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**Underground Storage Tank Closure Report**  
**14412 S. Carus Road**  
**Oregon City, Oregon 97045**  
**DEQ File #03-23-0491**

Prepared for:

Canby School District  
c/o Brad Kelsay, Kelsay Environmental  
3693 SE Francis Street  
Portland, Oregon 97202

&

Oregon Department of Environmental Quality  
Eastern Region  
Underground Storage Tank Program  
475 Northeast Bellevue, Suite 110  
Bend, Oregon 97701

September 20, 2023

Prepared by:

Soil Solutions Environmental Services, Inc.  
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## **1.0 INTRODUCTION**

This report summarizes the activities conducted by Soil Solutions Environmental Services, Inc. (SSES) at 14412 S. Carus Road in Oregon City, Oregon (site). Site activities included the decommissioning by removal of an approximately 500-gallon underground storage tank (UST), removal of petroleum contaminated soil (PCS), and soil and well sampling and analysis. This report describes our activities and summarizes the results of the work.

## **2.0 SITE DESCRIPTION**

As shown on the Vicinity Map, Figure 1, the site is in a rural area called Beaver Creek, approximately 6.7 miles southeast of downtown Oregon City, Oregon in Clackamas County. The site is located on the Carus Elementary School property (Tax lot: 32E33B00700). The UST was likely associated with The Carus Historic Schoolhouse which was previously removed from the property. The former contents of the UST was unknown but was estimated at 500 gallons capacity. The UST was located approximately 40-feet east of the main school building. The approximate UST location is shown on Figure 2. Surrounding properties are mostly rural residential farm forest with associated residences. Drinking water at the site is supplied by the active well, located approximately 25-feet northeast of the UST area.

The site gently slopes to the west southwest towards Parrott Creek a temporal creek flowing generally west for approximately 4.5 miles towards the Willamette River (shown on Figure 1). According to the United States Geological Survey Topographic 7.5-minute map for the Oregon City, Oregon quadrangle, the site lies at an elevation of approximately 480-feet above mean sea level. The site is located in township 3S range 2E section 33 of the Willamette Meridian.

Ma et al (2012) maps the surface geology of the site as Pleistocene age small basalt and basaltic andesite volcanoes located throughout the Portland Basin of the Boring Volcanic Field Deposits. Well logs indicate groundwater in the vicinity is typically 45-feet below ground surface (bgs) and generally flows to the west, towards the Willamette River.

## **3.0 FIELD ACTIVITIES**

Field activities were completed between July 21, 2023, and August 29, 2023. Photographs of field activities are included in Appendix A and disposal receipts are included in Appendix C. Activities included the removal of PCS, and collection and analysis of soil samples. Site features and sample locations are shown on Figure 2. All depths are measured from the ground surface at the tank. All equipment was decontaminated between sampling locations. New nitrile gloves were donned by the sampler prior to each sample collected. Soil and groundwater samples collected during field activities were placed in laboratory-supplied clean glass jars or bottles, labeled, and placed in a cooler with ice.

### **3.1 Tank Decommissioning**

Prior to SSES' arrival at the site, the tank was emptied and removed from the ground by Canby Excavating. The tank was placed on plastic. The tank contents were reported to be sludge and a sample was collected for analysis. Results indicated the presence of diesel and heavy oil but no gasoline. The tank was folded and smashed. The estimated capacity was 500 gallons. The UST appeared corroded with many holes in the exterior.

On July 21, 2023, SSES oversaw the placement of the tank, tank contents and PCS into a dropbox onsite to be transported to Waste Management Hillsboro Landfill for DEQ approved disposal.

SSES collected two initial soil samples from the former UST area, designated SG1 and SG2 from the west and east excavation bottom, respectively. The samples were collected at 5-feet bgs, approximately 1-foot below the bottom of the former tank location. The samples were analyzed by Northwest Total Petroleum Hydrocarbons Diesel and Gasoline Analysis (NWTPH-Dx and -Gx). Laboratory analysis detected 4,300 parts per million (ppm) diesel and 580 ppm gasoline in sample SG1. Laboratory analysis detected 3,400 ppm diesel and 80 ppm gasoline in sample SG2. The owner was notified, and a release was reported to the Oregon Department of Environmental Quality (DEQ) on July 20, 2023.

### **3.2 Drinking Water Well Sample Collection**

On July 21, 2023, SSES collected one well water sample, designated W9, from a spigot at the well pump house prior to any known filtration. Laboratory analysis revealed no detections of gasoline, diesel, or benzene, toluene, ethylbenzene, xylenes, and naphthalene (BTEX+N) above laboratory reporting limits in this sample. The wellhouse is located approximately 25-feet northeast of the UST area. A well log that appears to be for this well was identified as CLAC-51111. The construction details of the well appear to indicate the well was completed to 160-feet bgs with a casing the entire depth, with perforations beginning at 100-feet bgs. This well log as well as another well log from nearby are included in Appendix D.

### **3.3 Additional Site Assessment Activities**

On July 21, 2023, approximately 16.26-tons of petroleum contaminated soil (PCS) was removed from below the former tank location by Canby Excavation under SSES oversight. Following soil removal, six soil samples were collected from the excavation extents. Samples SG3 and SG4 were collected from the west and east excavation bottom, respectively, at depths of 11-feet bgs. Samples SG5 through SG8 were collected on the east, west, north, and south excavation sidewalls at depths of 8-feet bgs. Laboratory analysis revealed diesel and gasoline detections remained in the excavation.

On July 31, 2023, approximately 96.27 tons of PCS was removed from the excavation. SSES collected two soil grab samples, designated SG10 and SG11 from the east and west excavation bottom at depths of 17-feet bgs.

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On August 1, 2023, approximately 112.9 tons of PCS was removed from the excavation. SSES collected two soil grab samples, designated SG12 and SG13 from the north and south excavation walls at depths of 13-feet bgs.

On August 2, 2023, water entered the excavation at a depth of roughly 5-feet bgs on the southwest corner of the excavation due to an impacted underground water main in the vicinity. Approximately 400 gallons of water was removed from the excavation and transported to SSES equipment yard for temporary storage. The water was transported, in bulk, by Oil Re-Refining Company (ORRCO) for disposal.

Approximately 127.34 tons of PCS was removed from the excavation. SSES collected two soil grab samples, designated SG14 and SG15, on the north portion of the east wall and on the south portion of the excavation wall, respectively, at depths of 13-feet bgs.

A concrete septic tank was discovered on the southwest corner of the excavation. The septic tank contained a small amount a dirt.

On August 3, 2023, the septic tank was demolished and removed from the excavation. An additional 8.02 tons of PCS was removed from the west side of the excavation. SSES collected four soil grab samples, designated SG16 through SG19, located in the middle of the west excavation wall, south portion of the west excavation wall, north and south excavation walls. Samples SG16 through SG18 were collected at depths of 13-feet and SG19 was collected at a depth of 10-feet bgs.

Following receipt of all laboratory results, the excavation was backfilled with compacted gravel by another contractor and restored to grade.

On August 24, 2023, SSES completed two borings. Boring 20 was located on the east side of the former excavation adjacent to sample SG15 and completed to determine the vertical extent of soil contamination. One soil sample was collected at a depth of 27.5-feet. Boring 21 was located approximately 23-feet southeast of the excavation area and was completed to determine the lateral extent of contamination in that direction.

On August 29, 2023, SSES completed three additional borings, designated 22 through 24, located west, north, and south (respectively), to determine the lateral extent of contamination. Soil samples were collected at a depth of 25-feet in boring 22 and a depth of 26-feet bgs in borings 23 and 24. Borings 23 and 24 were extended to investigate for the presence of groundwater, to depths of refusal with direct push Geoprobe drill rig equipment at 36-feet and 32-feet bgs, respectively. Groundwater was not encountered.

#### **4.0 ANALYTICAL RESULTS**

Samples were transported under chain of custody documentation to Friedman & Bruya, Inc. laboratory in Seattle, Washington. Laboratory analysis of soil included gasoline, diesel, and

residual range oil using Northwest Total Petroleum Hydrocarbons Diesel and Gasoline Analysis (NWTPH-Dx and NWTPH-Gx); benzene, toluene, ethylbenzene, xylenes and naphthalene (BTEX+N) using Environmental Protection Agency (EPA) Method 8260D and 8260D Dual Acquisition; TCLP Metals by EPA Method 6020B and 1311, and volatile organic compounds (VOCs) by EPA Method 8260D. Laboratory analytical results are included in Tables 1 and 2.

Following removal of contaminated soil, diesel contaminated soil remained at a maximum concentration of 3,200 ppm and gasoline contaminated soil remained at a maximum concentration of 130 ppm. These were both measured in sample SG15@3, located at 13-feet bgs on the east sidewall of the excavation. This sample was further analyzed for BTEX+N and VOCs. Laboratory results revealed detections of BTEX+N and VOCs above laboratory reporting limits.

The lateral extent of soil contamination was constrained by borings 21 through 24. Gasoline, diesel, heavy oil, and BTEX+N were not detected above laboratory reporting limits in soil samples collected from these borings at depths of 24 to 16-feet bgs. The vertical extent of soil contamination was constrained in boring 20. Gasoline, diesel, heavy oil, and BTEX+N were not detected above laboratory reporting limits in a soil sample collected from this boring at a depth of 27.5-feet bgs.

Gasoline, diesel, heavy oil, and BTEX+N were also not detected above laboratory reporting limits in the sample collected from the water well.

## **5.0 SOIL MATRIX CLEANUP EVALUATION**

As required under Oregon Administrative rule 340-122-325, SSES completed a Soil Matrix Cleanup evaluation of this site. Appendix E contains the Soil Matrix Checklist and Score Sheet. Based on site-specific parameters, a Soil Matrix score of 27 was calculated giving a Level 2 cleanup standard of 500 ppm diesel and 40 ppm gasoline. Laboratory analytical results of final excavation confirmation soil samples showed that remaining concentrations of diesel and gasoline exceeded the calculated Soil Matrix Level 2 cleanup standards.

## **6.0 GENERIC REMEDY EVALUATION**

Generic Remedy Cleanup rules allow for less than 65 cubic yards of soil contaminated with a maximum total petroleum hydrocarbon (TPH) concentration of 10,000 ppm be left on site. Contaminated soil must be at least 3-feet bgs and above the seasonally high groundwater. Additionally, all samples exceeding 2,500 ppm diesel must be analyzed for the presence of benzene, ethylbenzene, and naphthalene. Any remaining benzene, ethylbenzene and naphthalene concentrations cannot exceed 0.16 ppm, 1.3 ppm, and 6.4 ppm, respectively. We believe all criteria to close this site under the Generic Remedy Cleanup rules can be met.

### **6.1 Magnitude and Extent of Impacted Soil**

SSES collected soil samples to determine the magnitude and extent of the contamination. The area of contamination is centered on the south sidewall of the excavation. Sample SG15@13 represents

the magnitude of the contamination to remain on site. The vertical extent of the soil contamination was identified in boring 20 at 27.5-feet bgs. The maximum lateral extent of the soil contamination was bounded by borings 21 through 24, however no samples above the Soil Matrix clean-up level remain in to the north and west of sample SG15@13 as the contaminated soil in this area was removed. All samples collected to determine the extent of the contamination were below the Soil Matrix clean-up level of 500 ppm.

Assuming diesel and heavy oil contamination migrated downward and out in an inverted cone shape, the total volume of contaminated soil at the site was estimated at approximately 311.4-cubic yards. A total of 360.8 tons of contaminated soil, or 267.3 cubic yards of contaminated soil was removed from the site, indicating approximately 44.1 cubic yards of contamination remains. The estimated area of remaining contaminated soil above soil matrix levels is shown on Figure 2.

Sample SG15@13 has the highest level of contamination remaining, this sample was analyzed for the constituent's benzene, toluene, ethylbenzene, xylenes, and naphthalene (BTEX+N). No constituents were detected that exceed Generic Remedy closure guidelines.

## **6.2 Groundwater Evaluation**

Oregon Water Resources Department (OWRD) well logs were reviewed for township, range, and section of the site as well as surrounding sections. Drinking water for the property comes from a water well on site. There was no contamination detected in the water well sample. Multiple beneficial use wells (domestic and/or irrigation) were identified within ¼-mile of the site. Well logs in the vicinity of the site report groundwater is first encountered at depths of 120 to 165-feet bgs. Groundwater was not encountered to a depth of 36-feet bgs during site activities.

## **7.0 SUMMARY, DISCUSSION, AND CONCLUSIONS**

A 500-gallon UST was decommissioned by removal at 14412 S. Carus Road in Oregon City, Oregon. The site is in a rural setting and drinking water is supplied by an active well on site. The project site was in the process of building a parking lot for the Carus Elementary School located in Clackamas County (Tax lot: 32E33B00700). The site has included a school on the property since 1926.

The leaking tank was reported to DEQ on July 20, 2023. The release was confirmed by soil samples collected by SSES on July 21, 2023. A total of twenty-three soil samples were collected, eighteen by the soil grab method, five soil borings, and one well water sample were collected for analysis. A total of 360.79 tons of contaminated soil was removed from the site.

A soil matrix score of 27 was calculated for the site resulting in a Level 2 cleanup standard. Remaining concentrations of contamination exceeds the Level 2 cleanup standards. Approximately 44.1 cubic yards of contaminated soil remains at the site, groundwater was not encountered during site activities or in a boring extending 11.5-feet past the vertical extent of remaining contamination.

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SSES believes this pocket of contamination can be left in place according to the rules for closure using the HOT Generic Remedy Guidance; the soil left on site is contaminated with less than 10,000 ppm diesel and has a volume less than 65 cubic yards of soil. The contamination is apparently limited to the soil only and no free product or groundwater was found during investigation. The contaminated soil is more than 3-feet bgs and above the seasonally high groundwater level

## **8.0 RECOMMENDATION**

SSES requests a finding of No Further Action and file closure for the above referenced site, DEQ file #03-23-0491.

## **9.0 LIMITATIONS**

This report was prepared by Soil Solutions Environmental Services, Inc. (SSES) for Brad Kelsay on behalf of the Canby School District, and summarizes the results of our work at 14412 S. Carus Road, Oregon City, Oregon. We have performed our services in accordance with our agreement and understanding with the client. The scope of work was limited to the specific project, location, and activities described herein. The material in it reflects our best judgment in light of the information available at report preparation.

This report may not be used or relied upon by any other party without the written consent of SSES. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. SSES is not responsible for the independent conclusions, opinions or recommendations made by others based on this report and accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. The scope of services performed in execution of this evaluation may not be appropriate to satisfy the needs of other users and use or re-use of this document or the findings, conclusions, or recommendations is at the risk of said user.

SSES performed this work in accordance with generally accepted professional practices related to the nature of the work accomplished, in the same or similar localities, at the time the services were performed. The conclusions presented in this report are, in part, based upon subsurface sampling performed at selected locations and depths. There may be conditions between sample points or samples that differ significantly from those presented in this report and which cannot be predicted by this study. For these types of evaluations, it is often necessary to use information prepared by others and SSES cannot be responsible for the accuracy of such information. Additionally, the passage of time may result in a change in the environmental characteristics at this site and surrounding properties. This report does not warrant against future operations or conditions, nor does this warrant operations or conditions present of a type or at a location not investigated. This report is not a regulatory compliance audit and is not intended to satisfy the requirements of any state, federal, or local real estate transfer laws.

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## **10.0 REFERENCES**

Lina Ma, Ian P. Madin, Serin Duplantis, and Kendra J. Williams, 2012, Lidar-Based Surficial Geologic Map and Database of the Greater Portland Area, Clackamas, Columbia, Marion, Multnomah, Washington, and Yamhill Counties, Oregon, and Clark County, Washington, Oregon Department of Geology and Mineral Industries, Open File Report O-12-02.

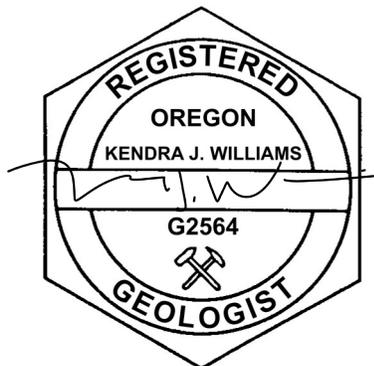
## **11.0 SIGNATURE**

### **SOIL SOLUTIONS ENVIRONMENTAL SERVICES, INC**

Report prepared by:

Mary Groff, Technical Report Writer

Kendra J. Williams, Registered Geologist, Project Manager



Expires 5/31/2024

Kendra J. Williams, R.G.

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## **FIGURES**

Vicinity and Site Map



Portland Maps 2023



Figure 1: Vicinity Map  
14412 S. Carus Road  
Oregon City, Oregon 97045  
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PROJECT:  
Canby School District  
DATE: 9/20/2023  
Approximate Scale: 1" = 600'



# S. Carus Road

## LEGEND

- = Hand auger boring/Geoprobe/grab sample location
- = approximate former UST location
- ▭ = excavation area
- ppm = parts per million
- ppb = parts per billion
- = estimated extent of soil contamination remaining above 500 ppm
- italics* = sample location was removed during excavation
- \* = Direct Push Geoprobe drill rig refusal

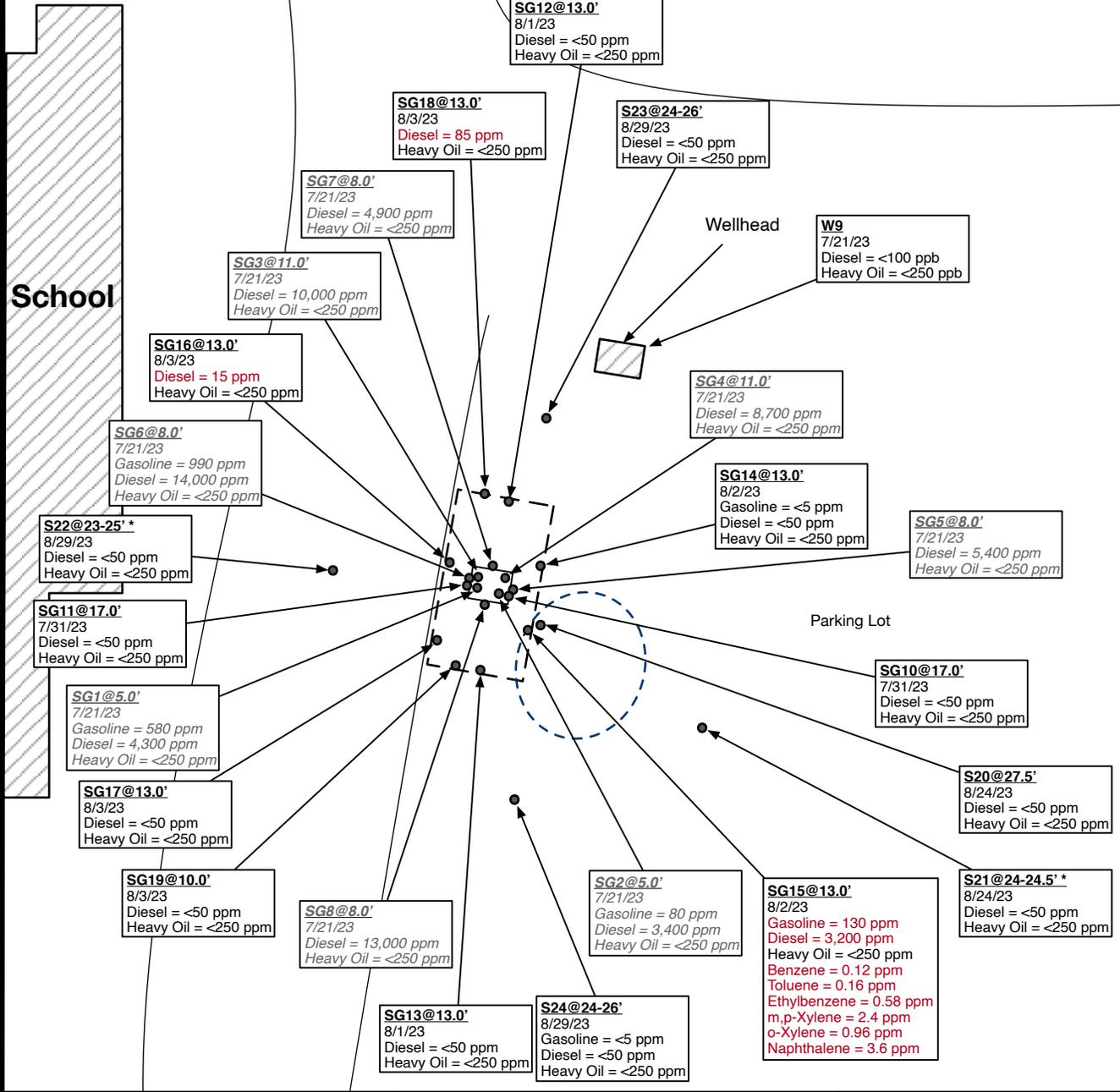


Figure 2: Site Map  
 14412 S. Carus Road  
 Oregon City, Oregon 97045  
 DEQ File #03-23-0491

PROJECT:  
 Canby School District  
 DATE: 9/20/2023  
 Approximate Scale: 1" = 30'

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## **TABLES**

Soil and Groundwater Sample Analytical Results



Table 2  
 Groundwater Sample Analytical Results

Sample Identification	Depth <sup>1</sup>	Date	Analytical Results (ug/l) <sup>2</sup>																								
			Total Petroleum Hydrocarbons (TPH)			Volatile Organic Carbons (VOCs) by EPA Method 8260C or 8021B							Polycyclic Aromatic Hydrocarbons (PAHs) by EPA Method 8270D														
			Gasoline Range (C <sub>2</sub> -C <sub>5</sub> ) by NWTPH-Gx	Diesel Range (C <sub>10</sub> -C <sub>25</sub> ) by NWTPH-Dx	Residual Range (C <sub>25</sub> -C <sub>36</sub> ) by NWTPH-Dx	Benzene	Toluene	Ethylbenzene	Total Xylenes	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Ideno(1,2,3-cd)pyrene	Dibenz(a,h)anthracene	Benzo(g,h,i)perylene		
W9	n/a	7/21/23	<100	<100	<250	<0.35	<1	<1	<1	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
<b>DEQ Risk-Based Concentrations</b>																											
<b>Pathway</b>			<b>Receptor</b>			<b>RBCs</b>																					
Ingestion & Inhalation from Tapwater (RBC <sub>tw</sub> )			Occupational	450	430	430	2.1	6,300	6.4	830	0.72	NE	2,500	1,300	NE	>S	>S	>S	0.17	>S	0.064	0.64	>S	>S	0.064	NE	
Volatilization to Outdoor Air (RBC <sub>wo</sub> )			Occupational	>S	>S	>S	1400	>S	4300	>S	16000	NE	>S	>S	NE	>S	NV	>S	>S	NV	NV	NV	NV	NV	NV	NV	NE
Vapor Intrusion into Buildings (RBC <sub>wb</sub> )			Commercial	520	1,700		12	150,000	31	3,300	50	NE	NITI	NE	NE	NITI	NITI, NV	NITI	2,300	NV	NV	NV	NV	NV	NV	NE	
Groundwater in Excavation (RBC <sub>we</sub> )			Construction & Excavation Worker	14,000	>S	>S	1,800	220,000	4,500	23000	500	NE	>S	>S	NE	>S	>S	>S	>S	>S	>S	>S	>S	>S	>S	NE	

**Notes:**  
 [ ] Highlighted cells indicate that detected value remaining on site exceeds one or more of the referenced RBCs.

*Gray italics indicate sample was collected prior to remediation efforts*

RBCs for Diesel Range and Residual Range Organics are given as Generic Diesel/Heating Oil.

1 – Depth in feet below ground surface

ug/l – micrograms per liter

x - Sample chromatograph does not resemble fuel standard used for quantitation

ve - Estimated concentration calculated for an analyte response is outside of instrument calibration range

>S - The groundwater RBC exceeds the solubility limit for this compound

NE - An RBC has not been established for this compound

NV - Compound is considered non-volatile for purposes of exposure calculations

NITI - No inhalation toxicity information

\* sample passed through silica gel cleanup prior to analysis

-- - Not analyzed

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## **Appendix A**

Photographs of Field Activities



Photo 1. Carus Elementary School at 14412 S. Carus Road in Oregon City, OR. View is to the west.



Photo 2. The UST was roughly located in front of the excavator indicated by circle. View is to the northwest.



Photo 3. Overburden was removed from the UST area. View is to the east.



Photo 4. Removed UST, tank contents and contaminated soil were staged on plastic. Water well located in the shed. View is to the northeast.



Photo 5. The UST, contaminated soil, and tank contents were placed into a dropbox on site. View is to the southeast.



Photo 6. Closeup view of removed UST. Holes were observed throughout the tank.



Photo 7. View is of the excavation.

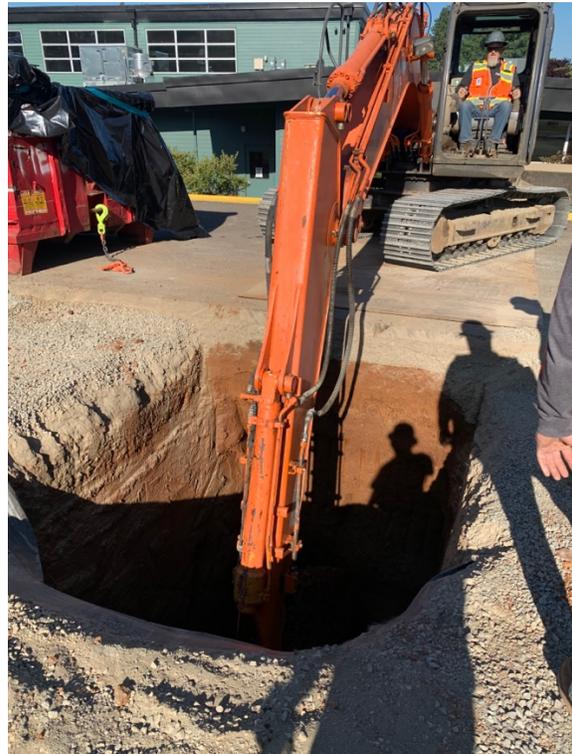


Photo 8. General view of excavation area. View is to the west.



Photo 9. Contaminated soil placed in dropbox on site. View is to the southwest.



Photo 10. PCS was removed and transported to Hillsboro Landfill. View is of a filled dropbox.



Photo 11. Water entered the excavation from an impacted water main nearby. View is of the excavation.



Photo 12. Approximately 400 gallons of water was removed from excavation. View is of west side of excavation.



Photo 13. View of excavation looking northwest.



Photo 14. View of excavation looking northeast.



Photo 15. Septic tank encountered on south excavation wall. View is to the south.



Photo 16. Septic tank contained dry soil, which was removed. View is to the southwest.



Photo 17. Septic tank was removed from excavation area. View is to the southwest.

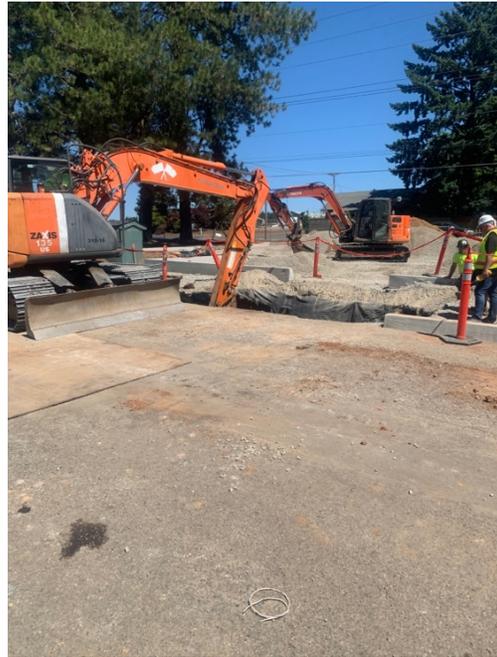


Photo 18. Overview of site looking northeast.



Photo 19. Overview of restored site. View is to south.



Photo 20. Borings were performed with drill rig following site restoration. View is the west.

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## **Appendix B**

Certified Analytical Reports, Chain of Custody Documents

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.  
Yelena Aravkina, M.S.  
Michael Erdahl, B.S.  
Vineta Mills, M.S.  
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August 2, 2023

Project Managers  
Soil Solutions  
3540 SE 28th Ave  
Portland, OR 97202

Dear Project Managers:

Included are the additional results from the testing of material submitted on July 22, 2023 from the 14412 S Carus Rd, F&BI 307281 project. There are 4 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

c: Soil Solutions Reports  
SSI0802R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID: W9	Client: Soil Solutions
Date Received: 07/22/23	Project: 14412 S Carus Rd, F&BI 307281
Date Extracted: 07/24/23	Lab ID: 307281-09
Date Analyzed: 07/24/23	Data File: 072410.D
Matrix: Water	Instrument: GCMS13
Units: ug/L (ppb)	Operator: MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	103	71	132
Toluene-d8	103	68	139
4-Bromofluorobenzene	109	62	136

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.02	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<0.01
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50 k	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20 k	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,3-Dichlorobenzene	<1
Bromodichloromethane	<0.5	1,4-Dichlorobenzene	<1
Dibromomethane	<1	1,2-Dichlorobenzene	<1
4-Methyl-2-pentanone	<10	1,2-Dibromo-3-chloropropane	<10
cis-1,3-Dichloropropene	<0.4	1,2,4-Trichlorobenzene	<1
Toluene	<1	Hexachlorobutadiene	<0.5
trans-1,3-Dichloropropene	<0.4	Naphthalene	<1
1,1,2-Trichloroethane	<0.5	1,2,3-Trichlorobenzene	<1
2-Hexanone	<10		

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	Method Blank	Client:	Soil Solutions
Date Received:	Not Applicable	Project:	14412 S Carus Rd, F&BI 307281
Date Extracted:	07/24/23	Lab ID:	03-1721 mb
Date Analyzed:	07/24/23	Data File:	072407.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	105	71	132
Toluene-d8	98	68	139
4-Bromofluorobenzene	107	62	136

Compounds:	Concentration ug/L (ppb)	Compounds:	Concentration ug/L (ppb)
Dichlorodifluoromethane	<1	1,3-Dichloropropane	<1
Chloromethane	<10	Tetrachloroethene	<1
Vinyl chloride	<0.02	Dibromochloromethane	<0.5
Bromomethane	<5	1,2-Dibromoethane (EDB)	<1
Chloroethane	<1	Chlorobenzene	<1
Trichlorofluoromethane	<1	Ethylbenzene	<1
Acetone	<50 k	1,1,1,2-Tetrachloroethane	<1
1,1-Dichloroethene	<1	m,p-Xylene	<2
Hexane	<5	o-Xylene	<1
Methylene chloride	<5	Styrene	<1
Methyl t-butyl ether (MTBE)	<1	Isopropylbenzene	<1
trans-1,2-Dichloroethene	<1	Bromoform	<5
1,1-Dichloroethane	<1	n-Propylbenzene	<1
2,2-Dichloropropane	<1	Bromobenzene	<1
cis-1,2-Dichloroethene	<1	1,3,5-Trimethylbenzene	<1
Chloroform	<1	1,1,2,2-Tetrachloroethane	<0.2
2-Butanone (MEK)	<20 k	1,2,3-Trichloropropane	<1
1,2-Dichloroethane (EDC)	<0.2	2-Chlorotoluene	<1
1,1,1-Trichloroethane	<1	4-Chlorotoluene	<1
1,1-Dichloropropene	<1	tert-Butylbenzene	<1
Carbon tetrachloride	<0.5	1,2,4-Trimethylbenzene	<1
Benzene	<0.35	sec-Butylbenzene	<1
Trichloroethene	<0.5	p-Isopropyltoluene	<1
1,2-Dichloropropane	<1	1,3-Dichlorobenzene	<1
Bromodichloromethane	<0.5	1,4-Dichlorobenzene	<1
Dibromomethane	<1	1,2-Dichlorobenzene	<1
4-Methyl-2-pentanone	<10	1,2-Dibromo-3-chloropropane	<10
cis-1,3-Dichloropropene	<0.4	1,2,4-Trichlorobenzene	<1
Toluene	<1	Hexachlorobutadiene	<0.5
trans-1,3-Dichloropropene	<0.4	Naphthalene	<1
1,1,2-Trichloroethane	<0.5	1,2,3-Trichlorobenzene	<1
2-Hexanone	<10		

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/02/23

Date Received: 07/22/23

Project: 14412 S Carus Rd, F&BI 307281

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER  
SAMPLES FOR VOLATILES BY EPA METHOD 8260D**

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Dichlorodifluoromethane	ug/L (ppb)	10	103	109	49-149	6
Chloromethane	ug/L (ppb)	10	92	98	34-143	6
Vinyl chloride	ug/L (ppb)	10	104	112	43-149	7
Bromomethane	ug/L (ppb)	10	132	132	28-182	0
Chloroethane	ug/L (ppb)	10	115	125	59-157	8
Trichlorofluoromethane	ug/L (ppb)	10	97	113	59-141	15
Acetone	ug/L (ppb)	50	71	81	20-139	13
1,1-Dichloroethene	ug/L (ppb)	10	100	110	67-138	10
Hexane	ug/L (ppb)	10	97	109	50-161	12
Methylene chloride	ug/L (ppb)	10	98	107	29-192	9
Methyl t-butyl ether (MTBE)	ug/L (ppb)	10	93	101	70-130	8
trans-1,2-Dichloroethene	ug/L (ppb)	10	100	110	70-130	10
1,1-Dichloroethane	ug/L (ppb)	10	97	108	70-130	11
2,2-Dichloropropane	ug/L (ppb)	10	81	101	71-148	22 vo
cis-1,2-Dichloroethene	ug/L (ppb)	10	94	104	70-130	10
Chloroform	ug/L (ppb)	10	100	110	70-130	10
2-Butanone (MEK)	ug/L (ppb)	50	82	100	50-157	20
1,2-Dichloroethane (EDC)	ug/L (ppb)	10	105	116	70-130	10
1,1,1-Trichloroethane	ug/L (ppb)	10	96	104	70-130	8
1,1-Dichloropropene	ug/L (ppb)	10	100	109	70-130	9
Carbon tetrachloride	ug/L (ppb)	10	97	111	70-130	13
Benzene	ug/L (ppb)	10	101	111	70-130	9
Trichloroethene	ug/L (ppb)	10	98	108	70-130	10
1,2-Dichloropropane	ug/L (ppb)	10	98	106	70-130	8
Bromodichloromethane	ug/L (ppb)	10	102	114	70-130	11
Dibromomethane	ug/L (ppb)	10	101	110	70-130	9
4-Methyl-2-pentanone	ug/L (ppb)	50	93	99	70-130	6
cis-1,3-Dichloropropene	ug/L (ppb)	10	92	102	70-130	10
Toluene	ug/L (ppb)	10	105	105	70-130	0
trans-1,3-Dichloropropene	ug/L (ppb)	10	95	93	70-130	2
1,1,2-Trichloroethane	ug/L (ppb)	10	106	106	70-130	0
2-Hexanone	ug/L (ppb)	50	92	92	66-132	0
1,3-Dichloropropane	ug/L (ppb)	10	102	102	70-130	2
Tetrachloroethene	ug/L (ppb)	10	102	102	70-130	0
Dibromochloromethane	ug/L (ppb)	10	111	112	63-142	1
1,2-Dibromoethane (EDB)	ug/L (ppb)	10	104	104	70-130	0
Chlorobenzene	ug/L (ppb)	10	102	102	70-130	0
Ethylbenzene	ug/L (ppb)	10	98	99	70-130	1
1,1,1,2-Tetrachloroethane	ug/L (ppb)	10	101	99	70-130	2
m,p-Xylene	ug/L (ppb)	20	106	106	70-130	0
o-Xylene	ug/L (ppb)	10	103	104	70-130	1
Styrene	ug/L (ppb)	10	100	99	70-130	1
Isopropylbenzene	ug/L (ppb)	10	104	103	70-130	1
Bromoform	ug/L (ppb)	10	107	108	50-157	1
n-Propylbenzene	ug/L (ppb)	10	100	103	70-130	3
Bromobenzene	ug/L (ppb)	10	100	99	70-130	1
1,3,5-Trimethylbenzene	ug/L (ppb)	10	98	98	52-150	0
1,1,2,2-Tetrachloroethane	ug/L (ppb)	10	110	109	75-140	1
1,2,3-Trichloropropane	ug/L (ppb)	10	102	99	40-153	3
2-Chlorotoluene	ug/L (ppb)	10	104	104	70-130	0
4-Chlorotoluene	ug/L (ppb)	10	101	102	70-130	1
tert-Butylbenzene	ug/L (ppb)	10	97	98	70-130	1
1,2,4-Trimethylbenzene	ug/L (ppb)	10	100	103	70-130	3
sec-Butylbenzene	ug/L (ppb)	10	99	101	70-130	2
p-Isopropyltoluene	ug/L (ppb)	10	98	98	70-130	0
1,3-Dichlorobenzene	ug/L (ppb)	10	96	96	70-130	0
1,4-Dichlorobenzene	ug/L (ppb)	10	97	97	70-130	0
1,2-Dichlorobenzene	ug/L (ppb)	10	96	97	70-130	1
1,2-Dibromo-3-chloropropane	ug/L (ppb)	10	96	100	70-130	4
1,2,4-Trichlorobenzene	ug/L (ppb)	10	94	94	70-130	0
Hexachlorobutadiene	ug/L (ppb)	10	89	87	70-130	2
Naphthalene	ug/L (ppb)	10	94	93	61-133	1
1,2,3-Trichlorobenzene	ug/L (ppb)	10	92	91	69-143	1

# 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, biased low; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. 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 analyte 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 due to sample matrix effects.
- j - The analyte concentration is reported below the standard reporting limit. 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.
- k - The calibration results for the analyte were outside of acceptance criteria, biased high, and the analyte was not detected in the sample.
- 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.

307981

Send Report To

PM's

SAMPLE CHAIN OF CUSTODY

07/22/23

WV1/VS-4/02/23

Page # 1 of 2

Company: Soil Solutions  
Address: 3540 SE 28th Avenue  
City, State, Zip: Portland, OR 97202  
Phone #: (503) 234-2118 Fax #: (503) 331-7133

SAMPLERS (signature) *[Signature]*

PROJECT NAME/NO. 14412 Scarus Rd

PO #

REMARKS

TURNAROUND TIME

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

Rush charges authorized by: *[Signature]*

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED							Notes			
						NWTPH-Dx	NWTPH-HCID	NWTPH-Gx	BTEX 8021B	BTEXN 8260C	PAHs (No N) 8270CCIM	PAHs 8270C SIM		Lead by 200.8	TCLP Lead	Full VOCs
S5-1 @ 5.0'	01A-C	7/21/23		Soil	1225 1226 1227 1228 1229 1230 1231 1232 1233 1234 1235 1236 1237 1238 1239 1240	Y		Y							(X) per TC 7/24/23 MC	
S5-2 @ 5.0'	02	7/21/23		Soil	1225 1226 1227 1228 1229 1230 1231 1232 1233 1234 1235 1236 1237 1238 1239 1240	Y		Y								
S5-3 @ 11.0'	03	7/21/23		Soil	1225 1226 1227 1228 1229 1230 1231 1232 1233 1234 1235 1236 1237 1238 1239 1240	Y										
S5-4 @ 11.0'	04	7/21/23		Soil	1225 1226 1227 1228 1229 1230 1231 1232 1233 1234 1235 1236 1237 1238 1239 1240	Y										
S5-5 @ 8.0'	05	7/21/23		Soil	1225 1226 1227 1228 1229 1230 1231 1232 1233 1234 1235 1236 1237 1238 1239 1240	Y										
S5-6 @ 8.0'	06	7/21/23		Soil	1225 1226 1227 1228 1229 1230 1231 1232 1233 1234 1235 1236 1237 1238 1239 1240	Y		(X)								
S5-7 @ 8.0'	07	7/21/23		Soil	1225 1226 1227 1228 1229 1230 1231 1232 1233 1234 1235 1236 1237 1238 1239 1240	Y										
S5-8 @ 8.0'	08A-C	7/21/23		Soil	1225 1226 1227 1228 1229 1230 1231 1232 1233 1234 1235 1236 1237 1238 1239 1240	Y										
W9	09A-E	7/21/23		H <sub>2</sub> O	1225 1226 1227 1228 1229 1230 1231 1232 1233 1234 1235 1236 1237 1238 1239 1240	Y										

Received by: *[Signature]* PRINT NAME: Todd Tomk

Received by: *[Signature]* PRINT NAME: James Bruya

Received by: *[Signature]* PRINT NAME: [Blank]

Received by: *[Signature]* PRINT NAME: [Blank]

COMPANY: SJS

COMPANY: F&B

COMPANY: [Blank]

DATE: 7/21/23

DATE: 7/22

DATE: [Blank]

TIME: [Blank]

TIME: [Blank]

TIME: [Blank]

Samples received at [Blank] °C

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

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FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

5500 4th Avenue South  
Seattle, WA 98108  
(206) 285-8282  
fbi@isomedia.com  
www.friedmanandbruya.com

July 27, 2023

Project Managers  
Soil Solutions  
3540 SE 28th Ave  
Portland, OR 97202

Dear Project Managers:

Included are the results from the testing of material submitted on July 22, 2023 from the 14412 S Carus Rd, F&BI 307281 project. There are 20 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

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

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl  
Project Manager

Enclosures  
c: Soil Solutions Reports  
SSI0725R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/27/23

Date Received: 07/22/23

Project: 14412 S Carus Rd, F&BI 307281

Date Extracted: 07/24/23

Date Analyzed: 07/24/23 and 07/25/23

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

Results Reported on a Dry Weight Basis

Results Reported as mg/kg (ppm)

<u>Sample ID</u> Laboratory ID	<u>Gasoline Range</u>	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 50-150)
SG1@5.0' 307281-01 1/5	580	118
SG2@5.0' 307281-02	80	95
SG6@8.0' 307281-06 1/10	990	108
Method Blank 03-1609 MB	<5	99

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/27/23  
Date Received: 07/22/23  
Project: 14412 S Carus Rd, F&BI 307281  
Date Extracted: 07/26/23  
Date Analyzed: 07/26/23

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES  
FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE  
USING METHOD NWTPH-G<sub>x</sub>**  
Results Reported as ug/L (ppb)

<u>Sample ID</u> Laboratory ID	<u>Gasoline Range</u>	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 50-150)
W9 307281-09	<100	99
Method Blank 03-1613 MB	<100	101

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/27/23

Date Received: 07/22/23

Project: 14412 S Carus Rd, F&BI 307281

Date Extracted: 07/24/23

Date Analyzed: 07/24/23

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES  
FOR TOTAL PETROLEUM HYDROCARBONS AS  
DIESEL AND RESIDUAL RANGE  
USING METHOD NWTPH-D<sub>x</sub>**

Results Reported on a Dry Weight Basis

Results Reported as mg/kg (ppm)

<u>Sample ID</u> Laboratory ID	<u>Diesel Range</u> (C <sub>10</sub> -C <sub>25</sub> )	<u>Residual Range</u> (C <sub>25</sub> -C <sub>36</sub> )	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 50-150)
SG1@5.0' 307281-01	4,300	<250	121
SG2@5.0' 307281-02	3,400	<250	116
SG3@11.0' 307281-03	10,000	<250	ip
SG4@11.0' 307281-04	8,700	<250	121
SG5@8.0' 307281-05	5,400	<250	121
SG6@8.0' 307281-06	14,000	<250	ip
SG7@8.0' 307281-07	4,900	<250	113
SG8@8.0' 307281-08	13,000	<250	ip
Method Blank 03-1762 MB	<50	<250	105

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/27/23  
Date Received: 07/22/23  
Project: 14412 S Carus Rd, F&BI 307281  
Date Extracted: 07/24/23  
Date Analyzed: 07/24/23

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES  
FOR TOTAL PETROLEUM HYDROCARBONS AS  
DIESEL AND RESIDUAL RANGE  
USING METHOD NWTPH-D<sub>x</sub>**  
Results Reported as ug/L (ppb)

<u>Sample ID</u> Laboratory ID	<u>Diesel Range</u> (C <sub>10</sub> -C <sub>25</sub> )	<u>Residual Range</u> (C <sub>25</sub> -C <sub>36</sub> )	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 50-150)
W9 307281-09	<100	<250	126
Method Blank 03-1760 MB	<100	<250	122

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	SG1@5.0'	Client:	Soil Solutions
Date Received:	07/22/23	Project:	14412 S Carus Rd, F&BI 307281
Date Extracted:	07/25/23	Lab ID:	307281-01
Date Analyzed:	07/25/23	Data File:	072515.D
Matrix:	Soil	Instrument:	GCMS11
Units:	mg/kg (ppm) Dry Weight	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	113	79	128
Toluene-d8	105	84	121
4-Bromofluorobenzene	88	84	116

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	0.26
o-Xylene	0.16
Naphthalene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	SG6@8.0'	Client:	Soil Solutions
Date Received:	07/22/23	Project:	14412 S Carus Rd, F&BI 307281
Date Extracted:	07/25/23	Lab ID:	307281-06
Date Analyzed:	07/25/23	Data File:	072516.D
Matrix:	Soil	Instrument:	GCMS11
Units:	mg/kg (ppm) Dry Weight	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	104	79	128
Toluene-d8	109	84	121
4-Bromofluorobenzene	84	84	116

Compounds:	Concentration mg/kg (ppm)
Benzene	0.12
Toluene	<0.05
Ethylbenzene	2.1
m,p-Xylene	3.7
o-Xylene	3.1
Naphthalene	8.5

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	Method Blank	Client:	Soil Solutions
Date Received:	Not Applicable	Project:	14412 S Carus Rd, F&BI 307281
Date Extracted:	07/25/23	Lab ID:	03-1722 mb
Date Analyzed:	07/25/23	Data File:	072509.D
Matrix:	Soil	Instrument:	GCMS11
Units:	mg/kg (ppm) Dry Weight	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	104	79	128
Toluene-d8	98	84	121
4-Bromofluorobenzene	91	84	116

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05
Naphthalene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	W9	Client:	Soil Solutions
Date Received:	07/22/23	Project:	14412 S Carus Rd, F&BI 307281
Date Extracted:	07/24/23	Lab ID:	307281-09
Date Analyzed:	07/24/23	Data File:	072410.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	103	71	132
Toluene-d8	103	68	139
4-Bromofluorobenzene	109	62	136

Compounds:	Concentration ug/L (ppb)
Benzene	<0.35
Toluene	<1
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	<1
Naphthalene	<1

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### Analysis For Volatile Compounds By EPA Method 8260D Dual Acquisition

Client Sample ID:	Method Blank	Client:	Soil Solutions
Date Received:	Not Applicable	Project:	14412 S Carus Rd, F&BI 307281
Date Extracted:	07/24/23	Lab ID:	03-1721 mb
Date Analyzed:	07/24/23	Data File:	072407.D
Matrix:	Water	Instrument:	GCMS13
Units:	ug/L (ppb)	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	105	71	132
Toluene-d8	98	68	139
4-Bromofluorobenzene	107	62	136

Compounds:	Concentration ug/L (ppb)
Benzene	<0.35
Toluene	<1
Ethylbenzene	<1
m,p-Xylene	<2
o-Xylene	<1
Naphthalene	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis for TCLP Metals By EPA Method 6020B and 1311

Client ID:	SG1@5.0'	Client:	Soil Solutions
Date Received:	07/22/23	Project:	14412 S Carus Rd, F&BI 307281
Date Extracted:	07/24/23	Lab ID:	307281-01
Date Analyzed:	07/25/23	Data File:	307281-01.047
Matrix:	Soil/Solid	Instrument:	ICPMS2
Units:	mg/L (ppm)	Operator:	MG

Analyte:	Concentration mg/L (ppm)	TCLP Limit
Lead	<1	5.0

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis for TCLP Metals By EPA Method 6020B and 1311

Client ID:	SG6@8.0'	Client:	Soil Solutions
Date Received:	07/22/23	Project:	14412 S Carus Rd, F&BI 307281
Date Extracted:	07/24/23	Lab ID:	307281-06
Date Analyzed:	07/25/23	Data File:	307281-06.050
Matrix:	Soil/Solid	Instrument:	ICPMS2
Units:	mg/L (ppm)	Operator:	MG

Analyte:	Concentration mg/L (ppm)	TCLP Limit
Lead	<1	5.0

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis for TCLP Metals By EPA Method 6020B and 1311

Client ID:	Method Blank	Client:	Soil Solutions
Date Received:	NA	Project:	14412 S Carus Rd, F&BI 307281
Date Extracted:	07/24/23	Lab ID:	I3-576 mb
Date Analyzed:	07/25/23	Data File:	I3-576 mb.037
Matrix:	Soil/Solid	Instrument:	ICPMS2
Units:	mg/L (ppm)	Operator:	MG

Analyte:	Concentration mg/L (ppm)	TCLP Limit
Lead	<1	5.0

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/27/23

Date Received: 07/22/23

Project: 14412 S Carus Rd, F&BI 307281

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

Laboratory Code: 307259-01 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Gasoline	mg/kg (ppm)	40	107	70-130

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/27/23

Date Received: 07/22/23

Project: 14412 S Carus Rd, F&BI 307281

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER  
SAMPLES FOR TPH AS GASOLINE  
USING METHOD NWTPH-G<sub>x</sub>**

Laboratory Code: 307292-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Gasoline	ug/L (ppb)	1,000	100	70-130

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/27/23

Date Received: 07/22/23

Project: 14412 S Carus Rd, F&BI 307281

**QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES  
FOR TOTAL PETROLEUM HYDROCARBONS AS  
DIESEL EXTENDED USING METHOD NWTPH-D<sub>x</sub>**

Laboratory Code: 307278-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	98	100	63-146	2

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	96	77-123

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/27/23

Date Received: 07/22/23

Project: 14412 S Carus Rd, F&BI 307281

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER  
SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS  
DIESEL EXTENDED USING METHOD NWTPH-D<sub>x</sub>**

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	ug/L (ppb)	2,500	100	104	65-151	4

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/27/23

Date Received: 07/22/23

Project: 14412 S Carus Rd, F&BI 307281

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES  
FOR VOLATILES BY EPA METHOD 8260D**

Laboratory Code: 307277-03 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Benzene	mg/kg (ppm)	2	<0.03	80	82	50-150	2
Toluene	mg/kg (ppm)	2	<0.05	79	82	50-150	4
Ethylbenzene	mg/kg (ppm)	2	<0.05	80	83	50-150	4
m,p-Xylene	mg/kg (ppm)	4	<0.1	80	84	50-150	5
o-Xylene	mg/kg (ppm)	2	<0.05	80	84	50-150	5
Naphthalene	mg/kg (ppm)	2	<0.05	76	80	50-150	5

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	2	98	70-130
Toluene	mg/kg (ppm)	2	95	70-130
Ethylbenzene	mg/kg (ppm)	2	96	70-130
m,p-Xylene	mg/kg (ppm)	4	96	70-130
o-Xylene	mg/kg (ppm)	2	97	70-130
Naphthalene	mg/kg (ppm)	2	90	69-119

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/27/23

Date Received: 07/22/23

Project: 14412 S Carus Rd, F&BI 307281

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER  
SAMPLES FOR VOLATILES BY EPA METHOD 8260D**

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Benzene	ug/L (ppb)	10	101	111	70-130	9
Toluene	ug/L (ppb)	10	105	105	70-130	0
Ethylbenzene	ug/L (ppb)	10	98	99	70-130	1
m,p-Xylene	ug/L (ppb)	20	106	106	70-130	0
o-Xylene	ug/L (ppb)	10	103	104	70-130	1
Naphthalene	ug/L (ppb)	10	94	93	61-133	1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 07/27/23

Date Received: 07/22/23

Project: 14412 S Carus Rd, F&BI 307281

**QUALITY ASSURANCE RESULTS  
FOR THE ANALYSIS OF SOIL/SOLID SAMPLES  
FOR TCLP METALS USING  
EPA METHODS 6020B AND 1311**

Laboratory Code: 307281-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Lead	mg/L (ppm)	1.0	<1	86	86	75-125	0

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Lead	mg/L (ppm)	1.0	87	80-120

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### **Data Qualifiers & Definitions**

- a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca - The calibration results for the analyte were outside of acceptance criteria, biased low; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. 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 analyte 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 due to sample matrix effects.
- j - The analyte concentration is reported below the standard reporting limit. 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.
- k - The calibration results for the analyte were outside of acceptance criteria, biased high, and the analyte was not detected in the sample.
- 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.

307981

SAMPLE CHAIN OF CUSTODY

07/22/23

WV / 18 US - 24 / 02 / 22

Send Report To

PM's

Company

Soil Solutions

Address

3540 SE 28th Avenue

City, State, Zip

Portland, OR 97202

Phone #

(503) 234-2118

Fax #

(503) 331-7133

SAMPLERS (signature)		PROJECT NAME/NO.		PO #	
<i>[Signature]</i>		14412 S Cars Rd			
REMARKS					

Page # 1 of 1

TURNAROUND TIME

SAMPLE DISPOSAL

Standard Same Day

RUSH

Dispose after 30 days

Return samples

Will call with instructions

Rush charges authorized by: [Signature]

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED							Notes	
						NWTPH-Dx	NWTPH-HCID	NWTPH-Gx	BTEX 8021B	BTEXN 8260C	PAHs (No N) 8270CCIM	PAHs 8270C SIM		Lead by 200.8
SE1 @ 5.0'	01A-C	7/21/23		Soil	1V25 2V25A	Y		Y		(X)				(X) per TC
SE2 @ 5.0'	02	7/21/23		Soil	1V25A 2V25A	Y		Y						7/24/23 ME
SE3 @ 11.0'	03	7/21/23		Soil	1V25A 2V25A	Y								● per TC
SE4 @ 11.0'	04	7/21/23		Soil	1V25A 2V25A	Y								
SE5 @ 8.0'	05	7/21/23		Soil	1V25A 2V25A	Y								7/26/23 ME
SE6 @ 8.0'	06	7/21/23		Soil	1V25A 2V25A	Y		(X)		(X)				
SE7 @ 8.0'	07	7/21/23		Soil	1V25A 2V25A	Y								
SE8 @ 8.0'	08A-C	7/21/23		Soil	1V25A 2V25A	Y								
W9	09A-E	7/21/23		HP3	2V25A 3V25A	Y		●		Y				

SIGNATURE		PRINT NAME		COMPANY		DATE	TIME
<i>[Signature]</i>		Todd Tomk		SS		7/21/23	
<i>[Signature]</i>		James Bryza		F&B		7/22	12:00
Received by:		Received by:		Samples received at			at

Friedman & Bryza, Inc.  
 3012 16th Avenue West  
 Seattle, WA 98119-2029  
 Ph. (206) 235-8282  
 Fax (206) 233-5044

FORMS\CO\CO\SOIL SOLUTIONS.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

5500 4th Avenue South  
Seattle, WA 98108  
(206) 285-8282  
fbi@isomedia.com  
www.friedmanandbruya.com

August 3, 2023

Project Managers  
Soil Solutions  
3540 SE 28th Ave  
Portland, OR 97202

Dear Project Managers:

Included are the results from the testing of material submitted on August 1, 2023 from the 14412 S Carus Rd, F&BI 308009 project. There are 5 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

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

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl  
Project Manager

Enclosures  
c: Soil Solutions Reports  
SSI0803R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/03/23  
Date Received: 08/01/23  
Project: 14412 S Carus Rd, F&BI 308009  
Date Extracted: 08/01/23  
Date Analyzed: 08/01/23

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

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

<u>Sample ID</u> Laboratory ID	<u>Gasoline Range</u>	Surrogate (% Recovery) (Limit 50-150)
SG10@17.0' 308009-01	<5	100
SG11@17.0' 308009-02	<5	104
Method Blank 03-1622 MB	<5	104

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/03/23  
Date Received: 08/01/23  
Project: 14412 S Carus Rd, F&BI 308009  
Date Extracted: 08/01/23  
Date Analyzed: 08/01/23

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES  
FOR TOTAL PETROLEUM HYDROCARBONS AS  
DIESEL AND RESIDUAL RANGE  
USING METHOD NWTPH-D<sub>x</sub>**

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

<u>Sample ID</u> Laboratory ID	<u>Diesel Range</u> (C <sub>10</sub> -C <sub>25</sub> )	<u>Residual Range</u> (C <sub>25</sub> -C <sub>36</sub> )	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 50-150)
SG10@17.0' 308009-01	<50	<250	102
SG11@17.0' 308009-02	<50	<250	101
Method Blank 03-1847 MB2	<50	<250	98

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/03/23

Date Received: 08/01/23

Project: 14412 S Carus Rd, F&BI 308009

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES  
FOR TPH AS GASOLINE  
USING METHOD NWTPH-G<sub>x</sub>**

Laboratory Code: 307390-03 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Gasoline	mg/kg (ppm)	40	112	70-130

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/03/23

Date Received: 08/01/23

Project: 14412 S Carus Rd, F&BI 308009

**QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES  
FOR TOTAL PETROLEUM HYDROCARBONS AS  
DIESEL EXTENDED USING METHOD NWTPH-D<sub>x</sub>**

Laboratory Code: 307407-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	(Wet wt) Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	460	103	105	64-136	2

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	100	78-121

# 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, biased low; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. 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 analyte 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 due to sample matrix effects.
- j - The analyte concentration is reported below the standard reporting limit. 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.
- k - The calibration results for the analyte were outside of acceptance criteria, biased high, and the analyte was not detected in the sample.
- 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.



FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

5500 4th Avenue South  
Seattle, WA 98108  
(206) 285-8282  
fbi@isomedia.com  
www.friedmanandbruya.com

August 4, 2023

Project Managers  
Soil Solutions  
3540 SE 28th Ave  
Portland, OR 97202

Dear Project Managers:

Included are the results from the testing of material submitted on August 2, 2023 from the 14412 S Carus Rd, F&BI 308041 project. There are 5 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

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

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl  
Project Manager

Enclosures  
c: Soil Solutions Reports  
SSI0804R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/04/23  
Date Received: 08/02/23  
Project: 14412 S Carus Rd, F&BI 308041  
Date Extracted: 08/02/23  
Date Analyzed: 08/02/23

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

Results Reported on a Dry Weight Basis

Results Reported as mg/kg (ppm)

<u>Sample ID</u> Laboratory ID	<u>Gasoline Range</u>	Surrogate (% Recovery) (Limit 50-150)
SG12@13.0' 308041-01	<5	113
SG13@13.0' 308041-02	<5	115
Method Blank 03-1625 MB 08-02-23 10:32	<5	114

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/04/23

Date Received: 08/02/23

Project: 14412 S Carus Rd, F&BI 308041

Date Extracted: 08/02/23

Date Analyzed: 08/02/23

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES  
FOR TOTAL PETROLEUM HYDROCARBONS AS  
DIESEL AND RESIDUAL RANGE  
USING METHOD NWTPH-D<sub>x</sub>**

Results Reported on a Dry Weight Basis

Results Reported as mg/kg (ppm)

<u>Sample ID</u> Laboratory ID	<u>Diesel Range</u> (C <sub>10</sub> -C <sub>25</sub> )	<u>Residual Range</u> (C <sub>25</sub> -C <sub>36</sub> )	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 50-150)
SG12@13.0' 308041-01	<50	<250	89
SG13@13.0' 308041-02	<50	<250	85
Method Blank 03-1866 MB	<50	<250	85

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/04/23

Date Received: 08/02/23

Project: 14412 S Carus Rd, F&BI 308041

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES  
FOR TPH AS GASOLINE  
USING METHOD NWTPH-G<sub>x</sub>**

Laboratory Code: 307371-01 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Gasoline	mg/kg (ppm)	40	75	70-130

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/04/23

Date Received: 08/02/23

Project: 14412 S Carus Rd, F&BI 308041

**QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES  
FOR TOTAL PETROLEUM HYDROCARBONS AS  
DIESEL EXTENDED USING METHOD NWTPH-D<sub>x</sub>**

Laboratory Code: 308037-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	(Wet wt) Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	90	90	64-136	0

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	88	78-121

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### **Data Qualifiers & Definitions**

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- 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, biased low; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. 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 analyte 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.
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- ip - Recovery fell outside of control limits due to sample matrix effects.
- j - The analyte concentration is reported below the standard reporting limit. 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.
- k - The calibration results for the analyte were outside of acceptance criteria, biased high, and the analyte was not detected in the sample.
- 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.



FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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August 11, 2023

Project Managers  
Soil Solutions  
3540 SE 28th Ave  
Portland, OR 97202

Dear Project Managers:

Included are the results from the testing of material submitted on August 3, 2023 from the 14412 S Carus Rd, F&BI 308058 project. There are 9 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

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

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl  
Project Manager

Enclosures  
c: Soil Solutions Reports  
SSI0811R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/11/23  
Date Received: 08/03/23  
Project: 14412 S Carus Rd, F&BI 308058  
Date Extracted: 08/03/23  
Date Analyzed: 08/03/23

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES  
FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE2  
USING METHOD NWTPH-Gx**

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

<u>Sample ID</u> Laboratory ID	<u>Gasoline Range</u>	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 58-139)
SG14@13.0' 308058-01	<5	94
SG15@13.0' 308058-01	130	124
Method Blank 03-1627 MB	<5	92

Note: The gasoline detection is likely due to overlap from diesel range compounds.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/11/23

Date Received: 08/03/23

Project: 14412 S Carus Rd, F&BI 308058

Date Extracted: 08/03/23

Date Analyzed: 08/03/23

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES  
FOR TOTAL PETROLEUM HYDROCARBONS AS  
DIESEL AND RESIDUAL RANGE  
USING METHOD NWTPH-D<sub>x</sub>**

Results Reported on a Dry Weight Basis

Results Reported as mg/kg (ppm)

<u>Sample ID</u> Laboratory ID	<u>Diesel Range</u> (C <sub>10</sub> -C <sub>25</sub> )	<u>Residual Range</u> (C <sub>25</sub> -C <sub>36</sub> )	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 50-150)
SG14@13.0' 308058-01	<50	<250	86
SG15@13.0' 308058-02	3,200	<250	109
Method Blank 03-1864 MB	<50	<250	81

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260D

Client Sample ID: SG15@13.0'	Client: Soil Solutions
Date Received: 08/03/23	Project: 14412 S Carus Rd, F&BI 308058
Date Extracted: 08/04/23	Lab ID: 308058-02
Date Analyzed: 08/04/23	Data File: 080408.D
Matrix: Soil	Instrument: GCMS4
Units: mg/kg (ppm) Dry Weight	Operator: MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	110	90	109
Toluene-d8	98	86	115
4-Bromofluorobenzene	108	84	115

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Dichlorodifluoromethane	<0.5	1,3-Dichloropropane	<0.05
Chloromethane	<0.5	Tetrachloroethene	<0.025
Vinyl chloride	<0.05	Dibromochloromethane	<0.05
Bromomethane	<0.5	1,2-Dibromoethane (EDB)	<0.05
Chloroethane	<0.5	Chlorobenzene	<0.05
Trichlorofluoromethane	<0.5	Ethylbenzene	0.58
Acetone	<5	1,1,1,2-Tetrachloroethane	<0.05
1,1-Dichloroethene	<0.05	m,p-Xylene	2.4
Hexane	<0.25	o-Xylene	0.96
Methylene chloride	<0.5	Styrene	<0.05
Methyl t-butyl ether (MTBE)	<0.05	Isopropylbenzene	0.34
trans-1,2-Dichloroethene	<0.05	Bromoform	<0.05
1,1-Dichloroethane	<0.05	n-Propylbenzene	0.90
2,2-Dichloropropane	<0.05	Bromobenzene	<0.05
cis-1,2-Dichloroethene	<0.05	1,3,5-Trimethylbenzene	1.3
Chloroform	<0.05	1,1,2,2-Tetrachloroethane	<0.05
2-Butanone (MEK)	<1	1,2,3-Trichloropropane	<0.05
1,2-Dichloroethane (EDC)	<0.05	2-Chlorotoluene	<0.05
1,1,1-Trichloroethane	<0.05	4-Chlorotoluene	<0.05
1,1-Dichloropropene	<0.05	tert-Butylbenzene	<0.05
Carbon tetrachloride	<0.05	1,2,4-Trimethylbenzene	4.1
Benzene	0.12	sec-Butylbenzene	0.66
Trichloroethene	<0.02	p-Isopropyltoluene	0.64
1,2-Dichloropropane	<0.05	1,3-Dichlorobenzene	<0.05
Bromodichloromethane	<0.05	1,4-Dichlorobenzene	<0.05
Dibromomethane	<0.05	1,2-Dichlorobenzene	<0.05
4-Methyl-2-pentanone	<1	1,2-Dibromo-3-chloropropane	<0.5
cis-1,3-Dichloropropene	<0.05	1,2,4-Trichlorobenzene	<0.25
Toluene	0.16	Hexachlorobutadiene	<0.25
trans-1,3-Dichloropropene	<0.05	Naphthalene	3.6
1,1,2-Trichloroethane	<0.05	1,2,3-Trichlorobenzene	<0.25
2-Hexanone	<0.5		

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260D

Client Sample ID:	Method Blank	Client:	Soil Solutions
Date Received:	Not Applicable	Project:	14412 S Carus Rd, F&BI 308058
Date Extracted:	08/04/23	Lab ID:	03-1724 mb
Date Analyzed:	08/04/23	Data File:	080406.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	90	109
Toluene-d8	95	86	115
4-Bromofluorobenzene	106	84	115

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Dichlorodifluoromethane	<0.5	1,3-Dichloropropane	<0.05
Chloromethane	<0.5	Tetrachloroethene	<0.025
Vinyl chloride	<0.05	Dibromochloromethane	<0.05
Bromomethane	<0.5	1,2-Dibromoethane (EDB)	<0.05
Chloroethane	<0.5	Chlorobenzene	<0.05
Trichlorofluoromethane	<0.5	Ethylbenzene	<0.05
Acetone	<5	1,1,1,2-Tetrachloroethane	<0.05
1,1-Dichloroethene	<0.05	m,p-Xylene	<0.1
Hexane	<0.25	o-Xylene	<0.05
Methylene chloride	<0.5	Styrene	<0.05
Methyl t-butyl ether (MTBE)	<0.05	Isopropylbenzene	<0.05
trans-1,2-Dichloroethene	<0.05	Bromoform	<0.05
1,1-Dichloroethane	<0.05	n-Propylbenzene	<0.05
2,2-Dichloropropane	<0.05	Bromobenzene	<0.05
cis-1,2-Dichloroethene	<0.05	1,3,5-Trimethylbenzene	<0.05
Chloroform	<0.05	1,1,2,2-Tetrachloroethane	<0.05
2-Butanone (MEK)	<1	1,2,3-Trichloropropane	<0.05
1,2-Dichloroethane (EDC)	<0.05	2-Chlorotoluene	<0.05
1,1,1-Trichloroethane	<0.05	4-Chlorotoluene	<0.05
1,1-Dichloropropene	<0.05	tert-Butylbenzene	<0.05
Carbon tetrachloride	<0.05	1,2,4-Trimethylbenzene	<0.05
Benzene	<0.03	sec-Butylbenzene	<0.05
Trichloroethene	<0.02	p-Isopropyltoluene	<0.05
1,2-Dichloropropane	<0.05	1,3-Dichlorobenzene	<0.05
Bromodichloromethane	<0.05	1,4-Dichlorobenzene	<0.05
Dibromomethane	<0.05	1,2-Dichlorobenzene	<0.05
4-Methyl-2-pentanone	<1	1,2-Dibromo-3-chloropropane	<0.5
cis-1,3-Dichloropropene	<0.05	1,2,4-Trichlorobenzene	<0.25
Toluene	<0.05	Hexachlorobutadiene	<0.25
trans-1,3-Dichloropropene	<0.05	Naphthalene	<0.05
1,1,2-Trichloroethane	<0.05	1,2,3-Trichlorobenzene	<0.25
2-Hexanone	<0.5		

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/11/23

Date Received: 08/03/23

Project: 14412 S Carus Rd, F&BI 308058

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

Laboratory Code: 308021-01 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Gasoline	mg/kg (ppm)	40	87	61-153

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/11/23

Date Received: 08/03/23

Project: 14412 S Carus Rd, F&BI 308058

**QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES  
FOR TOTAL PETROLEUM HYDROCARBONS AS  
DIESEL EXTENDED USING METHOD NWTPH-D<sub>x</sub>**

Laboratory Code: 308050-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	(Wet wt) Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	18,000	100	100	64-136	0

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	100	78-121

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/11/23

Date Received: 08/03/23

Project: 14412 S Carus Rd, F&BI 308058

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES  
FOR VOLATILES BY EPA METHOD 8260D**

Laboratory Code: 307396-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Dichlorodifluoromethane	mg/kg (ppm)	2	<0.5	48	50	10-142	4
Chloromethane	mg/kg (ppm)	2	<0.5	68	72	10-126	6
Vinyl chloride	mg/kg (ppm)	2	<0.05	73	79	10-138	8
Bromomethane	mg/kg (ppm)	2	<0.5	63	65	10-163	3
Chloroethane	mg/kg (ppm)	2	<0.5	65	65	10-176	0
Trichlorofluoromethane	mg/kg (ppm)	2	<0.5	74	78	10-176	5
Acetone	mg/kg (ppm)	10	<5	91	95	10-163	4
1,1-Dichloroethene	mg/kg (ppm)	2	<0.05	70	74	10-160	6
Hexane	mg/kg (ppm)	2	<0.25	86	90	10-137	5
Methylene chloride	mg/kg (ppm)	2	<0.5	78	83	10-156	6
Methyl t-butyl ether (MTBE)	mg/kg (ppm)	2	<0.05	84	91	21-145	8
trans-1,2-Dichloroethene	mg/kg (ppm)	2	<0.05	82	83	14-137	1
1,1-Dichloroethane	mg/kg (ppm)	2	<0.05	86	90	19-140	5
2,2-Dichloropropane	mg/kg (ppm)	2	<0.05	86	90	10-158	5
cis-1,2-Dichloroethene	mg/kg (ppm)	2	<0.05	82	88	25-135	7
Chloroform	mg/kg (ppm)	2	<0.05	87	92	21-145	6
2-Butanone (MEK)	mg/kg (ppm)	10	<1	91	97	19-147	6
1,2-Dichloroethane (EDC)	mg/kg (ppm)	2	<0.05	93	101	12-160	8
1,1,1-Trichloroethane	mg/kg (ppm)	2	<0.05	86	93	10-156	8
1,1-Dichloropropene	mg/kg (ppm)	2	<0.05	90	96	17-140	6
Carbon tetrachloride	mg/kg (ppm)	2	<0.05	84	90	9-164	7
Benzene	mg/kg (ppm)	2	<0.03	89	94	29-129	5
Trichloroethene	mg/kg (ppm)	2	<0.02	79	83	21-139	5
1,2-Dichloropropane	mg/kg (ppm)	2	<0.05	86	93	30-135	8
Bromodichloromethane	mg/kg (ppm)	2	<0.05	85	91	23-155	7
Dibromomethane	mg/kg (ppm)	2	<0.05	87	95	23-145	9
4-Methyl-2-pentanone	mg/kg (ppm)	10	<1	82	89	24-155	8
cis-1,3-Dichloropropene	mg/kg (ppm)	2	<0.05	89	93	28-144	4
Toluene	mg/kg (ppm)	2	<0.05	93	98	35-130	5
trans-1,3-Dichloropropene	mg/kg (ppm)	2	<0.05	95	98	26-149	3
1,1,2-Trichloroethane	mg/kg (ppm)	2	<0.05	92	98	10-205	6
2-Hexanone	mg/kg (ppm)	10	<5	97	101	15-166	4
1,3-Dichloropropane	mg/kg (ppm)	2	<0.05	96	100	31-137	4
Tetrachloroethene	mg/kg (ppm)	2	<0.025	93	98	20-133	5
Dibromochloromethane	mg/kg (ppm)	2	<0.05	92	95	28-150	3
1,2-Dibromoethane (EDB)	mg/kg (ppm)	2	<0.05	87	91	28-142	4
Chlorobenzene	mg/kg (ppm)	2	<0.05	92	96	32-129	4
Ethylbenzene	mg/kg (ppm)	2	<0.05	91	96	32-137	5
1,1,1,2-Tetrachloroethane	mg/kg (ppm)	2	<0.05	88	89	31-143	1
m,p-Xylene	mg/kg (ppm)	4	<0.1	92	97	34-136	5
o-Xylene	mg/kg (ppm)	2	<0.05	88	94	33-134	7
Styrene	mg/kg (ppm)	2	<0.05	90	93	35-137	3
Isopropylbenzene	mg/kg (ppm)	2	<0.05	90	92	31-142	2
Bromoform	mg/kg (ppm)	2	<0.05	77	80	21-156	4
n-Propylbenzene	mg/kg (ppm)	2	<0.05	98	100	23-146	2
Bromobenzene	mg/kg (ppm)	2	<0.05	92	97	34-130	5
1,3,5-Trimethylbenzene	mg/kg (ppm)	2	<0.05	95	95	18-149	0
1,1,2,2-Tetrachloroethane	mg/kg (ppm)	2	<0.05	103	102	28-140	1
1,2,3-Trichloropropane	mg/kg (ppm)	2	<0.05	98	98	25-144	0
2-Chlorotoluene	mg/kg (ppm)	2	<0.05	94	95	31-134	1
4-Chlorotoluene	mg/kg (ppm)	2	<0.05	93	95	31-136	2
tert-Butylbenzene	mg/kg (ppm)	2	<0.05	93	96	30-137	3
1,2,4-Trimethylbenzene	mg/kg (ppm)	2	<0.05	93	94	10-182	1
sec-Butylbenzene	mg/kg (ppm)	2	<0.05	93	95	23-145	2
p-Isopropyltoluene	mg/kg (ppm)	2	<0.05	94	96	21-149	2
1,3-Dichlorobenzene	mg/kg (ppm)	2	<0.05	94	97	30-131	3
1,4-Dichlorobenzene	mg/kg (ppm)	2	<0.05	94	95	29-129	1
1,2-Dichlorobenzene	mg/kg (ppm)	2	<0.05	97	98	31-132	1
1,2-Dibromo-3-chloropropane	mg/kg (ppm)	2	<0.5	96	97	11-161	1
1,2,4-Trichlorobenzene	mg/kg (ppm)	2	<0.25	97	100	22-142	3
Hexachlorobutadiene	mg/kg (ppm)	2	<0.25	105	110	10-142	5
Naphthalene	mg/kg (ppm)	2	<0.05	96	99	14-157	3
1,2,3-Trichlorobenzene	mg/kg (ppm)	2	<0.25	99	101	20-144	2

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/11/23

Date Received: 08/03/23

Project: 14412 S Carus Rd, F&BI 308058

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES  
FOR VOLATILES BY EPA METHOD 8260D**

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Dichlorodifluoromethane	mg/kg (ppm)	2	63	10-146
Chloromethane	mg/kg (ppm)	2	75	27-133
Vinyl chloride	mg/kg (ppm)	2	80	22-139
Bromomethane	mg/kg (ppm)	2	75	10-201
Chloroethane	mg/kg (ppm)	2	69	10-163
Trichlorofluoromethane	mg/kg (ppm)	2	80	10-196
Acetone	mg/kg (ppm)	10	97	52-141
1,1-Dichloroethene	mg/kg (ppm)	2	74	47-128
Hexane	mg/kg (ppm)	2	89	43-142
Methylene chloride	mg/kg (ppm)	2	83	10-184
Methyl t-butyl ether (MTBE)	mg/kg (ppm)	2	91	60-123
trans-1,2-Dichloroethene	mg/kg (ppm)	2	85	64-132
1,1-Dichloroethane	mg/kg (ppm)	2	94	64-135
2,2-Dichloropropane	mg/kg (ppm)	2	92	52-170
cis-1,2-Dichloroethene	mg/kg (ppm)	2	91	64-135
Chloroform	mg/kg (ppm)	2	94	61-139
2-Butanone (MEK)	mg/kg (ppm)	10	99	30-197
1,2-Dichloroethane (EDC)	mg/kg (ppm)	2	102	56-135
1,1,1-Trichloroethane	mg/kg (ppm)	2	95	62-131
1,1-Dichloropropene	mg/kg (ppm)	2	93	64-136
Carbon tetrachloride	mg/kg (ppm)	2	92	60-139
Benzene	mg/kg (ppm)	2	96	65-136
Trichloroethene	mg/kg (ppm)	2	86	63-139
1,2-Dichloropropane	mg/kg (ppm)	2	94	61-145
Bromodichloromethane	mg/kg (ppm)	2	93	57-126
Dibromomethane	mg/kg (ppm)	2	98	62-123
4-Methyl-2-pentanone	mg/kg (ppm)	10	86	45-145
cis-1,3-Dichloropropene	mg/kg (ppm)	2	96	65-143
Toluene	mg/kg (ppm)	2	96	66-126
trans-1,3-Dichloropropene	mg/kg (ppm)	2	97	65-131
1,1,2-Trichloroethane	mg/kg (ppm)	2	97	62-131
2-Hexanone	mg/kg (ppm)	10	102	33-152
1,3-Dichloropropane	mg/kg (ppm)	2	100	67-128
Tetrachloroethene	mg/kg (ppm)	2	99	68-128
Dibromochloromethane	mg/kg (ppm)	2	94	55-121
1,2-Dibromoethane (EDB)	mg/kg (ppm)	2	94	66-129
Chlorobenzene	mg/kg (ppm)	2	95	67-128
Ethylbenzene	mg/kg (ppm)	2	94	64-123
1,1,1,2-Tetrachloroethane	mg/kg (ppm)	2	94	64-121
m,p-Xylene	mg/kg (ppm)	4	94	68-128
o-Xylene	mg/kg (ppm)	2	93	67-129
Styrene	mg/kg (ppm)	2	93	67-129
Isopropylbenzene	mg/kg (ppm)	2	90	68-128
Bromoform	mg/kg (ppm)	2	80	56-132
n-Propylbenzene	mg/kg (ppm)	2	101	68-129
Bromobenzene	mg/kg (ppm)	2	98	69-128
1,3,5-Trimethylbenzene	mg/kg (ppm)	2	95	69-129
1,1,2,2-Tetrachloroethane	mg/kg (ppm)	2	105	56-143
1,2,3-Trichloropropane	mg/kg (ppm)	2	102	61-137
2-Chlorotoluene	mg/kg (ppm)	2	96	69-128
4-Chlorotoluene	mg/kg (ppm)	2	95	67-127
tert-Butylbenzene	mg/kg (ppm)	2	98	69-129
1,2,4-Trimethylbenzene	mg/kg (ppm)	2	94	69-128
sec-Butylbenzene	mg/kg (ppm)	2	95	69-130
p-Isopropyltoluene	mg/kg (ppm)	2	99	69-130
1,3-Dichlorobenzene	mg/kg (ppm)	2	97	69-127
1,4-Dichlorobenzene	mg/kg (ppm)	2	97	68-126
1,2-Dichlorobenzene	mg/kg (ppm)	2	100	69-127
1,2-Dibromo-3-chloropropane	mg/kg (ppm)	2	102	58-138
1,2,4-Trichlorobenzene	mg/kg (ppm)	2	100	64-135
Hexachlorobutadiene	mg/kg (ppm)	2	102	50-153
Naphthalene	mg/kg (ppm)	2	100	62-128
1,2,3-Trichlorobenzene	mg/kg (ppm)	2	101	61-126

# 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, biased low; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. 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 analyte 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 due to sample matrix effects.
- j - The analyte concentration is reported below the standard reporting limit. 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.
- k - The calibration results for the analyte were outside of acceptance criteria, biased high, and the analyte was not detected in the sample.
- 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.



FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

5500 4th Avenue South  
Seattle, WA 98108  
(206) 285-8282  
fbi@isomedia.com  
www.friedmanandbruya.com

August 14, 2023

Project Managers  
Soil Solutions  
3540 SE 28th Ave  
Portland, OR 97202

Dear Project Managers:

Included are the results from the testing of material submitted on August 5, 2023 from the 14412 S Carus Rd, F&BI 308098 project. There are 9 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

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

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl  
Project Manager

Enclosures  
c: Soil Solutions Reports  
SSI0814R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/14/23  
Date Received: 08/05/23  
Project: 14412 S Carus Rd, F&BI 308098  
Date Extracted: 08/07/23  
Date Analyzed: 08/07/23

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

Results Reported on a Dry Weight Basis

Results Reported as mg/kg (ppm)

<u>Sample ID</u> Laboratory ID	<u>Gasoline Range</u>	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 50-150)
SG16@13.0' 308098-01	15	107
SG17@13.0' 308098-02	<5	104
SG18@13.0' 308098-03	31	108
SG19@10.0' 308098-04	<5	107
Method Blank 03-1630 MB	<5	106

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/14/23  
Date Received: 08/05/23  
Project: 14412 S Carus Rd, F&BI 308098  
Date Extracted: 08/07/23  
Date Analyzed: 08/07/23

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES  
FOR TOTAL PETROLEUM HYDROCARBONS AS  
DIESEL AND RESIDUAL RANGE  
USING METHOD NWTPH-D<sub>x</sub>**

Results Reported on a Dry Weight Basis

Results Reported as mg/kg (ppm)

<u>Sample ID</u> Laboratory ID	<u>Diesel Range</u> (C <sub>10</sub> -C <sub>25</sub> )	<u>Residual Range</u> (C <sub>25</sub> -C <sub>36</sub> )	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 50-150)
SG16@13.0' 308098-01	<50	<250	91
SG17@13.0' 308098-02	<50	<250	89
SG18@13.0' 308098-03	85	<250	91
SG19@10.0' 308098-04	<50	<250	91
Method Blank 03-1885 MB	<50	<250	92

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260D

Client Sample ID:	SG16@13.0'	Client:	Soil Solutions
Date Received:	08/05/23	Project:	14412 S Carus Rd, F&BI 308098
Date Extracted:	08/08/23	Lab ID:	308098-01
Date Analyzed:	08/08/23	Data File:	080811.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	90	109
Toluene-d8	93	86	115
4-Bromofluorobenzene	100	84	115

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	0.14
o-Xylene	0.054
Naphthalene	0.17

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### Analysis For Volatile Compounds By EPA Method 8260D

Client Sample ID:	SG18@13.0'	Client:	Soil Solutions
Date Received:	08/05/23	Project:	14412 S Carus Rd, F&BI 308098
Date Extracted:	08/08/23	Lab ID:	308098-03
Date Analyzed:	08/08/23	Data File:	080812.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	106	90	109
Toluene-d8	98	86	115
4-Bromofluorobenzene	105	84	115

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	0.28
o-Xylene	0.12
Naphthalene	0.48

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### Analysis For Volatile Compounds By EPA Method 8260D

Client Sample ID:	Method Blank	Client:	Soil Solutions
Date Received:	Not Applicable	Project:	14412 S Carus Rd, F&BI 308098
Date Extracted:	08/08/23	Lab ID:	03-1807 mb
Date Analyzed:	08/08/23	Data File:	080806.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	90	109
Toluene-d8	96	86	115
4-Bromofluorobenzene	104	84	115

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05
Naphthalene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/14/23

Date Received: 08/05/23

Project: 14412 S Carus Rd, F&BI 308098

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

Laboratory Code: 308098-04 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Gasoline	mg/kg (ppm)	40	92	70-130

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/14/23

Date Received: 08/05/23

Project: 14412 S Carus Rd, F&BI 308098

**QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES  
FOR TOTAL PETROLEUM HYDROCARBONS AS  
DIESEL EXTENDED USING METHOD NWTPH-D<sub>x</sub>**

Laboratory Code: 308098-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	(Wet wt) Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	94	94	53-141	0

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	94	71-126

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/14/23

Date Received: 08/05/23

Project: 14412 S Carus Rd, F&BI 308098

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES  
FOR VOLATILES BY EPA METHOD 8260D**

Laboratory Code: 308062-03 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Benzene	mg/kg (ppm)	2	<0.03	93	95	29-129	2
Toluene	mg/kg (ppm)	2	<0.05	95	98	35-130	3
Ethylbenzene	mg/kg (ppm)	2	<0.05	93	95	32-137	2
m,p-Xylene	mg/kg (ppm)	4	<0.1	96	97	34-136	1
o-Xylene	mg/kg (ppm)	2	<0.05	91	95	33-134	4
Naphthalene	mg/kg (ppm)	2	<0.05	99	101	14-157	2

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	2	99	65-136
Toluene	mg/kg (ppm)	2	96	66-126
Ethylbenzene	mg/kg (ppm)	2	97	64-123
m,p-Xylene	mg/kg (ppm)	4	97	68-128
o-Xylene	mg/kg (ppm)	2	95	67-129
Naphthalene	mg/kg (ppm)	2	100	62-128

# 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, biased low; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. 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 analyte 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 due to sample matrix effects.
- j - The analyte concentration is reported below the standard reporting limit. 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.
- k - The calibration results for the analyte were outside of acceptance criteria, biased high, and the analyte was not detected in the sample.
- 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.



FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

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Seattle, WA 98108  
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fbi@isomedia.com  
www.friedmanandbruya.com

August 30, 2023

Project Managers  
Soil Solutions  
3540 SE 28th Ave  
Portland, OR 97202

Dear Project Managers:

Included are the results from the testing of material submitted on August 25, 2023 from the 14412 S Carus Rd, F&BI 308403 project. There are 9 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

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

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl  
Project Manager

Enclosures  
c: Soil Solutions Reports  
SSI0830R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/30/23  
Date Received: 08/25/23  
Project: 14412 S Carus Rd, F&BI 308403  
Date Extracted: 08/25/23  
Date Analyzed: 08/25/23

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

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

<u>Sample ID</u> Laboratory ID	<u>Gasoline Range</u>	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 50-150)
S20@27.5 308403-01	<5	98
S21@24.0-24.5 308403-02	<5	98
Method Blank 03-1656 MB	<5	98

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/30/23  
Date Received: 08/25/23  
Project: 14412 S Carus Rd, F&BI 308403  
Date Extracted: 08/25/23  
Date Analyzed: 08/25/23

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES  
FOR TOTAL PETROLEUM HYDROCARBONS AS  
DIESEL AND RESIDUAL RANGE  
USING METHOD NWTPH-D<sub>x</sub>**

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

<u>Sample ID</u> Laboratory ID	<u>Diesel Range</u> (C <sub>10</sub> -C <sub>25</sub> )	<u>Residual Range</u> (C <sub>25</sub> -C <sub>36</sub> )	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 50-150)
S20@27.5 308403-01	<50	<250	93
S21@24.0-24.5 308403-02	<50	<250	85
Method Blank 03-2034 MB	<50	<250	86

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260D

Client Sample ID:	S20@27.5	Client:	Soil Solutions
Date Received:	08/25/23	Project:	14412 S Carus Rd, F&BI 308403
Date Extracted:	08/25/23	Lab ID:	308403-01
Date Analyzed:	08/25/23	Data File:	082519.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	105	90	109
Toluene-d8	95	86	115
4-Bromofluorobenzene	103	84	115

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05
Naphthalene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260D

Client Sample ID:	S21@24.0-24.5	Client:	Soil Solutions
Date Received:	08/25/23	Project:	14412 S Carus Rd, F&BI 308403
Date Extracted:	08/25/23	Lab ID:	308403-02
Date Analyzed:	08/25/23	Data File:	082518.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	105	90	109
Toluene-d8	97	86	115
4-Bromofluorobenzene	102	84	115

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05
Naphthalene	<0.05

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### Analysis For Volatile Compounds By EPA Method 8260D

Client Sample ID:	Method Blank	Client:	Soil Solutions
Date Received:	Not Applicable	Project:	14412 S Carus Rd, F&BI 308403
Date Extracted:	08/25/23	Lab ID:	03-1958 mb
Date Analyzed:	08/25/23	Data File:	082506.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	90	90	109
Toluene-d8	100	86	115
4-Bromofluorobenzene	107	84	115

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05
Naphthalene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/30/23

Date Received: 08/25/23

Project: 14412 S Carus Rd, F&BI 308403

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

Laboratory Code: 308372-01 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Gasoline	mg/kg (ppm)	40	112	70-130

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/30/23

Date Received: 08/25/23

Project: 14412 S Carus Rd, F&BI 308403

**QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES  
FOR TOTAL PETROLEUM HYDROCARBONS AS  
DIESEL EXTENDED USING METHOD NWTPH-D<sub>x</sub>**

Laboratory Code: 308384-03 (Matrix Spike)

Analyte	Reporting Units	Spike Level	(Wet wt) Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	94	96	64-136	2

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	90	78-121

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 08/30/23

Date Received: 08/25/23

Project: 14412 S Carus Rd, F&BI 308403

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES  
FOR VOLATILES BY EPA METHOD 8260D**

Laboratory Code: 308384-03 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Benzene	mg/kg (ppm)	2	<0.03	92	95	29-129	3
Toluene	mg/kg (ppm)	2	<0.05	89	92	35-130	3
Ethylbenzene	mg/kg (ppm)	2	<0.05	87	90	32-137	3
m,p-Xylene	mg/kg (ppm)	4	<0.1	89	87	34-136	2
o-Xylene	mg/kg (ppm)	2	<0.05	88	87	33-134	1
Naphthalene	mg/kg (ppm)	2	<0.05	94	91	14-157	3

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	2	101	65-136
Toluene	mg/kg (ppm)	2	99	66-126
Ethylbenzene	mg/kg (ppm)	2	97	64-123
m,p-Xylene	mg/kg (ppm)	4	98	68-128
o-Xylene	mg/kg (ppm)	2	94	67-129
Naphthalene	mg/kg (ppm)	2	101	62-128

# 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, biased low; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. 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 analyte 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 due to sample matrix effects.
- j - The analyte concentration is reported below the standard reporting limit. 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.
- k - The calibration results for the analyte were outside of acceptance criteria, biased high, and the analyte was not detected in the sample.
- 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.



FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

5500 4th Avenue South  
Seattle, WA 98108  
(206) 285-8282  
fbi@isomedia.com  
www.friedmanandbruya.com

September 1, 2023

Project Managers  
Soil Solutions  
3540 SE 28th Ave  
Portland, OR 97202

Dear Project Managers:

Included are the results from the testing of material submitted on August 30, 2023 from the 14412 S Carus Rd, F&BI 308457 project. There are 10 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

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

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl  
Project Manager

Enclosures  
c: Soil Solutions Reports  
SSI0901R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 09/01/23  
Date Received: 08/30/23  
Project: 14412 S Carus Rd, F&BI 308457  
Date Extracted: 08/30/23  
Date Analyzed: 08/30/23

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES  
FOR TOTAL PETROLEUM HYDROCARBONS AS GASOLINE  
USING METHOD NWTPH-Gx**  
Results Reported on a Dry Weight Basis  
Results Reported as mg/kg (ppm)

<u>Sample ID</u> Laboratory ID	<u>Gasoline Range</u>	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 50-150)
S22@23-25 308457-01	<5	121
S23@24-26 308457-02	<5	123
S24@24-26 308457-03	<5	122
Method Blank 03-1664 MB	<5	114

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 09/01/23  
Date Received: 08/30/23  
Project: 14412 S Carus Rd, F&BI 308457  
Date Extracted: 08/30/23  
Date Analyzed: 08/30/23

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES  
FOR TOTAL PETROLEUM HYDROCARBONS AS  
DIESEL AND RESIDUAL RANGE  
USING METHOD NWTPH-D<sub>x</sub>**

Results Reported on a Dry Weight Basis

Results Reported as mg/kg (ppm)

<u>Sample ID</u> Laboratory ID	<u>Diesel Range</u> (C <sub>10</sub> -C <sub>25</sub> )	<u>Residual Range</u> (C <sub>25</sub> -C <sub>36</sub> )	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 50-150)
S22@23-25 308457-01	<50	<250	80
S23@24-26 308457-02	<50	<250	87
S24@24-26 308457-03	<50	<250	81
Method Blank 03-2053 MB	<50	<250	75

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### Analysis For Volatile Compounds By EPA Method 8260D

Client Sample ID:	S22@23-25	Client:	Soil Solutions
Date Received:	08/30/23	Project:	14412 S Carus Rd, F&BI 308457
Date Extracted:	08/30/23	Lab ID:	308457-01
Date Analyzed:	08/30/23	Data File:	083014.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	105	90	109
Toluene-d8	100	86	115
4-Bromofluorobenzene	99	84	115

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05
Naphthalene	<0.05

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### Analysis For Volatile Compounds By EPA Method 8260D

Client Sample ID:	S23@24-26	Client:	Soil Solutions
Date Received:	08/30/23	Project:	14412 S Carus Rd, F&BI 308457
Date Extracted:	08/30/23	Lab ID:	308457-02
Date Analyzed:	08/30/23	Data File:	083015.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	90	109
Toluene-d8	102	86	115
4-Bromofluorobenzene	100	84	115

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05
Naphthalene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260D

Client Sample ID:	S24@24-26	Client:	Soil Solutions
Date Received:	08/30/23	Project:	14412 S Carus Rd, F&BI 308457
Date Extracted:	08/30/23	Lab ID:	308457-03
Date Analyzed:	08/30/23	Data File:	083016.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	97	90	109
Toluene-d8	98	86	115
4-Bromofluorobenzene	104	84	115

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05
Naphthalene	<0.05

# FRIEDMAN & BRUYA, INC.

## ENVIRONMENTAL CHEMISTS

### Analysis For Volatile Compounds By EPA Method 8260D

Client Sample ID:	Method Blank	Client:	Soil Solutions
Date Received:	Not Applicable	Project:	14412 S Carus Rd, F&BI 308457
Date Extracted:	08/30/23	Lab ID:	03-1969 mb
Date Analyzed:	08/30/23	Data File:	083006.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	90	109
Toluene-d8	99	86	115
4-Bromofluorobenzene	102	84	115

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05
Naphthalene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 09/01/23

Date Received: 08/30/23

Project: 14412 S Carus Rd, F&BI 308457

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

Laboratory Code: 308457-03 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Gasoline	mg/kg (ppm)	40	102	70-130

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 09/01/23

Date Received: 08/30/23

Project: 14412 S Carus Rd, F&BI 308457

**QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES  
FOR TOTAL PETROLEUM HYDROCARBONS AS  
DIESEL EXTENDED USING METHOD NWTPH-D<sub>x</sub>**

Laboratory Code: 308452-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	(Wet wt) Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	90	92	64-136	2

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	90	78-121

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 09/01/23

Date Received: 08/30/23

Project: 14412 S Carus Rd, F&BI 308457

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES  
FOR VOLATILES BY EPA METHOD 8260D**

Laboratory Code: 308424-03 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Benzene	mg/kg (ppm)	2	<0.03	83	84	29-129	1
Toluene	mg/kg (ppm)	2	<0.05	84	87	35-130	4
Ethylbenzene	mg/kg (ppm)	2	<0.05	80	83	32-137	4
m,p-Xylene	mg/kg (ppm)	4	<0.1	82	85	34-136	4
o-Xylene	mg/kg (ppm)	2	<0.05	81	84	33-134	4
Naphthalene	mg/kg (ppm)	2	<0.05	84	84	14-157	0

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	2	98	65-136
Toluene	mg/kg (ppm)	2	100	66-126
Ethylbenzene	mg/kg (ppm)	2	97	64-123
m,p-Xylene	mg/kg (ppm)	4	102	68-128
o-Xylene	mg/kg (ppm)	2	97	67-129
Naphthalene	mg/kg (ppm)	2	101	62-128

# 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, biased low; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. 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 analyte 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 due to sample matrix effects.
- j - The analyte concentration is reported below the standard reporting limit. 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.
- k - The calibration results for the analyte were outside of acceptance criteria, biased high, and the analyte was not detected in the sample.
- 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.

**SAMPLE CHAIN OF CUSTODY**

ME 8/30/23 EZ/VSDy

508457

PM'S

Page # 1 of 1

TURNAROUND TIME

1

1

*Signature*

SAMPLERS (signature)

PROJECT NAME/NO.

1442 S Canus Rd

PO #

REMARKS

Standard  DRUSH = Same Day  
 Rush charges authorized by: \_\_\_\_\_  
 SAMPLE DISPOSAL  
 Dispose after 30 days  
 Return samples  
 Will call with instructions

Company Soil Solutions  
 Address 3540 SE 28th Avenue  
 City, State, Zip Portland, OR 97202  
 Phone # (503) 234-2118 Fax # (503) 331-7133

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of containers	ANALYSES REQUESTED							Notes		
						NWTPH-Dx	NWTPH-HCID	NWTPH-Gx	BTEX 8021B	BTEXN 8260C	PAHs (No N) 8270CCIM	PAHs 8270C SIM		Lead by 200.8	
522 @ 23-25	01A-C	8/29/23		Soil	3	/	/	/		Y					
523 @ 24-26	02A-C				3	/	/	/		Y					
524 @ 24-26	03A-C				3	/	/	/		Y					
<b>Samples received at 3 °C</b>															

**Friedman & Bruya, Inc.**  
 3012 16th Avenue West  
 Seattle, WA 98119-2029  
 Ph. (206) 285-9382  
 Fax (206) 283-5044

Relinquished by:	<i>Signature</i>	PRINT NAME	Joseph Trayer	COMPANY	Soil Solutions	DATE	8/29/23	TIME	
Received by:	<i>Signature</i>	PRINT NAME	Michael Edell	COMPANY	F&B	DATE	8/30/23	TIME	1030
Relinquished by:		PRINT NAME		COMPANY		DATE		TIME	
Received by:		PRINT NAME		COMPANY		DATE		TIME	

FORMS\COC\SOIL SOLUTIONS.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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

5500 4th Avenue South  
Seattle, WA 98108  
(206) 285-8282  
fbi@isomedia.com  
www.friedmanandbruya.com

September 8, 2023

Project Managers  
Soil Solutions  
3540 SE 28th Ave  
Portland, OR 97202

Dear Project Managers:

Included are the results from the testing of material submitted on September 6, 2023 from the 14412 S Carus Rd, F&BI 309046 project. There are 14 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

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

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl  
Project Manager

Enclosures  
c: Soil Solutions Reports  
SSI0908R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 09/08/23

Date Received: 09/06/23

Project: 14412 S Carus Rd, F&BI 309046

Date Extracted: 09/06/23

Date Analyzed: 09/06/23

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

Results Reported on a Dry Weight Basis

Results Reported as mg/kg (ppm)

<u>Sample ID</u> Laboratory ID	<u>Gasoline Range</u>	Surrogate (% Recovery) (Limit 50-150)
Tank Sludge 309046-01	<5	94
Method Blank 03-2073 MB	<5	125

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 09/08/23  
Date Received: 09/06/23  
Project: 14412 S Carus Rd, F&BI 309046  
Date Extracted: 09/06/23  
Date Analyzed: 09/06/23

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES  
FOR TOTAL PETROLEUM HYDROCARBONS AS  
DIESEL AND RESIDUAL RANGE  
USING METHOD NWTPH-D<sub>x</sub>**

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

<u>Sample ID</u> Laboratory ID	<u>Diesel Range</u> (C <sub>10</sub> -C <sub>25</sub> )	<u>Residual Range</u> (C <sub>25</sub> -C <sub>36</sub> )	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 50-150)
Tank Sludge 309046-01	53,000 ve	12,000 x	ip
Method Blank 03-2092 MB2	<50	<250	92

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	Tank Sludge	Client:	Soil Solutions
Date Received:	09/06/23	Project:	14412 S Carus Rd, F&BI 309046
Date Extracted:	09/06/23	Lab ID:	309046-01 x10
Date Analyzed:	09/06/23	Data File:	309046-01 x10.049
Matrix:	Soil/Sludge	Instrument:	ICPMS2
Units:	mg/kg (ppm)	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
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Lead	410
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FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Soil Solutions
Date Received:	NA	Project:	14412 S Carus Rd, F&BI 309046
Date Extracted:	09/06/23	Lab ID:	I3-690 mb
Date Analyzed:	09/06/23	Data File:	I3-690 mb.041
Matrix:	Soil/Sludge	Instrument:	ICPMS2
Units:	mg/kg (ppm)	Operator:	SP

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

ENVIRONMENTAL CHEMISTS

Analysis for TCLP Metals By EPA Method 6020B and 1311

Client ID:	Tank Sludge	Client:	Soil Solutions
Date Received:	09/06/23	Project:	14412 S Carus Rd, F&BI 309046
Date Extracted:	09/06/23	Lab ID:	309046-01
Date Analyzed:	09/07/23	Data File:	309046-01.041
Matrix:	Soil/Solid	Instrument:	ICPMS2
Units:	mg/L (ppm)	Operator:	SP

Analyte:	Concentration mg/L (ppm)	TCLP Limit
Lead	<1	5.0

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis for TCLP Metals By EPA Method 6020B and 1311

Client ID:	Method Blank	Client:	Soil Solutions
Date Received:	NA	Project:	14412 S Carus Rd, F&BI 309046
Date Extracted:	09/06/23	Lab ID:	I3-692 mb
Date Analyzed:	09/07/23	Data File:	I3-692 mb.036
Matrix:	Soil/Solid	Instrument:	ICPMS2
Units:	mg/L (ppm)	Operator:	SP

Analyte:	Concentration mg/L (ppm)	TCLP Limit
Lead	<1	5.0

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260D

Client Sample ID:	Tank Sludge	Client:	Soil Solutions
Date Received:	09/06/23	Project:	14412 S Carus Rd, F&BI 309046
Date Extracted:	09/06/23	Lab ID:	309046-01
Date Analyzed:	09/06/23	Data File:	090613.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	90	109
Toluene-d8	99	86	115
4-Bromofluorobenzene	97	84	115

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05
Naphthalene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260D

Client Sample ID:	Method Blank	Client:	Soil Solutions
Date Received:	Not Applicable	Project:	14412 S Carus Rd, F&BI 309046
Date Extracted:	09/06/23	Lab ID:	03-1981 mb
Date Analyzed:	09/06/23	Data File:	090606.D
Matrix:	Soil	Instrument:	GCMS4
Units:	mg/kg (ppm) Dry Weight	Operator:	MD

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	98	90	109
Toluene-d8	104	86	115
4-Bromofluorobenzene	106	84	115

Compounds:	Concentration mg/kg (ppm)
Benzene	<0.03
Toluene	<0.05
Ethylbenzene	<0.05
m,p-Xylene	<0.1
o-Xylene	<0.05
Naphthalene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 09/08/23

Date Received: 09/06/23

Project: 14412 S Carus Rd, F&BI 309046

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES  
FOR TPH AS GASOLINE  
USING METHOD NWTPH-G<sub>x</sub>**

Laboratory Code: 309022-01 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Gasoline	mg/kg (ppm)	40	97	70-130

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 09/08/23

Date Received: 09/06/23

Project: 14412 S Carus Rd, F&BI 309046

**QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES  
FOR TOTAL PETROLEUM HYDROCARBONS AS  
DIESEL EXTENDED USING METHOD NWTPH-D<sub>x</sub>**

Laboratory Code: 308347-08 (Matrix Spike)

Analyte	Reporting Units	Spike Level	(Wet wt) Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	650	89	83	53-141	7

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	86	71-126

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 09/08/23

Date Received: 09/06/23

Project: 14412 S Carus Rd, F&BI 309046

**QUALITY ASSURANCE RESULTS  
FOR THE ANALYSIS OF SOIL/SLUDGE SAMPLES  
FOR TOTAL METALS USING EPA METHOD 200.8**

Laboratory Code: 308410-33 x5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Lead	mg/kg (ppm)	50	<5	98	99	70-130	1

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Lead	mg/kg (ppm)	50	99	85-115

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 09/08/23

Date Received: 09/06/23

Project: 14412 S Carus Rd, F&BI 309046

**QUALITY ASSURANCE RESULTS  
FOR THE ANALYSIS OF SOIL/SOLID SAMPLES  
FOR TCLP METALS USING  
EPA METHODS 6020B AND 1311**

Laboratory Code: 309038-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Lead	mg/L (ppm)	1.0	<1	88	88	75-125	0

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Lead	mg/L (ppm)	1.0	88	80-120

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 09/08/23

Date Received: 09/06/23

Project: 14412 S Carus Rd, F&BI 309046

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES  
FOR VOLATILES BY EPA METHOD 8260D**

Laboratory Code: 308496-03 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Benzene	mg/kg (ppm)	2	<0.03	98	94	29-129	4
Toluene	mg/kg (ppm)	2	<0.05	99	95	35-130	4
Ethylbenzene	mg/kg (ppm)	2	<0.05	95	93	32-137	2
m,p-Xylene	mg/kg (ppm)	4	<0.1	99	97	34-136	2
o-Xylene	mg/kg (ppm)	2	<0.05	93	94	33-134	1
Naphthalene	mg/kg (ppm)	2	<0.05	85	85	14-157	0

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	2	98	65-136
Toluene	mg/kg (ppm)	2	103	66-126
Ethylbenzene	mg/kg (ppm)	2	97	64-123
m,p-Xylene	mg/kg (ppm)	4	103	68-128
o-Xylene	mg/kg (ppm)	2	100	67-129
Naphthalene	mg/kg (ppm)	2	92	62-128

# 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, biased low; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. 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 analyte 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 due to sample matrix effects.
- j - The analyte concentration is reported below the standard reporting limit. 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.
- k - The calibration results for the analyte were outside of acceptance criteria, biased high, and the analyte was not detected in the sample.
- 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.



**Underground Storage Tank Closure Report**  
**14412 S. Carus Road**  
**Oregon City, Oregon 97045**  
**DEQ File #03-23-0491**

## **Appendix C**

Disposal Receipts

140777OR\_Transaction\_History

Date	Profile #	Manifest/Additional Documents	Ticket #	Material	Facility	Carrier	Vehicle	Tons/Tonnes	Material Quantity	Material Unit
08/01/2023	140777OR	NA	1691454	Env Cleanup Daily Cover - Petroleum Contaminated Soil	Hillsboro Landfill	ROLL OFF	280	10.63	10.63	TON
08/01/2023	140777OR	NA	1691481	Env Cleanup Daily Cover - Petroleum Contaminated Soil	Hillsboro Landfill		R12	10.98	10.98	TON
08/01/2023	140777OR	NA	1691492	Env Cleanup Daily Cover - Petroleum Contaminated Soil	Hillsboro Landfill		C-92	13.27	13.27	TON
08/01/2023	140777OR	NA	1691524	Env Cleanup Daily Cover - Petroleum Contaminated Soil	Hillsboro Landfill		C-120	15.32	15.32	TON
08/01/2023	140777OR	NA	1691536	Env Cleanup Daily Cover - Petroleum Contaminated Soil	Hillsboro Landfill		R12	12.61	12.61	TON
08/01/2023	140777OR	NA	1691537	Env Cleanup Daily Cover - Petroleum Contaminated Soil	Hillsboro Landfill	ROLL OFF	228	6.51	6.51	TON
08/01/2023	140777OR	NA	1691544	Env Cleanup Daily Cover - Petroleum Contaminated Soil	Hillsboro Landfill		C-92	14.76	14.76	TON
08/01/2023	140777OR	NA	1691566	Env Cleanup Daily Cover - Petroleum Contaminated Soil	Hillsboro Landfill		C-120	12.19	12.19	TON
08/02/2023	140777OR	NA	1691581	Env Cleanup Daily Cover - Petroleum Contaminated Soil	Hillsboro Landfill	ROLL OFF	280	8.3	8.30	TON
08/02/2023	140777OR	NA	1691585	Env Cleanup Daily Cover - Petroleum Contaminated Soil	Hillsboro Landfill	ROLL OFF	228	10.34	10.34	TON
08/02/2023	140777OR	NA	1691641	Env Cleanup Daily Cover - Petroleum Contaminated Soil	Hillsboro Landfill		C-120	17.28	17.28	TON
08/02/2023	140777OR	NA	1691658	Env Cleanup Daily Cover - Petroleum Contaminated Soil	Hillsboro Landfill		C-92	14.55	14.55	TON
08/02/2023	140777OR	NA	1691672	Env Cleanup Daily Cover - Petroleum Contaminated Soil	Hillsboro Landfill		C-68	15.57	15.57	TON
08/02/2023	140777OR	NA	1691699	Env Cleanup Daily Cover - Petroleum Contaminated Soil	Hillsboro Landfill		C-120	16.22	16.22	TON
08/02/2023	140777OR	NA	1691729	Env Cleanup Daily Cover - Petroleum Contaminated Soil	Hillsboro Landfill		C-92	14.16	14.16	TON
08/02/2023	140777OR	NA	1691737	Env Cleanup Daily Cover - Petroleum Contaminated Soil	Hillsboro Landfill		C-120	16.48	16.48	TON
08/03/2023	140777OR	NA	1691755	Env Cleanup Daily Cover - Petroleum Contaminated Soil	Hillsboro Landfill	ROLL OFF	228	9.18	9.18	TON
08/03/2023	140777OR	NA	1691757	Env Cleanup Daily Cover - Petroleum Contaminated Soil	Hillsboro Landfill	ROLL OFF	280	8.29	8.29	TON
08/03/2023	140777OR	NA	1691803	Env Cleanup Daily Cover - Petroleum Contaminated Soil	Hillsboro Landfill		C-120	18.26	18.26	TON
08/03/2023	140777OR	NA	1691823	Env Cleanup Daily Cover - Petroleum Contaminated Soil	Hillsboro Landfill		07-16-SIDESPILL	20.48	20.48	TON
08/03/2023	140777OR	NA	1691820	Env Cleanup Daily Cover - Petroleum Contaminated Soil	Hillsboro Landfill		1-SOLO	15.01	15.01	TON
08/03/2023	140777OR	NA	1691835	Env Cleanup Daily Cover - Petroleum Contaminated Soil	Hillsboro Landfill	ROLL OFF	228	9.06	9.06	TON
08/03/2023	140777OR	NA	1691845	Env Cleanup Daily Cover - Petroleum Contaminated Soil	Hillsboro Landfill		T-37-SOLO	16.6	16.60	TON
08/03/2023	140777OR	NA	1691858	Env Cleanup Daily Cover - Petroleum Contaminated Soil	Hillsboro Landfill		C-120	17.64	17.64	TON
08/03/2023	140777OR	NA	1691872	Env Cleanup Daily Cover - Petroleum Contaminated Soil	Hillsboro Landfill		1-SOLO	12.82	12.82	TON
08/04/2023	140777OR	NA	1691891	Env Cleanup Daily Cover - Petroleum Contaminated Soil	Hillsboro Landfill	ROLL OFF	280	8.02	8.02	TON

**Underground Storage Tank Closure Report**  
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## **Appendix D**

Well Logs



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

CLAC 5111  
COAC 20721

RECEIVED  
NOV 20 1995

03S/02E/33BD  
(START CARD) # 81513

Instructions for completing this report are on the last page of the WATER RESOURCES DEPARTMENT

(1) OWNER: Name GRANT MICHAEL Well Number \_\_\_\_\_  
Address 23349 Hwy 213  
City MILLING State OR Zip 97042

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

(3) DRILL METHOD:  
 Rotary Air  Rotary Mud  Cable  Auger  
 Other \_\_\_\_\_

(4) PROPOSED USE:  
 Domestic  Community  Industrial  Irrigation  
 Thermal  Injection  Livestock  Other \_\_\_\_\_

(5) BORE HOLE CONSTRUCTION:  
Special Construction approval  Yes  No Depth of Completed Well 160 ft.  
Explosives used  Yes  No Type \_\_\_\_\_ Amount \_\_\_\_\_

HOLE		SEAL		Sacks or pounds	
Diameter	From To	Material	From To		
10"	0 22	BEANS	0 22	9	SACKS
6"	22 160				

How was seal placed: Method  A  B  C  D  E  
 Other \_\_\_\_\_  
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: 6"	1	22	250	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Liner: 4"	2	160		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Final location of shoe(s) \_\_\_\_\_

(7) PERFORATIONS/SCREENS:

Perforations Method SAW  
 Screens Type \_\_\_\_\_ Material \_\_\_\_\_

From	To	Slot size	Number	Diameter	Tube/pipe size	Casing	Liner
100	160	6"	190	4 1/4"		<input type="checkbox"/>	<input checked="" type="checkbox"/>

(8) WELL TESTS: Minimum testing time is 1 hour

Pump  Bailer  Air  Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
15		160	1 hr.

Temperature of water 58 Depth Artesian Flow Found \_\_\_\_\_  
Was a water analysis done?  Yes By whom \_\_\_\_\_  
Did any strata contain water not suitable for intended use?  Too little  
 Salty  Muddy  Odor  Colored  Other \_\_\_\_\_  
Depth of strata: \_\_\_\_\_

LOCATION OF WELL by legal description:  
County CLACKAMAS Latitude \_\_\_\_\_ Longitude \_\_\_\_\_  
Township 3 S N or S Range 2 E E or W. WM.  
Section 33 SE 1/4 NW 1/4  
Tax Lot 01002 Lot \_\_\_\_\_ Block \_\_\_\_\_ Subdivision \_\_\_\_\_  
Street Address of Well (or nearest address) 23349 Hwy 213

(10) STATIC WATER LEVEL:  
82 ft. below land surface. Date 10-16-95  
Artesian pressure \_\_\_\_\_ lb. per square inch. Date \_\_\_\_\_

(11) WATER BEARING ZONES:

Depth at which water was first found 120

From	To	Estimated Flow Rate	SWL
120	160	15	82

(12) WELL LOG:  
Ground Elevation \_\_\_\_\_

Material	From	To	SWL
SOIL	BROWN	0 2	
CLAY	BROWN	2 10	
CLAY	GRAY	10 15	
CLAYSTONE	GRAY	15 50	
CLAYSTONE	LIME GRAY	50 100	
CLAYSTONE	GRAY	100 120	
CLAYSTONE	W/B	120 160	82

Date started 10-12-95 Completed 10-16-95

(unbonded) Water Well Constructor Certification:  
I certify that the work I performed on the construction, 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.  
Signed \_\_\_\_\_ WWC Number \_\_\_\_\_  
Date \_\_\_\_\_

(bonded) Water Well Constructor Certification:  
I accept responsibility for the construction, 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.  
Signed Ray Moller WWC Number 1563  
Date 11-14-95

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## **Appendix E**

DEQ Forms

Forms included:

Soil Matrix Checklist

Soil Matrix Scoresheet



OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY  
Underground Storage Tank Program

**SOIL MATRIX CHECKLIST AND  
SOIL MATRIX SCORESHEET**

- 1. The release of petroleum has been reported to the DEQ (0220).
- 2. The matrix score sheet has been completed for this site, unless the site is cleaned up to the most stringent cleanup level (0320).
- 3. The required hydrocarbon identification test (NWTPH-HCID) has been performed (0335(3)), and, if detectable levels were found, the appropriate analytical method or methods have been used to measure the levels of contamination (0218).
- 4. A sketch has been made of this site (0345(1)) which clearly shows:
  - a. The location of all buildings and other key features, both man-made and natural;
  - b. The names of adjacent streets and properties;
  - c. The location of all excavations including those that were for the removal of tanks and associated piping as well as those that were strictly for the removal of contaminated soils;
  - d. The location of all product storage tanks, lines and dispensers, including those that were decommissioned as well as those that remain on the site; and
  - e. All soil and water sample locations.
- 5. If any contaminated soil exceeding matrix limits has been left on site, the reason for leaving this soil has been explained and the requirements of 0340(1)(f) and 0355(4) have been met.
- 6. If water was present in the tank pit, the Department was notified, the water was pumped from the pit, and the requirements of 0340(4) have been met.
- 7. All soil and/or water samples have been collected, coded, stored and shipped as specified in the rules, and proper chain-of-custody forms have been filled out (0345).
- 8. If a release from a waste oil tank was discovered, at least one sample has been analyzed by the methods specified in 0218(1)(b)(D).
- 9. If a tank was decommissioned in place, the Department gave prior approval for a site-specific sampling plan (0340(5)).
- 10. A report has been prepared which includes a detailed description of everything that was observed and performed at the site, contains all of the information required by the rules (0360), and presents findings and recommendations which are consistent with Department regulations.

## SOIL MATRIX SCORE SHEET

1.	Depth to Groundwater		
	< 25 feet	(10)	
	25 - 50 feet	(7)	
	51 - 100 feet	(4)	
	> 100 feet	(1)	
2.	Mean Annual Precipitation		
	> 45 inches	(10)	
	20 - 45 inches	(4)	
	< 20 inches	(1)	
3.	Native Soil Type		
	Course sands, gravels	(10)	
	Silts, fine sands	(5)	
	Clays	(1)	
4.	Sensitivity of Uppermost Aquifer		
		(10)	
	Sole Source	(7)	
	Current Potable	(4)	
	Future Potable	(1)	
	Non-potable		
5.	Potential Receptors		
	Many, near	(10)	
	Medium	(5)	
	Few, far	(1)	
TOTAL SCORE		=	
MATRIX SCORE		Cleanup Level (ppm TPH)	
		Gasoline	Diesel
Level 1: > 40 pts.		40	100
Level 2: 25 - 40 pts.		80	500
Level 3: < 25 pts.		130	1000

