

RISK-BASED CORRECTIVE ACTION DETERMINATION



**JIFFY LUBE #1011
2025 NE BROADWAY STREET
PORTLAND, MULTNOMAH COUNTY, OREGON**

Report Prepared for and Reliance Provided to:

**Lube Management Corp.
7430 Creek Road # 200
Sandy, UT 84093**

**Point Source Solutions Project No: OR161223-3B
April 7, 2017**

Field Work Conducted and Report
Prepared in General Accordance
with the following:

ASTM Standard Practice E1903

*Oregon State Board of Geologist
Examiners Professional Practices
Guideline (May 2014)*

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Point Source Solutions LLC (Point Source) is pleased to provide the results from the Risk-Based Corrective Action Determination prepared for 2025 NE Broadway Street, Portland, Oregon, 97232 ("Site"). This investigation was performed in accordance with Point Source's Proposal OR170201.6A as authorized by Lube Management Corporation on March 6, 2017.

The Property is improved with a 1,176 square-foot auto-lube center constructed in 1987. Multnomah County identifies the Property as tax lot 1N1E26DD12800 totaling 0.21 acres.

The Property occupies an area that is bound to the north by Crown Royal Apartments; to the east by NE 21st Avenue, beyond which is the Zeller Chapel of the Roses; to the south by NE Broadway Street, beyond which is a 7-Eleven store and the Banfield Pet Hospital; and to the west by Thai Pod (restaurant).

The Site is currently occupied by Jiffy Lube #1011.

1.0 PURPOSE

The purpose of this investigation is to:

- Assess onsite subsurface conditions to evaluate if there has been a release of hazardous substances; determine the nature and extent of the impacts to soil, soil vapor and groundwater, if any; and evaluate potential threats from these releases to the beneficial use of the Site.
- Develop a Conceptual Site Model (CSM).
- Complete a Beneficial Land and Water Use determination (BLWUD).
- Develop a list of Contaminants of Interest (COI) based upon the characteristics of the identified release.
- Compare Contaminants of Potential Concern (COPC) concentrations to the Oregon Department of Environmental Quality (ODEQ) Risk Based Concentrations (RBCs) for potentially complete exposure pathways.

This investigation was completed in general accordance with ASTM E1903-11, Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process. These methodologies are described as representing good commercial and customary practice for conducting a Phase II ESA of a property for the purpose of evaluating recognized environmental conditions.

The information provided in this report describes the work performed and provides documentation of the data and evaluation that constitutes the factual findings of the investigation.

2.0 BACKGROUND INFORMATION

Point Source performed a Phase I ESA (Point Source Project No. OR161223-3 dated January 12, 2017) on 2025 NE Broadway Street, Portland, Oregon, 97232 in general conformance with the scope and limitations of ASTM Practice E 1527-05. This report was prepared for Deck and Babs, LLC. Below is an excerpt from the Phase I ESA report.

This assessment revealed environmental concerns in connection with the Site.

- A service station occupied the Property from at least 1935 through 1985. According to permits obtained through the City of Portland Fire Prevention & Rescue, four USTs containing a total of 20,000-gallons of fuel were located on the Property. A permit issued to Oil Can Henry's in 1986 indicates that the tanks were removed. However, building plans (obtained through the City of Portland Building Department) for the current Property building constructed in 1987 indicate that the tanks were to be abandoned in place (filled with gravel). No reports or documentation associated with decommissioning these USTs were disclosed as a result of this assessment. The tanks and potential contamination associated with these tanks may be present in the subsurface environment at the Property.

3.0 SOILS, GEOLOGY & GROUNDWATER CHARACTERISTICS

The Site is situated in the Willamette Valley (Orr, Orr, Baldwin, 1992). The Willamette Valley is a structural depression with hills of moderate relief separating broad alluvial flats. It lies between the Cascade Range and the Coast Range and extends from the Portland Basin southward to a point near the city of Cottage Grove. The Willamette Valley consists of numerous terraces and reworked floodplains mostly of Pleistocene and recent age. Regional geology consists of a stratigraphic sequence of largely Quaternary sediments and flow deposits associated with the Willamette River and its tributaries, overlying older parent rock including Cascade volcanic rocks, and Columbia River Basalts. The Site is located at approximately 160 feet above mean sea level. No bedrock was observed in the vicinity of the Property. The estimated depth to bedrock at the Property is greater than 50 feet below the ground surface (bgs).

Site soils are mapped predominantly as Urban Land-Latourell complex. Urban land is soil that has been disturbed and modified by streets, buildings and other structures. Soils encountered during this excavation include clayey silt, silt and sand to a maximum explored depth of 39 feet bgs.

According to a well log search conducted on the Oregon Water Resources Department (OWRD) website, no significant shallow groundwater resources have been encountered in wells advanced in close proximity of the Property. Water was not encountered in borings up to 40 feet in depth advanced during this investigation. The water-bearing units within the area are comprised of alluvium.

Based on a review of the Portland, Oregon Quadrangle 7.5 minute series topographic map, the inferred groundwater flow at the site is to the west toward the Willamette River located approximately 1.1 miles west southwest at its closed point. According to the USEPA Ground Water Handbook, Vol.1 Ground Water and Contamination, September 1990, the water table typically conforms to surface topography.

4.0 SCOPE OF WORK

The purpose of the subsurface environmental investigation is to collect soil, soil vapor and groundwater samples on the Site to confirm the presence or absence of contaminants related to past use of the Site and support closure of the UST release with the ODEQ.

4.1 AREAS OF POTENTIAL CONCERN, PROPOSED BORINGS AND ANALYSIS

Based upon the past and current configuration and use of the Site, the following areas were identified for investigation. Boring locations are depicted on the attached Boring Location Diagram (Figure 4).

Area of Potential Concern	Borings
Former service station on Site from 1935 to 1985	SB1 and SB6 – SB16

Boring	Media	Analytical Methods	Detection Limit
SB1 and SB6 – SB16	Soil	NWTPH-Dx/Gx, EPA 8260 (VOCs) and EPA 7000 (Lead)	RBCs for Vapor Intrusion in a Residential Setting or Less
SS1	Sub-slab Vapor	EPA TO15 (Gx/Volatile Organic Compounds)	RBCs for Vapor Intrusion in an Occupational Setting or Less
SV1-SV2	Soil Vapor	EPA TO15 (Gx/Volatile Organic Compounds)	RBCs for Vapor Intrusion in a Residential Setting or Less

4.2 UTILITY LOCATING

Prior to initiating the field activities, Oregon law requires that, at least 48 hours prior to the initiation of any subsurface work (drilling, backhoe operation, etc.), a utility inspection be performed at the Site. This inspection consists of the marking of underground utility locations by authorized utility locating personnel. The utility inspection was performed prior to the drilling activities.

The ticket number for the utility inspection is 17037445.

4.3 HEALTH AND SAFETY PLAN

A site specific Safety Plan was read by field personnel. A toolbox safety meeting was conducted at the site prior to the commencement of the fieldwork. Topics included potential exposure to contaminants of interest, personal protective equipment (drilling and media contact), location of first aid kit, and location/directions to closest emergency medical facility.

4.4 GEOPHYSICAL INVESTIGATION

A Geophysical Survey of the Site was performed by Pacific Geophysics on February 27, 2017. No anomalies suspected of representing underground storage tanks were detected. A distinct disturbed zone of soil believed to represent a former tankhold was located on the southeast portion of the Site in the vicinity of the former service station.

A copy of the Geophysical Survey is presented in in Appendix IV.

5.0 SAMPLING METHODOLOGY and QA/QC

5.1 Soil Samples

Soil Borings SB1 and SB6 through SB16 were advanced Geoprobe macro tooling with an acetate liner, driven by a truck mounted probe. Soil samples were obtained continuously from the surface using a 4-foot-long, 2-inch diameter sample tool lined with an acetate sleeve. The sampling tool was driven in 4-foot intervals until the target depth was achieved.

Soils were field-screened using visual, sheen, and olfactory observations, and for the presence of volatile organic compounds (VOCs) using a photoionization detector (PID). Headspace vapor screening was conducted on representative samples placed in a sealed plastic bag. The tip of a PID was inserted into a hole in the bag, and the presence of VOCs was measured. Readings are collected in parts per million (ppm). Notes on visual appearance, odor, and PID readings were recorded on the field boring logs.

Soil samples were collected in 4-ounce glassware with Teflon-lined lids. Each sample was labeled for

identification and stored in an iced cooler. Soil cuttings generated during the advancement of the borings were visually inspected for discoloration, and monitored for odors.

5.2 Groundwater Samples

Groundwater was not encountered to a maximum explored depth of 40 feet below ground surface during this investigation.

5.3 Soil Gas Samples

The sub-slab soil gas probe (sample SS1), consisting of a pre-fabricated stainless steel screen and casing, was manually inserted into a 1-inch diameter hole drilled within the concrete building slab using a rotary hammer hand drill.

The soil gas probes (samples SV1 and SV2), consisting of a pre-fabricated stainless steel screen and casing (Geoprobe PRT Sampler), was driven to a depth of five feet below ground surface with direct push tooling.

Samples (SS1, SV1 and SV2) were collected in 1 liter sample canisters provided by Freidman & Bruya Environmental Chemists. The sample canister, Teflon tubing, vacuum gauges and flow rate orifice apparatus were connected in the sample string. Vacuum gauges and sample canister vacuum were checked before initiating sample collection. The air volume within the collection apparatus and Teflon tubing was purged prior to sample collection. A bentonite seal was applied to the point of ground penetration and at the exit of the Teflon tubing through the Geoprobe tool string. Paper towels saturated with 2-Propanol were placed over the bentonite seals and equipment fittings during sample collection as a leak check compound. The sampling trains were purged of a minimum of three dead volumes prior to sample collection. A clean pair of disposable nitrile gloves was worn during the collection of each sample.

All tooling was decontaminated in a water and detergent solution and rinsed in tap water between samples and boring locations. Samples were placed in laboratory provided containers. One transport blank was prepared.

Chain of Custody was maintained for all samples.

6.0 SUBSURFACE INVESTIGATION

6.1 Sampling

The subsurface investigation was conducted on February 28, 2017 and March 13-15, 2017. During the investigation, soil borings were advanced by Point Source Solutions as follows.

- Boring SB1 was completed to 20 feet bgs along the south property line fronting NE Broadway approximately 30 feet south southeast of the south edge of the former tankhold. A soil sample was collected at 20.0 feet bgs at this location. **No indications of contamination were noted in the continuous soil cores collected from this boring.**
- Boring SB6 was completed to 20 feet bgs along the north side of the former tankhold. A soil sample was collected at 20.0 feet bgs at this location. **No indications of contamination were noted in the continuous soil cores collected from this boring.**

- Boring SB6b was completed to 28 feet bgs along the north side of the former tankhold (next to SB6 for the purpose of collecting a deeper soil sample). A soil sample was collected at 28.0 feet bgs at this location. **No indications of contamination were noted in the continuous soil cores collected from this boring.**
- Boring SB7 was completed to 12 feet bgs along the east side of the former tankhold. A soil sample was collected at 12.0 feet bgs at this location. Refusal was met at 12.0 feet bgs in this boring. **No indications of contamination were noted in the continuous soil cores collected from this boring.**
- Boring SB8 was completed to 20 feet bgs along the south side of the former tankhold. A soil sample was collected at 20.0 feet bgs at this location. **No indications of contamination were noted in the continuous soil cores collected from this boring.**
- Boring SB9 was completed to 20 feet bgs along the west side of the former tankhold where the tankhold appears to extend beneath the existing structure on the Site. A soil sample was collected at 20.0 feet bgs at this location. **No indications of contamination were noted in the continuous soil cores collected from this boring.**
- Boring SB10 was completed to 28 feet bgs in the center west area of the former tankhold. Soil samples were collected at depths of 11.0 feet bgs, 18 feet bgs and 28.0 feet bgs at this location. **Soil staining was noted from 8-24 feet bgs in this soil boring. Petroleum odor was noted from 8-28 feet bgs in this boring.**
- Boring SB10b was completed to 39 feet bgs in the center west area of the former tankhold (next to SB10 for the purpose of collecting a deeper soil sample). Soil samples were collected at depths of 2.0 feet bgs and 39.0 feet bgs at this location. The sampling apparatus was advanced in a closed tip configuration from 4 feet bgs to 36 feet bgs. **Soil staining was not noted from 36-39 feet bgs in this soil boring. Petroleum odor was noted from 36-39 feet bgs in this boring although PID readings ranged from 350 ppm at 36.5 feet bgs to 35 ppm at 39 feet bgs.**
- Boring SB11 was completed to 28 feet bgs approximately 10 feet north of SB10 (approximately midway between SB10 and the north side of the former tankhold). Soil samples were collected at depths of 12.0 feet bgs and 28.0 feet bgs at this location. **Soil staining and petroleum odor was noted from 9.5-28 feet bgs in this boring.**
- Boring SB12 was completed to 16 feet bgs in the center east area of the former tankhold. A soil sample was collected at 16.0 feet bgs at this location. **Soil staining and petroleum odor was noted from 8-16 feet bgs in this boring.**
- Boring SB13 was completed to 24 feet bgs approximately 10 feet east of SB12 (approximately midway between SB12 and the east side of the former tankhold). A soil sample was collected at 24.0 feet bgs at this location. **Soil staining and petroleum odor was noted from 12-24 feet bgs in this boring.**
- Boring SB14 was completed to 16 feet bgs approximately 10 feet south of SB10 (approximately midway between SB10 and the south side of the former tankhold). A soil sample was collected at 13.0 feet bgs at this location. **Soil staining and petroleum odor was noted from 13-16 feet bgs in this boring.**

Fill and native soil consisting of clayey silt, silt, sand and occasional gravel was encountered in these borings.

Groundwater was not encountered at the maximum explored depth of 39 feet below ground surface in these borings.

Sub-slab vapor sampling and soil vapor sampling were conducted on March 10, 2017.

- Sub-Slab 1 was collected in the sub-grade service bay of the shop building.
- Soil Vapor 1 and Soil Vapor 2 were collected at the north Property line abutting the Crown Royal Apartments.

The sample locations are illustrated on Figure 4. Boring logs are presented in Appendix I.

6.2 Laboratory Analytical Results

Soil samples collected on February 28, 2017 and March 13-15, 2017 were transported under chain of custody to Wy'East Environmental Sciences, Inc. (Wy'East) for analysis.

- Sixteen soil samples were analyzed by NWTPH-Gx for gasoline range petroleum hydrocarbons. The soil sample with the highest concentration of Gx was further analyzed by EPA Method 8260B for volatile organic compounds and EPA Method 7000 for lead. Eight of these soil samples were analyzed by NWTPH-Dx for diesel range petroleum hydrocarbons.

Sub-slab and Soil vapor samples collected on March 10, 2017 were transported under chain of custody to Friedman & Bruya Environmental Chemists for analysis.

- Three soil vapor samples were analyzed by EPA Method TO-15. EPA Method TO-15 is used for the analysis of volatile organic compounds in air using a 1-liter Summa canister.

The sample analytical results are summarized in Tables 1 and 2 below.

The laboratory analytical reports and chain-of-custody forms are included as Appendix II.

TABLE 1- SOIL SAMPLES					
LABORATORY ANALYTICAL RESULTS – NWTPH-GX/DX/ VOCS/LEAD (MG/KG)					
SAMPLE	DEPTH	DATE	NWTPH - GX/DX/HO	VOCS EPA 8260	Lead EPA 7000
SB1-S1	20.0'	02/28/17	Gas – None Detected Diesel – None Detected Oil – None Detected	Not Analyzed	Not Analyzed
SB6-S1	20.0'	02/28/17	Gas – None Detected Diesel – None Detected Oil – None Detected	Not Analyzed	Not Analyzed
SB6b-S1	28.0'	03/13/17	Gas – None Detected	Not Analyzed	Not Analyzed
SB7-S1	12.0'	02/28/17	Gas – None Detected Diesel – None Detected Oil – None Detected	Not Analyzed	Not Analyzed
SB8-S1	20.0'	02/28/17	Gas – None Detected Diesel – None Detected	Not Analyzed	Not Analyzed

TABLE 1- SOIL SAMPLES					
LABORATORY ANALYTICAL RESULTS – NWTPH-GX/DX/ VOCS/LEAD (MG/KG)					
SAMPLE	DEPTH	DATE	NWTPH - GX/DX/HO	VOCS EPA 8260	Lead EPA 7000
			Oil – None Detected		
SB9-S1	20.0'	02/28/17	Gas – None Detected Diesel – None Detected Oil – None Detected	Not Analyzed	Not Analyzed
SB10-S1	11.0'	02/28/17	Gas – 19,300 Diesel – None Detected Oil – None Detected	Ethylbenzene – 65.1 Naphthalene – 127 Styrene – 0.752 Toluene – 0.651 124-TMB – 371 135-TMB – 189 Xylenes – 470	Not Analyzed
SB10-S2	18.0'	02/28/17	Gas – 4,220 Diesel – None Detected Oil – None Detected	Not Analyzed	Not Analyzed
SB10-S3	28.0'	02/28/17	Gas – 8,490 Diesel – None Detected Oil – None Detected	Not Analyzed	Not Analyzed
SB10b-S1	2.0'	03/10/17	GX – 132	Not Analyzed	Not Analyzed
SB10b-S2	39.0'	03/10/17	Gas – None Detected	Not Analyzed	Not Analyzed
SB11-S1	12.0'	03/13/17	Gas – 22,600	Not Analyzed	Not Analyzed
SB11-S2	28.0'	03/13/17	Gas – None Detected	Not Analyzed	Not Analyzed
SB12-S1	16.0'	03/13/17	Gas – 45,600	Ethylbenzene – 1,190 Naphthalene – 151 Toluene – 14.5 124-TMB – 7,830 135-TMB – 1,360 Xylenes – 8,180	Lead – 56
SB13-S1	24.0'	03/13/17	Gas – 37	Not Analyzed	Not Analyzed
SB14-S1	13.0'	03/13/17	Gas – 21,300	Not Analyzed	Not Analyzed

Table 1 Notes:

Concentrations are only presented for regulated VOCs. Various VOCs were detected in these samples without corresponding soil vapor RBCs.

TABLE 2- SOIL VAPOR SAMPLES					
LABORATORY ANALYTICAL RESULTS –VOCS/GAS (C4-C12 HYDROCARBONS) (UG/M ³)					
Sample	Depth	Date	Location	VOCS BY EPA TO-15	Gasoline
Sub-slab 1 (SS1)	0.5'	03/10/17	Shop Service Pit	Benzene – 4.0 Ethylbenzene – 3.1 Tetrachloroethene – 300 Toluene – 23.0 Total Xylenes – 15.4	None Detected
Soil Vapor 1 (SV1)	5.0'	03/10/17	North Property Line	Tetrachloroethene – 15 Total Xylenes – 6.9	None Detected
Soil Vapor 2 (SV2)	5.0'	03/10/17	North Property Line	Tetrachloroethene – 15 Toluene – 2.2	None Detected

Table 3 Notes:

Concentrations are only presented for regulated VOCs. Various VOCs were detected in these samples without corresponding soil vapor RBCs.

Concentrations of 2-propanol (highest 1,200 ug/m³) used as a leak detector gas are not indicative of significant sample breakthrough.

6.3 Quality Assurance/Quality Control Review

Laboratory QA/QC measures were performed through data validation of available analytical data generated as part of these sampling events. Data validation considered the following:

- Method Detection and/or Reporting Limits
- Laboratory Matrix Blanks
- Sample Holding Times
- Surrogate and Matrix Spike Recoveries, and
- Laboratory Duplicate Analysis Results

Wy'East did not report any qualifiers, which would indicate problems with the soil sample results. According to the lab reports, all analyses were performed with the appropriate Batch QC (including Sample Duplicates, Matrix Spikes and/or Matrix Spike Duplicates) in order to meet or exceed method and regulatory requirements. Exceptions are qualified in the analytical report. In cases where there is insufficient sample material provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) is analyzed to demonstrate accuracy and precision of the extraction and analysis.

Friedman & Bruya reported the following data qualifiers for the submitted soil vapor samples.

- The calibration results for acrylonitrile, pentane, cyclopentane and vinyl acetate in samples SS1, SV1 and SV2 were outside of acceptance criteria. The reported values are estimates.
- The 2-propanol response in sample SV2 exceeded the valid instrument calibration range. The reported value is an estimate.

7.0 NATURE AND EXTENT OF CONTAMINATION

7.1 Primary Source(s) of Contamination

The primary sources of contamination include the following.

- A release of gasoline to soil from former underground storage tanks located east of the current Site building. A service station occupied the Site from at least 1935 through 1985.

7.1.1 Soil

Gasoline-range petroleum hydrocarbons; various VOCs including ethylbenzene, naphthalene, styrene, toluene, 124 TMB, 135 TMB, total xylenes and MTBE; and lead were detected at maximum concentrations in the soil samples (10-16 feet bgs) collected in SB10, SB11 and SB12 near the center of the former tankhold. Samples collected from these borings along the perimeter of the tank hold did not contain detectable levels of these contaminants. Low levels of gasoline-range petroleum hydrocarbons

(132 mg/kg) are present in shallow (0-3 feet bgs) soils in SB10b. This area likely is the location of pump islands associated with the storage tanks decommissioned in 1985.

Point Source estimates the quantity of gasoline-range petroleum hydrocarbon impacted soil present in this area to be between 600 and 700 cubic yards based on an average thickness 20 foot lens of contaminated material spread over an aerial extent of 900 square feet.

7.1.2 Groundwater

Groundwater was not encountered to a depth of 40 feet below ground surface.

7.1.3 Soil Vapor

Various VOCs including benzene, ethylbenzene, tetrachloroethene, toluene and total xylenes were detected in the sub-slab vapor sample collected in the shop.

Various VOCs including tetrachloroethene, toluene and total xylenes were detected in the two soil vapor samples collected on the north property line.

7.2 Contaminants of Interest/Contaminants of Potential Concern

To identify compounds detected in site soils and groundwater that are most likely to be of concern to human health, detected concentrations of these contaminants were compared to a series of risk-based screening criteria that cover the range of potential human activities that may be practiced on the Property currently or in the future.

Compounds with detected concentrations were identified as being COIs. It should be noted that the identification of COIs does not indicate that an unacceptable risk or that a threat exists. Also, COI identification does not necessarily indicate that remediation of a specific environmental media is required. Screening criteria are purposely conservative so chemicals that may contribute to site risk can be further evaluated. The COIs for the Property include petroleum hydrocarbons (gas and oil), metals, VOCs, PAHs and PCBs detected in soil, sub-slab vapor and groundwater samples.

CONTAMINANTS OF INTEREST				
Contaminant	Soil Max Concentration mg/kg	Depth	Groundwater Max Concentration ug/L	Soil Vapor Max Concentration ug/m3
TPH-GX	45,600	16.0'	NA	Not Detected
Benzene	Not Detected		NA	4.0
Ethylbenzene	1,190	16.0'	NA	3.1
Naphthalene	151	16.0'	NA	Not Detected
Styrene	0.752	11.0'	NA	Not Detected
Tetrachloroethene	Not Detected		NA	300
Toluene	14.5	16.0'	NA	23.0
124 TMB	7,830	16.0'		Not Detected
135 TMB	1,360	16.0'		Not Detected
Total Xylenes	8,180	16.0'	NA	15.4
Lead	56	16.0'	NA	NA

COIs that have concentrations less than their RBCs can be screened out. Constituents that remain after the screening are COPCs.

The COPCs have been carried forward for the risk screening discussed below.

8.0 BENEFICIAL LAND AND WATER USE DETERMINATION

The purpose of the BLWUD is to collect and document information regarding the current and reasonably likely future beneficial uses of land and water in the locality of the facility (LOF). Beneficial use determinations provide the basis for the development of exposure scenarios discussed later in this report. The BLWUD was completed in accordance with the ODEQ's Guidance for Conducting Beneficial Water Use Determinations at Environmental Cleanup Sites (ODEQ, 1998) and Guidance for Consideration of Land Use (ODEQ, 1998).

Groundwater was not encountered in borings advanced by Point Source and refusal on the Site was met prior to providing evidence of adequate separation between documented contamination of soil and groundwater therefore a Beneficial Use of Groundwater evaluation was conducted.

Based upon a review of well logs in Section 26, depth to first water at the Site is estimated to be in excess of 50 feet below ground surface.

- M125396 located at 1624 NE Hancock Street (1,026 feet to the NE) indicates water was not encountered to a depth of 75 feet below ground surface.
- M92788 located at 1421 NE Halsey Street (2,138 feet to the ESE) indicates water was not encountered to a depth of 50 feet below ground surface.

8.1 Locality of Facility

The LOF is defined by ODEQ as any point where human or ecological receptors may reasonably come into contact with site-related contaminants. Point Source assumes that the LOF extends to the Site boundaries.

8.2 Summary of Water Use

The apartment building to the north and surrounding businesses to the east, south and west are all provided water by the Portland Water Bureau. According to the Portland Water Bureau, the main water supply for the district is the Bull Run Watershed. Drinking water is stored in two reservoirs with up to 9.9 million gallons of usable water in storage. Based on our review of the available data information from the Portland Water Bureau, the Property and immediately surrounding areas are connected to the municipal water supply system.

The Property (TL 1N1E26DD12800) is located in the SE ¼ of the SE ¼ of Section 26, T.1N, R.1E. All well log records available from the Oregon Water Resources Department (OWRD) for Sections 26 and 35 of T.1N, R.1E were reviewed.

Well ID	Owner	Address	Distance (FT)	Use	H2O
SECTION 35					
MULT1086	Lloyd Corporation	720 NE 12 th Av	3,410'	Industrial	121'
MULT1087	Jantzen, Inc.	1939 NE Glisan St	3,430'	Other	123'

Well ID	Owner	Address	Distance (FT)	Use	H2O
MULT1088	Tonkin Motor Company	Unknown	Unknown	Other	42'
MULT1090	Sheraton Hotel Corporation	720 NE 12 th Av	3,410'	Industrial	121'
MULT1091	Lloyd Corporation	Unknown	Unknown	Irrigation	30'
MULT1092	Sheraton Hotel Corporation	720 NE 12 th Av	3,410'	Industrial	121'
MULT1093	PPS - Benson High School	546 NE 12th Ave	3,440'	Cathodic	Unknown
MULT82884	Cavanaugh and Cavanaugh	1111 E. Burnside St	5,170'	Thermal/Injection	96'
MULT83130	Cavanaugh and Cavanaugh	1111 E. Burnside St	5,170'	Thermal	96'
MULT86581	Burnside Rocket	1111 E. Burnside St	5,170'	Thermal	Unknown
MULT86582	Burnside Rocket	1111 E. Burnside St	5,170'	Domestic/Thermal	Unknown
MULT105401	John Rowe	217 SE 14th Ave	5,500'	Domestic/Abandon	Unknown
MULT116498	P7 Jantzen LLC	1939 NE Glisan St	3,430'	Industrial/Abadon	116'
SECTION 26					
No water well logs are filed WITH OWRD for this section.					

Research of well logs filed with the OWRD revealed no drinking water supply wells within 1000 feet of the Property.

The closest well identified as a water well was installed in December 1957 at 720 NE 12th Avenue, Portland for Sheraton Hotel Corporation to a depth of 272 feet. The static water level was logged at 121 feet. This well is located approximately 3,410 feet southeast of the Site. Google Maps indicates that the property at this address is no longer present. Structures in the area include a parking lot, and roadway.

Copies of the well logs are included in Appendix III.

8.3 Summary of Land Use

The current zoning of the Site is Storefront Commercial (CS). CS zoning allows for a full range of retail, service and business uses with a local and regional market area. Industrial uses are allowed but are limited in size to avoid adverse effects different in kind or amount than commercial uses and to ensure that they do not dominate the character of the commercial area. Based on the BLWUD, development of the Site for commercial use (current use) is allowed.

With the exception of the north adjoining property the remaining adjoining properties are zoned CS.

The east adjoining property is zoned R1-Medium Density Residential. This property is currently developed with the Crown Royal Apartments.

9.0 CONCEPTUAL SITE MODEL

A CSM defines the potentially complete exposure pathways through which human or ecological receptors may be exposed to site contaminants under current or anticipated future land use conditions. A discussion of Site geology and hydrogeology, potential contaminant sources, and the nature and

extent of contamination are presented above. An evaluation of current and reasonably likely future receptor-exposure pathway analysis is presented below.

A Conceptual Site Model was developed for the Site and is included as Figure 5 of this report.

The Summary of the Conceptual Site Model, which includes the reasoning for accepting or rejecting exposure scenarios, is included as Figure 6.

9.1 Potential Human Receptors

Potential receptors are those individuals who might be likely exposed to the COIs under current and reasonably likely future land-use conditions. Current land use at the site and surrounding areas is zoned C3 and C3-MR1 which allows for commercial (north, east and south) and medium density residential (west) uses. Future development is expected to be for commercial/retail purposes. Current and potential human receptors that have been identified in the risk-based screening include the following:

- Adults in the occupational scenario (current Property use);
- Adults in the construction/excavation worker scenario;
- Residential occupants of the north adjoining property; and,
- Future residential occupants on and off site.

9.1.1 Exposure Pathways for Soil

The following summarizes the potential and/or complete exposure pathways for soil.

- Soil Ingestion, Dermal Contact, and Inhalation – These exposure pathways are considered potentially complete for future construction and excavation workers only. Underground utilities may be modified in the future within the LOF making it possible that future excavation and construction workers could be exposed to Site contamination during utility maintenance and construction activities.
- Volatilization to Outdoor Air – This pathway is considered potentially complete for current on-site occupational receptors, current adjoining residential receptors, and future on-site and adjoining residential/urban residential receptors.
- Vapor Intrusion into Buildings – This pathway is considered potentially complete for current on-site occupational receptors, current adjoining residential receptors, and future on-site and adjoining residential/urban residential receptors.
- Leaching to Groundwater – This pathway considers soil leaching to groundwater used for tap water. Based upon the results of the Beneficial Water Use Survey, groundwater in the vicinity of the site is not used as a drinking water source.

9.1.2 Exposure Pathways for Groundwater

The following summarizes the potential exposure pathways for groundwater.

- Ingestion and Inhalation from Tap Water – This exposure pathway is considered incomplete because drinking water wells are not located in or near the LOF and the Site and surrounding area

receives drinking water from the Bull Run watershed via the City of Portland.

9.1.3 Exposure Pathways for Soil Vapor

- None of the detected concentrations in soil vapor samples exceed any of their respective RBCs.

9.2 Potential Ecological Receptors

Ecological receptors on the Property are not anticipated since there is no ecological habitat present within the assumed LOF.

10.0 RISK SCREENING

The COPCs for the Site include gasoline-range petroleum hydrocarbons, ethylbenzene, xylenes, naphthalene, 124-TMB, 135 TMB, and lead. Analytical results were compared to ODEQ RBCs (November 2015) for the applicable exposure pathways discussed above.

A summary of COPCs that exceed applicable RBCs is presented below.

CONTAMINANTS OF POTENTIAL CONCERN (COPCs)			
COPC	Medium	Pathway	Receptor
TPH-Gx	Soil	Soil Ingestion, Dermal Contact and Inhalation	All current and future on-site receptors except for Excavation Workers
		Vapor Intrusion into Buildings	Future on site residential/urban residential receptors Current adjoining residential receptors
		Volatilization to Outdoor Air	Future on site residential/urban residential receptors Current adjoining residential receptors
		Leaching to Groundwater	All current and future receptors
Ethylbenzene	Soil	Soil Ingestion, Dermal Contact and Inhalation	Current on site occupational and future residential/urban residential receptors
		Vapor Intrusion into Buildings	Current on site occupational and future residential/urban residential receptors Current adjoining residential receptors
		Volatilization to Outdoor Air	Current on site occupational and future residential/urban residential receptors Current adjoining residential receptors
		Leaching to Groundwater	All current and future receptors
Xylenes	Soil	Soil Ingestion, Dermal Contact and Inhalation	Future on site residential/urban residential receptors
		Vapor Intrusion into Buildings	Future on site residential/urban residential receptors Current adjoining residential receptors
		Leaching to Groundwater	All current and future receptors
Naphthalene	Soil	Soil Ingestion, Dermal Contact and Inhalation	Current on site occupational receptors and Future residential/urban residential receptors
		Vapor Intrusion into Buildings	Current on site occupational and future residential/urban residential receptors

CONTAMINANTS OF POTENTIAL CONCERN (COPCs)			
COPC	Medium	Pathway	Receptor
			Current adjoining residential receptors
		Volatilization to Outdoor Air	Current on site occupational and future residential/urban residential receptors Current adjoining residential receptors
		Leaching to Groundwater	All current and future receptors
124-TMB	Soil	Soil Ingestion, Dermal Contact and Inhalation	All current and future on site receptors except for Excavation Workers
		Vapor Intrusion into Buildings	Current on site occupational and future residential/urban residential receptors Current adjoining residential receptors
		Volatilization to Outdoor Air	Current on site occupational and future residential/urban residential receptors Current adjoining residential receptors
		Leaching to Groundwater	All current and future receptors
135-TMB	Soil	Soil Ingestion, Dermal Contact and Inhalation	Future on site residential receptors
		Leaching to Groundwater	All current and future receptors
Lead	Soil	Leaching to Groundwater	All current and future receptors

10.1 Soil

COPCs detected in soil exceed the following RBCs.

- TPH-Gx in soil levels (highest 45,600 mg/kg) exceed the Soil Ingestion, Dermal Contact and Inhalation RBCs for residential and urban residential, occupational, and construction worker receptors.

This pathway is considered incomplete because impacted soils are greater than 3 feet below ground surface and are therefore not accessible to these receptors.

- TPH-Gx in soil levels (highest 45,600 mg/kg) exceed the Vapor Intrusion into Buildings RBCs and the Volatilization to outdoor Air RBCs for residential, urban residential, and occupational receptors.

These pathways are considered complete but have been eliminated based upon the results of the soil vapor sampling.

- TPH-Gx in soil levels (highest 45,600 mg/kg) exceed Leaching to Groundwater RBCs for residential, urban residential and occupational receptors.

This pathway has been eliminated based upon the results of the BLWD and because the impacted soil does not extend within 10 feet of the expected seasonally high water table.

- Ethylbenzene in soil levels (highest 1,190 mg/kg) exceed the Soil Ingestion, Dermal Contact and Inhalation RBCs for residential, urban residential, and occupational receptors.

This pathway is considered incomplete because impacted soils are greater than 3 feet below

ground surface and are therefore not accessible to these receptors.

- Ethylbenzene in soil levels (highest 1190 mg/kg) exceed the Vapor Intrusion into Buildings RBCs and the Volatilization to outdoor Air RBCs for residential, urban residential, and occupational receptors.

These pathways are considered complete but have been eliminated based upon the results of the soil vapor sampling.

- Ethylbenzene in soil levels (highest 1190 mg/kg) exceed Leaching to Groundwater RBCs for residential, urban residential and occupational receptors.

This pathway has been eliminated based upon the results of the BLWD and because the impacted soil does not extend within 10 feet of the expected seasonally high water table

- Xylenes in soil levels (highest 1,190 mg/kg) exceed the Soil Ingestion, Dermal Contact and Inhalation RBCs for residential and urban residential receptors.

This pathway is considered incomplete because impacted soils are greater than 3 feet below ground surface and are therefore not accessible to these receptors.

- Xylenes in soil levels (highest 1,190 mg/kg) exceed the Vapor Intrusion into Buildings RBCs for residential and urban residential receptors.

These pathways are considered complete but have been eliminated based upon the results of the soil vapor sampling.

- Xylenes in soil levels (highest 1,190 mg/kg) exceed Leaching to Groundwater RBCs for residential, urban residential and occupational receptors.

This pathway has been eliminated based upon the results of the BLWD and because the impacted soil does not extend within 10 feet of the expected seasonally high water table

- Naphthalene in soil levels (highest 151 mg/kg) exceed the Soil Ingestion, Dermal Contact and Inhalation RBCs for residential, urban residential, and occupational receptors.

This pathway is considered incomplete because impacted soils are greater than 3 feet below ground surface and are therefore not accessible to these receptors.

- Naphthalene in soil levels (highest 151 mg/kg) exceed the Vapor Intrusion into Buildings RBCs and the Volatilization to outdoor Air RBCs for residential, urban residential, and occupational receptors.

These pathways are considered complete but have been eliminated based upon the results of the soil vapor sampling.

- Naphthalene in soil levels (highest 151 mg/kg) exceed Leaching to Groundwater RBCs for residential, urban residential and occupational receptors.

This pathway has been eliminated based upon the results of the BLWD and because the impacted soil does not extend within 10 feet of the expected seasonally high water table.

- 1,2,4-TMB in soil levels (highest 7,830 mg/kg) exceed the Soil Ingestion, Dermal Contact and Inhalation RBCs for residential and urban residential, occupational, and construction worker

receptors.

This pathway is considered incomplete because impacted soils are greater than 3 feet below ground surface and are therefore not accessible to these receptors.

- 1,2,4-TMB in soil levels (highest 7,830 mg/kg) exceed the Vapor Intrusion into Buildings RBCs and the Volatilization to outdoor Air RBCs for residential, urban residential, and occupational receptors.

These pathways are considered complete but have been eliminated based upon the results of the soil vapor sampling.

- 1,2,4-TMB in soil levels (highest 7,830 mg/kg) exceed Leaching to Groundwater RBCs for residential, urban residential and occupational receptors.

This pathway has been eliminated based upon the results of the BLWD and because the impacted soil does not extend within 10 feet of the expected seasonally high water table.

- 1,3,5-TMB in soil levels (highest 1,360 mg/kg) exceed the Soil Ingestion, Dermal Contact and Inhalation RBCs for residential receptors.

This pathway is considered incomplete because impacted soils are greater than 3 feet below ground surface and are therefore not accessible to these receptors.

- Lead in soil levels (highest 56 mg/kg) exceed Leaching to Groundwater RBCs for residential, urban residential and occupational receptors.

This pathway has been eliminated based upon the results of the BLWD and because the impacted soil does not extend within 10 feet of the expected seasonally high water table.

10.2 Groundwater

Groundwater was not encountered to a depth of 40 feet below ground surface. Based on the findings of the BLWUD, the use of groundwater at the Site for drinking water purposes is not expected. Based upon well logs in the area, depth to first water at the Site is estimated to be in excess of 50 feet below ground surface.

With the removal of the Ingestion and Inhalation from Tapwater pathway, TPH-Gx and VOCs potentially present in groundwater do not exceed applicable RBCs.

10.3 Soil Vapor

No COPCs were identified.

11.0 FINDINGS

The investigation, field screening of samples, and laboratory analytical results indicated the following:

- Although gasoline-range hydrocarbons were detected in SB10b at less than 3 feet bgs, the concentration of Gx at that depth (132 mg/kg) does not exceed soil ingestion RBC for any receptor. Field screening of soil in the remaining borings did not indicate the presence of shallow contaminated soil. This area likely is the location of pump islands associated with the storage tanks decommissioned from the southeast portion of the Site in 1985.

- Gasoline-range petroleum hydrocarbons as well as various VOCs were detected in soil samples collected in SB10, SB11, SB12, SB13 and SB14 which represent locations within the former tankhold. Samples collected from borings advanced along the perimeter of the former tankhold not contain detectible levels of these contaminants. Point Source estimates the quantity of gasoline-range petroleum hydrocarbon impacted soil present in this area to be between 600 and 700 cubic yards based on an average thickness 20 foot lens of contaminated material spread over an aerial extent of 900 square feet.
- Various VOCs were detected in the sub-slab vapor sample collected in the shop at levels below soil vapor RBCs for any receptor.
- Various VOCs were detected in the soil vapor samples collected on the north property line at levels below soil vapor RBCs for any receptor.

12.0 CONCLUSIONS

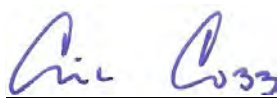
Based on the BLWUD and the CSM, and upon the soil and soil vapor sampling results; none of the COPCs exceed the RBCs for applicable exposure scenarios.

No further corrective action is recommended.

This report should be submitted to the Oregon Department of Environmental Quality with a request for closure.

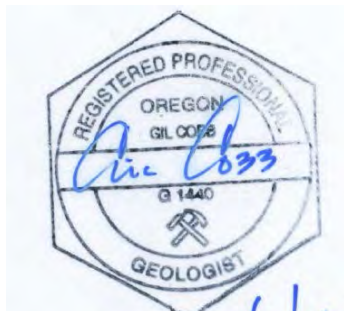
This report is intended for the exclusive use of Lube Management Corporation or entities specified by Lube Management Corporation. This report and findings contained herein shall not, in whole or in part, be disseminated or conveyed to any other party, nor relied upon by any other party, in whole or in part without prior written consent of Point Source.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.



Prepared by:

Gil Cobb, Registered Geologist (Oregon #G1440)



Expires 12/31/2017



Reviewed By:

Jeff Jackman, Environmental Professional

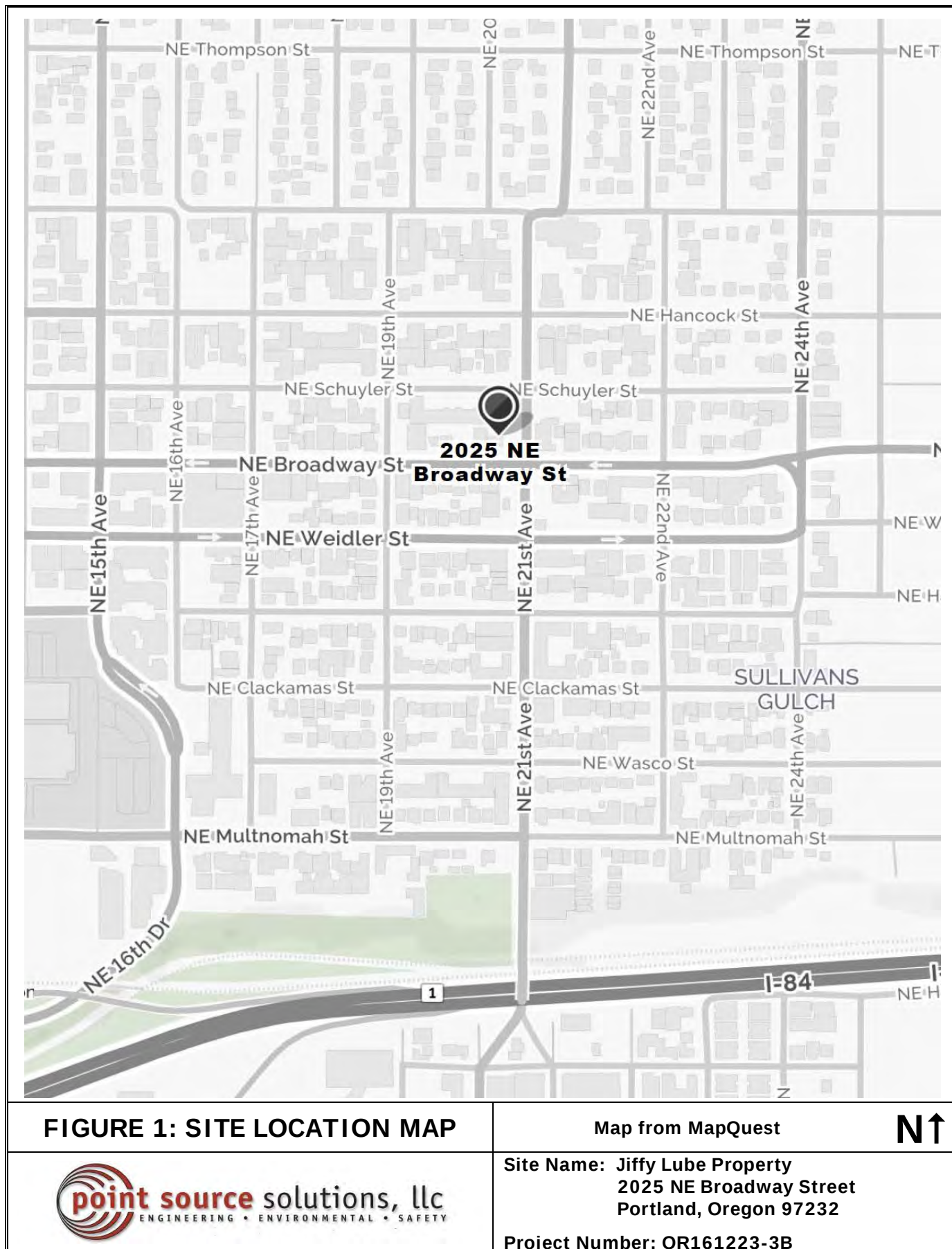
Point Source Solutions, LLC
10445 SW Canyon Road, Suite 115
Beaverton, Oregon 97005

Phone: 503.236.5885

Fax: 503.224.0449

www.pointsourcesolutions.com

FIGURES



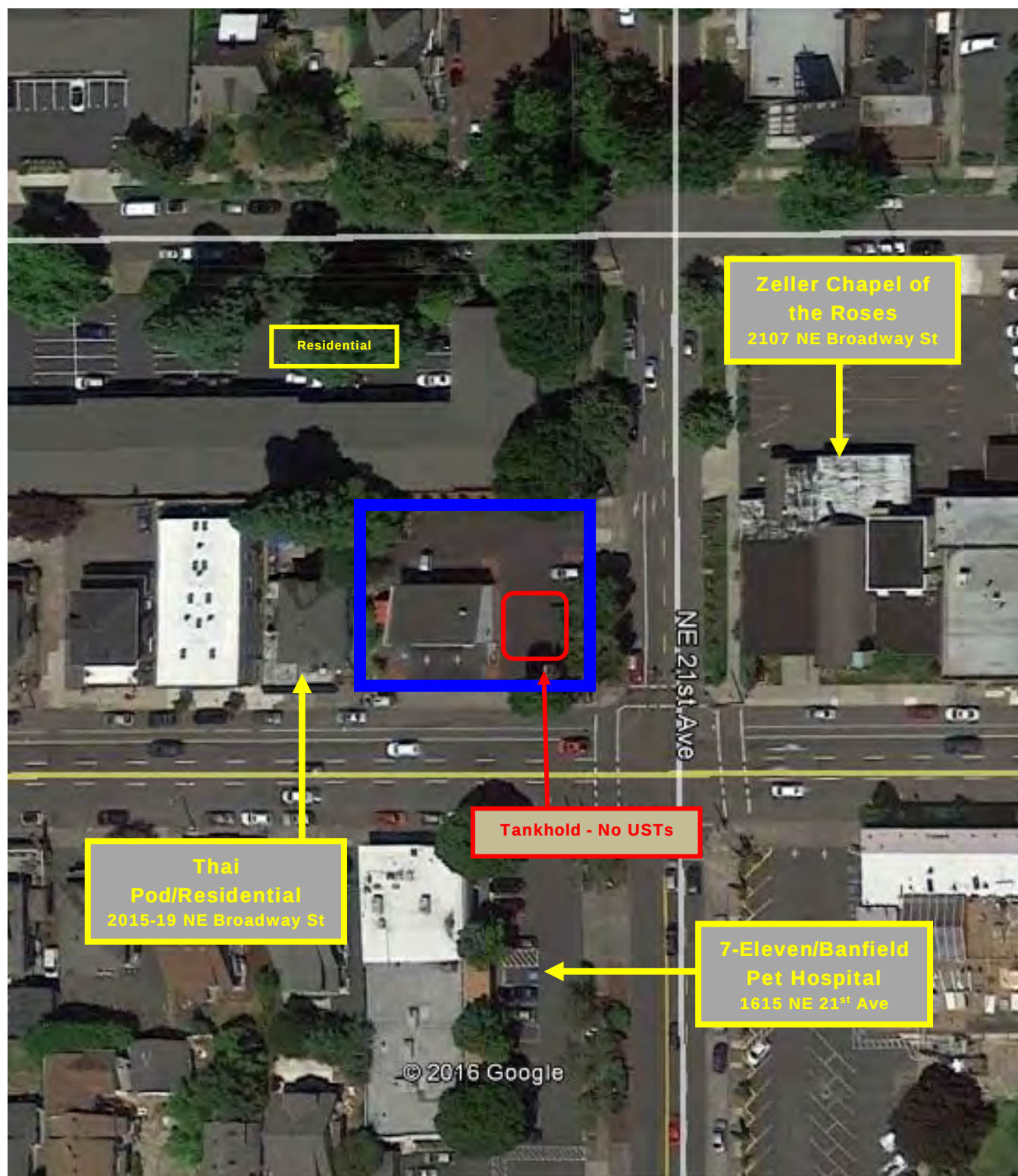


FIGURE 2: SITE PLAN

From Google Earth 2016

N↑



Site Name: Jiffy Lube Property
2025 NE Broadway Street
Portland, Oregon 97232

Project Number: OR161223-3B

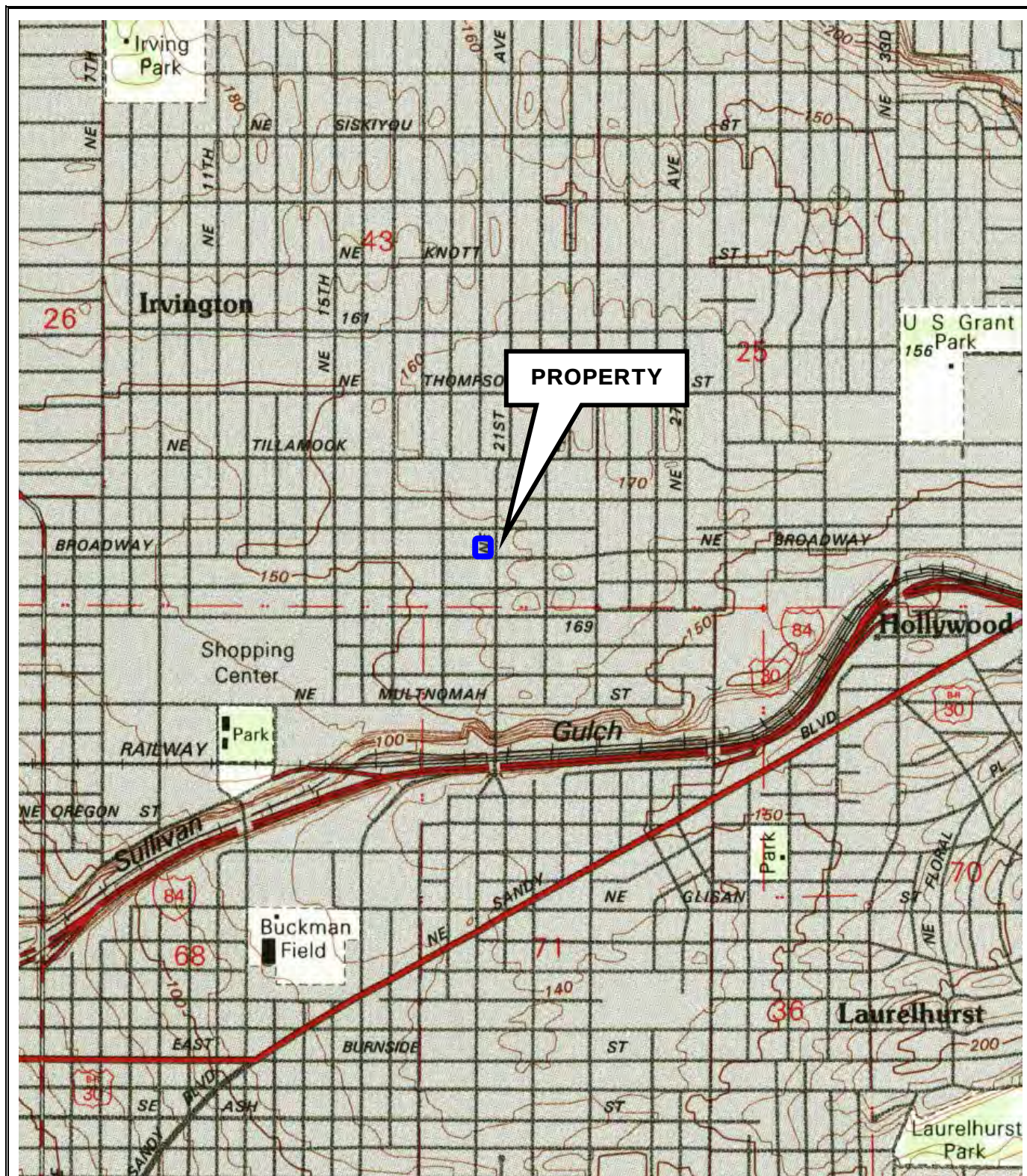


FIGURE 3: TOPOGRAPHIC MAP

DRAWING NOT TO SCALE

Source: USGS 7.5 Minute Topographic Map
Portland, OR Quadrangle 1990

N↑



Site Name: Jiffy Lube Property
2025 NE Broadway Street
Portland, Oregon 97232

Project Number: OR161223-3B

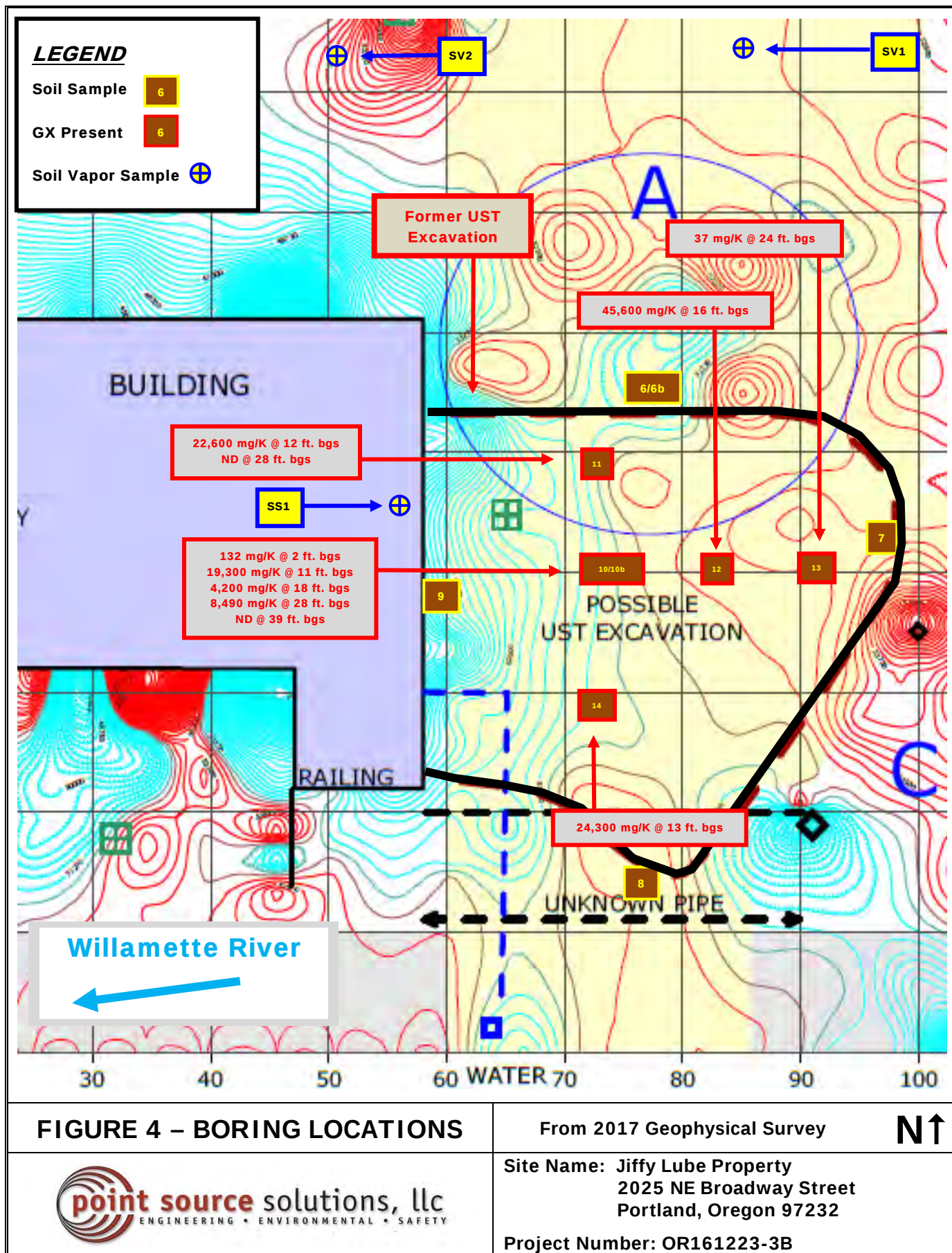
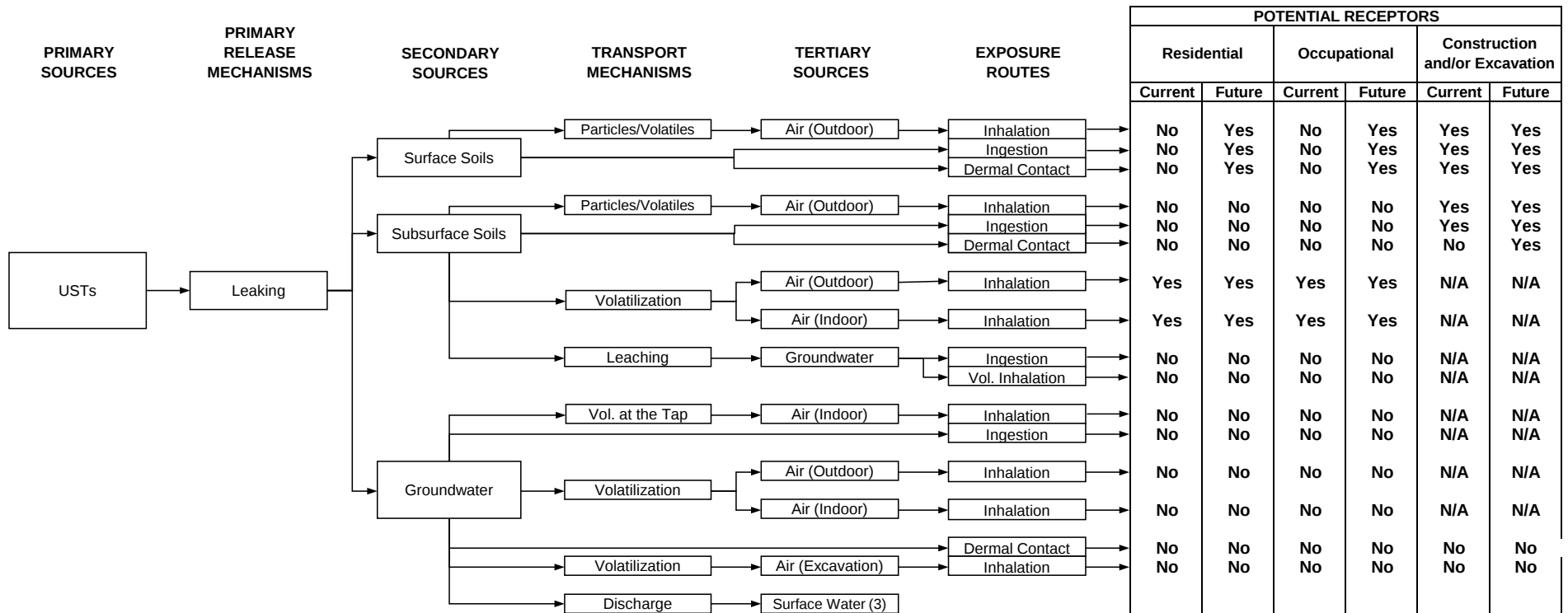


Figure 5: RBDM Conceptual Site Model



Notes:

Yes= This route is a primary source of exposure.

No= There is no exposure by this route.

Figure 6: SUMMARY OF CONCEPTUAL SITE MODEL

Potentially Exposed Population	Exposure Route, Medium and Exposure Point	Was This Pathway Selected?	Reason for Selection or Exclusion
CURRENT LAND USE: Commercial			
Employees	<i>Surface soils</i> (all exposure routes)	Yes	Pathway selected for future exposure scenarios only. Shallow contamination is capped with asphalt, and currently inaccessible.
Residents (in area)		Yes	
Exc./Const. Workers		Yes	
Employees	<i>Subsurface soils</i> ingestion, dermal contact, inhalation	No	Impacted soils are not accessible.
Residents (in area)		No	
Const. Workers		No	
Excavation Workers		Yes	Impacted soils may become accessible during future utility work.
Employees	<i>Subsurface soils</i> volatilization to outdoor air	Yes	Impacted subsurface soils are present.
Residents (in area)		Yes	
Exc./Const. Workers		No	Not a receptor scenario
Employees	<i>Subsurface soils</i> vapor intrusion into buildings	Yes	Impacted subsurface soils present within near the current on-site building and within 100 feet of a residential structure.
Residents (in area)		Yes	
Exc./Const. Workers		No	Not a receptor scenario
Employees	<i>Subsurface soils</i> leaching to groundwater	No	Impacted subsurface soils do not extend to within 10 feet of the seasonally high water table. BWUD indicates no drinking water wells within 1000 feet.
Residents (in area)		No	
Exc./Const. Workers		No	Not a receptor scenario
Employees	<i>Groundwater</i> Ingestion and inhalation of tap water	No	Groundwater is not impacted
Residents (in area)		No	
Exc./Const. Workers		No	Not a receptor scenario
Employees	<i>Groundwater</i> Volatilization to outdoor air	No	Groundwater is not impacted
Residents (in area)		No	
Exc./Const. Workers		No	Not a receptor scenario
Employees	<i>Groundwater</i> Vapor intrusion into buildings	No	Groundwater is not impacted
Residents (in area)		No	
Exc./Const. Workers		No	Not a receptor scenario.
Exc./Const. Workers	<i>Groundwater</i> in excavation	No	Groundwater is not impacted

APPENDICES

APPENDIX I

SOIL BORING LOGS

APPENDIX II

LABORATORY ANALYTICAL REPORTS

Wy'East Analytical Report #87248B dated March 2, 2017
Wy'East Analytical Report #87281 dated March 13, 2017
Wy'East Analytical Report #87285 dated March 15, 2017
Friedman & Bruya Analytical Report dated March 21, 2017

3/2/17

Point Source Solutions
10445 SW Canyon Rd Suite 115
Portland, OR 97214

Re: OR161223-3A

Dear Point Source Solutions

Enclosed are the results of analysis for samples received by the laboratory on 3/1/2017
The results related only to the samples included in this report.
The project was assigned a report number of 87248B

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

Sincerely,

A handwritten signature in dark ink, appearing to read 'CY Chan'. The signature is written in a cursive, slightly slanted style.

CY Chan
QA Officer

NW-TPHDx LABORATORY REPORT

Point Source Solutions

10445 SW Canyon Rd Suite 115

Portland, OR 97214

SITE NAME: Jiffy Lube **C.O.C. NUMBER:** 87248B
SITE LOCATION: 2025 NE Broadway **REPORT DATE:** 3/2/17
PROJECT NUMBER: OR161223-3A

Analytical Method: NWTPH-Dx**Preparation Method: EPA3545A****Analytes: Total Diesel and Heavy Oil range petroleum in Soil. Calculated on a dry-weight basis.**

Field ID	LAB ID	Diesel (mg/Kg)	Heavy Oil (mg/Kg)	Surrogate Recovery (%)	Analytical Batch	Prepared Batch	Sampling Date
SB1-S1-20	L5014	ND	ND	86%	78FL1703011	D170301-1	2/28/2017
SB6-S1-20	L5020	ND	ND	93%	78FL1703011	D170301-1	2/28/2017
SB7-S1-12	L5021	ND	ND	92%	78FL1703011	D170301-1	2/28/2017
SB8-S1-20	L5022	ND	ND	81%	78FL1703011	D170301-1	2/28/2017
SB9-S1-20	L5023	ND	ND	90%	78FL1703011	D170301-1	2/28/2017
SB10-S1-11	L5024	ND	ND	95%	78FL1703011	D170301-1	2/28/2017
SB10-S2-18	L5025	ND	ND	85%	78FL1703011	D170301-1	2/28/2017
SB10-S3-28	L5026	ND	ND	91%	78FL1703011	D170301-1	2/28/2017

Reporting Limit: --

25

100

Surrogate Limit:

50%-150%

Surrogate is 1-ChloroOctadecane**ND = Not Detected at or below the Reporting Limit**

Results relate only to samples

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Chemist Initials:

cy chan

Reviewed By:

PERCENT MOISTURE REPORT**REPORT NUMBER:** 87248**REPORT DATE:** 3/2/17**ASTM D2974-07a****Analytes: Percent Moisture in Sample**

LAB ID	Moisture(%)	Date Analyzed
L5014	14.0	3/1/17
L5020	14.5	3/1/17
L5021	8.7	3/1/17
L5022	14.5	3/1/17
L5023	15.7	3/1/17
L5024	21.1	3/1/17
L5025	24.0	3/1/17
L5026	12.9	3/1/17

Report Narrative

Method: NWTHP-Dx
Client: Point Source Solutions

Report No. 87248
Date: 3/1/2017

Sample Condition

13 Sample(s) were analyzed for NWTPH-Dx. Sample(s) were received in acceptable condition

Sample Temperature

Sample(s) arrived within acceptable temperature range

Sample Hold time

Sample(s) were analyzed within hold time

Initial Calibration

All criteria were within acceptable limits

Continuing Calibration Check (CCV)

All criteria were within method limits

Method Blank

Method Blank meets method limit

Laboratory Control Sample (LCS)

All criteria were within method limits

Duplicate Sample

All criteria were within method limits

Matrix Spike

All criteria were within method limits

Matrix Spike Duplicate

No Matrix Spike Duplicate was run on this batch

Non-Conformance

No non-conformances were associated with this request except noticed below

Quality Control for NWTPH-Dx

Batch Date: 3/1/2017

Units: Soil Blank (mg/Kg) Water Blank (mg/L) CCV & LCS (ug/mL)

Blank Number	PB	Diesel Result	Oil Result	Limits Diesel	Limits Oil	Blank Control	Surr. Recovery	Surr. Limits	Surr. Control
SBK03011	D170301-1	0	0	50	100	PASS	94%	50%-150%	PASS

Diesel LCS Number	PB	Diesel in Extract	Expected Conc.	LCS Recovery (%)	LCS Control Limits	LCS Control	Surr. Recovery	Surr. Limits	Surr. Control
SLC03011	D170301-1	560.11	500.00	112%	±30%	PASS	83%	50%-150%	PASS

Oil LCS Number	PB	Oil in Extract	Expected Conc.	LCS Recovery (%)	LCS Control Limits	LCS Control	Surr. Recovery	Surr. Limits	Surr. Control
SLC03011	D170301-1	496.24	500.00	99%	±30%	PASS	83%	50%-150%	PASS

Diesel Dupl. Number	PB	Sample in Extract	Duplicate In Extract	RPD (%)	Control Limits	Duplicate Control
L5010	D170301-1	4412.436287	4341.788559	2%	±30%	PASS
L5024	D170301-1	3.814355068	3.806022085	0%	±30%	PASS

Oil Dupl. Number	PB	Sample in Extract	Duplicate in Extract	RPD (%)	Control Limits	Duplicate Control
L5010	D170301-1	0	0	0%	±30%	PASS
L5024	D170301-1	0	0	0%	±30%	PASS

Diesel MS Number	PB	Sample in Extract	Diesel MS Result	MS Recovery (%)	MS Control Limits	MS Control
L5014MS	D170301-1	0	654.0530637	113%	70%-130%	PASS

Oil MS Number	PB	Sample in Extract	Oil MS Result	MS Recovery (%)	MS Control Limits	MS Control
L5014MS	D170301-1	0	594.6443628	100%	70%-130%	PASS

NW-TPHGx LABORATORY REPORT

Point Source Solutions
10445 SW Canyon Rd Suite 115
Portland, OR 97214

PROJECT NAME: Jiffy Lube
SITE LOCATION: 2025 NE Broadway
PROJECT NUMBER: OR161223-3A

C.O.C. NUMBER: 87248B
REPORT DATE: 3/2/2017

Analytical Method: NW-TPHGx

Preparation Method: EPA 5035

Analytes: Gasoline in Soil. Calculated on a dry-weight basis.

Field ID	LAB ID	Gasoline (mg/Kg)	Surrogate Recov.(%)	Analytical Batch	Preperation Batch	Sampling Date
SB1-S1-20	L5014	ND	101%	58PI170301-1	G170301-1	2/28/2017
SB6-S1-20	L5020	ND	103%	58PI170301-1	G170301-1	2/28/2017
SB7-S1-12	L5021	ND	104%	58PI170301-1	G170301-1	2/28/2017
SB8-S1-20	L5022	ND	102%	58PI170301-1	G170301-1	2/28/2017
SB9-S1-20	L5023	ND	99%	58PI170301-1	G170301-1	2/28/2017
SB10-S1-11	L5024	19300	94%	58PI170301-1	G170301-1	2/28/2017
SB10-S2-18	L5025	4220	105%	58PI170301-1	G170301-1	2/28/2017
SB10-S3-28	L5026	8490	97%	58PI170301-1	G170301-1	2/28/2017

Reporting Limit: -- 20

Surrogate is p-Bromofluorobenzene

ND = Not Detected (Below Reporting or Detection Limit)

Results relate only to samples.

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Chemist Initials:

C.Y. Chan

Reviewer Initials:

JO

PERCENT MOISTURE REPORT

REPORT NUMBER: 87248
REPORT DATE: 3/2/2017

ASTM D2974-07a

Analytes: Percent Moisture in Sample

LAB ID	Moisture (%)	Date Analyzed
L5014	14	3/1/2017
L5020	15	3/1/2017
L5021	9	3/1/2017
L5022	14	3/1/2017
L5023	16	3/1/2017
L5024	21	3/1/2017
L5025	24	3/1/2017
L5026	13	3/1/2017

Report Narrative

Method: NWTHP-Gx

Report No. 87248

Client: Point Source Solutions

Date: 3/1/2017

Sample Condition

8 sample(s) were analyzed for NWTPH-Gx. Sample(s) were received in acceptable condition

Sample Temperature

Sample(s) arrived within acceptable temperature range

Sample Hold time

sample(s) were analyzed within hold time

Initial Calibration

All criteria were within acceptable limits

Continuing Calibration Check (CCV)

All criteria were within method limits

Method Blank

Method Blank meets method limit

Laboratory Control Sample (LCS)

All criteria were within method limits

Duplicate Sample

All criteria were within method limits

Matrix Spike

All MS criteria were within method limits

No MSD was run this batch

Matrix Spike Duplicate RPD

No MSD was run this batch

Non-Conformance

No non-conformances were associated with this request except noticed below

Quality Control for Gasoline in Soil by NWTPH-Gx

Batch Date: 3/1/2017

<u>Blank</u>	<u>Prep. Batch</u>	<u>Result(mg/Kg)</u>	<u>Accep. Range</u>	<u>Sur. % Recovery</u>	<u>% Accep.</u>
GBK03011	G170301-1	1.96	<20	99%	50%-150%
<u>Spike</u>	<u>Prep. Batch</u>	<u>Result (mg/Kg)</u>	<u>Expected (mg/Kg)</u>	<u>spike % Recovery</u>	<u>% Accep.</u>
GLC03011	G170301-1	95.93	100.3	96%	70%-130%
<u>Duplicate</u>	<u>A. Batch</u>	<u>Result (mg/Kg)</u>	<u>Duplicate(mg/Kg)</u>	<u>RPD</u>	<u>% Accep.</u>
L5016	G170301-1	ND	ND	0%	±30%
L5018	G170301-1	ND	ND	0%	±30%
<u>MS</u>	<u>A. Batch</u>	<u>Spike (mg/Kg)</u>	<u>Sample(mg/Kg)</u>	<u>Spike % Recovery</u>	<u>% Accep.</u>
L5018MS	G170301-1	101	4	95%	70%-130%

LABORATORY REPORT

Point Source Solutions
10445 SW Canyon Rd Suite 115
Portland, OR 97214

PROJECT NAME: Jiffy Lube
SITE LOCATION: 2025 NE Broadway
PROJECT NUMBER: OR161223-3A
ANALYST
FIELD ID: SB10-S1-11

INSTRUMENT SolaTek
REPORT NUMBER: 87248B
REPORT DATE: 3/3/17
ACQ. ON 2Mar2017:55pm
PREP. BATCH V170302
LAB ID: L5024

Analytical Method: EPA 8260C

Preparation Method: EPA 5035A

Analyte: Volatile Organics in Soil

Compound	Sample (ug/Kg)	Quant. Limit (ug/Kg)	Qualifier	Dilution Factor
benzene	ND	200		50
bromobenzene	ND	200		50
bromochloromethane	ND	200		50
bromodichloromethane	ND	200		50
bromoform	ND	200		50
n-butylbenzene	31500	200		1000
sec-butylbenzene	5530	200		250
tert-butylbenzene	ND	200		50
chlorobenzene	ND	200		50
chloroform	ND	200		50
2-chlorotoluene	ND	200		50
4-chlorotoluene	ND	200		50
dibromochloromethane	ND	200		50
1,2dibromo3-chloropropane	ND	200		50
1,2-dibromoethane	ND	200		50
dibromomethane	ND	200		50
1,2-dichlorobenzene	ND	200		50
1,3-dichlorobenzene	ND	200		50
1,4-dichlorobenzene	ND	200		50
1,1-dichloroethane	ND	200		50
1,2-dichloroethane	ND	200		50
1,1-dichloroethene	ND	200		50
cis-1,2-dichloroethene	ND	200		50
trans-1,2-dichloroethene	ND	200		50
1,2-dichloropropane	ND	200		50
1,3-dichloropropane	ND	200		50
1,1-dichloropropene	ND	200		50
cis-1,3-dichloropropene	ND	200		50
trans-1,3-dichloropropene	ND	200		50
ethylbenzene	65100	200		5000
hexachlorobutadiene	ND	200		50
isopropylbenzene	8610	200		250
p-Isopropyltoluene	4300	200		250
methyl-tert-butylether(MTBE)	ND	200		50
naphthalene	127000	200		5000
n-propyl-benzene	34600	200		1000
styrene	752	200		50
1,1,1,2-tetrachloroethane	ND	200		50
1,1,2,2-tetrachloroethane	ND	200		50
tetrachloroethylene	ND	200		50
toluene	651	200		50
1,2,3-trichlorobenzene	ND	200		50
1,2,4-trichlorobenzene	ND	200		50
1,1,1-trichloroethane	ND	200		50
1,1,2-trichloroethane	ND	200		50
trichloroethene	ND	200		50
1,2,3-trichloropropane	ND	200		50
1,2,4-trimethylbenzene	371000	200		200000
1,3,5-trimethylbenzene	189000	200		5000
xylene(m&p)	333000	400		5000
o-xylene	137000	200		5000
total xylenes	470000	200		5000

Surrogate: 1,2-dichloroethane-d4
Percent Recovery 71

toluene-d8 76
p-bromofluorobenzene 94

Analyst: Cy Chan

Reviewer Initials: 

2415 SE 11th Ave.,
Portland, OR 97214

These parameters are accredited in accordance
with NELAP - OR100011

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

Report Narrative

Method: 8260
Client: Point Source Solutions

Report No. 87248
Date: 3/2/2017

Sample Condition

Sample was analyzed for 8260. Sample was received in acceptable condition

Sample Temperature

Sample(s) arrived within acceptable temperature range

Sample Hold time

Sample was analyzed within hold time

Initial Calibration

All criteria were within acceptable limits

Continuing Calibration Check (CCV)

All criteria were within method limits. Any exceptions are qualified in the body of the report

Method Blank

Method Blank meets method limit. Any exceptions are qualified in the body of the report

Laboratory Control Sample (LCS)

All criteria were within method limits, Any exceptions are qualified in the body of the report

Duplicate Sample

No Duplicate was run on this batch

Matrix Spike

All criteria were within method limits

Matrix Spike Duplicate

All criteria were within method limits

Non-Conformance

No non-conformances were associated with this request except noticed below

QUALITY CONTROL REPORT (EPA 8260C)

Run Date: 3/2/2017 **Prep batch:** P3-2-17
Report Date: 3/3/2017 **Analytical batch:** STRA170302

Analyte	BLANK (ug/Kg)	LCS (ug/Kg)	Expected (ug/Kg)	Recovery %
benzene	<4	16	16	98
bromobenzene	<4	16	16	97
bromochloromethane	<4	16	16	102
bromodichloromethane	<4	16	16	101
bromoform	<4	16	16	101
n-butylbenzene	<4	16	16	97
sec-butylbenzene	<4	15	16	95
tert-butylbenzene	<4	15	16	96
chlorobenzene	<4	16	16	98
chloroform	<4	16	16	99
2-chlorotoluene	<4	15	16	96
4-chlorotoluene	<4	15	16	96
dibromochloromethane	<4	17	16	105
1,2dibromo3-chloropropane	<4	17	16	103
1,2-dibromoethane	<4	17	16	104
dibromomethane	<4	17	16	104
1,2-dichlorobenzene	<4	16	16	99
1,3-dichlorobenzene	<4	16	16	98
1,4-dichlorobenzene	<4	16	16	99
1,1-dichloroethane	<4	16	16	98
1,2-dichloroethane	<4	16	16	101
1,1-dichloroethene	<4	16	16	98
cis-1,2-dichloroethene	<4	16	16	100
trans-1,2-dichloroethene	<4	16	16	98
1,2-dichloropropane	<4	16	16	100
1,3-dichloropropane	<4	17	16	104
1,1-dichloropropene	<4	16	16	98
cis-1,3-dichloropropene	<4	17	16	104
trans-1,3-dichloropropene	<4	17	16	106
ethylbenzene	<4	15	16	96
hexachlorobutadiene	<4	16	16	97
isopropylbenzene	<4	15	16	96
p-Isopropyltoluene	<4	15	16	95
methyl-tert-butylether(MTBE)	<4	17	16	109
naphthalene	<4	19	16	118
n-propyl-benzene	<4	15	16	97
styrene	<4	16	16	98
1,1,1,2-tetrachloroethane	<4	16	16	98
1,1,2,2-tetrachloroethane	<4	17	16	105
tetrachloroethylene	<4	16	16	99
toluene	<4	16	16	100
1,2,3-trichlorobenzene	<4	18	16	112
1,2,4-trichlorobenzene	<4	18	16	111
1,1,1-trichloroethane	<4	16	16	99
1,1,2-trichloroethane	<4	16	16	103
trichloroethene	<4	16	16	98
1,2,3-trichloropropane	<4	17	16	107
1,2,4-trimethylbenzene	<4	15	16	96
1,3,5-trimethylbenzene	<4	15	16	96
xylene(m&p)	<8	31	32	97
o-xylene	<4	16	16	97

Control: 70%-130%

DUPLICATE / MATRIX SPIKE REPORT (EPA 8260C)

Run Date: 3/2/2017
Report Date: 3/3/2017

Prep batch: P3-2-17
Analytical batch: STRA170302

MSD ID: SBK34MSD
MS ID: SBK34MS

Analyte	Sample (ug/Kg)	MSD (ug/Kg)	Recovery (%)	Sample (ug/Kg)	Spike (ug/Kg)	Recovery (%)
benzene	0	16	97	0	16	98
bromobenzene	0	15	93	0	16	97
bromochloromethane	0	15	93	0	16	102
bromodichloromethane	0	16	98	0	16	101
bromoform	0	15	93	0	16	101
n-butylbenzene	0	15	94	0	16	97
sec-butylbenzene	0	15	94	0	15	95
tert-butylbenzene	0	15	94	0	15	96
chlorobenzene	0	15	97	0	16	98
chloroform	0	15	95	0	16	99
2-chlorotoluene	0	15	94	0	15	96
4-chlorotoluene	0	15	94	0	15	96
dibromochloromethane	0	16	99	0	17	105
1,2dibromo3-chloropropane	0	16	97	0	17	103
1,2-dibromoethane	0	16	99	0	17	104
dibromomethane	0	16	98	0	17	104
1,2-dichlorobenzene	0	15	94	0	16	99
1,3-dichlorobenzene	0	16	97	0	16	98
1,4-dichlorobenzene	0	16	94	0	16	96
1,1-dichloroethane	0	15	94	0	16	98
1,2-dichloroethane	0	15	94	0	16	101
1,1-dichloroethene	0	15	96	0	16	98
cis-1,2-dichloroethene	0	15	96	0	16	100
trans-1,2-dichloroethene	0	15	95	0	16	98
1,2-dichloropropane	0	16	98	0	16	100
1,3-dichloropropane	0	16	99	0	17	104
1,1-dichloropropene	0	15	95	0	16	98
cis-1,3-dichloropropene	0	16	100	0	17	104
trans-1,3-dichloropropene	0	16	100	0	17	106
ethylbenzene	0	15	96	0	15	96
hexachlorobutadiene	0	15	93	0	16	97
isopropylbenzene	0	15	94	0	15	95
p-Isopropyltoluene	0	15	96	0	15	95
methyl-tert-butylether(MTBE)	0	16	97	0	17	109
naphthalene	0	17	105	0	19	118
n-propyl-benzene	0	15	95	0	15	97
styrene	0	15	95	0	16	98
1,1,1,2-tetrachloroethane	0	15	97	0	16	98
1,1,2,2-tetrachloroethane	0	15	96	0	17	105
tetrachloroethylene	0	16	99	0	16	99
toluene	0	16	99	0	16	100
1,2,3-trichlorobenzene	0	17	104	0	18	112
1,2,4-trichlorobenzene	0	16	103	0	18	111
1,1,1-trichloroethane	0	15	94	0	16	99
1,1,2-trichloroethane	0	16	99	0	16	103
trichloroethene	0	16	98	0	16	98
1,2,3-trichloropropane	0	15	96	0	17	107
1,2,4-trimethylbenzene	0	15	95	0	15	96
1,3,5-trimethylbenzene	0	15	94	0	15	96
xylene(m&p)	0	31	96	0	31	97
o-xylene	0	15	94	0	16	96

Control:

70%-130%

70%-130%



MATRIX SPIKE / MATRIX SPIKE DUPLICATE REPORT (EPA 8260C)

Run Date: 3/2/2017
Report Date: 3/3/2017

Prep batch: P3-2-17
Analytical batch: STRA170302

MS ID: SBK34MS
MSD ID: SBK34MSD

Analyte	MS (ug/Kg)	MSD (ug/Kg)	RPD (%)
benzene	16	16	1
bromobenzene	16	15	4
bromochloromethane	16	15	9
bromodichloromethane	16	16	3
bromoform	16	15	9
n-butylbenzene	16	15	3
sec-butylbenzene	15	15	2
tert-butylbenzene	15	15	2
chlorobenzene	16	15	1
chloroform	16	15	4
2-chlorotoluene	15	15	2
4-chlorotoluene	15	15	3
dibromochloromethane	17	16	6
1,2dibromo3-chloropropane	17	16	6
1,2-dibromoethane	17	16	5
dibromomethane	17	16	6
1,2-dichlorobenzene	16	15	6
1,3-dichlorobenzene	16	16	0
1,4-dichlorobenzene	16	16	2
1,1-dichloroethane	16	15	3
1,2-dichloroethane	16	15	7
1,1-dichloroethene	16	15	3
cis-1,2-dichloroethene	16	15	4
trans-1,2-dichloroethene	16	15	2
1,2-dichloropropane	16	16	2
1,3-dichloropropane	17	16	5
1,1-dichloropropene	16	15	3
cis-1,3-dichloropropene	17	16	3
trans-1,3-dichloropropene	17	16	6
ethylbenzene	15	15	0
hexachlorobutadiene	16	15	4
isopropylbenzene	15	15	2
p-Isopropyltoluene	15	15	0
methyl-tert-butylether(MTBE)	17	16	12
naphthalene	19	17	12
n-propyl-benzene	15	15	2
1,1,1,2-tetrachloroethane	16	15	3
1,1,2,2-tetrachloroethane	16	15	1
tetrachloroethylene	17	15	9
toluene	16	16	0
1,2,3-trichlorobenzene	16	16	1
1,2,4-trichlorobenzene	18	17	8
1,1,1-trichloroethane	18	16	8
1,1,2-trichloroethane	16	15	5
trichloroethene	16	16	4
trichlorofluoromethane	16	16	1
1,2,3-trichloropropane	17	15	10
1,2,4-trimethylbenzene	15	15	1
1,3,5-trimethylbenzene	15	15	2
xylene(m&p)	31	31	1
o-xylene	16	15	2
Control:			30

WyEast

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

CHAIN OF CUSTODYReport Number 87248 B

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

Company <u>Point Source Solutions</u>		Phone <u>503.780-1569</u>					NW-TPH-Dx	NW-TPH-GX	NW-TPH-HCID	EPA 8021B (BTEX)	EPA 8270 SIM (PAH)	EPA 8260B	Comments <u>cc: Andy</u>
Project # <u>OR161223-3A</u>		FAX											
Project Name <u>Jiffy Lube</u>		Purchase Order #											
Site <u>2025 NE Broadway</u>		Report Attention			Collected By								
Samples: Temperature <u>3°C</u> On Ice? ☒ Yes / ☐ No		Turnaround Time:			☒ Regular ☐ 3-5 Business Days								
LAB ID	Field ID	Sampling Date	Sampling Time	Matrix	Container	Volume							Analysis Requested
L5014	SB1-S1-20	2-28-17	9:30	Soil	1	402	X	X					
L5020	SB6-S1-20		12:26		1		X	X					
L5021	SB7-S1-12		13:07		1		X	X					
L5022	SB8-S1-20		13:48		1		X	X					
L5023	SB9-S1-20		14:41		1		X	X					
L5024	SB10-S1-11		15:28		1		X	X				X	
	SB10-S1-11				2		X	X					
L5025	SB10-S2-18		17:00		2		X	X					
L5026	SB10-S3-28		17:01		2		X	X					
Relinquished by <u>Jake Pan</u>	Affiliation <u>PSS</u>	Date <u>3-18-17</u>	Time <u>12:00</u>	Received by <u>[Signature]</u>		Affiliation <u>WyEast</u>		Date <u>3/1/17</u>	Time <u>9:243a</u>				
Relinquished by	Affiliation	Date	Time	Received by		Affiliation		Date	Time				

Sample Condition Check List

87248

Customer Name: Point Source

COC #: _____

Method of Delivery: courier client other _____

Type of ice: Ice Blue None

Cooler Temperature: 3°C

Matrix: Soil Water Other _____

Relinquish signed on Chain of Custody.

Received by signed on Chain of Custody.

Chain of Custody filled out.

Were samples Arrived within Hold Time.

Rush Turn Around Time Requested. If yes, how many days _____

Temperatures measured and written in correct place on COC.

Correct containers used.

Sufficient Volume.

ID on COC and Sample labels match.

Duplicate jars and vials labeled with a, b, c, d etc.

All tests logged in checked against the COC.

The COC scanned into the main office computer.

Yes	No	NA	Comments
☒	☐	☐	*
☒	☐	☐	*
☒	☐	☐	*
☒	☐	☐	* Sampled on 2/28/17
☒	☐	☐	* Relinquish
☒	☐	☐	* 3°C
☒	☐	☐	* 4oz
☒	☐	☐	*
☒	☐	☐	*
☒	☐	☐	* Done on L5015, L5024, L5025 & L5026.
☒	☐	☐	*
☒	☐	☐	*

FOR WATER SAMPLES:

Trip Blank: Yes _____ Waiver on file _____
No _____

Submitted by: _____

Was sufficient volume provided for analysis.

Was sufficient volume provided for QC samples (at least two).

HCL Preserved vials.

HCL LOT Number: _____

Were duplicate jars and vials labeled with a, b, c, d etc.

Headspace in VOA Vials (>6mm).

Yes	No	Comments
☐	☐	*
☐	☐	*
☐	☐	*
☐	☐	*
☐	☐	*

Client Notification/Resolution: _____

Comments: 3/1/17 - Sampled on 2/28/17, but within acceptable Temp.

- Apex Lab will run PCB & RCRA-8

Reviewed: WJ

Date: 3/1/17

3/13/17

Point Source Solutions
10445 SW Canyon Rd Suite 115
Portland, OR 97214

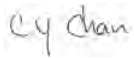
Re: OR161223-3A

Dear Point Source Solutions

Enclosed are the results of analysis for samples received by the laboraory on 3/10/2017
The results related only to the samples included in this report.
The project was assigned a report number of 87281

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

Sincerely,



CY Chan
QA Officer

NW-TPHGx LABORATORY REPORT

Point Source Solutions
10445 SW Canyon Rd Suite 115
Portland, OR 97214

PROJECT NAME: Jiffy Lube
SITE LOCATION: 2025 NE 25th Ave
PROJECT NUMBER: OR161223-3A

C.O.C. NUMBER: 87281
REPORT DATE: 3/13/2017

Analytical Method: NW-TPHGx

Preparation Method: EPA 5035

Analytes: Gasoline in Soil. Calculated on a dry-weight basis.

Field ID	LAB ID	Gasoline (mg/Kg)	Surrogate Recov.(%)	Analytical Batch	Preperation Batch	Sampling Date
SB10b-S1-2.0	L5707	132	107%	58PI170313-1	G170313-1	3/10/2017
SB10b-S2-39	L5708	ND	98%	58PI170313-1	G170313-1	3/10/2017

Reporting Limit: -- 20

Surrogate is p-Bromofluorobenzene

ND = Not Detected (Below Reporting or Detection Limit)

Results relate only to samples.

This report shall not be reproduced, except in full, without the written approval of Wy'East Environmental Sciences, Inc.

Chemist Initials:

Cy Chan

Reviewer Initials:

RE

PERCENT MOISTURE REPORT

REPORT NUMBER: 87281
REPORT DATE: 3/13/2017

ASTM D2974-07a

Analytes: Percent Moisture in Sample

LAB ID	Moisture (%)	Date Analyzed
L5707	14	3/13/2017
L5708	9	3/13/2017

Report Narrative

Method: NWTHP-Gx

Report No. 87281

Client: Point Source Solutions

Date: 3/13/2017

Sample Condition

2 sample(s) were analyzed for NWTPH-Gx. Sample(s) were received in acceptable condition

Sample Temperature

Sample(s) arrived within acceptable temperature range

Sample Hold time

sample(s) were analyzed within hold time

Initial Calibration

All criteria were within acceptable limits

Continuing Calibration Check (CCV)

All criteria were within method limits

Method Blank

Method Blank meets method limit

Laboratory Control Sample (LCS)

All criteria were within method limits

Duplicate Sample

All criteria were within method limits

Matrix Spike

All MS criteria were within method limits

No MSD was run this batch

Matrix Spike Duplicate RPD

No MSD was run this batch

Non-Conformance

No non-conformances were associated with this request except noticed below

Quality Control for Gasoline in Soil by NWTPH-Gx

Batch Date: 3/13/2017

<u>Blank</u>	<u>Prep. Batch</u>	<u>Result(mg/Kg)</u>	<u>Accep. Range</u>	<u>Sur. % Recovery</u>	<u>% Accep.</u>
GBK03011	G170313-1	2.22	<20	92%	50%-150%
<u>Spike</u>	<u>Prep. Batch</u>	<u>Result□(mg/Kg)</u>	<u>Expected (mg/Kg)</u>	<u>spike % Recovery</u>	<u>% Accep.</u>
GLC03011	G170313-1	91.18	100.3	91%	70%-130%
<u>Duplicate</u>	<u>A. Batch</u>	<u>Result (mg/Kg)</u>	<u>Duplicate(mg/Kg)</u>	<u>RPD</u>	<u>% Accep.</u>
L5708	G170313-1	ND	ND	0%	±30%
<u>MS</u>	<u>A. Batch</u>	<u>Spike (mg/Kg)</u>	<u>Sample(mg/Kg)</u>	<u>Spike % Recovery</u>	<u>% Accep.</u>
L5708MS	G170313-1	107	3	103%	70%-130%

Wy'East

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

CHAIN OF CUSTODY

Report Number 87261
Phone(503) 231-9320 FAX(503) 231-9344

Company <u>P.S.</u>		Phone <u>503-780-1569</u>																Comments
Project # <u>OR161223-3A</u>		FAX																
Project Name <u>Jiffy Lube</u>		Purchase Order #																
Site <u>2025 NE 25th Ave</u>		Report Attention <u>Gil</u>		Collected By <u>ATK</u>														
Samples: Temperature <u>3°C</u> On Ice? ☒ Yes ☐ No		Turnaround Time: ☒ Regular ☐ 3-5 Business Days																Analysis Requested
LAB ID	<u>106</u> <u>ATK 3/10/17</u> Field ID	Sampling Date	Sampling Time	Matrix	Container	Volume	NW-TPH-Dx no DX	NW-TPH-GX	NW-TPH-HCID	EPA 8021B (BTEX)	EPA 8270 SIM (PAH)	EPA 8260B						
<u>L5707</u>	<u>SB11-51-2.0</u>	<u>3/10/17</u>	<u>9:46</u>	<u>S</u>	<u>2</u>	<u>402</u>	<u>X</u>	<u>X</u>										
<u>L5708</u>	<u>SB106-52-39</u>		<u>11:05</u>		<u>1</u>		<u>X</u>	<u>X</u>										
Relinquished by <u>Jake Rasmussen</u>		Affiliation <u>PSS</u>		Date <u>3-10-17</u>		Time		Received by <u>[Signature]</u>		Affiliation <u>Wy'East</u>		Date <u>3/10/17</u>		Time <u>4:36pm</u>				
Relinquished by		Affiliation		Date		Time		Received by		Affiliation		Date		Time				

Sample Condition Check List

Customer Name: Point Source

COC #: 87281

Method of Delivery: courier client other

Type of ice: Ice Blue None

Cooler Temperature: 3°C

Matrix: Soil Water Other

Relinquish signed on Chain of Custody.

Received by signed on Chain of Custody.

Chain of Custody filled out.

Were samples Arrived within Hold Time.

Rush Turn Around Time Requested. If yes, how many days

Temperatures measured and written in correct place on COC.

Correct containers used.

Sufficient Volume.

ID on COC and Sample labels match.

Duplicate jars and vials labeled with a, b, c, d etc.

All tests logged in checked against the COC.

The COC scanned into the main office computer.

Yes	No	NA	Comments
☒	☐	☐	*
☒	☐	☐	*
☒	☐	☐	*
☒	☐	☐	* Same day
☒	☐	☐	* Regular
☒	☐	☐	* 3°C
☒	☐	☐	* 407
☒	☐	☐	*
☒	☐	☐	* on 45707
☒	☐	☐	*
☒	☐	☐	*

FOR WATER SAMPLES:

Trip Blank: Yes

Waiver on file

Submitted by:

No

Was sufficient volume provided for analysis.

Was sufficient volume provided for QC samples (at least two).

HCL Preserved vials.

HCL LOT Number:

Were duplicate jars and vials labeled with a, b, c, d etc.

Headspace in VOA Vials (>6mm).

Yes	No	Comments
☐	☐	*
☐	☐	*
☐	☐	*

☐	☐	*
☐	☐	*

Client Notification/Resolution:

Comments:

Reviewed:

Date:

3/15/17

Point Source Solutions
10445 SW Canyon Rd Suite 115
Portland, OR 97214

Re: OR161223-3A

Dear Point Source Solutions

Enclosed are the results of analysis for samples received by the laboraory on 3/13/2017
The results related only to the samples included in this report.
The project was assigned a report number of 87285

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

Sincerely,

A handwritten signature in cursive script that reads "CY Chan".

CY Chan
QA Officer

NW-TPHGx LABORATORY REPORT

Point Source Solutions
10445 SW Canyon Rd Suite 115
Portland, OR 97214

PROJECT NAME: Jiffy Lube
SITE LOCATION: 2025 NE Broadway
PROJECT NUMBER: OR161223-3A

C.O.C. NUMBER: 87285
REPORT DATE: 3/15/2017

Analytical Method: NW-TPHGx

Preparation Method: EPA 5035

Analytes: Gasoline in Soil. Calculated on a dry-weight basis.

Field ID	LAB ID	Gasoline (mg/Kg)	Surrogate Recov.(%)	Analytical Batch	Preperation Batch	Sampling Date
SB11-S1-12	L5712	22600	102%	58PI170314-1	G170314-1	3/13/2017
SB11-S2-28	L5713	ND	90%	58PI170314-1	G170314-1	3/13/2017
SB12-S1-16	L5714	45600	95%	58PI170314-1	G170314-1	3/13/2017
SB13-S1-24	L5715	37	92%	58PI170314-1	G170314-1	3/13/2017
SB14-S1-13	L5716	21300	94%	58PI170314-1	G170314-1	3/13/2017
SB6b-S1-28	L5717	ND	96%	58PI170314-1	G170314-1	3/13/2017

Reporting Limit: -- 20

Surrogate is p-Bromofluorobenzene

ND = Not Detected (Below Reporting or Detection Limit)

Results relate only to samples.

This report shall not be reproduced, except in full, without the written approval of Wy'East Environmental Sciences, Inc.

Chemist Initials:

E.Y. Chan

Reviewer Initials:

[Signature]

PERCENT MOISTURE REPORT

REPORT NUMBER: 87285
REPORT DATE: 3/15/2017

ASTM D2974-07a

Analytes: Percent Moisture in Sample

LAB ID	Moisture (%)	Date Analyzed
L5712	20	3/14/2017
L5713	15	3/14/2017
L5714	17	3/14/2017
L5715	25	3/14/2017
L5716	25	3/14/2017
L5717	16	3/14/2017

Report Narrative

Method: NWTHP-Gx

Report No. 87285

Client: Point Source Solutions

Date: 3/14/2017

Sample Condition

6 sample(s) were analyzed for NWTPH-Gx. Sample(s) were received in acceptable condition

Sample Temperature

Sample(s) arrived within acceptable temperature range

Sample Hold time

sample(s) were analyzed within hold time

Initial Calibration

All criteria were within acceptable limits

Continuing Calibration Check (CCV)

All criteria were within method limits

Method Blank

Method Blank meets method limit

Laboratory Control Sample (LCS)

All criteria were within method limits

Duplicate Sample

All criteria were within method limits

Matrix Spike

All MS criteria were within method limits

No MSD was run this batch

Matrix Spike Duplicate RPD

No MSD was run this batch

Non-Conformance

No non-conformances were associated with this request except noticed below

Quality Control for Gasoline in Soil by NWTPH-Gx

Batch Date: 3/14/2017

<u>Blank</u>	<u>Prep. Batch</u>	<u>Result(mg/Kg)</u>	<u>Accep. Range</u>	<u>Sur. % Recovery</u>	<u>% Accep.</u>
GBK03141	G170314-1	1.27	<20	86%	50%-150%
<u>Spike</u>	<u>Prep. Batch</u>	<u>Result (mg/Kg)</u>	<u>Expected (mg/Kg)</u>	<u>spike % Recovery</u>	<u>% Accep.</u>
GLC03141	G170314-1	99.64	100.3	99%	70%-130%
<u>Duplicate</u>	<u>A. Batch</u>	<u>Result (mg/Kg)</u>	<u>Duplicate(mg/Kg)</u>	<u>RPD</u>	<u>% Accep.</u>
L5717R	G170314-1	ND	ND	0%	±30%
<u>MS</u>	<u>A. Batch</u>	<u>Spike (mg/Kg)</u>	<u>Sample(mg/Kg)</u>	<u>Spike % Recovery</u>	<u>% Accep.</u>
L5717DUP	G170314-1	105	5	97%	70%-130%

LABORATORY REPORT

Point Source Solutions
10445 SW Canyon Rd Suite 115
Portland, OR 97214

PROJECT NAME: Jiffy Lube
SITE LOCATION: 2025 NE Broadway
PROJECT NUMBER: OR161223-3A
ANALYST
FIELD ID: SB12-S1-16

INSTRUMENT SolaTek
REPORT NUMBER: 87285
REPORT DATE: 3/17/17
ACQ. ON 16Mar2017 4:12pm
PREP. BATCH V170316
LAB ID: L5714

Analytical Method: EPA 8260C
Analyte: Volatile Organics in Soil

Preparation Method: EPA 5035A

Compound	Sample (ug/Kg)	Quant. Limit (ug/Kg)	Qualifier	Dilution Factor
benzene	ND	200		50
bromobenzene	ND	200		50
bromochloromethane	ND	200		50
bromodichloromethane	ND	200		50
bromoform	ND	200		50
n-butylbenzene	89300	200		5000
sec-butylbenzene	5250	200		500
tert-butylbenzene	ND	200		50
chlorobenzene	ND	200		50
chloroform	ND	200		50
2-chlorotoluene	ND	200		50
4-chlorotoluene	ND	200		50
dibromochloromethane	ND	200		50
1,2dibromo3-chloropropane	ND	200		50
1,2-dibromoethane	ND	200		50
dibromomethane	ND	200		50
1,2-dichlorobenzene	ND	200		50
1,3-dichlorobenzene	ND	200		50
1,4-dichlorobenzene	ND	200		50
1,1-dichloroethane	ND	200		50
1,2-dichloroethane	ND	200		50
1,1-dichloroethene	ND	200		50
cis-1,2-dichloroethene	ND	200		50
trans-1,2-dichloroethene	ND	200		50
1,2-dichloropropane	ND	200		50
1,3-dichloropropane	ND	200		50
1,1-dichloropropene	ND	200		50
cis-1,3-dichloropropene	ND	200		50
trans-1,3-dichloropropene	ND	200		50
ethylbenzene	1190000	200		100000
hexachlorobutadiene	ND	200		50
isopropylbenzene	13600	200		500
p-Isopropyltoluene	3660	200		500
methyl-tert-butylether(MTBE)	ND	200		50
naphthalene	151000	200		5000
n-propyl-benzene	176000	200		5000
styrene	ND	200		50
1,1,1,2-tetrachloroethane	ND	200		50
1,1,2,2-tetrachloroethane	ND	200		50
tetrachloroethylene	ND	200		50
toluene	14500	200		500
1,2,3-trichlorobenzene	ND	200		50
1,2,4-trichlorobenzene	ND	200		50
1,1,1-trichloroethane	ND	200		50
1,1,2-trichloroethane	ND	200		50
trichloroethene	ND	200		50
1,2,3-trichloropropane	ND	200		50
1,2,4-trimethylbenzene	7830000	200		200000
1,3,5-trimethylbenzene	1360000	200		100000
xylene(m&p)	5630000	400		100000
o-xylene	2550000	200		100000
total xylenes	8180000	200		100000

Surrogate: 1,2-dichloroethane-d4
Percent Recovery 69

toluene-d8 82
p-bromofluorobenzene 92

Analyst: Cy Chan

Reviewer Initials:

[Signature]

2415 SE 11th Ave.,
Portland, OR 97214

These parameters are accredited in accordance
with NELAP - OR100011

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

Report Narrative

Method: 8260
Client: Point Source Solutions

Report No. 87285
Date: 3/16/2017

Sample Condition

Sample was analyzed for 8260. Sample was received in acceptable condition

Sample Temperature

Sample(s) arrived within acceptable temperature range

Sample Hold time

Sample was analyzed within hold time

Initial Calibration

All criteria were within acceptable limits

Continuing Calibration Check (CCV)

All criteria were within method limits. Any exceptions are qualified in the body of the report

Method Blank

Method Blank meets method limit. Any exceptions are qualified in the body of the report

Laboratory Control Sample (LCS)

All criteria were within method limits, Any exceptions are qualified in the body of the report

Duplicate Sample

No Duplicate was run on this batch

Matrix Spike

All criteria were within method limits

Matrix Spike Duplicate

2 compounds of Matrix Spike Duplicate were outside method limits as flagged in the MSD QC report

Non-Conformance

No non-conformances were associated with this request except noticed below

Sample jar was opened prior to 8260 analysis.

QUALITY CONTROL REPORT (EPA 8260C)

Run Date: 3/16/2017 **Prep batch:** P3-16-17
Report Date: 3/17/2017 **Analytical batch:** STRA170316

Analyte	BLANK (ug/Kg)	LCS (ug/Kg)	Expected (ug/Kg)	Recovery %
benzene	<4	15	16	96
bromobenzene	<4	17	16	104
bromochloromethane	<4	17	16	105
bromodichloromethane	<4	16	16	98
bromoform	<4	18	16	113
n-butylbenzene	<4	15	16	92
sec-butylbenzene	<4	16	16	97
tert-butylbenzene	<4	16	16	98
chlorobenzene	<4	18	16	110
chloroform	<4	16	16	98
2-chlorotoluene	<4	15	16	96
4-chlorotoluene	<4	16	16	97
dibromochloromethane	<4	18	16	114
1,2-dibromo3-chloropropane	<4	18	16	113
1,2-dibromoethane	<4	20	16	124
dibromomethane	<4	18	16	112
1,2-dichlorobenzene	<4	16	16	98
1,3-dichlorobenzene	<4	15	16	95
1,4-dichlorobenzene	<4	16	16	98
1,1-dichloroethane	<4	17	16	106
1,2-dichloroethane	<4	16	16	102
1,1-dichloroethene	<4	16	16	102
cis-1,2-dichloroethene	<4	17	16	107
trans-1,2-dichloroethene	<4	17	16	106
1,2-dichloropropane	<4	18	16	111
1,3-dichloropropane	<4	17	16	109
1,1-dichloropropene	<4	16	16	97
cis-1,3-dichloropropene	<4	17	16	107
trans-1,3-dichloropropene	<4	17	16	107
ethylbenzene	<4	16	16	100
hexachlorobutadiene	<4	14	16	88
isopropylbenzene	<4	16	16	99
p-Isopropyltoluene	<4	15	16	97
methyl-tert-butylether(MTBE)	<4	20	16	123
naphthalene	<4	21	16	129
n-propyl-benzene	<4	16	16	99
styrene	<4	17	16	104
1,1,1,2-tetrachloroethane	<4	17	16	105
1,1,2,2-tetrachloroethane	<4	18	16	112
tetrachloroethylene	<4	16	16	98
toluene	<4	16	16	101
1,2,3-trichlorobenzene	<4	18	16	114
1,2,4-trichlorobenzene	<4	18	16	114
1,1,1-trichloroethane	<4	15	16	95
1,1,2-trichloroethane	<4	18	16	112
trichloroethene	<4	17	16	108
1,2,3-trichloropropane	<4	17	16	106
1,2,4-trimethylbenzene	<4	16	16	98
1,3,5-trimethylbenzene	<4	16	16	99
xylene(m&p)	<8	33	32	103
o-xylene	<4	17	16	103

Control: 70%-130%

DUPLICATE / MATRIX SPIKE REPORT (EPA 8260C)

Run Date:	3/16/2017	Prep batch:	P3-16-17	MSD ID:	SBK34MSD
Report Date:	3/17/2017	Analytical batch:	STRA170316	MS ID	SBK34MS

Analyte	Sample (ug/Kg)	MSD (ug/Kg)	Recovery (%)	Sample (ug/Kg)	Spike (ug/Kg)	Recovery (%)
benzene	0	14	89	0	15	96
bromobenzene	0	15	95	0	17	104
bromochloromethane	0	13	83	0	17	105
bromodichloromethane	0	13	82	0	16	98
bromoform	0	15	95	0	18	113
n-butylbenzene	0	15	96	0	15	92
sec-butylbenzene	0	16	101	0	16	97
tert-butylbenzene	0	16	98	0	16	98
chlorobenzene	0	17	105	0	18	110
chloroform	0	13	81	0	16	98
2-chlorotoluene	0	15	94	0	15	96
4-chlorotoluene	0	15	93	0	16	97
dibromochloromethane	0	14	88	0	18	114
1,2dibromo3-chloropropane	0	14	86	0	18	113
1,2-dibromoethane	0	15	93	0	20	124
dibromomethane	0	15	92	0	18	112
1,2-dichlorobenzene	0	14	91	0	16	98
1,3-dichlorobenzene	0	15	96	0	15	95
1,4-dichlorobenzene	0	15	95	0	16	98
1,1-dichloroethane	0	14	90	0	17	106
1,2-dichloroethane	0	13	80	0	16	102
1,1-dichloroethene	0	15	96	0	16	102
cis-1,2-dichloroethene	0	14	90	0	17	107
trans-1,2-dichloroethene	0	15	93	0	17	106
1,2-dichloropropane	0	15	95	0	18	111
1,3-dichloropropane	0	14	85	0	17	109
1,1-dichloropropene	0	14	87	0	16	97
cis-1,3-dichloropropene	0	13	84	0	17	107
trans-1,3-dichloropropene	0	13	80	0	17	107
ethylbenzene	0	16	98	0	16	100
hexachlorobutadiene	0	14	85	0	14	88
isopropylbenzene	0	16	97	0	16	99
p-Isopropyltoluene	0	16	100	0	15	97
methyl-tert-butylether(MTBE)	0	14	86	0	20	123
naphthalene	0	17	106	0	21	129
n-propyl-benzene	0	16	98	0	16	99
styrene	0	15	93	0	17	104
1,1,1,2-tetrachloroethane	0	16	98	0	17	105
1,1,2,2-tetrachloroethane	0	17	103	0	18	112
tetrachloroethylene	0	15	92	0	16	98
toluene	0	15	93	0	16	101
1,2,3-trichlorobenzene	0	15	93	0	18	114
1,2,4-trichlorobenzene	0	12	78	0	18	114
1,1,1-trichloroethane	0	13	84	0	15	95
1,1,2-trichloroethane	0	14	90	0	18	112
trichloroethene	0	16	100	0	17	108
1,2,3-trichloropropane	0	15	94	0	17	106
1,2,4-trimethylbenzene	0	16	97	0	16	98
1,3,5-trimethylbenzene	0	16	98	0	16	99
xylene(m&p)	0	32	100	0	33	103
o-xylene	0	15	95	0	17	102

Control:	70%-130%	70%-130%
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MATRIX SPIKE / MATRIX SPIKE DUPLICATE REPORT (EPA 8260C)

Run Date: 3/16/2017
Report Date: 3/17/2017

Prep batch: P3-16-17
Analytical batch: STRA170316

MS ID: SBK34MS
MSD ID: SBK34MSD

Analyte	MS (ug/Kg)	MSD (ug/Kg)	RPD (%)
benzene	15	14	8
bromobenzene	17	15	9
bromochloromethane	17	13	23
bromodichloromethane	16	13	18
bromoform	18	15	17
n-butylbenzene	15	15	4
sec-butylbenzene	16	16	4
tert-butylbenzene	16	16	1
chlorobenzene	18	17	5
chloroform	16	13	18
2-chlorotoluene	15	15	2
4-chlorotoluene	16	15	4
dibromochloromethane	18	14	26
1,2dibromo3-chloropropane	18	14	27
1,2-dibromoethane	20	15	28
dibromomethane	18	15	20
1,2-dichlorobenzene	16	14	8
1,3-dichlorobenzene	15	15	1
1,4-dichlorobenzene	16	15	3
1,1-dichloroethane	17	14	17
1,2-dichloroethane	16	13	24
1,1-dichloroethene	16	15	6
cis-1,2-dichloroethene	17	14	17
trans-1,2-dichloroethene	17	15	13
1,2-dichloropropane	18	15	16
1,3-dichloropropane	17	14	25
1,1-dichloropropene	16	14	11
cis-1,3-dichloropropene	17	13	23
trans-1,3-dichloropropene	17	13	29
ethylbenzene	16	16	2
hexachlorobutadiene	14	14	4
isopropylbenzene	16	16	2
p-Isopropyltoluene	15	16	4
methyl-tert-butylether(MTBE)	20	14	35*
naphthalene	21	17	19
n-propyl-benzene	16	16	1
styrene	17	15	11
1,1,1,2-tetrachloroethane	17	16	7
1,1,2,2-tetrachloroethane	18	17	8
tetrachloroethylene	16	15	7
toluene	16	15	9
1,2,3-trichlorobenzene	18	15	20
1,2,4-trichlorobenzene	18	12	38*
1,1,1-trichloroethane	15	13	13
1,1,2-trichloroethane	18	14	22
trichloroethene	17	16	8
1,2,3-trichloropropane	17	15	12
1,2,4-trimethylbenzene	16	16	0
1,3,5-trimethylbenzene	16	16	1
xylene(m&p)	33	32	3
o-xylene	17	15	7
Control:			30

* - QC fails on this compound

Laboratory Report

Point Source Solutions
10445 SW Canyon Rd Suite 115
Portland, OR 97214

Project Name:
Project Location: Jiffy Lube
Project Number: 2025 NE Broadway
Date Sampled: OR161223-3A
Date received: 3/13/17

Report Number: 87285
Report Date: 4/3/17

EPA 7000

Analyte: Total Lead (Pb) quantitation by FLAA

Field ID	Lab ID	Result mg/Kg(ppm)	Detection Limit mg/Kg(ppm)
SB12-S1-16	L5714	56	10

Quality Control Report: Lead (Pb)

	Measured Conc. (mg/L)	Expected Concentration (mg/L)	Recovery (%)	Lower Limit	Upper Limit	
PB1704031						
ICV	5.1	5.0	102%	80%	120%	PASS
Prep Blank	0.1	0.0	--	0.5 mg/L	--	PASS
LCS	2.6	2.4	107%	70%	130%	PASS
QC Blank	0.0	0.0	--	0.5 mg/L	--	PASS
QC Check	5.1	5.0	102%	80%	120%	PASS
Calibration R^2	1.	(Lower Limit: 0.990)				PASS

CHAIN OF CUSTODY

Report Number 87285

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

[illegible]

Sample Condition Check List

Customer Name: PS.

COC #: 87285

Method of Delivery: courier client other _____

Type of ice: Ice Blue None

Cooler Temperature: 0.5

Matrix: Soil Water Other _____

Relinquish signed on Chain of Custody.

Received by signed on Chain of Custody.

Chain of Custody filled out.

Were samples Arrived within Hold Time.

Rush Turn Around Time Requested. *If yes, how many days* _____

Temperatures measured and written in correct place on COC.

Correct containers used.

Sufficient Volume.

ID on COC and Sample labels match.

Duplicate jars and vials labeled with a, b, c, d etc.

All tests logged in checked against the COC.

The COC scanned into the main office computer.

Yes	No	NA	Comments
/			*
/			*
/			*
/			*
NA			*
/			*
/			*
/			*
/			*
NA			*
/			*
/			*

FOR WATER SAMPLES:

Trip Blank: Yes _____ Waiver on file _____
No _____

Submitted by: _____

Was sufficient volume provided for analysis.

Was sufficient volume provided for QC samples (at least two).

HCL Preserved vials.

HCL LOT Number: _____

Were duplicate jars and vials labeled with a, b, c, d etc.

Headspace in VOA Vials (>6mm).

Yes	No	Comments
		*
		*
		*

		*
		*

Client Notification/Resolution: _____

Comments: _____

Reviewed: CY

Date: 3/13/17

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.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

March 22, 2017

Andy Klopfenstein, Project Manager
Point Source Solutions
10445 SW Canyon Rd., Ste. 115
Beaverton, OR 97005

Dear Mr Klopfenstein:

Included is the amended report from the testing of material submitted on March 14, 2017 from the 2025 NE Broadway St, F&BI 703242 project. Per your request, only the overrange compounds were reported in the dilutions of the samples.

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

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
NAA0321R.DOC

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.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

March 21, 2017

Andy Klopfenstein, Project Manager
Point Source Solutions
10445 SW Canyon Rd., Ste. 115
Beaverton, OR 97005

Dear Mr Klopfenstein:

Included are the results from the testing of material submitted on March 14, 2017 from the 2025 NE Broadway St, F&BI 703242 project. There are 9 pages included in this report.

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

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
NAA0321R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on March 14, 2017 by Friedman & Bruya, Inc. from the Point Source Solutions 2025 NE Broadway St, F&BI 703242 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Point Source Solutions</u>
703242 -01	SS1
703242 -02	SV1
703242 -03	SV2

The TO-15 calibration standard failed the acceptance criteria for acrylonitrile, pentane, cyclopentane, and vinyl acetate. The data were flagged accordingly.

A single point calibration at 1,000 ppbv was used for quantification of Gasoline Range Organics.

All other quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By Method TO-15

Client Sample ID: SS1	Client: Point Source Solutions
Date Received: 03/14/17	Project: 2025 NE Broadway St, F&BI 703242
Date Collected: 02/10/17	Lab ID: 703242-01 1/5
Date Analyzed: 03/17/17	Data File: 031718.D
Matrix: Air	Instrument: GCMS7
Units: ug/m3	Operator: MP

Surrogates:	%	Lower	Upper
4-Bromofluorobenzene	Recovery: 96	Limit: 70	Limit: 130

Compounds:	Concentration ug/m3	ppbv	Compounds:	Concentration ug/m3	ppbv
Chlorodifluoromethane	<1.8	<0.5	1-Butanol	90	30
Propene	5.7	3.3	Carbon tetrachloride	<3.1	<0.5
Dichlorodifluoromethane	<2.5	<0.5	Benzene	4.0	1.3
Chloromethane	<1	<0.5	Cyclohexane	<34	<10
F-114	<3.5	<0.5	2-Pentanone	<18	<5
Isobutene	22	9.4	3-Pentanone	<18	<5
Acetaldehyde	360	200	Pentanal	<18	<5
Vinyl chloride	<1.3	<0.5	1,2-Dichloropropane	<2.3	<0.5
1,3-Butadiene	3.7	1.7	1,4-Dioxane	<1.8	<0.5
Bromomethane	<1.9	<0.5	Bromodichloromethane	<3.4	<0.5
Chloroethane	<1.3	<0.5	Trichloroethene	<2.7	<0.5
Ethanol	<38	<20	cis-1,3-Dichloropropene	<2.3	<0.5
Acetonitrile	<8.4	<5	4-Methyl-2-pentanone	<20	<5
Acrolein	<4.6	<2	trans-1,3-Dichloropropene	<2.3	<0.5
Acrylonitrile	<1.1 ca	<0.5 ca	Toluene	23	6.2
Pentane	<15 ca	<5 ca	1,1,2-Trichloroethane	<2.7	<0.5
Trichlorofluoromethane	<2.8	<0.5	3-Hexanone	<20	<5
Acetone	80	34	2-Hexanone	<20	<5
2-Propanol	80	33	Hexanal	<20	<5
Isoprene	<1.4	<0.5	Tetrachloroethene	300	44
Iodomethane	<2.9	<0.5	Dibromochloromethane	<4.3	<0.5
1,1-Dichloroethene	<2	<0.5	1,2-Dibromoethane (EDB)	<3.8	<0.5
Methacrolein	<14	<5	Chlorobenzene	<2.3	<0.5
trans-1,2-Dichloroethene	<2	<0.5	Ethylbenzene	3.1	0.71
Cyclopentane	<1.4 ca	<0.5 ca	1,1,2,2-Tetrachloroethane	<3.4	<0.5
Methyl vinyl ketone	<5.7	<2	m,p-Xylene	11	2.6
Butanal	<15	<5	o-Xylene	4.4	1.0
Methylene chloride	<430	<120	Styrene	<4.3	<1
CFC-113	<3.8	<0.5	Bromoform	<10	<1
Carbon disulfide	<31	<10	Benzyl chloride	<2.6	<0.5
Methyl t-butyl ether	<1.8	<0.5	1,3,5-Trimethylbenzene	<12	<2.5
Vinyl acetate	<35 ca	<10 ca	1,2,4-Trimethylbenzene	<12	<2.5
1,1-Dichloroethane	<2	<0.5	1,3-Dichlorobenzene	<6	<1
cis-1,2-Dichloroethene	<2	<0.5	1,4-Dichlorobenzene	<3	<0.5
Hexane	<18	<5	1,2,3-Trimethylbenzene	<12	<2.5
Chloroform	<2.4	<0.5	1,2-Dichlorobenzene	<6	<1
2-Butanone (MEK)	<15	<5	1,2,4-Trichlorobenzene	<3.7	<0.5
1,2-Dichloroethane (EDC)	<2	<0.5	Naphthalene	<2.6	<0.5
1,1,1-Trichloroethane	<2.7	<0.5	Hexachlorobutadiene	<5.3	<0.5
Gasoline Range Organics	<2,100	<500			

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By Method TO-15

Client Sample ID: SV1	Client: Point Source Solutions
Date Received: 03/14/17	Project: 2025 NE Broadway St, F&BI 703242
Date Collected: 02/10/17	Lab ID: 703242-02 1/5
Date Analyzed: 03/17/17	Data File: 031715.D
Matrix: Air	Instrument: GCMS7
Units: ug/m3	Operator: MP

Surrogates:	%	Lower	Upper
4-Bromofluorobenzene	Recovery: 98	Limit: 70	Limit: 130

Compounds:	Concentration ug/m3	ppbv	Compounds:	Concentration ug/m3	ppbv
Chlorodifluoromethane	<1.8	<0.5	1-Butanol	<30	<10
Propene	9.8	5.7	Carbon tetrachloride	<3.1	<0.5
Dichlorodifluoromethane	<2.5	<0.5	Benzene	<1.6	<0.5
Chloromethane	<1	<0.5	Cyclohexane	<34	<10
F-114	<3.5	<0.5	2-Pentanone	<18	<5
Isobutene	9.5	4.1	3-Pentanone	<18	<5
Acetaldehyde	200	110	Pentanal	<18	<5
Vinyl chloride	<1.3	<0.5	1,2-Dichloropropane	<2.3	<0.5
1,3-Butadiene	1.7	0.75	1,4-Dioxane	<1.8	<0.5
Bromomethane	<1.9	<0.5	Bromodichloromethane	<3.4	<0.5
Chloroethane	<1.3	<0.5	Trichloroethene	<2.7	<0.5
Ethanol	<38	<20	cis-1,3-Dichloropropene	<2.3	<0.5
Acetonitrile	<8.4	<5	4-Methyl-2-pentanone	<20	<5
Acrolein	<4.6	<2	trans-1,3-Dichloropropene	<2.3	<0.5
Acrylonitrile	<1.1 ca	<0.5 ca	Toluene	<1.9	<0.5
Pentane	<15 ca	<5 ca	1,1,2-Trichloroethane	<2.7	<0.5
Trichlorofluoromethane	<2.8	<0.5	3-Hexanone	<20	<5
Acetone	48	20	2-Hexanone	<20	<5
2-Propanol	<43	<17	Hexanal	<20	<5
Isoprene	<1.4	<0.5	Tetrachloroethene	15	2.2
Iodomethane	<2.9	<0.5	Dibromochloromethane	<4.3	<0.5
1,1-Dichloroethene	<2	<0.5	1,2-Dibromoethane (EDB)	<3.8	<0.5
Methacrolein	<14	<5	Chlorobenzene	<2.3	<0.5
trans-1,2-Dichloroethene	<2	<0.5	Ethylbenzene	<2.2	<0.5
Cyclopentane	<1.4 ca	<0.5 ca	1,1,2,2-Tetrachloroethane	<3.4	<0.5
Methyl vinyl ketone	<5.7	<2	m,p-Xylene	4.5	1.0
Butanal	<15	<5	o-Xylene	2.4	0.55
Methylene chloride	<430	<120	Styrene	<4.3	<1
CFC-113	<3.8	<0.5	Bromoform	<10	<1
Carbon disulfide	<31	<10	Benzyl chloride	<2.6	<0.5
Methyl t-butyl ether	<1.8	<0.5	1,3,5-Trimethylbenzene	<12	<2.5
Vinyl acetate	<35 ca	<10 ca	1,2,4-Trimethylbenzene	<12	<2.5
1,1-Dichloroethane	<2	<0.5	1,3-Dichlorobenzene	<6	<1
cis-1,2-Dichloroethene	<2	<0.5	1,4-Dichlorobenzene	<3	<0.5
Hexane	<18	<5	1,2,3-Trimethylbenzene	<12	<2.5
Chloroform	<2.4	<0.5	1,2-Dichlorobenzene	<6	<1
2-Butanone (MEK)	<15	<5	1,2,4-Trichlorobenzene	<3.7	<0.5
1,2-Dichloroethane (EDC)	<2	<0.5	Naphthalene	<2.6	<0.5
1,1,1-Trichloroethane	<2.7	<0.5	Hexachlorobutadiene	<5.3	<0.5
Gasoline Range Organics	<2,100	<500			

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By Method TO-15

Client Sample ID: SV2	Client: Point Source Solutions
Date Received: 03/14/17	Project: 2025 NE Broadway St, F&BI 703242
Date Collected: 02/10/17	Lab ID: 703242-03 1/5
Date Analyzed: 03/17/17	Data File: 031716.D
Matrix: Air	Instrument: GCMS7
Units: ug/m3	Operator: MP

Surrogates:	%	Lower	Upper
4-Bromofluorobenzene	Recovery: 97	Limit: 70	Limit: 130

Compounds:	Concentration ug/m3	ppbv	Compounds:	Concentration ug/m3	ppbv
Chlorodifluoromethane	<1.8	<0.5	1-Butanol	<30	<10
Propene	6.0	3.5	Carbon tetrachloride	<3.1	<0.5
Dichlorodifluoromethane	<2.5	<0.5	Benzene	<1.6	<0.5
Chloromethane	<1	<0.5	Cyclohexane	<34	<10
F-114	<3.5	<0.5	2-Pentanone	<18	<5
Isobutene	5.0	2.2	3-Pentanone	<18	<5
Acetaldehyde	170	97	Pentanal	<18	<5
Vinyl chloride	<1.3	<0.5	1,2-Dichloropropane	<2.3	<0.5
1,3-Butadiene	1.3	0.57	1,4-Dioxane	<1.8	<0.5
Bromomethane	<1.9	<0.5	Bromodichloromethane	<3.4	<0.5
Chloroethane	<1.3	<0.5	Trichloroethene	<2.7	<0.5
Ethanol	<38	<20	cis-1,3-Dichloropropene	<2.3	<0.5
Acetonitrile	<8.4	<5	4-Methyl-2-pentanone	<20	<5
Acrolein	<4.6	<2	trans-1,3-Dichloropropene	<2.3	<0.5
Acrylonitrile	<1.1 ca	<0.5 ca	Toluene	2.2	0.59
Pentane	<15 ca	<5 ca	1,1,2-Trichloroethane	<2.7	<0.5
Trichlorofluoromethane	<2.8	<0.5	3-Hexanone	<20	<5
Acetone	34	14	2-Hexanone	<20	<5
2-Propanol	1,200 ve	490 ve	Hexanal	<20	<5
Isoprene	<1.4	<0.5	Tetrachloroethene	15	2.2
Iodomethane	<2.9	<0.5	Dibromochloromethane	<4.3	<0.5
1,1-Dichloroethene	<2	<0.5	1,2-Dibromoethane (EDB)	<3.8	<0.5
Methacrolein	<14	<5	Chlorobenzene	<2.3	<0.5
trans-1,2-Dichloroethene	<2	<0.5	Ethylbenzene	<2.2	<0.5
Cyclopentane	<1.4 ca	<0.5 ca	1,1,2,2-Tetrachloroethane	<3.4	<0.5
Methyl vinyl ketone	<5.7	<2	m,p-Xylene	<4.3	<1
Butanal	<15	<5	o-Xylene	<2.2	<0.5
Methylene chloride	<430	<120	Styrene	<4.3	<1
CFC-113	<3.8	<0.5	Bromoform	<10	<1
Carbon disulfide	<31	<10	Benzyl chloride	<2.6	<0.5
Methyl t-butyl ether	<1.8	<0.5	1,3,5-Trimethylbenzene	<12	<2.5
Vinyl acetate	<35 ca	<10 ca	1,2,4-Trimethylbenzene	<12	<2.5
1,1-Dichloroethane	<2	<0.5	1,3-Dichlorobenzene	<6	<1
cis-1,2-Dichloroethene	<2	<0.5	1,4-Dichlorobenzene	<3	<0.5
Hexane	<18	<5	1,2,3-Trimethylbenzene	<12	<2.5
Chloroform	<2.4	<0.5	1,2-Dichlorobenzene	<6	<1
2-Butanone (MEK)	<15	<5	1,2,4-Trichlorobenzene	<3.7	<0.5
1,2-Dichloroethane (EDC)	<2	<0.5	Naphthalene	<2.6	<0.5
1,1,1-Trichloroethane	<2.7	<0.5	Hexachlorobutadiene	<5.3	<0.5
Gasoline Range Organics	<2,100	<500			

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	SV2	Client:	Point Source Solutions
Date Received:	03/14/17	Project:	2025 NE Broadway St, F&BI 703242
Date Collected:	02/10/17	Lab ID:	703242-03 1/25
Date Analyzed:	03/16/17	Data File:	031610.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	MP

	%	Lower	Upper
Surrogates:	Recovery:	Limit:	Limit:
4-Bromofluorobenzene	93	70	130

	Concentration	
Compounds:	ug/m3	ppbv
2-Propanol	610	250

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By Method TO-15

Client Sample ID:	Method Blank	Client:	Point Source Solutions
Date Received:	Not Applicable	Project:	2025 NE Broadway St, F&BI 703242
Date Collected:	03/16/17	Lab ID:	07-536 mb
Date Analyzed:	03/16/17	Data File:	031607.D
Matrix:	Air	Instrument:	GCMS7
Units:	ug/m3	Operator:	MP

Surrogates:	%	Lower	Upper
4-Bromofluorobenzene	Recovery: 99	Limit: 70	Limit: 130

Compounds:	Concentration ug/m3	ppbv	Compounds:	Concentration ug/m3	ppbv
Chlorodifluoromethane	<0.35	<0.1	1-Butanol	<6.1	<2
Propene	<0.69	<0.4	Carbon tetrachloride	<0.63	<0.1
Dichlorodifluoromethane	<0.49	<0.1	Benzene	<0.32	<0.1
Chloromethane	<0.21	<0.1	Cyclohexane	<6.9	<2
F-114	<0.7	<0.1	2-Pentanone	<3.5	<1
Isobutene	<0.92	<0.4	3-Pentanone	<3.5	<1
Acetaldehyde	<9	<5	Pentanal	<3.5	<1
Vinyl chloride	<0.26	<0.1	1,2-Dichloropropane	<0.46	<0.1
1,3-Butadiene	<0.22	<0.1	1,4-Dioxane	<0.36	<0.1
Bromomethane	<0.39	<0.1	Bromodichloromethane	<0.67	<0.1
Chloroethane	<0.26	<0.1	Trichloroethene	<0.54	<0.1
Ethanol	<7.5	<4	cis-1,3-Dichloropropene	<0.45	<0.1
Acetonitrile	<1.7	<1	4-Methyl-2-pentanone	<4.1	<1
Acrolein	<0.92	<0.4	trans-1,3-Dichloropropene	<0.45	<0.1
Acrylonitrile	<0.22	<0.1	Toluene	<0.38	<0.1
Pentane	<3 ca	<1 ca	1,1,2-Trichloroethane	<0.55	<0.1
Trichlorofluoromethane	<0.56	<0.1	3-Hexanone	<4.1	<1
Acetone	<4.8	<2	2-Hexanone	<4.1	<1
2-Propanol	<8.6	<3.5	Hexanal	<4.1	<1
Isoprene	<0.28	<0.1	Tetrachloroethene	<0.68	<0.1
Iodomethane	<0.58	<0.1	Dibromochloromethane	<0.85	<0.1
1,1-Dichloroethene	<0.4	<0.1	1,2-Dibromoethane (EDB)	<0.77	<0.1
Methacrolein	<2.9	<1	Chlorobenzene	<0.46	<0.1
trans-1,2-Dichloroethene	<0.4	<0.1	Ethylbenzene	<0.43	<0.1
Cyclopentane	<0.29	<0.1	1,1,2,2-Tetrachloroethane	<0.69	<0.1
Methyl vinyl ketone	<1.1	<0.4	m,p-Xylene	<0.87	<0.2
Butanal	<2.9	<1	o-Xylene	<0.43	<0.1
Methylene chloride	<87	<25	Styrene	<0.85	<0.2
CFC-113	<0.77	<0.1	Bromoform	<2.1	<0.2
Carbon disulfide	<6.2	<2	Benzyl chloride	<0.52	<0.1
Methyl t-butyl ether	<0.36	<0.1	1,3,5-Trimethylbenzene	<2.5	<0.5
Vinyl acetate	<7	<2	1,2,4-Trimethylbenzene	<2.5	<0.5
1,1-Dichloroethane	<0.4	<0.1	1,3-Dichlorobenzene	<1.2	<0.2
cis-1,2-Dichloroethene	<0.4	<0.1	1,4-Dichlorobenzene	<0.6	<0.1
Hexane	<3.5	<1	1,2,3-Trimethylbenzene	<2.5	<0.5
Chloroform	<0.49	<0.1	1,2-Dichlorobenzene	<1.2	<0.2
2-Butanone (MEK)	<2.9	<1	1,2,4-Trichlorobenzene	<0.74	<0.1
1,2-Dichloroethane (EDC)	<0.4	<0.1	Naphthalene	<0.52	<0.1
1,1,1-Trichloroethane	<0.55	<0.1	Hexachlorobutadiene	<1.1	<0.1
Gasoline Range Organics	<410	<100			

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 03/21/17

Date Received: 03/14/17

Project: 2025 NE Broadway St

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Chlorodifluoromethane	ppbv	10	94	70-130
Propene	ppbv	10	78	70-130
Dichlorodifluoromethane	ppbv	10	93	70-130
Chloromethane	ppbv	10	94	70-130
F-114	ppbv	10	103	70-130
Isobutene	ppbv	10	93	70-130
Acetaldehyde	ppbv	10	94	70-130
Vinyl chloride	ppbv	10	100	70-130
1,3-Butadiene	ppbv	10	98	70-130
Bromomethane	ppbv	10	104	70-130
Chloroethane	ppbv	10	99	70-130
Ethanol	ppbv	10	101	70-130
Acetonitrile	ppbv	10	95	70-130
Acrolein	ppbv	10	95	70-130
Acrylonitrile	ppbv	10	71	70-130
Pentane	ppbv	10	69 vo	70-130
Trichlorofluoromethane	ppbv	10	103	70-130
Acetone	ppbv	10	97	70-130
2-Propanol	ppbv	10	99	70-130
Isoprene	ppbv	10	87	70-130
Iodomethane	ppbv	10	94	70-130
1,1-Dichloroethene	ppbv	10	91	70-130
Methacrolein	ppbv	10	84	70-130
trans-1,2-Dichloroethene	ppbv	10	92	70-130
Cyclopentane	ppbv	10	74	70-130
Methyl Vinyl Ketone	ppbv	10	100	70-130
Butanal	ppbv	10	91	70-130
Methylene chloride	ppbv	10	92	70-130
CFC-113	ppbv	10	95	70-130
Carbon disulfide	ppbv	10	91	70-130
Methyl t-butyl ether	ppbv	10	84	70-130
Vinyl acetate	ppbv	10	70	70-130
1,1-Dichloroethane	ppbv	10	88	70-130
cis-1,2-Dichloroethene	ppbv	10	88	70-130
Hexane	ppbv	10	84	70-130
Chloroform	ppbv	10	90	70-130
2-Butanone (MEK)	ppbv	10	90	70-130
1,2-Dichloroethane (EDC)	ppbv	10	86	70-130
1,1,1-Trichloroethane	ppbv	10	84	70-130
1-Butanol	ppbv	10	80	70-130
Carbon tetrachloride	ppbv	10	86	70-130

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 03/21/17

Date Received: 03/14/17

Project: 2025 NE Broadway St

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF AIR SAMPLES FOR VOLATILES BY METHOD TO-15

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ppbv	10	88	70-130
Cyclohexane	ppbv	10	83	70-130
2-Pentanone	ppbv	10	93	70-130
3-Pentanone	ppbv	10	93	70-130
Pentanal	ppbv	10	85	70-130
1,2-Dichloropropane	ppbv	10	94	70-130
1,4-Dioxane	ppbv	10	103	70-130
Bromodichloromethane	ppbv	10	95	70-130
Trichloroethene	ppbv	10	95	70-130
cis-1,3-Dichloropropene	ppbv	10	87	70-130
4-Methyl-2-pentanone	ppbv	10	96	70-130
trans-1,3-Dichloropropene	ppbv	10	88	70-130
Toluene	ppbv	10	94	70-130
1,1,2-Trichloroethane	ppbv	10	102	70-130
3-Hexanone	ppbv	10	94	70-130
2-Hexanone	ppbv	10	94	70-130
Hexanal	ppbv	10	89	70-130
Tetrachloroethene	ppbv	10	98	70-130
Dibromochloromethane	ppbv	10	104	70-130
1,2-Dibromoethane (EDB)	ppbv	10	101	70-130
Chlorobenzene	ppbv	10	99	70-130
Ethylbenzene	ppbv	10	97	70-130
1,1,2,2,-Tetrachloroethane	ppbv	10	100	70-130
m,p-Xylene	ppbv	20	97	70-130
o-Xylene	ppbv	10	96	70-130
Styrene	ppbv	10	94	70-130
Bromoform	ppbv	10	101	70-130
Benzyl chloride	ppbv	10	83	70-130
1,3,5-Trimethylbenzene	ppbv	10	96	70-130
1,2,4-Trimethylbenzene	ppbv	10	98	70-130
1,3-Dichlorobenzene	ppbv	10	100	70-130
1,4-Dichlorobenzene	ppbv	10	98	70-130
1,2,3-Trimethylbenzene	ppbv	10	97	70-130
1,2-Dichlorobenzene	ppbv	10	100	70-130
1,2,4-Trichlorobenzene	ppbv	10	83	70-130
Naphthalene	ppbv	10	84	70-130
Hexachlorobutadiene	ppbv	10	89	70-130
Gasoline Range Organics	ppbv	10	97	70-130

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.

703242

SAMPLE CHAIN OF CUSTODY

ME 03/14/17

Page # 1 of 1

Report To Andy KlopfersteinCompany Point Source SolutionsAddress 10445 SW Canyon Rd, Ste 15City, State, ZIP Beaverton, OR, 97005Phone 503-780-1569 Email Andy@pointsource solutions

SAMPLERS (signature)

PROJECT NAME

PO #

2025 NE Broadway St

REMARKS

INVOICE TO

P.S.

TURNAROUND TIME

☐ Standard☒ RUSH 5 day

Rush charges authorized by:

ATK

SAMPLE DISPOSAL

☐ Dispose after 30 days☐ Archive Samples☐ Other

ANALYSIS REQUESTED

Sample Name	Lab ID	Canister ID	Flow Contr. ID	Date Sampled	Field Initial Press. (Hg)	Field Initial Time	Field Final Press. (Hg)	Field Final Time	TO-15 Full Scan	TO-15 BTEXN	TO-15 cVOCs	2 Prop / GX	Notes
SS1	01	3257	FB108	2-10-17	29	13:20	4	13:24	X			X	
SV1	02	3260	FB110	↓	30	14:03	5	14:07	X			X	
SV2	03	3255	FB107	↓	30	15:12	5	15:16	X			X	

Friedman & Bruya, Inc.
3012 16th Avenue West

Seattle, WA 98119-0000

Ph. (206) 285-8282

Fax (206) 283-5044

FORMS\COC\COCTO-15.DOC

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:				
Received by: <u>m. klopfer</u>	<u>Nhan Phan</u>	<u>Fe B+</u>	<u>3/14/17</u>	<u>1330</u>
Relinquished by:				
Received by:				

Samples received at 20 °C

APPENDIX III

WELL LOGS

WATER WELL REPORT

STATE OF OREGON

State Well No. M/1-35C 2

State Permit No. G-1144

(1) OWNER:

Name Lloyd Corporation
Address 720 NE 12th Ave
Portland, Oregon

(2) LOCATION OF WELL:

County Multnomah Owner's number, if any—
NE 1/4 NW 1/4 Section 35 T. 1N R. 1E W.M.
Bearing and distance from section or subdivision corner
235 ft. N., 90 ft. E of SW Corner,
Block 112, Holladay's Addition

(3) TYPE OF WORK (check):

Well ☒ Deepening ☐ Reconditioning ☐ Abandon ☐
Abandonment, describe material and procedure in Item 11.

(4) PROPOSED USE (check):

Domestic ☐ Industrial ☒ Municipal ☐
Other ☐ Test Well ☐ Other ☐

(5) TYPE OF WELL:

Rotary ☒ Driven ☐
Cable ☐ Jetted ☐
Dug ☐ Bored ☐

(6) CASING INSTALLED:

Threaded ☐ Welded ☒
16 " Diam. from 0 ft. to 271 ft. Gage 3/8" wall
" Diam. from _____ ft. to _____ ft. Gage _____
" Diam. from _____ ft. to _____ ft. Gage _____

(7) PERFORATIONS:

Perforated? ☒ Yes ☐ No
Type of perforator used Star

SIZE of perforations 3/8" in. by 14 in.
8 ROWS perforations from 186 ft. to 200 ft.
8 ROWS perforations from 242 ft. to 251 ft.
..... perforations from _____ ft. to _____ ft.
..... perforations from _____ ft. to _____ ft.
..... perforations from _____ ft. to _____ ft.

(8) SCREENS:

Well screen installed ☐ Yes ☒ No
Manufacturer's Name _____

Model No. _____
Screen Slot size _____ Set from _____ ft. to _____ ft.
Screen Slot size _____ Set from _____ ft. to _____ ft.

CONSTRUCTION:

Well gravel packed? ☐ Yes ☐ No Size of gravel: _____
Gravel placed from _____ ft. to _____ ft.
Was a surface seal provided? ☐ Yes ☒ No To what depth? _____ ft.
Material used in seal—
Did any strata contain unusable water? ☐ Yes ☒ No
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

(10) WATER LEVELS:

Static level 121 ft. below land surface Date Jan. 26, 59
Artesian pressure _____ lbs. per square inch Date _____

Log Accepted by:

Lloyd Corporation, Inc.
[Signed] W. F. B. Smith Date 3/1, 1959
Portland, Ore.

(11) WELL TESTS:

Drawdown is amount water level is lowered below static level Strasser D Co.
Was a pump test made? ☒ Yes ☐ No If yes, by whom?

Yield: 1100 gal./min. with 7 ft. drawdown after 8 hrs.

" " " "

" " " "

Ballor test 150 gal./min. with no ft. drawdown after _____ hrs.

Artesian flow _____ g.p.m. Date _____

Temperature of water 53.1 Was a chemical analysis made? ☒ Yes ☐ No

(12) WELL LOG:

Diameter of well 16 inches.
Depth drilled 271 ft. Depth of completed well 271 ft.

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL	FROM	TO
Basement	Surface	14
Sandy silt	14	48
Coarse sand and gravel, some clay	48	67
Dirty sand	67	83
Dirty sand and gravel	83	117
Boulders, gravel, and sand	117	134
Loose gravel and sand	134	149
Gravel and sand, some large gravel	149	176
Gravel, some sand and clay	176	182
Loose gravel and sand, water bearing	182	201
Boulders	201	206
Sand, gravel, some clay boulders	206	242
Loose gravel and sand, water bearing	242	254
Cemented gravel	254	271

Work started Dec. 16 1958 Completed Feb. 11 1959

(13) PUMP:

Manufacturer's Name _____
Type: _____ H.P. _____

Well Driller's Statement:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME R. J. Strasser Drilling Co.
(Person, firm, or corporation) (Type or print)
Address 8110 SE Sunset Lane, Portland 6, Oregon
Driller's well number 3098
[Signed] Robert J. Strasser partner
(Well Driller)
License No. 10 Date Feb. 20, 1959

(USE ADDITIONAL SHEETS IF NECESSARY)

(USE ADDITIONAL SHEETS IF NECESSARY)

ORIGINAL
File Original, and
Duplicate with the
STATE ENGINEER,
SALEM, OREGON

SEP 5 1956

WATER WELL DRILLERS REPORT

Do Not State Well No.

Fill In

State Permit No.

STATE ENGINEER

STATE OF OREGON

SALEM, OREGON

(1) OWNER:

Name Jantzen Inc.

Address Jantzen Center-Portland 8, Oregon

(2) LOCATION OF WELL:

County Multnomah Owner's number, if any--

R. F. D. or Street No.

Bearing and distance from section or subdivision corner

Well located under sidewalk on
SE Glisan st. between 19th and
20th Ave.

(3) TYPE OF WORK (check):

New well ☒ Deepening ☐ Reconditioning ☐ Abandon ☐

abandonment, describe material and procedure in Item 11.

(4) PROPOSED USE (check):

Domestic ☐ Industrial ☒ Municipal ☐

Irrigation ☐ Test Well ☐ Other ☐

(5) EQUIPMENT:

Rotary ☐

Cable ☒

Dug Well ☐

(6) CASING INSTALLED:

Threaded ☐ Welded ☒

Sidewalk 307' 12" 0.33" Gage or Wall

FROM ft. to ft. Diam. ft.

" " " " " "

" " " " " "

" " " " " "

" " " " " "

" " " " " "

Type and size of shoe or well ring Std.

Describe joint

If gravel packed

Diameter of Bore from ft. to ft.

" " " " " "

" " " " " "

" " " " " "

" " " " " "

" " " " " "

" " " " " "

Size of gravel:

(7) PERFORATIONS:

Type of perforator used Star perforator

SIZE of perforations 1 1/4 in. length, by 3/8 in.

FROM 130 to 172.5 ft. perf per foot 4 No. of rows

" " " " " " " " " "

" " " " " " " " " "

" " " " " " " " " "

" " " " " " " " " "

SCREENS:

Give Manufacturer's Name, Model No. and Size

(8) CONSTRUCTION:

Was a surface sanitary seal provided? ☒ Yes ☐ No To what depth 30 ft.

Were any strata sealed against pollution? ☐ Yes ☐ No

If yes, note depth of strata

FROM ft. to ft.

" " " " " "

" " " " " "

METHOD OF SEALING backfilled with cuttings

(9) WATER LEVELS:

Depth at which water was first found 156 ft.

Standing level before perforating 111 ft.

Standing level after perforating 115 ft.

Log Accepted by:

[Signed] _____ Dated _____, 19____

Owner

(10) WELL TESTS:

Was a pump test made? ☒ Yes ☐ No If yes, by whom?

Yield: 400 gal./min. with 10 ft. draw down after 12 hrs.

" 750 " 20 " " "

" 950 " 26 " 12 "

Artesian flow _____ g.p.m.

Shut-in pressure _____ lbs. per square inch.

Bailer test _____ g.p.m. with _____ ft. drawdown

Temperature of water _____ Was a chemical analysis made? ☐ Yes ☐ No

Was electric log made of well? ☐ Yes ☐ No

(11) WELL LOG:

Diameter of well, 12 inches.

Total depth 380 ft. Depth of completed well _____ ft.

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

sdw to basement 13 feet

13 " 40 " Brown sand and silt

40 " 48 " Blue clay

48 " 59 " Yellow clay

59 " 78 " Gravel with clay binder

78 " 102 " Hard packed sand

102 " 121 " Sand with clay binder

121 " 156 " Cemented gravel -boulders

156 " 171 " Water bearing sand and gravel

171 " 195 " Cemented gravel and boulders

195 " 206 " Sand and gravel-clay binder

206 " 295 " Blue clay

295 " 302 " Sandstone

302 " 342 " Gray shale

342 " 368 " Gray shale with sand seams

368 " 380 " Sandstone

" " " " " "

" " " " " "

" " " " " "

" " " " " "

" " " " " "

" " " " " "

" " " " " "

" " " " " "

" " " " " "

" " " " " "

" " " " " "

" " " " " "

" " " " " "

Ground elevation at well site _____ feet above mean sea level.

Work started June 23 1956 Completed Aug. 8 1956

Well Driller's Statement:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME R. J. Strasser Drilling Co.

(Person, firm, or corporation) (Typed or printed)

Address 8110 SE Sunset Lane Portland 6, Oregon

Driller's well number 3080

[Signed] R. J. Strasser (Well Driller)

License No. 10 Dated Aug. 18, 1956

File Original and
First Copy with the
STATE ENGINEER,
SALEM, OREGON

Record from
U.S.G.S. W.S.P. 890

WATER WELL REPORT
STATE OF OREGON

State Well No. 1N/1-35B(1)

State Permit No. _____

(1) OWNER:

Name - Lloyd Corporation

Address _____

Portland, Oregon

(2) LOCATION OF WELL:

County Multnomah

Owner's number, if any—

NW ¼ NE ¼ Section 35 T. 1 N R. 1 E W.M.

Bearing and distance from section or subdivision corner _____

(3) TYPE OF WORK (check):

New Well ☐ Deepening ☐ Reconditioning ☐ Abandon ☐

If abandonment, describe material and procedure in Item 11.

(4) PROPOSED USE (check):

Domestic ☐ Industrial ☐ Municipal ☐

Irrigation ☒ Test Well ☐ Other ☐

(5) TYPE OF WELL:

Rotary ☐ Driven ☐

Cable ☐ Jetted ☐

Dug ☐ Bored ☐

(6) CASING INSTALLED:

Threaded ☐ Welded ☐

_____ " Diam. from _____ ft. to _____ ft. Gage _____

_____ " Diam. from _____ ft. to _____ ft. Gage _____

_____ " Diam. from _____ ft. to _____ ft. Gage _____

(7) PERFORATIONS:

Perforated? ☐ Yes ☐ No

Type of perforator used _____

SIZE of perforations in. by in.

_____ perforations from _____ ft. to _____ ft.

_____ perforations from _____ ft. to _____ ft.

_____ perforations from _____ ft. to _____ ft.

_____ perforations from _____ ft. to _____ ft.

_____ perforations from _____ ft. to _____ ft.

(8) SCREENS:

Well screen installed ☐ Yes ☐ No

Manufacturer's Name _____

Type _____ Model No. _____

_____ Slot size _____ Set from _____ ft. to _____ ft.

_____ Slot size _____ Set from _____ ft. to _____ ft.

(9) CONSTRUCTION:

Was well gravel packed? ☐ Yes ☐ No Size of gravel: _____

Gravel placed from _____ ft. to _____ ft.

Was a surface seal provided? ☐ Yes ☐ No To what depth? _____ ft.

Material used in seal—

Did any strata contain unusable water? ☐ Yes ☐ No

Type of water? _____ Depth of strata _____

Method of sealing strata off _____

(10) WATER LEVELS:

Static level 30 ft. below land surface Date 1931

Artesian pressure _____ lbs. per square inch Date _____

Log Accepted by: _____

[Signed] _____ Date _____, 19____
(Owner)

(11) WELL TESTS:

Drawdown is amount water level is lowered below static level

Was a pump test made? ☐ Yes ☐ No If yes, by whom? _____

Yield: 600 gal./min. with 18 ft. drawdown after _____ hrs.

" " " "

" " " "

Ballor test gal./min. with _____ ft. drawdown after _____ hrs.

Artesian flow _____ g.p.m. Date _____

Temperature of water _____ Was a chemical analysis made? ☐ Yes ☐ No

(12) WELL LOG:

Diameter of well 12-10 inches.

Depth drilled 501 ft. Depth of completed well 501 ft.

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL	FROM	TO
Sand, white, packed	0	77
gravel, cemented	77	136
gravel, cobbles & boulders, cemented	136	145
fine sand, in part clayey; cobbles in one 3-foot zone	145	175
clay, sandy in part	175	205
sandrock, soft	205	215
sand, fine, packed in lower part	215	285
sand	285	290
clay, blue and gravel	290	301
clay, blue	301	346
sand, fine	346	355
sand and clay	355	397
sand, fine at top, coarsens toward bottom	397	445
clay, sandy	445	470
sand	470	478
clay, sandy	478	487
sand	487	501

Work started _____ 19____ Completed _____ 1931

(13) PUMP:

Manufacturer's Name _____

Type: Turbine H.P. _____

Well Driller's Statement:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME A. M. Janssen Drilling Co.
(Person, firm, or corporation) (Type or print)

Address _____

Driller's well number _____

[Signed] _____ (Well Driller)

License No. _____ Date _____, 19____

(USE ADDITIONAL SHEETS IF NECESSARY)

The original and first copy
of this report are to be
filed with the

APR 3 - 1972

WELL REPORT

MULT

State Well No. W/1-35

STATE ENGINEER, SALEM, OREGON (Please type or print)

within 30 days from the date of well completion.
SALEM, OREGON (Do not write above this line)

State Permit No.

(1) OWNER:

Name Portland Public Schools/Benson HighAddress P.O. Box 3107
Portland, Oregon 97208

(2) TYPE OF WORK (check):

Cathodic Groundbed
New ☒ Deepening ☐ Reconditioning ☐ Abandon ☐

If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL:

Rotary ☐ Driven ☐
Cable ☐ Jetted ☐
Dug ☐ Bored ☐

(4) PROPOSED USE (check):

Cathodic Groundbed
Domestic ☐ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☒

CASING INSTALLED:

Threaded ☐ Welded ☒
10" Diam. from 0 ft. to 20 ft. Gage # 188
" Diam. from ft. to ft. Gage
" Diam. from ft. to ft. Gage

PERFORATIONS:

Perforated? ☐ Yes ☐ No.

Type of perforator used

Size of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

(7) SCREENS:

Well screen installed? ☐ Yes ☐ No

Manufacturer's Name

Type Model No.

Diam. Slot size Set from ft. to ft.

Diam. Slot size Set from ft. to ft.

(8) WELL TESTS:

Drawdown is amount water level is lowered below static level

Was a pump test made? ☐ Yes ☐ No If yes, by whom?

Yield: gal./min. with ft. drawdown after hrs.

" " " "

" " " "

Per test gal./min. with ft. drawdown after hrs.

Artesian flow g.p.m.

Temperature of water Depth artesian flow encountered ft.

(9) CONSTRUCTION:

Well seal—Material used Cement

Well sealed from land surface to 20 ft.

Diameter of well bore to bottom of seal in.

Diameter of well bore below seal in.

Number of sacks of cement used in well seal sacks

Number of sacks of bentonite used in well seal sacks

Brand name of bentonite

Number of pounds of bentonite per 100 gallons

of water lbs./100 gals.

Was a drive shoe used? ☐ Yes ☐ No Plugs Size: location ft.Did any strata contain unusable water? ☐ Yes ☐ No

Type of water? depth of strata

Method of sealing strata off

Was well gravel packed? ☐ Yes ☐ No Size of gravel:

Gravel placed from ft. to ft.

(10) LOCATION OF WELL:

County Multnomah Driller's well number

1/4 1/4 Section 35 T.1N R.1E W.M.

Bearing and distance from section or subdivision corner

(11) WATER LEVEL: Completed well.

Depth at which water was first found ft.

Static level ft. below land surface. Date

Artesian pressure lbs. per square inch. Date

(12) WELL LOG:

Diameter of well below casing

Depth drilled 301 ft. Depth of completed well 301 ft.

Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level and indicate principal water-bearing strata.

MATERIAL	From	To	SWL
fill material	0	12	
fine silty clay	12	39	
course sand	39	42	
brown clay	42	46	
blue clay	46	54	
brown clay & sand	54	73	
semi-cemented small gravel & course sand M	73	166	
layers of sand & gravel & gravel & clay H	166	188	
cemented gravel & sand w/a few boulders H	188	200	
cement gravel & boulders H	200	274	
blue clay H	274	277	
brown sandy clay	277	299	
sand & gravel	299	301	
Cathodic Groundbed			
Rotary drilled with mud			

Work started 3-22 1972 Completed 3-24 1972

Date well drilling machine moved off of well 3-24- 1972

Drilling Machine Operator's Certification:

This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.

[Signed] Marvin Sample Date 3/29, 1972
(Drilling Machine Operator)

Drilling Machine Operator's License No. 292

Water Well Contractor's Certification:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Name Hansen Drilling Co., Inc.
(Person, firm or corporation) (Type or print)Address 6711 N.E. 58th Ave.-Vancouver-Wa.[Signed] Joe E. Hansen
(Water Well Contractor)

Contractor's License No. 400 Date March 25, 1972

MULT 82884

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765)

WELL I.D. # L 78309

START CARD # 184556

Instructions for completing this report are on the last page of this form.

(1) LAND OWNER Well Number L-1
Name Cavanaugh and Cavanaugh LLC
Address 3435 NE 45th Ave Ste J
City Portland State OR Zip 97213

(2) TYPE OF WORK ☒ New Well
☐ Deepening ☐ Alteration (repair/recondition) ☐ Abandonment ☐ Conversion

(3) DRILL METHOD
☒ Rotary Air ☐ Rotary Mud ☐ Cable ☐ Auger ☐ Cable Mud
☐ Other

(4) PROPOSED USE
☐ Domestic ☐ Community ☐ Industrial ☐ Irrigation
☒ Thermal ☒ Injection ☐ Livestock ☐ Other

(5) BORE HOLE CONSTRUCTION Special Construction: ☒ Yes ☐ No
Depth of Completed Well 205 ft.
Explosives used: ☐ Yes ☒ No Type _____ Amount _____

BORE HOLE			SEAL			Sacks or Pounds
Diameter	From	To	Material	From	To	
12"	0	25	Bentonite	0	25	20 aka
8"	0	205				

How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☐ E

☒ Other Poured chips in annulus and hydrated

Backfill placed from _____ ft. to _____ ft. Material _____
Gravel placed from _____ ft. to _____ ft. Size of gravel _____

(6) CASING/LINER							
Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing: 8"	0	183	.250	☒	☐	☐	☐
				☐	☐	☐	☐
Liner:				☐	☐	☐	☐

Drive Shoe used ☐ Inside ☒ Outside ☐ None
Final location of shoe(s) 183

(7) PERFORATIONS/SCREENS
☐ Perforations Method _____
☒ Screens Type Alloy Mesh Material Stainless

From	To	Slot Size	Number	Diameter	Tele/pipe size	Casing	Liner
180	185	.040		8	Tele	☐	☐
185	205	.050		8	Tele	☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour
☐ Pump ☐ Bailer ☒ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
75	100	180	1 hour

Temperature of water 54 F Depth Artesian Flow Found _____
Was a water analysis done? ☒ Yes By whom Client
Did any strata contain water not suitable for intended use? ☐ Too little
☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other
Depth of strata: _____

(9) LOCATION OF WELL (legal description)

County Multnomah
Tax Lot 5200 Lot _____
Township 1 N Range 1 E WM
Section 35 NE 1/4 NW 1/4

Lat _____ " or _____ (degrees or decimal)
Long _____ " or _____ (degrees or decimal)

Street Address of Well (or nearest address) 1111 East Burnside St
Portland

(10) STATIC WATER LEVEL

78 ft. below land surface. Date 2/10/06

_____ ft. below land surface. Date _____
Artesian pressure _____ lb. per square inch Date _____

(11) WATER BEARING ZONES

Depth at which water was first found 96

From	To	Estimated Flow Rate	SWL
96	205	60 gpm	78

(12) WELL LOG

		Ground Elevation		SWL
Material		From	To	
Gravel crushed	gray	0	1	
Sandy Silt	tan	1	22	
Silty Sand	tan	22	46	
Silty sand with gravel	tan	46	57	
Silty Sand with occ gravel	brown	46	97	78
Sandy Gravel troutdale	gr/br	97	205	

RECEIVED	RECEIVED
APR 20 2006	MAR 30 2006
WATER RESOURCES DEPT SALEM, OREGON	WATER RESOURCES DEPT SALEM, OREGON

Date Started 2/6/06

Completed 2/10/06

(unbonded) Water Well Constructor Certification

I certify that the work I performed on the construction, deepening, alteration, or abandonment of this well is in compliance with Oregon water supply well construction standards. Materials used and information reported above are true to the best of my knowledge and belief.

WWC Number _____ Date _____

Signed _____

(bonded) Water Well Constructor Certification

I accept responsibility for the construction, deepening, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.

WWC Number 1824 Date 2/13/06

Signed Chad Meyer

ORIGINAL - WATER RESOURCES DEPT

RECEIVED

FIRST COPY - CONSTRUCTOR

SECOND COPY - CUSTOMER

06/16/2004

OCT 26 2006

WATER RESOURCES DEPT
SALEM, OREGON



MULT 83130

Oregon

Theodore R. Kulongoski, Governor

Water Resources Department
North Mall Office Building
725 Summer Street NE, Suite A
Salem, OR 97301-1266
503-986-0900
FAX 503-986-0904

February 7, 2006

GREGORY DRILLING INC
CHAD GREGORY #10451
17609 NE 70TH ST
REDMOND, WA 98052

FINAL ORDER

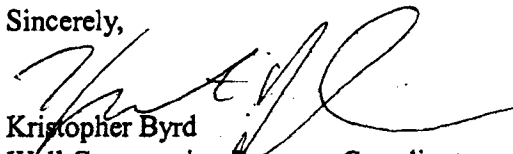
Dear Chad:

The Special Standard request you submitted for owner: Kevin Cavanaugh, Start Card number 184555 is hereby approved for the following: You may construct this well within 33 feet from a sanitary sewer line. However, the well must have a minimum surface seal depth of 22 feet bgs. If a deeper surface seal is required to meet the minimum standards based on site conditions then a deeper surface seal shall be placed. The well may also be placed in an underground vault. The vault shall be constructed to the ODWR recommended standards that were included with your Special Standard request. The vault must be watertight and it shall have a two inch drain to daylight (See OAR 690-210-0030 and 690-210-0250). All other construction standards must be adhered to. Your Special Standard request form is enclosed. This Special Standard only addresses the minimum well construction standards. DEQ regulates UIC systems and should be contacted regarding any UIC. I would also urge the landowner to contact the local Watermaster to address any water use or quantity issues.

The Well Construction Standards serve to protect ground water resources. By approving and issuing this special construction standard the Oregon Water Resources Department is not representing that a well constructed in accordance with this condition will maintain structural integrity or that it meets engineering standards. The well constructor/or landowner is responsible for ensuring that a well is constructed in a manner that protects ground water resources as required under Oregon Administrative Rules 690-200 through 690-240.

If you have any questions concerning this letter, please contact me at (503) 986-0851, or by e-mail at Kristopher.R.Byrd@wrdr.state.or.us.

Sincerely,



Kristopher Byrd
Well Construction Program Coordinator
Enforcement Section

enclosure

cc: Joel Jeffery, NW Region Well Inspector
File

This is a final order in other than contested case. This order is subject to judicial review under ORS 183.484. Any petition for judicial review must be filed within the 60 day time period specified by ORS 183.484(2). Pursuant to ORS 536.075 and OAR 137-004-0080 you may either petition for judicial review or petition the Director for reconsideration of this order. A petition for reconsideration may be granted or denied by the Director, and if no action is taken within 60 days following the date the petition was filed, the petition shall be deemed denied.

MULT 83-130

Production Well (P-1)
(Sanitary Sewer set back)

Oregon Water Resources Department

REQUEST FOR WRITTEN APPROVAL TO USE CONSTRUCTION METHODS NOT INCLUDED IN OREGON ADMINISTRATIVE RULES 690-200 THROUGH 690-240

Before the request can be considered, this form must be completed. Requests shall be submitted to the Well Construction Specialist, Water Resources Department, 725 Summer Street NE, Suite "A", Salem OR 97301-1271. Requests may also be considered by the appropriate Regional Manager.

Date of request: 2/1/06 Oral approval date (if applicable): _____

Bonded Well Constructor (name, license #, and mailing address): Chad Gergory (Gergory Drilling Inc)

License # 1824 17609 NE 70th ST, Redmond, WA 98052

(1) Location of Well: NE 1/4 SW 1/4 Tax lot 5200 Section 35,
Township 1 N, Range 1E W, Multnomah County
Address at well site: 1111 E Burnside St. Portland, Or 97214

(2) Start Card Number(s)(for work to be done): 184555

(3) Name and Address of Land Owner: Kevin Cavanaugh: 3435 NE 45th Ave., Suite J,
Portland, OR 97213

(4) Distance to the nearest septic tank, drainfield, closed sewage line (if water supply well)
It is 33' to the nearest closed sewage lateral (see attached site map). This distance is measured from the well to the point where the sewage line emerges from beneath the building. There are no septic tanks or drainfields known in the area

(5) The unusual site conditions which necessitate this request: Lot is entirely covered by building;
production and injection wells need to be separated a maximum distance to function as efficient geothermal wells.
The only location available for this production is 33 feet from the sanitary sewer line (see site map)
The sanitary sewer line drains south off the property to a main line 52 feet from the property line.

(6) The proposed construction methods that the bonded well constructor believes will be adequate for this well: (attach additional pages if needed)

ODWR Setback Requirements (690-210-003) are 50' for closed sewage drainage system. The proposed well is 17' closer than recommended. To assure groundwater protection a 22' surface seal will be placed around the well to seal the casing within a 22 foot thick natural silt layer beneath the property (see Foster Gambee geotech boring log). The groundwater tables is separated from any sewage source by 90 feet of soil and Troutdale formation. Finally, this well is less vulnerable to sewage seepage because it is not a drinking well but is a low temperature production well; water pulled from this well will be reinjected at the west end of the property(see site map).

MULT 83130

- (7) Diagram showing the pertinent features of the proposed well design and construction:
(attach additional pages if needed)

1. Site Map

2. Well Construction Map

3. GROUTING Soil Borings Log

PLEASE NOTE:

- (1) The Well Construction Standards serve to protect ground water resources. By approving and issuing this special construction standard the Oregon Water Resources Department is not representing that a well constructed in accordance with this condition will maintain structural integrity or that it meets engineering standards. The well constructor/or landowner is responsible for ensuring that a well is constructed in a manner that protects ground water resources as required under Oregon Administrative Rules 690-200 through 690-240.
- (2) If it should be determined at some future date that the well, due to its construction, is allowing ground water contamination, waste or loss of artesian pressure, the undersigned shall return to the site and rectify the problem.
- (3) If oral approval was granted, a written request must be submitted to the Department either within three (3) working days of the date of oral approval or prior to the completion of the associated well work. Failure to submit a written request as described above may void prior oral approval.

I have read and understand the above information. I further attest that the information provided is accurate to the best of my knowledge.

Bonded Constructor Signature: _____



revised 11/03/2003

STATE OF OREGON
WATER SUPPLY WELL REPORT
(as required by ORS 537.765 & OAR 690-205-0210)

(1) LAND OWNER		Owner Well I.D. <u>I-1</u>
First Name <u>Kevin</u>	Last Name <u>Cavanaugh</u>	
Company <u>Burnside Rocket LLC</u>		
Address <u>3435 NE 45th Ave.,</u>	Pod # <u>1</u>	
City <u>Portland</u>	State <u>OR</u>	Zip <u>97213</u>

(4) PROPOSED USE ☐ Domestic ☐ Irrigation ☐ Community
☐ Industrial/ Commercial ☐ Livestock ☐ Dewatering
☒ Thermal ☐ Injection ☐ Other

Form Version:

MULT 86581

WELL I.D. # L 78309

START CARD # 37217

(10) STATIC WATER LEVEL

Water Bearing Zones

[illegible]

(11) WELL LOG

[illegible]**Comments/Remarks**

Cut off 2.0 feet of casing. Casing is now 1 foot above bottom of well head vault.

[illegible]

MULT 86582

WELL LABEL # L	78308
START CARD #	37216

(banded) Water Well Constructor Certification
I accept responsibility for the construction, deepening, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon water supply well construction standards. This report is true to the best of my knowledge and belief.
License Number 1824 Date 9/4/06
Password: (if filing electronically)
Signed Chad R. [Signature]

Form Version:

APPENDIX IV

GEOPHYSICAL SURVEY



GEOPHYSICAL SURVEY LETTER REPORT

Gil Cobb
Point Source Solutions [PSS]

Project: 170218
Survey Date: February 27, 2017

Jiffy Lube-Former Gas Station 2025 NE Broadway Portland, Oregon

A magnetometer survey was conducted across the parking lot and adjacent sidewalks of the property located at the address shown above. The survey was conducted for Mr. Gil Cobb of PSS for the purpose of detecting underground storage tanks (USTs) and excavations from removed USTs across the survey area. A gas station building occupied the site in the past. No surface evidence of tanks, like fill ports or vent pipes, was seen. An additional scope was to clear several proposed boring locations of buried obstructions and piping.

A Geometrics G858 cesium-vapor magnetometer was used to collect magnetic data along survey lines measured to be 5 feet apart. A Schonstedt Magnetic Gradiometer, an Aqua-Tronics EMA6 Tracer, and a GSSI SIR2000 ground penetrating radar (GPR) system coupled to a 400-MHz radar antenna were used to investigate several magnetic anomalies and to clear proposed boring locations. GPR was used to detect disturbed-soil zones that could be UST excavations.

Figure 1 is a colored magnetic contour map of the data, contoured at 250 nT (nanoTesla). The map shows the earth's local magnetic field at the time of the survey. Magnetic anomalies higher in amplitude than the normal local magnetic background are shown in red, and are usually found over areas where ferrous objects are located below the sensor, carried at a height of about 3 feet. These objects may be surface objects such as manholes, catch basins, hydrants, or other surface features, or buried objects of interest, such as USTs, drums, pipes, and debris. Magnetic anomalies at or below the amplitude of the local magnetic field are shown in blue, and are caused by ferrous objects located above the sensor. Fences, poles and buildings typically produce magnetic lows.

Ferrous surface objects create magnetic interference that can hide the anomaly caused by buried objects of interest. The Jiffy-Lube building, a chain-link trash corral, a metal canopy, and several sign posts created interference.

Four anomalies or groups of anomalies are labeled in figure 1:

The cluster of small anomalies labeled A is interpreted to be caused by several pipes.

Anomaly B appears to be caused by metal in the canopy between the building and the west property line. No suspicious objects were detected with radar at this location.

Radar profiles across magnetic anomaly C indicated the cause is possibly a reinforced portion of the sidewalk.

Anomaly D is interpreted to be caused by a large grate immediately north of the site.

GPR traverses were made across the area east of the building (shown in yellow in figure 1), as this is the area most probable to have contained tanks related to the former station. A distinct disturbed-soil zone was detected in the southern middle of the survey area. It did not look like a typical tank excavation but it may possibly be one. It is outlined with a dashed brown line in figure 1.

Four proposed boring locations were cleared near the southwest corner of the building, where an above-ground tank was removed. Boring locations were cleared in and around the possible UST excavation.

Nikos Tzetos of Pacific Geophysics conducted the survey for Mr. Gil Cobb of PSS on February 27, 2017. This letter report was written by Nikos Tzetos and sent to Mr. Cobb on March 9, 2017.

Limitations

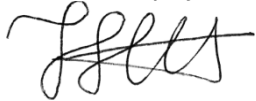
The conclusions presented in this report were based upon widely accepted geophysical principles, methods and equipment. This survey was conducted with limited knowledge of the site, the site history and the subsurface conditions. The goal of near-surface geophysics is to provide a rapid means of characterizing the subsurface using non-intrusive methods. Conclusions based upon these methods are generally reliable; however, due to the inherent ambiguity of the methods, no single interpretation of the data can be made. As an example, rocks and roots produce radar reflections that may appear the same as pipes and tanks.

Under reasonable conditions, geophysical surveys are good at detecting changes in the subsurface caused by man-made objects or changes in subsurface conditions, but they are poor at actually identifying those objects or subsurface conditions.

Objects of interest are not always detectable due to surface and subsurface conditions. The deeper an object is buried, the more difficult it is to detect, and the less accurately it can be located.

The only way to see an object is to physically expose it.

Nikos Tzetos
Pacific Geophysics



March 9, 2016

Appendix A. Geophysical Survey Methods

Magnetometer Surveys

Small disturbances in the Earth's local magnetic field are called "magnetic anomalies". These may be caused by naturally occurring features such as metallic mineral ore bodies, or from manmade features such as metal buildings, vehicles, fences, and underground storage tanks. The magnetometer only detects changes produced by **ferrous** objects. Aluminum and brass are non-ferrous metals and cannot be detected using a magnetometer.

A magnetometer is an electronic instrument designed to detect small changes in the Earth's local magnetic field. Over the years different technologies have been used in magnetometers. The Geometrics G-858 Portable Cesium Magnetometer used to collect magnetic data for Pacific Geophysics uses one of the most recent methods to detect magnetic anomalies. A detailed discussion describing the method this unit uses is available at Geometrics.com.

This magnetometer enables the operator to collect data rapidly and continuously rather than the older instruments that collected data at discreet points only. The G-858 is carried by hand across the site. The sensor is carried at waist level. Typically individual data points collected at normal walking speed are about 6" apart along survey lines usually 5 feet apart, depending on the dimensions of the target objects.

It is critical to know the exact location of each data point so that if an anomaly is detected it can be accurately plotted on a magnetic contour map. At most small sites, data are collected along straight, parallel survey lines set up on the site before the data collection stage begins. For very large, complex sites, the G-858 can be connected to a Global Positioning System (GPS) antenna which allows the operator to collect accurately-located data without establishing a survey grid. With GPS, data are collected and positioned wherever the operator walks. A limitation using GPS is that the GPS antenna must have line of sight with the GPS satellites. Data can be mislocated if the GPS antenna is under trees or near tall buildings.

Data are stored in the unit's memory for later downloading and processing. A magnetic contour map of the data is plotted in the field. Geographical features are plotted on the map. Magnetic anomalies appearing to be caused by objects of interest are then investigated on the site using several small hand-held metal detectors. If an object appears to be a possible object of interest, it may be investigated with GPR.

Magnetic contour maps may be printed in color in order to highlight anomalies caused by ferrous objects located under the magnetic sensor. Usually, ferrous objects situated below the sensor produce magnetic "highs" and anomalies located above the sensor produce magnetic "lows". Magnetic highs are of interest to the operator since most objects of interest are located underground.

Depending on the orientation, shape and mass of a metallic object, a high/low pair of magnetic anomalies may be present. In the northern hemisphere the magnetic low is located north of the object and the magnetic high toward the south. The object producing the anomaly is located part way between the high and the low anomalies.

Magnetometer surveys have limitations. Magnetometers only detect objects made of ferrous (iron-containing) metal. Large ferrous objects (buildings, cars, fences, etc.) within several feet of the magnetometer create interference that may hide the anomaly produced by a nearby object of interest.

Ground Penetrating Radar

A Geophysical Survey Systems, Inc. (GSSI) SIR-2000 GPR system coupled to a 270-, 400-, or 900-MHz GSSI antenna is used to obtain the radar data for our surveys.

GPR antennas both transmit and receive electromagnetic energy. EM energy is transmitted into the material the antenna passes over. A portion of that energy is reflected back to the antenna and amplified. Reflections are displayed in real-time in a continuous cross section. Reflections are produced where there is a sufficient electrical contrast between two materials. Changes in the electrical properties (namely the dielectric constant) that produce radar reflections include the moisture content, porosity, mineralogy, and texture of the material. Metallic objects of interest exhibit a strong electrical contrast with the surrounding material and thus produce relatively strong reflections. Non-metallic objects of interest (septic tanks, cesspools, dry wells, PVC and clay tile pipes) are not always good reflectors.

Radar data are ambiguous. It can be difficult to distinguish the reflection produced by an object of interest from the reflection caused by some natural feature. Rocks or tree roots have reflections that appear similar to reflections from pipes. In concrete investigations reflections produced by metal rebar look exactly like those from electrical conduit or post-tension cables. Objects with too small an electrical contrast may produce no reflections at all and may be missed. Target objects buried below objects with contrasting properties that also produce reflections may be missed (e.g. USTs below roots, concrete pieces, pipes or rocks). If an object of interest like a UST is buried below the depth of penetration of the radar signal, it will be missed.

In addition to interpreting ambiguous data, radar has several limitations that cannot be controlled by the operator. The radar signal is severely attenuated by electrically conductive material, including wet, clay-rich soil and reinforced concrete. The quality of the data is affected by the surface conditions over which the antenna is pulled. Ideally the antenna should rest firmly on a smooth surface. Rough terrain and tall grass reduce the quality of radar data.

It is the job of an experienced interpreter to examine the GPR profiles and deduce if reflections are from objects of interest. A GPR interpreter cannot see underground, but can only interpret reflections based on experience.

The only way to truly identify an object is to excavate.

Hand-held Metal detectors

Two small, non-recording metal detectors are used to locate suspect magnetic anomalies detected using the G-858 Magnetometer in order to determine the likely cause of the anomaly. First, the magnetic contour map and a Schonstedt Magnetic Gradiometer are used to locate the center of the magnetic anomalies.

Once the anomaly is located an Aqua-Tronics Tracer is used to determine if the object producing the anomaly is a possible object of interest. Most anomalies are at least in part produced by features observed on the ground surface.

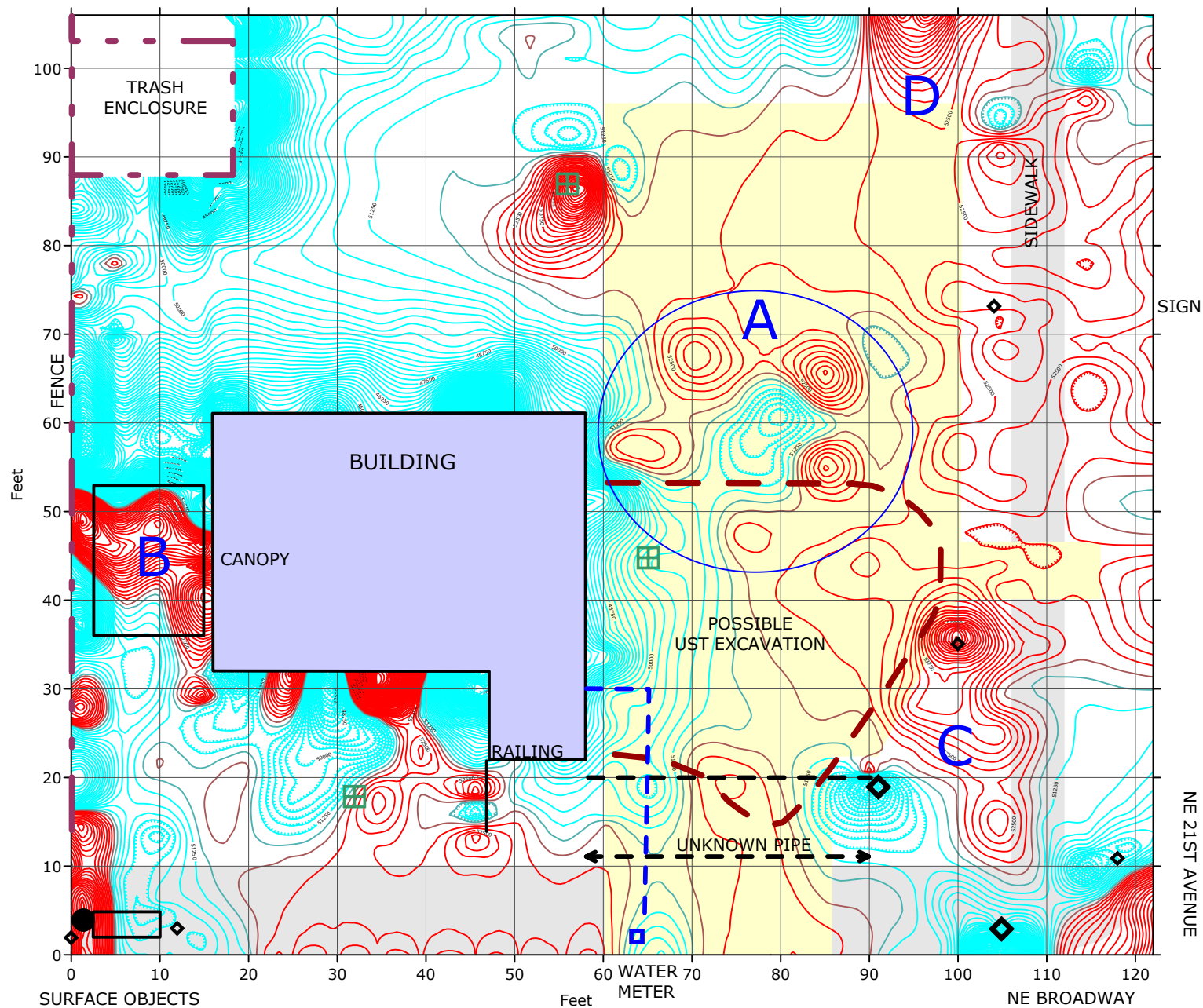
Schonstedt Magnetic Gradiometer: This magnetometer has two magnetic sensors separated vertically by 10". The magnetic field surrounding a ferrous object is strongest near the object and decreases rapidly as the distance increases. If the magnitude measured by the sensor located in the tip of the Schonstedt is very high, and the magnetic field measured by the sensor located farther up the shaft of the

Schonstedt is low, there is a large vertical magnetic gradient and the instrument responds with a loud whistle indicating the object is near the surface. If there is a small difference in the magnitudes measured by the two sensors, the object is deeper. The instrument responds with a softer tone. A discussion of this instrument is available at Schonstedt.com.

Aqua-Tronics A-6 Tracer: The Aqua-Tronics A-6 Tracer uses a different method of detecting metallic objects. This instrument measures the electrical conductivity of a metal object. It is capable of detecting any electrically conductive metal, including non-ferrous aluminum and brass. The Tracer is capable of detecting three-dimensional objects as well as pipes.

The Tracer consists of a transmitter coil and a receiver coil. In the absence of any electrically conductive material in the vicinity of the Tracer, the electromagnetic field around each coil is balanced.

Basically the electromagnetic field produced by the transmitter induces an electric current into the area surrounding the instrument. Nearby conductive objects distort the EM field. The balance between the two coils is disturbed and the instrument produces an audible tone and meter indication.



FIGURE

1

Magnetic Contour Map-C.I. = 250 nT

Project:
170218

Jiffy Lube
2025 NE Broadway
Portland, Oregon

Drawn by : NT

Prepared for: Point Source Solutions

Survey Date: February 27, 2017