by buried ferrous metal objects such as USTs, drums, pipes, and debris-filled trenches. (Magnetic surveys can only detect ferrous metal objects. Interference caused by observed surface metal objects limits the accuracy of the survey. The anomalies produced by fences, power lines, cars, and buildings can easily mask an anomaly caused by an underground target.)

Ground Penetrating Radar – GPR uses short impulses of high frequency radio waves directed into the ground to acquire information about the subsurface. GPR can be used to accurately locate both metallic and non-metallic objects (e.g., USTs, utilities, and drums) from a few inches below the surface to depths of up to 30 feet. GPR may also be effective at delineating trenches and excavations.

4.3 Soil Borings

ENW contracted with Cascade Drilling (Clackamas, Oregon) to install a total of 8 direct-push borings using a track-mounted GeoProbe rig. The locations of the borings, which were installed on May 2, 2017, are illustrated on Figure 3 and their locations are further described on Table 4-1.

Table 4-1. Soil Samples and Locations

Sample Location Identification	Sample ID	Media Sampled	Date Sampled	Depth Sampled (feet bgs)	Sampled by:	Location and Comments
B01	B01-5	Soil	5/2/2017	5	ENW	Former fuel island location
	B01-11		5/2/2017	11	ENW	
	B01-13.5		5/2/2017	13.5	ENW	
B02	B02-10		5/2/2017	10	ENW	Geophysical Anomaly GA01, possible former UST locations
	B02-15		5/2/2017	15	ENW	
B03	B03-6		5/2/2017	6	ENW	
	B03-9		5/2/2017	9	ENW	
	B03-15		5/2/2017	15	ENW	
B04	B04-6		5/2/2017	6	ENW	
B05	B05-ALT-10		5/2/2017	10	ENW	East side of current UST nest
	B05-ALT-15		5/2/2017	15	ENW	
B06	B06-10		5/2/2017	10	ENW	Southeast corner of current UST Next
	B06-15		5/2/2017	15	ENW	
B07	B07-5		5/2/2017	5	ENW	West of current fuel island
B08	B07-11		5/2/2017	11	ENW	Former Service Bay Location (inferred)
	B08-5		5/2/2017	5	ENW	

Soil borings were advanced to between approximately 13 and 20 feet bgs. During each sampling interval, soil materials recovered from the sample tooling were inspected continuously from the surface to the total depth of the boring for the presence of impacts by visual and olfactory inspection. Subsurface soil samples were periodically field screened using a photoionization detector (PID). Soil lithology, field screening results, and other observations were recorded by a ENW geologist onto soil boring logs presented in Appendix B.

Soils were retained for laboratory analysis from zones where field screening indicated the presence of impacts. In the absence of impacts, at least one soil sample was collected from depths necessary to confirm no release from the adjacent structure of historical feature of concern. Soil samples were transferred directly into laboratory prepared sample containers sealed with a Teflon-lined cap to minimize headspace, uniquely labeled, and preserved on artificial ice in a cooler pending delivery to the laboratory.

Soil samples were labelled by boring number and depth by appending it to the boring number (e.g., B01-5 would indicate a sample collected from 5 feet bgs in boring B01). A complete list of the soil borings and the samples collected is included in Table 4-1, above. Boring log indicates B05 was installed within the tank excavation and encountered pea gravel (no odor). The boring was stepped out to the east and reinstalled as B05-ALT.

Direct-push construction notices (start cards) and reports (well logs) were prepared and submitted to Ecology as required by Washington Administrative Code (WAC) 173-160. On the same day as drilling, each of the direct-push borings was backfilled with bentonite and sealed at the surface using appropriate materials to match existing conditions.

4.4 Laboratory Analysis

A total of 15 soil samples were delivered to Friedman & Bruya, Inc. (F&BI) of Seattle, Washington by courier under chain-of-custody protocol. Laboratory analytical reports and chain-of-custody documents are included in Appendix C. Soil samples were analyzed in accordance with the laboratory analytical plan presented in Table 4-2.

Table 4-2. Analytical Plan

Analytical Method	Constituents	Soil
NWTPH-HCID	Total Petroleum Hydrocarbons – Hydrocarbon Identification (semi-quantitative analysis)	Selected samples
NWTPH-Gx	Total Petroleum Hydrocarbons – Gasoline-Range Organics (GRO)	Samples with GRO detections by NWTPH-HCID and all soil/water interface soil samples, as applicable
NWTPH-Dx	Total Petroleum Hydrocarbons – Diesel-Range and Residual (Oil)-Range Organics (DRO and RRO, respectively) quantification	Samples with DRO/RRO detections by NWTPH-HCID and all soil/water interface samples, as applicable
US Environmental Protection Agency (EPA) 8260C	Selected Volatile Organic Constituents (VOCs)	Selected samples with detections of GRO
EPA 6020A	Total Lead	Selected samples with detections of GRO

4.5 Cleanup Levels

4.5.1 Model Toxics Control Act (MTCA)

The State of Washington MTCA Regulations (Chapter 173-340 WAC) sets numeric cleanup levels for “routine cleanup actions”. “Routine cleanup actions” are defined as those sites where: 1) cleanup standards for each hazardous substance are obvious and undisputed, allowing for an adequate margin of safety for protection of human health and the environment; 2) does not require preparation of an environmental impact statement, and 3) qualifies for an exclusion from conducting a terrestrial ecological evaluation. Cleanup levels (CULs) are defined as the concentration of a hazardous substance in soil, water, air, or sediment that is determined to be protective of human health and the environment under specified exposure conditions. MTCA’s three (3) methods for establishing cleanup levels are briefly described below.

Method A: Method A provides tables of cleanup levels that are protective of human health for the most common hazardous substances found in soil and ground water at sites. Note that these levels were developed by procedures of Method B. The Method A cleanup must meet the concentrations listed in the Method A table and, if not listed in the table, the concentration standards established under applicable state or federal laws. If neither the Method A table nor applicable state and federal laws provide an appropriate cleanup level, then natural background concentration or the practical quantification limit (PQL) may be used as the cleanup level. Method A is the simplest, most streamlined approach to cleanup, but is meant to be applied with sites that have releases of only a few, common, hazardous substances.

Method B: Method B provides cleanup levels using risk assessment equations developed for various exposure pathways, as well as by using standards specified by applicable state and federal laws. Standard Method B uses generic default assumptions; Modified Method B uses

chemical-specific and/or site-specific parameters in calculating the cleanup levels. Natural background concentrations and PQLs are also considered in this method. Method B is considered the universal approach to site closure and is the method most commonly used.

Both Methods A and B do not permit cleanup levels that would allow impacts to ecological receptors unless it can be demonstrated that ecological impacts are not a concern at the site.

Method C: Method C is used at industrial sites with the most complex impacts, and employs less stringent exposure assumptions and less stringent lifetime cancer risks. Although ecological impacts are evaluated, only impacts to wildlife are considered during terrestrial ecological evaluation.

Since the purpose of this FSI is to screen for possible impacts, Method A and B Cleanup levels were used for initial screening of data (MTCA Screening Level).

4.5.2 EPA Regional Screening Levels (RSLs)

For constituents that do not have established MTCA cleanup levels, ENW screened the analytical data against US Environmental Protection Agency (EPA) Regional Screening Levels (RSLs; RSLs calculated using the conservative Total Hazard Quotient value of 0.1 and excess cancer risk of 1E-6). The RSLs combine current human health toxicity values with standard exposure factors to estimate contaminant concentrations in environmental media (soil, air, and water) that are considered by Ecology to be health protective of human exposures (including sensitive groups) over a lifetime. The RSLs were developed using the criteria of acceptable additional risk of cancer from exposure with carcinogenic constituents less than one in one million incidences, or for non-carcinogenic constituents, below the constituent threshold concentration at which health impacts would occur (i.e., Hazard Quotient less than 1.0).

5.0 RESULTS

This section describes the results of the FSI. The following supportive information may be referenced during this discussion:

- Site and investigative work photographs (Appendix A).
- Soil sample laboratory analytical results (summarized in Table 1, following the Tables Tab).
- Soil boring logs (Appendix B).

5.1 Geophysical Survey

The geophysical survey was completed on April 28, 2017, as described in Section 4.2. All of the proposed boring locations were cleared of utilities, or relocated to avoid detected utilities as necessary. In addition, selected areas of the site were scanned to identify buried features that could pose a possible environmental concern, the results of which are as follows:

- Magnetic anomalies MA01 and MA02 – located east of the current cardlock pump island, these two anomalies were three feet in diameter with high magnetic response near their perimeters. The apparent “rim” features are interpreted as possible abandoned septic features or vertical drains. Boring B04 was sited equidistant from MA01 and MA02.
- Geophysical anomaly GA01 – located northwest of the convenience store building, this anomaly measuring approximately 22 feet by 23 feet did not have a magnetic response, but did have a GPR response interpreted as a former excavation. Borings B02 and B03 were sited within this anomaly.
- The survey did not identify any evidence of buried USTs, other than the current regulated UST servicing the onsite service station, or other features of potential environmental concern, although not all areas of the site were scanned during the survey.

5.2 Soil Boring Locations and General Subsurface Conditions

Soil borings were completed between 13 and 20 feet bgs to investigate historical features of environmental interest and geophysical/magnetic anomalies. For convenience, Table 4-1 provides soil sample locations.

Soil borings encountered 1 to 3 feet of variable fill at the surface consisting of gravels, sandy cobbles, sandy gravel, silt, and silty sand, with occasional debris materials including concrete, brick, and wood fragments. Below the fill materials the borings generally penetrated brown medium dense to dense sandy gravels, sand, silty sand, and silt. Ground water was not encountered in any of the borings. Boring logs are included in Appendix B.

An oil-like petroleum odor and slightly elevated PID readings were noted in boring B01 (north of the convenience store near a purported former pump island) at the 10 to 11-foot depth interval. The evidence of petroleum quickly subsided in grab samples from the 13-foot and deeper sample intervals.

5.3 Laboratory Results

In Table 1, soil analytical results are screened against conservative Washington MTCA CULs (further discussed in Section 6.0) for soils and, for those constituents where MTCA cleanup standards are not established, against RSLs. As detailed below, the laboratory only detected constituents of interest in one of the soil samples.

5.3.1 Petroleum Hydrocarbons

Gasoline-range petroleum hydrocarbons were detected in one sample from boring B01 at the 11-foot depth. The detected GRO concentration of 620 milligrams per Kilogram (mg/Kg) exceeds the MTCA Method A soil cleanup level of 100 mg/Kg.

A deeper sample from the same boring (collected at 13.5 feet bgs) was analyzed for TPH to determine how deep the petroleum impacted soils extended vertically in B01. Laboratory analysis of sample B01-13.5 did not detect GRO in the sample.

Neither diesel-range organics nor residual-range organics were detected above the laboratory method reporting limit (MRL) in any of the soil samples analyzed.

5.3.2 Volatile Organic Constituents

Since regulated VOC constituents are associated with GRO, further analysis of gasoline-related VOCs was performed on soil sample B01-11 with the following results:

- Ethylbenzene was detected at 0.17 mg/Kg
- Naphthalene was reported with a flagged concentration of 0.022 mg/Kg
- Xylenes were reported at a flagged concentration of 1.1 mg/Kg

None of the detected VOC constituents were above their respective MTCA Method A soil cleanup levels. The results flagged by the laboratory indicate the results are estimates since instrument calibration or internal standards associated with the analyte were outside their respective control limits. Due to their very low concentrations, the flagged results do not alter the findings of this investigation.

5.3.3 Metals

Soil sample B01-11 was analyzed for lead since some older gasoline formulations contained lead. Lead was detected at 2.38 mg/Kg, below the MTCA Method A CUL of 250 mg/Kg.

6.0 DISCUSSION

The purpose of the FSI was to evaluate areas of potential environmental concern at the subject property. The geophysical survey identified both an area interpreted as a former UST excavation as well as two proximate magnetic anomalies. Soil borings were installed to investigate the former fuel dispenser location, the presumed former UST excavation, MA01/MA02, the area of the current fueling facilities, and the inferred former service bay.

Only one soil boring (B01 at the former fuel dispenser location) suggested petroleum-impacts based on field observations (odor and elevated PID readings). The low-level petroleum impacts in soil were located beneath a purported former fuel pump in the northeast portion of the property. Soil impacts appeared within a thin lens of fine sands at the 11-foot depth and samples collected from coarser sands and gravels immediately below the impacted zone were not impacted. The petroleum impacts at boring B01 were not identified at the same depth in borings B02 and B03 to the west.

Laboratory reporting confirmed soil in this boring was impacted with gasoline-related constituents; however only the constituent GRO exceeded its (conservative) MTCA Method A CUL. No other soil samples had detections of any of petroleum hydrocarbons, including a sample collected from a depth of 13.5 feet in B01 (providing vertical delineation).

From a human health perspective, the GRO concentration at the 11-foot depth is above the ground water table and the concentration was relatively low (less than one order of magnitude above Ecology's most conservative CUL). VOCs and lead were not detected in the impacted sample above Ecology's most conservative CUL. Based on the low concentration, depth of burial and lack of significant volatiles, the impacted soil would appear to pose little if any human health concern by either direct contact or vapor intrusion.

From a cleanup liability standpoint, it is unclear if this release should be reported to the State of Washington since it is unclear if the release is related to a release from a UST system. The release of GRO in soil poses a low actionable response since little if any human health or ecological risk to current and future site occupants exist. Based on the findings of the FSI, ENW recommends no further investigation.

7.0 LIMITATIONS

The scope of this report is limited to observations made during on-site work; interviews with knowledgeable sources; and review of readily available published and unpublished reports and literature. As a result, these conclusions are based on information supplied by others as well as interpretations by qualified parties.

The focus of the site closure does not extend to the presence of the following conditions unless they were the express concerns of contacted personnel, report and literature authors or the work scope.

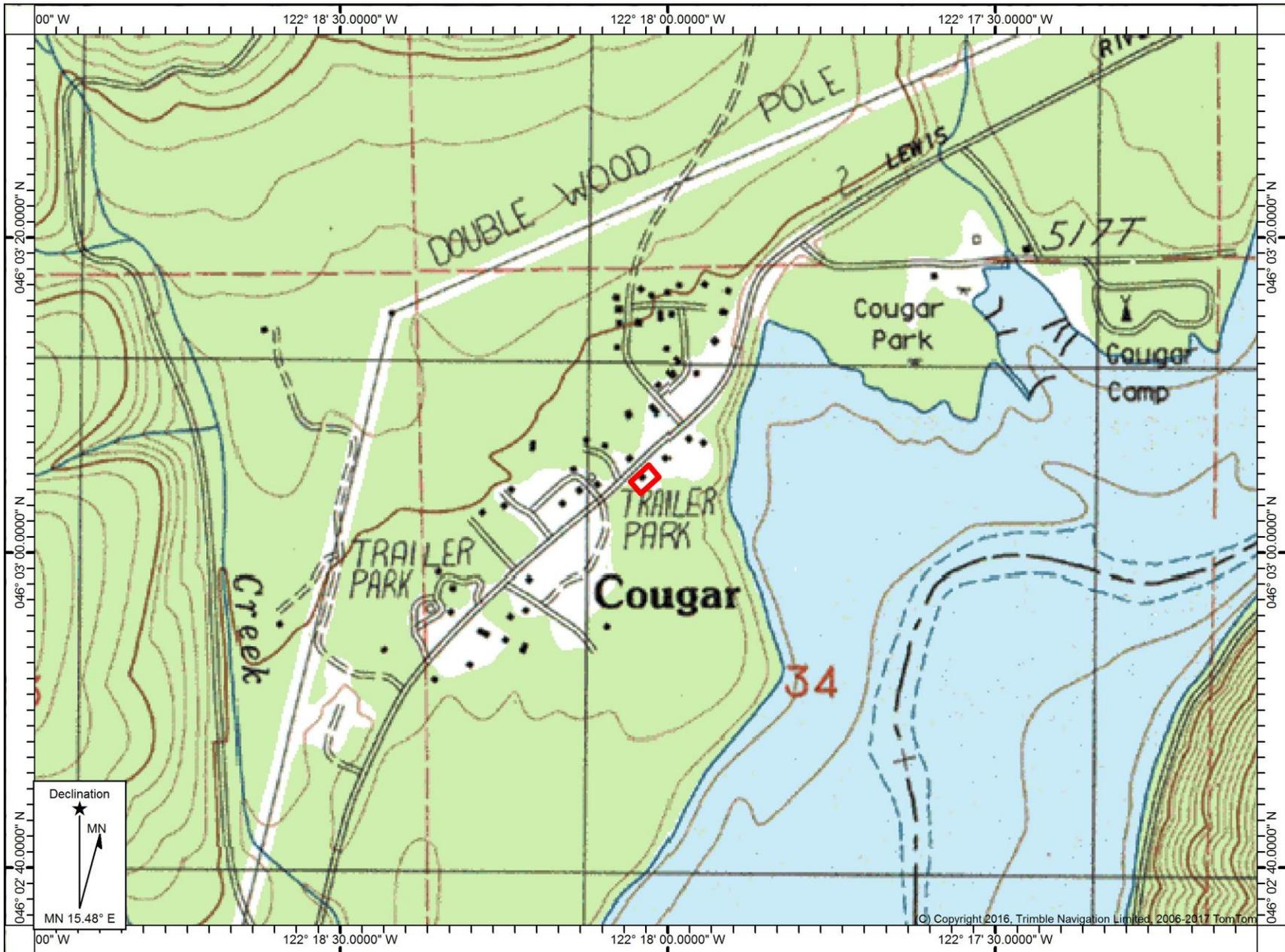
1. Naturally occurring toxic or hazardous substances in the subsurface soils, geology and water,
2. Toxicity of substances common in current habitable environments, such as stored chemicals, products, building materials and consumables,
3. Contaminants or contaminant concentrations that are not a concern now but may be under future regulatory standards,
4. Unpredictable events that may occur after ENW's site work, such as illegal dumping or accidental spillage.

There is no practice that is thorough enough to absolutely identify the presence of all hazardous substances that may be present at a given site. ENW's investigation has been focused only on the potential for contamination that was specifically identified in the SOW. Therefore, if contamination other than that specifically mentioned is present and not identified as part of a limited SOW, ENW's environmental investigation shall not be construed as a guaranteed absence of such materials. ENW has endeavored to collect representative analytical samples for the locations and depths indicated in this report. However, no sampling program can thoroughly identify all variations in contaminant distribution.

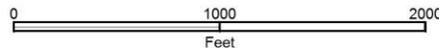
We have performed our services for this project in accordance with our agreement and understanding with the client. This document and the information contained herein have been prepared solely for the use of the client.

ENW performed this study under a limited scope of services per our agreement. It is possible, despite the use of reasonable care and interpretation, that ENW may have failed to identify regulation violations related to the presence of hazardous substances other than those specifically mentioned at the closure site. ENW assumes no responsibility for conditions that we did not specifically evaluate or conditions that were not generally recognized as environmentally unacceptable at the time this report was prepared.

FIGURES



Name: COUGAR
Date: Jan 1, 1983



Location: 046° 03' 04.6401" N, 122° 18' 02.0319" W
Contour Interval: 40 ft



Date Drawn: 5/22/2017
CAD File Name: 1162-17001-02-fig1sv_map(v01)
Drawn By: JOB
Approved By: LDG

Lakeside Service Station
16835 Lewis River Road
Cougar, WA 98616

Site Vicinity Map

Project No.
1162-17001-02

Figure No.

1

DRAWN BY J. BIGELOW [05/18/2017] P. TRONE [05/18/2017] L. GREEN [05/18/2017] APPROVED BY 1162-17001(v01) DRAWING NUMBER

LEWIS RIVER RD

FORMER FUEL PUMPS

STORAGE CONTAINER

SHED



PUMPS

SEPTIC TANK



DRAIN FIELD

TANKS

PROPANE

VENT PIPES

OFFICE

FIRE STATION #2

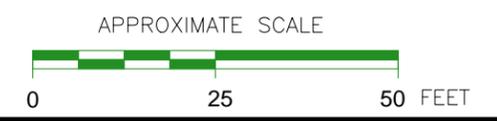
VACANT

LEGEND:

-  SUBJECT BUILDINGS
-  SUBJECT PROPERTY BOUNDARIES
-  BUILDING LOCATIONS
-  FORMER BUILDING LOCATIONS
-  PAD TRANSFORMER
-  SOLID WASTE RECEPTACLE

NOTES:

1. BASE MAP DEVELOPED FROM AN AERIAL PHOTOGRAPH MAP DATED 2015 AND ENW FIELD NOTES.
2. ALL BUILDING, STREET, AND FEATURE LOCATIONS ARE APPROXIMATE.



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FIGURE 2
 SITE PLAN

LAKESIDE SERVICE STATION
 16835 LEWIS RIVER ROAD
 COUGAR, WASHINGTON

DRAWN BY J. BIGELOW [05/18/2017] P. TRONE [05/18/2017] L. GREEN [05/18/2017] APPROVED BY DRAWING NUMBER 1162-17001(v01)

LEWIS RIVER RD

FORMER FUEL PUMPS

STORAGE CONTAINER

SHED

SEPTIC TANK

DRAIN FIELD

VACANT

FIRE STATION #2

PUMPS

TANKS

PROPANE

VENT PIPES

OFFICE

GA01

MA01

MA02

B01

B02

B03

B08

B04

B07

B05

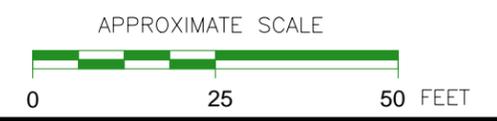
B06

LEGEND:

-  SUBJECT BUILDINGS
-  SUBJECT PROPERTY BOUNDARIES
-  BUILDING LOCATIONS
-  FORMER BUILDING LOCATIONS
-  POLE TRANSFORMER
-  PAD TRANSFORMER
-  SOLID WASTE RECEPTACLE
-  MAGNETIC ANOMALY
-  GEOPHYSICAL ANOMALY
-  B01 TEMPORARY ENVIRONMENTAL BORING

NOTES:

1. BASE MAP DEVELOPED FROM AN AERIAL PHOTOGRAPH MAP DATED 2015 AND ENW FIELD NOTES.
2. ALL BUILDING, STREET, AND FEATURE LOCATIONS ARE APPROXIMATE.



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FIGURE 3
 SAMPLE LOCATION DIAGRAM
 LAKESIDE SERVICE STATION
 16835 LEWIS RIVER ROAD
 COUGAR, WASHINGTON

TABLE

Table 1 - Summary of Analytical Data, Soil

Sample Location		B01			B02		B03		B04	B05		B06	
Sample ID		B01-5	B01-11	B01-13.5	B02-10	B02-15	B03-6	B03-15	B04-6	B05-ALT-10	B05-ALT-15	B06-10	B06-15
Date Sampled		5/2/2017	5/2/2017	5/2/2017	5/2/2017	5/2/2017	5/2/2017	5/2/2017	5/2/2017	5/2/2017	5/2/2017	5/2/2017	5/2/2017
Depth Sampled (feet)		5	11	13.5	10	15	6	15	6	10	15	10	15
Sampled by:		ENW	ENW	ENW	ENW	ENW	ENW	ENW	ENW	ENW	ENW	ENW	ENW
Location		Former Fuel Island Location			Geophysical Anomaly GA01, possible former UST locations			Geophysical Anomaly MA01, east of current USTs	East side of current UST nest		Southeast corner of current UST Next		
Constituent of Interest	Note	mg/Kg (ppm)	mg/Kg (ppm)	mg/Kg (ppm)	mg/Kg (ppm)	mg/Kg (ppm)	mg/Kg (ppm)	mg/Kg (ppm)	mg/Kg (ppm)	mg/Kg (ppm)	mg/Kg (ppm)	mg/Kg (ppm)	mg/Kg (ppm)
Volatile Organic Constituents (VOCs)													
Benzene	c, v	---	<0.003 ND	---	---	---	---	---	---	---	---	---	---
EDB (1,2-dibromoethane)	c, v	---	<0.005 ND	---	---	---	---	---	---	---	---	---	---
EDC (1,2-dichloroethane)	c, v	---	<0.005 ND	---	---	---	---	---	---	---	---	---	---
Ethylbenzene	nc, v	---	0.17	---	---	---	---	---	---	---	---	---	---
MTBE (methyl t-butyl ether)	c, v	---	<0.005 ND	---	---	---	---	---	---	---	---	---	---
Naphthalene (Method 8260)	c, v	---	0.022 J	---	---	---	---	---	---	---	---	---	---
Toluene	nc, v	---	<0.005 ND	---	---	---	---	---	---	---	---	---	---
Xylenes	nc, v	---	1.1 VE	---	---	---	---	---	---	---	---	---	---
Metals													
Lead	NA, nv	---	2.38	---	---	---	---	---	---	---	---	---	---
Total Petroleum Hydrocarbons													
GRO	nc, v	<20 (NP)	620	<20 (NP)	<20 (NP)	<20 (NP)	<20 (NP)	<20 (NP)	<20 (NP)	<20 (NP)	<20 (NP)	<20 (NP)	<20 (NP)
DRO	nc, nv	<50 (NP)	<50 (NP)	<50 (NP)	<50 (NP)	<50 (NP)	<50 (NP)	<50 (NP)	<50 (NP)	<50 (NP)	<50 (NP)	<50 (NP)	<50 (NP)
RRO	nc, nv	<250 (NP)	<250 (NP)	<250 (NP)	<250 (NP)	<250 (NP)	<250 (NP)	<250 (NP)	<250 (NP)	<250 (NP)	<250 (NP)	<250 (NP)	<250 (NP)

Notes:
 NP = not present based on NWTPH-HCID (hydrocarbon identification) analysis
 ND = not detected at or above laboratory method reporting limits
 --- = not analyzed or not applicable.
 < = not detected at or above the method reporting limit shown.
 NE = not established.
 mg/Kg = milligram per kilogram.
 c = carcinogenic
 nc = noncarcinogenic
 v = volatile
 nv = nonvolatile
 J = the internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
 VE = the analyte response exceeded the valid instrument calibration range. The value reported is an estimate.
 GRO = gasoline-range organics.
 DRO = diesel-range organics.
 RRO = residual-range organics.
Bolded concentrations exceed either MTCA Cleanup Levels.
 (Y) indicates analyte not detected, but detection limit is above

Table 1 - Summary of Analytical Data, Soil

Sample Location		B07		B08	Maximum Residual Soil Concentration (detected)	MTCA Method A Soil Cleanup Levels for Unrestricted Land Uses ¹	MTCA Method B Soil Cleanup Levels (if Method A not available) ¹	Constituent of Potential Concern (COPC, exceeds Method A or B CULs)?	MTCA Method C Soil Cleanup Levels for Industrial Land Uses	Background Concentrations (metals)*
Sample ID	B07-5	B07-11	B08-5							
Date Sampled	5/2/2017	5/2/2017	5/2/2017							
Depth Sampled (feet)	5	11	5							
Sampled by:	ENW	ENW	ENW							
Location	West of current fuel island	West of current fuel island	Former Service Bay Location (inferred)							
Constituent of Interest	Note	mg/Kg (ppm)	mg/Kg (ppm)	mg/Kg (ppm)	mg/Kg (ppm)	mg/Kg (ppm)	mg/Kg (ppm)	Y / N	mg/Kg (ppm)	mg/Kg (ppm)
Volatile Organic Constituents (VOCs)										
Benzene	c, v	---	---	---	<0.003 (ND)	0.03	18.2	N	2390	NE
EDB (1,2-dibromoethane)	c, v	---	---	---	<0.005 (ND)	0.005	0.5	N	0.005	NE
EDC (1,2-dichloroethane)	c, v	---	---	---	<0.005 (ND)	NE	11	N	NE	NE
Ethylbenzene	nc, v	---	---	---	0.17	6	8000	N	350000	NE
MTBE (methyl t-butyl ether)	c, v	---	---	---	<0.005 (ND)	0.1	556	N	0.1	NE
Naphthalene (Method 8260)	c, v	---	---	---	0.022 J	5	1600	N	70000	NE
Toluene	nc, v	---	---	---	<0.005 (ND)	7	6400	N	7	NE
Xylenes	nc, v	---	---	---	1.1 VE	9	16000	N	700000	NE
Metals										
Lead	NA, nv	---	---	---	2.38	250	NE	N	1000	24.02
Total Petroleum Hydrocarbons										
GRO	nc, v	<20 (NP)	---	<20 (NP)	620	100	NE	Y	CALC	NE
DRO	nc, nv	<50 (NP)	---	<50 (NP)	<50 (NP)	2000	NE	N	CALC	NE
RRO	nc, nv	<250 (NP)	---	<250 (NP)	<250 (NP)	2000	NE	N	2000	NE

Notes:

NP = not present based on NWTPH-HCID (hydrocarbon identification) analysis
 ND = not detected at or above laboratory method reporting limits
 --- = not analyzed or not applicable.
 < = not detected at or above the method reporting limit shown.
 NE = not established.
 mg/Kg = milligram per kilogram.
 c = carcinogenic
 nc = noncarcinogenic
 v = volatile
 nv = nonvolatile
 J = the internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
 VE = the analyte response exceeded the valid instrument calibration range. The value reported is an estimate.
 GRO = gasoline-range organics.
 DRO = diesel-range organics.
 RRO = residual-range organics.
Bolded concentrations exceed either MTCA Cleanup Levels.
 (Y) indicates analyte not detected, but detection limit is above

APPENDIX A SITE PHOTOGRAPHS



A geophysical survey was conducted to clear boring locations and confirm buried historical features.



Magnetic anomalies were marked in white paint, and boring locations were sited in appropriate locations to assess suspect underground features.



One large area at the NW corner of the building was interpreted as a former excavation. An old fuel dispenser was reportedly located further east (behind the black truck).



A GeoProbe drill rig was used to advance eight exploratory borings at selected locations.



Cougar Property
16835, 16840, & 16842 Lewis River Road
Cougar, Washington

**Site
Photographs**

Project No.
1162-17001-02
Appendix
C



A 6-foot tile probe was used to manually clear holes prior to drilling to avoid damaging underground utilities near the existing tanks and pump island.



Observations were recorded onto a field notebook and boring log.



Continuous soil cores retained within plastic sleeves were inspected from the ground surface to total depth at each boring.



Soil samples were placed into laboratory-prepared sample jars for possible analysis.



Cougar Property
 16835, 16840, & 16842 Lewis River Road
 Cougar, Washington

**Site
 Photographs**

Project No.
 1162-17001-02
 Appendix
C



After drilling and sampling, each boring was backfilled with bentonite chips and sealed at the surface.

	<p>Cougar Property 16835, 16840, & 16842 Lewis River Road Cougar, Washington</p>	<p>Site Photographs</p>	<p>Project No. 1162-17001-02 Appendix C</p>
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APPENDIX B SOIL BORING LOGS

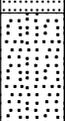
EVREN Northwest, Inc.

DRILL LOG	PROJECT		PROJECT NO.		BORING NO.
	P2ESA		1162-17001-02		B01
SITE		BEGUN	COMPLETED	HOLE SIZE	
16835 Lewis River Rd, Cougar, WA		5/2/17	5/2/17	2-inch	
COORDINATES		DEPTH GROUND WATER	DATE SL	STATIC LEVEL	FIRST WATER
DRILLER		CORE RECOVERY (%)		# SAMPLES	# CORE BOXES
Cascade Drilling					
DRILL MAKE AND MODEL		LOGGED BY:			DEPTH BOTTOM OF HOLE
		E. Chapman			20

DEPTH	STRATA ELEVATION/ DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE DATA				PID/OVM	REMARKS: NOTES ON WATER LEVELS, LOSSES, CAVING, CASING, DEPTH & DRILLING CONDITIONS.
				SAMPLE NO.	SAMPLE TYPE	CORE RECOVERY	MW Const./ Completion		
0			Asphalt					0	
			Fill materials; mostly sand & gravel					0	
			Sandy SILT (ML/SM); dark brown; moist; loose.			20			
5			SAND w/ silt; tannish brown; some coarse rounded gravel; loose; dry;	B01-5		45		0	
			cemented sand layer					0	
10			SAND; grey brown; medium grained; loose; moist; occasional basalt clasts					0	
			lens of very fine sand; greyish pink; petrol odor	B01-11		80		42.5	
			SAND; gray and red; coarse sand w/ fine gravels; moist; loose; no oder at 11.5						
15			pink cemented sand or sandstone	B01-13.5				0	
			Fine to coarse GRAVELS; pinkish gray; clasts/ fragments of basalt up to 1-in dia or larger; hard drilling; dense; moist			85		0	
20			Boring terminated. Groundwater not encountered. Boring abandoned	B01-19				0	
25									
30									
35									

EVREN Northwest, Inc.

DRILL LOG	PROJECT		PROJECT NO.		BORING NO.
	P2ESA		1162-17001-02		B02
SITE		BEGUN	COMPLETED	HOLE SIZE	ANGLE FROM HORIZ.
16835 Lewis River Rd, Cougar, WA		5/2/17	5/2/17	2-inch	
COORDINATES		DEPTH GROUND WATER	DATE SL	STATIC LEVEL	FIRST WATER
DRILLER		CORE RECOVERY (%)		# SAMPLES	# CORE BOXES
Cascade Drilling					
DRILL MAKE AND MODEL		LOGGED BY:			DEPTH BOTTOM OF HOLE
		E. Chapman			20

DEPTH	STRATA ELEVATION/ DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE DATA				PID/OVM	REMARKS: NOTES ON WATER LEVELS, LOSSES, CAVING, CASING, DEPTH & DRILLING CONDITIONS.
				SAMPLE NO.	SAMPLE TYPE	CORE RECOVERY	MW Const./ Completion		
0			Asphalt Fill materials; mostly sand & gravel; dense					0	
			SILT (ML); brown; charred woody debris; moist; soft; no odor.			60		0	
5			Silty SAND w/ gravel; reddish tan; very fine basalt fragments; no odor			65		0	
			SAND; grey brown; medium grained; loose; moist;					0	
10			8-in lens of very fine sand to silty sand; reddish tan w/ grey and tan mottling Sandy GRAVELS; grey; dark red; green; coarse sand; angular gravel up to 1-in dia. hard; dense; moist	B02-10		80		0 0 0	
			SAND; gray and red; coarse sand w/ fine gravels; moist; loose; no oder at 11.5					0	
15			3-in layer cemented black silty sand pink cemented sand or sandstone	B02-15		85		0	
20			Boring terminated. Groundwater not encountered. Boring abandoned					0	
25									
30									
35									

EVREN Northwest, Inc.

DRILL LOG	PROJECT		PROJECT NO.		BORING NO.
	P2ESA		1162-17001-02		B03
SITE		BEGUN	COMPLETED	HOLE SIZE	
16835 Lewis River Rd, Cougar, WA		5/2/17	5/2/17	2-inch	
COORDINATES		DEPTH GROUND WATER	DATE SL	STATIC LEVEL	FIRST WATER
DRILLER		CORE RECOVERY (%)		# SAMPLES	# CORE BOXES
Cascade Drilling					
DRILL MAKE AND MODEL		LOGGED BY:			DEPTH BOTTOM OF HOLE
		E. Chapman			20

DEPTH	STRATA ELEVATION/ DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE DATA				PID/OVM	REMARKS: NOTES ON WATER LEVELS, LOSSES, CAVING, CASING, DEPTH & DRILLING CONDITIONS.
				SAMPLE NO.	SAMPLE TYPE	CORE RECOVERY	MW Const./ Completion		
0			Asphalt Fill materials; mostly sand & gravel; dense					0	
			SILT w/ sand (ML/SM); brown; very fine sand; moist; soft; no odor.			60		0	
5			woody debris in shoe					0	
			Gravelly SAND; reddish brown; dense; sl. moist; no odor	B03-6		65		0.4	
			SAND; reddish brown to grey; medium grained; loose; moist;	B03-9				0	
10			Fine SAND; trace silt; reddish brown; layer approx 1- in thick of fines; moist; no odor					0	
			Coarse sand; black with gravel; dense; moist; no odor; occasssional basalt frags; pink clasts			90		0	
15			Very fine SAND; gray brown; moist	B03-15				0	
			Alternating sandstone clasts, sands; gravels; dense; moist to very moist			60		0	
20			Boring terminated. Groundwater not encountered. Boring abandoned					0	
25									
30									
35									

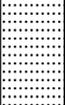
EVREN Northwest, Inc.

DRILL LOG	PROJECT		PROJECT NO.		BORING NO.
	P2ESA		1162-17001-02		B04
SITE		BEGUN	COMPLETED	HOLE SIZE	
16835 Lewis River Rd, Cougar, WA		5/2/17	5/2/17	2-inch	
COORDINATES		DEPTH GROUND WATER	DATE SL	STATIC LEVEL	FIRST WATER
DRILLER		CORE RECOVERY (%)		# SAMPLES	# CORE BOXES
Cascade Drilling					
DRILL MAKE AND MODEL		LOGGED BY:			DEPTH BOTTOM OF HOLE
		E. Chapman			13

DEPTH	STRATA ELEVATION/ DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE DATA				PID/OVM	REMARKS: NOTES ON WATER LEVELS, LOSSES, CAVING, CASING, DEPTH & DRILLING CONDITIONS.
				SAMPLE NO.	SAMPLE TYPE	CORE RECOVERY	MW Const./ Completion		
0			Asphalt					0	
			Sand and Gravel fill; pinkish gray			60			
5			Sandy GRAVEL; reddish brown; med sand; fine to crse gravel; loose; sl. moist; no odor	B04-6		80		0	
			SAND; gray-brown; medium grained sand; wet zone ; loose					0	
10			Sandy GRAVEL; grey to dk brown; red; pink.			80		0	
15			Refusal; Boring terminated. Groundwater not encountered. Boring abandoned						
20									
25									
30									
35									

EVREN Northwest, Inc.

DRILL LOG	PROJECT		PROJECT NO.		BORING NO.
	P2ESA		1162-17001-02		B05 ALT
SITE		BEGUN	COMPLETED	HOLE SIZE	
16835 Lewis River Rd, Cougar, WA		5/2/17	5/2/17	2-inch	
COORDINATES		DEPTH GROUND WATER	DATE SL	STATIC LEVEL	FIRST WATER
DRILLER		CORE RECOVERY (%)		# SAMPLES	# CORE BOXES
Cascade Drilling					
DRILL MAKE AND MODEL		LOGGED BY:			DEPTH BOTTOM OF HOLE
		E. Chapman			15

DEPTH	STRATA ELEVATION/ DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE DATA				PID/OVM	REMARKS: NOTES ON WATER LEVELS, LOSSES, CAVING, CASING, DEPTH & DRILLING CONDITIONS.
				SAMPLE NO.	SAMPLE TYPE	CORE RECOVERY	MW Const./ Completion		
0			Asphalt Fill materials; mostly sand & gravel; dense			40		0	
5			SAND w/ gravel; reddish brown; no odor; dry; loose					0	
			Gravelly SAND; yellow to reddish brown; coarse gravel subangular; mostly fine sand; sl. moist; dense; large gravel fragment in shoe			50		0	
10			SAND; reddish brown to grey; medium grained; loose; moist;	B05-ALT-10				0	
			Coarse sand; black with gravel; dense; moist					0	
			Sandy GRAVEL; grey, red, orange, tan, fine to coarse gravel; medium sand; danse; moist; no odor			100		0	
			3-in layer cemented black silty sand	B05-ALT-15				0	
15			Refusal; Groundwater not encountered. Boring abandoned					0	
20									
25									
30									
35									

EVREN Northwest, Inc.

DRILL LOG	PROJECT		PROJECT NO.		BORING NO.
	P2ESA		1162-17001-02		B06
SITE		BEGUN	COMPLETED	HOLE SIZE	
16835 Lewis River Rd, Cougar, WA		5/2/17	5/2/17	2-inch	
COORDINATES		DEPTH GROUND WATER	DATE SL	STATIC LEVEL	FIRST WATER
DRILLER		CORE RECOVERY (%)		# SAMPLES	# CORE BOXES
Cascade Drilling					
DRILL MAKE AND MODEL		LOGGED BY:			DEPTH BOTTOM OF HOLE
		E. Chapman			15

DEPTH	STRATA ELEVATION/ DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE DATA				PID/OVM	REMARKS: NOTES ON WATER LEVELS, LOSSES, CAVING, CASING, DEPTH & DRILLING CONDITIONS.
				SAMPLE NO.	SAMPLE TYPE	CORE RECOVERY	MW Const./ Completion		
0			Asphalt Fill materials; mostly sand & gravel; dense					0	
5			SILT w/ sand (ML/SM); brown; very fine sand; moist; soft; no odor.			35		0	
10			Gravelly SAND; gray, rust, buff, black; med to coarse gravel; f-med sand; dense; rock fragments; sl. moist; no odor No Recovery - melted liner	B06-10		80		0	
15			Refusal. Groundwater not encountered. Boring abandoned	B06-15		60		0	
20									
25									
30									
35									

EVREN Northwest, Inc.

DRILL LOG	PROJECT		PROJECT NO.		BORING NO.
	P2ESA		1162-17001-02		B07
SITE		BEGUN	COMPLETED	HOLE SIZE	
16835 Lewis River Rd, Cougar, WA		5/2/17	5/2/17	2-inch	
COORDINATES		DEPTH GROUND WATER	DATE SL	STATIC LEVEL	FIRST WATER
DRILLER		CORE RECOVERY (%)		# SAMPLES	# CORE BOXES
Cascade Drilling					
DRILL MAKE AND MODEL		LOGGED BY:			DEPTH BOTTOM OF HOLE
		E. Chapman			15

DEPTH	STRATA ELEVATION/ DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE DATA				PID/OVM	REMARKS: NOTES ON WATER LEVELS, LOSSES, CAVING, CASING, DEPTH & DRILLING CONDITIONS.
				SAMPLE NO.	SAMPLE TYPE	CORE RECOVERY	MW Const./ Completion		
0			Asphalt Fill materials; mostly sand & gravel; dense					0	
			SILT w/ sand (ML/SM); brown; very fine sand; moist; soft; no odor.	B07-5		60		0	
5			Gravelly SAND w/ gravel; reddish brown; dense; sl. moist; no odor			80		0	
			SAND; reddish brown to grey; medium grained; loose; moist;					0	
10			SAND; gray; f-med sand; rust colored; weathered rinds; moist to wet; hard drilling 9'-14'	B07-11		80		0	
15			Coarse gravelly SAND; gray, rust, yellow, buff; coarse gravels; med sand; dense; moist; no odor					0	
			Refusal. Abandon boring. Groundwater not encountered					0	
20									
25									
30									
35									

EVREN Northwest, Inc.

DRILL LOG	PROJECT		PROJECT NO.		BORING NO.
	P2ESA		1162-17001-02		B08
SITE		BEGUN	COMPLETED	HOLE SIZE	
16835 Lewis River Rd, Cougar, WA		5/2/17	5/2/17	2-inch	
COORDINATES		DEPTH GROUND WATER	DATE SL	STATIC LEVEL	FIRST WATER
DRILLER		CORE RECOVERY (%)		# SAMPLES	# CORE BOXES
Cascade Drilling					
DRILL MAKE AND MODEL		LOGGED BY:			DEPTH BOTTOM OF HOLE
		E. Chapman			20

DEPTH	STRATA ELEVATION/ DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE DATA				PID/OVM	REMARKS: NOTES ON WATER LEVELS, LOSSES, CAVING, CASING, DEPTH & DRILLING CONDITIONS.
				SAMPLE NO.	SAMPLE TYPE	CORE RECOVERY	MW Const./ Completion		
0			Asphalt						
			Fill materials; mostly sand & gravel; dense						
			SILT w/ sand (ML/SM); brown; very fine sand; moist; soft; no odor.	B08-5		35		0	
5			Gravelly SAND w/ gravel; reddish brown; dense; sl. moist; no odor				60		0
			SAND; reddish brown to grey; medium grained; loose; moist;						0
10			SAND; med grained; gray; dense; moist; no odors						0
			Sands and Gravels; gray, red, brown; dense; moist; fragments of sandstone			90		0	
15								0	
						80			
20			Boring terminated. Groundwater not encountered. Boring abandoned						
25									
30									
35									

APPENDIX C LABORATORY ANALYTICAL REPORT

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

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www.friedmanandbruya.com

May 15, 2017

Lynn Green, Project Manager
Evren Northwest, Inc.
PO Box 14488
Portland, OR 97293

Dear Mr Green:

Included are the results from the testing of material submitted on May 3, 2017 from the 1162-17001-02, F&BI 705047 project. There are 12 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Neil Woller, Paul Trone
ENW0515R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on May 3, 2017 by Friedman & Bruya, Inc. from the Evren Northwest 1162-17001-02, F&BI 705047 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Evren Northwest</u>
705047 -01	B01-5
705047 -02	B01-11
705047 -03	B01-13.5
705047 -04	B01-19
705047 -05	B02-10
705047 -06	B02-15
705047 -07	B03-6
705047 -08	B03-9
705047 -09	B03-15
705047 -10	B04-6
705047 -11	B05-ALT-10
705047 -12	B05-ALT-15
705047 -13	B06-10
705047 -14	B06-15
705047 -15	B07-5
705047 -16	B07-11
705047 -17	B08-5

A 8260C internal standard failed the acceptance criteria for sample B01-11 due to matrix interferences. The data were flagged accordingly. In addition, the m,p-xylene and o-xylene concentrations exceeded the calibration range of the instrument. The data were flagged accordingly.

All other quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 05/15/17
Date Received: 05/03/17
Project: 1162-17001-02, F&BI 705047
Date Extracted: 05/03/17
Date Analyzed: 05/03/17

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR GASOLINE, DIESEL AND HEAVY OIL BY NWTPH-HCID**

Results Reported on a Dry Weight Basis

Results Reported as Not Detected (ND) or Detected (D)

**THE DATA PROVIDED BELOW WAS PERFORMED PER THE GUIDELINES ESTABLISHED BY THE
WASHINGTON DEPARTMENT OF ECOLOGY AND WERE NOT DESIGNED TO PROVIDE INFORMATION
WITH REGARDS TO THE ACTUAL IDENTIFICATION OF ANY MATERIAL PRESENT**

<u>Sample ID</u> Laboratory ID	<u>Gasoline</u>	<u>Diesel</u>	<u>Heavy Oil</u>	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 53-144)
B01-5 705047-01	ND	ND	ND	107
B01-11 705047-02	D	ND	ND	116
B01-13.5 705047-03	ND	ND	ND	100
B02-10 705047-05	ND	ND	ND	101
B02-15 705047-06	ND	ND	ND	99
B03-6 705047-07	ND	ND	ND	101
B03-15 705047-09	ND	ND	ND	101
B04-6 705047-10	ND	ND	ND	112
B05-ALT-10 705047-11	ND	ND	ND	91
B05-ALT-15 705047-12	ND	ND	ND	106

ND - Material not detected at or above 20 mg/kg gas, 50 mg/kg diesel and 250 mg/kg heavy oil.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 05/15/17
Date Received: 05/03/17
Project: 1162-17001-02, F&BI 705047
Date Extracted: 05/03/17
Date Analyzed: 05/03/17

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR GASOLINE, DIESEL AND HEAVY OIL BY NWTPH-HCID**

Results Reported on a Dry Weight Basis
Results Reported as Not Detected (ND) or Detected (D)

**THE DATA PROVIDED BELOW WAS PERFORMED PER THE GUIDELINES ESTABLISHED BY THE
WASHINGTON DEPARTMENT OF ECOLOGY AND WERE NOT DESIGNED TO PROVIDE INFORMATION
WITH REGARDS TO THE ACTUAL IDENTIFICATION OF ANY MATERIAL PRESENT**

<u>Sample ID</u> Laboratory ID	<u>Gasoline</u>	<u>Diesel</u>	<u>Heavy Oil</u>	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 53-144)
B06-10 705047-13	ND	ND	ND	118
B06-15 705047-14	ND	ND	ND	97
B07-5 705047-15	ND	ND	ND	98
B08-5 705047-17	ND	ND	ND	96
Method Blank 07-955 MB	ND	ND	ND	103

ND - Material not detected at or above 20 mg/kg gas, 50 mg/kg diesel and 250 mg/kg heavy oil.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 05/15/17
Date Received: 05/03/17
Project: 1162-17001-02, F&BI 705047
Date Extracted: 05/05/17
Date Analyzed: 05/05/17

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
USING METHOD NWTPH-Gx**

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

<u>Sample ID</u> Laboratory ID	<u>Gasoline Range</u>	Surrogate (% Recovery) (Limit 50-150)
B01-11 705047-02 1/20	620	137
Method Blank 07-968 MB	<2	110

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C Direct Sparge

Client Sample ID:	B01-11	Client:	Evren Northwest
Date Received:	05/03/17	Project:	1162-17001-02, F&BI 705047
Date Extracted:	05/08/17	Lab ID:	705047-02
Date Analyzed:	05/08/17	Data File:	050832.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	114	50	150
Toluene-d8	109	50	150
4-Bromofluorobenzene	208 vo J	50	150

Compounds:	Concentration mg/kg (ppm)
Hexane	0.14
Methyl t-butyl ether (MTBE)	<0.005
1,2-Dichloroethane (EDC)	<0.005
Benzene	<0.003
Toluene	<0.005
1,2-Dibromoethane (EDB)	<0.005
Ethylbenzene	0.17
m,p-Xylene	0.85 ve
o-Xylene	0.25 ve
Naphthalene	0.022 J

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C Direct Sparge

Client Sample ID:	Method Blank	Client:	Evren Northwest
Date Received:	Not Applicable	Project:	1162-17001-02, F&BI 705047
Date Extracted:	05/08/17	Lab ID:	07-931 mb
Date Analyzed:	05/08/17	Data File:	050828.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	97	50	150
Toluene-d8	95	50	150
4-Bromofluorobenzene	97	50	150

Compounds:	Concentration mg/kg (ppm)
Hexane	<0.025
Methyl t-butyl ether (MTBE)	<0.005
1,2-Dichloroethane (EDC)	<0.005
Benzene	<0.003
Toluene	<0.005
1,2-Dibromoethane (EDB)	<0.005
Ethylbenzene	<0.005
m,p-Xylene	<0.01
o-Xylene	<0.005
Naphthalene	<0.005

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 6020A

Client ID:	B01-11	Client:	Evren Northwest
Date Received:	05/03/17	Project:	1162-17001-02, F&BI 705047
Date Extracted:	05/08/17	Lab ID:	705047-02
Date Analyzed:	05/09/17	Data File:	705047-02.043
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
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Lead	2.38
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FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 6020A

Client ID:	Method Blank	Client:	Evren Northwest
Date Received:	NA	Project:	1162-17001-02, F&BI 705047
Date Extracted:	05/08/17	Lab ID:	I7-248 mb
Date Analyzed:	05/08/17	Data File:	I7-248 mb.120
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
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Lead	<1
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FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 05/15/17

Date Received: 05/03/17

Project: 1162-17001-02, F&BI 705047

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES
FOR TPH AS GASOLINE
USING METHOD NWTPH-Gx**

Laboratory Code: 705115-01 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Gasoline	mg/kg (ppm)	<2	<2	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Gasoline	mg/kg (ppm)	20	95	71-131

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 05/15/17

Date Received: 05/03/17

Project: 1162-17001-02, F&BI 705047

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES
FOR VOLATILES BY EPA METHOD 8260C DIRECT SPARGE**

Laboratory Code: 705109-09 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet wt)	Duplicate Result (Wet wt)	RPD (Limit 20)
Hexane	mg/kg (ppm)	<0.025	<0.025	nm
Methyl t-butyl ether (MTBE)	mg/kg (ppm)	<0.005	<0.005	nm
1,2-Dichloroethane (EDC)	mg/kg (ppm)	<0.005	<0.005	nm
Benzene	mg/kg (ppm)	<0.003	<0.003	nm
Toluene	mg/kg (ppm)	<0.005	<0.005	nm
1,2-Dibromoethane (EDB)	mg/kg (ppm)	<0.005	<0.005	nm
Ethylbenzene	mg/kg (ppm)	<0.005	<0.005	nm
m,p-Xylene	mg/kg (ppm)	<0.01	<0.01	nm
o-Xylene	mg/kg (ppm)	<0.005	<0.005	nm
Naphthalene	mg/kg (ppm)	<0.005	<0.005	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Hexane	mg/kg (ppm)	0.05	90	91	70-130	1
Methyl t-butyl ether (MTBE)	mg/kg (ppm)	0.05	90	91	49-148	1
1,2-Dichloroethane (EDC)	mg/kg (ppm)	0.05	81	81	69-137	0
Benzene	mg/kg (ppm)	0.05	90	90	67-138	0
Toluene	mg/kg (ppm)	0.05	97	98	12-185	1
1,2-Dibromoethane (EDB)	mg/kg (ppm)	0.05	90	95	70-130	5
Ethylbenzene	mg/kg (ppm)	0.05	101	101	70-130	0
m,p-Xylene	mg/kg (ppm)	0.1	102	102	70-130	0
o-Xylene	mg/kg (ppm)	0.05	100	101	70-130	1
Naphthalene	mg/kg (ppm)	0.05	88	87	70-130	1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 05/15/17

Date Received: 05/03/17

Project: 1162-17001-02, F&BI 705047

**QUALITY ASSURANCE RESULTS
FOR THE ANALYSIS OF SOIL SAMPLES
FOR TOTAL METALS USING EPA METHOD 6020A**

Laboratory Code: 705108-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Lead	mg/kg (ppm)	50	1.37	81	77	75-125	5

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Lead	mg/kg (ppm)	50	101	80-120

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

- a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.
- c - The presence of the analyte may be due to carryover from previous sample injections.
- cf - The sample was centrifuged prior to analysis.
- d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.
- dv - Insufficient sample volume was available to achieve normal reporting limits.
- f - The sample was laboratory filtered prior to analysis.
- fb - The analyte was detected in the method blank.
- fc - The compound is a common laboratory and field contaminant.
- hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.
- hs - Headspace was present in the container used for analysis.
- ht - The analysis was performed outside the method or client-specified holding time requirement.
- ip - Recovery fell outside of control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.
- j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.
- J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.
- js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc - The presence of the analyte is likely due to laboratory contamination.
- L - The reported concentration was generated from a library search.
- nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.
- ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.
- vo - The value reported fell outside the control limits established for this analyte.
- x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

705047

SAMPLE CHAIN OF CUSTODY

ME 05/03/17

1 of 2

Send Report To Lyann Carter

Company EUREKA WA

Address PO Box 14488

City, State, ZIP Portland, OR 97223

Phone # 503 452-5821 Fax # _____

SAMPLERS (signature) Elaine Jones

PROJECT NAME/NO. 1162-17021-02

PO# 116217021

REMARKS

Page #

of

TURNAROUND TIME

Standard (2 Weeks)

RUSH

Rush charges authorized by _____

SAMPLE DISPOSAL

Dispose after 30 days

Return samples

Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED							Notes					
						TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS	NWTPH HCl		MICA VOCs	Lead			
B01-5	01	5/2/17	0855	S	1													
B01-11	02	5/2/17	0900	S	5		(X)											(X) - pellet
B01-13,5	03	5/2/17	0905	S	1													5/2/17
B01-19	04	5/2/17	0910	S	1													AK
B02-10	05	5/2/17	0925	S	1													
B02-15	06	5/2/17	0930	S	1													
B03-6	07	5/2/17	0940	S	1													
B03-9	08	5/2/17	0945	S	1													
B03-15	09	5/2/17	0950	S	1													
B04-6	10	5/2/17	1005	S	1													

Friedman & Bruya, Inc.
 3012 16th Avenue West
 Seattle, WA 98119-2029
 Ph. (206) 285-8282
 Fax (206) 283-5044
 FORMS(COCC)COC.DOC

Reinquisitioned by: _____	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Received by: <u>MM</u>	<u>MM</u>	<u>MM</u>	<u>MM</u>	<u>5/2/17</u>	<u>16:15</u>
Reinquisitioned by: _____	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Received by: _____	_____	_____	_____	<u>5/3/17</u>	<u>08:00</u>
Received by: _____	_____	_____	_____	_____	_____

705047

SAMPLE CHAIN OF CUSTODY

ME

05/03/17 2 of 2
200/CT

Send Report To Lynne Green

Company EVERETT WLS

Address Do Boye 14488

City, State, ZIP Portland, OR 97293

Phone # (503) 452-5561 Fax #

SAMPLERS (signature) [Signature]

PROJECT NAME/NO. 1162-17001-02

PO# 1162-17001

REMARKS

TURNAROUND TIME
 Standard (2 Weeks)
 RUSH
 Rush charges authorized by _____

SAMPLE DISPOSAL
 Dispose after 30 days
 Return samples
 Will call with instructions

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED						Notes	
						TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260	SVOCs by 8270	HFS		HClD
B05-MT-10	11	5/2/17	1100	S	1							X	
B05-MT-15	12		1105	S	1							X	
B06-10	13		1130	S	1							X	
B06-15	14		1135	S	1							X	
B07-5	15		1210	S	1							X	
B07-11	16		1230	S	1							X	
B08-5	17		1005	S	1							X	

Friedman & Bryga, Inc.
 3012 16th Avenue West
 Seattle, WA 98119-2029
 Ph. (206) 285-8282
 Fax (206) 283-5044
 FORMS/COC/COC.DOC

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
<u>[Signature]</u>	<u>Eric Chapman</u>	<u>BLU</u>	<u>5/2/17</u>	<u>1615</u>
<u>[Signature]</u>	<u>Wan Wan</u>	<u>FBI</u>	<u>5/3/17</u>	<u>0800</u>
Received by:				
Relinquished by:				
Received by:				

Samples received at 3 PC