GeoEngineers

2101 Fourth Avenue, Suite 950
Seattle, Washington 98121
206.728.2674

October 24, 2023

City of Mercer Island Public Works
9601 SE 36th Street
Mercer Island, Washington 98040

Attention: Paul West, CIP Project Manager

Subject: Soil Sampling and Analytical Results Summary
Field Support – Stair Construction
Luther Burbank Park
Mercer Island, Washington
File No. 0817-025-00

INTRODUCTION AND PROJECT BACKGROUND

GeoEngineers is pleased to present this letter summarizing the field activities, including soil and water sampling and laboratory analyses, conducted at City of Mercer Island (City) Luther Burbank Park located at 2040 84th Avenue SE in Mercer Island, Washington (project site). Field support was provided by GeoEngineers during construction of stairs along the south shoreline that includes construction of a gravel trail and installation of habitat gravels and woody debris in the nearshore environment of Lake Washington. The recent work is next to a larger project that includes plaza and waterfront improvements in the vicinity of the former boiler plant building. Two decommissioned fuel underground storage tanks (USTs) remain in place beneath the plaza area associated with the boiler plant and to the northwest of the stairs (Figure 1).

The proposed upland improvement project (project) for Luther Burbank Park includes replacement of existing pavement with low impact surfacing, such as permeable pavers, intended to limit stormwater runoff, construction of a new Americans with Disability Act (ADA) accessible pedestrian ramp leading from existing trails to a second-story rooftop classroom area, and a seismic retrofit of the existing boiler plant building.

Consistent with the Environmental Construction Contingency Plan (ECCP), which was prepared by GeoEngineers for use by the City team during project construction, the City contacted GeoEngineers when soil and water encountered on August 3, 2023 during construction of stairs along the park shoreline indicated evidence (i.e., staining and odor) of the potential presence of petroleum hydrocarbons. Consistent with the ECCP, the stained soil was segregated for further evaluation, management, and appropriate disposal.

Prior to construction near the shoreline, a gravel berm had been created to enable the excavation for stair construction, and absorbent booms were placed on the standing water collected behind the berm. These measures isolated the affected soil and water from Lake Washington.

GeoEngineers understands that a previous remedial/cleanup action was conducted to remove diesel-range total petroleum hydrocarbon (TPH-D) containing soil from the UST area in 2003, leading to a No Further Action (NFA) determination from the Washington State Department of Ecology (Ecology). Environmental investigations by Hart Crowser in 2002 and by GeoEngineers in 2022 did not identify evidence of area-wide petroleum hydrocarbon-containing soil or groundwater at the project site.

FIELD ACTIVITIES AND CHEMICAL ANALYTICAL RESULTS

GeoEngineers completed three site visits during stair construction to support the City team with the evaluation and appropriate management and disposal of the petroleum hydrocarbon-containing soil and water. Samples were collected for laboratory chemical analysis during the first and second visits. The third visit was conducted to observe and document backfilling of the area excavated during stair construction. The three site visits are summarized below, and the soil excavation area (outlined in red) and sample collection locations are shown on Figure 1.

Initial Sampling

On August 4, 2023, GeoEngineers visited the Luther Burbank Park project site to complete an initial assessment and to collect samples after the City team encountered soil and water that indicated evidence (i.e., staining and odor) of the potential presence of petroleum hydrocarbons during construction of stone stairs leading down to the park's south shoreline. Prior to GeoEngineers arrival at the project site, excavated soil with evidence of the potential presence of petroleum hydrocarbons had been stockpiled on plastic sheeting, with plastic sheeting covering the pile. The volume of the stockpiled soil was estimated to be less than 2 cubic yards. Surface water that had accumulated within the excavation was contained by absorbent booms and absorbent pads were used to collect/remove the petroleum hydrocarbons visible on the water surface.

Two soil samples and one water grab sample were collected for laboratory analysis during the initial site visit to characterize the soil and water for appropriate disposal. One soil sample, identified as LBP-SP1, was collected as a six-point composite of the stockpiled soil. The second soil sample, identified as LBP-STAIRS, was collected directly from the north sidewall of the stair excavation. The water sample, identified as LBP-W1, was a grab sample collected from the water accumulated in the bottom of the excavation.

The soil and water samples were analyzed for diesel- and oil-range TPH, and the soil samples were additionally analyzed for polycyclic aromatic hydrocarbons (PAHs), based on the historical impacts previously documented in the adjacent UST area. Tables 1 and 2 present the sample analytical results that are summarized below. The laboratory data report is included in Appendix A.

- **LBP-SP1**. Oil-range TPH and various PAHs were detected at concentrations greater than the laboratory reporting limits but not greater than their associated Ecology Model Toxics Control Act (MTCA) Method A cleanup levels.

- **LBP-Stairs**. Oil-range TPH was detected at a concentration greater than the laboratory reporting limits but not greater than the MTCA Method A cleanup level.
- **LBP-W1**. Diesel-range TPH was detected at a concentration greater than the laboratory reporting limits. The detected diesel-range TPH concentration (1,010 µg/L) was greater than the concentration protective of fresh surface water for "unweathered" diesel-range TPH (150 µg/L) but not greater than the concentration protective for "weathered" diesel-range TPH (3,000 µg/L) based on the MTCA Method B or Method C requirements for surface water cleanup levels that are protective of aquatic receptors under WAC 173-340-730 (3)(b)(ii) or 173-340-730(4)(b)(ii) using the NWTPH-Gx and NWTPH-Dx methods. The laboratory report for this analysis notes that the chromatographic pattern indicates that the diesel-range TPH may be a weathered product and/or organic material.

Follow-Up Sampling

Upon receipt of the initial analytical results, the City indicated that their plan was to remove the petroleum hydrocarbon-containing soil and water, to the extent practical during stair construction, to minimize the potential for soil and water with sheen, odor, or other indications of potential petroleum hydrocarbon contamination to affect the shoreline of Lake Washington and/or to present a potential risk to users of the park. The City requested that GeoEngineers observe the focused over-excavation of soil in the stair area to support appropriate management of the removed soil and water, and to collect additional samples for laboratory chemical analysis, as necessary to support soil and water disposal and document conditions at the project site.

Focused over-excavation was performed in the stair construction area on August 15, 2023. Field screening for sheen, odor, and staining were used to guide the extent of excavation, and samples were collected for laboratory chemical analysis from the limits of the excavation. The final dimensions of the excavation measured approximately 16 feet long and 8 feet wide, with a maximum depth of approximately 4 feet below the surface of the adjacent plaza. Field screening indications of petroleum hydrocarbon-containing soil were detected in the final west sidewall of the excavation; however, access limitations prevented further excavation.

After completion of the excavation, three soil samples were collected from the limits of the excavation. Two soil samples, identified as LBP-EX1-W1 and LBP-EX1-S1, were collected from the west and south sidewalls respectively; one sample, identified as LBP-EX1-B1, was collected from the bottom of the excavation. Table 1 presents the sample analytical results that are summarized below.

- **LBP-EX1-W1**. Oil-range TPH and various PAHs were reported at concentrations greater than their respective MTCA Method A cleanup levels. Diesel-range TPH and various other PAHs were detected at concentrations greater than the laboratory reporting limits but less than their respective MTCA Method A cleanup levels.
- **LBP-EX1-S1**. TPH and PAHs were not detected at concentrations greater than the laboratory reporting limits.
- **LBP-EX1-B1**. TPH and PAHs were not detected at concentrations greater than the laboratory reporting limits.

Shoreline Stabilization

To minimize construction delays during the shoreline project and due to the pending plaza and waterfront improvements construction, the City decided to postpone further excavation of the petroleum hydrocarbon-containing soil from the west/upland side of the stair area and include the work in the next phase of the plaza redevelopment project. Pending further excavation, and to stabilize the shoreline area and minimize the potential for the remaining petroleum hydrocarbon-containing soil to affect the Lake Washington or park users, the excavation sidewalls were covered in plastic sheeting and the excavation was backfilled with clean, imported material.

GeoEngineers was present at the project site on August 22, 2023, to observe the excavation stabilization and backfilling. Prior to backfilling, the water that had collected in the excavation was removed using a vactor truck for appropriate off-site disposal, and the excavation sidewalls were covered with plastic sheeting. The excavation was subsequently backfilled and compacted. The excavated soil was loaded and hauled off-site for appropriate disposal. The soil and water removed from the project site was disposed of at PRS group in Tacoma, Washington. The disposal documentation is included in Appendix B.

SUMMARY

The petroleum hydrocarbon-containing soil and associated water encountered during the stair construction project was evaluated, managed, and disposed consistent with the applicable Ecology regulations, and the area was stabilized to minimize the potential for the remaining petroleum hydrocarbon-containing soil to affect Lake Washington or park users. The analytical results for soil from the west side of the excavation for stair construction and focused soil removal indicate that residual petroleum hydrocarbon-containing soil remains in the southern portion of the upland area at the Luther Burbank Park plaza. The petroleum hydrocarbon-containing soil appears to be related to the historical decommissioned USTs that remain in place beneath the plaza.

We understand that the City will be completing additional construction/redevelopment work in 2024 in the adjacent plaza area, including further investigation of soil and groundwater as part of construction planning, and will further evaluate and address the remaining petroleum hydrocarbon-containing soil, as warranted, consistent with applicable Ecology regulations to protect Lake Washington and park users.

REFERENCES

Washington State Department of Ecology, 2007. “Model Toxics Control Act Cleanup Regulation, Chapter 173-340 WAC” Washington State Department of Ecology Toxics Cleanup Program. Publication No. 94-06. Issued April 1990, Revised October 12, 2007.

Washington State Department of Ecology, 2021. “Concentrations of Gasoline and Diesel Range Organics Predicted to be Protective of Aquatic Receptors in Surface Waters Implementation Memorandum No. 23 dated August 25, 2021.

Washington State Department of Ecology, 2023. Cleanup Levels and Risk Calculation (CLARC) Tables. Updated August 2023. https://fortress.wa.gov/ecy/ezshare/tcp/CLARC/CLARC_Master.xlsx.

LIMITATIONS

We have prepared this report for the City of Mercer Island. The City may distribute copies of this report to their 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 the use of this report.

We appreciate the opportunity to assist the City of Mercer Island with this project. Please call if you have questions or require additional information.

Sincerely,
GeoEngineers, Inc.

for
James A. Kohn, GIT
Staff Environmental Scientist

Tim L. Syverson, LG, LHG
Associate

JAK:TLS:

Attachments:
Table 1. Chemical Analytical Data – Soil
Table 2. Chemical Analytical Data – Water
Figure 1. Site Plan
Appendix A – Laboratory Analytical Data
Appendix B - Soil and Water Disposal Documentation
Appendix C – Report Limitations and Guidelines for Use

Table 1

Chemical Analytical Data – Soil

Luther Burbank Park

Mercer Island, Washington

Sample Identification[1]	MTCA Cleanup Levels (Soil)[2]	LBP-SP1	LBP-STAIRS	LBP-EX1-W1	LBP-EX1-S1	LBP-EX1-B1
Sample Location		Stockpiled soil	Excavation sidewall	Excavation sidewall	Excavation sidewall	Excavation sidewall
Date Sampled		8/4/2023	8/4/2023	8/15/2023	8/15/2023	8/15/2023
Petroleum Hydrocarbons by NWTPH-Dx (mg/kg)						
Diesel-range hydrocarbons	2,000	54.5 U	53.5 U	414	56.7 U	56.1 U
Heavy oil-range hydrocarbons	2,000	**843**	**417**	**2,610**	**113 U**	**112 U**
Polyaromatic Hydrocarbons (PAHs) by EPA 8270 (mg/kg)						
Fluoranthene	3,200	**0.0288**	**0.0206 U**	**0.0985**	**22.5 U**	0.0220 U
Pyrene	2,400	**0.225**	**0.0412 U**	**0.889**	**45.1 U**	0.0441 U
Benzo[a]pyrene	0.10	**0.056**	**0.0309 U**	**0.173**	**33.8 U**	0.0331 U
Chrysene	NE	**0.126**	**0.0206 U**	**0.406**	**22.5 U**	0.0220 U

Notes:

[1] Sample locations are shown on Figure 1.

[2] Based on the MTCA Method A or B cleanup levels for soil.

EPA = United States Environmental Protection Agency

MTCA = Model Toxics Control Act

mg/kg = milligrams per kilogram

NWTPH-Dx = Northwest Total Petroleum Hydrocarbon - Diesel Extended

NE = Not Established

U = Not detected above the practical quantification limit.

Shading indicates that the identified concentration is greater than the MTCA cleanup level.

Bold font type indicates the analyte was detected at the reported concentration.

Table 2

Chemical Analytical Data – Water

Luther Burbank Park

Mercer Island, Washington

Sample Identification[1]	MTCA Cleanup Levels (Water)[2]	LBP-W1
Sample Location		Accumulated water
Date Sampled		8/4/2023
Petroleum Hydrocarbons by NWTPH-Dx (µg/L)		
Diesel-range hydrocarbons	150/3000[3]	**1,010**
Heavy oil-range hydrocarbons	NE	94.5 U

Notes:

[1] Sample LBP-W1 was collected from water accumulated in the bottom of the excavation (area outlined in red on Figure 1).

[2] Based on the MTCA Method B cleanup levels for surface water. Ecology - *Concentrations of Gasoline and Diesel Range Organics Predicted to be Protective of Aquatic Receptors in Surface Waters Implementation Memorandum No.* 23, August 25, 2021.

[3] The cleanup level is 150 µg/L for "unweathered" diesel-range organics and 3,000 µg/L for "weathered" diesel-range organics.

MTCA = Model Toxics Control Act

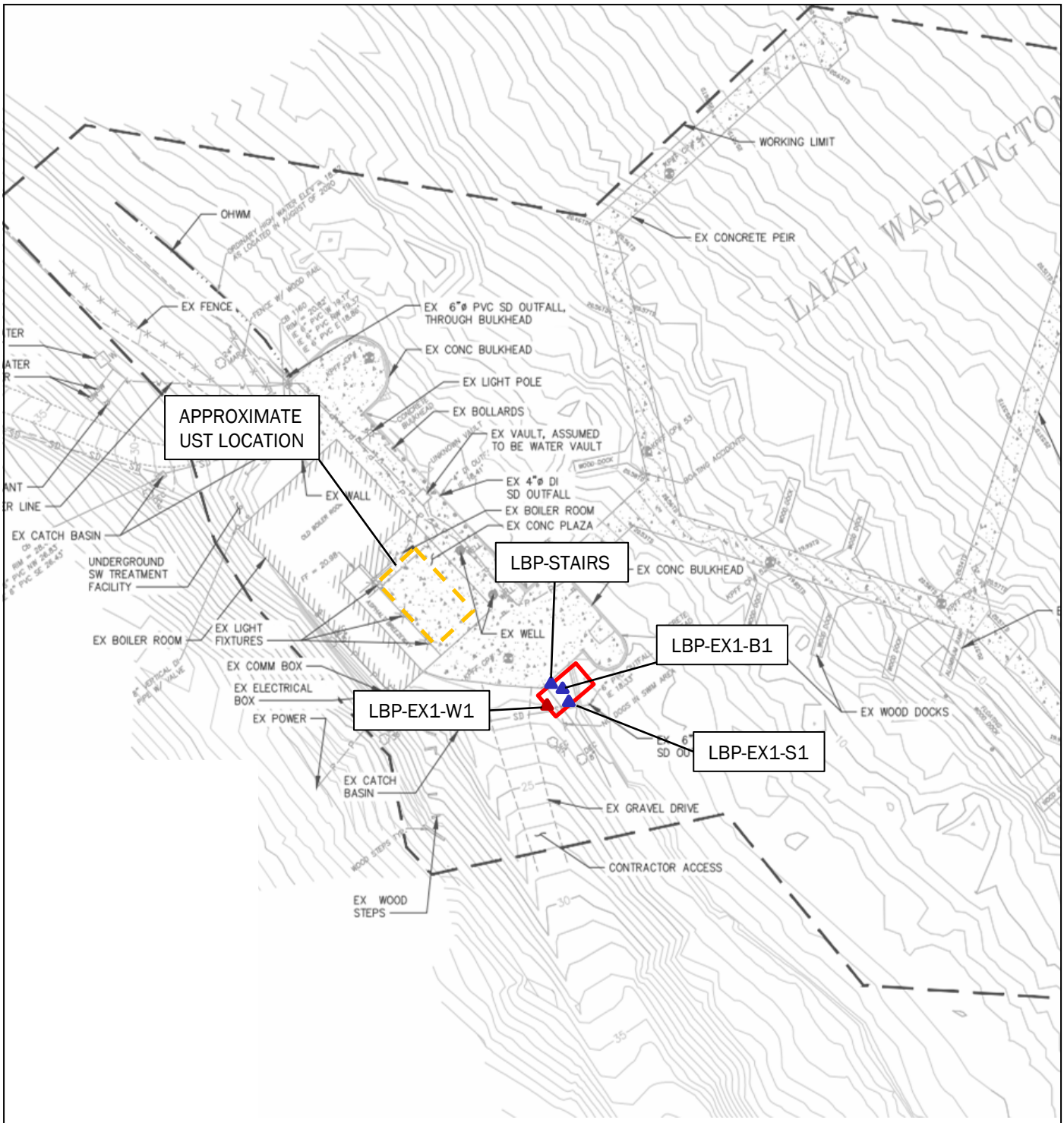
µg/L = microgram per liter

NE = Not Established

U = Not detected above the practical quantification limit.

Shading indicates that the identified concentration is greater than the MTCA cleanup level.

Bold font type indicates the analyte was detected at the reported concentration.



Not to Scale

Notes:

1. The locations of all features shown are approximate.
2. This Drawing originates from the KPFF 60% Design sheet dated October 2022.
3. 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.

Site Plan

Luther Burbank Park
Mercer Island, Washington

GeoEngineers

Figure 1

APPENDIX A
Laboratory Analytical Data

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

GeoEngineers
Tim Syverson
2101 4th Ave, Suite 950
Seattle, WA 98121

RE: Luther Burbank Park
Work Order Number: 2308072

August 07, 2023

Attention Tim Syverson:

Fremont Analytical, Inc. received 3 sample(s) on 8/4/2023 for the analyses presented in the following report.

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)
Sample Moisture (Percent Moisture)

This report consists of the following:

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

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

Thank you for using Fremont Analytical.

Sincerely,

Brianna Barnes
Project Manager

Date: *08/07/2023*

CLIENT: GeoEngineers
Project: Luther Burbank Park
Work Order: 2308072

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2308072-001	LBP-SP1	08/04/2023 12:50 PM	08/04/2023 3:00 PM
2308072-002	LBP-STAIRS	08/04/2023 1:00 PM	08/04/2023 3:00 PM
2308072-003	LBP-W1	08/04/2023 1:20 PM	08/04/2023 3:00 PM

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

Case Narrative

WO#: **2308072**
Date: **8/7/2023**

CLIENT: GeoEngineers
Project: Luther Burbank Park

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

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

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

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

Qualifiers:

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

Acronyms:

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

Analytical Report

Work Order: **2308072**
Date Reported: **8/7/2023**

Client: GeoEngineers
Collection Date: 8/4/2023 12:50:00 PM
Project: Luther Burbank Park
Lab ID: 2308072-001
Matrix: Soil
Client Sample ID: **LBP-SP1**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 41112		Analyst: SK
Diesel Range Organics	ND	54.5		mg/Kg-dry	1	8/7/2023 2:07:29 PM
Heavy Oil	843	109		mg/Kg-dry	1	8/7/2023 2:07:29 PM
Total Petroleum Hydrocarbons	843	164		mg/Kg-dry	1	8/7/2023 2:07:29 PM
Surr: 2-Fluorobiphenyl	94.8	50 - 150		%Rec	1	8/7/2023 2:07:29 PM
Surr: o-Terphenyl	97.1	50 - 150		%Rec	1	8/7/2023 2:07:29 PM
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 41111		Analyst: SH
Naphthalene	ND	22.9		µg/Kg-dry	1	8/7/2023 11:56:34 AM
2-Methylnaphthalene	ND	22.9		µg/Kg-dry	1	8/7/2023 11:56:34 AM
1-Methylnaphthalene	ND	22.9		µg/Kg-dry	1	8/7/2023 11:56:34 AM
Acenaphthylene	ND	22.9		µg/Kg-dry	1	8/7/2023 11:56:34 AM
Acenaphthene	ND	22.9		µg/Kg-dry	1	8/7/2023 11:56:34 AM
Fluorene	ND	22.9		µg/Kg-dry	1	8/7/2023 11:56:34 AM
Phenanthrene	ND	22.9		µg/Kg-dry	1	8/7/2023 11:56:34 AM
Anthracene	ND	22.9		µg/Kg-dry	1	8/7/2023 11:56:34 AM
Fluoranthene	28.8	22.9		µg/Kg-dry	1	8/7/2023 11:56:34 AM
Pyrene	225	45.8		µg/Kg-dry	1	8/7/2023 11:56:34 AM
Benz(a)anthracene	ND	22.9		µg/Kg-dry	1	8/7/2023 11:56:34 AM
Chrysene	126	22.9		µg/Kg-dry	1	8/7/2023 11:56:34 AM
Benzo(b)fluoranthene	ND	28.6		µg/Kg-dry	1	8/7/2023 11:56:34 AM
Benzo(k)fluoranthene	ND	28.6		µg/Kg-dry	1	8/7/2023 11:56:34 AM
Benzo(a)pyrene	56.0	34.3		µg/Kg-dry	1	8/7/2023 11:56:34 AM
Indeno(1,2,3-cd)pyrene	ND	45.8		µg/Kg-dry	1	8/7/2023 11:56:34 AM
Dibenz(a,h)anthracene	ND	57.2		µg/Kg-dry	1	8/7/2023 11:56:34 AM
Benzo(g,h,i)perylene	ND	57.2		µg/Kg-dry	1	8/7/2023 11:56:34 AM
Surr: 2-Fluorobiphenyl	79.2	22.2 - 146		%Rec	1	8/7/2023 11:56:34 AM
Surr: Terphenyl-d14 (surr)	101	20.2 - 159		%Rec	1	8/7/2023 11:56:34 AM
Sample Moisture (Percent Moisture)				Batch ID: R85728		Analyst: MP
Percent Moisture	14.4	0.500		wt%	1	8/7/2023 8:58:36 AM

Analytical Report

Work Order: **2308072**
Date Reported: **8/7/2023**

Client: GeoEngineers
Collection Date: 8/4/2023 1:00:00 PM
Project: Luther Burbank Park
Lab ID: 2308072-002
Matrix: Soil
Client Sample ID: **LBP-STAIRS**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 41112		Analyst: SK
Diesel Range Organics	ND	53.5		mg/Kg-dry	1	8/7/2023 12:50:22 PM
Heavy Oil	417	107		mg/Kg-dry	1	8/7/2023 12:50:22 PM
Total Petroleum Hydrocarbons	417	160		mg/Kg-dry	1	8/7/2023 12:50:22 PM
Surr: 2-Fluorobiphenyl	105	50 - 150		%Rec	1	8/7/2023 12:50:22 PM
Surr: o-Terphenyl	106	50 - 150		%Rec	1	8/7/2023 12:50:22 PM
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 41111		Analyst: SH
Naphthalene	ND	20.6		µg/Kg-dry	1	8/7/2023 1:40:46 PM
2-Methylnaphthalene	ND	20.6		µg/Kg-dry	1	8/7/2023 1:40:46 PM
1-Methylnaphthalene	ND	20.6		µg/Kg-dry	1	8/7/2023 1:40:46 PM
Acenaphthylene	ND	20.6		µg/Kg-dry	1	8/7/2023 1:40:46 PM
Acenaphthene	ND	20.6		µg/Kg-dry	1	8/7/2023 1:40:46 PM
Fluorene	ND	20.6		µg/Kg-dry	1	8/7/2023 1:40:46 PM
Phenanthrene	ND	20.6		µg/Kg-dry	1	8/7/2023 1:40:46 PM
Anthracene	ND	20.6		µg/Kg-dry	1	8/7/2023 1:40:46 PM
Fluoranthene	ND	20.6		µg/Kg-dry	1	8/7/2023 1:40:46 PM
Pyrene	ND	41.2		µg/Kg-dry	1	8/7/2023 1:40:46 PM
Benz(a)anthracene	ND	20.6		µg/Kg-dry	1	8/7/2023 1:40:46 PM
Chrysene	ND	20.6		µg/Kg-dry	1	8/7/2023 1:40:46 PM
Benzo(b)fluoranthene	ND	25.7		µg/Kg-dry	1	8/7/2023 1:40:46 PM
Benzo(k)fluoranthene	ND	25.7		µg/Kg-dry	1	8/7/2023 1:40:46 PM
Benzo(a)pyrene	ND	30.9		µg/Kg-dry	1	8/7/2023 1:40:46 PM
Indeno(1,2,3-cd)pyrene	ND	41.2		µg/Kg-dry	1	8/7/2023 1:40:46 PM
Dibenz(a,h)anthracene	ND	51.5		µg/Kg-dry	1	8/7/2023 1:40:46 PM
Benzo(g,h,i)perylene	ND	51.5		µg/Kg-dry	1	8/7/2023 1:40:46 PM
Surr: 2-Fluorobiphenyl	75.4	22.2 - 146		%Rec	1	8/7/2023 1:40:46 PM
Surr: Terphenyl-d14 (surr)	90.8	20.2 - 159		%Rec	1	8/7/2023 1:40:46 PM
Sample Moisture (Percent Moisture)				Batch ID: R85728		Analyst: MP
Percent Moisture	10.6	0.500		wt%	1	8/7/2023 8:58:36 AM

Analytical Report

Work Order: **2308072**
Date Reported: **8/7/2023**

Client: GeoEngineers
Collection Date: 8/4/2023 1:20:00 PM
Project: Luther Burbank Park
Lab ID: 2308072-003
Matrix: Water
Client Sample ID: **LBP-W1**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 41105		Analyst: SK
Diesel Range Organics	1,010	94.5		µg/L	1	8/7/2023 1:12:44 PM
Heavy Oil	ND	94.5		µg/L	1	8/7/2023 1:12:44 PM
Total Petroleum Hydrocarbons	1,010	189		µg/L	1	8/7/2023 1:12:44 PM
Surr: 2-Fluorobiphenyl	78.2	50 - 150		%Rec	1	8/7/2023 1:12:44 PM
Surr: o-Terphenyl	50.6	50 - 150		%Rec	1	8/7/2023 1:12:44 PM

NOTES:
Chromatographic pattern indicates an unresolved complex mixture, which may be weathered and/or organic material

Work Order: 2308072
CLIENT: GeoEngineers
Project: Luther Burbank Park

QC SUMMARY REPORT

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

Sample ID: **MB-41112**	SampType: **MBLK**	Units: **mg/Kg**	Prep Date: **8/7/2023**	RunNo: **85744**
Client ID: **MBLKS**	Batch ID: **41112**		Analysis Date: **8/7/2023**	SeqNo: **1789143**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel Range Organics	ND	50.0									
Heavy Oil	ND	100									
Total Petroleum Hydrocarbons	ND	150									
Surr: 2-Fluorobiphenyl	10.5		10.00		105	50	150				
Surr: o-Terphenyl	10.7		10.00		107	50	150				

Sample ID: **LCS-41112**	SampType: **LCS**	Units: **mg/Kg**	Prep Date: **8/7/2023**	RunNo: **85744**
Client ID: **LCSS**	Batch ID: **41112**		Analysis Date: **8/7/2023**	SeqNo: **1789144**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	500	150	500.0	0	99.9	76.8	124				
Surr: 2-Fluorobiphenyl	10.5		10.00		105	50	150				
Surr: o-Terphenyl	12.2		10.00		122	50	150				

Sample ID: **2308072-002AMS**	SampType: **MS**	Units: **mg/Kg-dry**	Prep Date: **8/7/2023**	RunNo: **85744**
Client ID: **LBP-STAIRS**	Batch ID: **41112**		Analysis Date: **8/7/2023**	SeqNo: **1789387**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	761	160	532.7	416.8	64.6	21.8	165				
Surr: 2-Fluorobiphenyl	11.1		10.65		104	50	150				
Surr: o-Terphenyl	14.3		10.65		134	50	150				

Sample ID: **2308072-002AMSD**	SampType: **MSD**	Units: **mg/Kg-dry**	Prep Date: **8/7/2023**	RunNo: **85744**
Client ID: **LBP-STAIRS**	Batch ID: **41112**		Analysis Date: **8/7/2023**	SeqNo: **1789388**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	743	160	534.2	416.8	61.0	21.8	165	760.9	2.42	30	
Surr: 2-Fluorobiphenyl	11.2		10.68		105	50	150		0		
Surr: o-Terphenyl	12.5		10.68		117	50	150		0		

Work Order: 2308072
CLIENT: GeoEngineers
Project: Luther Burbank Park

QC SUMMARY REPORT

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

Sample ID: **MB-41105**	SampType: **MBLK**	Units: **µg/L**	Prep Date: **8/4/2023**	RunNo: **85748**
Client ID: **MBLKW**	Batch ID: **41105**		Analysis Date: **8/7/2023**	SeqNo: **1789268**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel Range Organics	ND	94.2									
Heavy Oil	ND	94.2									
Total Petroleum Hydrocarbons	ND	188									
Surr: 2-Fluorobiphenyl	15.5		23.55		65.7	50	150				
Surr: o-Terphenyl	17.3		23.55		73.5	50	150				

Sample ID: **LCS-41105**	SampType: **LCS**	Units: **µg/L**	Prep Date: **8/4/2023**	RunNo: **85748**
Client ID: **LCSW**	Batch ID: **41105**		Analysis Date: **8/7/2023**	SeqNo: **1789269**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	1,060	189	1,178	0	89.6	48	113				
Surr: 2-Fluorobiphenyl	21.9		23.57		93.1	50	150				
Surr: o-Terphenyl	25.7		23.57		109	50	150				

Sample ID: **LCSD-41105**	SampType: **LCSD**	Units: **µg/L**	Prep Date: **8/4/2023**	RunNo: **85748**
Client ID: **LCSW02**	Batch ID: **41105**		Analysis Date: **8/7/2023**	SeqNo: **1789270**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	886	188	1,177	0	75.2	48	113	1,056	17.6	30	
Surr: 2-Fluorobiphenyl	18.1		23.54		76.8	50	150		0		
Surr: o-Terphenyl	22.6		23.54		96.2	50	150		0		

Work Order: 2308072
CLIENT: GeoEngineers
Project: Luther Burbank Park

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **MB-41111**	SampType: **MBLK**	Units: **µg/Kg**	Prep Date: **8/7/2023**	RunNo: **85747**	
Client ID: **MBLKS**	Batch ID: **41111**		Analysis Date: **8/7/2023**	SeqNo: **1789193**	

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	ND	20.0									
2-Methylnaphthalene	ND	20.0									
1-Methylnaphthalene	ND	20.0									
Acenaphthylene	ND	20.0									
Acenaphthene	ND	20.0									
Fluorene	ND	20.0									
Phenanthrene	ND	20.0									
Anthracene	ND	20.0									
Fluoranthene	ND	20.0									
Pyrene	ND	40.0									
Benz(a)anthracene	ND	20.0									
Chrysene	ND	20.0									
Benzo(b)fluoranthene	ND	25.0									
Benzo(k)fluoranthene	ND	25.0									
Benzo(a)pyrene	ND	30.0									
Indeno(1,2,3-cd)pyrene	ND	40.0									
Dibenz(a,h)anthracene	ND	50.0									
Benzo(g,h,i)perylene	ND	50.0									
Surr: 2-Fluorobiphenyl	830		1,000		83.0	22.2	146				
Surr: Terphenyl-d14 (surr)	926		1,000		92.6	20.2	159				

Sample ID: **LCS-41111**	SampType: **LCS**	Units: **µg/Kg**	Prep Date: **8/7/2023**	RunNo: **85747**	
Client ID: **LCSS**	Batch ID: **41111**		Analysis Date: **8/7/2023**	SeqNo: **1789194**	

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	1,820	20.0	2,000	0	91.2	59.3	114				
2-Methylnaphthalene	1,750	20.0	2,000	0	87.5	55.5	115				
1-Methylnaphthalene	1,770	20.0	2,000	0	88.4	57.2	116				
Acenaphthylene	1,820	20.0	2,000	0	90.9	58.2	120				
Acenaphthene	1,830	20.0	2,000	0	91.6	56.6	114				
Fluorene	1,770	20.0	2,000	0	88.5	57.7	117				

Work Order: 2308072
CLIENT: GeoEngineers
Project: Luther Burbank Park

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **LCS-41111** SampType: **LCS** Units: **µg/Kg** Prep Date: **8/7/2023** RunNo: **85747**
Client ID: **LCSS** Batch ID: **41111** Analysis Date: **8/7/2023** SeqNo: **1789194**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phenanthrene	1,760	20.0	2,000	0	88.0	53.2	118				
Anthracene	1,800	20.0	2,000	0	89.9	54.7	118				
Fluoranthene	1,930	20.0	2,000	0	96.4	56	120				
Pyrene	1,870	40.0	2,000	0	93.5	56.9	120				
Benz(a)anthracene	1,850	20.0	2,000	0	92.4	59.5	123				
Chrysene	1,880	20.0	2,000	0	94.1	51.5	115				
Benzo(b)fluoranthene	1,810	25.0	2,000	0	90.7	50	122				
Benzo(k)fluoranthene	1,830	25.0	2,000	0	91.6	51	117				
Benzo(a)pyrene	2,030	30.0	2,000	0	101	53.2	123				
Indeno(1,2,3-cd)pyrene	1,770	40.0	2,000	0	88.3	49.5	122				
Dibenz(a,h)anthracene	1,770	50.0	2,000	0	88.6	51	120				
Benzo(g,h,i)perylene	1,770	50.0	2,000	0	88.3	46.8	122				
Surr: 2-Fluorobiphenyl	942		1,000		94.2	22.2	146				
Surr: Terphenyl-d14 (surr)	1,020		1,000		102	20.2	159				

Sample ID: **2308072-001AMS** SampType: **MS** Units: **µg/Kg-dry** Prep Date: **8/7/2023** RunNo: **85747**
Client ID: **LBP-SP1** Batch ID: **41111** Analysis Date: **8/7/2023** SeqNo: **1789196**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	2,060	22.9	2,285	0	90.1	48.9	121				
2-Methylnaphthalene	2,000	22.9	2,285	7.930	87.2	45.9	118				
1-Methylnaphthalene	2,020	22.9	2,285	10.60	87.7	48.5	121				
Acenaphthylene	2,100	22.9	2,285	0	92.0	49.2	126				
Acenaphthene	2,080	22.9	2,285	0	91.2	46	122				
Fluorene	2,020	22.9	2,285	0	88.5	49	123				
Phenanthrene	1,980	22.9	2,285	0	86.5	40.5	126				
Anthracene	2,020	22.9	2,285	0	88.5	46.3	124				
Fluoranthene	2,280	22.9	2,285	28.76	98.6	49.1	129				
Pyrene	2,310	45.7	2,285	225.4	91.1	48.8	130				
Benz(a)anthracene	2,360	22.9	2,285	0	103	53.9	130				
Chrysene	2,060	22.9	2,285	125.5	84.7	41.2	126				

Work Order: 2308072
CLIENT: GeoEngineers
Project: Luther Burbank Park

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **2308072-001AMS** SampType: **MS** Units: **µg/Kg-dry** Prep Date: **8/7/2023** RunNo: **85747**
Client ID: **LBP-SP1** Batch ID: **41111** Analysis Date: **8/7/2023** SeqNo: **1789196**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzo(b)fluoranthene	2,200	28.6	2,285	0	96.4	37.2	132				
Benzo(k)fluoranthene	2,010	28.6	2,285	0	87.8	32.8	131				
Benzo(a)pyrene	2,380	34.3	2,285	55.99	102	28.8	145				
Indeno(1,2,3-cd)pyrene	2,100	45.7	2,285	0	91.9	3.36	151				
Dibenz(a,h)anthracene	2,080	57.1	2,285	0	90.9	6.99	152				
Benzo(g,h,i)perylene	2,010	57.1	2,285	34.23	86.3	5.86	143				
Surr: 2-Fluorobiphenyl	1,020		1,143		89.4	22.2	146				
Surr: Terphenyl-d14 (surr)	1,110		1,143		96.9	20.2	159				

Sample ID: **2308072-001AMSD** SampType: **MSD** Units: **µg/Kg-dry** Prep Date: **8/7/2023** RunNo: **85747**
Client ID: **LBP-SP1** Batch ID: **41111** Analysis Date: **8/7/2023** SeqNo: **1789197**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	1,990	22.9	2,287	0	87.1	48.9	121	2,058	3.28	30	
2-Methylnaphthalene	1,940	22.9	2,287	7.930	84.3	45.9	118	2,001	3.27	30	
1-Methylnaphthalene	1,960	22.9	2,287	10.60	85.1	48.5	121	2,016	2.96	30	
Acenaphthylene	2,030	22.9	2,287	0	88.5	49.2	126	2,102	3.70	30	
Acenaphthene	2,020	22.9	2,287	0	88.1	46	122	2,084	3.32	30	
Fluorene	1,940	22.9	2,287	0	85.0	49	123	2,022	3.95	30	
Phenanthrene	1,920	22.9	2,287	0	84.0	40.5	126	1,976	2.77	30	
Anthracene	1,960	22.9	2,287	0	85.6	46.3	124	2,023	3.25	30	
Fluoranthene	2,190	22.9	2,287	28.76	94.5	49.1	129	2,282	4.09	30	
Pyrene	2,170	45.7	2,287	225.4	84.9	48.8	130	2,307	6.26	30	
Benz(a)anthracene	2,260	22.9	2,287	0	98.7	53.9	130	2,357	4.27	30	
Chrysene	1,990	22.9	2,287	125.5	81.7	41.2	126	2,061	3.32	30	
Benzo(b)fluoranthene	2,120	28.6	2,287	0	92.7	37.2	132	2,203	3.79	30	
Benzo(k)fluoranthene	1,960	28.6	2,287	0	85.9	32.8	131	2,007	2.15	30	
Benzo(a)pyrene	2,300	34.3	2,287	55.99	98.0	28.8	145	2,382	3.61	30	
Indeno(1,2,3-cd)pyrene	1,990	45.7	2,287	0	86.9	3.36	151	2,099	5.40	30	
Dibenz(a,h)anthracene	1,980	57.2	2,287	0	86.4	6.99	152	2,077	5.01	30	
Benzo(g,h,i)perylene	1,860	57.2	2,287	34.23	80.0	5.86	143	2,007	7.33	30	

Work Order: 2308072
CLIENT: GeoEngineers
Project: Luther Burbank Park

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **2308072-001AMSD** SampType: **MSD** Units: **µg/Kg-dry** Prep Date: **8/7/2023** RunNo: **85747**
Client ID: **LBP-SP1** Batch ID: **41111** Analysis Date: **8/7/2023** SeqNo: **1789197**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: 2-Fluorobiphenyl	1,030		1,144		89.9	22.2	146		0		
Surr: Terphenyl-d14 (surr)	1,120		1,144		97.6	20.2	159		0		

Fremont Analytical
An Alliance Technical Group Company

Sample Log-In Check List

Client Name:	GEI	Work Order Number:	2308072
Logged by:	Morgan Wilson	Date Received:	8/4/2023 3:00:00 PM

Chain of Custody

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

Log In

3.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes ☐	No ☐	Not Present ☑
4.	Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5.	Were all items received at a temperature of >2°C to 6°C *	Yes ☑	No ☐	NA ☐
6.	Sample(s) in proper container(s)?	Yes ☑	No ☐	
7.	Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8.	Are samples properly preserved?	Yes ☑	No ☐	
9.	Was preservative added to bottles?	Yes ☑	No ☐	NA ☐ HCL
10.	Is there headspace in the VOA vials?	Yes ☐	No ☐	NA ☑
11.	Did all samples containers arrive in good condition(unbroken)?	Yes ☑	No ☐	
12.	Does paperwork match bottle labels?	Yes ☑	No ☐	
13.	Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14.	Is it clear what analyses were requested?	Yes ☑	No ☐	
15.	Were all holding times able to be met?	Yes ☑	No ☐	

Special Handling (if applicable)

16.	Was client notified of all discrepancies with this order?	Yes ☐	No ☐	NA ☑

Person Notified: _____ Date: _____

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

Regarding: _____

Client Instructions: _____

17. Additional remarks:

Item Information

Item #	Temp °C
Sample	2.1

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

Fremont Analytical
An Alliance Technical Group Company
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790

Chain of Custody Record & Laboratory Services Agreement

Date: 8/4/23 | Page: 1 of: 1 | Laboratory Project No (internal): 2309072

Special Remarks:

Client: GEOENGINEERS
Address: 2601 4TH AE
City, State, Zip: SEATTLE, WA 98121
Telephone:
Email(s): TSIVERSON@GEOENGINEERS.COM

Project Name: LUTHER BURBANK PARK
Project No: TBD
Collected by: JAK
Location:
Report To (PM): TIM SIVERSON

Disposal: Samples will be disposed in 30 days unless otherwise requested.
☐ Retain volume (specify above) ☐ Return to client

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	# of Cont.	VOCs (EPA 8260 / 624)	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SVOCs (EPA 8270 / 625)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082 / 608)	Metals** (EPA 6020 / 200.8)	Total (T) | Dissolved (D)	Anions (IC)***	EDB (8011)	Comments
1 LBP-SP1	8/4/23	1250	S	1				X		X							
2 LBP-STAIRS	↓	1300	S	1				X		X							
3 LBP-W1	↓	1320	W	1				X									TURBID - POSSIBLE PAH FOLLOW-UP
4																	
5																	
6																	
7																	
8																	
9																	
10																	

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

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

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

Turn-around Time:
☐ Standard ☑ Next Day
☐ 3 Day ☐ Same Day
☐ 2 Day (specify)

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above, that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished (Signature)	Print Name	Date/Time	Received (Signature)	Print Name	Date/Time
x	JAMES KOHN	8/4/23 1500	x	NAK RICS	8/4/23 15:00
Relinquished (Signature)	Print Name	Date/Time	Received (Signature)	Print Name	Date/Time
x			x		

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

GeoEngineers
Tim Syverson
2101 4th Ave, Suite 950
Seattle, WA 98121

RE: LBP
Work Order Number: 2308204

August 16, 2023

Attention Tim Syverson:

Fremont Analytical, Inc. received 3 sample(s) on 8/15/2023 for the analyses presented in the following report.

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)
Sample Moisture (Percent Moisture)

This report consists of the following:

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

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

Thank you for using Fremont Analytical.

Sincerely,

Brianna Barnes
Project Manager

Date: *08/16/2023*

CLIENT: GeoEngineers
Project: LBP
Work Order: 2308204

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2308204-001	LBP-EX1-S1	08/15/2023 9:50 AM	08/15/2023 11:25 AM
2308204-002	LBP-EX1-W1	08/15/2023 9:55 AM	08/15/2023 11:25 AM
2308204-003	LBP-EX1-B1	08/15/2023 10:15 AM	08/15/2023 11:25 AM

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

Case Narrative

WO#: **2308204**
Date: **8/16/2023**

CLIENT: GeoEngineers
Project: LBP

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

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

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

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

Qualifiers:

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

Acronyms:

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

Analytical Report

Work Order: **2308204**
Date Reported: **8/16/2023**

Client: GeoEngineers
Collection Date: 8/15/2023 9:50:00 AM
Project: LBP
Lab ID: 2308204-001
Matrix: Soil
Client Sample ID: **LBP-EX1-S1**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 41198		Analyst: AP
Diesel Range Organics	ND	56.7		mg/Kg-dry	1	8/15/2023 4:00:30 PM
Heavy Oil	ND	113		mg/Kg-dry	1	8/15/2023 4:00:30 PM
Total Petroleum Hydrocarbons	ND	170		mg/Kg-dry	1	8/15/2023 4:00:30 PM
Surr: 2-Fluorobiphenyl	139	50 - 150		%Rec	1	8/15/2023 4:00:30 PM
Surr: o-Terphenyl	137	50 - 150		%Rec	1	8/15/2023 4:00:30 PM
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 41211		Analyst: SH
Naphthalene	ND	22.5		µg/Kg-dry	1	8/16/2023 7:31:22 AM
2-Methylnaphthalene	ND	22.5		µg/Kg-dry	1	8/16/2023 7:31:22 AM
1-Methylnaphthalene	ND	22.5		µg/Kg-dry	1	8/16/2023 7:31:22 AM
Acenaphthylene	ND	22.5		µg/Kg-dry	1	8/16/2023 7:31:22 AM
Acenaphthene	ND	22.5		µg/Kg-dry	1	8/16/2023 7:31:22 AM
Fluorene	ND	22.5		µg/Kg-dry	1	8/16/2023 7:31:22 AM
Phenanthrene	ND	22.5		µg/Kg-dry	1	8/16/2023 7:31:22 AM
Anthracene	ND	22.5		µg/Kg-dry	1	8/16/2023 7:31:22 AM
Fluoranthene	ND	22.5		µg/Kg-dry	1	8/16/2023 7:31:22 AM
Pyrene	ND	45.1		µg/Kg-dry	1	8/16/2023 7:31:22 AM
Benz(a)anthracene	ND	22.5		µg/Kg-dry	1	8/16/2023 7:31:22 AM
Chrysene	ND	22.5		µg/Kg-dry	1	8/16/2023 7:31:22 AM
Benzo(b)fluoranthene	ND	28.2		µg/Kg-dry	1	8/16/2023 7:31:22 AM
Benzo(k)fluoranthene	ND	28.2		µg/Kg-dry	1	8/16/2023 7:31:22 AM
Benzo(a)pyrene	ND	33.8		µg/Kg-dry	1	8/16/2023 7:31:22 AM
Indeno(1,2,3-cd)pyrene	ND	45.1		µg/Kg-dry	1	8/16/2023 7:31:22 AM
Dibenz(a,h)anthracene	ND	56.3		µg/Kg-dry	1	8/16/2023 7:31:22 AM
Benzo(g,h,i)perylene	ND	56.3		µg/Kg-dry	1	8/16/2023 7:31:22 AM
Surr: 2-Fluorobiphenyl	90.5	22.2 - 146		%Rec	1	8/16/2023 7:31:22 AM
Surr: Terphenyl-d14 (surr)	92.9	20.2 - 159		%Rec	1	8/16/2023 7:31:22 AM
Sample Moisture (Percent Moisture)				Batch ID: R85922		Analyst: ALB
Percent Moisture	14.7	0.500		wt%	1	8/15/2023 1:31:00 PM

Analytical Report

Work Order: **2308204**
Date Reported: **8/16/2023**

Client: GeoEngineers
Collection Date: 8/15/2023 9:55:00 AM
Project: LBP
Lab ID: 2308204-002
Matrix: Soil
Client Sample ID: **LBP-EX1-W1**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 41198		Analyst: AP
Diesel Range Organics	414	62.3		mg/Kg-dry	1	8/15/2023 4:44:11 PM
Heavy Oil	2,610	125		mg/Kg-dry	1	8/15/2023 4:44:11 PM
Total Petroleum Hydrocarbons	3,020	187		mg/Kg-dry	1	8/15/2023 4:44:11 PM
Surr: 2-Fluorobiphenyl	179	50 - 150	S	%Rec	1	8/15/2023 4:44:11 PM
Surr: o-Terphenyl	197	50 - 150	S	%Rec	1	8/15/2023 4:44:11 PM

NOTES:
S - Outlying surrogate recovery attributed to TPH interference.
Chromatographic pattern indicates a continuous distribution of material in the diesel and oil ranges. Material is not identified as a specific petroleum product and is divided into diesel and oil by carbon range

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 41211		Analyst: SH
Naphthalene	ND	24.9		µg/Kg-dry	1	8/16/2023 11:06:49 AM
2-Methylnaphthalene	ND	24.9		µg/Kg-dry	1	8/16/2023 11:06:49 AM
1-Methylnaphthalene	ND	24.9		µg/Kg-dry	1	8/16/2023 11:06:49 AM
Acenaphthylene	ND	24.9		µg/Kg-dry	1	8/16/2023 11:06:49 AM
Acenaphthene	ND	24.9		µg/Kg-dry	1	8/16/2023 11:06:49 AM
Fluorene	ND	24.9		µg/Kg-dry	1	8/16/2023 11:06:49 AM
Phenanthrene	ND	24.9		µg/Kg-dry	1	8/16/2023 11:06:49 AM
Anthracene	ND	24.9		µg/Kg-dry	1	8/16/2023 11:06:49 AM
Fluoranthene	98.5	24.9		µg/Kg-dry	1	8/16/2023 11:06:49 AM
Pyrene	889	49.8		µg/Kg-dry	1	8/16/2023 11:06:49 AM
Benz(a)anthracene	ND	24.9		µg/Kg-dry	1	8/16/2023 11:06:49 AM
Chrysene	406	24.9		µg/Kg-dry	1	8/16/2023 11:06:49 AM
Benzo(b)fluoranthene	ND	31.1		µg/Kg-dry	1	8/16/2023 11:06:49 AM
Benzo(k)fluoranthene	ND	31.1		µg/Kg-dry	1	8/16/2023 11:06:49 AM
Benzo(a)pyrene	173	37.4		µg/Kg-dry	1	8/16/2023 11:06:49 AM
Indeno(1,2,3-cd)pyrene	ND	49.8		µg/Kg-dry	1	8/16/2023 11:06:49 AM
Dibenz(a,h)anthracene	ND	62.3		µg/Kg-dry	1	8/16/2023 11:06:49 AM
Benzo(g,h,i)perylene	64.1	62.3		µg/Kg-dry	1	8/16/2023 11:06:49 AM
Surr: 2-Fluorobiphenyl	95.4	22.2 - 146		%Rec	1	8/16/2023 11:06:49 AM
Surr: Terphenyl-d14 (surr)	104	20.2 - 159		%Rec	1	8/16/2023 11:06:49 AM
Sample Moisture (Percent Moisture)				Batch ID: R85922		Analyst: ALB
Percent Moisture	22.5	0.500		wt%	1	8/15/2023 1:31:00 PM

Analytical Report

Work Order: **2308204**
Date Reported: **8/16/2023**

Client: GeoEngineers
Collection Date: 8/15/2023 10:15:00 AM
Project: LBP
Lab ID: 2308204-003
Matrix: Soil
Client Sample ID: **LBP-EX1-B1**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 41198		Analyst: AP
Diesel Range Organics	ND	56.1		mg/Kg-dry	1	8/15/2023 4:22:25 PM
Heavy Oil	ND	112		mg/Kg-dry	1	8/15/2023 4:22:25 PM
Total Petroleum Hydrocarbons	ND	168		mg/Kg-dry	1	8/15/2023 4:22:25 PM
Surr: 2-Fluorobiphenyl	130	50 - 150		%Rec	1	8/15/2023 4:22:25 PM
Surr: o-Terphenyl	129	50 - 150		%Rec	1	8/15/2023 4:22:25 PM
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)				Batch ID: 41211		Analyst: SH
Naphthalene	ND	22.0		µg/Kg-dry	1	8/16/2023 8:56:09 AM
2-Methylnaphthalene	ND	22.0		µg/Kg-dry	1	8/16/2023 8:56:09 AM
1-Methylnaphthalene	ND	22.0		µg/Kg-dry	1	8/16/2023 8:56:09 AM
Acenaphthylene	ND	22.0		µg/Kg-dry	1	8/16/2023 8:56:09 AM
Acenaphthene	ND	22.0		µg/Kg-dry	1	8/16/2023 8:56:09 AM
Fluorene	ND	22.0		µg/Kg-dry	1	8/16/2023 8:56:09 AM
Phenanthrene	ND	22.0		µg/Kg-dry	1	8/16/2023 8:56:09 AM
Anthracene	ND	22.0		µg/Kg-dry	1	8/16/2023 8:56:09 AM
Fluoranthene	ND	22.0		µg/Kg-dry	1	8/16/2023 8:56:09 AM
Pyrene	ND	44.1		µg/Kg-dry	1	8/16/2023 8:56:09 AM
Benz(a)anthracene	ND	22.0		µg/Kg-dry	1	8/16/2023 8:56:09 AM
Chrysene	ND	22.0		µg/Kg-dry	1	8/16/2023 8:56:09 AM
Benzo(b)fluoranthene	ND	27.5		µg/Kg-dry	1	8/16/2023 8:56:09 AM
Benzo(k)fluoranthene	ND	27.5		µg/Kg-dry	1	8/16/2023 8:56:09 AM
Benzo(a)pyrene	ND	33.1		µg/Kg-dry	1	8/16/2023 8:56:09 AM
Indeno(1,2,3-cd)pyrene	ND	44.1		µg/Kg-dry	1	8/16/2023 8:56:09 AM
Dibenz(a,h)anthracene	ND	55.1		µg/Kg-dry	1	8/16/2023 8:56:09 AM
Benzo(g,h,i)perylene	ND	55.1		µg/Kg-dry	1	8/16/2023 8:56:09 AM
Surr: 2-Fluorobiphenyl	98.0	22.2 - 146		%Rec	1	8/16/2023 8:56:09 AM
Surr: Terphenyl-d14 (surr)	99.8	20.2 - 159		%Rec	1	8/16/2023 8:56:09 AM
Sample Moisture (Percent Moisture)				Batch ID: R85922		Analyst: ALB
Percent Moisture	15.7	0.500		wt%	1	8/15/2023 1:31:00 PM

Work Order: 2308204
CLIENT: GeoEngineers
Project: LBP

QC SUMMARY REPORT

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

Sample ID: **MB-41198**	SampType: **MBLK**	Units: **mg/Kg**	Prep Date: **8/14/2023**	RunNo: **85925**
Client ID: **MBLKS**	Batch ID: **41198**		Analysis Date: **8/14/2023**	SeqNo: **1793181**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel Range Organics	ND	50.0									
Heavy Oil	ND	100									
Total Petroleum Hydrocarbons	ND	150									
Surr: 2-Fluorobiphenyl	10.6		10.00		106	50	150				
Surr: o-Terphenyl	10.8		10.00		108	50	150				

Sample ID: **LCS-41198**	SampType: **LCS**	Units: **mg/Kg**	Prep Date: **8/14/2023**	RunNo: **85925**
Client ID: **LCSS**	Batch ID: **41198**		Analysis Date: **8/14/2023**	SeqNo: **1793182**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	476	150	500.0	0	95.3	76.8	124				
Surr: 2-Fluorobiphenyl	9.88		10.00		98.8	50	150				
Surr: o-Terphenyl	11.2		10.00		112	50	150				

Sample ID: **2308174-002AMS**	SampType: **MS**	Units: **mg/Kg-dry**	Prep Date: **8/14/2023**	RunNo: **85925**
Client ID: **BATCH**	Batch ID: **41198**		Analysis Date: **8/14/2023**	SeqNo: **1793185**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	942	152	505.2	595.5	68.7	21.8	165				
Surr: 2-Fluorobiphenyl	10.0		10.10		99.4	50	150				
Surr: o-Terphenyl	11.6		10.10		115	50	150				

Sample ID: **2308174-002AMSD**	SampType: **MSD**	Units: **mg/Kg-dry**	Prep Date: **8/14/2023**	RunNo: **85925**
Client ID: **BATCH**	Batch ID: **41198**		Analysis Date: **8/14/2023**	SeqNo: **1793186**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	876	152	505.2	595.5	55.6	21.8	165	942.4	7.29	30	
Surr: 2-Fluorobiphenyl	9.87		10.10		97.7	50	150		0		
Surr: o-Terphenyl	11.7		10.10		116	50	150		0		

Work Order: 2308204
CLIENT: GeoEngineers
Project: LBP

QC SUMMARY REPORT

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

Sample ID: **2308174-003ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **8/14/2023** RunNo: **85925**
Client ID: **BATCH** Batch ID: **41198** Analysis Date: **8/14/2023** SeqNo: **1793188**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel Range Organics	72.4	51.7						66.47	8.58	30	
Heavy Oil	343	103						450.9	27.1	30	
Total Petroleum Hydrocarbons	416	155						517.4	21.8	30	
Surr: 2-Fluorobiphenyl	10.7		10.34		104	50	150		0		
Surr: o-Terphenyl	11.2		10.34		108	50	150		0		

Work Order: 2308204
CLIENT: GeoEngineers
Project: LBP

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **MB-41211** SampType: **MBLK** Units: **µg/Kg** Prep Date: **8/15/2023** RunNo: **85967**
Client ID: **MBLKS** Batch ID: **41211** Analysis Date: **8/16/2023** SeqNo: **1793997**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	ND	20.0									
2-Methylnaphthalene	ND	20.0									
1-Methylnaphthalene	ND	20.0									
Acenaphthene	ND	20.0									
Acenaphthylene	ND	20.0									
Phenanthrene	ND	20.0									
Fluorene	ND	20.0									
Anthracene	ND	20.0									
Fluoranthene	ND	20.0									
Pyrene	ND	40.0									
Benz(a)anthracene	ND	20.0									
Chrysene	ND	20.0									
Benzo(b)fluoranthene	ND	25.0									
Benzo(k)fluoranthene	ND	25.0									
Benzo(a)pyrene	ND	30.0									
Indeno(1,2,3-cd)pyrene	ND	40.0									
Dibenz(a,h)anthracene	ND	50.0									
Benzo(g,h,i)perylene	ND	50.0									
Surr: 2-Fluorobiphenyl	950		1,000		95.0	22.2	146				
Surr: Terphenyl-d14 (surr)	982		1,000		98.2	20.2	159				

Sample ID: **LCS-41211** SampType: **LCS** Units: **µg/Kg** Prep Date: **8/15/2023** RunNo: **85967**
Client ID: **LCSS** Batch ID: **41211** Analysis Date: **8/16/2023** SeqNo: **1793998**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	1,960	20.0	2,000	0	98.2	59.3	114				
2-Methylnaphthalene	1,850	20.0	2,000	0	92.7	55.5	115				
1-Methylnaphthalene	1,910	20.0	2,000	0	95.3	57.2	116				
Acenaphthene	1,940	20.0	2,000	0	96.8	56.6	114				
Acenaphthylene	1,970	20.0	2,000	0	98.6	58.2	120				
Phenanthrene	1,880	20.0	2,000	0	93.8	53.2	118				

Work Order: 2308204
CLIENT: GeoEngineers
Project: LBP

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **LCS-41211** SampType: **LCS** Units: **µg/Kg** Prep Date: **8/15/2023** RunNo: **85967**
Client ID: **LCSS** Batch ID: **41211** Analysis Date: **8/16/2023** SeqNo: **1793998**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluorene	1,930	20.0	2,000	0	96.5	57.7	117				
Anthracene	1,930	20.0	2,000	0	96.5	54.7	118				
Fluoranthene	1,890	20.0	2,000	0	94.5	56	120				
Pyrene	1,970	40.0	2,000	0	98.4	56.9	120				
Benz(a)anthracene	1,850	20.0	2,000	0	92.5	59.5	123				
Chrysene	1,970	20.0	2,000	0	98.7	51.5	115				
Benzo(b)fluoranthene	1,770	25.0	2,000	0	88.6	50	122				
Benzo(k)fluoranthene	2,000	25.0	2,000	0	99.9	51	117				
Benzo(a)pyrene	2,040	30.0	2,000	0	102	53.2	123				
Indeno(1,2,3-cd)pyrene	1,830	40.0	2,000	0	91.3	49.5	122				
Dibenz(a,h)anthracene	1,840	50.0	2,000	0	92.2	51	120				
Benzo(g,h,i)perylene	1,800	50.0	2,000	0	89.8	46.8	122				
Surr: 2-Fluorobiphenyl	1,040		1,000		104	22.2	146				
Surr: Terphenyl-d14 (surr)	1,100		1,000		110	20.2	159				

Sample ID: **2308204-001AMS** SampType: **MS** Units: **µg/Kg-dry** Prep Date: **8/15/2023** RunNo: **85967**
Client ID: **LBP-EX1-S1** Batch ID: **41211** Analysis Date: **8/16/2023** SeqNo: **1794000**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	2,270	22.6	2,256	0	101	48.9	121				
2-Methylnaphthalene	2,140	22.6	2,256	0	94.7	45.9	118				
1-Methylnaphthalene	2,200	22.6	2,256	0	97.4	48.5	121				
Acenaphthene	2,200	22.6	2,256	0	97.6	46	122				
Acenaphthylene	2,270	22.6	2,256	0	101	49.2	126				
Phenanthrene	2,170	22.6	2,256	0	96.1	40.5	126				
Fluorene	2,220	22.6	2,256	0	98.3	49	123				
Anthracene	2,220	22.6	2,256	0	98.6	46.3	124				
Fluoranthene	2,190	22.6	2,256	0	96.9	49.1	129				
Pyrene	2,260	45.1	2,256	0	100	48.8	130				
Benz(a)anthracene	2,120	22.6	2,256	0	94.0	53.9	130				
Chrysene	2,280	22.6	2,256	0	101	41.2	126				

Work Order: 2308204
CLIENT: GeoEngineers
Project: LBP

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **2308204-001AMS** SampType: **MS** Units: **µg/Kg-dry** Prep Date: **8/15/2023** RunNo: **85967**
Client ID: **LBP-EX1-S1** Batch ID: **41211** Analysis Date: **8/16/2023** SeqNo: **1794000**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzo(b)fluoranthene	2,100	28.2	2,256	0	93.0	37.2	132				
Benzo(k)fluoranthene	2,280	28.2	2,256	0	101	32.8	131				
Benzo(a)pyrene	2,360	33.8	2,256	0	105	28.8	145				
Indeno(1,2,3-cd)pyrene	2,100	45.1	2,256	0	93.2	3.36	151				
Dibenz(a,h)anthracene	2,120	56.4	2,256	0	94.0	6.99	152				
Benzo(g,h,i)perylene	2,070	56.4	2,256	0	91.6	5.86	143				
Surr: 2-Fluorobiphenyl	1,130		1,128		100	22.2	146				
Surr: Terphenyl-d14 (surr)	1,180		1,128		104	20.2	159				

Sample ID: **2308204-001AMSD** SampType: **MSD** Units: **µg/Kg-dry** Prep Date: **8/15/2023** RunNo: **85967**
Client ID: **LBP-EX1-S1** Batch ID: **41211** Analysis Date: **8/16/2023** SeqNo: **1794001**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	2,290	22.6	2,256	0	101	48.9	121	2,273	0.648	30	
2-Methylnaphthalene	2,130	22.6	2,256	0	94.6	45.9	118	2,136	0.0683	30	
1-Methylnaphthalene	2,200	22.6	2,256	0	97.5	48.5	121	2,198	0.122	30	
Acenaphthene	2,230	22.6	2,256	0	98.6	46	122	2,202	1.07	30	
Acenaphthylene	2,270	22.6	2,256	0	101	49.2	126	2,274	0.0741	30	
Phenanthrene	2,170	22.6	2,256	0	96.0	40.5	126	2,168	0.127	30	
Fluorene	2,220	22.6	2,256	0	98.3	49	123	2,217	0.00202	30	
Anthracene	2,240	22.6	2,256	0	99.3	46.3	124	2,224	0.654	30	
Fluoranthene	2,200	22.6	2,256	0	97.3	49.1	129	2,186	0.424	30	
Pyrene	2,270	45.1	2,256	0	101	48.8	130	2,263	0.509	30	
Benz(a)anthracene	2,130	22.6	2,256	0	94.4	53.9	130	2,119	0.415	30	
Chrysene	2,280	22.6	2,256	0	101	41.2	126	2,284	0.00282	30	
Benzo(b)fluoranthene	2,100	28.2	2,256	0	93.1	37.2	132	2,097	0.169	30	
Benzo(k)fluoranthene	2,290	28.2	2,256	0	102	32.8	131	2,279	0.557	30	
Benzo(a)pyrene	2,380	33.8	2,256	0	105	28.8	145	2,361	0.791	30	
Indeno(1,2,3-cd)pyrene	2,110	45.1	2,256	0	93.7	3.36	151	2,103	0.481	30	
Dibenz(a,h)anthracene	2,140	56.4	2,256	0	94.7	6.99	152	2,120	0.768	30	
Benzo(g,h,i)perylene	2,080	56.4	2,256	0	92.3	5.86	143	2,067	0.735	30	

Work Order: 2308204
CLIENT: GeoEngineers
Project: LBP

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: **2308204-001AMSD** SampType: **MSD** Units: **µg/Kg-dry** Prep Date: **8/15/2023** RunNo: **85967**
Client ID: **LBP-EX1-S1** Batch ID: **41211** Analysis Date: **8/16/2023** SeqNo: **1794001**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: 2-Fluorobiphenyl	1,130		1,128		100	22.2	146		0		
Surr: Terphenyl-d14 (surr)	1,170		1,128		103	20.2	159		0		

Sample Log-In Check List

Client Name:	GEI	Work Order Number:	2308204
Logged by:	Clare Griggs	Date Received:	8/15/2023 11:25:00 AM

Chain of Custody

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

Log In

3.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes ☐	No ☐	Not Present ☑
4.	Was an attempt made to cool the samples?	Yes ☐	No ☑	NA ☐
5.	Were all items received at a temperature of >2°C to 6°C *	Yes ☐	No ☐	NA ☑
6.	Sample(s) in proper container(s)?	Yes ☑	No ☐	
7.	Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8.	Are samples properly preserved?	Yes ☑	No ☐	
9.	Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10.	Is there headspace in the VOA vials?	Yes ☐	No ☐	NA ☑
11.	Did all samples containers arrive in good condition(unbroken)?	Yes ☑	No ☐	
12.	Does paperwork match bottle labels?	Yes ☑	No ☐	
13.	Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
14.	Is it clear what analyses were requested?	Yes ☑	No ☐	
15.	Were all holding times able to be met?	Yes ☑	No ☐	

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

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

17. Additional remarks:

Item Information

Item #	Temp °C
Sample	18.2

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

Chain of Custody Record & Laboratory Services Agreement

Fremont Analytical
An Alliance Technical Group Company
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790

Date: 8/15/23 | Page: 1 of: 1 | Laboratory Project No (internal): 23082Q4

Project Name: LBP | Special Remarks:

Client: GEI

Project No: 0917-025-00

Address: 2101 4TH AVE STE 950

Collected by: JAK

City, State, Zip: SEATTLE, WA 98121

Location:

Telephone:

Report To (PM): TIM SYVERSON

Disposal: Samples will be disposed in 30 days unless otherwise requested. ☐ Retain volume (specify above) ☐ Return to client

Email(s): TSYVERSON@GEOENGINEERS.COM

	Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	# of Cont.	VOCs (EPA 8260 / 624)	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SVOCs (EPA 8270 / 625)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082 / 608)	Metals** (EPA 6020 / 200.8)	Total (T) | Dissolved (D)	Anions (IC)***	EDB (8011)	Comments
1	LBP-EX1-S1	8/15/23	0950	S	1					X		X						
2	LBP-EX1-W1	↓	0955	↓	1					X		X						
3	LBP-EX1-B1	↓	1015	↓	1					X		X						
4																		
5																		
6																		
7																		
8																		
9																		
10																		

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

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

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

Turn-around Time:
☐ Standard ☑ Next Day
☐ 3 Day ☐ Same Day
☐ 2 Day ☐ (specify)

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above, that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished (Signature)	Print Name	Date/Time	Received (Signature)	Print Name	Date/Time
x	JAMES KOHN	8/15/23 1125	x	Emma Tuck	8/15/23 11:25
Relinquished (Signature)	Print Name	Date/Time	Received (Signature)	Print Name	Date/Time
x			x		

APPENDIX B
Soil and Water Disposal Documentation

PRO-VAC

6622 112th Street East
Puyallup, WA 98373

B.O.L. # 152756

SHIPPING PAPER

DELIVERY DATE: 08-15-23	JOB #: 188011
SHIPPER / CUSTOMER: Mercer Island Parks	POINT OF CONTACT: Paul
ADDRESS: Luther Burbank Parks	PHONE #: 206-677-1028
CITY, STATE, ZIP: Mercer Island, Wa	
CARRIER / TRANSPORTER: PRO VAC	PHONE #
CONSIGNEE / FACILITY: PKS	POINT OF CONTACT
ADDRESS: 3003 Taylor Way	PHONE #
CITY, STATE, ZIP: Tacoma, WA	

HM	US DOT Description *(Including Proper Shipping Name, Hazard Class, and ID Number)*	Containers No.	Containers Type	Total Quantity	UOM	CHLOR	pH
A	NOT Regul BY DOT Contaminated Native soil W/Water	1	FT				
B							
C							
D							

Special Handling Instruction and Additional Information:

#9130-B

Placards Provided YES_____ NO X

SHIPPER'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway, vessel, and rail according to applicable international and national government regulations.

		MONTH	DAY	YEAR
(SHIPPER) PRINT OR TYPE NAME: X Paul West	SIGNATURE: X	8	15	23
(CARRIER/TRANSPORTER) PRINT OR TYPE NAME: X Tim L Williams	SIGNATURE: X	08	15	23
(CONSIGNEE/FACILITY) PRINT OR TYPE NAME: X	SIGNATURE: X			

SHIPPER

PRO-VAC

6622 112th Street East
Puyallup, WA 98373

B.O.L. # 165865

SHIPPING PAPER

DELIVERY DATE: Aug 22 20[illegible]	JOB #: [illegible]
SHIPPER / CUSTOMER: [illegible]	POINT OF CONTACT: [illegible]
ADDRESS: [illegible]	PHONE #: [illegible]
CITY, STATE, ZIP: [illegible]	
CARRIER / TRANSPORTER: [illegible]	PHONE #:
CONSIGNEE / FACILITY: [illegible]	POINT OF CONTACT:
ADDRESS: [illegible]	PHONE #:
CITY, STATE, ZIP: [illegible]	

HM	US DOT Description *(Including Proper Shipping Name, Hazard Class, and ID Number)*	Containers No.	Containers Type	Total Quantity	UOM	CHLOR	pH
A	[illegible]	1	T	[illegible]			
B							
C							
D							

Special Handling Instruction and Additional Information:

9130-B

Placards Provided YES_____ NO_____ RV505

SHIPPER'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway, vessel, and rail according to applicable international and national government regulations.

		MONTH	DAY	YEAR
(SHIPPER) PRINT OR TYPE NAME X Paul D West	SIGNATURE X	8	22	23
(CARRIER/TRANSPORTER) PRINT OR TYPE NAME X [illegible]	SIGNATURE X	8	22	23
(CONSIGNEE/FACILITY) PRINT OR TYPE NAME X	SIGNATURE X			

APPENDIX C
Report Limitations and Guidelines for Use

APPENDIX C
REPORT LIMITATIONS AND GUIDELINES FOR USE[1]

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 for the City of Mercer Island Luther Burbank Park project in Mercer Island, Washington in general accordance with the scope and limitations of our fully executed proposal, dated August 15, 2023. This report has been prepared for the exclusive use of the City of Mercer Island. 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 for the Luther Burbank Park project in Mercer Island, 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.

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

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

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 tables. 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.

Uncertainty May Remain Even After This Phase II ESA is Completed

Performance of a Phase II ESA is intended to reduce uncertainty regarding the potential for contamination in connection with a property, but no ESA can wholly eliminate that uncertainty. Our interpretation of subsurface conditions in this study is based on field observations and chemical analytical data from widely spaced sampling locations. It is always possible that contamination exists in areas that were not explored, sampled or analyzed.

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 on-site 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 should be contacted prior to the export of soil or groundwater from the subject property or reuse of the affected soil or groundwater on-site to evaluate the potential for associated environmental liabilities. 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 on-site 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.