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January 11, 2023

City of Olympia Public Works
P.O. Box 1967
Olympia, Washington 98507

Attention: Jim Rioux and Gary Franks

Subject: Soil Sampling and Analytical Results Summary
Tacoma Smelter Plume Evaluation
Carpenter Road Property, Lacey, Washington
File No. 0415-068-07

INTRODUCTION AND PROJECT UNDERSTANDING

This letter summarizes the Tacoma Smelter Plume (TSP) soil sampling activities performed at the Carpenter Road Property located at 6530 Martin Way East in Lacey, Washington. The property totaling approximately 8.45 acres is shown on the Vicinity Map, Figure 1. The property is undergoing redevelopment by the City including demolition and remediation of the former indoor gun range and clearing, grading, and construction of a new solid waste operations facility that includes offices, maintenance shops, and parking areas.

The Carpenter Road property is located within the footprint of the area-wide contamination from the Tacoma Smelter Plume (TSP) as mapped by the Washington State Department of Ecology (Ecology). Ecology's map shows predicted arsenic concentrations in surface/near surface soil relative to the Ecology Model Toxics Control Act (MTCA) Method A cleanup level for unrestricted land use of 20 milligrams per kilogram (mg/kg). This information is made available to the public through Ecology's Dirt Alert site at <https://fortress.wa.gov/ecy/dirtalert/>. Based on Ecology's mapping, arsenic is predicted to be between 20 mg/kg and 40 mg/kg in surface soil on the property. As a result, samples are required to be collected for chemical analysis to characterize the soil from 0 to 6 inches below ground surface (bgs) and 6 to 12 inches bgs and are required to also include separate sampling of forest duff where it is located in accordance with Ecology requirements.

An environmental investigation was performed at the property in 2017 to perform a preliminary evaluation of the TSP and characterize impacts from operation of an indoor gun range on the property. A description of the investigation activities and results are presented in the Remedial Investigation/Feasibility Study and Cleanup Action Plan (RI/FS/CAP) report prepared for the Carpenter Road Site (GeoEngineers 2022). Samples from 10 locations completed during the investigation in 2017 that were collected from



approximately 0 to 6 inches bgs and two samples from approximately 6 to 12 inches bgs were incorporated into the TSP evaluation of the property presented in this report as described further below.

Additional sampling was performed on November 11, 2022 to further evaluate the TSP at the Carpenter Road property. A Sampling and Analysis Plan (SAP) was prepared describing the sampling protocol to be used to guide the sampling effort. The SAP was prepared following the Tacoma Smelter Plume Model Remedies Guidance (TSPMRG) document (Ecology 2019). The SAP is provided in Appendix A. Samples were collected from 0 to 6 inches bgs at 34 locations, from 6 to 12 inches bgs at nine locations and five 6-point composite duff samples were collected in accordance with the SAP to complete the TSP evaluation for the subject property.

The following sections describe the methodology, 2022 field activities and results of the TSP evaluation for the Carpenter Road property.

METHODOLOGY

One decision unit (DU1) was selected for the property based on information that the entire property is to be redeveloped. The evaluation consisted of collection of soil samples from 0 to 6 inches bgs and 6 to 12 inches bgs from borings that were approximately evenly spaced across the property and duff samples were collected from where duff is present in forested areas. A combined total of 60 samples were collected to characterize arsenic and lead concentrations over the property that is 8.45 acres in size.

Samples were collected from soil borings completed in 2017 and 2022 representing decision unit DU-1 that included the following:

- 0 to 6 inches bgs depth interval – 34 soil samples collected in 2022 and 10 soil samples collected in 2017 combined for a total of 44 soil samples.
- 6 to 12 inches bgs depth interval – Nine soil samples collected in 2022 and two soil samples collected in 2017 for a total of 11 soil samples (25 percent of the total soil boring locations).
- Duff – Five 6-point composite duff samples collected from the forested portions of the property.

The 2017 and 2022 sampling locations are presented on Figure 2.

Based on the TSPMRG, soil concentrations within a decision unit are considered elevated if the average arsenic concentration is greater than 20 mg/kg and/or the average lead concentration is greater than 250 mg/kg, or if any single sample has an arsenic concentration greater than 40 mg/kg and/or a lead concentration greater than 500 mg/kg.

2022 FIELD ACTIVITIES AND CHEMICAL ANALYSES

Soil samples were collected at the Carpenter Road property on November 11, 2022 for chemical analysis. Thirty-four soil borings were completed using a soil sampling shovel.

Each soil boring included a soil sample collected from 0 to 6 inches bgs and 25 percent of the soil borings included a soil sample collected from 6 to 12 inches bgs for a total of 43 soil samples. A total of five duff

samples were collected. Each duff sample was comprised of a composite of duff collected from the surface at six discrete soil boring locations and mixed together forming one sample.

The sample locations are shown on the Sample Location Map, Figure 2. The soil and duff samples were submitted for chemical analysis for total arsenic and lead by United States Environmental Protection Agency (EPA) Method 6010D. The analytical laboratory report is provided in Appendix B.

RESULTS OF THE TSP EVALUATION

The analytical results for all 60 samples collected during the investigations in 2017 and 2022 are presented in Table 1 using the format identified in the TSPMRG.

Arsenic was either not detected or was detected at concentrations less than the maximum concentration (40 mg/kg) allowed under the TSPMRG in soil samples collected during the 2017 and 2022 sampling events. The average arsenic concentration was 3.3 mg/kg in the 0- to 6-inch bgs soil samples and 2.8 mg/kg in the 6- to 12-inch bgs soil samples. The average arsenic concentration in duff was 3.8 mg/kg. Additionally, arsenic was not detected in any single soil sample at a concentration greater than the MTCA Method A cleanup level for unrestricted land use (20 mg/kg).

Lead was either not detected or was detected at concentrations less than the maximum concentration (500 mg/kg) allowed under the TSPMRG in soil samples collected during the 2017 and 2022 sampling events. The average lead concentration was 41.9 mg/kg in the 0- to 6-inch bgs soil samples and 41.6 mg/kg in the 6- to 12-inch bgs soil samples. The average lead concentration in duff was 51.5 mg/kg. Additionally, lead was not detected in any single soil sample at a concentration greater than the MTCA Method A cleanup level for unrestricted land use (250 mg/kg).

CONCLUSIONS

The results of the investigations at the Carpenter Road Property to evaluate the TSP indicate that arsenic and lead concentrations are less than the respective MTCA cleanup levels for unrestricted land use and the TSPMRG criteria for soil and duff as no single sample exceeded the maximum concentrations of 40 mg/kg for arsenic and 500 mg/kg for lead. Furthermore, the results of the soil and duff samples indicate that the surface soils at property were not impacted by the TSP Tacoma Smelter Plume above the threshold indicated on Ecology's Dirt Alert site and indicates the proposed development area falls below the "elevated" criteria and does not require remediation under the TSPMRG.

REFERENCES

Washington State Department of Ecology. 2019. "Tacoma Smelter Plume Model Remedies Guidance" Toxics Cleanup Program Publication Number 19-09-101.

Washington State Department of Ecology. 2020. Website "Dirt Alert"
<https://apps.ecology.wa.gov/dirtalert/>

LIMITATIONS

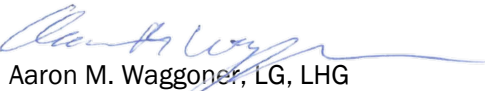
We have prepared this report for City of Olympia Public Works and to support redevelopment of the City of Olympia's Carpenter Road Property located in Lacey, Washington. City of Olympia Public Works may distribute copies of this report to the owner, owner's authorized agents and regulatory agencies as may be required for the project.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted environmental science practices in this area at the time this report was prepared. The conclusions, recommendations, and opinions presented in this report are based on our professional knowledge, judgment and experience. No warranty or other conditions, express or implied, should be understood.

Please refer to Appendix C titled "Report Limitations and Guidelines for Use" for additional information pertaining to use of this report.

Please call if you have questions or require additional information.

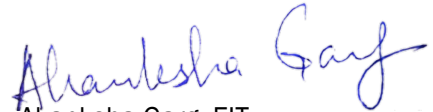
Sincerely,
GeoEngineers, Inc.



Aaron M. Waggoner, LG, LHG
Senior Geologist



Iain H. Wingard
Principal Environmental Scientist



Akanksha Garg, EIT
Staff Environmental Engineer 2

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Attachments:

Table 1. Chemical Analytical Data – Arsenic and Lead Concentrations in Soil

Figure 1. Vicinity Map

Figure 2. Sample Location Map

Appendix A. Sampling and Analysis Plan

Appendix B. Laboratory Analytical Data

Appendix C. Report Limitations and Guidelines for Use

Disclaimer: Any electronic form, facsimile or hard copy of the original document (email, text, table, and/or figure), if provided, and any attachments are only a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.



Table 1**Chemical Analytical Data - Arsenic and Lead Concentrations¹ in Soil**

City of Olympia - Carpenter Road Facility

Lacey, Washington

DU	Sample Number	Soil Depth (inches)	Date	Time	Corresponding Sample ID	Testing Parameters ² (mg/kg)			
						Arsenic	Average Arsenic ³	Lead	Average Lead ³
1	1	0-6	11/3/2022	0830	DU1-1-0-6	11	3.3	44	41.9
1	2		11/3/2022	0843	DU1-2-0-6	11		50	
1	3		11/3/2022	0855	DU1-3-0-6	5.2 U		5.2 U	
1	4		11/3/2022	0907	DU1-4-0-6	5.2 U		6.4	
1	5		11/3/2022	0913	DU1-5-0-6	5.5 U		11	
1	6		11/3/2022	0950	DU1-6-0-6	8.5		71	
1	7		11/3/2022	0920	DU1-7-0-6	6.0 U		6.0 U	
1	8		11/3/2022	0945	DU1-8-0-6	6.0 U		35	
1	9		11/3/2022	0925	DU1-9-0-6	5.9 U		5.9 U	
1	10		11/3/2022	1010	DU1-10-0-6	5.8 U		28	
1	11		11/3/2022	1004	DU1-11-0-6	5.7 U		14	
1	12		11/3/2022	955	DU1-12-0-6	5.3 U		13	
1	13		11/3/2022	1042	DU1-13-0-6	5.6 U		20	
1	14		11/3/2022	1203	DU1-14-0-6	5.8 U		16	
1	15		11/3/2022	1015	DU1-15-0-6	5.8 U		11	
1	16		11/3/2022	1028	DU1-16-0-6	5.2 U		7.1	
1	17		11/3/2022	1037	DU1-17-0-6	5.5 U		27	
1	18		11/3/2022	1055	DU1-18-0-6	5.3 U		5.3 U	
1	19		11/3/2022	1104	DU1-19-0-6	5.2 U		5.2 U	
1	20		11/3/2022	1121	DU1-20-0-6	5.2 U		10	
1	21		11/3/2022	1210	DU1-21-0-6	5.9 U		35	
1	22		11/3/2022	1220	DU1-22-0-6	5.7 U		15	
1	23		11/3/2022	1228	DU1-23-0-6	5.5 U		19	
1	24		11/3/2022	1226	DU1-24-0-6	5.2 U		180	
1	25		11/3/2022	1157	DU1-25-0-6	5.2 U		5.2 U	
1	26		11/3/2022	1130	DU1-26-0-6	5.3 U		6.7	
1	27		11/3/2022	1113	DU1-27-0-6	5.9 U		16	
1	28		11/3/2022	1240	DU1-28-0-6	6.1 U		180	
1	29		11/3/2022	1250	DU1-29-0-6	5.4 U		5.4 U	
1	30		11/3/2022	1320	DU1-30-0-6	5.4 U		5.4 U	
1	31		11/3/2022	1247	DU1-31-0-6	5.9 U		120	
1	32		11/3/2022	1150	DU1-32-0-6	5.6 U		86	
1	33		11/3/2022	1137	DU1-33-0-6	5.4 U		120	
1	34		11/3/2022	1140	DU1-34-0-6	5.3 U		9.9	
1	B-1		4/24/2017	1100	B-1-0-6-20170424	2.6		4.0	
1	B-2		4/24/2017	1305	B-2-0-5-20170424	2.7		5.7	
1	B-3		4/24/2017	1240	B-3-0-6-20170424	2.7		5.1	
1	B-4		4/24/2017	1510	B-4-0-6-20170424	2.6		4.0	
1	B-5		4/24/2017	1015	B-5-0-6-20170424	2.1		230	
1	B-6		4/24/2017	1147	B-6-0-6-20170424	2.8		6.6	
1	B-7		4/24/2017	1350	B-7-0-6-20170424	2.3		17	
1	B-8		4/24/2017	1445	B-8-0-6-20170424	3.5		240	
1	B-9		4/24/2017	1420	B-9-0-6-20170424	3.6		20	
1	HA-6		4/18/2017	1200	HA6-0-6-20170418	3.4		140	

DU	Sample Number	Soil Depth (inches)	Date	Time	Corresponding Sample ID	Testing Parameters ² (mg/kg)			
						Arsenic	Average Arsenic ³	Lead	Average Lead ³
1	2	6-12	11/3/2022	0845	DU1-2-6-12	5.6 U	2.8	9.3	41.6
1	5		11/3/2022	0915	DU1-5-6-12	5.2 U		5.2 U	
1	9		11/3/2022	0927	DU1-9-6-12	5.6 U		5.6 U	
1	12		11/3/2022	0957	DU1-12-6-12	5.3 U		11	
1	13		11/3/2022	1045	DU1-13-6-12	5.5 U		7.6	
1	14		11/3/2022	1205	DU1-14-6-12	5.5 U		7.9	
1	27		11/3/2022	1115	DU1-27-6-12	5.8 U		13	
1	28		11/3/2022	1242	DU1-28-6-12	5.9 U		130	
1	32		11/3/2022	1152	DU1-32-6-12	5.4 U		190	
1	B1		4/24/2017	1105	B-1-6-8-20170424	1.9		2.2	
1	B2		4/24/2017	1310	B-2-6-12-20170424	4.4		3.3	
1	1	Duff	11/3/2022	0840	DU1-1-Duff	10.0	3.8	130	51.5
1	3		11/3/2022	0900	DU1-3-Duff	3.7		33	
1	15		11/3/2022	1017	DU1-15-Duff	6.4 U		61	
1	19		11/3/2022	1108	DU1-19-Duff	2.7 U		21 U	
1	21		11/3/2022	1215	DU1-21-Duff	1.8 U		23	
MTCA Method A ULU Cleanup Levels						20	N/A	250	N/A
TSPMRG Maximum Criteria						40	20	500	250

Notes:

¹ Chemical analysis was performed by OnSite Environmental, Inc., of Redmond, Washington.

² Metals analyzed by United States Environmental Protection Agency (EPA) Method 6010D.

³ Non-detects are assigned a value equal to half the laboratory detection limit for the purpose of calculating the average concentration within a decision unit.

TSPMRG = Tacoma Smelter Plume Model Remedy Guidance

U = not detected at or greater than the laboratory reporting limit

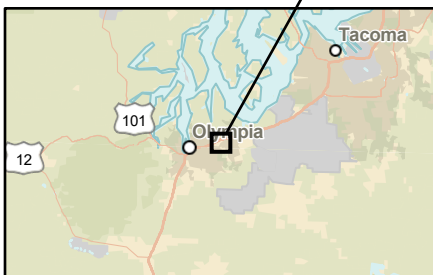
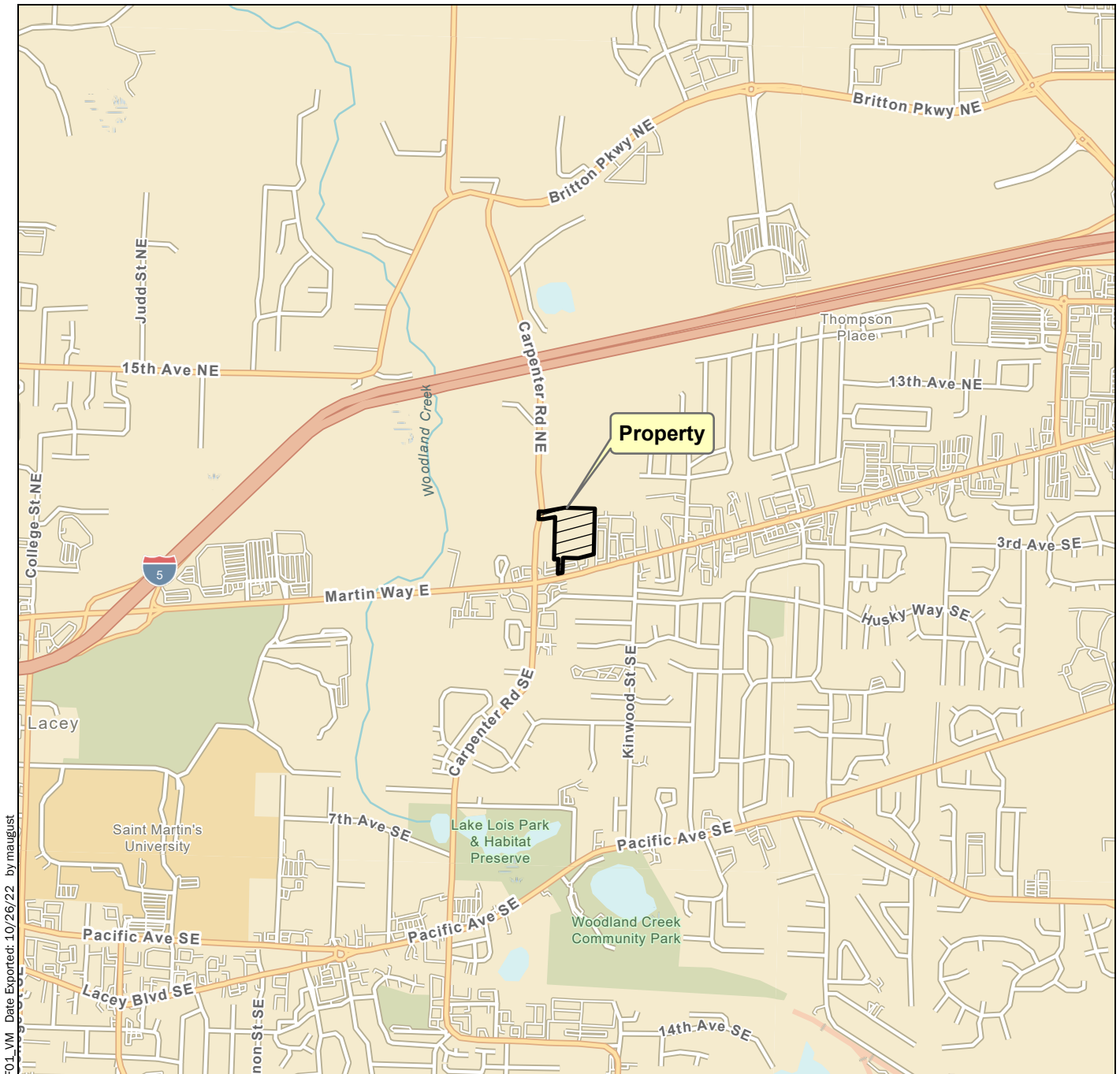
MTCA = Model Toxics Control Act

ULU = Unrestricted Land Use

N/A = Not Applicable

DU = Decision Unit

mg/kg = milligram per kilogram



Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: ESRI

Projection: NAD 1983 StatePlane Washington South FIPS 4602 Feet

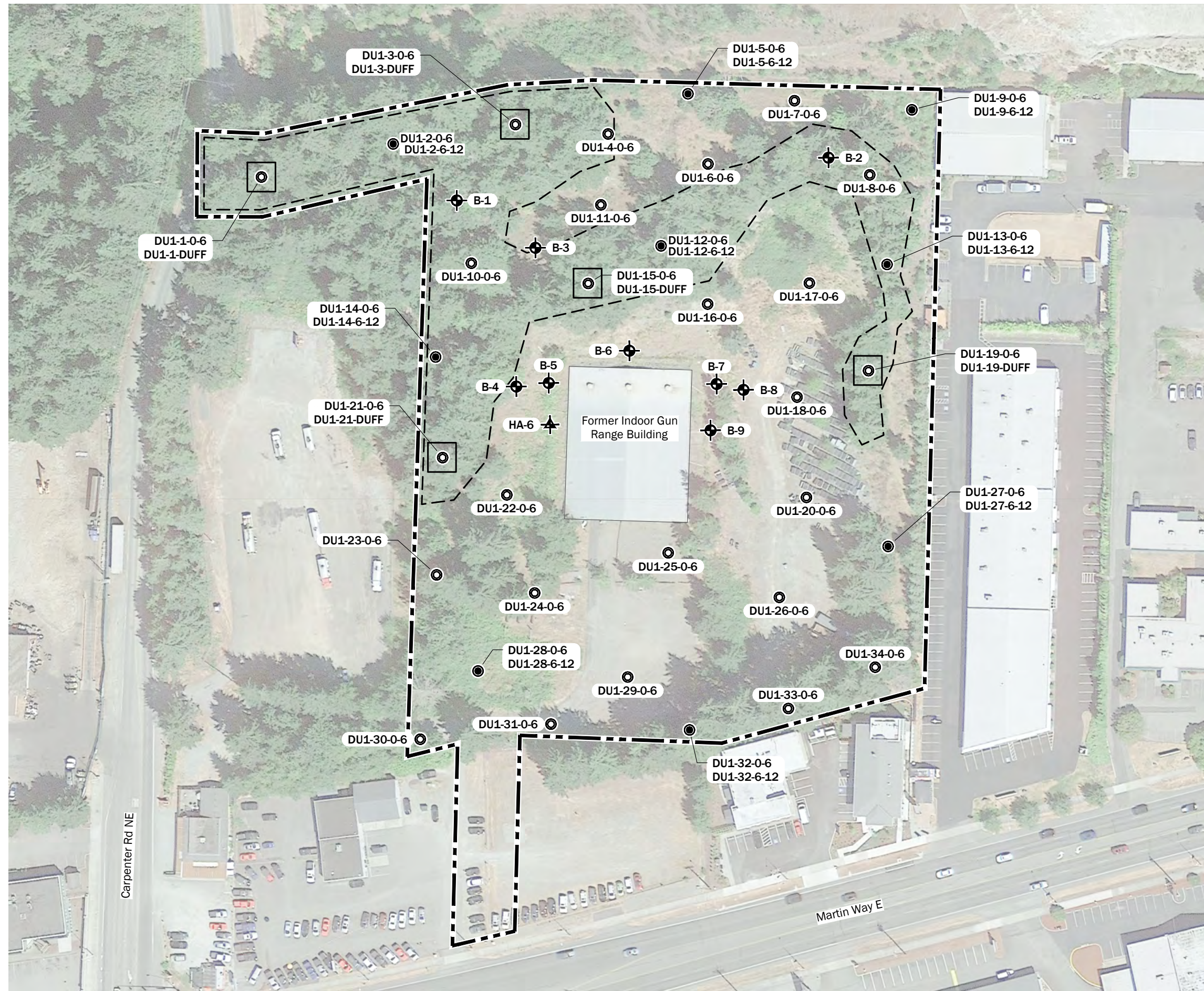
Vicinity Map

Carpenter Road Property
Lacey, Washington



Figure 1

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Legend

--- Site Property Boundary

--- Area of Duff Accumulation

2017 Sample Location

B-1 Boring by GeoEngineers, Inc.

HA-6 Hand Auger by GeoEngineers, Inc.

2022 Sample Location

DU1-3-0-6 0" to 6" bgs Sample Location with Duff Sample

DU1-3-Duff 0" to 6" bgs and 6" to 12" bgs Sample Location

DU1-2-0-6 0" to 6" bgs Sample Location

DU1-2-6-12 0" to 6" bgs Sample Location

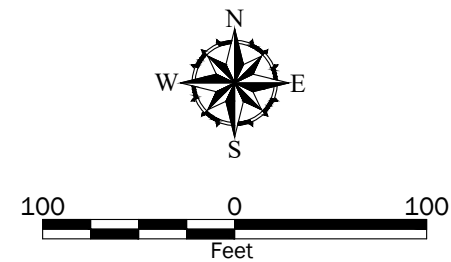
DU1-4-0-6 0" to 6" bgs Sample Location

Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Aerial from Google Earth Pro dated 08/06/2022.

Projection: WA State Plane, South Zone, NAD83, US Foot



Sample Location Map	
Carpenter Road Property Lacey, Washington	
	Figure 2

APPENDIX A

Sampling and Analysis Plan

Sampling and Analysis Plan

Carpenter Road Property
Tacoma Smelter Plume Sampling
Lacey, Washington

for

City of Olympia Public Works

October 27, 2022



Sampling and Analysis Plan

Carpenter Road Property
Tacoma Smelter Plume Sampling
Lacey, Washington

for

City of Olympia Public Works

October 27, 2022



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**Sampling and Analysis Plan
Tacoma Smelter Plume Sampling
Carpenter Road Property
Lacey, Washington**

Project No. 0415-068-07

October 27, 2022

Prepared for:

City of Olympia Public Works
P.O. Box 1967
Olympia, Washington 98507

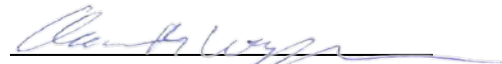
Attention: Jim Rioux and Gary Franks

Prepared by:

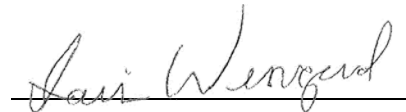
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Figure 2. Soil Sampling Plan

1.0 INTRODUCTION

This Sampling and Analysis Plan (SAP) has been prepared in accordance with the Tacoma Smelter Plume Model Remedies Guidance (TSPMRG) to support redevelopment of the City of Olympia's (City) Carpenter Road Property (property) located at 6530 Martin Way East in Lacey, Washington. The property totaling approximately 8.45 acres is shown on the Vicinity Map, Figure 1.

The property is located within Washington State Department of Ecology's (Ecology's) mapped Tacoma Smelter Plume (TSP) (area-wide contamination) where arsenic concentrations in surface/near surface soil are predicted to exceed the Model Toxics Control Act (MTCA) Method A cleanup level for unrestricted land use (ULU). The subject property falls within the area where surface soil concentrations of arsenic are expected to be in the range of 20 to 40 milligrams per kilogram (mg/kg). The MTCA Method A cleanup level for arsenic and lead for ULU are 20 mg/kg and 250 mg/kg, respectively. The Ecology TSPMRG document (July 2019) requires remedial action for soil if the average arsenic concentration is greater than 20 mg/kg and the maximum concentration is greater than 40 mg/kg or if the average lead concentration is greater than 250 mg/kg and the maximum concentration is greater than 500 mg/kg. Ecology's TSP Model Remedy Guidance also provides guidance on the number of samples to be collected for various acreage.

The property is undergoing redevelopment by the City including demolition and remediation of the former indoor gun range and clearing, grading, and construction of a new solid waste operations facility that includes offices, maintenance shops, and parking areas. The cleanup of the gun range is being performed under the Expedited Voluntary Cleanup Program (VCP) to address lead contaminated soil associated with the activities of the gun range. The planned gun range remediation area totals approximately 20,800 square feet, leaving approximately 8 acres of the property to be included in the TSP evaluation. The existing property conditions are shown on the Soil Sampling Plan, Figure 2.

The known chemical of concern at the site is lead associated with the indoor gun range and the potential chemicals of concern are arsenic and lead related to air fallout from Asarco's smelter operations. Soil investigation was performed to evaluate soil conditions at the site related to gun range operations in April 2017. The details of the soil sampling and the analytical results are provided in the Environmental Investigation Report prepared by GeoEngineers Inc. dated November 6, 2017.

Lead was detected at concentrations greater than 500 mg/kg at six locations on the property with four of them located within the gun range building itself and two located just outside the building near where the ventilation system exhaust exits the building. The areas with elevated lead concentrations are located within the gun range remediation area and will be addressed through the VCP.

Arsenic was not detected at concentrations greater than the MTCA Method A cleanup level for ULU of 20 mg/kg in the samples that were collected as part of the investigation. The highest concentration (10 mg/kg) was detected in a sample collected inside the gun range building.

This SAP serves as the primary guide and standard operating procedures (SOPs) for soil sample collection for the project.

2.0 GENERAL SCOPE

The objectives of the investigation activities presented in this SAP are to evaluate the presence of arsenic and lead associated with the TSP in accordance with the TSPMRG. The general scope of services for this work will consist of completing soil borings that are generally, evenly spaced around the property from the remaining areas that do not already have arsenic and lead data associated with the previous site investigation. Ten soil samples were collected and analyzed for arsenic and lead during the previous site investigation that can be used for evaluating the TSP including eight samples representing the 0- to 6-inch below ground surface (bgs) sample interval and two samples representing the 6- to 12-inch sample interval. The proposed soil borings will be completed within one decision unit DU-1 to collect samples to support the TSP evaluation and include the following:

- Thirty-four (34) soil samples are to be collected from the 0- to 6-inch bgs depth interval.
- Nine (9) soil samples are to be collected from the 6- to 12-inch bgs depth interval (25 percent of the total soil boring locations).
- Five (5) 6-point composite duff samples are to be collected from the forested portions of the property.
- Soil and duff samples will be submitted to the laboratory for chemical analysis of total arsenic and lead.

A total of 58 samples consisting of the 43 soil samples and 5 duff samples to be collected in accordance with this SAP, and 10 previous soil samples will represent the recommended number of samples for a property of this size based on the guidelines outlined in the TSPMRG. The proposed and previous sampling locations are presented on Figure 2.

2.1. Project Organization, Roles and Responsibilities

This section outlines the individuals directly involved with the project and their specific responsibilities. Services completed under this SAP will be in cooperation with the following key personnel.

Affiliation	Contact Information
City of Olympia Public Works Project Manager	Jim Rioux jrioux@ci.olympia.wa.us (360) 753-8484 Olympia, Washington
Consultant Principal-in-Charge (GeoEngineers, Inc.)	Iain H. Wingard iwingard@geoengineers.com (253) 722-2417 Tacoma, Washington
Consultant Project Manager (GeoEngineers, Inc.)	Abhijit R. Joshi ajoshi@geoengineers.com (206) 239-3256 Seattle, Washington

Affiliation	Contact Information	
Consultant Field Coordinator (GeoEngineers, Inc.)	Aaron M. Waggoner awaggoner@geoengineers.com (253) 579-2176 Tacoma, Washington	
Consultant Field Staff (GeoEngineers, Inc.)	Akanksha Garg agarg@geoengineers.com (201) 744-0304 Redmond, Washington	Nathan Solomon nsolomon@geoengineers.com (206) 437-6819 Tacoma, Washington

2.2. Health and Safety

A site-specific Health and Safety Plan (HASP) will be developed for use during the investigation field activities. The Field Coordinator will be responsible for implementing the HASP during the field activities. The Project Manager will discuss health and safety issues with the Field Coordinator on a routine basis during the completion of field activities.

The Field Coordinator will conduct a tailgate safety meeting each morning prior to beginning daily field activities. The Field Coordinator will terminate any work activities that do not comply with the HASP. The HASP will include protocols to protect workers from exposure.

Companies providing services for this project on a subcontracted basis will be responsible for developing and implementing their own HASP for use by their employees.

3.0 SAMPLING PLAN

3.1. Soil Sampling

Field activities will include collecting up to 43 soil samples using hand tools from 34 soil sampling locations spaced around the property with 34 samples representing the 0- to 6-inch bgs sample interval and nine samples representing the 6- to 12- inch sample interval (25% of the soil boring locations). Sampling equipment will be decontaminated as described in Section 4.5. Proposed soil sampling locations are shown on Figure 2. Actual sample locations may be relocated in the field if the proposed sampling locations are not accessible. Relocated sampling locations will be positioned as close as possible to the proposed sampling locations and will be identified in the site plan. Sampling locations that are located in the forested area or areas that are not subject to disturbances from human activities will be marked in the field using a stake. Sample identification will be labeled on the stake. For sampling locations in areas that are subject to disturbances from human activities, field measurements will be obtained from identifiable site features (e.g., corner of the existing building). Two measurements will be obtained to ensure that the sampling location can be located in the field in the future, if necessary. Photographs will be obtained for each sampling location.

Each soil sample will be placed in a 1-gallon plastic bag and thoroughly homogenized. The soil from the bag will then be placed into a laboratory supplied 4- to 8-oz glass sample jar, labeled, and then placed in a sample cooler with ice for preservation and transport to the laboratory. The 43 soil samples obtained from

decision unit DU-1 will be analyzed for arsenic and lead by United States Environmental Protection Agency (EPA) method 6010.

3.2. Duff Sampling

Field activities will include collecting up to five (5), six-point composite samples of duff material present on site using hand tools. Each duff sample from decision unit DU-1 will be a composite comprised of duff collected from six individual locations around the sample locations shown on Figure 2 and consolidated in a 1-gallon plastic bag and thoroughly homogenized. The 5 sampling locations where duff samples will be collected are identified on Figure 2. The duff material from the bag will be packed into the laboratory supplied 4- to 8-oz glass sample jar, labeled, and then placed in a sample cooler with ice for preservation and transport to the laboratory. The 5 duff samples obtained from decision unit DU-1 will be analyzed for arsenic and lead by EPA method 6010.

4.0 GENERAL FIELD PROTOCOLS AND PROCEDURES

4.1. Soil Containers and Labeling

The Field Coordinator will manage field protocols related to sample collection, handling and documentation. Soil samples will be placed in appropriate laboratory-provided containers.

Sample containers will be labeled with the following information at the time of sample collection:

- Project number.
- Sample name, which will include a reference to the decision unit, sample location number and sampling depth.
- Date and time of collection.
- Sampler's initials.
- Preservative type (i.e., ice).

The Field Coordinator will monitor consistency between sample containers/labels, field logs, and chain of custody forms. Sample numbering conventions are described below and the sample numbers for the samples to be collected are shown on Figure 2.

Soil Samples – Each sample will be labeled with the decision unit number followed by the sequential boring location number and depth range in inches bgs. For example, the sample ID for the soil sample collected from decision unit DU-1, sample location number 1 from 0 to 6 inches bgs would be DU1-1-0-6. At locations where a sample is collected from 0 to 6 inches and 6 to 12 inches from the same boring location, the sample number will have the same boring number such as DU1-1-0-6 and DU1-1-6-12.

Duff Samples – Each duff sample will be labeled with the decision unit number followed by the sequential boring location number and the word DUFF. For example, the sample number for the duff sample collected from decision unit DU-1 at sample location three (3) would be DU1-3-DUFF.

4.2. Sample Handling and Custody

4.2.1. Sample Storage

Samples will be placed in a cooler following collection. The samples will be kept cool and dry until delivery to the analytical laboratory. The holding time for soil samples is 6 months when kept at less than or equal to 4 degrees Celsius.

4.2.2. Accredited Laboratory

The selected analytical laboratory for this project is OnSite Environmental, Inc. of Redmond, Washington. Their Washington State Department of Ecology Accreditation ID is C591 that is current through July 26, 2023.

4.2.3. Sample Shipment

Samples will be transported and delivered to the analytical laboratory in the laboratory supplied sample coolers. The samples will either be transported by field personnel, laboratory personnel, or by laboratory-supplied courier service. The cooler will be properly secured using clear plastic tape and custody seals prior to delivery to the analytical laboratory.

4.2.4. Chain-of-Custody Records

Field personnel are responsible for the security of samples from the time the samples are collected until the samples have been received by the courier service or laboratory personnel. A chain of custody (COC) form will be completed for the samples being delivered to the laboratory. Information to be included on the COC form includes the following:

- Project name and number.
- Sample identifications.
- Date and time of sampling.
- Sample matrix (soil), preservative, and number of containers for each sample.
- Analyses to be performed.
- Names of sampling personnel.
- Project manager name and contact information including phone number.
- Special instructions noted (e.g., laboratory sample detection limits).
- Shipping information including shipping container number, if applicable.

The original COC form will be signed by the field personnel responsible for sample collection. Field personnel will retain a signed carbon copy of the COC form and provide the original and remaining carbon copies of the COC form to the laboratory or courier.

4.2.5. Laboratory Custody Procedures

The laboratory will follow their standard operating procedures (SOPs) to document sample handling from time of receipt (sample log-in) to reporting. Documentation will include, at a minimum, the analyst's name or initials, time, date and condition of samples upon receipt.

4.3. Field Observations Documentation and Records

Field documentation provides important information about sample characteristics and special circumstances surrounding sample collection. Field personnel will record information for each soil sampling location and sample collected in a daily field report. Entries in the field report will be made in pencil or water-resistant ink on water-resistant paper, and corrections will consist of line-out deletions. Individual reports will become part of the project files at the conclusion of the field work.

At a minimum, the following information will be recorded during the collection of each sample.

- Sample location and description.
- Site or sampling area sketch showing sample location and measured distances.
- Sampler's name(s).
- Date and time of sample collection.
- Designation of sample as composite or discrete.
- Type of sample (soil or duff).
- Type of sampling equipment used.
- Field observations and details that are pertinent to the integrity/condition of the samples (e.g., weather conditions, performance of the sampling equipment, sample depth control, etc.).
- Preliminary sample descriptions (e.g., lithologies, noticeable odors, colors, field-screening results).
- Sample preservation.
- Shipping or courier arrangements.
- Name of recipient laboratory.

The following specific information will also be recorded in the field report for each day of sampling in addition to the sampling information.

- Team members and their responsibilities.
- Time of arrival/entry on site and time of site departure.
- Other personnel present at the site.
- Summary of pertinent meetings or discussions with regulatory agency or other personnel on site.
- Deviations from sampling plans, site safety plans, and SOPs.
- Changes in personnel and responsibilities with reasons for the changes.
- Levels of safety protection.

The handling, use, and maintenance of field reports are the Field Coordinator's responsibilities.

4.4. Data Management

The laboratory will report the sample data in formatted hard copy and digital formats. Analytical laboratory measurements will be recorded in standard formats that display, at a minimum, the field sample

identification, the laboratory identification, reporting units, data qualifiers, analytical method, analyte tested, analytical result, extraction and analysis dates, and quantitation limits. The sample delivery group will be accompanied by sample receipt forms and a case narrative identifying data quality issues. Laboratory electronic data deliverable (EDD) requirements will be established by GeoEngineers, Inc. with the contract laboratory. The laboratory will send final analytical testing results to the Project Manager.

The EDD will be uploaded to Ecology's Environmental Information Management (EIM) database.

4.5. Decontamination

The objective of the decontamination procedures described herein is to prevent the potential for cross-contamination between sample locations. Sampling equipment will be decontaminated in accordance with the following procedures before each sampling attempt or measurement.

- Brush equipment with a nylon brush to remove large particulate matter.
- Rinse with potable tap water.
- Wash with non-phosphate detergent solution (Alconox® and potable tap water).
- Rinse with potable tap water.

Equipment will either be decontaminated immediately prior to use or wrapped in aluminum foil between decontamination and use.

5.0 REFERENCES

Washington State Department of Ecology, 2019. "Tacoma Smelter Plume Model Remedies Guidance, Sampling and Cleanup of Arsenic and Lead Contaminated Soils for: Formal Cleanup Sites, Voluntary Cleanup Program, Properties Under Development, Projects Involving Soil Movement." Ecology Toxics Cleanup Program. Publication number 19-09-101. July 2019.

Washington State Department of Ecology, 2013. "Model Toxics Control Act Statute and Regulation - Model Toxics Control Act Chapter 70.105D RCW, Uniform Environmental Covenants Act Chapter 64.70 RCW, MTCA Cleanup Regulation Chapter 173-340 WAC," January 1996, revised November 2013.

GeoEngineers, Inc., 2017. "Environmental Investigation Report, Carpenter Road Site, Lacey, Washington" November 6, 2017.

Table 1
Soil Sampling Schedule of Chemical Analysis
TSP Soil and Duff Samples
Carpenter Road Property
Lacey, Washington

Location Identification	Soil Boring Depth (Inches bgs)	0 to 6 Inch Depth Interval	6 to 12 Inch Depth Interval	Duff Sample	Total Arsenic	Total Lead
DU1-1	6	X		X	X	X
DU1-2	12	X	X		X	X
DU1-3	6	X		X	X	X
DU1-4	6	X			X	X
DU1-5	12	X	X		X	X
DU1-6	6	X			X	X
DU1-7	6	X			X	X
DU1-8	6	X			X	X
DU1-9	12	X	X		X	X
DU1-10	6	X			X	X
DU1-11	6	X			X	X
DU1-12	12	X	X		X	X
DU1-13	12	X	X		X	X
DU1-14	12	X	X		X	X
DU1-15	6	X		X	X	X
DU1-16	6	X			X	X
DU1-17	6	X			X	X
DU1-18	6	X			X	X
DU1-19	6	X		X	X	X
DU1-20	6	X			X	X
DU1-21	6	X		X	X	X
DU1-22	6	X			X	X
DU1-23	6	X			X	X
DU1-24	6	X			X	X
DU1-25	6	X			X	X
DU1-26	6	X			X	X
DU1-27	12	X	X		X	X
DU1-28	12	X	X		X	X
DU1-29	6	X			X	X
DU1-30	6	X			X	X
DU1-31	6	X			X	X
DU1-32	12	X	X		X	X
DU1-33	6	X			X	X
DU1-34	6	X			X	X

Notes:

X = Depth interval selected and sample to be analyzed at the laboratory following receipt

bgs = below ground surface

Table 2
Test Methods, Sample Containers, Preservation and Hold Times
 Carpenter Road Property
 Lacey, Washington

Analysis	Test Method	Soil/Duff			
		Minimum Sample Size	Bottle Size	Preservation	Holding Times
Total Metals (Arsenic and Lead)	EPA Method 6010 (soil)	4 oz	4- to 8-oz glass with Teflon-lined lid	Cool 4 °C	180 days

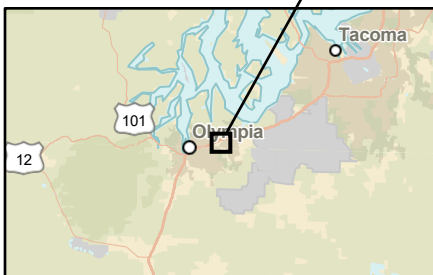
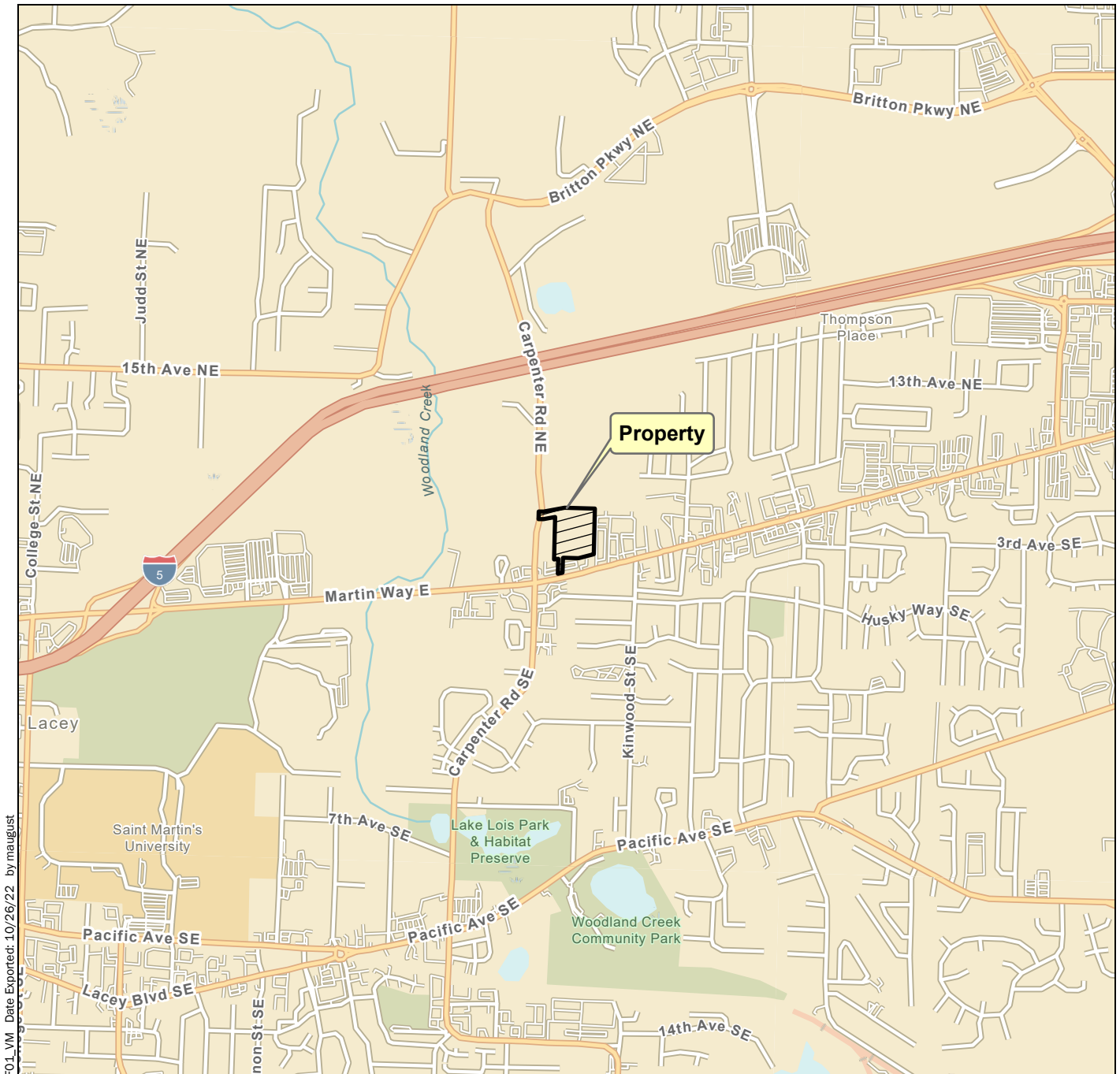
Notes:

Extraction holding time is based on elapsed time from date of sample collection.

EPA = United States Environmental Protection Agency

°C = degree Celsius

oz = ounce



Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: ESRI

Projection: NAD 1983 StatePlane Washington South FIPS 4602 Feet

Vicinity Map

Carpenter Road Property
Lacey, Washington



Figure 1

P:\0415068\CAD\07 Geotech Report\041506807_F02_Soil Sampling Plan.dwg F02 Date Exported:10/26/2022 2:46 PM - by Majed Fadhl



Legend

--- Site Property

--- Area of Anticipated Duff Accumulation

Previous Sample Location

B-1 Boring by GeoEngineers, Inc.

HA-6 Hand Auger by GeoEngineers, Inc.

Proposed Sample Location

0-inch to 6-inch Soil Sample Location

0-inch to 6-inch and 12-inch Soil Samples Location

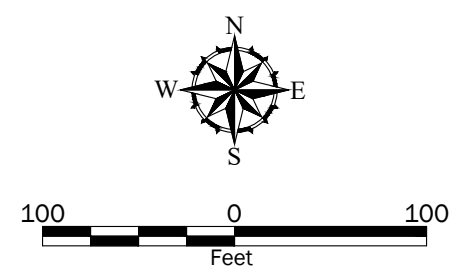
6-point Composite Duff Sample Area

Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Aerial from Google Earth Pro dated 08/06/2022.

Projection: WA State Plane, South Zone, NAD83, US Foot



Soil Sampling Plan	
Carpenter Road Property Lacey, Washington	
	Figure 2

APPENDIX B

Laboratory Analytical Data



14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

November 18, 2022

Abhijit Joshi
GeoEngineers, Inc.
2101 4th Avenue, Suite 950
Seattle, WA 98121

Re: Analytical Data for Project 0415-068-07
Laboratory Reference No. 2211-047

Dear Abhijit:

Enclosed are the analytical results and associated quality control data for samples submitted on November 3, 2022.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

A handwritten signature in black ink, appearing to read 'DB', with a long horizontal stroke extending to the right.

David Baumeister
Project Manager

Enclosures



OnSite Environmental, Inc. 14648 NE 95th Street, Redmond, WA 98052 (425) 883-3881

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: November 18, 2022
Samples Submitted: November 3, 2022
Laboratory Reference: 2211-047
Project: 0415-068-07

Case Narrative

Samples were collected on November 3, 2022 and received by the laboratory on November 3, 2022. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.



Date of Report: November 18, 2022
 Samples Submitted: November 3, 2022
 Laboratory Reference: 2211-047
 Project: 0415-068-07

ANALYTICAL REPORT FOR SAMPLES
 page 1 of 2

Client ID	Laboratory ID	Matrix	Date Sampled	Date Received	Notes
DU1-1-0-6	11-047-01	Soil	11-3-22	11-3-22	
DU1-1-Duff	11-047-02	Soil	11-3-22	11-3-22	
DU1-2-0-6	11-047-03	Soil	11-3-22	11-3-22	
DU1-2-6-12	11-047-04	Soil	11-3-22	11-3-22	
DU1-3-0-6	11-047-05	Soil	11-3-22	11-3-22	
DU1-3-Duff	11-047-06	Soil	11-3-22	11-3-22	
DU1-4-0-6	11-047-07	Soil	11-3-22	11-3-22	
DU1-5-0-6	11-047-08	Soil	11-3-22	11-3-22	
DU1-5-6-12	11-047-09	Soil	11-3-22	11-3-22	
DU1-6-0-6	11-047-10	Soil	11-3-22	11-3-22	
DU1-7-0-6	11-047-11	Soil	11-3-22	11-3-22	
DU1-8-0-6	11-047-12	Soil	11-3-22	11-3-22	
DU1-9-0-6	11-047-13	Soil	11-3-22	11-3-22	
DU1-9-6-12	11-047-14	Soil	11-3-22	11-3-22	
DU1-10-0-6	11-047-15	Soil	11-3-22	11-3-22	
DU1-11-0-6	11-047-16	Soil	11-3-22	11-3-22	
DU1-12-0-6	11-047-17	Soil	11-3-22	11-3-22	
DU1-12-6-12	11-047-18	Soil	11-3-22	11-3-22	
DU1-13-0-6	11-047-19	Soil	11-3-22	11-3-22	
DU1-13-6-12	11-047-20	Soil	11-3-22	11-3-22	
DU1-14-0-6	11-047-21	Soil	11-3-22	11-3-22	
DU1-14-6-12	11-047-22	Soil	11-3-22	11-3-22	
DU1-15-0-6	11-047-23	Soil	11-3-22	11-3-22	
DU1-15-Duff	11-047-24	Soil	11-3-22	11-3-22	
DU1-16-0-6	11-047-25	Soil	11-3-22	11-3-22	



Date of Report: November 18, 2022
 Samples Submitted: November 3, 2022
 Laboratory Reference: 2211-047
 Project: 0415-068-07

ANALYTICAL REPORT FOR SAMPLES
 page 2 of 2

Client ID	Laboratory ID	Matrix	Date Sampled	Date Received	Notes
DU1-17-0-6	11-047-26	Soil	11-3-22	11-3-22	
DU1-18-0-6	11-047-27	Soil	11-3-22	11-3-22	
DU1-19-0-6	11-047-28	Soil	11-3-22	11-3-22	
DU1-19-Duff	11-047-29	Soil	11-3-22	11-3-22	
DU1-20-0-6	11-047-30	Soil	11-3-22	11-3-22	
DU1-21-0-6	11-047-31	Soil	11-3-22	11-3-22	
DU1-21-Duff	11-047-32	Soil	11-3-22	11-3-22	
DU1-22-0-6	11-047-33	Soil	11-3-22	11-3-22	
DU1-23-0-6	11-047-34	Soil	11-3-22	11-3-22	
DU1-24-0-6	11-047-35	Soil	11-3-22	11-3-22	
DU1-25-0-6	11-047-36	Soil	11-3-22	11-3-22	
DU1-26-0-6	11-047-37	Soil	11-3-22	11-3-22	
DU1-27-0-6	11-047-38	Soil	11-3-22	11-3-22	
DU1-27-6-12	11-047-39	Soil	11-3-22	11-3-22	
DU1-28-0-6	11-047-40	Soil	11-3-22	11-3-22	
DU1-28-6-12	11-047-41	Soil	11-3-22	11-3-22	
DU1-29-0-6	11-047-42	Soil	11-3-22	11-3-22	
DU1-30-0-6	11-047-43	Soil	11-3-22	11-3-22	
DU1-31-0-6	11-047-44	Soil	11-3-22	11-3-22	
DU1-32-0-6	11-047-45	Soil	11-3-22	11-3-22	
DU1-32-6-12	11-047-46	Soil	11-3-22	11-3-22	
DU1-33-0-6	11-047-47	Soil	11-3-22	11-3-22	
DU1-34-0-6	11-047-48	Soil	11-3-22	11-3-22	



Date of Report: November 18, 2022
 Samples Submitted: November 3, 2022
 Laboratory Reference: 2211-047
 Project: 0415-068-07

**TOTAL METALS
 EPA 6010D**

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	DU1-1-0-6					
Laboratory ID:	11-047-01					
Arsenic	11	6.0	EPA 6010D	11-9-22	11-17-22	
Lead	44	6.0	EPA 6010D	11-9-22	11-17-22	

Client ID:	DU1-1-Duff					
Laboratory ID:	11-047-02					
Arsenic	10	5.2	EPA 6010D	11-9-22	11-9-22	
Lead	130	10	EPA 6010D	11-9-22	11-9-22	

Client ID:	DU1-2-0-6					
Laboratory ID:	11-047-03					
Arsenic	11	5.6	EPA 6010D	11-9-22	11-9-22	
Lead	50	5.6	EPA 6010D	11-9-22	11-9-22	

Client ID:	DU1-2-6-12					
Laboratory ID:	11-047-04					
Arsenic	ND	5.6	EPA 6010D	11-9-22	11-9-22	
Lead	9.3	5.6	EPA 6010D	11-9-22	11-9-22	

Client ID:	DU1-3-0-6					
Laboratory ID:	11-047-05					
Arsenic	ND	5.2	EPA 6010D	11-9-22	11-9-22	
Lead	ND	5.2	EPA 6010D	11-9-22	11-9-22	

Client ID:	DU1-3-Duff					
Laboratory ID:	11-047-06					
Arsenic	3.7	1.8	EPA 6020B	11-11-22	11-17-22	
Lead	33	15	EPA 6010D	11-9-22	11-9-22	

Client ID:	DU1-4-0-6					
Laboratory ID:	11-047-07					
Arsenic	ND	5.2	EPA 6010D	11-9-22	11-9-22	
Lead	6.4	5.2	EPA 6010D	11-9-22	11-9-22	



Date of Report: November 18, 2022
 Samples Submitted: November 3, 2022
 Laboratory Reference: 2211-047
 Project: 0415-068-07

**TOTAL METALS
 EPA 6010D**

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	DU1-5-0-6					
Laboratory ID:	11-047-08					
Arsenic	ND	5.5	EPA 6010D	11-9-22	11-9-22	
Lead	11	5.5	EPA 6010D	11-9-22	11-9-22	

Client ID:	DU1-5-6-12					
Laboratory ID:	11-047-09					
Arsenic	ND	5.2	EPA 6010D	11-9-22	11-9-22	
Lead	ND	5.2	EPA 6010D	11-9-22	11-9-22	

Client ID:	DU1-6-0-6					
Laboratory ID:	11-047-10					
Arsenic	8.5	5.7	EPA 6010D	11-9-22	11-9-22	
Lead	71	5.7	EPA 6010D	11-9-22	11-9-22	

Client ID:	DU1-7-0-6					
Laboratory ID:	11-047-11					
Arsenic	ND	6.0	EPA 6010D	11-9-22	11-9-22	
Lead	ND	6.0	EPA 6010D	11-9-22	11-9-22	

Client ID:	DU1-8-0-6					
Laboratory ID:	11-047-12					
Arsenic	ND	6.0	EPA 6010D	11-9-22	11-9-22	
Lead	35	6.0	EPA 6010D	11-9-22	11-9-22	

Client ID:	DU1-9-0-6					
Laboratory ID:	11-047-13					
Arsenic	ND	5.9	EPA 6010D	11-11-22	11-11-22	
Lead	ND	5.9	EPA 6010D	11-11-22	11-11-22	

Client ID:	DU1-9-6-12					
Laboratory ID:	11-047-14					
Arsenic	ND	5.6	EPA 6010D	11-11-22	11-11-22	
Lead	ND	5.6	EPA 6010D	11-11-22	11-11-22	



Date of Report: November 18, 2022
 Samples Submitted: November 3, 2022
 Laboratory Reference: 2211-047
 Project: 0415-068-07

**TOTAL METALS
 EPA 6010D**

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	DU1-10-0-6					
Laboratory ID:	11-047-15					
Arsenic	ND	5.8	EPA 6010D	11-11-22	11-11-22	
Lead	28	5.8	EPA 6010D	11-11-22	11-11-22	

Client ID:	DU1-11-0-6					
Laboratory ID:	11-047-16					
Arsenic	ND	5.7	EPA 6010D	11-11-22	11-11-22	
Lead	14	5.7	EPA 6010D	11-11-22	11-11-22	

Client ID:	DU1-12-0-6					
Laboratory ID:	11-047-17					
Arsenic	ND	5.3	EPA 6010D	11-11-22	11-11-22	
Lead	13	5.3	EPA 6010D	11-11-22	11-11-22	

Client ID:	DU1-12-6-12					
Laboratory ID:	11-047-18					
Arsenic	ND	5.3	EPA 6010D	11-11-22	11-11-22	
Lead	11	5.3	EPA 6010D	11-11-22	11-11-22	

Client ID:	DU1-13-0-6					
Laboratory ID:	11-047-19					
Arsenic	ND	5.6	EPA 6010D	11-11-22	11-11-22	
Lead	20	5.6	EPA 6010D	11-11-22	11-11-22	

Client ID:	DU1-13-6-12					
Laboratory ID:	11-047-20					
Arsenic	ND	5.5	EPA 6010D	11-11-22	11-11-22	
Lead	7.6	5.5	EPA 6010D	11-11-22	11-11-22	

Client ID:	DU1-14-0-6					
Laboratory ID:	11-047-21					
Arsenic	ND	5.8	EPA 6010D	11-11-22	11-11-22	
Lead	16	5.8	EPA 6010D	11-11-22	11-11-22	



Date of Report: November 18, 2022
 Samples Submitted: November 3, 2022
 Laboratory Reference: 2211-047
 Project: 0415-068-07

**TOTAL METALS
 EPA 6010D**

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	DU1-14-6-12					
Laboratory ID:	11-047-22					
Arsenic	ND	5.5	EPA 6010D	11-11-22	11-11-22	
Lead	7.9	5.5	EPA 6010D	11-11-22	11-11-22	

Client ID:	DU1-15-0-6					
Laboratory ID:	11-047-23					
Arsenic	ND	5.8	EPA 6010D	11-11-22	11-11-22	
Lead	11	5.8	EPA 6010D	11-11-22	11-11-22	

Client ID:	DU1-15-Duff					
Laboratory ID:	11-047-24					
Arsenic	ND	6.4	EPA 6010D	11-11-22	11-11-22	
Lead	61	13	EPA 6010D	11-11-22	11-11-22	

Client ID:	DU1-16-0-6					
Laboratory ID:	11-047-25					
Arsenic	ND	5.2	EPA 6010D	11-11-22	11-11-22	
Lead	7.1	5.2	EPA 6010D	11-11-22	11-11-22	

Client ID:	DU1-17-0-6					
Laboratory ID:	11-047-26					
Arsenic	ND	5.5	EPA 6010D	11-11-22	11-11-22	
Lead	27	5.5	EPA 6010D	11-11-22	11-11-22	

Client ID:	DU1-18-0-6					
Laboratory ID:	11-047-27					
Arsenic	ND	5.3	EPA 6010D	11-11-22	11-11-22	
Lead	ND	5.3	EPA 6010D	11-11-22	11-11-22	

Client ID:	DU1-19-0-6					
Laboratory ID:	11-047-28					
Arsenic	ND	5.2	EPA 6010D	11-11-22	11-11-22	
Lead	ND	5.2	EPA 6010D	11-11-22	11-11-22	



Date of Report: November 18, 2022
 Samples Submitted: November 3, 2022
 Laboratory Reference: 2211-047
 Project: 0415-068-07

**TOTAL METALS
EPA 6010D**

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	DU1-19-Duff					
Laboratory ID:	11-047-29					
Arsenic	ND	2.7	EPA 6020B	11-11-22	11-17-22	
Lead	ND	21	EPA 6010D	11-11-22	11-11-22	

Client ID:	DU1-20-0-6					
Laboratory ID:	11-047-30					
Arsenic	ND	5.2	EPA 6010D	11-11-22	11-11-22	
Lead	10	5.2	EPA 6010D	11-11-22	11-11-22	

Client ID:	DU1-21-0-6					
Laboratory ID:	11-047-31					
Arsenic	ND	5.9	EPA 6010D	11-11-22	11-11-22	
Lead	35	5.9	EPA 6010D	11-11-22	11-11-22	

Client ID:	DU1-21-Duff					
Laboratory ID:	11-047-32					
Arsenic	ND	1.8	EPA 6020B	11-11-22	11-17-22	
Lead	23	14	EPA 6010D	11-11-22	11-11-22	

Client ID:	DU1-22-0-6					
Laboratory ID:	11-047-33					
Arsenic	ND	5.7	EPA 6010D	11-14-22	11-15-22	
Lead	15	5.7	EPA 6010D	11-14-22	11-15-22	

Client ID:	DU1-23-0-6					
Laboratory ID:	11-047-34					
Arsenic	ND	5.5	EPA 6010D	11-14-22	11-15-22	
Lead	19	5.5	EPA 6010D	11-14-22	11-15-22	

Client ID:	DU1-24-0-6					
Laboratory ID:	11-047-35					
Arsenic	ND	5.2	EPA 6010D	11-14-22	11-15-22	
Lead	180	5.2	EPA 6010D	11-14-22	11-15-22	



Date of Report: November 18, 2022
 Samples Submitted: November 3, 2022
 Laboratory Reference: 2211-047
 Project: 0415-068-07

**TOTAL METALS
EPA 6010D**

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	DU1-25-0-6					
Laboratory ID:	11-047-36					
Arsenic	ND	5.2	EPA 6010D	11-14-22	11-15-22	
Lead	ND	5.2	EPA 6010D	11-14-22	11-15-22	

Client ID:	DU1-26-0-6					
Laboratory ID:	11-047-37					
Arsenic	ND	5.3	EPA 6010D	11-14-22	11-15-22	
Lead	6.7	5.3	EPA 6010D	11-14-22	11-15-22	

Client ID:	DU1-27-0-6					
Laboratory ID:	11-047-38					
Arsenic	ND	5.9	EPA 6010D	11-14-22	11-15-22	
Lead	16	5.9	EPA 6010D	11-14-22	11-15-22	

Client ID:	DU1-27-6-12					
Laboratory ID:	11-047-39					
Arsenic	ND	5.8	EPA 6010D	11-14-22	11-15-22	
Lead	13	5.8	EPA 6010D	11-14-22	11-15-22	

Client ID:	DU1-28-0-6					
Laboratory ID:	11-047-40					
Arsenic	ND	6.1	EPA 6010D	11-14-22	11-15-22	
Lead	180	6.1	EPA 6010D	11-14-22	11-15-22	

Client ID:	DU1-28-6-12					
Laboratory ID:	11-047-41					
Arsenic	ND	5.9	EPA 6010D	11-14-22	11-15-22	
Lead	130	5.9	EPA 6010D	11-14-22	11-15-22	

Client ID:	DU1-29-0-6					
Laboratory ID:	11-047-42					
Arsenic	ND	5.4	EPA 6010D	11-14-22	11-15-22	
Lead	ND	5.4	EPA 6010D	11-14-22	11-15-22	



Date of Report: November 18, 2022
 Samples Submitted: November 3, 2022
 Laboratory Reference: 2211-047
 Project: 0415-068-07

**TOTAL METALS
 EPA 6010D**

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	DU1-30-0-6					
Laboratory ID:	11-047-43					
Arsenic	ND	5.4	EPA 6010D	11-14-22	11-15-22	
Lead	ND	5.4	EPA 6010D	11-14-22	11-15-22	

Client ID:	DU1-31-0-6					
Laboratory ID:	11-047-44					
Arsenic	ND	5.9	EPA 6010D	11-14-22	11-15-22	
Lead	120	5.9	EPA 6010D	11-14-22	11-15-22	

Client ID:	DU1-32-0-6					
Laboratory ID:	11-047-45					
Arsenic	ND	5.6	EPA 6010D	11-14-22	11-15-22	
Lead	86	5.6	EPA 6010D	11-14-22	11-15-22	

Client ID:	DU1-32-6-12					
Laboratory ID:	11-047-46					
Arsenic	ND	5.4	EPA 6010D	11-14-22	11-15-22	
Lead	190	5.4	EPA 6010D	11-14-22	11-15-22	

Client ID:	DU1-33-0-6					
Laboratory ID:	11-047-47					
Arsenic	ND	5.4	EPA 6010D	11-14-22	11-15-22	
Lead	120	5.4	EPA 6010D	11-14-22	11-15-22	

Client ID:	DU1-34-0-6					
Laboratory ID:	11-047-48					
Arsenic	ND	5.3	EPA 6010D	11-14-22	11-15-22	
Lead	9.9	5.3	EPA 6010D	11-14-22	11-15-22	



Date of Report: November 18, 2022
 Samples Submitted: November 3, 2022
 Laboratory Reference: 2211-047
 Project: 0415-068-07

**TOTAL METALS
 EPA 6010D
 QUALITY CONTROL**

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1114SM1					
Arsenic	ND	5.0	EPA 6010D	11-14-22	11-15-22	
Lead	ND	5.0	EPA 6010D	11-14-22	11-15-22	
Laboratory ID:	MB1111SM2					
Arsenic	ND	5.0	EPA 6010D	11-11-22	11-11-22	
Lead	ND	5.0	EPA 6010D	11-11-22	11-11-22	
Laboratory ID:	MB1111SM2					
Arsenic	ND	0.63	EPA 6020B	11-11-22	11-17-22	
Laboratory ID:	MB1109SM1					
Arsenic	ND	2.5	EPA 6010D	11-9-22	11-9-22	
Lead	ND	5.0	EPA 6010D	11-9-22	11-9-22	
Laboratory ID:	MB1109SM1					
Arsenic	ND	0.63	EPA 6020B	11-9-22	11-17-22	



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**TOTAL METALS
 EPA 6010D
 QUALITY CONTROL**

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	11-047-01							
	ORIG	DUP						
Arsenic	8.80	8.60	NA	NA	NA	NA	2	20
Lead	36.3	29.6	NA	NA	NA	NA	20	20
Laboratory ID: 11-047-01								
	ORIG	DUP						
Arsenic	10.2	9.16	NA	NA	NA	NA	11	20
Laboratory ID: 11-047-01								
	ORIG	DUP						
Arsenic	ND	ND	NA	NA	NA	NA	NA	20
Lead	ND	ND	NA	NA	NA	NA	NA	20
Laboratory ID: 11-047-13								
	ORIG	DUP						
Arsenic	1.89	1.70	NA	NA	NA	NA	10	20
Laboratory ID: 11-047-33								
	ORIG	DUP						
Arsenic	ND	ND	NA	NA	NA	NA	NA	20
Lead	13.1	12.5	NA	NA	NA	NA	5	20



Date of Report: November 18, 2022
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 Project: 0415-068-07

**TOTAL METALS
 EPA 6010D
 QUALITY CONTROL**

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	11-047-33										
	MS	MSD	MS	MSD		MS	MSD				
Arsenic	96.7	96.8	100	100	8.80	88	88	75-125	0	20	
Lead	271	271	250	250	36.3	94	94	75-125	0	20	
Laboratory ID:	11-047-01										
	MS	MSD	MS	MSD		MS	MSD				
Arsenic	112	112	100	100	10.2	101	101	75-125	0	20	
Laboratory ID:	11-047-13										
	MS	MSD	MS	MSD		MS	MSD				
Arsenic	90.7	93.2	100	100	ND	91	93	75-125	3	20	
Lead	241	243	250	250	ND	96	97	75-125	1	20	
Laboratory ID:	11-047-13										
	MS	MSD	MS	MSD		MS	MSD				
Arsenic	95.0	94.0	100	100	1.89	93	92	75-125	1	20	
Laboratory ID:	11-047-33										
	MS	MSD	MS	MSD		MS	MSD				
Arsenic	93.9	93.7	100	100	ND	94	94	75-125	0	20	
Lead	256	259	250	250	13.1	97	99	75-125	1	20	



Date of Report: November 18, 2022
 Samples Submitted: November 3, 2022
 Laboratory Reference: 2211-047
 Project: 0415-068-07

% MOISTURE

Client ID	Lab ID	% Moisture	Date Analyzed
DU1-1-0-6	11-047-01	17	11-8-22
DU1-1-Duff	11-047-02	52	11-8-22
DU1-2-0-6	11-047-03	11	11-8-22
DU1-2-6-12	11-047-04	11	11-8-22
DU1-3-0-6	11-047-05	4	11-8-22
DU1-3-Duff	11-047-06	66	11-17-22
DU1-4-0-6	11-047-07	5	11-8-22
DU1-5-0-6	11-047-08	10	11-8-22
DU1-5-6-12	11-047-09	3	11-8-22
DU1-6-0-6	11-047-10	12	11-8-22
DU1-7-0-6	11-047-11	17	11-8-22
DU1-8-0-6	11-047-12	16	11-8-22
DU1-9-0-6	11-047-13	15	11-8-22
DU1-9-6-12	11-047-14	11	11-8-22
DU1-10-0-6	11-047-15	13	11-8-22
DU1-11-0-6	11-047-16	12	11-8-22
DU1-12-0-6	11-047-17	6	11-8-22
DU1-12-6-12	11-047-18	6	11-8-22
DU1-13-0-6	11-047-19	10	11-8-22
DU1-13-6-12	11-047-20	9	11-8-22
DU1-14-0-6	11-047-21	13	11-8-22
DU1-14-6-12	11-047-22	9	11-8-22
DU1-15-0-6	11-047-23	14	11-8-22
DU1-15-Duff	11-047-24	61	11-17-22
DU1-16-0-6	11-047-25	5	11-8-22
DU1-17-0-6	11-047-26	9	11-8-22
DU1-18-0-6	11-047-27	5	11-8-22



Date of Report: November 18, 2022
 Samples Submitted: November 3, 2022
 Laboratory Reference: 2211-047
 Project: 0415-068-07

% MOISTURE

Client ID	Lab ID	% Moisture	Date Analyzed
DU1-19-0-6	11-047-28	4	11-8-22
DU1-19-Duff	11-047-29	77	11-8-22
DU1-20-0-6	11-047-30	5	11-8-22
DU1-21-0-6	11-047-31	16	11-8-22
DU1-21-Duff	11-047-32	65	11-17-22
DU1-22-0-6	11-047-33	12	11-8-22
DU1-23-0-6	11-047-34	9	11-8-22
DU1-24-0-6	11-047-35	3	11-8-22
DU1-25-0-6	11-047-36	4	11-8-22
DU1-26-0-6	11-047-37	6	11-8-22
DU1-27-0-6	11-047-38	15	11-8-22
DU1-27-6-12	11-047-39	14	11-8-22
DU1-28-0-6	11-047-40	18	11-8-22
DU1-28-6-12	11-047-41	16	11-8-22
DU1-29-0-6	11-047-42	7	11-8-22
DU1-30-0-6	11-047-43	7	11-8-22
DU1-31-0-6	11-047-44	15	11-8-22
DU1-32-0-6	11-047-45	11	11-8-22
DU1-32-6-12	11-047-46	8	11-8-22
DU1-33-0-6	11-047-47	8	11-8-22
DU1-34-0-6	11-047-48	6	11-8-22





Data Qualifiers and Abbreviations

- A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.
- B - The analyte indicated was also found in the blank sample.
- C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.
- E - The value reported exceeds the quantitation range and is an estimate.
- F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.
- H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.
- I - Compound recovery is outside of the control limits.
- J - The value reported was below the practical quantitation limit. The value is an estimate.
- K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.
- L - The RPD is outside of the control limits.
- M - Hydrocarbons in the gasoline range are impacting the diesel range result.
- M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.
- N - Hydrocarbons in the lube oil range are impacting the diesel range result.
- N1 - Hydrocarbons in diesel range are impacting lube oil range results.
- O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.
- P - The RPD of the detected concentrations between the two columns is greater than 40.
- Q - Surrogate recovery is outside of the control limits.
- S - Surrogate recovery data is not available due to the necessary dilution of the sample.
- T - The sample chromatogram is not similar to a typical _____.
- U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- U1 - The practical quantitation limit is elevated due to interferences present in the sample.
- V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.
- W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.
- X - Sample extract treated with a mercury cleanup procedure.
- X1 - Sample extract treated with a sulfuric acid/silica gel cleanup procedure.
- X2 - Sample extract treated with a silica gel cleanup procedure.
- Y - The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.
- Y1 - Negative effects of the matrix from this sample on the instrument caused values for this analyte in the bracketing continuing calibration verification standard (CCVs) to be outside of 20% acceptance criteria. Because of this, quantitation limits and sample concentrations should be considered estimates.
- Z -
- ND - Not Detected at PQL
- PQL - Practical Quantitation Limit
- RPD - Relative Percent Difference





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Chain of Custody

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Company: <u>Geo Engineers</u>		Turnaround Request (in working days)		Laboratory Number: 11-047													
Project Number: <u>0415-068-07</u>		☐ Same Day ☐ 1 Day															
Project Name: <u>Carputer Road</u>		☐ 2 Days ☐ 3 Days															
Project Manager: <u>Abhi Joshi</u>		☒ Standard (7 Days)															
Sampled by: <u>Arunabhagana Arunabhagana</u>		☐ (other)															
Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers												
1	DU1-1-0-6	11/3/22	0830	Soil	1	NWTPH-HCID											
2	DU1-1-0-6		0840			NWTPH-Gx/BTEX (8021 ☐ 8260 ☐)											
3	DU1-2-0-6		0843			NWTPH-Gx											
4	DU1-2-6-12		0845			NWTPH-Dx (Acid / SG Clean-up ☐)											
5	DU1-3-0-6		0855			Volatiles 8260											
6	DU1-3-0-6		0900			Halogenated Volatiles 8260											
7	DU1-4-0-6		0907			EDB EPA 8011 (Waters Only)											
8	DU1-5-0-6		0913			Semivolatiles 8270/SIM (with low-level PAHs)											
9	DU1-5-6-12		0915			PAHs 8270/SIM (low-level)											
10	DU1-6-0-6		0950			PCBs 8082											
					Organochlorine Pesticides 8081												
					Organophosphorus Pesticides 8270/SIM												
					Chlorinated Acid Herbicides 8151												
					Total RCRA Metals												
					Total MTCA Metals												
					TCLP Metals												
					HEM (oil and grease) 1664												
					Total Metals As, Pb*												
					% Moisture												
Relinquished		Signature	Company	Date	Time	Comments/Special Instructions											
Received		<u>Arunabhagana Arunabhagana</u>	<u>Geo Engineers</u>	<u>11/3</u>	<u>1605</u>	* Detection limits As < 7 mg/kg Pb < 24 mg/kg copy to <u>agang@geoengineers.com</u>											
Relinquished																	
Received																	
Relinquished																	
Received																	
Relinquished																	
Reviewed/Date			Reviewed/Date			Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐											



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Chain of Custody

Company: <u>GeoEngineers</u>		Turnaround Request (in working days)		Laboratory Number: 11-047												
Project Number: <u>0415-068-07</u>		(Check One)														
Project Name: <u>Corpente Road</u>		☐ Same Day ☐ 1 Day														
Project Manager: <u>Ahli Tesli</u>		☐ 2 Days ☐ 3 Days														
Sampled by: <u>Aaron Liberman, Atankala</u>		☒ Standard (7 Days)														
Date Sampled: <u>11/3/22</u>		(other) _____														
Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers											
11	DU1-7-06	11/3/22	0900	Soil	1											
12	DU1-8-0-6		0945													
13	DU1-9-0-6		0925													
14	DU1-9-6-12		0927													
15	DU1-10-0-6		1010													
16	DU1-11-0-6		1009													
17	DU1-12-0-6		0955													
18	DU1-12-6-12		0957													
19	DU1-13-0-6		1042													
20	DU1-13-6-12		1045													
Signature		Company	Date	Time	Comments/Special Instructions											
<u>[Signature]</u>		GEI	11/3	1605	* Detection Limits As & 7 ug/kg Pb & 24 ug/kg											
Relinquished																
Received																
Relinquished																
Received																
Relinquished																
Received																
Relinquished																
Reviewed/Date		Reviewed/Date		Data Package: Standard ☐ Level III ☐ Level IV ☐ Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐												



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Chain of Custody

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Company: <u>Geotek Engineers</u>		Turnaround Request (in working days)		Laboratory Number: 11-047														
Project Number: <u>0415-068-07</u>		☐ Same Day ☐ 1 Day																
Project Name: <u>Corvallis Road</u>		☐ 2 Days ☐ 3 Days																
Project Manager: <u>Abhi Joshi</u>		☒ Standard (7 Days)																
Sampled by: <u>Arum Vignarajah, Arankala Gang</u>		☐ (other)																
Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers													
21	D01-14-06	11/3/12	1203	Soil	1													
22	D01-14-6-12		1205															
23	D01-15-0-6		1015															
24	D01-15-Duff		1017															
25	D01-16-0-6		1028															
26	D01-17-0-6		1037															
27	D01-18-0-6		1055															
28	D01-19-0-6		1104															
28	D01-19-Duff		1108															
30	D01-20-0-6		1121															
Signature: <u>Arankala Gang</u>		Company: <u>Geotek</u>	Date: <u>11/3</u>	Time: <u>1605</u>	Comments/Special Instructions: <u>* Detection Limits As & Fungus Pb < 24 mg/kg</u>													
Relinquished																		
Received																		
Relinquished																		
Received																		
Relinquished																		
Received																		
Relinquished																		
Reviewed/Date					Data Package: Standard ☐ Level III ☐ Level IV ☐ Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐													



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Chain of Custody

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Company: <u>GeoEngineers</u>			Turnaround Request (in working days)			Laboratory Number: 11-047													
Project Number: <u>0415-068-07</u>			☐ Same Day ☐ 1 Day																
Project Name: <u>Carpenter Road</u>			☐ 2 Days ☐ 3 Days																
Project Manager: <u>Ahmed Yeghyan, Alexander</u>			☒ Standard (7 Days)																
Sampled by: <u>Ahmed Yeghyan, Alexander</u>			☐ (other)																
Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers														
31	D01-21-0-6	11/3/22	12:10	Soil	NWTPH-HCID														
32	D01-21-0-6				NWTPH-Gx/BTEX (8021 ☐ 8260 ☐)														
33	D01-22-0-6				NWTPH-Gx														
34	D01-23-0-6				NWTPH-Dx (Acid / SG Clean-up ☐)														
35	D01-24-0-6				Volatiles 8260														
36	D01-25-0-6				Halogenated Volatiles 8260														
37	D01-26-0-6				EDB EPA 8011 (Waters Only)														
38	D01-27-0-6				Semivolatiles 8270/SIM (with low-level PAHs)														
39	D01-27-6-12				PAHs 8270/SIM (low-level)														
40	D01-28-0-6				PCBs 8082														
					Organochlorine Pesticides 8081														
					Organophosphorus Pesticides 8270/SIM														
					Chlorinated Acid Herbicides 8151														
					Total RCRA Metals														
					Total MTCA Metals														
					TCPL Metals														
					HEM (oil and grease) 1664														
					Total Metals As, Pb*														
					% Moisture														
Relinquished		Signature		Company		Date		Time		Comments/Special Instructions									
Received		<u>Alexander</u>		GEF		11/3		1605		* Detection limits As < 7 mg/kg Pb < 24 mg/kg									
Relinquished																			
Received																			
Relinquished																			
Received																			
Relinquished																			
Reviewed/Date				Reviewed/Date						Data Package: Standard ☐ Level III ☐ Level IV ☐									
										Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐									



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Chain of Custody

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Company: Geo Engineers		Turnaround Request (in working days)		Laboratory Number: 11-047																	
Project Number: 0415-068-07		(Check One)																			
Project Name: Carpenter Road		☐ Same Day ☐ 1 Day																			
Project Manager: Abhi Joshi		☐ 2 Days ☐ 3 Days																			
Sampled By: Aaron Lagrone, Atankshg		☒ Standard (7 Days)																			
Lab ID		Date Sampled		Time Sampled		Matrix		Number of Containers													
Sample Identification																					
Gang																					
41		DU1-28-6-12		11/3/2012		1242		S017		1											
42		DU1-29-0-6				1250															
43		DU1-30-0-6				1320															
44		DU1-31-0-6				1247															
45		DU1-32-0-6				1150															
46		DU1-32-6-12				1152															
47		DU1-33-0-6				1137															
48		DU1-34-0-6				1140															
Signature		Company		Date		Time		Comments/Special Instructions													
Relinquished		Relinquished		Relinquished		Relinquished		Relinquished													
Received		Received		Received		Received		Received													
Relinquished		Relinquished		Relinquished		Relinquished		Relinquished													
Received		Received		Received		Received		Received													
Relinquished		Relinquished		Relinquished		Relinquished		Relinquished													
Received		Received		Received		Received		Received													
Relinquished		Relinquished		Relinquished		Relinquished		Relinquished													
Reviewed/Date		Reviewed/Date		Reviewed/Date		Reviewed/Date		Reviewed/Date													

APPENDIX C

Report Limitations and Guidelines for Use

APPENDIX C

REPORT LIMITATIONS AND GUIDELINES FOR USE¹

This appendix provides information to help you manage your risks with respect to the use of this report. Please confer with GeoEngineers if you need to know more about how these “Report Limitations and Guidelines for Use” apply to your project or property.

Read These Provisions Closely

It is important to recognize that environmental engineering and geoscience practices (geotechnical engineering, geology and environmental science) are less exact than other engineering and natural science disciplines. GeoEngineers includes these explanatory “limitations” provisions in our reports to help reduce the risk of misunderstandings or unrealistic expectations that lead to disappointments, claims and disputes.

Environmental Services Are Performed for Specific Purposes, Persons and Projects

GeoEngineers has prepared this Soil Sampling and Analytical Results Summary to support redevelopment of the City of Olympia’s (City) Carpenter Road Property (property) located in Lacey, Washington in general accordance with the scope and limitations of our proposal, dated October 07, 2022. This report has been prepared for the exclusive use of City of Olympia. This report is not intended for use by others, and the information contained herein is not applicable to other properties.

GeoEngineers structures its services to meet the specific needs of its clients. For example, an ESA study conducted for a property owner may not fulfill the needs of a prospective purchaser of the same property. Because each environmental study is unique, each environmental report is unique, prepared solely for the specific client and property. Use of this report is not recommended for any purpose or project other than as expressly stated in this report.

This Environmental Report is Based on a Unique Set of Project-Specific Factors

This report has been prepared to support redevelopment of the City of Olympia’s (City) Carpenter Road Property (property) located in Lacey, Washington. GeoEngineers considered a number of unique, project-specific factors when establishing the scope of services for this Project. Unless GeoEngineers specifically indicates otherwise, it is important not to rely on this report if it was:

- not prepared for you,
- not prepared for your Project,
- not prepared for the specific site explored, or
- completed before Project changes were made.

¹ Developed based on material provided by GBA, GeoProfessional Business Association; www.geoprofessional.org.



If changes to the Project or property occur after the date of this report, GeoEngineers cannot be responsible for any consequences of such changes in relation to this report unless we have been given the opportunity to review our interpretations and recommendations in the context of such changes. Based on that review, we can provide written modifications or confirmation, as appropriate.

Reliance Conditions for Third Parties

This report was prepared for the exclusive use of the party(ies) to whom this report is addressed. No other party may rely on the product of our services unless we agree to such reliance in advance and in writing. Within the limitations of the agreed Project scope, schedule and budget, our services have been executed in accordance with our Agreement with the Client and generally accepted environmental practices in this area at the time this report was prepared.

Understand That Geotechnical Issues Have Not Been Addressed

Unless geotechnical engineering was specifically included in our scope of service, this report does not provide any geotechnical findings, conclusions, or recommendations, including but not limited to, the suitability of subsurface materials for construction purposes.

Do Not Separate Documentation from the Report

Environmental reports often include supplemental documentation, such as maps, figures and table. Do not separate such documentation from the report. Further, do not, and do not permit any other party to redraw or modify any of the supplemental documentation for incorporation into other professionals' instruments of service.

Environmental Regulations Change and Evolve

Some substances may be present in the vicinity of the subject property in quantities or under conditions that may have led, or may lead, to contamination of the subject property, but are not included in current local, state or federal regulatory definitions of hazardous substances or do not otherwise present current potential liability. GeoEngineers cannot be responsible if the standards for appropriate inquiry, or regulatory definitions of hazardous substances, change or if more stringent environmental standards are developed in the future.

Subsurface Conditions Can Change

This environmental report is based on conditions that existed at the time the study was performed. The findings and conclusions of this report may be affected by the passage of time, by man-made events such as construction on or adjacent to the subject property, by new releases of hazardous substances, new information or technology that become available subsequent to the report date, or by natural events such as floods, earthquakes, slope instability or groundwater fluctuations. Please contact GeoEngineers before applying this report for its intended purpose so that GeoEngineers may evaluate whether changed conditions affect the continued applicability of the report.

Soil and Groundwater End Use

The cleanup levels referenced in this report are site- and situation-specific. The cleanup levels may not be applicable for other properties or for other uses of the affected soil and/or groundwater. Note that hazardous substances may be present in some of the on-site soil and/or groundwater at detectable



concentrations that are less than the referenced cleanup levels. GeoEngineers will not assume responsibility for potential environmental liability arising out of the transfer of soil and/or groundwater from the subject property to another location, or the reuse of such soil and/or groundwater in any instances that we did not recommend, know of, or control.

Most Environmental Findings Are Professional Opinions

Our interpretations of subsurface conditions are based on field observations and chemical analytical data from widely spaced sampling locations at the subject property. Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. GeoEngineers reviewed field and laboratory data and then applied its professional judgment to render an informed opinion about subsurface conditions throughout the property. Actual subsurface conditions may differ significantly from those indicated in this report. Our report, conclusions and interpretations should not be construed as a warranty of the subsurface conditions.

Biological Pollutants

GeoEngineers' Scope of Work specifically excludes the investigation, detection, prevention or assessment of the presence of Biological Pollutants. Accordingly, this report does not include any interpretations, recommendations, findings or conclusions regarding the detecting, assessing, preventing or abating of Biological Pollutants, and no conclusions or inferences should be drawn regarding Biological Pollutants as they may relate to this Project. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria and viruses, and/or any of their byproducts.

A Client that desires these specialized services is advised to obtain them from a consultant who offers services in this specialized field.

Information Provided by Others

GeoEngineers has relied upon certain data or information provided or compiled by others in the performance of our services. Although we use sources that we reasonably believe to be trustworthy, GeoEngineers cannot warrant or guarantee the accuracy or completeness of information provided or compiled by others.

