Draft Cleanup Action Plan
Mossman Residence
3461 East Lake Sammamish Shore Lane Northeast
Sammamish, Washington

Prepared for: Young and Larson
c/o Mr. Mark Myers
Williams Kastner
601 Union Street, Suite 4100
Seattle, WA 98101-2380

Prepared by: G-Logics
40 2nd Avenue SE
Issaquah, WA 98027

Telephone: (425) 391-6874
Facsimile: (425) 313-3074

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1.0 INTRODUCTION

G-Logics has prepared this Cleanup Action Plan (CAP) to address a release of heating oil at the Mossman Residence at 3461 East Lake Sammamish Shore Lane Northeast in Sammamish, King County, Washington (Property). The location of the Property is shown in Figure 1, and relevant Property features are shown in Figure 2.

The Property was enrolled into the Washington State Department of Ecology (Ecology) Voluntary Cleanup Program (VCP) in July 2021 with the ultimate goal of obtaining a No Further Action (NFA) determination from Ecology through establishing compliance with the Model Toxics Control Act (MTCA, Chapter 173-340 Washington Administrative Code [WAC]). The purpose of the CAP is to develop and present a remediation plan designed to achieve this goal for the Property by establishing compliant conditions for the following contaminants of concern (COCs) in the following media:

COC	Soil	Groundwater	Surface Water	Indoor Air
Diesel-Range Petroleum Hydrocarbons (DRO)	X	X	X	
Benzene	X			X
Total Xylenes	X			
Naphthalene	X	X	X	X

This CAP proposes the use of soil excavation and monitored natural attenuation to address the presence of petroleum impacted media at the Property. The remediation activities described in Section 6 of this CAP are tentatively expected to take place in late summer and fall of 2023, following the demolition of the current residential building on the Property.

This CAP includes a background discussion in Section 2.0, the cleanup levels and points of compliance used in this study in Section 3.0, the extent of contamination in soil and groundwater at this Property in Section 4.0, the recommended remedial alternative for the Property in Section 5.0, and a detailed scope of work for the selected remedy in Section 6.0. Limitations and a conclusion are included in Sections 7.0 and 8.0, respectively.

2.0 BACKGROUND

2.1 Property Description and Site Designation

The Property consists of one parcel (King County Tax Parcel Number 192506-9042) and is zoned as residential (R4). The Property is located on the eastern shore of Lake Sammamish and is occupied by a single-family home. The home was built as a slab-on-grade

construction in the late 1940s and is understood to have been heated by an oil-burning furnace. Oil for the furnace was stored in an underground storage tank (UST), previously located on the north side of the house at the location shown in Figure 2. The adjacent properties to the north, east, and south are single-family residences. The western boundary of the Subject Property borders Lake Sammamish.

A release of heating oil from the UST at the Property was identified at the Property in extends to the adjacent property to the north (Northern Property).

A site is typically defined by Ecology for MTCA cleanups as the extent of contaminated media associated with a release or releases from defined activities or infrastructure. The site at the Property includes portions of the Property and extends several feet onto the adjacent property to the north at 3463 E Lake Sammamish Shore Lane NE (Site). The Site corresponds to the areas of soil and groundwater contamination shown on Figures 3 and 4, respectively.). The property at 3463 E Lake Sammamish Shore Lane NE consists of one parcel (King County Tax Parcel Number 192506-9062) and is occupied by a single-family home.

2.2 Site History

The Property was purchased by the Mossmans in August 2012. It is understood that the Mossmans converted the home's heating system to natural gas in October 2012. In November 2012, Mr. Mossman observed an oily sheen on the surface of Lake Sammamish near his property. The Mossmans retained Environmental Partners Inc. (EPI) as an environmental consultant on their behalf to perform a UST Site Assessment in the same month. EPI identified that a release of heating oil had occurred at the UST on the Property that was likely the cause of the sheen observed on the lake. Based the results of the UST Site Assessment report, Mr. Mossman reported the release to the Ecology Spill Response Division. On November 28, 2012, during a visit to confirm the report, Ecology provided absorbent booms to contain the sheen to the area of the dock at the Property. Subsequently, the heating oil UST on the Mossman Property was removed and confirmed as the source of the heating oil release.

In May 2013, a Phase II Environmental Site Assessment (ESA) was performed by EPI to evaluate the extent of petroleum hydrocarbons in the soil and groundwater on the Property. The investigation found that heating oil contaminants were present in soil and groundwater on the Property and also had migrated into soil and groundwater on the property to the north. EPI concluded in their report that the migration pathway from groundwater to surface water in Lake Sammamish was complete (EPI, *Phase II Environmental Site Assessment*, dated July 1, 2013). Multiple Site characterization efforts were completed from 2013 through 2018. During the additional characterization efforts, measurable light non-aqueous phase liquid (LNAPL) was measured in monitoring well MW-1 in September 2015 and in well MW-2 from 2014 to 2018, as indicated in Figure 4a. LNAPL removal was conducted starting in 2014. By 2021, LNAPL had been eliminated in previously impacted wells except for a small (approximately 0.05 foot) accumulation in well MW-2. Using soil and groundwater quality data from the 2013 Phase II ESA and

subsequent characterization efforts, EPI provided cost estimates to conduct a remedial excavation in a Technical Memorandum dated November 16, 2018.

G-Logics conducted an additional exploration in May 2020, with the results presented in the *Additional Site Characterization* report dated June 29, 2020. the results of the investigation, the report indicated petroleum concentrations in soil and groundwater had significantly decreased from the concentrations first detected in 2012. Additionally, the measurable LNAPL thickness had decreased in monitoring well MW-2 and no longer was detected in well MW-1. This reduction in LNAPL thickness is likely in part attributable to LNAPL recovery efforts conducted by EPI, which recovered a total of approximately 33 gallons of LNAPL as of April 2021.

EPI was acquired by TRC Companies (TRC) in 2019 and assumed that company name. On July 2, 2021, on behalf of the property owner, TRC submitted a *Remedial Investigation* (RI) report (dated June 28, 2021), a VCP application, and the VCP Agreement for the Site to Ecology. The Site was accepted into the VCP program on January 21, 2022. Data from the G-Logics June 29, 2020, report were incorporated into the 2021 TRC RI report.

G-Logics conducted additional groundwater and soil sampling at the Site in October 2021, with results presented in the *2021 Soil and Groundwater Sampling* report included in Appendix A. During the 2021 investigation, additional soil samples were collected from near the water table along the shore of Lake Sammamish at locations seven to twelve feet apart and just above the designated ordinary high water mark (OHWM) for the lakeshore at the Property. Petroleum hydrocarbons were not detected or were detected at concentrations less than applicable MTCA Method A cleanup levels in the soil samples from these borings, delineating the extent of soil contamination to the west, and indicating that soil contamination requiring cleanup does not extend beyond (west of) the OHWM.

Based on the results of sediment sample analyses documented in the 2021 TRC RI, and email conversations with Ecology, we understand that no additional evaluation of sediment is required at the Site, nor is sediment further considered for remediation in this CAP.

Surface water is a medium of concern due to the assumption that groundwater at the Property is hydraulically connected to and discharges to the adjacent Lake Sammamish. Surface water sampling has not been and will not be performed in part due to potential false positives from incidental recreational watercraft releases on the lake. In addition, previous detection of LNAPL have been nearly eliminated in wells located between the former UST and the lakeshore, with only a 0.05 foot accumulation of LNAPL remaining in well MW-2 as of 2021. To address the potential for surface water quality impacts related to the Site, the program outlined in this CAP is designed to remediate COC concentrations in groundwater to cleanup levels that are protective of surface water. No additional investigation or remedial action related to surface water is considered as part of this CAP.

3.0 PRELIMINARY CLEANUP LEVELS AND POINTS OF COMPLIANCE

This section develops and presents the rationale for preliminary cleanup levels, remediation levels, and points of compliance. WAC 174-340-200 defines "cleanup level" as the concentration of a hazardous substance in soil, water, air, or sediment that is determined to be protective of human health and the environment under specified exposure conditions. A "point of compliance" is defined as the point or points where cleanup levels shall be attained. A "remediation level" means a concentration or other method of identification of a hazardous substance in soil, water, air, or sediment above which a particular cleanup action component will be required as part of a cleanup action at a site.

Since the Property and the surrounding properties are currently zoned Residential (R4), the Site is subject to MTCA Soil Cleanup Levels for Unrestricted Land Uses and MTCA Method A Groundwater Cleanup Levels, which have been selected as applicable for both soil and groundwater, respectively. Method B cleanup levels have been selected for indoor air. The determination of appropriate cleanup levels, including the evaluation of applicable exposure pathways, was included in the 2021 TRC RI, and is summarized in the following sections.

3.1 Soil Cleanup Levels and Points of Compliance

The following exposure pathways were considered to evaluate soil cleanup levels:

- Dermal exposure via direct contact with soil; and
- Soil impacts leaching to groundwater.

Based on the absence of sediment impacts, the soil to sediment pathway was not considered in evaluation of the soil cleanup levels. The table below summarizes the cleanup levels established for this project for each soil COC:

COC	Cleanup Level[1]	Basis for Cleanup Level
DRO	2,000	MTCA Method A Soil Cleanup Level for Unrestricted Land Uses
Benzene	0.03	MTCA Method A Soil Cleanup Level for Unrestricted Land Uses
Total Xylenes	9	MTCA Method A Soil Cleanup Level for Unrestricted Land Uses
Naphthalene	5	MTCA Method A Soil Cleanup Level for Unrestricted Land Uses

[1]Cleanup levels reported in milligrams per kilogram (mg/kg).

In accordance with the MTCA regulation, the point of compliance for soil is the entire soil column throughout the Site. The deepest observed contaminant concentration greater than soil cleanup levels has been identified at approximately 9 feet below the surface.

3.2 Groundwater Cleanup Levels and Points of Compliance

The following exposure pathways were considered to evaluate groundwater cleanup levels:

- Inhalation of COCs volatizing from groundwater to indoor air; and,
- Groundwater discharging to surface water.

As discussed in the TRC RI, there is not a current or potential future exposure pathway for groundwater for human ingestion. As such, the ingestion of groundwater pathway was not considered in evaluation of the groundwater cleanup levels. However, the cleanup levels selected are equal to or more stringent than the available MTCA Method A Groundwater Cleanup Levels for the COCs.

The table below summarizes the cleanup levels established for this project for each groundwater COC:

COC	Cleanup Level[1]	Basis for Cleanup Level
DRO	500	MTCA Method A Cleanup Level, Protective of Freshwater Surface Water
Naphthalene	8.9	Cleanup Levels and Risk Calculations – August 2020, Groundwater Screening Levels for Vapor Intrusion[2]

[1]Cleanup levels reported in micrograms per liter (µg/L).

[2]8.9 µg/L is more conservative than the MTCA Method A Groundwater Cleanup Level of 160 µg/L. As such, the cleanup level established for naphthalene also meets the Method A requirements.

As defined under MTCA in Chapter 173-340-720(8) WAC, the standard point of compliance for groundwater is throughout the Site.

3.3 Indoor Air Cleanup Levels and Points of Compliance

MTCA Method B cleanup levels have been selected for the indoor air exposure pathway. The standard MTCA Method B Indoor Air Cleanup Levels are based on a residential exposure scenario that includes an exposure frequency of 1 (i.e., 24 hours/day, 365 days/year) and includes considerations for juvenile exposures.

The table below summarizes the indoor air cleanup levels for each COC:

COC	Cleanup Level[1]	Basis for Cleanup Level
Benzene	0.32	MTCA Method B Soil Cleanup Level for Air
Naphthalene	0.0735	MTCA Method B Soil Cleanup Level for Air

[1]Cleanup levels reported in micrograms per cubic meter (µg/m^3).

Following completion of remediation at the Site, if the sampling plan to evaluate the indoor air exposure pathway for the planned new residential building includes sampling soil vapor, additional cleanup levels will be selected. The points of compliance will be in accordance with MTCA guidance and will be dependent on the indoor air pathway sampling plan, as discussed in Section 6.4.

4.0 DESCRIPTION OF THE AREAS OF CONCERN

4.1 Areas of Concern for Soil

The identified lateral extent of DRO at concentrations greater than the cleanup level of 2,000 mg/kg in soils is shown in Figure 3. This figure also includes an interpretation of the area where DRO concentrations in soil are expected to be greater than 10,000 mg/kg. These areas largely exist within the yard and beach areas of the Property, downgradient of the former UST, but do not extend west beyond the OHWM. A small area of DRO in soil is present on the property to the north. The estimated maximum depth of the impacted soils varies from approximately 2 to 9 feet bgs.

Table 1 includes a summary of analytical results for soil samples collected from the Site in 2000 and 2021.

4.2 Areas of Concern for Groundwater

Figure 4 shows the results of groundwater samples collected during the October 2021 soil and groundwater sampling activities (Appendix A), with an interpretation of the area where DRO concentrations are expected to exceed 500 ug/L, the MTCA Method A CUL. The highest detected concentrations DRO in groundwater samples were generally collected from monitoring wells located within the interior of the interpreted area of the groundwater plume, with the highest detection in the samples collected from GLB-8, which is located in the yard area upslope of the rock wall. This figure includes both groundwater samples collected from monitoring wells and those collected as grab samples from the 2021 borings.

Figure 4a presents DRO groundwater concentrations measured in samples from monitoring wells located at the Site, with summarized results for samples collected over the past five years. For the most part, DRO concentrations remained relatively consistent over this comparison interval. A small thickness of measurable LNAPL was again detected in MW-2 in October 2021 (0.05 inches). A sample of groundwater was collected from MW-2, yielding a DRO concentration of 11,900 ug/L.

Refer to Table 2 for a summary of groundwater analytical results.

5.0 DESCRIPTION OF REMEDIAL ALTERNATIVE

The proposed remedial alternative is to use the Ecology Model Remedy 1 for sites with petroleum contaminated soil in the Ecology *Model Remedies for Sites with Petroleum Contaminated Soils* dated December 2017 and Model Remedy 1 for sites with petroleum impacted groundwater in the Ecology *Model Remedies for Sites with Petroleum Impacts to Groundwater* dated December 2017. This alternative involves:

- For soil with concentrations of DRO, benzene, total xylene, and naphthalene that are greater than the cleanup levels, excavation, removal and off-Site disposal at a landfill permitted to accept these materials;
- Application of Oxygen Releasing Compound (ORC) to enhance biodegradation of petroleum related compounds in groundwater; and
- Monitored natural attenuation (MNA) of DRO and naphthalene in the groundwater.

The proposed remedial alternative is intended to also address indoor air and surface water quality by removal of COCs from vadose zone soil and reduction of COC concentrations in groundwater that contribute to COCs in indoor air. The monitoring plan will include soil vapor and/or indoor air sampling to evaluate the effectiveness of remediation on indoor air quality. Groundwater sampling will be used to determine the efficacy of the remedy on potential impacts to surface water.

5.1 Soil

Application of the Ecology Soil Model Remedy 1 will entail excavation and off-Site disposal of vadose zone soils that exceed cleanup levels for DRO, benzene, total xylene, and naphthalene to a landfill permitted to accept petroleum-contaminated soils. Based on the estimated extent and depth of excavation shown in Figure 5, G-Logics estimates the removal and disposal of approximately 650 tons of contaminated soil. To improve the effectiveness of this remedy, excavations are planned to be performed during late summer or early autumn, when groundwater and lake levels are typically at annual low elevations. Limited dewatering may be warranted in areas where deeper soil contamination has been identified or is observed during remedial excavation.

Excavation limit soil sampling will be completed in compliance with requirements in the Ecology *Guidance for Remediation of Petroleum Contaminated Sites* dated June 2016. Soil samples for confirmation of conditions at excavation limits will be collected in the sidewalls of the excavation and at the excavation floor in locations where soil samples can be collected from areas that are dry or can be effectively dewatered. The soil samples will be analyzed for the COCs and the sample results will be used to determine whether Method A cleanup levels have been met at the point of compliance.

5.2 Groundwater

Application of the Ecology Groundwater Model Remedy 1 has been selected to address groundwater cleanup at the site. The remedial actions that will be included under

Groundwater Model Remedy 1 are enhanced biodegradation of COCs using an ORC material that effectively increases the oxygen content of the impacted area to stimulate biodegradation of petroleum-related compounds. The oxygen enhanced bioremediation processes will support an MNA program as the final remedy stage for petroleum in groundwater and saturated soils remaining below the zone of soil removal. MNA will be implemented at the Site in accordance with the Ecology *Guidance on Remediation of Petroleum Contaminated Groundwater by Natural Attenuation* dated July 2005.

Following completion of the soil excavation and prior to backfilling, ORC will be placed on the excavation floor within the zone of groundwater level fluctuation and may be mixed into the soils on the excavation floor using an excavator bucket and/or soil mixing screw attachment.

Natural attenuation is a reduction in mass or concentration of COCs in groundwater over time or distance from the source due to naturally occurring physical, chemical, and/or biological processes, such as biodegradation, dispersion, dilution, adsorption, and volatilization. The effectiveness of natural attenuation at a specific Site is evaluated by completion of a groundwater monitoring program.

Following backfilling, five new monitoring wells will be installed at locations appropriate for evaluating groundwater remedial progress and for eventual confirmation of groundwater conditions compliant with the cleanup levels. . The monitoring program will at least four consecutive quarters of groundwater sample collection to evaluate progress to attainment of groundwater cleanup levels. Upon the completion of four consecutive quarters of groundwater monitoring where the COC concentrations in groundwater are equal to or less than the cleanup levels established in Section 3.2. Measurement of groundwater parameters and/or analysis for constituents useful for confirming conditions conducive to natural attenuation will be included in the performance groundwater monitoring. Section 6.3.3 of this report includes a description of these specific parameters.

Since Ecology Model Remedies are being used for remediation on this site, an evaluation of other remedial alternatives in a Feasibility Study was not performed.

6.0 CLEANUP ACTION PLAN

For this cleanup action, G-Logics proposes to perform remedial excavation activities to remove the contaminated soils above the water table, supplemented by biodegradation enhancement with the use of ORC and monitored natural attenuation to address impacted saturated soil and groundwater.

6.1 Monitoring Well Abandonment

Prior to excavation activities, monitoring wells MW-1 though MW-5 within the proposed excavation footprint will be properly decommissioned in compliance with requirements in Chapter173-160-381 WAC by a well driller licensed in the State of Washington.

Monitoring wells located outside of the excavation area (MW-6, MW-7, MW-8, and MW-9) will be preserved for potential inclusion in the groundwater remediation progress and confirmation monitoring network.

6.2 Remedial Excavation

G-Logics proposes to perform remedial excavation at the Site following the demolition of the current house. The proposed remedial excavation activities are detailed below.

6.2.1 Remedial Excavation Preparation

G-Logics will contact the public utility locating service to mark public utilities servicing the Site prior to commencing excavation activities.

G-Logics will prepare a Health and Safety Plan (HASP) in general accordance with the requirements of 29 CFR 1910.120 and Chapter 296-843 WAC that will apply to G-Logics staff and provide recommendations for other personnel and contractors that are present on the Site during field activities. G-Logics will not be held responsible for the health and/or safety of non-G-Logics staff.

6.2.2 Remedial Excavation

In order to facilitate the remedial excavation activities, the house on the Property will be demolished and the associated utilities will be disconnected prior to commencing excavation activities. G-Logics will confirm with the demolition contractor that utilities present in the planned excavation area are each de-energized and out of service prior to initiation of remedial excavation activities.

G-Logics will direct the remedial excavation activities at the Site. Necessary permits to complete the planned remedial excavation works will be obtained by G-Logics. the excavation contractor, or the client. Excavated soils will be screened for evidence of petroleum hydrocarbons in the field using visual and olfactory methods as well as a portable photoionization detector (PID) to qualitatively evaluate for the presence of volatile organic vapors. Soils with elevated PID response or odors indicative of petroleum contamination will be loaded directly onto a truck and transported off the Site to a licensed disposal facility. Excavation activities will cease at horizontal limits where evidence of petroleum contamination in the soil is no longer observed. Figure 5 shows the location where DRO-contaminated soil is anticipated to be excavated based on soil data.

Vertically, soil excavation will cease when groundwater is encountered or, in areas where field screening indicates elevated petroleum concentrations in soils below the water table, where there is no longer evidence of petroleum impacts or where further vertical excavation becomes impractical because of dewatering limitations. Excavation activities are anticipated to take place when groundwater and lake levels are near annual minimum levels. Groundwater containing petroleum that is recovered during dewatering efforts will be contained on Site and will be shipped to an appropriate treatment and/or disposal facility permitted to accept petroleum-contaminated water.

Figure 5 shows the estimated extent of the planned remedial excavation and includes an estimate of the area and depth of soil to be removed that assumes the work is completed under seasonal low lake and groundwater elevation conditions. The actual average depths of the excavation may vary from those estimated on Figure 5, depending upon the observed depth of petroleum impacts and the groundwater and lake levels at the time the work is completed. The estimated weight of petroleum-contaminated soil to be removed is approximately 650 tons.

If necessary during excavation activities, dewatering will be completed using a vacuum extraction truck from the open excavation. Care will be taken to prevent water from the excavation from running directly into the lake using small earth dams, absorbent booms, or other features in compliance with the shoreline permitting anticipated to be required for the planned excavation work.

Upon completion of the remedial excavation activities, soil confirmation samples will be collected from the lateral extents of the excavation and at bottom elevations where groundwater conditions prevent collection of undisturbed soil samples even when dewatering is applied. Soil samples will be placed in laboratory-prepared containers for transport to the analytical laboratory. The actual number and locations of samples collected will ultimately depend on the dimensions of the remedial excavation. The soil samples will be analyzed for the contaminants of concern, as discussed in Section 6.2.3 below. The excavation will remain open pending receipt of the soil confirmation sampling results, and additional excavation may be completed to remove areas of remaining petroleum contamination identified from the sample results. Additional soil samples will be collected from the limits of these areas to confirm appropriate removal of the contaminated soil.

6.2.3 Soil Sample Laboratory Analysis

Soil samples collected from the limits of the excavation at the Site will be analyzed for the following:

- DRO using Ecology Method NWTPH-Dx.
- Benzene, total xylenes, and naphthalene using United States Environmental Protection Agency (USEPA) Method 8260D or similar approved method.

6.2.4 Application of ORC

Following excavation completion and before backfilling, ORC will be placed on the excavation floor and/or will be mixed into soils at the excavation limits using an excavator bucket and/or soil mixing screw attachment. The type, distribution, and total volume of ORC placed in the excavation will be recorded.

6.2.5 Remedial Excavation Report Preparation

G-Logics will prepare a report summarizing the results of the excavation cleanup action, including a summary of analytical test data, comparisons of the soil COC conditions to project cleanup levels, conclusions regarding the effectiveness of the soil cleanup action at the Site, and a Site plan showing the approximate excavation limits and excavation limit soil sample locations.

6.3 Monitoring Well Installation and Groundwater Sampling

Following backfilling of the remedial excavation and as part of the proposed MNA program, five permanent groundwater monitoring wells will be installed (MW-10 through MW-15) in the following locations:

- One monitoring well upgradient of the known area of petroleum in soil and groundwater to evaluate background water quality;
- One monitoring well at or near the former UST location;
- One well near the contaminated plume centerline between the former UST location and the shoreline OHWM; and
- Two wells immediately inland of the OHWM within the area of petroleum contaminated groundwater prior to the initiation of remedial excavation activities.

The five newly installed monitoring wells and the four pre-existing monitoring wells that are not planned for abandonment (MW-6, MW-7, MW-8, and MW-9) will compose the set of wells available for remedial progress and confirmation groundwater monitoring, as discussed below. Note that one or more of the previously existing monitoring wells may not be used for each of the planned post-excavation groundwater monitoring events. Monitoring wells for use for groundwater remediation progress and confirmation monitoring will be selected based on the available pre-remediation groundwater quality conditions and conditions observed during groundwater monitoring completed as part of the program in this CAP.

6.3.1 Monitoring Well Installation

The anticipated well construction will be completed in strict accordance with Chapter 173-160 WAC *Minimum Standards for Construction and Maintenance of Wells*. The groundwater monitoring wells will be constructed as follows:

- Ten feet of two-inch diameter, 0.010-inch machine slotted PVC well screen with a threaded bottom cap.
- A two-inch diameter, threaded, flush-joint PVC riser pipe from the top of the screened interval to ground surface.
- Pre-sieved 10/20 grade silica sand for annular sand pre-packed around the well screen from the bottom of the boring to approximately one- to two-feet above the top of the well screen and overlain by hydrated bentonite chips and concrete.
- A lockable plug secured with a ground surface flush monument plate.

The groundwater monitoring wells will be developed by G-Logics and/or its drilling subcontractor by surging with a decontaminated surge block or electric submersible pump and then pumped to remove turbid groundwater. Development water will be collected in labeled drums and left on the Property pending characterization and disposal.

Following installation, the top-of-casing elevations of the newly constructed wells will be measured using appropriate surveying tools relative to a common reference datum common to the existing on-Site wells. This scope of work does not include surveying of the wells by a licensed surveyor, which is not considered necessary to achieve the project objectives.

6.3.2 Groundwater Sample Collection

Groundwater samples will be collected from the selected remediation progress and confirmation monitoring wells at the Site as part of the proposed MNA program using the following methods:

- The groundwater monitoring well covers will be opened and the static water level will be allowed to equilibrate.
- The groundwater level will be measured in each well prior to initiation of sample collection activities.
- Prior to the collection of each sample, groundwater will be purged from the well using a submersible pump or peristaltic pump with dedicated disposable tubing. Groundwater quality parameters including temperature, electrical conductivity (EC), pH, turbidity, dissolved oxygen (DO), and oxidation-reduction potential (ORP) will be measured at regular intervals using a water quality meter in combination with a flow-through cell. Purging at a given well will be considered complete either when three consecutive parameter readings for have stabilized (±3% for EH, ±0.2 units for pH, ±10% (for values greater than 1 NTU) for turbidity, ±10% or ±0.2 mg/L (whichever is greater) for DO, ±10% or ±10 millivolts (whichever is greater) for ORC) and once three well volumes are purged from the well, or once the monitoring well is purged dry twice, whichever occurs first. Alternately, low-flow sampling procedures may be used following the stabilization standards outlined above, and with a minimum purged groundwater volume of 5 liters from each well. The groundwater parameters measured during purging, pumping flow rates, total volume pumped, and instrument calibrations will be documented in the field by an G-Logics field representative.
- Following the purging activities, the well will be allowed to partially recover, and a groundwater sample will be collected from the well for laboratory analysis using the submersible or peristaltic pump.
- Each sample container will be labeled with the project number, date, time, and sample identification. Groundwater samples will be collected into appropriate sample containers provided by a third-party laboratory and immediately placed into a cooler containing ice or ice substitute. Samples will then be delivered to a

Washington State-accredited analytical laboratory in strict accordance with industry standard chain-of-custody procedures.

- Purge water will be collected into drums and to be stored at the Property pending characterization and removal for proper disposal.

This scope of work anticipates a minimum of four post-excavation quarterly groundwater sampling events, with quarterly monitoring events continuing until four consecutive quarters where COC concentrations in each groundwater sample from that period are less than the project cleanup levels. If some individual COC concentrations from the final four quarters of groundwater monitoring are greater than the project cleanup levels, compliance may still be demonstrated by use of statistical modeling compliant with MTCA requirements and approved by the Ecology project manager.

The performance and confirmation sampling schedule will be re-evaluated at any time after the initial four post-excavation quarterly monitoring events are completed to determine if any revisions to the frequency or scheduling of the events is warranted. If initial analytical results show that a change in the sampling schedule is necessary, adjustments will be made as appropriate, in consultation with and with approval from the Ecology project manager. Regardless of changes to the progress groundwater monitoring program, final groundwater compliance will still require four consecutive quarterly groundwater sampling events showing compliant COC concentrations in each groundwater sample.

6.3.3 Groundwater Analysis

The collected groundwater samples will be submitted to a subcontracted Ecology-approved laboratory for analysis of one or more of the following analytes:

- DRO using Ecology Method NWTPH-Dx.

- Benzene, total xylenes, and naphthalene using USEPA Method 8260D or similar approved method.

The groundwater analyses will be performed and reported on a standard laboratory delivery schedule.

Note that benzene and total xylenes are not confirmed as COCs in groundwater; however, they are included in the groundwater remediation monitoring program because they have been identified as COCs in soil. If concentrations of these compounds remain less than the MTCA Method A Groundwater Cleanup levels for the first four quarterly groundwater monitoring events, analyses of these parameters may be suspended for the remaining duration of the groundwater monitoring program.

During at least two progress monitoring events per year, groundwater samples will be additionally analyzed for the following MNA indicator analytes in order to evaluate the performance and continued viability of the MNA approach:

- Anions (nitrate, nitrite, sulfate and chloride) using USEPA Method 300.0,
- Cations (calcium, sodium, potassium, and magnesium) using USEPA Method 6020B,
- Ferrous iron using USEPA Method SM3500,
- Dissolved methane, ethane, and ethene using USEPA Method RSK 175,
- Dissolved iron and manganese using USEPA Method 200.8,
- Total organic carbon by USEPA Method SM5310, and
- Alkalinity by USEPA Method SM2320B.

The groundwater analyses will be performed and reported on a standard laboratory delivery schedule.

Note that if the groundwater monitoring program extends beyond 18 months, after that time, the frequency and types of these additional analyses may be reduced subject to approval by the Ecology project manager.

6.3.4 Groundwater Monitoring Report Preparation

G-Logics will prepare a report summarizing the findings of each monitoring event, including a Site plan showing the monitoring well locations, a summary of analytical test data, laboratory test certificates, comparisons to MTCA Method A cleanup levels, and conclusions regarding the groundwater conditions at the Site. Conclusions will include an evaluation of groundwater quality at the Site with respect to project cleanup levels and, for progress monitoring events, with respect to the viability of continued application of an MNA remedy at the Site.

6.4 Indoor Air

The proposed remedial alternative is intended to address indoor air by removing the source from the vadose zone and by the enhancement and monitoring of natural attenuation processes in groundwater.

This exposure route will be reassessed either after the source area removal and MNA is complete or upon construction of a new house on the Subject Property, whichever is sooner. The monitoring plan will include soil vapor and/or air sampling to evaluate the effectiveness of remediation on indoor air quality in the future residence.

6.5 Remediation Completion Conditions

Once COC concentrations for soil, groundwater, and indoor air are demonstrated to be less than project cleanup levels or can be established as compliant with project cleanup levels using MTCA-compliant statistical methods approved by the Ecology project manager, G-Logics will submit a request to the Ecology VCP for a No Further Action (NFA) determination for the Site.

7.0 LIMITATIONS

Land use, site conditions (both on and off the Property), and other factors may change over time. Since activities and regulations beyond our control could change at any time after the completion of this CAP, our observations, findings, and opinions can be considered valid only as of the date of the exploration work completed and of the development of this report.

G Logics assumes no responsibility or liability whatsoever for any claim, loss of property value, damage, or injury which results from pre-existing hazardous materials being encountered or present on the project site, or from the discovery of such hazardous materials.

G-Logics personnel performed this study in accordance with generally accepted standards of care that existed in the state of Washington at the time of this study. This report has been prepared in accordance with generally accepted professional practices in the area at this time. No other warranty, either express or implied, is made.

This report is based on conditions that existed at the time the study was completed. The findings of this report may be affected by the passage of time or events such as a change in property use or occupancy, or by natural events, such as floods, earthquakes, or groundwater fluctuations.

8.0 CLOSING

G-Logics personnel prepared this CAP in accordance with generally accepted industry practices within Washington State and in the Site vicinity at the time of this evaluation. Our findings and conclusions have been prepared in accordance with the agreed-upon scope of work and the current, generally accepted standard of care for this profession.

We appreciate the opportunity to be of service to you on this project. If you should have any questions or require additional information, please feel free to contact the undersigned.

Sincerely,
G-LOGICS

DRAFT

_____
Mike Arnold, LG, LHG
Director of Technical Services

FIGURES

g-logics

Property Location Maps

Mossman Residence

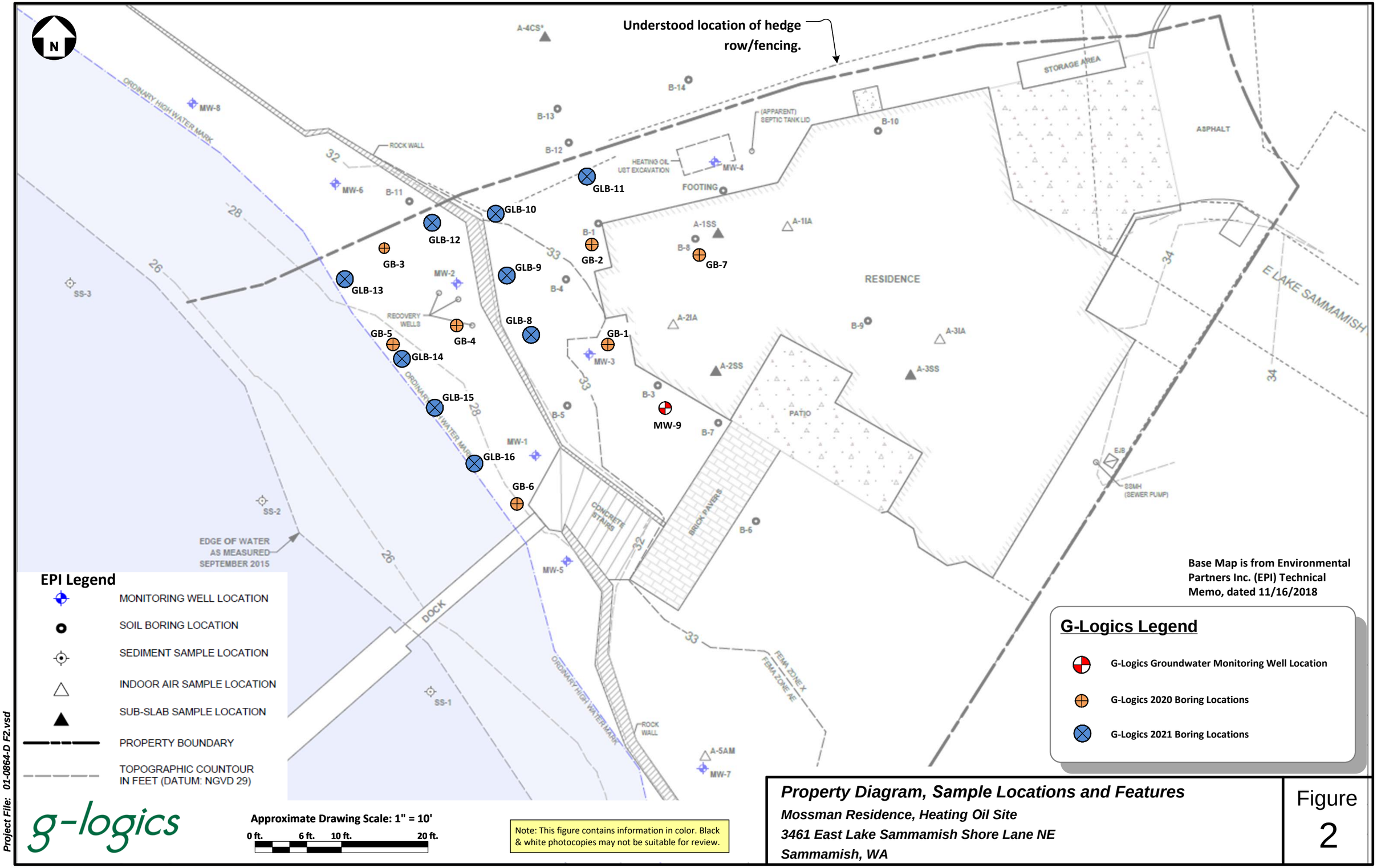
3461 East Lake Sammamish Shore Lane NE

Sammamish, Washington

Figure 1

Project File: 01-0864-D F1.vsd

Mapping Reference: Delorme and King County iMap


N
Understood location of hedge row/fencing.
A-4CS*
B-14
B-13
B-12
MW-8
ORDINARY HIGH WATER MARK
ROCK WALL
32
MW-6
B-11
28
26
SS-3
GLB-10
GLB-12
GB-3
GLB-13
MW-2
RECOVERY WELLS
GB-4
GB-5
GLB-14
GLB-15
GLB-16
MW-1
GB-6
SS-2
EDGE OF WATER AS MEASURED SEPTEMBER 2015
DOCK
SS-1
GLB-11
HEATING OIL UST EXCAVATION
MW-4
(APPARENT) SEPTIC TANK LID
FOOTING
B-10
STORAGE AREA
ASPHALT
A-1SS
A-1IA
B-1
GB-2
B-8
GB-7
RESIDENCE
GLB-9
B-4
GLB-8
GB-1
MW-3
A-2IA
B-9
A-3IA
A-2SS
A-3SS
B-3
MW-9
B-5
B-7
PATIO
33
34
E LAKE SAMMAMISH
EJB
SSMH (SEWER PUMP)
CONCRETE STAIRS
BRICK PAVERS
B-6
MW-5
FEMA ZONE X
FEMA ZONE AE
ROCK WALL
A-5AM
MW-7
Base Map is from Environmental Partners Inc. (EPI) Technical Memo, dated 11/16/2018
EPI Legend
MONITORING WELL LOCATION
SOIL BORING LOCATION
SEDIMENT SAMPLE LOCATION
INDOOR AIR SAMPLE LOCATION
SUB-SLAB SAMPLE LOCATION
PROPERTY BOUNDARY
TOPOGRAPHIC COUNTOUR IN FEET (DATUM: NGVD 29)
G-Logics Legend
G-Logics Groundwater Monitoring Well Location
G-Logics 2020 Boring Locations
G-Logics 2021 Boring Locations
g-logics
Approximate Drawing Scale: 1" = 10'
0 ft. 6 ft. 10 ft. 20 ft.
Note: This figure contains information in color. Black & white photocopies may not be suitable for review.
Property Diagram, Sample Locations and Features
Mossman Residence, Heating Oil Site
3461 East Lake Sammamish Shore Lane NE
Sammamish, WA
Figure 2
Project File: 01-0864-D F2.vsd
Mapping Reference: Environmental Partners Inc., Triad Associates, G-Logics Measurements.

Understood location of hedge row/fencing.

G-Logics Legend

- G-Logics Groundwater Monitoring Well Location
- G-Logics 2020 Boring Locations
- G-Logics 2021 Boring Locations
- 10,000 — DRO Concentration in Soil Exceeding 10,000 mg/kg
- 2,000 — DRO Concentration in Soil Exceeding MTCA Method A Cleanup Level 2,000 mg/kg
- 519 — DRO Concentrations from EPI and G-Logics soil sampling, see EPI Table 1 and G-Logics Table 1 for Analytical Results, highest result from multiple depths shown when applicable
- 5,123 — DRO Concentrations >2,000 mg/kg
- <51.5 — DRO Concentrations Not Detected

EPI Legend

- MONITORING WELL LOCATION
- SOIL BORING LOCATION
- SEDIMENT SAMPLE LOCATION
- INDOOR AIR SAMPLE LOCATION
- SUB-SLAB SAMPLE LOCATION
- PROPERTY BOUNDARY
- TOPOGRAPHIC COUNTOUR IN FEET (DATUM: NGVD 29)

Base Map is from Environmental Partners Inc. (EPI) Technical Memo, dated 11/16/2018

The isoconcentration contours represent an interpretation of available data, for the indicated date. These contours may change with additional measurements and/or data points, remedial efforts, natural attenuation, and/or other influences.

Approximate Drawing Scale: 1" = 10'

0 ft. 6 ft. 10 ft. 20 ft.

Note: This figure contains information in color. Black & white photocopies may not be suitable for review.

DRO Concentrations in Soil, 2013-2021

Mossman Residence, Heating Oil Site

3461 East Lake Sammamish Shore Lane NE

Sammamish, WA

Figure 3

Mapping Reference: Environmental Partners Inc., Triad Associates, G-Logics Data.

Project File: 01-0864-D F3 DRO in Soil Isocontours.vsdx

Understood location of hedge row/fencing.

MW-8 <198

GLB-11 242

GLB-10 1,080

GLB-12 7,750

MW-6 541

GLB-13 165

LNAPL MW-2

GLB-9 2,550

GLB-8 22,600

GLB-14 534

MW-3 2,270

GLB-15 9,290

MW-9 263

MW-1 944

GLB-16 4,970

MW-4 2,690

693 MW-5

MW-7 <48.8

STORAGE AREA

ASPHALT

RESIDENCE

FOOTING

PATIO

BRICK PAVERS

CONCRETE STAIRS

ROCK WALL

RECOVERY WELLS

(APPARENT) SEPTIC TANK LID

HEATING OIL TANK EXCAVATION

ORDINARY HIGH WATER MARK

EDGE OF WATER AS MEASURED SEPTEMBER 2015

DOCK

FEMA ZONE X
FEMA ZONE AE

E LAKE SAMMAMISH

B-1 B-3 B-4 B-5 B-6 B-7 B-8 B-9 B-10 B-11 B-12 B-13 B-14

A-1SS A-1IA A-2IA A-2SS A-3IA A-3SS A-4CS* A-5AM

SS-1 SS-2 SS-3

EPI Legend

- MONITORING WELL LOCATION
- SOIL BORING LOCATION
- SEDIMENT SAMPLE LOCATION
- INDOOR AIR SAMPLE LOCATION
- SUB-SLAB SAMPLE LOCATION
- PROPERTY BOUNDARY
- TOPOGRAPHIC COUNTOUR IN FEET (DATUM: NGVD 29)

Base Map is from Environmental Partners Inc. (EPI) Technical Memo, dated 11/16/2018

G-Logics Legend

- G-Logics Groundwater-Monitoring Well Location
- G-Logics 2021 Boring Locations
- 500 — DRO Concentration in Groundwater exceeding MTCA Method A Cleanup Level 500 ug/L
- 236 — DRO Concentrations and Isocontours based on G-Logics groundwater sampling on 10/2021, see Table 2 for analytical results.
- 541 — DRO Concentrations >500 ug/L
- <51.5 — DRO Concentrations Not Detected

The isoconcentration contours represent an interpretation of available data, for the indicated date. These contours may change with additional measurements and/or data points, remedial efforts, natural attenuation, and/or other influences.

g-logics

Approximate Drawing Scale: 1" = 10'
0 ft. 6 ft. 10 ft. 20 ft.

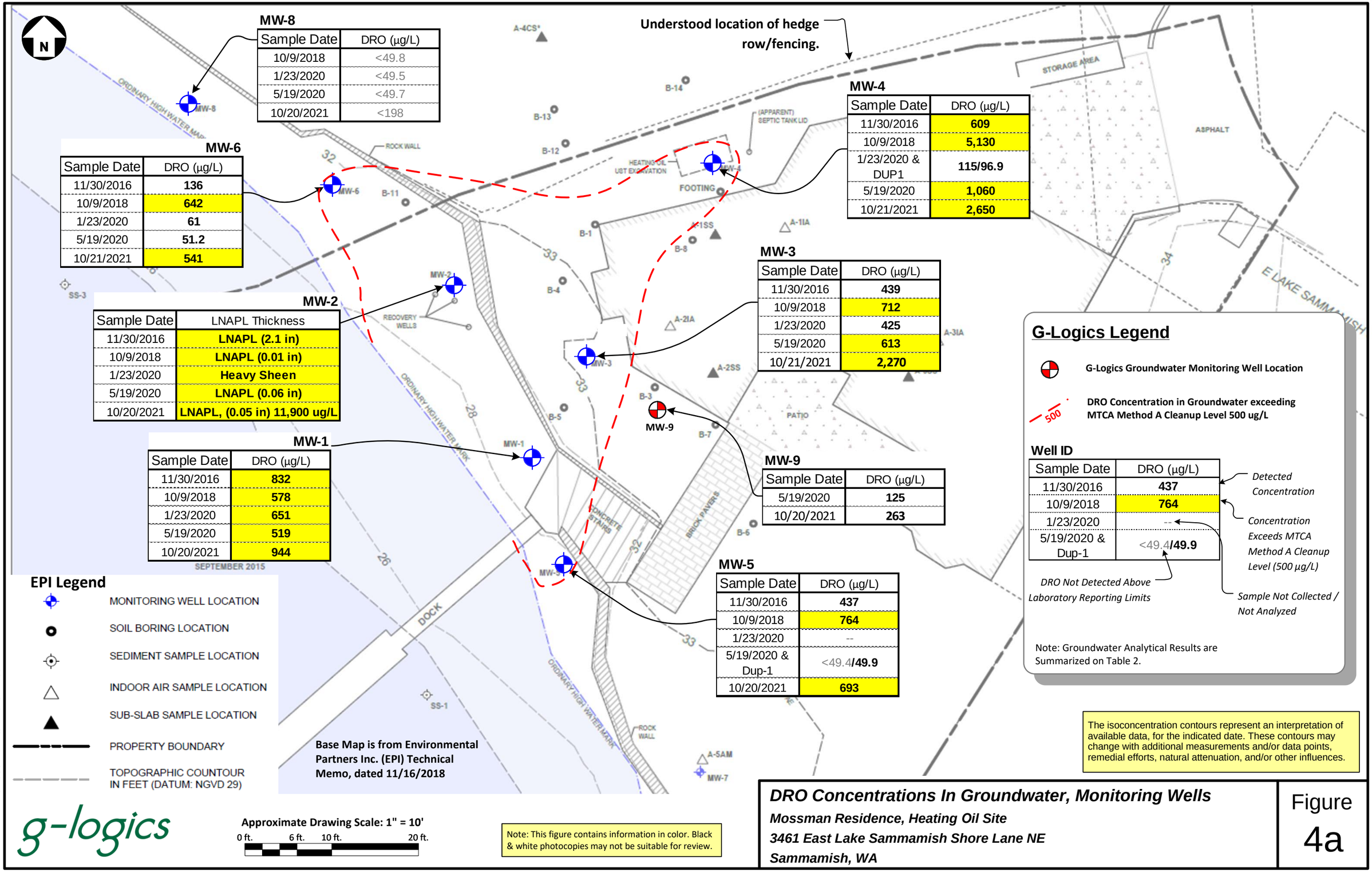
Note: This figure contains information in color. Black & white photocopies may not be suitable for review.

DRO in Groundwater Isocontours, October 2021
Mossman Residence, Heating Oil Site
3461 East Lake Sammamish Shore Lane NE
Sammamish, WA

Figure 4

Project File: *01-0864-D F4 DRO in Groundwater Isocontours.vsdx*

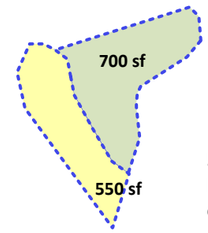
Mapping Reference: Environmental Partners Inc., Triad Associates, G-Logics Data.


N
MW-8
Sample Date | DRO (µg/L)
10/9/2018 | <49.8
1/23/2020 | <49.5
5/19/2020 | <49.7
10/20/2021 | <198
Understood location of hedge row/fencing.
MW-4
Sample Date | DRO (µg/L)
11/30/2016 | 609
10/9/2018 | 5,130
1/23/2020 & DUP1 | 115/96.9
5/19/2020 | 1,060
10/21/2021 | 2,650
MW-6
Sample Date | DRO (µg/L)
11/30/2016 | 136
10/9/2018 | 642
1/23/2020 | 61
5/19/2020 | 51.2
10/21/2021 | 541
MW-3
Sample Date | DRO (µg/L)
11/30/2016 | 439
10/9/2018 | 712
1/23/2020 | 425
5/19/2020 | 613
10/21/2021 | 2,270
MW-2
Sample Date | LNAPL Thickness
11/30/2016 | LNAPL (2.1 in)
10/9/2018 | LNAPL (0.01 in)
1/23/2020 | Heavy Sheen
5/19/2020 | LNAPL (0.06 in)
10/20/2021 | LNAPL, (0.05 in) 11,900 ug/L
MW-1
Sample Date | DRO (µg/L)
11/30/2016 | 832
10/9/2018 | 578
1/23/2020 | 651
5/19/2020 | 519
10/20/2021 | 944
SEPTEMBER 2015
MW-9
Sample Date | DRO (µg/L)
5/19/2020 | 125
10/20/2021 | 263
MW-5
Sample Date | DRO (µg/L)
11/30/2016 | 437
10/9/2018 | 764
1/23/2020 | --
5/19/2020 & Dup-1 | <49.4/49.9
10/20/2021 | 693
EPI Legend
MONITORING WELL LOCATION
SOIL BORING LOCATION
SEDIMENT SAMPLE LOCATION
INDOOR AIR SAMPLE LOCATION
SUB-SLAB SAMPLE LOCATION
PROPERTY BOUNDARY
TOPOGRAPHIC COUNTOUR IN FEET (DATUM: NGVD 29)
Base Map is from Environmental Partners Inc. (EPI) Technical Memo, dated 11/16/2018
G-Logics Legend
G-Logics Groundwater Monitoring Well Location
DRO Concentration in Groundwater exceeding MTCA Method A Cleanup Level 500 ug/L
Well ID
Sample Date | DRO (µg/L)
11/30/2016 | 437
10/9/2018 | 764
1/23/2020 | --
5/19/2020 & Dup-1 | <49.4/49.9
Detected Concentration
Concentration Exceeds MTCA Method A Cleanup Level (500 µg/L)
DRO Not Detected Above Laboratory Reporting Limits
Sample Not Collected / Not Analyzed
Note: Groundwater Analytical Results are Summarized on Table 2.
The isoconcentration contours represent an interpretation of available data, for the indicated date. These contours may change with additional measurements and/or data points, remedial efforts, natural attenuation, and/or other influences.
STORAGE AREA
ASPHALT
E LAKE SAMMAMISH
ROCK WALL
HEATING OIL UST EXCAVATION
(APPARENT) SEPTIC TANK LID
FOOTING
PATIO
CONCRETE STAIRS
BRICK PAVERS
DOCK
ORDINARY HIGH WATER MARK
RECOVERY WELLS
Approximate Drawing Scale: 1" = 10'
0 ft. 6 ft. 10 ft. 20 ft.
Note: This figure contains information in color. Black & white photocopies may not be suitable for review.
DRO Concentrations In Groundwater, Monitoring Wells
Mossman Residence, Heating Oil Site
3461 East Lake Sammamish Shore Lane NE
Sammamish, WA
Figure 4a
Project File: 01-0864-D F4a DRO GW.vsd
Mapping Reference: Environmental Partners Inc., Triad Associates, G-Logics Data.

Understood location of hedge row/fencing.

G-Logics Legend

- G-Logics Groundwater Monitoring Well Location
- G-Logics 2020 Boring Locations
- G-Logics 2021 Boring Locations
- 10,000 — DRO Concentration in Soil Exceeding 10,000 mg/kg
- 2,000 — DRO Concentration in Soil Exceeding MTCA Method A Cleanup Level 2,000 mg/kg



700 SqFt, x Average 11'
Depth = 285 cy, x 1.6
conversion = 456 tons

550 SqFt, x Average 6'
Depth = 122 cy, x 1.6
conversion = 195 tons

EPI Legend

- MONITORING WELL LOCATION
- SOIL BORING LOCATION
- SEDIMENT SAMPLE LOCATION
- INDOOR AIR SAMPLE LOCATION
- SUB-SLAB SAMPLE LOCATION
- PROPERTY BOUNDARY
- TOPOGRAPHIC COUNTOUR IN FEET (DATUM: NGVD 29)

Base Map is from Environmental Partners Inc. (EPI) Technical Memo, dated 11/16/2018

The isoconcentration contours represent an interpretation of available data for the indicated date in the soil-data table. These contours may change with additional measurements and/or data points, remedial efforts, natural attenuation, and/or other influences.

g-logics

Approximate Drawing Scale: 1" = 10'

0 ft. 6 ft. 10 ft. 20 ft.

Note: This figure contains information in color. Black & white photocopies may not be suitable for review.

Estimated Extent of Remedial Excavation

Mossman Residence, Heating Oil Site

3461 East Lake Sammamish Shore Lane NE

Sammamish, WA

Figure 5

Mapping Reference: Environmental Partners Inc., Triad Associates, G-Logics Data.

Project File: 01-0864-D F7 SoilV.vsdx

TABLES

TABLE 1
Soil Sample Analyses, Petroleum Hydrocarbons
Mossman Residence
3461 East Lake Sammamish Shore Lane NE
Sammamish, Washington

Exploration Location	Sample Date	Sample Number	Surface Elevation[1] (feet)	Sample Depth (feet)	Sample Elevation[1] (feet)	Diesel Range Organics	Heavy Oil Range Organics	Combined ORO and DRO	DRO with Silica Gel Treatment	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	Methyl Tert Butyl Ether	EC 5-6 Aliphatics	EC 6-8 Aliphatics	APH [EC 8-10 aliphatics] Fraction	APH [EC 10-12 aliphatics] Fraction	APH [EC8-10 aromatics] Fraction	APH [EC10-12 aromatics] Fraction	APH [EC12-13 aromatics] Fraction	Aliphatic Hydrocarbon (C8-C10)	Aliphatic Hydrocarbon (C8-C10)	Aliphatic Hydrocarbon (C10-12)	Aliphatic Hydrocarbon (C12-16)	Aliphatic Hydrocarbon (C16-21)	Aliphatic Hydrocarbon (C21-34)	Aromatic Hydrocarbon (C8-10)	Aromatic Hydrocarbon (C10-12)	Aromatic Hydrocarbon (C12-16)	Aromatic Hydrocarbon (C16-21)	Aromatic Hydrocarbon (C21-34)
MTCA Method A Cleanup Level[2]						2,000	2,000	2,000	2,000	0.03	7	6	9	5	0.1	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Units in milligrams per kilogram																																
2020 Explorations																																
GB-1	5/14/2020	GB-1-7	33	7	26	**1,540**	**174**	**1,714**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	5/14/2020	GB-1-9		9	24	**947**	<52.6	**947**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
GB-2	5/14/2020	GB-2-7	33	7	26	**13,800 D**	<68.3	**13,800 D**	---	<0.881	<1.03	2.81	**16.26**	**45.6**	---	<2.57	**6.08**	**87.8**	**306**	**136**	---	---	---	---	---	---	---	---	---	---	---	---	---
	5/14/2020	GB-2-9		9	24	**7,410 D**	<137	**7,410 D**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
GB-3	5/14/2020	GB-3-4	29	4	25	**3,740 D**	<51.8	**3,740 D**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	5/14/2020	GB-3-6		6	23	**64.9**	<49.5	**64.9**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	5/14/2020	GB-3-8		8	21	<21.3	<53.3	<53.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
GB-4	5/14/2020	GB-4-2	29	2	27	**30,900 D**	<47.5	**30,900 D**	---	<0.719	<0.839	<0.839	<1.56	**7.41**	---	<2.10	<3.00	<1.68	**35.6**	<3.60	---	---	---	---	---	---	---	---	---	---	---	---	---
	5/14/2020	GB-4-4		4	25	**28,900 D**	<55.4	**28,900 D**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	5/14/2020	GB-4-8		8	21	<21.8	<54.5	<54.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
GB-5	5/14/2020	GB-5-4	28	4	24	<21.7	<54.3	<54.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
GB-6	5/14/2020	GB-6-1	28	1	27	**105**	<59.4	**105**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	5/14/2020	GB-6-4		4	24	<23.1	<57.7	<57.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
GB-7	5/14/2020	GB-7-6	33	6	27	<20.5	<51.2	<51.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	5/14/2020	GB-7-8		8	25	**1,530**	<25.2	**1,530**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	5/14/2020	GB-7-9		9	24	<31.6	<79.0	<79.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
G-Logics Monitoring Well																																
MW-9	5/14/2020	MW-9-7	33	7	26	<31.6	**180**	**180**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	5/14/2020	MW-9-10		10	23	<21.6	<54.0	<54.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2021 Explorations																																
GLB-8	10/20/2021	GLB-8-6	32	6	26	<56.0	<112	<168	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/20/2021	GLB-8-8		8	24	**12,400 D**	<1,060	**12,400 D**	**8,720**	<0.0906 DH	<0.136 DH	<0.113 DH	0.564 DH	**6.4**	---	**3.56 H**	**11.8 H**	**48.6 H**	**293 DH**	**111 H**	**735 DH**	**3,120 DH**	**102 H**	**315 HL**	**1,450 H**	**1,480 H**	**192 H**	<19.0 H	**104 H**	**518 H**	**1,190 H**	<9.49 H
	10/20/2021	GLB-8-10		10	22	<59.2	<118	<178	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
GLB-9	10/20/2021	GLB-9-6	33	6	27	**8,940**	<96.8	**8,940**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/20/2021	GLB-9-8		8	25	**27,600 D**	<1,400	**27,600 D**	**25,000 D**	**0.120**	<0.224	**1.54**	**5.97**	---	---	**6.12 H**	**29.2 H**	**185 DH**	**463 DH**	**212 H**	**1,170 DH**	**4,750 DH**	**328 H**	**961 HL**	**3,800 DH**	**4,160 DH**	**495 H**	**82.4 H**	**401 H**	**1,630 H**	**3,290 DH**	**591 H**
	10/20/2021	GLB-9-10		10	23	**215**	<119	**215**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/20/2021	GLB-9-12		12	21	**58.3 H**	<105 H	**58.3 H**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
GLB-10	10/20/2021	GLB-10-6	33	6	27	**143 H**	<118 H	**143 H**																								
	10/20/2021	GLB-10-8		8	25	**498**	**342**	**839**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/20/2021	GLB-10-10		10	23	<51.4 H	<103 H	<103 H	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/20/2021	GLB-10-12		12	21	<49.4 H	<98.8 H	<98.8 H	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/20/2021	GLB-10-14		14	19	<49.8 H	<99.5 H	<99.5 H	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/20/2021	GLB-10-16		16	17	<52.1 H	<104 H	<104 H	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

TABLE 1
Soil Sample Analyses, Petroleum Hydrocarbons
Mossman Residence
3461 East Lake Sammamish Shore Lane NE
Sammamish, Washington

Exploration Location	Sample Date	Sample Number	Surface Elevation[1] (feet)	Sample Depth (feet)	Sample Elevation[1] (feet)	Diesel Range Organics	Heavy Oil Range Organics	Combined ORO and DRO	DRO with Silica Gel Treatment	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	Methyl Tert Butyl Ether	EC 5-6 Aliphatics	EC 6-8 Aliphatics	APH [EC 8-10 aliphatics] Fraction	APH [EC 10-12 aliphatics] Fraction	APH [EC8-10 aromatics] Fraction	APH [EC10-12 aromatics] Fraction	APH [EC12-13 aromatics] Fraction	Aliphatic Hydrocarbon (C8-C10)	Aliphatic Hydrocarbon (C10-12)	Aliphatic Hydrocarbon (C12-16)	Aliphatic Hydrocarbon (C16-21)	Aliphatic Hydrocarbon (C21-34)	Aromatic Hydrocarbon (C8-10)	Aromatic Hydrocarbon (C10-12)	Aromatic Hydrocarbon (C12-16)	Aromatic Hydrocarbon (C16-21)	Aromatic Hydrocarbon (C21-34)
MTCA Method A Cleanup Level[2]						2,000	2,000	2,000	2,000	0.03	7	6	9	5	0.1	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Units in milligrams per kilogram																																
GLB-11	10/20/2021	GLB-11-8	33	8	25	**259**	**980**	**1,240**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/20/2021	GLB-11-10		10	23	<93.3 H	**381 H**	**381 H**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/20/2021	GLB-11-12		12	21	<87.2 H	<174 H	<174 H	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/20/2021	GLB-11-16		14	19	<56.1 H	<112 H	<112 H	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
GLB-12	10/21/2021	GLB-12-2	30	2	28	---	---	---	---	<0.0271 H	<0.0406 H	<0.0338 H	<0.0677 H	<0.135 H	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/21/2021	GLB-12-4		4	26	**5,160**	<105	**5,160**	**6,250**	<0.618 H	<0.515 H	<1.75 H	<0.515	**3.89 H**	<1.13 H	**3.80 H**	<1.54 H	**6.44 H**	71.3 DH	**22.5 H**	**253 DH**	**2,180 DH**	<22.7	**66.7 L**	**712**	**939**	**113**	<22.7	**12.9**	**103**	**477**	**99.5**
	10/21/2021	GLB-12-6		6	24	**60.6**	<98.6	**60.6**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
GLB-13	10/21/2021	GLB-13-2	28	2	26	<47.2	<94.5	<94.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/21/2021	GLB-13-4		4	24	<50.6	<101	<152	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/21/2021	GLB-13-6		6	22	<51.5	<103	<154	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/21/2021	GLB-13-8		8	20	<55.8	<112	<112	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
GLB-14	10/21/2021	GLB-14-2	28	2	26	<48.1	<96.1	<144	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/21/2021	GLB-14-4		4	24	<55.1	<110	<165	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/21/2021	GLB-14-6		6	22	<48.1	<96.1	<96.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
GLB-15	10/21/2021	GLB-15-2	28	2	26	<49.3	<98.6	<98.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/21/2021	GLB-15-4		4	24	<48.8	<97.5	<146	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/21/2021	GLB-15-6		6	22	<51.3	<103	<154	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/21/2021	GLB-15-8		8	20	<51.3	<103	<103	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
GLB-16	10/21/2021	GLB-16-2	28	2	26	**125**	<103	**125**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/21/2021	GLB-16-4		4	24	<60.4	<121	<181	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/21/2021	GLB-16-6		6	22	<49.2	<98.3	<98.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/21/2021	GLB-16-8		8	20	<54.4	<109	<109	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Notes:

[1] Surface elevations are estimated based on October 15, 2015 survey by Triad Associates based on NGVD 29 (provided by Environmental Partners Inc.)

[2] MTCA Method A Soil Cleanup Levels for Unrestricted Use, provided in the Ecology cleanup levels and risk calculation (CLARC) database

--- Sample not analyzed.

<1.07 The analyte was not detected at a concentration greater than the indicated reporting limit.

12.0 Bold value indicates contaminant detected.

419 Bold value and yellow shading indicates concentration greater than the applicable cleanup level.

D The Sample was diluted. Detection Limits were raised and surrogate recoveries may not be meaningful.

H Holding times for preparation or analysis exceeded

L Flagged value is not within established control limits

NE Cleanup level not established or not applicable

Table 2
Summary of Groundwater Analytical Results
Mossman Residence
3461 East Lake Sammamish Shore Lane
Sammamish, Washington

Sample ID	Sample Date	Total Petroleum Hydrocarbons [a]				Volatile Organic Compounds [b]											Semivolatile Organic Compounds [c]			
		DRO	ORO	Combined DRO/ORO	DRO with Silica Gel Treatment	Ethyl-benzene	Total Xylenes	Benzene	n-Butyl-benzene	sec-Butyl-benzene	n-Propyl-benzene	Toluene	4-Isopropyl-toluene	1,2,4-Trimethyl-benzene	1,3,5-Trimethyl-benzene	Naphthalene	Naphthalene	1-Methyl-naphthalene	2-Methyl-naphthalene	Total Organic Carbon (d)
Units in micrograms per liter																				**mg/L**
Method A Cleanup Level		**500**	**500**	**500**	**500**	**700**	**1,000**	**5**	*	*	*	**1,000**	*	*	*	**160**	**160**	*	*	*
Method B NC Cleanup Level						**800**	**1,600**	**32**	**400**	**800**	**800**	**640**	*	**80.0**	**80.0**	**160**	**160**	**560**	**32.0**	*
B-1	5/20/2013	**43,000**	<2,500	**43,000**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B-3	5/20/2013	<270	<430	<430	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B-4	5/20/2013	**2,600**	<430	**2,600**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B-5	5/20/2013	**3,900**	<420	**3,900**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B-6	5/20/2013	<260	<420	<260	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B-7	5/21/2013	<260	<420	<260	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B-8	11/20/2013	**1,080**	<100	**1,080**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B-9	11/20/2013	<50	<100	<50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B-10	11/20/2013	**190**	<100	**190**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B-11	11/19/2013	**959**	<100	**959**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B-12	11/19/2013	**616**	<100	**616**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B-13	2/17/2014	**170**	**270**	**440**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B-14	2/17/2014	**3,200**	**570**	**3,770**	--	--	--	--	--	--	--	--	--	--	--	--	**0.1**	**0.026**	**0.031**	--
GLB-8	10/20/2021	**22,600 D**	<988	**22,600 D**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GLB-9	10/20/2021	**2,550**	<99.3	**2,550**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GLB-10	10/20/2021	**1,080**	<98.9	**1,080**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GLB-11	10/20/2021	<99.8	**167**	**242**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GLB-12	10/21/2021	**7,750**	<99.9	**7,750**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GLB-13	10/21/2021	**165**	<99.3	**165**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GLB-14	10/21/2021	**534**	<98.9	**534**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GLB-15	10/21/2021	**9,290**	<99.2	**9,290**	**7,950**	<0.400 H	<1.00 H	<0.440 H	--	--	--	<0.750 H	--	--	--	<1.25 H	--	--	--	--
GLB-16	10/21/2021	**4,970**	<98.6	**4,970**	**5,120 B**	<0.400 H	<1.00 H	<0.440 H	--	--	--	<0.750 H	--	--	--	<1.25 H	--	--	--	--
MW-1	5/21/2013	**9,300**	<950	**9,300**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/21/2013	**1,280**	<100	**1,280**	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--
	3/4/2014	**1,700**	<250	**1,700**	--	--	--	--	--	--	--	--	--	--	--	--	**3.2**	**7.0**	**6.0**	--
	8/5/2016	**457**	<100	**457**	--	--	--	--	--	--	--	--	--	--	--	**5.35**	--	--	--	--
	11/30/2016	**832**	<99.5	**832**	--	--	--	--	--	--	--	--	--	--	--	**3.32**	--	--	--	--
	10/9/2018	**578**	<99.6	**578**	--	--	--	--	--	--	--	--	--	--	--	<1.0	--	--	--	--
	1/23/2020	**651**	<49.5	**651**	--	--	--	--	--	--	--	--	--	--	--	<1.0	--	--	--	--
	5/19/2020	**519**	<99.4	**519**	--	<1	<1	<1	--	--	--	<1	--	--	--	<1	--	--	--	--
	10/20/2021	**944**	<99.8	**944**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 2
Summary of Groundwater Analytical Results
Mossman Residence
3461 East Lake Sammamish Shore Lane
Sammamish, Washington

Sample ID	Sample Date	Total Petroleum Hydrocarbons [a]				Volatile Organic Compounds [b]											Semivolatile Organic Compounds [c]			
		DRO	ORO	Combined DRO/ORO	DRO with Silica Gel Treatment	Ethyl-benzene	Total Xylenes	Benzene	n-Butyl-benzene	sec-Butyl-benzene	n-Propyl-benzene	Toluene	4-Isopropyl-toluene	1,2,4-Trimethyl-benzene	1,3,5-Trimethyl-benzene	Naphthalene	Naphthalene	1-Methyl-naphthalene	2-Methyl-naphthalene	Total Organic Carbon (d)
Units in micrograms per liter																				**mg/L**
Method A Cleanup Level		**500**	**500**	**500**	**500**	**700**	**1,000**	**5**	*	*	*	**1,000**	*	*	*	**160**	**160**	*	*	*
Method B NC Cleanup Level						**800**	**1,600**	**32**	**400**	**800**	**800**	**640**	*	**80.0**	**80.0**	**160**	**160**	**560**	**32.0**	*
MW-2	5/21/2013	**LNAPL PRESENT**		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/21/2013	**LNAPL PRESENT**		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	3/4/2014	**LNAPL PRESENT**		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	8/5/2016	**LNAPL PRESENT**		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/30/2016	**LNAPL PRESENT**		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	10/9/2018	**LNAPL PRESENT**		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	1/23/2020	**LNAPL PRESENT**		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/19/2020	**LNAPL PRESENT****		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	10/20/2021	**LNAPL PRESENT**		**11,900**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	5/20/2013	**11,000**	<570	**11,000**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/21/2013	**2,010**	<100	**2,010**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	3/4/2014	**1,100**	<250	**1,100**	--	--	--	--	--	--	--	--	--	--	--	--	**0.067**	**0.35**	**0.069**	--
	9/15/2015	**604**	<99.8	**604**	--	--	--	--	--	--	--	--	--	--	--	--	<0.10	<0.10	<0.10	--
	1/22/2016	**895**	<99.9	**895**	--	--	--	--	--	--	--	--	--	--	--	<1.0	--	--	--	--
	8/5/2016	**3,010**	<99.9	**3,010**	--	--	--	--	--	--	--	--	--	--	--	<1.0	--	--	--	--
	11/30/2016	**439**	<99.7	**439**	--	--	--	--	--	--	--	--	--	--	--	<1.0	--	--	--	--
	10/9/2018	**712**	<99.7	**712**	--	--	--	--	--	--	--	--	--	--	--	<1.0	<0.0991	**0.396**	<0.0991	--
	1/23/2020	**425**	<49.9	**425**	--	--	--	--	--	--	--	--	--	--	--	<1.0	<0.0993	**0.145**	<0.0993	--
	5/19/2020	**613**	<99.7	**613**	--	<1	<1	<1	--	--	--	<1	--	--	--	<1	--	--	--	--
	10/21/2021	**2,270**	<98.6	**2,270**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	5/21/2013	**22,000**	<1,100	**22,000**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/21/2013	**29,800**	**185**	**29,985**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	3/4/2014	**1,300**	**340**	**1,640**	--	--	--	--	--	--	--	--	--	--	--	--	**0.026**	<0.020	<0.020	--
	9/15/2015	**3,860**	<101	**3,860**	--	--	--	--	--	--	--	--	--	--	--	--	**0.566**	**0.181**	**0.406**	--
	1/22/2016	**255**	<99.8	**255**	--	--	--	--	--	--	--	--	--	--	--	<1.0	--	--	--	--
	8/5/2016	**783**	<99.5	**783**	--	--	--	--	--	--	--	--	--	--	--	**1.50**	--	--	--	--
	11/30/2016	**609**	<99.5	**609**	--	--	--	--	--	--	--	--	--	--	--	<1.0	--	--	--	--
	10/9/2018	**5,130**	<99.7	**5,130**	--	--	--	--	--	--	--	--	--	--	--	<1.0	**0.575**	**0.498**	**0.106**	--
	1/23/2020	**115**	<49.8	**115**	--	--	--	--	--	--	--	--	--	--	--	<1.0	<0.0999	<0.0999	<0.0999	--
	5/19/2020	**1,060**	<98.5	**1,060**	--	<1	<1	<1	--	--	--	<1	--	--	--	**1.4**	--	--	--	--
	10/21/2021	**2,650**	<98.7	**2,690**	**197**	<0.400 H	<1.00 H	<0.440 H	--	--	--	<0.750 H	--	--	--	<1.25 H	--	--	--	11.2

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Sammamish, Washington

Sample ID	Sample Date	Total Petroleum Hydrocarbons [a]				Volatile Organic Compounds [b]											Semivolatile Organic Compounds [c]			
		DRO	ORO	Combined DRO/ORO	DRO with Silica Gel Treatment	Ethyl-benzene	Total Xylenes	Benzene	n-Butyl-benzene	sec-Butyl-benzene	n-Propyl-benzene	Toluene	4-Isopropyl-toluene	1,2,4-Trimethyl-benzene	1,3,5-Trimethyl-benzene	Naphthalene	Naphthalene	1-Methyl-naphthalene	2-Methyl-naphthalene	Total Organic Carbon (d)
Units in micrograms per liter																				**mg/L**
Method A Cleanup Level		**500**	**500**	**500**	**500**	**700**	**1,000**	**5**	*	*	*	**1,000**	*	*	*	**160**	**160**	*	*	*
Method B NC Cleanup Level						**800**	**1,600**	**32**	**400**	**800**	**800**	**640**	*	**80.0**	**80.0**	**160**	**160**	**560**	**32.0**	*
MW-5 Recon	11/19/2013	**2,080**	<100		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-5	11/21/2013	**1,250**	<100	**1,250**	--	**1.59**	**3.7**	**--**	**4.29**	**2.92**	**4.44**	**--**	**1.88**	**22.4**	**2.34**	**9.66**	--	--	--	--
	3/4/2014	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	9/15/2015	**209**	**206**	**415**	--	--	--	--	--	--	--	--	--	--	--	--	<0.0998	<0.0998	**0.714**	--
	1/22/2016	**377**	<99.8	**377**	--	--	--	--	--	--	--	--	--	--	--	<1.0	--	--	--	--
	8/5/2016	**160**	<99.8	**160**	--	--	--	--	--	--	--	--	--	--	--	<1.0	--	--	--	--
	11/30/2016	**437**	<99.4	**437**	--	--	--	--	--	--	--	--	--	--	--	<1.0	--	--	--	--
	10/9/2018	**764**	<99.7	**764**	--	--	--	--	--	--	--	--	--	--	--	<1.0	--	--	--	--
	1/23/2020	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/19/2020	<49.4	<98.8	<49.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	10/20/2021	**693**	<98.2	**693**	**340**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-6 Recon	11/19/2013	**1,450**	<100	**1,450**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-6	11/21/2013	**1,120**	<100	**1,120**	--	<1.0	<1.0	--	<1.0	<1.0	<1.0	--	<1.0	**6.04**	<1.0	**1.11**	--	--	--	--
	3/4/2014	**400**	<250	**400**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	9/15/2015	**117**	**261**	**378**	--	--	--	--	--	--	--	--	--	--	--	--	<0.0999	<0.0999	**0.568**	--
	1/22/2016	**199**	<100	**199**	--	--	--	--	--	--	--	--	--	--	--	<1.0	--	--	--	--
	8/5/2016	**126**	<100	**126**	--	--	--	--	--	--	--	--	--	--	--	<1.0	--	--	--	--
	11/30/2016	**136**	<99.5	**136**	--	--	--	--	--	--	--	--	--	--	--	<1.0	--	--	--	--
	10/9/2018	**642**	<99.4	**642**	--	--	--	--	--	--	--	--	--	--	--	<1.0	--	--	--	--
	1/23/2020	**60.6**	<49.9	**60.6**	--	--	--	--	--	--	--	--	--	--	--	<1.0	--	--	--	--
	5/19/2020	**51.2**	<99.4	**51.2**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	10/21/2021	**541**	<98.7	**541**	**297**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-7	3/4/2014	<130	<250	<130	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	10/9/2018	<49.9	<99.7	<49.9	--	--	--	--	--	--	--	--	--	--	--	<1.0	--	--	--	--
	1/23/2020	<49.5	<98.9	<49.5	--	--	--	--	--	--	--	--	--	--	--	<1.0	--	--	--	--
	5/19/2020	<48.8	<97.6	<48.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	10/21/2021	<99.8	<99.8	<99.8	--	--	--	--	--	--	--	--	--	--	--	--				--

Table 2
Summary of Groundwater Analytical Results
Mossman Residence
3461 East Lake Sammamish Shore Lane
Sammamish, Washington

Sample ID	Sample Date	Total Petroleum Hydrocarbons [a]				Volatile Organic Compounds [b]											Semivolatile Organic Compounds [c]			
		DRO	ORO	Combined DRO/ORO	DRO with Silica Gel Treatment	Ethyl-benzene	Total Xylenes	Benzene	n-Butyl-benzene	sec-Butyl-benzene	n-Propyl-benzene	Toluene	4-Isopropyl-toluene	1,2,4-Trimethyl-benzene	1,3,5-Trimethyl-benzene	Naphthalene	Naphthalene	1-Methyl-naphthalene	2-Methyl-naphthalene	Total Organic Carbon (d)
Units in micrograms per liter																				**mg/L**
Method A Cleanup Level		**500**	**500**	**500**	**500**	**700**	**1,000**	**5**	*	*	*	**1,000**	*	*	*	**160**	**160**	*	*	*
Method B NC Cleanup Level						**800**	**1,600**	**32**	**400**	**800**	**800**	**640**	*	**80.0**	**80.0**	**160**	**160**	**560**	**32.0**	*
MW-8	3/4/2014	<130	<250	<130	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	10/9/2018	<49.8	<99.7	<49.8	--	--	--	--	--	--	--	--	--	--	--	<1.0	--	--	--	--
	1/23/2020	<49.5	<99.1	<49.5	--	--	--	--	--	--	--	--	--	--	--	<1.0	--	--	--	--
	5/19/2020	<49.7	<99.5	<49.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	10/20/2021	<98.8	<98.8	<98.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.19
MW-9	5/19/2020	**125**	<98.7	**125**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	10/21/2021	**263**	<98.6	**263**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:

a	Analyzed by Method NWTPH-Dx/Dx Extended.
b	Analyzed by USEPA Method 8260 reporting only non-halogenated hydrocarbons (except naphthalenes as indicated).
c	Analyzed by USEPA Method 8270 SIM.
--	Sample was not analyzed for this compound.
*	Not spplicable/ cleanup/screening level not established.
**	Groundwater sample not collected from well because of LNAPL
125	Bold value indicates that the compound was detected.
642	Bold value and yellow shading indicates concentration exceeds MTCA Methods A cleanup level.
B	Analyte was detected in the method blank
LNAPL	Light nonaqueous phase liquid
mg/L	Units in milligrams per liter
NC	Non-cancer

APPENDIX A

2021 Soil and Groundwater Sampling Report

2021 Soil and Groundwater Sampling
Mossman Residence
3461 East Lake Sammamish Shore Lane NE
Sammamish, WA 98074

Prepared for: Mr. Mark Myers
Williams Kastner
601 Union Street, Suite 4100
Seattle, WA 98101-2380

Prepared by: G-Logics, Inc.
40 2nd Avenue SE
Issaquah, WA 98027

Telephone: (425) 391-6874
Facsimile: (425) 313-3074

January 11, 2022

G-Logics Project 01-0864-D

January 11, 2022
G-Logics Project 01-0864-D

Mr. Mark Myers
Williams Kastner
601 Union Street, Suite 4100
Seattle, WA 98101-2380

Subject: 2021 Soil and Groundwater Sampling
Mossman Residence
3461 East Lake Sammamish Shore Lane NE
Sammamish, WA 98074

Dear Mr. Myers:

This report presents the purpose, approach, and results of G-Logics soil and groundwater sampling performed at the above-referenced property (the "Property"). We trust the information presented in this report meets your needs at this time. Should you require additional information or have any questions, please contact us at your convenience. Thank you again for this opportunity to be of service.

Sincerely,
G-Logics, Inc.

Rory L. Galloway, LG, LHG
Principal

Pamela M. Fleming, GIT
Project Geologist

G-Logics, Inc.
40 2nd Avenue SE, Issaquah, WA 98027
T: 425-391-6874, F: 425-313-3074

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1.0 INTRODUCTION

G-Logics has completed an additional characterization at the Property located at 3461 East Lake Sammamish Shore Lane NE, in Sammamish, WA (Figures 1 and 2). The scope of this exploration was based on G-Logics review of the *Remedial Investigation Report, Mossman Residence*, dated June 28, 2021. This RI report was prepared by TRC Environmental Corporation (TRC, formerly Environmental Partners, Inc.).

This exploration work was requested due to the known presence of petroleum contaminated soil and groundwater at the Property resulting from previous releases from a home heating-oil tank. This report documents a subsurface exploration designed to provide additional characterization information before a final decision is made regarding remediation methods.

Explorations were conducted in the areas of the highest contamination, near the northwest corner of the home, along the northern-property border, and along the shoreline. With updated information, better decisions can be made where remedial excavations and/or treatment could be conducted.

Our work was performed in accordance with our workplan dated August 31, 2021. The results of our exploration are presented in this report and are subject to the report's limitations. The findings of this report can be used by both Mossman Parties and Rodden Parties (Users).

2.0 BACKGROUND

The Property is located on the eastern shore of Lake Sammamish and is occupied by a single-family home. The home was built as a slab-on-grade construction in the late 1940s and was understood to have been heated by an oil-burning furnace. Oil for the furnace was stored in an underground storage tank (UST), previously located on the north side of the house. It is understood that the Mossman's purchased the home in August 2012 and converted the home's heating system to natural gas in October 2012.

In November 2012, Mr. Mossman observed an oily sheen on the surface of Lake Sammamish near his property. Based on a UST Site Assessment Report prepared by Environmental Partners Inc. (EPI), Mr. Mossman reported the sheen to the Spill Response Division of Washington State Department of Ecology (Ecology). On November 28, 2012, during a site visit to confirm the report, Ecology provided absorbent booms to contain the sheen to the dock area. Subsequently, the heating-oil UST on the Mossman Property was removed and the Mossman's retained EPI as an environmental consultant on their behalf.

In May 2013, an environmental site assessment was performed by EPI to assess the presence of petroleum hydrocarbons in the soil and groundwater on the Property. The assessment found that heating-oil contaminants were present on the Property and also had migrated onto the north-adjoining property. EPI concluded in their report that the exposure pathway from groundwater to surface water (freshwater, Lake Sammamish) was complete (EPI, *Phase II Environmental Site Assessment*, dated July 1, 2013). Using soil and groundwater data from the 2013 Phase II and subsequent characterization efforts, EPI provided cost estimates to conduct a remedial excavation in a *Technical Memorandum*, dated November 16, 2018.

G-Logics conducted an additional exploration in May 2020, with the results presented in our *Additional Site Characterization* report dated June 29, 2020. This report indicated petroleum concentrations in soil and groundwater had significantly decreased from when they were first detected in 2012. Reduction was attributed due to ongoing natural-attenuation processes. Measurable amounts of Light Non-Aqueous Phase Liquid (LNAPL) also were smaller, likely due to the same processes and the LNAPL-recovery efforts conducted by EPI.

EPI was acquired by TRC Companies (TRC) in 2019. On July 2, 2021, TRC submitted their *Remedial Investigation* (RI) report (dated June 28, 2021), their Voluntary Cleanup Program (VCP) application, and the VCP Agreement to Ecology. In their submittal, and based on email conversations with Ecology, the initial concerns with sediment contamination have been identified as resolved (for the time being), and the Property has been accepted into the VCP. In their RI report, TRC incorporated the data from the G-Logics June 29, 2020, report.

Based on current Ecology backlog, at least six months will be required for a project manager to be assigned and the initial review to be completed. In this interim, additional soil and groundwater analytical data was generated, as presented in the following report sections. This data is intended to provide updated site-characterization data that Ecology can use for their review of remedial methods for the Property. The collected information, as described in this report, is anticipated to be provided to Ecology by TRC as a Supplement to their RI report. G-Logics also understands TRC will include these findings during their review of cost-effective remedial options for the Property, to be summarized in their *Feasibility Study* (FS).

2.1 Regulatory Background

The law that guides the soil remediation process at sites located within Washington State is the Model Toxics Control Act (MTCA). The regulations implementing MTCA are in the Washington Administrative Code (WAC), Chapter 173-340. This regulation is administered by the Washington Department of Ecology (Ecology). MTCA "establishes administrative processes and standards to identify, investigate, and cleanup facilities where hazardous substances have come to be located" (WAC 173-340-100). MTCA regulations also list prescriptive, numerical "Method A Cleanup Levels" that "provide conservative cleanup levels for sites undergoing routine cleanup actions or for sites with relatively few hazardous substances". However, the regulations also state that Method A Cleanup Levels should not automatically be used to define cleanup levels that must be met for financial, real estate, insurance coverage, or similar purposes. Additionally, exceeding MTCA published cleanup levels does not necessarily mean that a cleanup needs to meet those cleanup levels.

3.0 EXPLORATION ACTIVITIES

To provide updated information on soil and groundwater contamination on the Property, notably concentration and contaminant-location information, an additional exploration was conducted. A G-Logics geologist was present at the Property during the exploration to observe and document site conditions.

The following tasks were performed by G-Logics under this scope of services:

- Performed utility locating services prior to conducting the borings at the Property.
- Completed nine-soil borings.
- Collected groundwater samples from temporary wells installed in the completed borings.
- Collected groundwater samples from the monitoring wells at the Property.
- Prepared this report to document our findings and recommendations.

Exploration work conducted at this Property is further described below. A description of our site-exploration methods is presented in Appendix A. The boring logs are presented in Appendix B. Each boring log presents soil types/field descriptions, sample-screening results, general observations, and sample-collection depths.

3.1 Soil Borings

On October 20 and 21, 2021, G-Logics completed nine direct-push borings (GLB-8 through GLB-16). Boring locations, shown on Figure 2, were selected based on the findings of the previously completed site explorations performed by EPI and G-Logics. Exploration locations were chosen to provide additional information regarding the lateral and vertical extent of petroleum contaminants. Samples also were collected to provide updated concentration information.

During drilling, soil samples were collected for soil identification and chemical analysis. A photoionization detector (PID) was used to screen for volatile-organic compounds (VOCs) in collected soil samples, with the results measured in parts per million by volume (ppmv) and noted on the boring logs. Soil conditions encountered during drilling are further descried in Section 4.1 below.

Collected at approximately two-foot intervals, numerous soil samples were submitted to the analytical laboratory and analyzed for diesel-range organics (DRO). Based on the DRO results, selected samples were analyzed for BTEX (benzene, toluene, ethylbenzene, and xylenes), DRO with silica gel cleanup, and/or petroleum fractionation. Results of these analyses are presented in Section 4.2 of this report.

3.2 Groundwater Samples

Groundwater samples were collected from monitoring wells located on the Property and from all nine of the completed soil borings. A groundwater sample was collected from MW-2, even though the presence of LNAPL was indicated.

Collected samples from each well were submitted to the analytical laboratory and analyzed for DRO and/or BTEX and total organic carbon. Analytical results are presented in Section 4.3 of this report.

3.3 Quality Assurance/Quality Control

Quality Assurance/Quality Control (QA/QC) included accepted procedures for sample collection, storage, tracking, and documentation. All non-dedicated sampling equipment was washed and rinsed before the collection of the samples. All samples were labeled with a sample number, date, time, and sampler name, and were stored in an ice chest containing ice.

3.4 Groundwater Depth Measurements

The static water level was measured in each monitoring well (MW-1 through MW-9) on October 21, 2021. Groundwater-depth measurements were converted to elevations in order to prepare groundwater-elevation contours. Results of these measurements are presented in Section 4.4 of this report. Appendix A also presents details of the groundwater depth-measurement procedures.

4.0 EXPLORATION OBSERVATIONS AND FINDINGS

The findings of this exploration are presented below. Analytical results obtained by EPI/TRC are attached as Table A. Analytical results obtained during this exploration are presented on Tables 1 through 3. The analytical laboratory reports for the analyzed samples are attached as Appendix C of this report. Chain-of custody forms also are included in Appendix C.

4.1 Soil Boring Findings

The borings completed during the exploration were advanced to depths ranging from 8 to 16 feet below the ground surface. These borings generally encountered brown and gray sands and gravels to the explored depths. Depths to groundwater above the retaining wall (near the Mossman residence) were approximately 5 to 6 feet below the ground surface, while below the retaining wall they were approximately 1 foot deep. Petroleum-hydrocarbon odors were noted in all borings.

4.2 Soil Analytical Results

Soil analytical results from this exploration are summarized in our Table 1 (prior analytical results are presented in EPI Table A). Findings from our work are summarized below.

4.2.1 Petroleum Hydrocarbons

Diesel-range organics were reported exceeding the MTCA Method A Cleanup Level (2,000 mg/kg) in soil samples from borings GLB-8, GLB-9, and GLB-12 (8', 8', and 4' deep respectively). The samples are located west of the home, downgradient of the former UST. DRO was not found above cleanup levels in the remaining borings. As seen on Table 1, these elevated concentrations were limited to a narrow band of soils approximate 2 to 4 feet thick.

Using the recently collected data, and the highest concentrations previously found in soil samples at each boring location, Figure 3 was prepared. This figure also includes an interpretation of the areas where DRO concentrations are expected to exceed 2,000 and 10,000 mg/kg. These areas largely exist within the yard and beach areas downgradient of the former UST, but do not extend beyond the Ordinary High Watermark.

4.2.2 Volatile Organic Compounds

After receiving the DRO results, three soil samples with the highest detected concentrations (from GLB-8, GLB-9, and GLB-12) also were analyzed for volatile organics (BTEX), petroleum fractions, and naphthalene. Detected concentrations also are presented on Table 1, only with benzene and naphthalene detected above their respective cleanup levels.

4.3 Groundwater Sampling Results

Analytical groundwater data collected from the groundwater-monitoring wells and the temporary wells placed into the soil borings is presented in Table 3. Groundwater analytical results are summarized below.

4.3.1 Petroleum Hydrocarbons

Figure 4 shows the results of groundwater samples collected during this exploration, with an interpretation of the area where concentrations are expected to exceed 500 ug/L, the MTCA Method A cleanup level. The highest detected concentrations were found in yard areas upslope of the rock wall. This figure includes groundwater samples collected from monitoring wells and those collected as grab samples from the recent borings.

Figure 4a presents DRO concentrations measured in monitoring wells located at the Property, with summarized results for samples collected over the past five years. For the most part, DRO concentrations remained relatively consistent over this comparison interval. Additionally, measurable LNAPL was again detected in MW-2 (0.05 inches). A sample of groundwater from this well also was analyzed, yielding a DRO concentration of 11,900 ug/L.

4.3.2 Additional Analyses

After receiving the DRO results, five groundwater samples with high concentrations also were analyzed for volatile organics (BTEX), DRO with silica gel treatment, naphthalene, and/or total organic carbon. BTEX and naphthalene were not detected in any of the analyzed samples.

DRO concentrations after silica-gel treatment indicated drops in concentrations in four of the five analyzed samples, with three concentrations below the cleanup level of 500 ug/L. The largest reduction was in the noted in the sample from MW-4, which is located in the area of the former fuel tank. Also located in this area is a sump pump that transfers wastewater from the home to the sanitary-sewer line located in the street. During our field efforts, we noted an obvious leak from the discharge line, resulting in a release of wastewater in this area (TRC and the homeowner were notified). It is unknown to what extent the release of wastewater has been affecting the DRO concentrations in this area.

4.4 Groundwater Depth Measurement Findings

The depths to groundwater were measured in monitoring wells located at the Property. Measurements are presented in Table 3 of this report. Measured groundwater elevations for these wells have been plotted on Figure 5, which includes an interpretation of groundwater-flow directions. The plotted groundwater elevations indicate flow directions toward the southwest (into Lake Sammamish).

As seen in Table 3, LNAPL (as measurable thickness or sheen) now only remains in MW-2. Additionally, the thickness shows variability, but overall, the LNAPL presence is decreasing.

4.5 Quality Assurance/Quality Control Findings

The laboratory conducted matrix-spike analyses, matrix-spike duplicate analyses, laboratory-control, and method-blank analyses. These analyses indicated that analytical results were within acceptable limits. Laboratory QA/QC information is included (with the laboratory report) in Appendix C.

5.0 CONCLUSIONS AND OPINIONS

Presented below are conclusions and opinions for the completed work, which also incorporates findings from previous explorations at the Property.

5.1 Soil Cleanup Levels

For this recent sampling, DRO concentrations were reported exceeding the MTCA Method A Cleanup Level (2,000 mg/kg) in soil samples from borings GLB-8, GLB-9, and GLB-12 (Figure 3). These samples are located west of the home, in downgradient areas from the former UST.

DRO was not found in soils above cleanup levels in the remaining borings, including samples collected from GLB-13 through 16, all located on the shoreline in the area of the ordinary high watermark. Additionally, hydrocarbons only were detected in a shallow sample from GLB-16, at a concentration of 125 mg/kg, well below the cleanup level.

5.2 Groundwater Cleanup Levels

In the RI report dated June 28, 2021, TRC presents a surface-water cleanup level for DRO as 500 ug/L. Given recent Ecology Guidance IM 23 (*Implementation Memorandum No. 23: Concentrations of Gasoline and Diesel Range Organics Predicted to be Protective of Aquatic Receptors in Surface Waters*, August 2021), we concur that 500 ug/L should be identified as the cleanup level. This is consistent with MTCA Method A Cleanup Levels for groundwater.

While IM 23 does not define the characteristics of "weathered" diesel, IM 23 references a 2020 toxicity study for "a release of diesel range organics that could be considered as an event that had happened in the past (significant time prior to investigation), and natural biologic process have influenced the original chemistry of the product, or what could be considered a "weathered" release of diesel."

For this Property, analytical laboratory reports for groundwater samples collected by EPI in 2014 indicate the DRO is weathered. Specifically, results for samples collected from monitoring wells MW-1 and MW-4 contained the following language "Chromatogram indicates that it is likely that sample contains weathered diesel." This finding is consistent with the expectation that the fuel has weathered further since 2014, now nine years since discovery of the release in November 2012.

IM 23 states that the groundwater protective value for freshwater, for diesel-range organics "weathered", is listed as 3,000 ug/L. Currently, only one monitoring well at the Property, MW-2, contains DRO concentrations greater than 3,000 ug/L (see Figure 4a). Including the groundwater samples collected from the recent soil borings (see Figure 4), four additional areas contain groundwater concentrations greater than 3,000 ug/L (groundwater samples collected from GLB-8, -12, -15, and -16). Given the findings that DRO contaminants at this Property are weathered, 3,000 ug/L should be considered when developing remedial alternatives for the Property groundwater.

5.3 Extent of Property Contamination

As can be seen on Figures 4 and 4a, the areas with elevated DRO concentrations are similar to those observed for soils (Figure 3), with a notable difference along area of the Ordinary High Watermark. In this location, groundwater data is represented by grab samples collected from the recent borings. As previously stated, petroleum contaminants were largely not detected in soil samples collected from this area. Accordingly, groundwater concentrations detected in the grab samples likely are transitory, due to upgradient sources and the effects of removing water from the borings prior to collection of groundwater samples. Grab samples typically also are biased high, due to turbidity in the samples (as they are not collected from a properly-developed monitoring well).

Information collected from this recent G-Logics exploration indicates that petroleum concentrations in soil and groundwater generally have decreased from when they were first detected approximately nine years ago. This reduction likely is due to ongoing natural-attenuation processes, which is degrading the fuel oil in the subsurface. Measurable amounts of LNAPL also are now smaller, likely due to the same processes and the LNAPL-recovery efforts conducted by EPI. However, petroleum contaminants still remain at concentrations greater than cleanup levels in yard and shoreline areas west of the home. Based on residual soil concentrations, remedial efforts are warranted.

With the discovered locations and depths of DRO contaminants, an additional cross-section has been prepared. Figure 6 presents a third cross-section that complements the two cross-sections previously provided in the RI report prepared by TRC (their Figure 3). In their cross-section B-B', data was extrapolated from inland areas (B-11, GB-3, MW-2 and MW-1) and projected westward toward the shoreline as much as 10+ feet. By including this inland data, the presented interpretation indicated that this contamination is physically

present at the cross-section location, when factually it is not. Accordingly, G-Logics generated this new cross-section (Figure 6) using the same alignment, but only incorporating data points (old and new) for soil samples located in the cross-section location. Based on this updated cross-section, soil contamination does not extend beyond the Ordinary High Watermark.

6.0 REMEDIAL EXCAVATION

This section discusses G-Logics approach for the excavation of soils containing DRO contaminants at the Property. Planning-level estimates also have been prepared. These estimates update the budgeting information presented in our Draft letter dated July 15, 2020. This letter was prepared as a review of TRC's *Description of Remedial Alternative and Order-of-Magnitude Cost Estimate, Mossman UST Site*, dated November 16, 2018.

With the updated information collected for the Property, a remedial excavation is prudent. Specifically, this remedial work acknowledges the following.

- Demolition of the existing house would not be necessary. Instead, the foundations nearest the excavation could be shored with pin-piles (or helical piles) prior to the remedial excavation.
- Significant encroachment onto the north-adjoining property is not necessary.
- Soil excavation would not extend beyond the ordinary high watermark.
- In-water work is not needed, soil permitting, coffer dams, or sheet piling will not be needed.
- Excavation could be conducted with limited-access equipment (e.g., small track-mounted excavator and skid-steer equipment).
- Equipment can access the excavation area via the walkway area located along the southeast side of the home.
- A conveyor system would be used to move soils from the excavation area to truck/bins staged in front of the home. The conveyor system also would be used to move backfill soils to the excavated area.

- In order to use pin piles to support the home in areas directly adjacent to the identified excavation areas, a structural evaluation would need to be conducted. This study would identify bearing capacities and the recommendations for structural reinforcement of the building. Using these findings, a structural engineer would need to design the layout for any structural reinforcement. In addition, the structural engineer should conduct site visits before and after all work activity to assess the structure for existing cracks and the general structural conditions of the foundation, walls, and roof. Accordingly, both a geotechnical engineer and structural engineer would need to be retained prior to and during the remedial excavations in order to provide assistance to the remediation contractor.
- In addition to the pin-piles protecting the building foundation in the areas near the excavation work, measures need to be taken to prevent sloughing of material from underneath the building. These precautionary steps are intended to mitigate failure of the slab and/or any sub-slab utilities. It is anticipated that slot-cut and/or trench box excavation methods can be used adjacent to the building, with the cuts backfilled using control density fill (CDF). However, based on site conditions, the contractor may need to coordinate with the geotechnical engineer to select a different excavation method (if slot-cut methods are not feasible).
- If contaminated soils are not excavated beneath the northwestern portion of the home, In-situ treatment methods (chemical oxidation and/or enhanced bioremediation) could be used to address remaining contaminants. If needed, it is anticipated that simple infiltration galleries can be used for the addition of treatment solutions.

6.1 Soil Excavation Areas

As seen on Table 1, elevated DRO concentrations are limited to a narrow band of soils approximate 2 to 4 feet thick, located at/near the water-table interface. Accordingly, a remedial excavation to address these soils is appropriate, with a more successful/complete excavation anticipated when water levels (lake levels) are lower. For soils that cannot be excavated due to overlying structures (residence and patio structures located on North-adjacent property), In-situ treatment may be appropriate. This combined remedial work should mitigate impacts to groundwater and subsequently the possible impacts to surface water.

Figure 7 of this report, based on soil data presented on Figure 3, shows the location where DRO contaminants can be excavated. Square-footage calculations for upland areas (green shading) and shoreline areas (yellow shading) also are presented on Figure 7. For the upland area, an average soil thickness of 11 feet has been used for the calculations. A thickness of 6 feet has been used for the shoreline area. Given the small volumes of soils and the restricted space at the Property, no effort is assumed for segregation of clean soils from contaminated soils.

6.2 Soil-Disposal Costs

For the excavated soils, a conversion factor of 1.6 (yards to tons) is assumed, which yields a total of 651 tons of soil for off-site disposal. For estimating purposes, disposal of petroleum-contaminated soil is identified at $75 per ton and transport is identified at $20 per ton. These values have been used in the calculations presented in Table 4.

The interpretations presented on Figure 7 should not be taken to represent definitive locations or absolute volumes. Final excavated volumes also will not exactly match these estimated quantities, given actual excavated depths/areas, discovered site conditions, contractor capabilities, weather conditions, etc.

Prior to initiation of this approach for remedial work at the Property, further collaborative refinement and updating of the presented work scopes and budget estimates should be considered. This update would reflect current contractor rates, labor rates, equipment requirements, permitting issues/costs, soil-disposal costs, etc. With this update, edits to the discussed workscope may be required.

6.3 Additional Remedial Costs

Table 4 also includes preliminary estimates of additional costs for a typical soil-excavation project. These costs are for work associated with engineering, management, permitting, documentation, and contractor expenses necessary to address the subsurface contamination. Additional efforts include activities such as project-design modifications, contractor health and safety issues, sampling and chemical analyses, contaminated soil transportation and disposal, groundwater management and treatment, Ecology negotiations, and document preparation. These additional tasks have been included with “Placeholder Estimates” presented in Table 4. Refinement of these costs would be updated as the project is developed.

7.0 LIMITATIONS

The scope of work on this project was presented in our identified workplan, as subsequently approved. Please be aware our scope of work was limited to those items specifically identified in the workplan. Other activities not specifically included in the presented scope of work (in the workplan, correspondence, or this report) are excluded and are therefore not part of our services.

Land use, site conditions (both on-site and off-site), and other factors will change over time. Since property activities and regulations beyond our control could change at any time after the completion of this report, our observations, findings, and opinions can be considered valid only as of the date of the exploration work.

G-Logics assumes no responsibility or liability whatsoever for any claim, loss of property value, damage, or injury which results from pre-existing hazardous materials being encountered or present on the project site, or from the discovery of such hazardous materials.

This report is prepared for the sole use of our client and the Users identified in Section 1.0 of this report. The scope of services performed during this effort may not be appropriate for the needs of other parties. Re-use of this document or the findings, conclusions, or recommendations presented herein, are at the sole risk of said party(ies). Our client and regulatory agencies also may make additional copies of this document for their internal and public use, or as required by law. All other users of this document must acknowledge our copyright and indicate that permission to use has been received from G-Logics and our Client. Any party other than our client who would like to use this report shall notify G-Logics of such intended use by executing the “Permission and Conditions for Use and Copying” contained in this document. Based on the intended use of the report, G-Logics may require that additional work be performed and that an updated report be issued. Non-compliance with any of these requirements will release G-Logics from any liability resulting from the use of this report by any unauthorized party.

The planning-level costs presented in this report are based on our current understanding of site conditions, our professional experience, and Ecology requirements. Actual costs could differ by as much or more than -10% to +50%, depending upon a multitude of project variables. Presented budgeting estimates also do not include health testing, Ecology costs, attorney fees, public participation/notification issues, or other items not specifically described in this report or presented in the attached Table 4, which ultimately may be required. Data gaps also were identified and discussed in Section 6.1 and 6.2 of this report.

Presented planning estimates do not constitute a “not-to-exceed” bid or proposal for this work. Actual costs may change up or down based on discovered site conditions, actual provided services, and project deliverables. G-Logics does not warrant or guarantee presented estimates, especially if others conduct the soil-excavation coordination and sampling work.

G-Logics is not a cost estimator or contractor and does not have a cost estimator’s or contractor's experience with factors such as the specific decisions of other consultants involved with the project; the means, methods, sequences, and operations of construction and related safety programs; the cost and extent of labor, equipment, and materials; cost estimators’ and contractors’ techniques for determining prices and market conditions; and other factors that cost estimators and contractors consider and over which G-Logics has no control. Accordingly, if project proponents choose to rely on our preliminary estimate rather than a cost estimator’s or contractor’s estimate, to the fullest extent permitted by law, any claim against G-Logics relative to the accuracy of G-Logics opinions and estimates shall be waived.

No warranty, either express or implied, is made.

FIGURES

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Property Location Maps

Mossman Residence

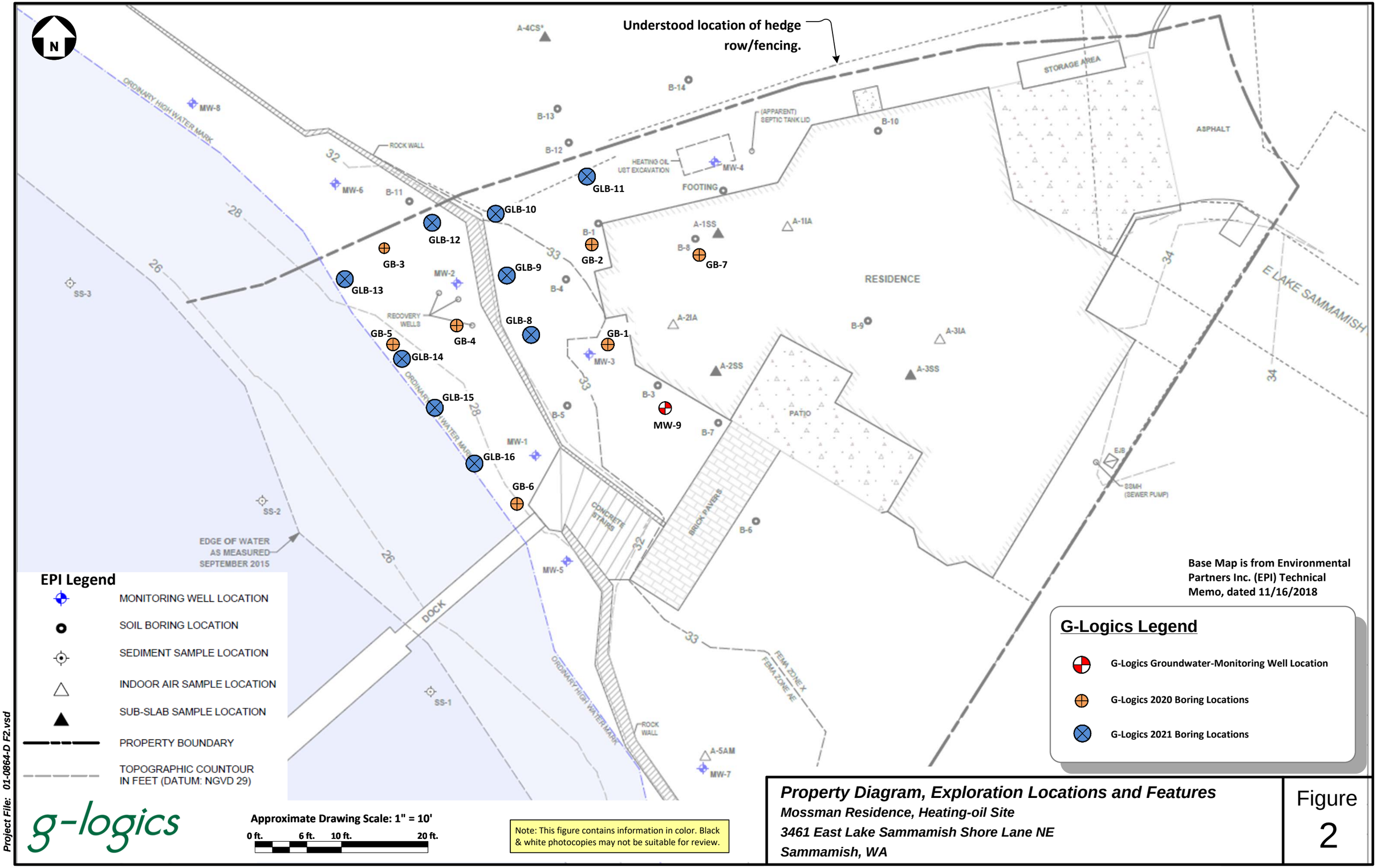
3461 East Lake Sammamish Shore Lane NE

Sammamish, Washington

Figure 1

Project File: 01-0864-D F1.vsd

Mapping Reference: Delorme and King County iMap



EPI Legend

- MONITORING WELL LOCATION
- SOIL BORING LOCATION
- SEDIMENT SAMPLE LOCATION
- INDOOR AIR SAMPLE LOCATION
- SUB-SLAB SAMPLE LOCATION
- PROPERTY BOUNDARY
- TOPOGRAPHIC COUNTOUR IN FEET (DATUM: NGVD 29)

Base Map is from Environmental Partners Inc. (EPI) Technical Memo, dated 11/16/2018

G-Logics Legend

- G-Logics Groundwater-Monitoring Well Location
- G-Logics 2020 Boring Locations
- G-Logics 2021 Boring Locations

g-logics

Approximate Drawing Scale: 1" = 10'

0 ft. 6 ft. 10 ft. 20 ft.

Note: This figure contains information in color. Black & white photocopies may not be suitable for review.

Property Diagram, Exploration Locations and Features
Mossman Residence, Heating-oil Site
3461 East Lake Sammamish Shore Lane NE
Sammamish, WA

Figure 2

Project File: 01-0864-D F2.vsd

Mapping Reference: Environmental Partners Inc., Triad Associates, G-Logics Measurements.

Understood location of hedge row/fencing.

G-Logics Legend

- G-Logics Groundwater-Monitoring Well Location
- G-Logics 2020 Boring Locations
- G-Logics 2021 Boring Locations
- 10,000 — DRO Concentration in Soil Exceeding 10,000 mg/kg
- 2,000 — DRO Concentration in Soil Exceeding MTCA Method A Cleanup Level 2,000 mg/kg
- 519 — DRO Concentrations from EPI and G-Logics soil sampling, see EPI Table 1 and G-Logics Table 1 for Analytical Results
- 5,123 — DRO Concentrations >2,000 mg/kg
- <51.5 — DRO Concentrations Not Detected

EPI Legend

- MONITORING WELL LOCATION
- SOIL BORING LOCATION
- SEDIMENT SAMPLE LOCATION
- INDOOR AIR SAMPLE LOCATION
- SUB-SLAB SAMPLE LOCATION
- PROPERTY BOUNDARY
- TOPOGRAPHIC COUNTOUR IN FEET (DATUM: NGVD 29)

Base Map is from Environmental Partners Inc. (EPI) Technical Memo, dated 11/16/2018

The isoconcentration contours represent an interpretation of available data, for the indicated date. These contours may change with additional measurements and/or data points, remedial efforts, natural attenuation, and/or other influences.

Approximate Drawing Scale: 1" = 10'

0 ft. 6 ft. 10 ft. 20 ft.

Note: This figure contains information in color. Black & white photocopies may not be suitable for review.

Highest DRO Concentrations in Soil, 2013/14, 2020, and 2021

Mossman Residence, Heating-oil Site

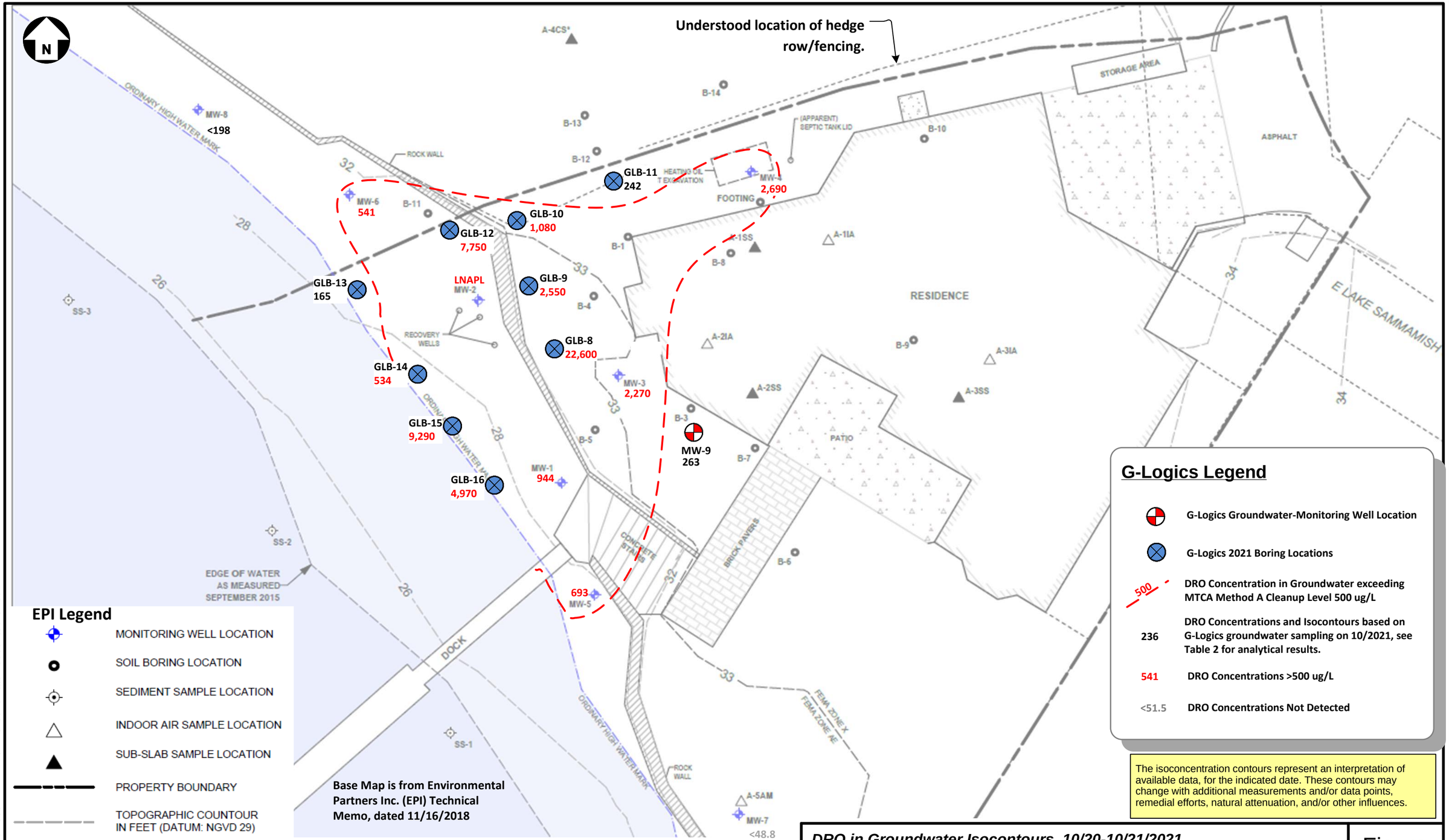
3461 East Lake Sammamish Shore Lane NE

Sammamish, WA

Figure 3

Mapping Reference: Environmental Partners Inc., Triad Associates, G-Logics Data.

Project File: 01-0864-D F3 DRO in Soil Isocontours.vsdx



Project File: 01-0864-D F4 DRO in Groundwater Isocontours.vsdx

g-logics

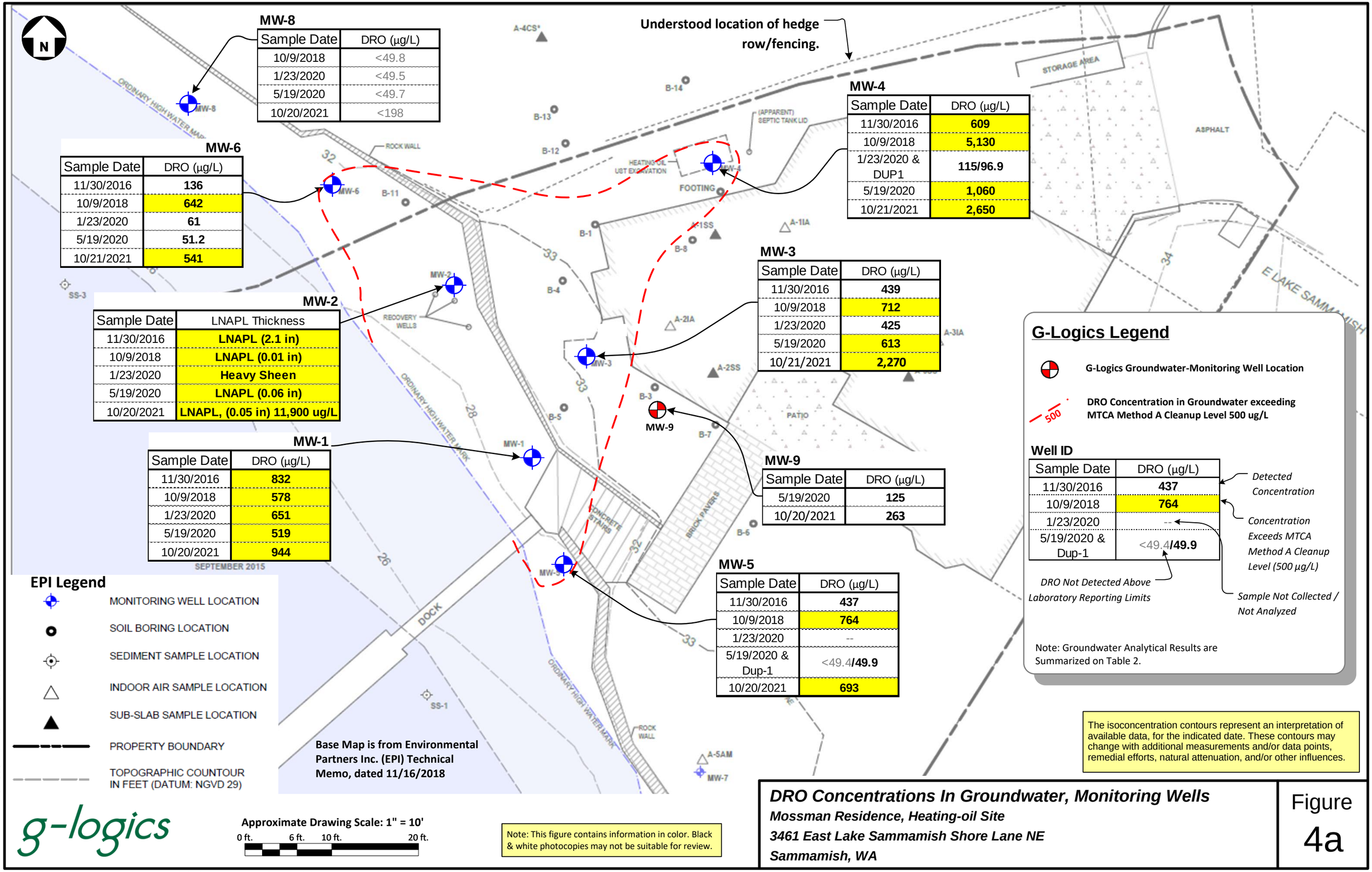
Approximate Drawing Scale: 1" = 10'
0 ft. 6 ft. 10 ft. 20 ft.

Note: This figure contains information in color. Black & white photocopies may not be suitable for review.

DRO in Groundwater Isocontours, 10/20-10/21/2021
Mossman Residence, Heating-oil Site
3461 East Lake Sammamish Shore Lane NE
Sammamish, WA

Figure 4

Mapping Reference: Environmental Partners Inc., Triad Associates, G-Logics Data.


N
MW-8
Sample Date | DRO (µg/L)
10/9/2018 | <49.8
1/23/2020 | <49.5
5/19/2020 | <49.7
10/20/2021 | <198
Understood location of hedge row/fencing.
MW-4
Sample Date | DRO (µg/L)
11/30/2016 | 609
10/9/2018 | 5,130
1/23/2020 & DUP1 | 115/96.9
5/19/2020 | 1,060
10/21/2021 | 2,650
MW-6
Sample Date | DRO (µg/L)
11/30/2016 | 136
10/9/2018 | 642
1/23/2020 | 61
5/19/2020 | 51.2
10/21/2021 | 541
MW-3
Sample Date | DRO (µg/L)
11/30/2016 | 439
10/9/2018 | 712
1/23/2020 | 425
5/19/2020 | 613
10/21/2021 | 2,270
MW-2
Sample Date | LNAPL Thickness
11/30/2016 | LNAPL (2.1 in)
10/9/2018 | LNAPL (0.01 in)
1/23/2020 | Heavy Sheen
5/19/2020 | LNAPL (0.06 in)
10/20/2021 | LNAPL, (0.05 in) 11,900 ug/L
MW-1
Sample Date | DRO (µg/L)
11/30/2016 | 832
10/9/2018 | 578
1/23/2020 | 651
5/19/2020 | 519
10/20/2021 | 944
SEPTEMBER 2015
MW-9
Sample Date | DRO (µg/L)
5/19/2020 | 125
10/20/2021 | 263
MW-5
Sample Date | DRO (µg/L)
11/30/2016 | 437
10/9/2018 | 764
1/23/2020 | --
5/19/2020 & Dup-1 | <49.4/49.9
10/20/2021 | 693
EPI Legend
MONITORING WELL LOCATION
SOIL BORING LOCATION
SEDIMENT SAMPLE LOCATION
INDOOR AIR SAMPLE LOCATION
SUB-SLAB SAMPLE LOCATION
PROPERTY BOUNDARY
TOPOGRAPHIC COUNTOUR IN FEET (DATUM: NGVD 29)
Base Map is from Environmental Partners Inc. (EPI) Technical Memo, dated 11/16/2018
G-Logics Legend
G-Logics Groundwater-Monitoring Well Location
DRO Concentration in Groundwater exceeding MTCA Method A Cleanup Level 500 ug/L
Well ID
Sample Date | DRO (µg/L)
11/30/2016 | 437
10/9/2018 | 764
1/23/2020 | --
5/19/2020 & Dup-1 | <49.4/49.9
Detected Concentration
Concentration Exceeds MTCA Method A Cleanup Level (500 µg/L)
DRO Not Detected Above Laboratory Reporting Limits
Sample Not Collected / Not Analyzed
Note: Groundwater Analytical Results are Summarized on Table 2.
The isoconcentration contours represent an interpretation of available data, for the indicated date. These contours may change with additional measurements and/or data points, remedial efforts, natural attenuation, and/or other influences.
STORAGE AREA
ASPHALT
E LAKE SAMMAMISH
ROCK WALL
HEATING OIL UST EXCAVATION
(APPARENT) SEPTIC TANK LID
FOOTING
PATIO
CONCRETE STAIRS
BRICK PAVERS
DOCK
ORDINARY HIGH WATER MARK
RECOVERY WELLS
Approximate Drawing Scale: 1" = 10'
0 ft. 6 ft. 10 ft. 20 ft.
Note: This figure contains information in color. Black & white photocopies may not be suitable for review.
DRO Concentrations In Groundwater, Monitoring Wells
Mossman Residence, Heating-oil Site
3461 East Lake Sammamish Shore Lane NE
Sammamish, WA
Figure 4a
Project File: 01-0864-D F4a DRO GW.vsd
Mapping Reference: Environmental Partners Inc., Triad Associates, G-Logics Data.

Understood location of hedge row/fencing.

MW-8
26.05'

MW-6
25.98'

MW-2
26.04'

MW-1
26.09'

MW-5
26.05'

MW-7
26.05'

MW-3
26.18'

MW-9
26.36'

MW-4
27.41'

27'

26'

STORAGE AREA

ASPHALT

RESIDENCE

PATIO

FOOTING

(APPARENT) SEPTIC TANK LID

HEATING OIL UST EXCAVATION

ROCK WALL

RECOVERY WELLS

CONCRETE STAIRS

BRICK PAVERS

DOCK

EDGE OF WATER AS MEASURED SEPTEMBER 2015

ORDINARY HIGH WATER MARK

FEMA ZONE X
FEMA ZONE AE

E LAKE SAMMAMISH

SSMH (SEWER PUMP)

EJB

A-4CS*
A-1SS
A-1IA
A-2IA
A-2SS
A-3IA
A-3SS
A-5AM

B-1
B-3
B-4
B-5
B-6
B-7
B-8
B-9
B-10
B-11
B-12
B-13
B-14

SS-1
SS-2
SS-3

32
33
34
28
26

EPI Legend

- MONITORING WELL LOCATION
- SOIL BORING LOCATION
- SEDIMENT SAMPLE LOCATION
- INDOOR AIR SAMPLE LOCATION
- SUB-SLAB SAMPLE LOCATION
- PROPERTY BOUNDARY
- TOPOGRAPHIC COUNTOUR IN FEET (DATUM: NGVD 29)

Base Map is from Environmental Partners Inc. (EPI) Technical Memo, dated 11/16/2018

G-Logics Legend

- G-Logics Groundwater-Monitoring Well Location
- MW-5 / 26.49' — Well Identification / Groundwater Elevation in feet (NGVD 29)
- -26'- Groundwater Elevation Contour Line
- Inferred Groundwater Flow Direction

The groundwater contours represent an interpretation of available data, for the indicated date. Site groundwater contours may change with additional measurements and/or data points, weather changes, construction activities, and/or other influences.

g-logics

Approximate Drawing Scale: 1" = 10'

0 ft. 6 ft. 10 ft. 20 ft.

Note: This figure contains information in color. Black & white photocopies may not be suitable for review.

Groundwater Contours, 10/21/2021
Mossman Residence, Heating-oil Site
3461 East Lake Sammamish Shore Lane NE
Sammamish, WA

Figure 5

Project File: 01-0864-D F5 Groundwater Contours.vsd

Mapping Reference: Environmental Partners Inc., Triad Associates, G-Logics Measurements.

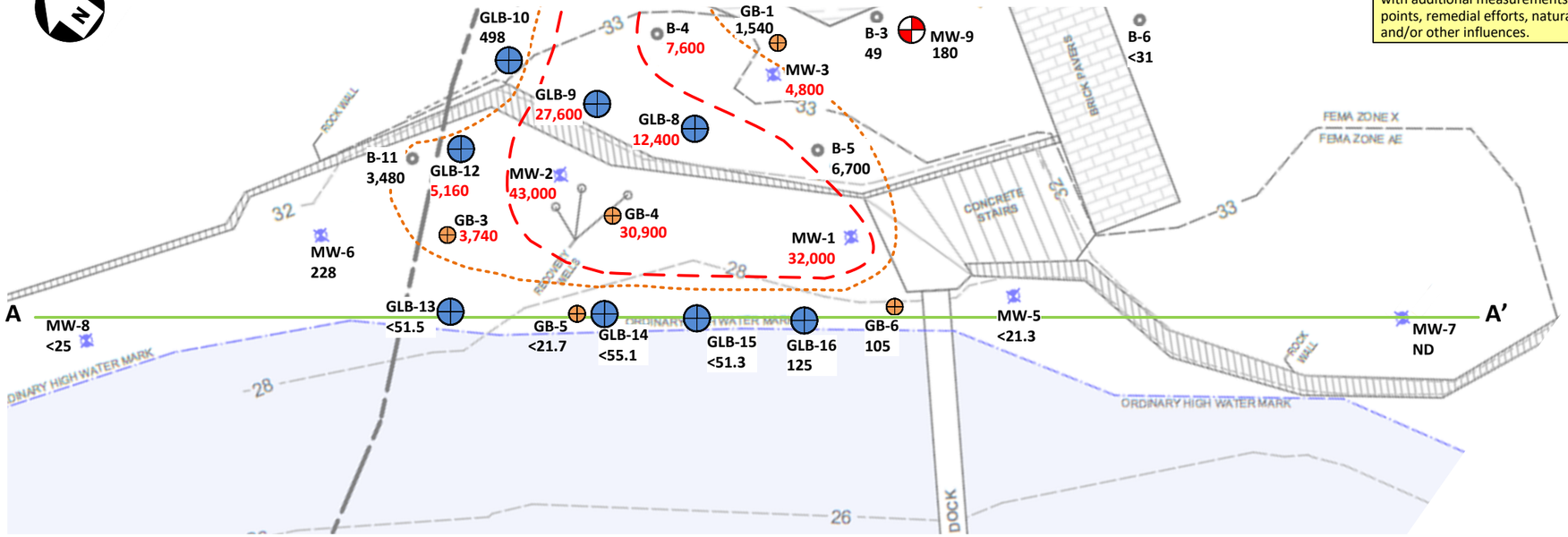
The isoconcentration contours represent an interpretation of available data, for the indicated date. These contours may change with additional measurements and/or data points, remedial efforts, natural attenuation, and/or other influences.

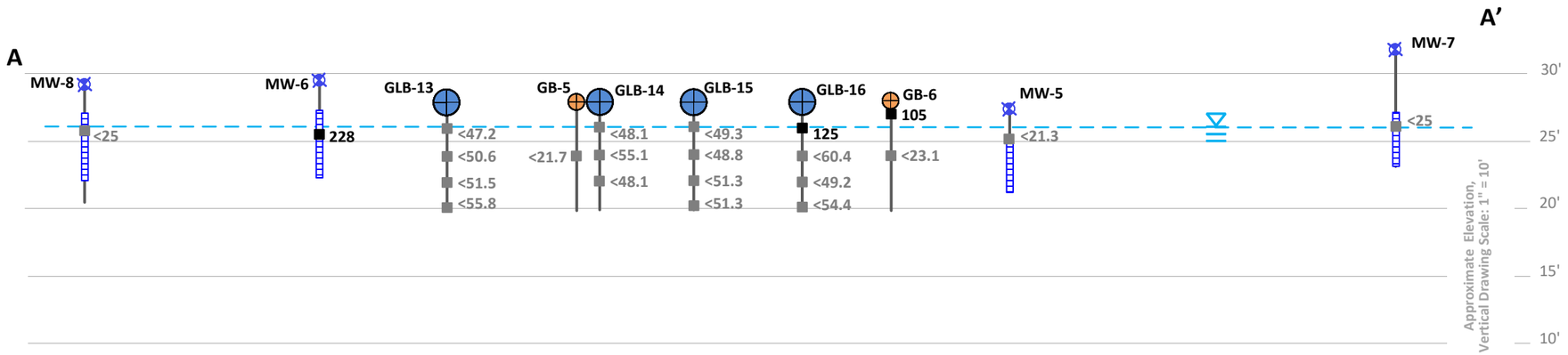
Base Map is from Environmental Partners Inc. (EPI) Technical Memo, dated 11/16/2018

MONITORING WELL LOCATION

SOIL BORING LOCATION

TOPOGRAPHIC COUNTOUR IN FEET (DATUM: NGVD 29)





G-Logics Legend

- G-Logics Groundwater-Monitoring Well Location
- G-Logics 2020 Boring Locations
- G-Logics 2021 Boring Locations
- 10,000 — DRO Concentration in Soil Exceeding 10,000 mg/kg
- 2,000 — DRO Concentration in Soil Exceeding MTCA Method A Cleanup Level 2,000 mg/kg
- 519 — DRO Concentrations from EPI and G-Logics soil sampling, see EPI Table 1 and G-Logics Table 1 for Analytical Results
- 5,123 — DRO Concentrations >2,000 mg/kg
- <51.5 — DRO Concentrations Not Detected
- Well screen, if installed
- Approximate Water-Table Elevation (Based on October 2021 Measurements)

Note: This figure contains information in color. Black & white photocopies may not be suitable for review.

Project File: 01-0864-D F6 CS CC.vsdx

g-logics

Approximate Drawing Scale: 1" = 10'

0 ft. 6 ft. 10 ft. 20 ft.

Cross-section, C - C', Soil Data for DRO

Mossman Residence, Heating-oil Site

3461 East Lake Sammamish Shore Lane NE

Sammamish, WA

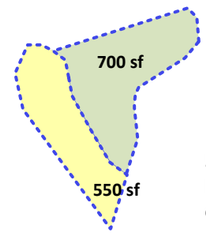
Figure 6

Mapping Reference: Environmental Partners Inc., Triad Associates, G-Logics Data.

Understood location of hedge row/fencing.

G-Logics Legend

- G-Logics Groundwater-Monitoring Well Location
- G-Logics 2020 Boring Locations
- G-Logics 2021 Boring Locations
- 10,000 — DRO Concentration in Soil Exceeding 10,000 mg/kg
- 2,000 — DRO Concentration in Soil Exceeding MTCA Method A Cleanup Level 2,000 mg/kg



700 SqFt, x Average 11'
Depth = 285 cy, x 1.6
conversion = 456 tons

550 SqFt, x Average 6'
Depth = 122 cy, x 1.6
conversion = 195 tons

EPI Legend

- MONITORING WELL LOCATION
- SOIL BORING LOCATION
- SEDIMENT SAMPLE LOCATION
- INDOOR AIR SAMPLE LOCATION
- SUB-SLAB SAMPLE LOCATION
- PROPERTY BOUNDARY
- TOPOGRAPHIC COUNTOUR IN FEET (DATUM: NGVD 29)

Base Map is from Environmental Partners Inc. (EPI) Technical Memo, dated 11/16/2018

The isoconcentration contours represent an interpretation of available data for the indicated date in the soil-data table. These contours may change with additional measurements and/or data points, remedial efforts, natural attenuation, and/or other influences.

g-logics

Approximate Drawing Scale: 1" = 10'

0 ft. 6 ft. 10 ft. 20 ft.

Note: This figure contains information in color. Black & white photocopies may not be suitable for review.

Soil Volume Estimates

Mossman Residence, Heating-oil Site

3461 East Lake Sammamish Shore Lane NE

Sammamish, WA

Figure 7

Mapping Reference: Environmental Partners Inc., Triad Associates, G-Logics Data.

Project File: 01-0864-D F7 SoilV.vsdx

TABLES

Table A, EPI/TRC Data
Soil Sampling Analytical Results (in mg/kg)
Remedial Investigation Report
Mossman Residence
3461 E. Lake Sammamish Shore Lane, Sammamish, Washington

Report	Sample ID	Sample Date	Total petroleum Hydrocarbons[a]		Volatile Organic Compounds[b]											
			Diesel-Range	Oil-Range	Benzene	Toluene	Ethylbenzene	Total xylenes	m,p-Xylene	n-Propylbenzene	1,3,5-Trimethylbenzene	sec-buylbenzene	4-Isopropyltoluene	n-Butylbenzene	1,2,4-Trimethylbenzene	Napthalene
Phase II Investigation	B-1:7.5	5/20/2013	**27,000**	ND (<1,500)	--	--	--	--	--	--	--	--	--	--	--	--
	B-1:11	5/20/2013	ND (<29)	ND (<57)	--	--	--	--	--	--	--	--	--	--	--	--
	B-2:5	5/20/2013	ND (<30)	ND (<60)	--	--	--	--	--	--	--	--	--	--	--	--
	B-2:7.5	5/20/2013	**4,800**	ND (<400)	--	--	--	--	--	--	--	--	--	--	--	--
	B-3:4	5/20/2013	ND (<27)	ND <53	--	--	--	--	--	--	--	--	--	--	--	--
	B-3:6.5	5/20/2013	**49**	**350**	--	--	--	--	--	--	--	--	--	--	--	--
	B-4:5	5/20/2013	ND (<29)	ND (<59)	--	--	--	--	--	--	--	--	--	--	--	--
	B-4:6.5	5/20/2013	**7,600**	ND (<910)	--	--	--	--	--	--	--	--	--	--	--	--
	B-5:4	5/20/2013	ND (<27)	ND (<54)	--	--	--	--	--	--	--	--	--	--	--	--
	B-5:6.5	5/20/2013	**6,700**	ND (<350)	--	--	--	--	--	--	--	--	--	--	--	--
	B-6:3.5	5/20/2013	ND (<27)	ND (<53)	--	--	--	--	--	--	--	--	--	--	--	--
	B-6:5.5	5/20/2013	ND (<31)	ND (<61)	--	--	--	--	--	--	--	--	--	--	--	--
	MW-1:1.3	5/21/2013	**32,000**	ND (<1,800)	--	--	--	--	--	--	--	--	--	--	--	--
	MW-2:2	5/21/2013	**13,000**	ND (<890)	--	--	--	--	--	--	--	--	--	--	--	--
	MW-2:3	5/21/2013	**43,000**	ND (<1,600)	--	--	--	--	--	--	--	--	--	--	--	--
	MW-2:6	5/21/2013	**300**	**1,000**	--	--	--	--	--	--	--	--	--	--	--	--
	B-7:6	5/21/2013	ND (<30)	ND (<60)	--	--	--	--	--	--	--	--	--	--	--	--
	MW-4:5	5/21/2013	**26,000**	ND (<1,500)	**0.14[c]**	**0.4[c]**	**3.1[c]**	**15.6[c]**	--	--	--	--	--	--	--	**7.2**
	Footing:1.5	5/21/2013	ND (<27)	ND (<53)	--	--	--	--	--	--	--	--	--	--	--	--

Table A, EPI/TRC Data
Soil Sampling Analytical Results (in mg/kg)
Remedial Investigation Report
Mossman Residence
3461 E. Lake Sammamish Shore Lane, Sammamish, Washington

Report	Sample ID	Sample Date	Total petroleum Hydrocarbons[a]		Volatile Organic Compounds[b]											
			Diesel-Range	Oil-Range	Benzene	Toluene	Ethylbenzene	Total xylenes	m,p-Xylene	n-Propylbenzene	1,3,5-Trimethylbenzene	sec-buylbenzene	4-Isopropyltoluene	n-Butylbenzene	1,2,4-Trimethylbenzene	Napthalene
Remedial Investigation	B-8:8	11/20/2013	**1,910**	ND (<68.3)	ND (<0.0232)	ND (<0.0232)	ND (<0.0348)	--	ND (<0.0232)	ND (<0.0232)	ND (<0.0232)	**0.258**	**0.0848**	ND (<0.0232)	**0.0322**	ND (<0.0348)
	B-9:8	11/20/2013	**372**	ND (<71)	--	--	--	--	--	--	--	--	--	--	--	--
	B-10:6	11/20/2013	**502**	ND (<65.7)	--	--	--	--	--	--	--	--	--	--	--	--
	B-11:4	11/19/2013	**3,480**	ND (<49.4)	--	--	--	--	--	--	--	--	--	--	--	--
	B-12:7	11/19/2013	**54.1**	ND (<69.2)	--	--	--	--	--	--	--	--	--	--	--	--
	B-13:7.7	2/17/2014	ND (<26)	ND(<53)	--	--	--	--	--	--	--	--	--	--	--	--
	B-14:7	2/17/2014	**640**	ND (<56)	--	--	--	--	--	--	--	--	--	--	--	--
	MW-5:2	11/19/2013	ND (<21.3)	ND (<53.2)	--	--	--	--	--	--	--	--	--	--	--	--
	MW-6:4	11/19/2013	**228**	ND (<52.7)	ND (<0.0225)	ND (<0.0225)	ND (<0.0337)	--	**0.0373**	**0.0735**	**0.0608**	**0.0537**	**0.0400**	**0.146**	**0.311**	**0.0852**
	MW-7:5.5	2/17/2014	ND(<25)	ND(<50)	--	--	--	--	--	--	--	--	--	--	--	--
	MW-8:3.5	2/17/2014	ND(<25)	ND(<50)	--	--	--	--	--	--	--	--	--	--	--	--
Method A Soil Cleanup Levels for Unrestricted Land Uses			**2,000**	**2,000**	**0.03**	**7**	**6**	**9**	**9**	**NVE**	**NVE**	**NVE**	**NVE**	**NVE**	**NVE**	**5**

Notes:
All samples collected during the November 2013 event analyzed at Fremont Analytical in Seattle, Washington
All samples collected during May 2013 and February/March 2014 events were analyzed at ALS Environmental Laboratories in Everett Washington
(a) Analyzed by Method NWTPH-Dx
(b) Analyzed by EPA Method 8260 reporting only non-halogenated hydrocarbons
(c) Analyzed by EPA Method 8021

Bold Bold results indicate that the compound was detected, but concentration is less than applicable cleanup level
Cells shaded gray indicate that the compound was detected at a concentration greater than the cleanup level
-- No analysis requested
NVE No value established

TABLE 1
Soil Sample Analyses, Petroleum Hydrocarbons
Mossman Residence
3461 East Lake Sammamish Shore Lane NE
Sammamish, WA

Exploration Location	Sample Date	Sample Number	Surface Elevation† (ft)	Sample Depth (ft)	Sample Elevation† (ft)	PID Reading (ppmv) (1)	Diesel Range Organics	Heavy Oil Range Organics	Combined ORO and DRO	DRO with Silica Gel Treatment	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	Methyl Tert Butyl Ether (MTBE)	EC 5-6 Aliphatics	EC 6-8 Aliphatics	APH [EC 8-10 aliphatics] Fraction	APH [EC 10-12 aliphatics] Fraction	APH [EC8-10 aromatics] Fraction	APH [EC10-12 aromatics] Fraction	APH [EC12-13 aromatics] Fraction	Aliphatic Hydrocarbon (C8-C10)	Aliphatic Hydrocarbon (C10-12)	Aliphatic Hydrocarbon (C12-16)	Aliphatic Hydrocarbon (C16-21)	Aliphatic Hydrocarbon (C21-34)	Aromatic Hydrocarbon (C8-10)	Aromatic Hydrocarbon (C10-12)	Aromatic Hydrocarbon (C12-16)	Aromatic Hydrocarbon (C16-21)	Aromatic Hydrocarbon (C21-34)
MTCA Method A Cleanup Level (2)						*	2,000	2,000	2,000	2,000	0.03	7	6	9	5	0.1	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
(units in mg/kg)																																
2020 Exploration																																
GB-1	5/14/2020	GB-1-4	33	4	29	0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	5/14/2020	GB-1-6		6	27	0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	5/14/2020	GB-1-7		7	26	33	**1,540**	**174**	**1,714**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	5/14/2020	GB-1-9		9	24	35	**947**	<52.6	**947**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
GB-2	5/14/2020	GB-2-4	33	4	29	0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	5/14/2020	GB-2-7		7	26	360	**13,800 D**	<68.3	**13,800 D**	---	<0.881	<1.03	2.81	**16.26**	**45.6**	---	<2.57	**6.08**	**87.8**	**306**	**136**	---	---	---	---	---	---	---	---	---	---	---	---
	5/14/2020	GB-2-9		9	24	196	**7,410 D**	<137	**7,410 D**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
GB-3	5/14/2020	GB-3-2	29	2	27	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	5/14/2020	GB-3-4		4	25	7	**3,740 D**	<51.8	**3,740 D**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	5/14/2020	GB-3-6		6	23	5	**64.9**	<49.5	**64.9**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	5/14/2020	GB-3-8		8	21	3	<21.3	<53.3	<53.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
GB-4	5/14/2020	GB-4-2	29	2	27	5	**30,900 D**	<47.5	**30,900 D**	---	<0.719	<0.839	<0.839	<1.56	**7.41**	---	<2.10	<3.00	<1.68	**35.6**	<3.60	---	---	---	---	---	---	---	---	---	---	---	---
	5/14/2020	GB-4-4		4	25	242	**28,900 D**	<55.4	**28,900 D**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	5/14/2020	GB-4-8		8	21	8	<21.8	<54.5	<54.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
GB-5	5/14/2020	GB-5-4	28	4	24	0	<21.7	<54.3	<54.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	5/14/2020	GB-5-7		7	21	0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
GB-6	5/14/2020	GB-6-1	28	1	27	2	**105**	<59.4	**105**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	5/14/2020	GB-6-4		4	24	0	<23.1	<57.7	<57.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	5/14/2020	GB-6-6		6	22	0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
GB-7	5/14/2020	GB-7-6	33	6	27	3	<20.5	<51.2	<51.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	5/14/2020	GB-7-8		8	25	63	**1,530**	<25.2	**1,530**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	5/14/2020	GB-7-9		9	24	1	<31.6	<79.0	<79.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
G-Logics Monitoring Well																																
MW-9	5/14/2020	MW-9-4	33	4	29	0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	5/14/2020	MW-9-7		7	26	0	<31.6	**180**	**180**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	5/14/2020	MW-9-10		10	23	0	<21.6	<54.0	<54.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2021 Exploration																																
GLB-8	10/20/2021	GLB-8-2	32	2	30	26.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/20/2021	GLB-8-4		4	28	1.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/20/2021	GLB-8-6		6	26	16.2	<56.0	<112	<168	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/20/2021	GLB-8-8		8	24	128.7	**12,400 D**	<1,060	**12,400 D**	**8,720**	<0.0906 DH	<0.136 DH	<0.113 DH	0.564 DH	**6.4**	---	**3.56 H**	**11.8 H**	**48.6 H**	**293 DH**	**111 H**	**735 DH**	**3,120 DH**	**102 H**	**315 HL**	**1,450 H**	**1,480 H**	**192 H**	<19.0 H	**104 H**	**518 H**	**1,190 H**	<9.49 H
	10/20/2021	GLB-8-10		10	22	6.4	<59.2	<118	<178	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/20/2021	GLB-8-12		12	20	3.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/20/2021	GLB-8-14		14	18	2.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/20/2021	GLB-8-16		16	16	5.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
GLB-9	10/20/2021	GLB-9-4	33	4	29	2.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/20/2021	GLB-9-6		6	27	25.1	**8,940**	<96.8	**8,940**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/20/2021	GLB-9-8		8	25	168.2	**27,600 D**	<1,400	**27,600 D**	**25,000 D**	**0.120**	<0.224	**1.54**	**5.97**	---	---	**6.12 H**	**29.2 H**	**185 DH**	**463 DH**	**212 H**	**1,170 DH**	**4,750 DH**	**328 H**	**961 HL**	**3,800 DH**	**4,160 DH**	**495 H**	**82.4 H**	**401 H**	**1,630 H**	**3,290 DH**	**591 H**
	10/20/2021	GLB-9-10		10	23	30.4	**215**	<119	**215**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/20/2021	GLB-9-12		12	21	52	**58.3 H**	<105 H	**58.3 H**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/20/2021	GLB-9-14		14	19	9.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/20/2021	GLB-9-16		16	17	7.7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
GLB-10	10/20/2021	GLB-10-4	33	4	29	3.4																										
	10/20/2021	GLB-10-6		6	27	1.7	**143 H**	<118 H	**143 H**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/20/2021	GLB-10-8		8	25	25.2	**498**	**342**	**839**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/20/2021	GLB-10-10		10	23	4.7	<51.4 H	<103 H	<103 H	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/20/2021	GLB-10-12		12	21	2.1	<49.4 H	<98.8 H	<98.8 H	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/20/2021	GLB-10-14		14	19	26.0	<49.8 H	<99.5 H	<99.5 H	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/20/2021	GLB-10-16		16	17	2.5	<52.1 H	<104 H	<104 H	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

TABLE 1
Soil Sample Analyses, Petroleum Hydrocarbons
Mossman Residence
3461 East Lake Sammamish Shore Lane NE
Sammamish, WA

Exploration Location	Sample Date	Sample Number	Surface Elevation† (ft)	Sample Depth (ft)	Sample Elevation† (ft)	PID Reading (ppmv) (1)	Diesel Range Organics	Heavy Oil Range Organics	Combined ORO and DRO	DRO with Silica Gel Treatment	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	Methyl Tert Butyl Ether (MTBE)	EC 5-6 Aliphatics	EC 6-8 Aliphatics	APH [EC 8-10 aliphatics] Fraction	APH [EC 10-12 aliphatics] Fraction	APH [EC8-10 aromatics] Fraction	APH [EC10-12 aromatics] Fraction	APH [EC12-13 aromatics] Fraction	Aliphatic Hydrocarbon (C8-C10)	Aliphatic Hydrocarbon (C10-12)	Aliphatic Hydrocarbon (C12-16)	Aliphatic Hydrocarbon (C16-21)	Aliphatic Hydrocarbon (C21-34)	Aromatic Hydrocarbon (C8-10)	Aromatic Hydrocarbon (C10-12)	Aromatic Hydrocarbon (C12-16)	Aromatic Hydrocarbon (C16-21)	Aromatic Hydrocarbon (C21-34)
MTCA Method A Cleanup Level (2)						*	2,000	2,000	2,000	2,000	0.03	7	6	9	5	0.1	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
(units in mg/kg)																																
GLB-11	10/20/2021	GLB-11-4	33	4	29	0.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/20/2021	GLB-11-6		6	27	3.2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/20/2021	GLB-11-8		8	25	9.5	**259**	**980**	**1,240**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/20/2021	GLB-11-10		10	23	1.6	<93.3 H	**381 H**	**381 H**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/20/2021	GLB-11-12		12	21	2.5	<87.2 H	<174 H	<174 H	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/20/2021	GLB-11-16		14	19	1.9	<56.1 H	<112 H	<112 H	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/20/2021	GLB-11-18		16	17	2.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
GLB-12	10/21/2021	GLB-12-2	30	2	28	1.4	---	---	---	---	<0.0271 H	<0.0406 H	<0.0338 H	<0.0677 H	<0.135 H	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/21/2021	GLB-12-4		4	26	339.4	**5,160**	<105	**5,160**	**6,250**	<0.618 H	<0.515 H	<1.75 H	<0.515	**3.89 H**	<1.13 H	**3.80 H**	<1.54 H	**6.44 H**	71.3 DH	**22.5 H**	**253 DH**	**2,180 DH**	<22.7	**66.7 L**	**712**	**939**	**113**	<22.7	**12.9**	**103**	**477**	**99.5**
	10/21/2021	GLB-12-6		6	24	59.8	**60.6**	<98.6	**60.6**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/21/2021	GLB-12-8		8	22	31.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
GLB-13	10/21/2021	GLB-13-2	28	2	26	7.5	<47.2	<94.5	<94.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/21/2021	GLB-13-4		4	24	7.3	<50.6	<101	<152	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/21/2021	GLB-13-6		6	22	10.3	<51.5	<103	<154	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/21/2021	GLB-13-8		8	20	10.6	<55.8	<112	<112	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
GLB-14	10/21/2021	GLB-14-2	28	2	26	29.2	<48.1	<96.1	<144	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/21/2021	GLB-14-4		4	24	162.0	<55.1	<110	<165	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/21/2021	GLB-14-6		6	22	2.1	<48.1	<96.1	<96.1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/21/2021	GLB-14-8		8	20	12.8	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
GLB-15	10/21/2021	GLB-15-2	28	2	26	4.2	<49.3	<98.6	<98.6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/21/2021	GLB-15-4		4	24	6.9	<48.8	<97.5	<146	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/21/2021	GLB-15-6		6	22	1.7	<51.3	<103	<154	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/21/2021	GLB-15-8		8	20	9.3	<51.3	<103	<103	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
GLB-16	10/21/2021	GLB-16-2	28	2	26	64.6	**125**	<103	**125**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/21/2021	GLB-16-4		4	24	1.9	<60.4	<121	<181	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/21/2021	GLB-16-6		6	22	0.4	<49.2	<98.3	<98.3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/21/2021	GLB-16-8		8	20	0.1	<54.4	<109	<109	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Notes:
Refer to site diagram(s) for sampling locations. Refer to laboratory reports for analytical methods.
(1) Soil samples were field screened using a PID to record VOCs. Headspace VOC concentrations were recorded after placing the soil in a sealed plastic bag and allowing air inside the bag to equilibrate.
(2) MTCA Standard Method A Soil Cleanup Levels based on residential use, provided in the Ecology cleanup levels and risk calculation (CLARC) database
† Surface elevations are estimated based on October 15, 2015 survey by Triad Associates based on NGVD 29 (provided by Environmental Partners Inc.)
* Not Applicable/ Cleanup/Screening Level Not Established.
--- Sample not analyzed.
nd Not Detected (data gathered from historical reports, lab analysis reporting limits not available).
<1.07 The analyte was not detected at a concentration above the indicated reporting limit.
12.0 Bold Number(s) indicates contaminant detected.
419 Bold Number(s) and Yellow Shading indicates concentration exceeds applicable cleanup level.
D The Sample was diluted. Detection Limits were raised and surrogate recoveries may not be meaningful.
H Holding times for preparation or analysis exceeded
L Flagged value is not within established control limits

Table 2
Summary of Groundwater Analytical Results
Mossman Residence
3461 E. Lake Sammamish Shore Lane, Sammamish, Washington

Sample ID	Sample Date	Total Petroleum Hydrocarbons [a]				Volatile Organic Compounds [b]											Semivolatile Organic Compounds [c]			
		DRO	ORO	Combined DRO/ORO	DRO with Silica Gel Treatment	Ethyl-benzene	Total Xylenes	Benzene	n-Butyl-benzene	sec-Butyl-benzene	n-Propyl-benzene	Toluene	4-Isopropyl-toluene	1,2,4-Trimethyl-benzene	1,3,5-Trimethyl-benzene	Naphthalene	Naphthalene	1-Methyl-naphthalene	2-Methyl-naphthalene	Total Organic Carbon (d)
Method A CUL		**500**	**500**	**500**	**500**	**700**	**1,000**	**5**	*	*	*	**1,000**	*	*	*	**160**	**160**	*	*	*
Method B N-C CUL						**800**	**1,600**	**32**	**400**	**800**	**800**	**640**	*	**80.0**	**80.0**	**160**	**160**	**560**	**32.0**	*
B-1	5/20/2013	**43,000**	<2500	**43,000**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B-3	5/20/2013	<270	<430	<430	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B-4	5/20/2013	**2,600**	<430	**2,600**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B-5	5/20/2013	**3,900**	<420	**3,900**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B-6	5/20/2013	<260	<420	<260	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B-7	5/21/2013	<260	<420	<260	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B-8	11/20/2013	**1,080**	<100	**1,080**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B-9	11/20/2013	<50	<100	<50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B-10	11/20/2013	**190**	<100	**190**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B-11	11/19/2013	**959**	<100	**959**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B-12	11/19/2013	**616**	<100	**616**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B-13	2/17/2014	**170**	**270**	**440**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B-14	2/17/2014	**3,200**	**570**	**3,770**	--	--	--	--	--	--	--	--	--	--	--	--	**0.1**	**0.026**	**0.031**	--
GLB-8	10/20/2021	**22,600 D**	<988	**22,600 D**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GLB-9	10/20/2021	**2,550**	<99.3	**2,550**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GLB-10	10/20/2021	**1,080**	<98.9	**1,080**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GLB-11	10/20/2021	<99.8	**167**	**242**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GLB-12	10/21/2021	**7,750**	<99.9	**7,750**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GLB-13	10/21/2021	**165**	<99.3	**165**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GLB-14	10/21/2021	**534**	<98.9	**534**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GLB-15	10/21/2021	**9,290**	<99.2	**9,290**	**7,950**	<0.400 H	<1.00 H	<0.440 H	--	--	--	<0.750 H	--	--	--	<1.25 H	--	--	--	--
GLB-16	10/21/2021	**4,970**	<98.6	**4,970**	**5,120 B**	<0.400 H	<1.00 H	<0.440 H	--	--	--	<0.750 H	--	--	--	<1.25 H	--	--	--	--
MW-1	5/21/2013	**9,300**	<950	**9,300**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/21/2013	**1,280**	<100	**1,280**	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--
	3/4/2014	**1,700**	<250	**1,700**	--	--	--	--	--	--	--	--	--	--	--	--	**3.2**	**7.0**	**6.0**	--
	8/5/2016	**457**	<100	**457**	--	--	--	--	--	--	--	--	--	--	--	**5.35**	--	--	--	--
	11/30/2016	**832**	<99.5	**832**	--	--	--	--	--	--	--	--	--	--	--	**3.32**	--	--	--	--
	10/9/2018	**578**	<99.6	**578**	--	--	--	--	--	--	--	--	--	--	--	<1.0	--	--	--	--
	1/23/2020	**651**	<49.5	**651**	--	--	--	--	--	--	--	--	--	--	--	<1.0	--	--	--	--
	5/19/2020	**519**	<99.4	**519**	--	<1	<1	<1	--	--	--	<1	--	--	--	<1	--	--	--	--
	10/20/2021	**944**	<99.8	**944**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 2
Summary of Groundwater Analytical Results
Mossman Residence
3461 E. Lake Sammamish Shore Lane, Sammamish, Washington

Sample ID	Sample Date	Total Petroleum Hydrocarbons [a]				Volatile Organic Compounds [b]											Semivolatile Organic Compounds [c]			
		DRO	ORO	Combined DRO/ORO	DRO with Silica Gel Treatment	Ethyl-benzene	Total Xylenes	Benzene	n-Butyl-benzene	sec-Butyl-benzene	n-Propyl-benzene	Toluene	4-Isopropyl-toluene	1,2,4-Trimethyl-benzene	1,3,5-Trimethyl-benzene	Naphthalene	Naphthalene	1-Methyl-naphthalene	2-Methyl-naphthalene	Total Organic Carbon (d)
Method A CUL		**500**	**500**	**500**	**500**	**700**	**1,000**	**5**	*	*	*	**1,000**	*	*	*	**160**	**160**	*	*	*
Method B N-C CUL						**800**	**1,600**	**32**	**400**	**800**	**800**	**640**	*	**80.0**	**80.0**	**160**	**160**	**560**	**32.0**	*
MW-2	5/21/2013	**LNAPL PRESENT**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/21/2013	**LNAPL PRESENT**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	3/4/2014	**LNAPL PRESENT**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	8/5/2016	**LNAPL PRESENT**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/30/2016	**LNAPL PRESENT**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	10/9/2018	**LNAPL PRESENT**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	1/23/2020	**LNAPL PRESENT**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/19/2020	**LNAPL PRESENT****	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	10/20/2021	**LNAPL PRESENT (1)**	**11,900**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-3	5/20/2013	**11,000**	<570	**11,000**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/21/2013	**2,010**	<100	**2,010**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	3/4/2014	**1,100**	<250	**1,100**	--	--	--	--	--	--	--	--	--	--	--	--	**0.067**	**0.35**	**0.069**	--
	9/15/2015	**604**	<99.8	**604**	--	--	--	--	--	--	--	--	--	--	--	--	<0.10	<0.10	<0.10	--
	1/22/2016 & DUP1	**895/532**	<99.9/<100	**895/532**	--	--	--	--	--	--	--	--	--	--	--	<1.0/<1.0	--	--	--	--
	8/5/2016	**3,010**	<99.9	**3,010**	--	--	--	--	--	--	--	--	--	--	--	<1.0	--	--	--	--
	11/30/2016	**439**	<99.7	**439**	--	--	--	--	--	--	--	--	--	--	--	<1.0	--	--	--	--
	10/9/2018	**712**	<99.7	**712**	--	--	--	--	--	--	--	--	--	--	--	<1.0	<0.0991	**0.396**	<0.0991	--
	1/23/2020	**425**	<49.9	**425**	--	--	--	--	--	--	--	--	--	--	--	<1.0	<0.0993	**0.145**	<0.0993	--
	5/19/2020	**613**	<99.7	**613**	--	<1	<1	<1	--	--	--	<1	--	--	--	<1	--	--	--	--
	10/21/2021	**2,270**	<98.6	**2,270**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-4	5/21/2013	**22,000**	<1,100	**22,000**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/21/2013	**29,800**	**185**	**29,985**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	3/4/2014	**1,300**	**340**	**1,640**	--	--	--	--	--	--	--	--	--	--	--	--	**0.026**	<0.020	<0.020	--
	9/15/2015	**3,860**	<101	**3,860**	--	--	--	--	--	--	--	--	--	--	--	--	**0.566**	**0.181**	**0.406**	--
	1/22/2016	**255**	<99.8	**255**	--	--	--	--	--	--	--	--	--	--	--	<1.0	--	--	--	--
	8/5/2016	**783**	<99.5	**783**	--	--	--	--	--	--	--	--	--	--	--	**1.50**	--	--	--	--
	11/30/2016	**609**	<99.5	**609**	--	--	--	--	--	--	--	--	--	--	--	<1.0	--	--	--	--
	10/9/2018	**5,130**	<99.7	**5,130**	--	--	--	--	--	--	--	--	--	--	--	<1.0	**0.575**	**0.498**	**0.106**	--
	1/23/2020 & DUP1	**115/96.9**	<49.8/<49.8	**115/96.9**	--	--	--	--	--	--	--	--	--	--	--	<1.0/'<1.0	<0.0999	<0.0999	<0.0999	--
	5/19/2020	**1,060**	<98.5	**1,060**	--	<1	<1	<1	--	--	--	<1	--	--	--	**1.4**	--	--	--	--
	10/21/2021	**2,650**	<98.7	**2,690**	**197**	<0.400 H	<1.00 H	<0.440 H	--	--	--	<0.750 H	--	--	--	<1.25 H	--	--	--	11.2

Table 2
Summary of Groundwater Analytical Results
Mossman Residence
3461 E. Lake Sammamish Shore Lane, Sammamish, Washington

Sample ID	Sample Date	Total Petroleum Hydrocarbons [a]				Volatile Organic Compounds [b]											Semivolatile Organic Compounds [c]			
		DRO	ORO	Combined DRO/ORO	DRO with Silica Gel Treatment	Ethyl-benzene	Total Xylenes	Benzene	n-Butyl-benzene	sec-Butyl-benzene	n-Propyl-benzene	Toluene	4-Isopropyl-toluene	1,2,4-Trimethyl-benzene	1,3,5-Trimethyl-benzene	Naphthalene	Naphthalene	1-Methyl-naphthalene	2-Methyl-naphthalene	Total Organic Carbon (d)
Method A CUL		**500**	**500**	**500**	**500**	**700**	**1,000**	**5**	*	*	*	**1,000**	*	*	*	**160**	**160**	*	*	*
Method B N-C CUL						**800**	**1,600**	**32**	**400**	**800**	**800**	**640**	*	**80.0**	**80.0**	**160**	**160**	**560**	**32.0**	*
MW-5 Recon	11/19/2013	**2,080**	<100		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-5	11/21/2013	**1,250**	<100	**1,250**	--	**1.59**	**3.7**	**--**	**4.29**	**2.92**	**4.44**	**--**	**1.88**	**22.4**	**2.34**	**9.66**	--	--	--	--
	3/4/2014	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	9/15/2015	**209**	**206**	**415**	--	--	--	--	--	--	--	--	--	--	--	--	<0.0998	<0.0998	**0.714**	--
	1/22/2016	**377**	<99.8	**377**	--	--	--	--	--	--	--	--	--	--	--	<1.0	--	--	--	--
	8/5/2016	**160**	<99.8	**160**	--	--	--	--	--	--	--	--	--	--	--	<1.0	--	--	--	--
	11/30/2016	**437**	<99.4	**437**	--	--	--	--	--	--	--	--	--	--	--	<1.0	--	--	--	--
	10/9/2018	**764**	<99.7	**764**	--	--	--	--	--	--	--	--	--	--	--	<1.0	--	--	--	--
	1/23/2020	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/19/2020 & Dup-1	<49.4/**49.9**	<98.8/<99.5	<49.4/**49.9**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	10/20/2021	**693**	<98.2	**693**	**340**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-6 Recon	11/19/2013	**1,450**	<100	**1,450**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-6	11/21/2013	**1,120**	<100	**1,120**	--	<1.0	<1.0	--	<1.0	<1.0	<1.0	--	<1.0	**6.04**	<1.0	**1.11**	--	--	--	--
	3/4/2014	**400**	<250	**400**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	9/15/2015	**117**	**261**	**378**	--	--	--	--	--	--	--	--	--	--	--	--	<0.0999	<0.0999	**0.568**	--
	1/22/2016	**199**	<100	**199**	--	--	--	--	--	--	--	--	--	--	--	<1.0	--	--	--	--
	8/5/2016	**126**	<100	**126**	--	--	--	--	--	--	--	--	--	--	--	<1.0	--	--	--	--
	11/30/2016	**136**	<99.5	**136**	--	--	--	--	--	--	--	--	--	--	--	<1.0	--	--	--	--
	10/9/2018	**642**	<99.4	**642**	--	--	--	--	--	--	--	--	--	--	--	<1.0	--	--	--	--
	1/23/2020	**60.6**	<49.9	**60.6**	--	--	--	--	--	--	--	--	--	--	--	<1.0	--	--	--	--
	5/19/2020	**51.2**	<99.4	**51.2**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	10/21/2021	**541**	<98.7	**541**	**297**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-7	3/4/2014	<130	<250	<130	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	10/9/2018	<49.9	<99.7	<49.9	--	--	--	--	--	--	--	--	--	--	--	<1.0	--	--	--	--
	1/23/2020	<49.5	<98.9	<49.5	--	--	--	--	--	--	--	--	--	--	--	<1.0	--	--	--	--
	5/19/2020	<48.8	<97.6	<48.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	10/21/2021	<99.8	<99.8	<99.8	--	--	--	--	--	--	--	--	--	--	--	--				--

Table 2
Summary of Groundwater Analytical Results
Mossman Residence
3461 E. Lake Sammamish Shore Lane, Sammamish, Washington

Sample ID	Sample Date	Total Petroleum Hydrocarbons [a]				Volatile Organic Compounds [b]											Semivolatile Organic Compounds [c]			
		DRO	ORO	Combined DRO/ORO	DRO with Silica Gel Treatment	Ethyl-benzene	Total Xylenes	Benzene	n-Butyl-benzene	sec-Butyl-benzene	n-Propyl-benzene	Toluene	4-Isopropyl-toluene	1,2,4-Trimethyl-benzene	1,3,5-Trimethyl-benzene	Naphthalene	Naphthalene	1-Methyl-naphthalene	2-Methyl-naphthalene	Total Organic Carbon (d)
Method A CUL		**500**	**500**	**500**	**500**	**700**	**1,000**	**5**	*	*	*	**1,000**	*	*	*	**160**	**160**	*	*	*
Method B N-C CUL						**800**	**1,600**	**32**	**400**	**800**	**800**	**640**	*	**80.0**	**80.0**	**160**	**160**	**560**	**32.0**	*
MW-8	3/4/2014	<130	<250	<130	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	10/9/2018	<49.8	<99.7	<49.8	--	--	--	--	--	--	--	--	--	--	--	<1.0	--	--	--	--
	1/23/2020	<49.5	<99.1	<49.5	--	--	--	--	--	--	--	--	--	--	--	<1.0	--	--	--	--
	5/19/2020	<49.7	<99.5	<49.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	10/20/2021	<98.8	<98.8	<98.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.19
MW-9	5/19/2020	**125**	<98.7	**125**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	10/21/2021	**263**	<98.6	**263**	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:
All results presented in micrograms per liter (µg/L).

Bold	Bold results indicate that the compound was detected.
a	Analyzed by Method NWTPH-Dx/Dx Extended.
b	Analyzed by EPA Method 8260 reporting only non-halogenated hydrocarbons (except Naphthalenes as indicated).
c	Analyzed by EPA Method 8270 SIM.
d	Units in mg/L
1	LNAPL detected at time of sampling.
--	Sample was not analyzed for this compound.
*	Not Applicable/ Cleanup/Screening Level Not Established.
**	Well containing LNAPL was not sampled
642	Bold Number(s) and Yellow Shading indicates concentration exceeds MTCA Methods A cleanup level.
10/20/2021	Most recent sampling event
B	Analyte was Detected in the Method Blank

Table 3
Groundwater Elevation Data
Mossman Residence
3461 E. Lake Sammamish Shore Lane, Sammamish, Washington

Well ID	Date	Ground Elevation	PVC Casing Elevation[a]	Depth to Water[b]	LNAPL Thickness[c]	Water Table Elevation[d]
MW-1	5/21/2013	28.02	27.74	0.01	--	27.73
	11/21/2013			0.80	--	26.94
	3/4/2014			0.25	--	27.49
	9/15/2015			1.89	**0.01**	25.85
	1/22/2016			0.50	--	27.24
	8/5/2016			1.68	--	26.06
	11/30/2016			0.50	--	27.24
	10/12/2018			1.62	--	26.12
	1/23/2020			0.30*	--	27.44
	5/19/2020			1.23	0.0	26.51
	10/21/2021			1.65	0.0	26.09
MW-2	5/21/2013	29.09	28.75	2.00	--	26.75
	11/21/2013			3.20	--	25.55
	3/4/2014			---	**LNAPL[e]**	---
	9/15/2015			3.20	**0.31**	25.57
	1/22/2016			3.20	**2.21**	25.73
	8/5/2016			2.96	**0.21**	25.81
	11/30/2016			3.25	**2.1**	25.67
	10/12/2018			2.64	**0.01**	26.11
	1/23/2020			0.80*	**Heavy Sheen**	28.67
	5/19/2020			2.31	**0.06**	26.49
	10/21/2021			2.75	**0.05**	26.04
MW-3	5/21/2013	33.03	32.82	4.96	--	27.86
	11/21/2013			5.40	--	27.42
	3/4/2014			5.09	--	27.73
	9/15/2015			6.88	--	25.94
	1/22/2016			5.13	--	27.69
	8/5/2016			6.67	--	26.15
	11/30/2016			5.20	--	27.62
	10/12/2018			6.56	--	26.26
	1/23/2020			4.83	--	27.99
	5/19/2020			6.29	0.0	26.53
	10/21/2021			6.64	0.0	26.18

Table 3
Groundwater Elevation Data
Mossman Residence
3461 E. Lake Sammamish Shore Lane, Sammamish, Washington

Well ID	Date	Ground Elevation	PVC Casing Elevation[a]	Depth to Water[b]	LNAPL Thickness[c]	Water Table Elevation[d]
MW-4	5/21/2013	33.40	33.30	3.88	--	29.42
	11/21/2013			5.19	--	28.11
	3/4/2014			3.38	--	29.92
	9/15/2015			5.91	--	27.39
	1/22/2016			3.73	--	29.57
	8/5/2016			6.05	--	27.25
	11/30/2016			4.14	--	29.16
	10/12/2018			5.75	--	27.55
	1/23/2020			4.08	--	29.22
	5/19/2020			5.24	0.0	28.06
	10/21/2021			5.89	0.0	27.41
MW-5	11/21/2013	27.57	27.36	0.40	--	26.96
	3/4/2014			---[f]	--	---
	9/15/2015			1.51	--	25.85
	1/22/2016			0.10	--	27.26
	8/5/2016			1.32	--	26.04
	11/30/2016			0.00	--	27.36
	10/12/2018			1.27	--	26.09
	1/23/2020			--	--	---
	5/19/2020			0.87	0.0	26.49
	10/21/2021			1.31	0.0	26.05
MW-6	11/21/2013	29.60	29.29	2.38	--	26.91
	3/4/2014			1.89	--	27.40
	9/15/2015			3.53	--	25.76
	1/22/2016			1.97	--	27.32
	8/5/2016			3.30	--	25.99
	11/30/2016			1.30	**Sheen**	27.99
	10/12/2018			3.27	--	26.02
	1/23/2020			1.82	--	27.47
	5/19/2020			2.87	0.0	26.42
	10/21/2021			3.31	0.0	25.98

Table 3
Groundwater Elevation Data
Mossman Residence
3461 E. Lake Sammamish Shore Lane, Sammamish, Washington

Well ID	Date	Ground Elevation	PVC Casing Elevation[a]	Depth to Water[b]	LNAPL Thickness[c]	Water Table Elevation[d]
MW-7	3/4/2014	32.10	31.89	4.46	--	27.43
	9/15/2015			6.07	--	25.82
	1/22/2016			4.54	--	27.35
	8/5/2016			5.85	--	26.04
	11/30/2016			4.53	--	27.36
	10/12/2018			5.79	--	26.10
	1/23/2020			4.42	--	27.47
	5/19/2020			5.42	0.0	26.47
	10/21/2021			5.84	0.0	26.05
MW-8	3/4/2014	29.30	29.05	1.60	--	27.45
	9/15/2015			3.21	--	25.84
	1/22/2016			1.71	--	27.34
	8/5/2016			3.98	--	25.07
	11/30/2016			1.68	--	27.37
	10/12/2018			2.95	--	26.10
	1/23/2020			1.57	--	27.48
	5/19/2020			2.58	0.0	26.47
	10/20/2021			3.00	0.0	26.05
MW-9	5/19/2020	--	33.11	6.51	0.0	26.60
	10/21/2021			6.75	0.0	26.36

Notes:

All measurements are in feet. Elevations are in feet above mean sea level (AMSL).

a Polyvinyl chloride (PVC) casing elevation on the north side of the well casing.
- Survey Coordinate System and Zone: Washington State Plane, North Zone coordinates.
- Horizontal Datum: NAD 83(91) US feet (horizontal accuracy: 0.1').
- Vertical Datum: NGVD 29 (vertical accuracy: 0.01').

To convert from NGVD 29 to NAVD 88, add 3.58 feet to elevations.
- Survey completed October 5, 2015 by Triad Associates.

b Depth to groundwater measured from top of well casing.

c LNAPL thickness = [Depth to LNAPL] - [Depth to Water]; measured from top of well casing using an electronic oil-water interface probe. Bold value indicates measurable thickness.

d Water table elevations adjusted for the presence of LNAPL using the following formula and assumed LNAPL specific gravity of 0.8: [Water Table Elevation] = [PVC Casing Elevation] - [Depth to Water] + [LNAPL Thickness x 0.80].

e LNAPL present; however, thickness and depth to water not recorded.

f Groundwater surface was greater than PVC casing at this location on the date measured.

-- Not recorded.

* Depth to groundwater measurement is an estimate.

LNAPL Light non-aqueous phase liquid.

10/20/2021 Information added by G-Logics, most recent measurements.

Elevation for MW-9 was derived from MW-3 casing elevation.

Table 4
Budgeting Estimates, Excavation of DRO Contaminated Soils
Mossman Residence
3461 E. Lake Sammamish Shore Lane, Sammamish, Washington

Classification	Bulk Cubic Yards (BCY)	Tons (1.6 tons per BCY)	Transport (per Ton)	Disposal (per Ton)	Totals For Soils	Placeholder Estimates	Totals	
Petroleum Contaminants								
Upland Area, Green Shaded Area on Figure 7	**285**	**456**	$20	$75	**$43,320**		**$43,320**	
Shoreline Area, Yellow Shaded Area on Figure 7	**122**	**195**	$20	$75	**$18,544**		**$18,544**	
Workscope Preparation, Pre-Remediation Permitting, Bid Requests						$ 30,000	**$30,000**	
Geotechnical and Structural Engineering						$ 80,000	**$80,000**	
Pin Pile Installation						$ 50,000	**$50,000**	
Well Decommissioning						$ 10,000	**$10,000**	
Excavation/Restoration Contractor						$ 150,000	**$150,000**	
Excavation-water Treatment for Discharge						$ 10,000	**$10,000**	
Groundwater Monitoring-well Installation						$ 30,000	**$30,000**	
Groundwater Sampling, 1 Year						$ 30,000	**$30,000**	
In-Situ System Installation and Treatment						$ 50,000	**$50,000**	
Vapor Monitoring						$ 5,000	**$5,000**	
Analytical Testing						$ 30,000	**$30,000**	
Bioremediation Treatment-System Installation and Treatments						$ 50,000	**$50,000**	
Environmental Consulting and Reporting						$ 200,000	**$200,000**	
Legal Assistance for Regulatory Compliance						$ 40,000	**$40,000**	
Totals	**407**	**651**			**$61,864**	**$765,000**	**$826,864**	**$826,864**
20% Contingency						20%	**$165,373**	**$992,237**

Notes:

Placeholder Estimates are Preliminary Only

These tables accompany a written report and should not be reviewed separately.

APPENDIX A

APPENDIX A

FIELD EXPLORATION METHODS

G-Logics performed subsurface soil and groundwater sampling during the assessment conducted on the subject property. The sampling activities were conducted in general accordance with Washington Department of Ecology (Ecology) guidelines and regulations.

Health and Safety Plan

A site-specific Health and Safety Plan was developed for the field activities completed at the subject property. All field personnel reviewed the plan and implemented the procedures while conducting the on-site field activities. Health and safety procedures for COVID-19 pandemic issues also were followed.

Underground Utility Clearance

Before conducting the subsurface exploration, G-Logics contacted a service that notifies public utilities of proposed subsurface investigations. Additionally, on-site private utilities were located by a private locating company to identify on-site utilities as well as specific areas of concern. Consequently, the below-grade utility locations were identified by marking their inferred location on the ground surface. This information was used to aid in identifying sampling locations.

Quality Assurance Quality Control

Quality Assurance/Quality Control (QA/QC) for the presented scope of work included accepted procedures for sample collection, storage, tracking, and documentation. All sampling equipment was washed and rinsed before the collection of the samples. All samples were labeled with a sample number, date, time, and sampler name, and were stored in an ice chest containing frozen ice or ice substitute. Appropriate chain-of-custody documentation was completed.

Direct-Push Technologies Soil Borings

A G-Logics employee was present during the drilling and assisted in obtaining samples of the subsurface materials, maintained a log of the borings, made detailed observations of site conditions, and provided technical assistance, as required. Soil borings were advanced using track-mounted direct-push probe equipment, provided by our drilling subcontractor. Soil samples were collected using a 2-inch diameter stainless steel sampler, in lengths of four feet. Continuous soil samples were obtained by driving/pushing this sampler, containing an acrylic liner, to the sampling depth. After reaching the required depth, the sampler was retrieved and opened.

Soil Sampling Procedures

During this effort, soil samples were collected for soil identification and chemical analysis. A photoionization detector (PID) was used during drilling to screen for volatile organic compounds (VOCs) in collected soil samples. A portion of each soil sample was placed into a plastic zip-lock bag and allowed to develop for 15 minutes (to allow contaminants to volatilize). Vapors then were drawn through the PID for qualitative screening of VOCs. The results were measured in parts per million by volume (ppmv) and noted on the boring logs. A new plastic bag was used each time a sample was screened.

The soils were then observed and categorized for grain-size, color, presence of artifacts, moisture, odor, staining, sheen, and any other indications of contamination and documented on boring logs (attached).

Samples were collected where indications of contamination were observed or from where contamination likely would be present (i.e., at the groundwater interface) and at a two-foot interval. The collected soils contained within the acrylic liner were removed and placed into laboratory-provided sample containers (prepared by the contract laboratory to conform to EPA-recommended preservation techniques for the analytes of concern).

Soil samples for volatile analyses were collected from the soil core using an Easy Draw Syringe and Powerstop Handle and extruded directly into a 40 ml VOA Vial containing methanol preservative. Sample containers were open only as long as necessary to collect the samples. The stainless-steel sampler then was washed, and new liners were used for each sampling attempt.

Upon completion of each soil boring, the resulting hole was backfilled with bentonite (hydrated with a small amount of water) and the ground surface restored to match original surface. All soil cuttings were collected and placed into a waste drum to be disposed at an off-site disposal facility (determined by analytical results).

Water Level Measurements in Wells

Water level measurements were referenced to the top of the well casing. The static water level was measured in each monitoring well using a conductivity type, water-level probe (Solonist, Mini Interface Meter). The conductivity probe on the water level meter was lowered into the well until the instrument detected water. The tape on the probe was used to obtain a depth-to-water measurement, from the reference point, to within 0.01 feet.

Measurement of LNAPL Thickness in Wells

In monitoring wells where light non aqueous phase liquid (LNAPL) was present, the thickness of the LNAPL was measured using an interface probe (Solinst Mini Interface Meter). When the interface probe reached LNAPL, a solid beep from the instrument sounded and continued as the probe passed through it. The probe was slowly lowered past the LNAPL until the constant beep stopped and an intermittent beeping occurred (indicating the probe is in water). The measurement to static water level was then recorded. The probe was then slowly pulled up from the static water level by pinching the measuring tape at the reference point. The tape was then pulled through the LNAPL until the solid beep was silenced and a thickness measurement was obtained from the tape at the reference point (depth to static water level subtracted by depth to LNAPL). Since passing the probe through LNAPL can coat the probe (thereby providing unreliable measurements), the thickness measurement was repeated multiple times until a confident field reading was obtained. The thickness was then recorded with a precision of 0.01 feet. If a constant beep occurred but no measurable thickness was present, the LNAPL thickness is considered as either trace amount, or considered to be a sheen.

Monitoring Well Purging and Sampling, Low-Flow Purge and Sample Method

A G-Logics employee sample existing groundwater wells, and temporary wells installed in recently completed borings, using low-flow techniques in accordance with the following protocol.

- For this sampling event, a peristaltic pump was used to sample all on-site monitoring wells.
- During purging, the flow rate was set between 150 and 500 mL/minute in order to maintain minimal drawdown in the well.
- Once three well-casing volumes were removed from the well, groundwater samples were collected directly into laboratory-provided sample containers.
- Sample containers were open only as long as necessary to collect the samples.
- The contract laboratory prepared the sample containers to conform to EPA-recommended preservation techniques for the analytes of concern.
- All purge water was collected and placed into waste drums for proper disposal (determined by analytical results).
- Collected samples were labeled with a sample number, date, time, and sampler's name and stored in an ice chest containing frozen “blue ice”. Chain-of-custody procedures were followed to document sample handling.
- Dedicated tubing was used at each sampling location.
- Before use, the sampling equipment was washed and rinsed.

APPENDIX B

Unified Soil Classification System (USCS)

PRIMARY DIVISIONS			SYMBOL	DESCRIPTIONS
COARSE GRAINED SOILS Sands & Gravels, Over 50% retained on #200 sieve	**GRAVELS** Over 50% of coarse material retained on #4 sieve	**CLEAN GRAVEL** Less than 5% passing #200 sieve	GW	Well graded gravel, many different particle sizes, little or no fines
			GP	Poorly graded, few different particle sizes, little or no fines
		GRAVEL WITH FINES	GM	Silty gravels, gravel-sand-silt mixtures
			GC	Clayey gravels, gravel-sand-clay mixtures
	SAND Over 50% of coarse material passed #4 sieve	**CLEAN SANDS** Less than 5% passing #200 sieve	SW	Well graded gravel, many different particle sizes, little or no fines
			SP	Poorly graded, few different particle sizes, little or no fines
		SAND WITH FINES	SM	Silty gravels, gravel-sand-silt mixtures
			SC	Clayey gravels, gravel-sand-clay mixtures
FINE GRAINED SOILS Silts & Clays, Over 50% passing the #200 sieve	**SILTS AND CLAYS** Liquid limit is less than 50 %		ML	Inorganic silts, slight to no plasticity
			CL	Inorganic clays, low to moderate plasticity
			OL	Organic silts and clays of low plasticity
	SILTS AND CLAYS Liquid limit is more than 50 %		MH	Inorganic silts, moderate to high plasticity
			CH	Inorganic clays, high plasticity, fat clays
			OH	Organic silts and clays of high plasticity
Highly Organic Soils			PT	Peat and other highly organic soils

Soil Samples

- Disturbed, bag, bulk, or grab sample
- Standard penetration split spoon sample
- Cuttings
- Continuous-Core Sample

Field Measurements

- Water Level Observed During Drilling
- PID — Photoionization Detector
- ppmv — Parts Per Million by Volume
- End of Boring (E.O.B)

Note: Blows per foot is the number of blows used to drive a split-spoon (2" OD) sampler through the last 12 inches of an 18-inch sampling attempt. One blow is a 30-inch fall of a 140-pound hammer.

Note: The line separating strata on the logs represents approximate boundaries only. The actual transition may be gradual. No warranty is provided as to the continuity of the strata between exploration locations. Logs represent the soil section observed at the exploration location on the date of exploration only.

ExplorationLogLegend.pub

g-logics

Exploration Log Legend

gb-1.vsd

INTERVAL	SAMPLE NUMBER	SOIL DESCRIPTION	Recovery %	USCS	PID (ppmv in headspace)	WELL CONSTRUCTION
		Grass surface				
0		0-3': Brown SAND, well graded, fine to coarse grain, little gravel, dry, no odor, fill material	70	SW		No well Installed
	GB-1-4	3-7': Brown/gray SAND, poorly graded, medium grain, trace gravel, moist, slight petroleum odor at 6 feet		SP	0	
5	GB-1-6		100		0	
	GB-1-7	7-8': Gray SAND, poorly graded, fine grain, trace gravel, wet, moderate odor			33	
	GB-1-9	8-8.5': ORGANICS with sand, trace gravel, wet, odor		PT	35	
		8.5-9': Gray GRAVEL, well graded, fine to coarse grain, with sand, clay lens, wet, odor		GW		
10		Refusal at 9 feet				
15						
20						
25						
30						

Depth in feet

Drilling Method: Direct-Push	Date: 5/14/2020	Other Information: Boring backfilled with Bentonite
Drilling Company: Standard	Weather: Rain	
Boring Diameter: Two Inches	Page 1 of 1	
Logged By: JS		

g-logics

Boring/Well Log
Mossman Property
3461 East Lake Sammamish Shore Ln. NE
Sammamish, Washington

GB-1

gb-2.vsd

INTERVAL	SAMPLE NUMBER	SOIL DESCRIPTION	Recovery %	USCS	PID (ppmv in headspace)	WELL CONSTRUCTION
0		Grass surface				No well Installed
		0-3': Brown SAND, well graded, fine to coarse grain, little gravel, dry, no odor, fill material	70	SW	0	
	GB-2-4	3-6': Brown/gray SAND, poorly graded, medium grain, trace gravel, moist, slight petroleum odor at 6 feet		SP	0 2	
5		6-7.5': Gray SAND, poorly graded, fine grain, trace gravel, wet, moderate odor	100		360	
	GB-2-7			PT		
	GB-2-9	8-8.5': ORGANICS with sand, trace gravel, wet, odor		GW	196	
10		8.5-9.5': Gray GRAVEL, well graded, fine to coarse grain, with sand, wet, odor				
		Refusal at 9.5 feet				
15						
20						
25						
30	Depth in feet					

Drilling Method: Direct-Push	Date: 5/14/2020	Other Information: Boring backfilled with Bentonite
Drilling Company: Standard	Weather: Rain	
Boring Diameter: Two Inches	Page 1 of 1	
Logged By: JS		

g-logics

Boring/Well Log
Mossman Property
3461 East Lake Sammamish Shore Ln. NE
Sammamish, Washington

GB-2

gb-3.vsd

INTERVAL	SAMPLE NUMBER	SOIL DESCRIPTION	Recovery %	USCS	PID (ppmv in headspace)	WELL CONSTRUCTION
		Beach surface				
0		0-2': Brown SAND, poorly graded, fine to medium			1	No well Installed
	GB-3-2	grain, little gravel, moist		SP	1	
		2-3': Gray GRAVEL, poorly graded, wet at 2 feet,	50	GP	7	
	GB-3-4	slight petroleum odor				
5	GB-3-6	3-8': Gray SAND, poorly graded, fine to coarse grain,	100	SP	5	
		wet, slight petroleum odor				
	GB-3-8					
		Refusal at 8 feet			3	
10						
15						
20						
25						
30	Depth in feet					

Drilling Method: Direct-Push	Date: 5/14/2020	Other Information: Boring backfilled with Bentonite
Drilling Company: Standard	Weather: Rain	
Boring Diameter: Two Inches	Page 1 of 1	
Logged By: JS		

g-logics

Boring/Well Log
Mossman Property
3461 East Lake Sammamish Shore Ln. NE
Sammamish, Washington

GB-3

gb-4.vsd

INTERVAL	SAMPLE NUMBER	SOIL DESCRIPTION	Recovery %	USCS	PID (ppmv in headspace)	WELL CONSTRUCTION
		Beach surface				
0		0-1': Gray, SAND, well graded, fine to coarse grain,		SW		No well Installed
	GB-4-2	little gravel, moist, no odor	50	GW	5	
		1-3': Gray, GRAVEL, well graded, with sand, wet at 2				
	GB-4-4	feet, slight petroleum odor		SP	242	
		3-4': Gray SAND, poorly graded, medium to coarse			284	
5		grain, wet at 7', moderate odor	100	SW		
		4-8': Gray SAND, well graded, fine to coarse grain,			44	
	GB-4-8	little gravel, wet, moderate odor			8	
10		Refusal at 8 feet				
15						
20						
25						
30	Depth in feet					

Drilling Method: Direct-Push	Date: 5/14/2020	Other Information: Boring backfilled with Bentonite
Drilling Company: Standard	Weather: Overcast	
Boring Diameter: Two Inches	Page 1 of 1	
Logged By: JS		

g-logics

Boring/Well Log
Mossman Property
3461 East Lake Sammamish Shore Ln. NE
Sammamish, Washington

GB-4

gb-5.vsd

INTERVAL	SAMPLE NUMBER	SOIL DESCRIPTION	Recovery %	USCS	PID (ppmv in headspace)	WELL CONSTRUCTION
0		Beach surface				
		0-5': Gray GRAVEL, well graded, wet 1 foot, no odor		GW	0	No well Installed
	GB-5-4		50		0	
5		5-8': Gray SAND, well graded, fine to coarse grain,	100	SW	0	
	GB-5-7	trace gravel, wet, no odor			0	
		Refusal at 8 feet				
10						
15						
20						
25						
30						

Depth in feet

Drilling Method: Direct-Push	Date: 5/14/2020	Other Information: Boring backfilled with Bentonite
Drilling Company: Standard	Weather: Rain	
Boring Diameter: Two Inches	Page 1 of 1	
Logged By: JS		

g-logics

Boring/Well Log
Mossman Property
3461 East Lake Sammamish Shore Ln. NE
Sammamish, Washington

GB-5

gb-6.vsd

INTERVAL	SAMPLE NUMBER	SOIL DESCRIPTION	Recovery %	USCS	PID (ppmv in headspace)	WELL CONSTRUCTION
		Beach surface				
0	GB-6-1	0-1': Gray SAND, poorly graded, medium grain, wet, slight odor		SP	2	No well Installed
		2-3': Gray GRAVEL, poorly graded, medium grain,	40	GP		
	GB-6-4	trace gravel, wet			0	
		3-8': Gray SAND, poorly graded, medium grain, little		SP	0	
5	GB-6-6	gravel, wet, no odor	90			
		Trace gravel			0	
					0	
10		Refusal at 8 feet				
15						
20						
25						
30						

Depth in feet

Drilling Method: Direct-Push	Date: 5/14/2020	Other Information: Boring backfilled with Bentonite
Drilling Company: Standard	Weather: Rain	
Boring Diameter: Two Inches	Page 1 of 1	
Logged By: JS		

g-logics

Boring/Well Log
Mossman Property
3461 East Lake Sammamish Shore Ln. NE
Sammamish, Washington

GB-6

gb-7.vsd

INTERVAL	SAMPLE NUMBER	SOIL DESCRIPTION	Recovery %	USCS	PID (ppmv in headspace)	WELL CONSTRUCTION
0		Concrete surface				No well Installed
		0-4': Brown/gray SAND, poorly graded, fine grain, little gravel, very poor recovery	<10	SP	0	
5	GB-7-6	4-8.5': Brown/gray SAND, poorly graded, fine to medium grain, few silt, wet at 7 feet, becomes gray at 8 feet, slight petroleum odor at 8 feet	100		3	
	GB-7-8				63	
	GB-7-9	8.5-9': ORGANICS, with Sand and silt, woody debris and peat		PT	1	
10		Refusal at 9.5 feet				
15						
20						
25						
30						

Depth in feet

Drilling Method: Direct-Push	Date: 5/14/2020	Other Information: Boring backfilled with Bentonite
Drilling Company: Standard	Weather: Rain	
Boring Diameter: Two Inches	Page 1 of 1	
Logged By: JS		

g-logics

Boring/Well Log
Mossman Property
3461 East Lake Sammamish Shore Ln. NE
Sammamish, Washington

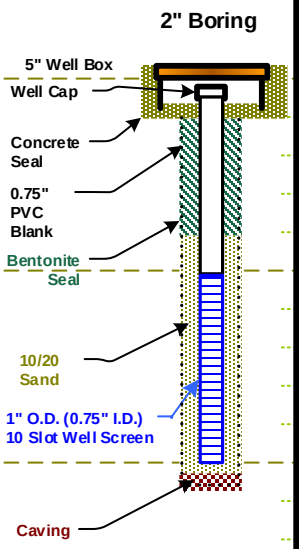
GB-7

mw-9.vsd

INTERVAL	SAMPLE NUMBER	SOIL DESCRIPTION	Recovery %	USCS	PID (ppmv in headspace)
0		Grass surface			
		0-3': Brown SAND, well graded, fine to coarse grain, little gravel, dry, no odor	75	SW	0
	MW-9-4	3-7': Brown/gray SAND, poorly graded, medium grain, trace gravel, moist, wet at 7', no odor		SP	
5			100		
	MW-9-7	7-9': Gray SAND, poorly graded, fine grain, trace gravel, moist, wet, no odor, organics at 9' (peat/ wood), clay lens			0
				PT	
	MW-9-10	9-10': Gray GRAVEL, well graded, fine to coarse grain, with sand, wet, no odor		GW	0
10		E.O.B. at 10 feet			
15					
20					
25					
30					

Depth in feet

WELL CONSTRUCTION



Drilling Method: Direct-Push	Date: 5/14/2020	Other Information: Well Tag # BJP-750
Drilling Company: Standard	Weather: Rain	
Boring Diameter: Two Inches	Page 1 of 1	
Logged By: JS		

g-logics

Boring/Well Log
Mossman Property
3461 East Lake Sammamish Shore Ln. NE
Sammamish, Washington

MW-9

g-logics

	PROJECT/PROJECT NO: **Mossman Residence**	DRILLING DATE: **10/20/2021**	LOGGED BY: **PMF**
	DRILLING CONTRACTOR: **Standard**	BORING DIAMETER: **2"**	WEATHER: **Rainy**
BORING/WELL ID: **GLB-8**	DRILLING METHOD: **Direct Push**	TOTAL DEPTH: **16'**	DEPTH TO WATER: **6'**
	LOCATION: **Sammamish, WA 98074**		

NOTES: Caved, had to push point for gw

Depth (feet)	USCS Soil Type/Graphic	Description	Interval and % Recovery	PID	Sample ID	Well Construction
0		0-4': SAND, brown, medium-grained with gravel and organics, dry, no odor. Overlain by topsoil.	25	26.8	GLB-8-2	Temporary boring. Backfilled with bentonite.
				1.1	GLB-8-4	
5		4-6': SAND, tan, fine to medium grained with silt, dry, no odor.	50	16.2	GLB-8-6	
		6-7': SAND, dark gray, medium grained with silt and organics (bark), moist, petroleum odor.			GLB-8-GW	
	SW			128.7	GLB-8-8	
10		7-16': SAND, gray, medium to coarse grained with gravel, wet, petroleum odor. Boring terminated at 16 ft.	90	6.4	GLB-8-10	
				3.4	GLB-8-12	
			100	2.6	GLB-8-14	
15				5.2	GLB-8-16	

g-logics	PROJECT/PROJECT NO: **Mossman Residence**	DRILLING DATE: **10/20/2021**	LOGGED BY: **PMF**
	DRILLING CONTRACTOR: **Standard**	BORING DIAMETER: **2"**	WEATHER: **Rainy**
BORING/WELL ID: **GLB-9**	DRILLING METHOD: **Direct Push**	TOTAL DEPTH: **16'**	DEPTH TO WATER: **7'**
	LOCATION: **Sammamish, WA 98074**		

NOTES:

Depth (feet)	USCS Soil Type/Graphic	Description	Interval and % Recovery	PID	Sample ID	Well Construction
0		0-4': SAND, brown, medium-grained with silt, gravel, and organics, dry, no odor. Overlain by topsoil.	15	2.5	GLB-9-4	Temporary boring. Backfilled with bentonite.
5		4-6': SAND, tan, fine to medium grained with silt, dry, no odor.	70	25.1	GLB-9-6	
		6-7': SAND, dark gray, medium grained with silt and organics, moist, no odor.				
	SW			168.2	GLB-9-8 GLB-9-GW	
10		7-16': SAND, gray, medium to coarse grained with gravel, wet, petroleum odor. Boring terminated at 16 ft.	100	30.4	GLB-9-10	
				5.2	GLB-9-12	
15			100	9.5	GLB-9-14	
				7.7	GLB-9-16	

g-logics

	PROJECT/PROJECT NO: **Mossman Residence**	DRILLING DATE: **10/20/2021**	LOGGED BY: **PMF**
	DRILLING CONTRACTOR: **Standard**	BORING DIAMETER: **2"**	WEATHER: **Overcast**
BORING/WELL ID: **GLB-10**	DRILLING METHOD: **Direct Push**	TOTAL DEPTH: **16'**	DEPTH TO WATER: **6.5'**
	LOCATION: **Sammamish, WA 98074**		

NOTES:

Depth (feet)	USCS Soil Type/Graphic	Description	Interval and % Recovery	PID	Sample ID	Well Construction
0		0-2': SAND, brown, medium-grained with silt, gravel, and organics, dry, no odor. Overlain by topsoil.	20			Temporary boring. Backfilled with bentonite.
	SW	2-6': SAND, tan, fine to medium grained with silt, dry, no odor.		3.4	GLB-10-4	
5			60	1.7	GLB-10-6	
		6-8': SAND, dark gray, medium grained with silt and organics, moist, no odor.			GLB-10-GW	
				25.2	GLB-10-8	
10			100	4.7	GLB-10-10	
	GW	8-16': GRAVEL, gray, fine to medium with sand, wet, petroleum odor. Boring terminated at 16 ft.		2.1	GLB-10-12	
			50	2.6	GLB-10-14	
15				2.5	GLB-10-16	

g-logics

	PROJECT/PROJECT NO: **Mossman Residence**	DRILLING DATE: **10/20/2021**	LOGGED BY: **TQ**
	DRILLING CONTRACTOR: **Standard**	BORING DIAMETER: **2"**	WEATHER: **Overcast**
BORING/WELL ID: **GLB-11**	DRILLING METHOD: **Direct Push**	TOTAL DEPTH: **16'**	DEPTH TO WATER: **6.5'**
	LOCATION: **Sammamish, WA 98074**		

NOTES:

Depth (feet)	USCS Soil Type/Graphic	Description	Interval and % Recovery	PID	Sample ID	Well Construction
0		0-4': SAND, gray, medium to coarse grained, with some organics, dry, no odor. Overlain by topsoil.	30	0.2	GLB-11-4	Temporary boring. Backfilled with bentonite.
5		4-6': SAND, brown to gray, fine to medium grained, dry to moist, no odor.	60	3.2	GLB-11-6	
	SW	6-10': SAND, brown, fine to medium grained with silt and organics, moist, slight odor.			GLB-11-GW	
				9.5	GLB-11-8	
10		10-11': SAND, gray, medium to coarse grained with some gravel, moist, no odor.	100	1.6	GLB-11-10	
		11-12': SAND, gray-green, fine to medium grained with trace gravel and silt, moist, no odor.		2.5	GLB-11-12	
		12-16': SAND, gray, medium to coarse grained with gravel, wet, petroleum odor. Boring terminated at 16 ft.	100	1.9	GLB-11-14	
15				2	GLB-11-16	

g-logics

	PROJECT/PROJECT NO: **Mossman Residence**	DRILLING DATE: **10/21/2021**	LOGGED BY: **PMF**
	DRILLING CONTRACTOR: **Standard**	BORING DIAMETER: **2"**	WEATHER: **Overcast**
BORING/WELL ID: **GLB-12**	DRILLING METHOD: **Direct Push**	TOTAL DEPTH: **8'**	DEPTH TO WATER: **5'**
	LOCATION: **Sammamish, WA 98074**		

NOTES:

Depth (feet)	USCS Soil Type/Graphic	Description	Interval and % Recovery	PID	Sample ID	Well Construction
0	SW	0-3': SAND, brown, medium-grained with silt, gravel, and organics, dry, no odor. Overlain by topsoil.	25	1.4	GLB-12-2	Temporary boring. Backfilled with bentonite.
		3-4': SAND, brown, medium to coarse grained with gravel and silt, moist, no odor.	75	339	GLB-12-4	
5	GW	4-8': GRAVEL, gray, fine grained with mdium grained sand, wet, mild odor. Boring terminated at 8 ft.	100	59.8 31.6	GLB-12-6 GLB-12-GW GLB-12-8	

g-logics	PROJECT/PROJECT NO: **Mossman Residence**	DRILLING DATE: **10/21/2021**	LOGGED BY: **PMF**
	DRILLING CONTRACTOR: **Standard**	BORING DIAMETER: **2"**	WEATHER: **Overcast**
BORING/WELL ID: **GLB-13**	DRILLING METHOD: **Direct Push**	TOTAL DEPTH: **8'**	DEPTH TO WATER: **1'**
	LOCATION: **Sammamish, WA 98074**		

NOTES:

Depth (feet)	USCS Soil Type/Graphic	Description	Interval and % Recovery	PID	Sample ID	Well Construction
0			40	7.5	GLB-13-2	Temporary boring. Backfilled with bentonite.
	SW	0-8': SAND, brown to gray, medium to coarse grained with gravel, wet, mild odor. Boring terminated at 8 ft.		7.3	GLB-13-4	
5			80	10.3	GLB-13-6 GLB-13-GW	
				10.6	GLB-13-8	

g-logics

	PROJECT/PROJECT NO: **Mossman Residence**	DRILLING DATE: **10/21/2021**	LOGGED BY: **PMF**
	DRILLING CONTRACTOR: **Standard**	BORING DIAMETER: **2"**	WEATHER: **Overcast**
BORING/WELL ID: **GLB-14**	DRILLING METHOD: **Direct Push**	TOTAL DEPTH: **8'**	DEPTH TO WATER: **1'**
	LOCATION: **Sammamish, WA 98074**		

NOTES:

Depth (feet)	USCS Soil Type/Graphic	Description	Interval and % Recovery	PID	Sample ID	Well Construction
0			10	29.2	GLB-14-2	Temporary boring. Backfilled with bentonite.
	SW	0-8': SAND, gray, coarse grained with fine gravel, wet, mild odor. Topsoil 0-6". Boring terminated at 8ft.		162	GLB-14-4	
5			75		GLB-14-GW	
				2.1	GLB-14-6	
			100			
				12.8	GLB-14-8	

g-logics

	PROJECT/PROJECT NO: **Mossman Residence**	DRILLING DATE: **10/21/2021**	LOGGED BY: **PMF**
	DRILLING CONTRACTOR: **Standard**	BORING DIAMETER: **2"**	WEATHER: **Overcast**
BORING/WELL ID: **GLB-15**	DRILLING METHOD: **Direct Push**	TOTAL DEPTH: **8'**	DEPTH TO WATER: **1'**
	LOCATION: **Sammamish, WA 98074**		

NOTES:

Depth (feet)	USCS Soil Type/Graphic	Description	Interval and % Recovery	PID	Sample ID	Well Construction
0			75	4.2	GLB-15-2	Temporary boring. Backfilled with bentonite.
	SW	0-8': SAND, gray, coarse grained with fine gravel, wet, mild odor. Topsoil 0-6". Boring terminated at 8ft.		6.9	GLB-15-4	
5					GLB-15-GW	
			75	1.7	GLB-15-6	
				9.3	GLB-15-8	

g-logics

	PROJECT/PROJECT NO: **Mossman Residence**	DRILLING DATE: **10/21/2021**	LOGGED BY: **TQ**
	DRILLING CONTRACTOR: **Standard**	BORING DIAMETER: **2"**	WEATHER: **Overcast**
BORING/WELL ID: **GLB-16**	DRILLING METHOD: **Direct Push**	TOTAL DEPTH: **8'**	DEPTH TO WATER: **1'**
	LOCATION: **Sammamish, WA 98074**		

NOTES:

Depth (feet)	USCS Soil Type/Graphic	Description	Interval and % Recovery	PID	Sample ID	Well Construction
0	SW	0-4': SAND, gray, coarse grained with fine gravel and trace organics, wet, mild odor. Topsoil 0-6".	80	64.6	GLB-16-2	Temporary boring. Backfilled with bentonite.
				1.9	GLB-16-4	
	SM	4-5': SILTY SAND, brown, fine grained with trace gravel, wet, mild odor.				
5					GLB-16-GW	
	SW	5-8': SAND, gray, coarse grained with fine gravel, and pockets of brown silt, wet, no odor. Boring terminated at 8 ft.	95	0.4	GLB-16-6	
				0.1	GLB-16-8	

APPENDIX C

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

G-Logics
Pamela Fleming
40 Second Ave. SE
Issaquah, WA 98027

RE: Mossman
Work Order Number: 2110292

October 28, 2021

Attention Pamela Fleming:

Fremont Analytical, Inc. received 10 sample(s) on 10/20/2021 for the analyses presented in the following report.

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.
Total Organic Carbon by SM 5310C

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: *11/11/2021*

CLIENT: G-Logics
Project: Mossman
Work Order: 2110292

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2110292-001	MW-1	10/20/2021 12:15 PM	10/20/2021 5:55 PM
2110292-002	MW-5	10/20/2021 12:43 PM	10/20/2021 5:55 PM
2110292-003	MW-6	10/20/2021 12:00 AM	10/20/2021 5:55 PM
2110292-004	MW-8	10/20/2021 10:36 AM	10/20/2021 5:55 PM
2110292-005	MW-2	10/20/2021 11:30 AM	10/20/2021 5:55 PM
2110292-006	GLB-8-GW	10/20/2021 11:05 AM	10/20/2021 5:55 PM
2110292-007	GLB-9-GW	10/20/2021 12:20 PM	10/20/2021 5:55 PM
2110292-008	GLB-10-GW	10/20/2021 1:25 PM	10/20/2021 5:55 PM
2110292-009	GLB-11-GW	10/20/2021 2:30 PM	10/20/2021 5:55 PM
2110292-010	Trip Blank		10/20/2021 5:55 PM

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

Case Narrative

WO#: **2110292**
Date: **10/28/2021**

CLIENT: G-Logics
Project: Mossman

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.

11/11/21: Revision 1 includes addition analysis requested by the client.

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: **2110292**
Date Reported: **10/28/2021**

CLIENT: G-Logics
Project: Mossman

Lab ID: 2110292-001 **Collection Date:** 10/20/2021 12:15:00 PM
Client Sample ID: **MW-1** **Matrix:** Groundwater

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34145		Analyst: MM
Diesel (Fuel Oil)	944	99.8		µg/L	1	10/26/2021 9:28:10 AM
Heavy Oil	ND	99.8		µg/L	1	10/26/2021 9:28:10 AM
Total Petroleum Hydrocarbons	944	200		µg/L	1	10/26/2021 9:28:10 AM
Surr: 2-Fluorobiphenyl	86.2	50 - 150		%Rec	1	10/26/2021 9:28:10 AM
Surr: o-Terphenyl	102	50 - 150		%Rec	1	10/26/2021 9:28:10 AM

Lab ID: 2110292-002 **Collection Date:** 10/20/2021 12:43:00 PM
Client Sample ID: **MW-5** **Matrix:** Groundwater

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34145		Analyst: MM
Diesel (Fuel Oil)	340	98.2	SGT	µg/L	1	11/9/2021 1:20:48 PM
Diesel (Fuel Oil)	693	98.2		µg/L	1	10/26/2021 9:53:51 AM
Heavy Oil	ND	98.2		µg/L	1	10/26/2021 9:53:51 AM
Total Petroleum Hydrocarbons	340	196	SGT	µg/L	1	11/9/2021 1:20:48 PM
Total Petroleum Hydrocarbons	693	196		µg/L	1	10/26/2021 9:53:51 AM
Surr: 2-Fluorobiphenyl	101	50 - 150	SGT	%Rec	1	11/9/2021 1:20:48 PM
Surr: 2-Fluorobiphenyl	89.1	50 - 150		%Rec	1	10/26/2021 9:53:51 AM
Surr: o-Terphenyl	113	50 - 150	SGT	%Rec	1	11/9/2021 1:20:48 PM
Surr: o-Terphenyl	98.2	50 - 150		%Rec	1	10/26/2021 9:53:51 AM

NOTES:
SGT - Silica Gel Treatment

CLIENT: G-Logics
Project: Mossman

Lab ID: 2110292-003 **Collection Date:** 10/20/2021
Client Sample ID: **MW-6** **Matrix:** Groundwater

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34145		Analyst: MM
Diesel (Fuel Oil)	297	98.7	SGT	µg/L	1	11/9/2021 1:33:39 PM
Diesel (Fuel Oil)	541	98.7		µg/L	1	10/26/2021 10:06:52 AM
Heavy Oil	ND	98.7		µg/L	1	10/26/2021 10:06:52 AM
Total Petroleum Hydrocarbons	297	197	SGT	µg/L	1	11/9/2021 1:33:39 PM
Total Petroleum Hydrocarbons	541	197		µg/L	1	10/26/2021 10:06:52 AM
Surr: 2-Fluorobiphenyl	92.5	50 - 150	SGT	%Rec	1	11/9/2021 1:33:39 PM
Surr: 2-Fluorobiphenyl	92.2	50 - 150		%Rec	1	10/26/2021 10:06:52 AM
Surr: o-Terphenyl	108	50 - 150	SGT	%Rec	1	11/9/2021 1:33:39 PM
Surr: o-Terphenyl	106	50 - 150		%Rec	1	10/26/2021 10:06:52 AM

NOTES:
SGT - Silica Gel Treatment

Lab ID: 2110292-004 **Collection Date:** 10/20/2021 10:36:00 AM
Client Sample ID: **MW-8** **Matrix:** Groundwater

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34145		Analyst: MM
Diesel (Fuel Oil)	ND	98.8		µg/L	1	10/26/2021 10:19:43 AM
Heavy Oil	ND	98.8		µg/L	1	10/26/2021 10:19:43 AM
Total Petroleum Hydrocarbons	ND	198		µg/L	1	10/26/2021 10:19:43 AM
Surr: 2-Fluorobiphenyl	94.5	50 - 150		%Rec	1	10/26/2021 10:19:43 AM
Surr: o-Terphenyl	104	50 - 150		%Rec	1	10/26/2021 10:19:43 AM
Total Organic Carbon by SM 5310C				Batch ID: R70840		Analyst: SS
Total Organic Carbon	4.19	0.500		mg/L	1	10/27/2021 5:46:00 PM

CLIENT: G-Logics
Project: Mossman

Lab ID: 2110292-005 **Collection Date:** 10/20/2021 11:30:00 AM
Client Sample ID: **MW-2** **Matrix:** Groundwater

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34145		Analyst: MM
Diesel (Fuel Oil)	11,900	98.4		µg/L	1	10/26/2021 10:32:31 AM
Heavy Oil	ND	98.4		µg/L	1	10/26/2021 10:32:31 AM
Total Petroleum Hydrocarbons	11,900	197		µg/L	1	10/26/2021 10:32:31 AM
Surr: 2-Fluorobiphenyl	97.9	50 - 150		%Rec	1	10/26/2021 10:32:31 AM
Surr: o-Terphenyl	110	50 - 150		%Rec	1	10/26/2021 10:32:31 AM

Lab ID: 2110292-006 **Collection Date:** 10/20/2021 11:05:00 AM
Client Sample ID: **GLB-8-GW** **Matrix:** Groundwater

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34145		Analyst: MM
Diesel (Fuel Oil)	22,600	988	D	µg/L	10	10/26/2021 2:32:39 PM
Heavy Oil	ND	988	D	µg/L	10	10/26/2021 2:32:39 PM
Total Petroleum Hydrocarbons	22,600	1,980	D	µg/L	10	10/26/2021 2:32:39 PM
Surr: 2-Fluorobiphenyl	96.0	50 - 150	D	%Rec	10	10/26/2021 2:32:39 PM
Surr: o-Terphenyl	51.0	50 - 150	D	%Rec	10	10/26/2021 2:32:39 PM

Lab ID: 2110292-007 **Collection Date:** 10/20/2021 12:20:00 PM
Client Sample ID: **GLB-9-GW** **Matrix:** Groundwater

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34145		Analyst: MM
Diesel (Fuel Oil)	2,550	99.3		µg/L	1	10/26/2021 10:58:26 AM
Heavy Oil	ND	99.3		µg/L	1	10/26/2021 10:58:26 AM
Total Petroleum Hydrocarbons	2,550	199		µg/L	1	10/26/2021 10:58:26 AM
Surr: 2-Fluorobiphenyl	73.2	50 - 150		%Rec	1	10/26/2021 10:58:26 AM
Surr: o-Terphenyl	92.4	50 - 150		%Rec	1	10/26/2021 10:58:26 AM

CLIENT: G-Logics
Project: Mossman

Lab ID: 2110292-008 **Collection Date:** 10/20/2021 1:25:00 PM
Client Sample ID: **GLB-10-GW** **Matrix:** Groundwater

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34145		Analyst: MM
Diesel (Fuel Oil)	1,080	98.9		µg/L	1	10/26/2021 12:10:41 PM
Heavy Oil	ND	98.9		µg/L	1	10/26/2021 12:10:41 PM
Total Petroleum Hydrocarbons	1,080	198		µg/L	1	10/26/2021 12:10:41 PM
Surr: 2-Fluorobiphenyl	89.9	50 - 150		%Rec	1	10/26/2021 12:10:41 PM
Surr: o-Terphenyl	88.5	50 - 150		%Rec	1	10/26/2021 12:10:41 PM

Lab ID: 2110292-009 **Collection Date:** 10/20/2021 2:30:00 PM
Client Sample ID: **GLB-11-GW** **Matrix:** Groundwater

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34145		Analyst: MM
Diesel (Fuel Oil)	ND	99.8		µg/L	1	10/26/2021 12:23:34 PM
Heavy Oil	167	99.8		µg/L	1	10/26/2021 12:23:34 PM
Total Petroleum Hydrocarbons	242	200		µg/L	1	10/26/2021 12:23:34 PM
Surr: 2-Fluorobiphenyl	91.5	50 - 150		%Rec	1	10/26/2021 12:23:34 PM
Surr: o-Terphenyl	90.3	50 - 150		%Rec	1	10/26/2021 12:23:34 PM

Work Order: 2110292
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

Total Organic Carbon by SM 5310C

Sample ID: **MB-R70840**	SampType: **MBLK**	Units: **mg/L**	Prep Date: **10/27/2021**	RunNo: **70840**
Client ID: **MBLKW**	Batch ID: **R70840**		Analysis Date: **10/27/2021**	SeqNo: **1440962**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	ND	0.500									

Sample ID: **LCS-R70840**	SampType: **LCS**	Units: **mg/L**	Prep Date: **10/27/2021**	RunNo: **70840**
Client ID: **LCSW**	Batch ID: **R70840**		Analysis Date: **10/27/2021**	SeqNo: **1440963**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	5.02	0.500	5.000	0	100	93.1	106				

Sample ID: **2110315-003CDUP**	SampType: **DUP**	Units: **mg/L**	Prep Date: **10/27/2021**	RunNo: **70840**
Client ID: **BATCH**	Batch ID: **R70840**		Analysis Date: **10/27/2021**	SeqNo: **1440966**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	11.5	0.500						11.22	2.12	20	

Sample ID: **2110315-003CMS**	SampType: **MS**	Units: **mg/L**	Prep Date: **10/27/2021**	RunNo: **70840**
Client ID: **BATCH**	Batch ID: **R70840**		Analysis Date: **10/27/2021**	SeqNo: **1440967**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	16.0	0.500	5.000	11.22	95.8	69.1	124				

Sample ID: **2110315-003CMSD**	SampType: **MSD**	Units: **mg/L**	Prep Date: **10/27/2021**	RunNo: **70840**
Client ID: **BATCH**	Batch ID: **R70840**		Analysis Date: **10/27/2021**	SeqNo: **1440968**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	15.8	0.500	5.000	11.22	91.6	69.1	124	16.01	1.30	30	

Work Order: 2110292
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

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

Sample ID: **LCS-34145** SampType: **LCS** Units: **µg/L** Prep Date: **10/22/2021** RunNo: **70787**
Client ID: **LCSW** Batch ID: **34145** Analysis Date: **10/26/2021** SeqNo: **1439716**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	1,050	198	991.6	0	106	55	117				
Surr: 2-Fluorobiphenyl	17.3		19.83		87.0	50	150				
Surr: o-Terphenyl	23.0		19.83		116	50	150				

Sample ID: **MB-34145** SampType: **MBLK** Units: **µg/L** Prep Date: **10/22/2021** RunNo: **70787**
Client ID: **MBLKW** Batch ID: **34145** Analysis Date: **10/26/2021** SeqNo: **1439717**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	98.2									
Heavy Oil	ND	98.2									
Total Petroleum Hydrocarbons	ND	196									
Surr: 2-Fluorobiphenyl	17.5		19.64		89.1	50	150				
Surr: o-Terphenyl	20.4		19.64		104	50	150				

Sample ID: **2110292-001BMS** SampType: **MS** Units: **µg/L** Prep Date: **10/22/2021** RunNo: **70787**
Client ID: **MW-1** Batch ID: **34145** Analysis Date: **10/26/2021** SeqNo: **1439721**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	2,170	199	994.8	944.0	123	37.1	131				
Surr: 2-Fluorobiphenyl	17.9		19.90		90.1	50	150				
Surr: o-Terphenyl	22.2		19.90		112	50	150				

Sample ID: **2110302-001ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **10/22/2021** RunNo: **70787**
Client ID: **BATCH** Batch ID: **34145** Analysis Date: **10/26/2021** SeqNo: **1439729**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	99.0						0		30	
Heavy Oil	ND	99.0						0		30	
Total Petroleum Hydrocarbons	ND	198						0		30	

Work Order: 2110292
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

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

Sample ID: **2110302-001ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **10/22/2021** RunNo: **70787**
Client ID: **BATCH** Batch ID: **34145** Analysis Date: **10/26/2021** SeqNo: **1439729**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: 2-Fluorobiphenyl	16.5		19.81		83.5	50	150		0		
Surr: o-Terphenyl	17.9		19.81		90.6	50	150		0		

Sample ID: **MB-34145** SampType: **MBLK** Units: **µg/L** Prep Date: **10/22/2021** RunNo: **70787**
Client ID: **MBLKW** Batch ID: **34145** Analysis Date: **11/9/2021** SeqNo: **1448762**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	124	98.2									SGT
Heavy Oil	429	98.2									SGT
Total Petroleum Hydrocarbons	553	196									SGT
Surr: 2-Fluorobiphenyl	18.6		19.64		94.6	50	150				SGT
Surr: o-Terphenyl	22.3		19.64		114	50	150				SGT

NOTES:
SGT - Silica Gel Treatment

Sample ID: **LCS-34145** SampType: **LCS** Units: **µg/L** Prep Date: **10/22/2021** RunNo: **70787**
Client ID: **LCSW** Batch ID: **34145** Analysis Date: **11/9/2021** SeqNo: **1448763**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	1,190	198	991.6	0	120	55	117				BSSGT
Surr: 2-Fluorobiphenyl	18.8		19.83		94.8	50	150				SGT
Surr: o-Terphenyl	26.1		19.83		132	50	150				SGT

NOTES:
SGT - Silica Gel Treatment

Sample Log-In Check List

Client Name:	**GL**	Work Order Number:	**2110292**
Logged by:	**Justine Mantz**	Date Received:	**10/20/2021 5:55:00 PM**

Chain of Custody

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

Log In

3.	Coolers are present?	Yes ☑	No ☐	NA ☐
4.	Shipping container/cooler in good condition?	Yes ☑	No ☐	
5.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes ☐	No ☐	Not Present ☑
6.	Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
7.	Were all items received at a temperature of >2°C to 6°C *	Yes ☑	No ☐	NA ☐
8.	Sample(s) in proper container(s)?	Yes ☑	No ☐	
9.	Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
10.	Are samples properly preserved?	Yes ☑	No ☐	
11.	Was preservative added to bottles?	Yes ☑	No ☐	NA ☐ H2SO4
12.	Is there headspace in the VOA vials?	Yes ☐	No ☑	NA ☐
13.	Did all samples containers arrive in good condition(unbroken)?	Yes ☑	No ☐	
14.	Does paperwork match bottle labels?	Yes ☑	No ☐	
15.	Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
16.	Is it clear what analyses were requested?	Yes ☑	No ☐	
17.	Were all holding times able to be met?	Yes ☑	No ☐	

Special Handling (if applicable)

18.	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: _____

19. Additional remarks:

Item Information

Item #	Temp ºC
Sample 1	4.5

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

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Chain of Custody Record & Laboratory Services Agreement

Date: 10-20-21 | Page: 1 of: 1 | Laboratory Project No (internal): 2110292

Special Remarks:

Project Name: Mossman

Project No: 01-0864-D

Collected by: Tiffany Q + Pamela F

Location: Lake Sammamish

Report To (PM): Pamela F

PM Email: pamelaf@g-logics.com

Sample Disposal: ☐ Return to client ☐ Disposal by lab (after 30 days)

Client: G-Logics

Address:

City, State, Zip:

Telephone:

Fax:

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)	Total organic carbon	Comments
1 MW-1	10-20-21	1215	GW	3													
2 MW-5		1243		1													
3 MW-6				↓													
4 MW-8		1036		4											X		
5 MW-2		1130		3													
6 GLB-8-GW		1105		3													
7 GLB-9-GW		1220															
8 GLB-10-GW		1325															
9 GLB-11-GW	↓	1430	↓	↓													
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 Tiffany Q'Leary	Tiffany Q'Leary	10-20-21	x	Alena	10/20/21 1755
Relinquished (Signature)	Print Name	Date/Time	Received (Signature)	Print Name	Date/Time
x			x		

Chain of Custody Record & Laboratory Services Agreement

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 10-20-21 Page: 1 of: 1

Laboratory Project No (internal): 2110292

Project Name: Mossman

Special Remarks: edits per TQ, Std TAT 11/3/21 -CG

Project No: 01-0864-D

Client: G-Logics

Collected by: Tiffany Q & Pamela F

Address:

Location: Lake Sammamish

City, State, Zip:

Report To (PM): Pamela F

Sample Disposal: ☐ Return to client ☐ Disposal by lab (after 30 days)

Telephone:

PM Email: pamelaf@g-logics.com

Fax:

	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)	Total organic carbon			Comments
1	MW-1	10-20-21	1215	GW	3															
2	MW-5		1243		1															DX w/ Silica Gel Cleanup
3	MW-6				↓															DX w/ Silica Gel Cleanup
4	MW-8		1036		4											X				
5	MW-2		1130		3															
6	GLB-8-GW		1105		3															
7	GLB-9-GW		1220																	
8	GLB-10-GW		1325																	
9	GLB-11-GW	↓	1430	↓	↓					↓										
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 Tiffany Qwong	Tiffany Qwong	10-20-21	x	Alena	10/20/21 1755
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

G-Logics
Pamela Fleming
40 Second Ave. SE
Issaquah, WA 98027

RE: Mossman
Work Order Number: 2110293

November 17, 2021

Attention Pamela Fleming:

Fremont Analytical, Inc. received 29 sample(s) on 10/20/2021 for the analyses presented in the following report.

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.
Extractable Petroleum Hydrocarbons by NWEPH
Sample Moisture (Percent Moisture)
Volatile Organic Compounds by EPA Method 8260D
Volatile Petroleum Hydrocarbons by NWVPH

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: *11/17/2021*

CLIENT: G-Logics
Project: Mossman
Work Order: 2110293

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2110293-001	GLB-8-2	10/20/2021 9:50 AM	10/20/2021 5:55 PM
2110293-002	GLB-8-4	10/20/2021 9:55 AM	10/20/2021 5:55 PM
2110293-003	GLB-8-6	10/20/2021 10:00 AM	10/20/2021 5:55 PM
2110293-004	GLB-8-8	10/20/2021 10:10 AM	10/20/2021 5:55 PM
2110293-005	GLB-8-10	10/20/2021 10:15 AM	10/20/2021 5:55 PM
2110293-006	GLB-8-12	10/20/2021 10:30 AM	10/20/2021 5:55 PM
2110293-007	GLB-8-14	10/20/2021 10:35 AM	10/20/2021 5:55 PM
2110293-008	GLB-8-16	10/20/2021 10:35 AM	10/20/2021 5:55 PM
2110293-009	GLB-9-4	10/20/2021 11:25 AM	10/20/2021 5:55 PM
2110293-010	GLB-9-6	10/20/2021 11:30 AM	10/20/2021 5:55 PM
2110293-011	GLB-9-8	10/20/2021 11:40 AM	10/20/2021 5:55 PM
2110293-012	GLB-9-10	10/20/2021 11:45 AM	10/20/2021 5:55 PM
2110293-013	GLB-9-12	10/20/2021 11:55 AM	10/20/2021 5:55 PM
2110293-014	GLB-9-14	10/20/2021 12:05 PM	10/20/2021 5:55 PM
2110293-015	GLB-9-16	10/20/2021 12:10 PM	10/20/2021 5:55 PM
2110293-016	GLB-10-4	10/20/2021 12:45 PM	10/20/2021 5:55 PM
2110293-017	GLB-10-6	10/20/2021 12:50 PM	10/20/2021 5:55 PM
2110293-018	GLB-10-8	10/20/2021 12:55 PM	10/20/2021 5:55 PM
2110293-019	GLB-10-10	10/20/2021 1:00 PM	10/20/2021 5:55 PM
2110293-020	GLB-10-12	10/20/2021 1:05 PM	10/20/2021 5:55 PM
2110293-021	GLB-10-14	10/20/2021 12:00 AM	10/20/2021 5:55 PM
2110293-022	GLB-10-16	10/20/2021 12:00 AM	10/20/2021 5:55 PM
2110293-023	GLB-11-4	10/20/2021 12:00 AM	10/20/2021 5:55 PM
2110293-024	GLB-11-6	10/20/2021 12:00 AM	10/20/2021 5:55 PM
2110293-025	GLB-11-8	10/20/2021 12:00 AM	10/20/2021 5:55 PM
2110293-026	GLB-11-10	10/20/2021 12:00 AM	10/20/2021 5:55 PM
2110293-027	GLB-11-12	10/20/2021 12:00 AM	10/20/2021 5:55 PM
2110293-028	GLB-11-14	10/20/2021 12:00 AM	10/20/2021 5:55 PM
2110293-029	GLB-11-16	10/20/2021 12:00 AM	10/20/2021 5:55 PM

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

Case Narrative

WO#: **2110293**
Date: **11/17/2021**

CLIENT: G-Logics
Project: Mossman

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.

11/02/2021, Rev 1: Includes additional analyses requested by the client.
11/17/2021, Rev 2: Includes additional analyses requested by the client.

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: **2110293**
Date Reported: **11/17/2021**

CLIENT: G-Logics
Project: Mossman

Lab ID: 2110293-003 **Collection Date:** 10/20/2021 10:00:00 AM
Client Sample ID: **GLB-8-6** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34211		Analyst: MM
Diesel (Fuel Oil)	ND	56.0		mg/Kg-dry	1	10/28/2021 3:05:24 PM
Heavy Oil	ND	112		mg/Kg-dry	1	10/28/2021 3:05:24 PM
Total Petroleum Hydrocarbons	ND	168		mg/Kg-dry	1	10/28/2021 3:05:24 PM
Surr: 2-Fluorobiphenyl	82.4	50 - 150		%Rec	1	10/28/2021 3:05:24 PM
Surr: o-Terphenyl	95.9	50 - 150		%Rec	1	10/28/2021 3:05:24 PM
Sample Moisture (Percent Moisture)				Batch ID: R70839		Analyst: ALB
Percent Moisture	13.9	0.500		wt%	1	10/28/2021 9:39:47 AM

Analytical Report

Work Order: **2110293**
Date Reported: **11/17/2021**

CLIENT: G-Logics
Project: Mossman

Lab ID: 2110293-004 **Collection Date:** 10/20/2021 10:10:00 AM
Client Sample ID: **GLB-8-8** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34131		Analyst: MM
Diesel (Fuel Oil)	12,400	532	D	mg/Kg-dry	10	10/22/2021 2:28:31 PM
Diesel (Fuel Oil)	8,720	53.2	SGT	mg/Kg-dry	1	11/9/2021 1:20:48 PM
Heavy Oil	ND	1,060	D	mg/Kg-dry	10	10/22/2021 2:28:31 PM
Heavy Oil	ND	106	SGT	mg/Kg-dry	1	11/9/2021 1:20:48 PM
Total Petroleum Hydrocarbons	8,720	160	SGT	mg/Kg-dry	1	11/9/2021 1:20:48 PM
Total Petroleum Hydrocarbons	12,400	1,600	D	mg/Kg-dry	10	10/22/2021 2:28:31 PM
Surr: 2-Fluorobiphenyl	107	50 - 150	SGT	%Rec	1	11/9/2021 1:20:48 PM
Surr: 2-Fluorobiphenyl	73.0	50 - 150	D	%Rec	10	10/22/2021 2:28:31 PM
Surr: o-Terphenyl	149	50 - 150	D	%Rec	10	10/22/2021 2:28:31 PM
Surr: o-Terphenyl	128	50 - 150	SGT	%Rec	1	11/9/2021 1:20:48 PM

NOTES:
SGT - Silica Gel Treatment

Extractable Petroleum Hydrocarbons by NWEPH				Batch ID: 34312		Analyst: MM
Aliphatic Hydrocarbon (C8-C10)	102	19.0	H	mg/Kg-dry	1	11/15/2021 8:44:16 PM
Aliphatic Hydrocarbon (C10-C12)	315	9.49	*H	mg/Kg-dry	1	11/15/2021 8:44:16 PM
Aliphatic Hydrocarbon (C12-C16)	1,450	9.49	H	mg/Kg-dry	1	11/15/2021 8:44:16 PM
Aliphatic Hydrocarbon (C16-C21)	1,480	9.49	H	mg/Kg-dry	1	11/15/2021 8:44:16 PM
Aliphatic Hydrocarbon (C21-C34)	192	9.49	H	mg/Kg-dry	1	11/15/2021 8:44:16 PM
Aromatic Hydrocarbon (C8-C10)	ND	19.0	H	mg/Kg-dry	1	11/16/2021 4:46:01 AM
Aromatic Hydrocarbon (C10-C12)	104	9.49	H	mg/Kg-dry	1	11/16/2021 4:46:01 AM
Aromatic Hydrocarbon (C12-C16)	518	9.49	H	mg/Kg-dry	1	11/16/2021 4:46:01 AM
Aromatic Hydrocarbon (C16-C21)	1,190	9.49	H	mg/Kg-dry	1	11/16/2021 4:46:01 AM
Aromatic Hydrocarbon (C21-C34)	ND	9.49	H	mg/Kg-dry	1	11/16/2021 4:46:01 AM
Surr: 1-Chlorooctadecane	77.5	60 - 140	H	%Rec	1	11/15/2021 8:44:16 PM
Surr: o-Terphenyl	90.0	60 - 140	H	%Rec	1	11/16/2021 4:46:01 AM

NOTES:
* - Associated LCS does not meet acceptance criteria; refer to QC summary.

Volatile Organic Compounds by EPA Method 8260D				Batch ID: 34343		Analyst: CR
Benzene	ND	0.0906	DH	mg/Kg-dry	4	11/8/2021 1:38:11 PM
Toluene	ND	0.136	DH	mg/Kg-dry	4	11/8/2021 1:38:11 PM
Ethylbenzene	ND	0.113	DH	mg/Kg-dry	4	11/8/2021 1:38:11 PM
m,p-Xylene	0.564	0.227	DH	mg/Kg-dry	4	11/8/2021 1:38:11 PM
o-Xylene	ND	0.113	DH	mg/Kg-dry	4	11/8/2021 1:38:11 PM
Naphthalene	6.40	0.453	DH	mg/Kg-dry	4	11/8/2021 1:38:11 PM
Surr: Dibromofluoromethane	98.3	75.5 - 119	DH	%Rec	4	11/8/2021 1:38:11 PM

CLIENT: G-Logics
Project: Mossman

Volatile Organic Compounds by EPA Method 8260D

Batch ID: 34343 Analyst: CR

Surr: Toluene-d8	105	82.4 - 115	DH	%Rec	4	11/8/2021 1:38:11 PM
Surr: 1-Bromo-4-fluorobenzene	96.7	78.5 - 118	DH	%Rec	4	11/8/2021 1:38:11 PM

NOTES:
Diluted due to matrix.

Volatile Petroleum Hydrocarbons by NWVPH

Batch ID: 34320 Analyst: SLL

Aliphatic Hydrocarbon (C5-C6)	3.56	2.31	H	mg/Kg-dry	1	11/11/2021 8:40:16 AM
Aliphatic Hydrocarbon (C6-C8)	11.8	1.39	H	mg/Kg-dry	1	11/11/2021 8:40:16 AM
Aliphatic Hydrocarbon (C8-C10)	48.6	2.31	H	mg/Kg-dry	1	11/11/2021 8:40:16 AM
Aliphatic Hydrocarbon (C10-C12)	293	9.24	DH	mg/Kg-dry	20	11/11/2021 6:04:45 AM
Aromatic Hydrocarbon (C8-C10)	111	2.77	H	mg/Kg-dry	1	11/11/2021 8:40:16 AM
Aromatic Hydrocarbon (C10-C12)	735	9.24	DH	mg/Kg-dry	20	11/11/2021 6:04:45 AM
Aromatic Hydrocarbon (C12-C13)	3,120	46.2	DH	mg/Kg-dry	100	11/11/2021 6:07:12 PM
Surr: 1,4-Difluorobenzene	85.7	65 - 140	H	%Rec	1	11/11/2021 8:40:16 AM
Surr: Bromofluorobenzene	468	65 - 140	SH	%Rec	1	11/11/2021 8:40:16 AM

NOTES:
S - Outlying surrogate recovery attributed to TPH interference.

Sample Moisture (Percent Moisture)

Batch ID: R70710 Analyst: MCH

Percent Moisture	11.7	0.500		wt%	1	10/21/2021 5:03:36 PM

Lab ID: 2110293-005
Client Sample ID: **GLB-8-10**
Collection Date: 10/20/2021 10:15:00 AM
Matrix: Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed

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

Batch ID: 34211 Analyst: MM

Diesel (Fuel Oil)	ND	59.2		mg/Kg-dry	1	10/28/2021 3:18:07 PM
Heavy Oil	ND	118		mg/Kg-dry	1	10/28/2021 3:18:07 PM
Total Petroleum Hydrocarbons	ND	178		mg/Kg-dry	1	10/28/2021 3:18:07 PM
Surr: 2-Fluorobiphenyl	99.2	50 - 150		%Rec	1	10/28/2021 3:18:07 PM
Surr: o-Terphenyl	96.4	50 - 150		%Rec	1	10/28/2021 3:18:07 PM

Sample Moisture (Percent Moisture)

Batch ID: R70839 Analyst: ALB

Percent Moisture	21.6	0.500		wt%	1	10/28/2021 9:39:47 AM

Analytical Report

Work Order: **2110293**
Date Reported: **11/17/2021**

CLIENT: G-Logics
Project: Mossman

Lab ID: 2110293-010 **Collection Date:** 10/20/2021 11:30:00 AM
Client Sample ID: **GLB-9-6** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34211		Analyst: MM
Diesel (Fuel Oil)	8,940	48.4		mg/Kg-dry	1	10/28/2021 3:30:54 PM
Heavy Oil	ND	96.8		mg/Kg-dry	1	10/28/2021 3:30:54 PM
Total Petroleum Hydrocarbons	8,940	145		mg/Kg-dry	1	10/28/2021 3:30:54 PM
Surr: 2-Fluorobiphenyl	55.4	50 - 150		%Rec	1	10/28/2021 3:30:54 PM
Surr: o-Terphenyl	71.9	50 - 150		%Rec	1	10/28/2021 3:30:54 PM
Sample Moisture (Percent Moisture)				Batch ID: R70839		Analyst: ALB
Percent Moisture	9.27	0.500		wt%	1	10/28/2021 9:39:47 AM

CLIENT: G-Logics
Project: Mossman

Lab ID: 2110293-011 **Collection Date:** 10/20/2021 11:40:00 AM
Client Sample ID: **GLB-9-8** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34131		Analyst: MM
Diesel (Fuel Oil)	27,600	700	D	mg/Kg-dry	10	10/22/2021 2:41:21 PM
Diesel (Fuel Oil)	25,000	700	DSGT	mg/Kg-dry	10	11/9/2021 6:42:52 PM
Heavy Oil	ND	1,400	D	mg/Kg-dry	10	10/22/2021 2:41:21 PM
Heavy Oil	ND	1,400	DSGT	mg/Kg-dry	10	11/9/2021 6:42:52 PM
Total Petroleum Hydrocarbons	25,000	2,100	DSGT	mg/Kg-dry	10	11/9/2021 6:42:52 PM
Total Petroleum Hydrocarbons	27,600	2,100	D	mg/Kg-dry	10	10/22/2021 2:41:21 PM
Surr: 2-Fluorobiphenyl	61.0	50 - 150	D	%Rec	10	10/22/2021 2:41:21 PM
Surr: 2-Fluorobiphenyl	75.0	50 - 150	DSGT	%Rec	10	11/9/2021 6:42:52 PM
Surr: o-Terphenyl	91.0	50 - 150	DSGT	%Rec	10	11/9/2021 6:42:52 PM
Surr: o-Terphenyl	72.0	50 - 150	D	%Rec	10	10/22/2021 2:41:21 PM

NOTES:
SGT - Silica Gel Treatment

Extractable Petroleum Hydrocarbons by NWEPH				Batch ID: 34312		Analyst: MM
Aliphatic Hydrocarbon (C8-C10)	328	27.7	H	mg/Kg-dry	1	11/15/2021 11:25:24 PM
Aliphatic Hydrocarbon (C10-C12)	961	13.9	*H	mg/Kg-dry	1	11/15/2021 11:25:24 PM
Aliphatic Hydrocarbon (C12-C16)	3,800	139	DH	mg/Kg-dry	10	11/16/2021 7:13:30 PM
Aliphatic Hydrocarbon (C16-C21)	4,160	139	DH	mg/Kg-dry	10	11/16/2021 7:13:30 PM
Aliphatic Hydrocarbon (C21-C34)	495	13.9	H	mg/Kg-dry	1	11/15/2021 11:25:24 PM
Aromatic Hydrocarbon (C8-C10)	82.4	27.7	H	mg/Kg-dry	1	11/16/2021 7:26:23 AM
Aromatic Hydrocarbon (C8-C10)	ND	27.7	H	mg/Kg-dry	1	11/15/2021 11:25:24 PM
Aromatic Hydrocarbon (C10-C12)	ND	13.9	H	mg/Kg-dry	1	11/15/2021 11:25:24 PM
Aromatic Hydrocarbon (C10-C12)	401	13.9	H	mg/Kg-dry	1	11/16/2021 7:26:23 AM
Aromatic Hydrocarbon (C12-C16)	1,630	13.9	H	mg/Kg-dry	1	11/16/2021 7:26:23 AM
Aromatic Hydrocarbon (C12-C16)	ND	13.9	H	mg/Kg-dry	1	11/15/2021 11:25:24 PM
Aromatic Hydrocarbon (C16-C21)	3,290	139	DH	mg/Kg-dry	10	11/16/2021 3:38:50 PM
Aromatic Hydrocarbon (C16-C21)	ND	13.9	H	mg/Kg-dry	1	11/15/2021 11:25:24 PM
Aromatic Hydrocarbon (C21-C34)	591	13.9	H	mg/Kg-dry	1	11/16/2021 7:26:23 AM
Aromatic Hydrocarbon (C21-C34)	ND	13.9	H	mg/Kg-dry	1	11/15/2021 11:25:24 PM
Surr: 1-Chlorooctadecane	78.2	60 - 140	H	%Rec	1	11/15/2021 11:25:24 PM
Surr: o-Terphenyl	0.520	60 - 140	SH	%Rec	1	11/15/2021 11:25:24 PM
Surr: o-Terphenyl	93.4	60 - 140	H	%Rec	1	11/16/2021 7:26:23 AM

NOTES:
* - Associated LCS does not meet acceptance criteria; refer to QC summary.

Volatile Organic Compounds by EPA Method 8260D				Batch ID: 34227		Analyst: CR
Benzene	0.120	0.0747	D	mg/Kg-dry	4	10/29/2021 5:20:15 PM

CLIENT: G-Logics
Project: Mossman

Volatile Organic Compounds by EPA Method 8260D

Batch ID: 34227 Analyst: CR

Toluene	ND	0.224	D	mg/Kg-dry	4	10/29/2021 5:20:15 PM
Ethylbenzene	1.54	0.187	D	mg/Kg-dry	4	10/29/2021 5:20:15 PM
m,p-Xylene	5.55	0.374	D	mg/Kg-dry	4	10/29/2021 5:20:15 PM
o-Xylene	0.424	0.187	D	mg/Kg-dry	4	10/29/2021 5:20:15 PM
Surr: Dibromofluoromethane	96.0	75.5 - 119	D	%Rec	4	10/29/2021 5:20:15 PM
Surr: Toluene-d8	104	82.4 - 115	D	%Rec	4	10/29/2021 5:20:15 PM
Surr: 1-Bromo-4-fluorobenzene	97.6	78.5 - 118	D	%Rec	4	10/29/2021 5:20:15 PM

NOTES:
Diluted due to matrix, benzene is reported to MDL.

Volatile Petroleum Hydrocarbons by NWVPH

Batch ID: 34320 Analyst: SLL

Aliphatic Hydrocarbon (C5-C6)	6.12	3.26	H	mg/Kg-dry	1	11/11/2021 8:01:23 AM
Aliphatic Hydrocarbon (C6-C8)	29.2	1.96	H	mg/Kg-dry	1	11/11/2021 8:01:23 AM
Aliphatic Hydrocarbon (C8-C10)	185	65.2	DH	mg/Kg-dry	20	11/11/2021 6:43:41 AM
Aliphatic Hydrocarbon (C10-C12)	463	13.0	DH	mg/Kg-dry	20	11/11/2021 6:43:41 AM
Aromatic Hydrocarbon (C8-C10)	212	3.91	H	mg/Kg-dry	1	11/11/2021 8:01:23 AM
Aromatic Hydrocarbon (C10-C12)	1,170	13.0	DH	mg/Kg-dry	20	11/11/2021 6:43:41 AM
Aromatic Hydrocarbon (C12-C13)	4,750	65.2	DH	mg/Kg-dry	100	11/11/2021 6:46:06 PM
Surr: 1,4-Difluorobenzene	76.7	65 - 140	H	%Rec	1	11/11/2021 8:01:23 AM
Surr: Bromofluorobenzene	326	65 - 140	SH	%Rec	1	11/11/2021 8:01:23 AM

NOTES:
S - Outlying surrogate recovery attributed to TPH interference.

Sample Moisture (Percent Moisture)

Batch ID: R70710 Analyst: MCH

Percent Moisture	28.9	0.500		wt%	1	10/21/2021 5:03:36 PM

CLIENT: G-Logics
Project: Mossman

Lab ID: 2110293-012 **Collection Date:** 10/20/2021 11:45:00 AM
Client Sample ID: **GLB-9-10** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34131		Analyst: MM
Diesel (Fuel Oil)	215	59.3		mg/Kg-dry	1	10/22/2021 12:27:22 PM
Heavy Oil	ND	119		mg/Kg-dry	1	10/22/2021 12:27:22 PM
Total Petroleum Hydrocarbons	215	178		mg/Kg-dry	1	10/22/2021 12:27:22 PM
Surr: 2-Fluorobiphenyl	122	50 - 150		%Rec	1	10/22/2021 12:27:22 PM
Surr: o-Terphenyl	126	50 - 150		%Rec	1	10/22/2021 12:27:22 PM
Sample Moisture (Percent Moisture)				Batch ID: R70710		Analyst: MCH
Percent Moisture	20.5	0.500		wt%	1	10/21/2021 5:03:36 PM

Lab ID: 2110293-013 **Collection Date:** 10/20/2021 11:55:00 AM
Client Sample ID: **GLB-9-12** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34305		Analyst: MM
Diesel (Fuel Oil)	58.3	52.7	H	mg/Kg-dry	1	11/4/2021 10:38:26 PM
Heavy Oil	ND	105	H	mg/Kg-dry	1	11/4/2021 10:38:26 PM
Total Petroleum Hydrocarbons	ND	158	H	mg/Kg-dry	1	11/4/2021 10:38:26 PM
Surr: 2-Fluorobiphenyl	115	50 - 150	H	%Rec	1	11/4/2021 10:38:26 PM
Surr: o-Terphenyl	113	50 - 150	H	%Rec	1	11/4/2021 10:38:26 PM
Sample Moisture (Percent Moisture)				Batch ID: R71006		Analyst: cb
Percent Moisture	12.5	0.500		wt%	1	11/4/2021 9:42:20 AM

CLIENT: G-Logics
Project: Mossman

Lab ID: 2110293-017 **Collection Date:** 10/20/2021 12:50:00 PM
Client Sample ID: **GLB-10-6** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34305		Analyst: MM
Diesel (Fuel Oil)	143	59.2	H	mg/Kg-dry	1	11/4/2021 11:17:14 PM
Heavy Oil	ND	118	H	mg/Kg-dry	1	11/4/2021 11:17:14 PM
Total Petroleum Hydrocarbons	ND	177	H	mg/Kg-dry	1	11/4/2021 11:17:14 PM
Surr: 2-Fluorobiphenyl	128	50 - 150	H	%Rec	1	11/4/2021 11:17:14 PM
Surr: o-Terphenyl	130	50 - 150	H	%Rec	1	11/4/2021 11:17:14 PM
Sample Moisture (Percent Moisture)				Batch ID: R71006		Analyst: cb
Percent Moisture	15.7	0.500		wt%	1	11/4/2021 9:42:20 AM

Lab ID: 2110293-018 **Collection Date:** 10/20/2021 12:55:00 PM
Client Sample ID: **GLB-10-8** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34131		Analyst: MM
Diesel (Fuel Oil)	498	82.6		mg/Kg-dry	1	10/22/2021 12:53:10 PM
Heavy Oil	ND	165		mg/Kg-dry	1	10/22/2021 12:53:10 PM
Heavy Oil Range Organics (C24-37)	342	165		mg/Kg-dry	1	10/22/2021 12:53:10 PM
Total Petroleum Hydrocarbons	839	248		mg/Kg-dry	1	10/22/2021 12:53:10 PM
Surr: 2-Fluorobiphenyl	122	50 - 150		%Rec	1	10/22/2021 12:53:10 PM
Surr: o-Terphenyl	127	50 - 150		%Rec	1	10/22/2021 12:53:10 PM

NOTES:
Heavy Oil Range Organics - Indicates unresolved compounds in the Oil range inconsistent with a known petroleum standard.

Sample Moisture (Percent Moisture)				Batch ID: R70710		Analyst: MCH
Percent Moisture	44.7	0.500		wt%	1	10/21/2021 5:03:36 PM

CLIENT: G-Logics
Project: Mossman

Lab ID: 2110293-019 **Collection Date:** 10/20/2021 1:00:00 PM
Client Sample ID: **GLB-10-10** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34305		Analyst: MM
Diesel (Fuel Oil)	ND	51.4	H	mg/Kg-dry	1	11/4/2021 11:30:11 PM
Heavy Oil	ND	103	H	mg/Kg-dry	1	11/4/2021 11:30:11 PM
Total Petroleum Hydrocarbons	ND	154	H	mg/Kg-dry	1	11/4/2021 11:30:11 PM
Surr: 2-Fluorobiphenyl	107	50 - 150	H	%Rec	1	11/4/2021 11:30:11 PM
Surr: o-Terphenyl	110	50 - 150	H	%Rec	1	11/4/2021 11:30:11 PM
Sample Moisture (Percent Moisture)				Batch ID: R71006		Analyst: cb
Percent Moisture	14.8	0.500		wt%	1	11/4/2021 9:42:20 AM

Lab ID: 2110293-020 **Collection Date:** 10/20/2021 1:05:00 PM
Client Sample ID: **GLB-10-12** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34305		Analyst: MM
Diesel (Fuel Oil)	ND	49.4	H	mg/Kg-dry	1	11/4/2021 11:43:23 PM
Heavy Oil	ND	98.8	H	mg/Kg-dry	1	11/4/2021 11:43:23 PM
Total Petroleum Hydrocarbons	ND	148	H	mg/Kg-dry	1	11/4/2021 11:43:23 PM
Surr: 2-Fluorobiphenyl	97.7	50 - 150	H	%Rec	1	11/4/2021 11:43:23 PM
Surr: o-Terphenyl	97.9	50 - 150	H	%Rec	1	11/4/2021 11:43:23 PM
Sample Moisture (Percent Moisture)				Batch ID: R71006		Analyst: cb
Percent Moisture	14.9	0.500		wt%	1	11/4/2021 9:42:20 AM

CLIENT: G-Logics
Project: Mossman

Lab ID: 2110293-021 **Collection Date:** 10/20/2021
Client Sample ID: **GLB-10-14** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34305		Analyst: MM
Diesel (Fuel Oil)	ND	49.8	H	mg/Kg-dry	1	11/4/2021 11:56:19 PM
Heavy Oil	ND	99.5	H	mg/Kg-dry	1	11/4/2021 11:56:19 PM
Total Petroleum Hydrocarbons	ND	149	H	mg/Kg-dry	1	11/4/2021 11:56:19 PM
Surr: 2-Fluorobiphenyl	97.8	50 - 150	H	%Rec	1	11/4/2021 11:56:19 PM
Surr: o-Terphenyl	98.6	50 - 150	H	%Rec	1	11/4/2021 11:56:19 PM
Sample Moisture (Percent Moisture)				Batch ID: R71006		Analyst: cb
Percent Moisture	12.9	0.500		wt%	1	11/4/2021 9:42:20 AM

Lab ID: 2110293-022 **Collection Date:** 10/20/2021
Client Sample ID: **GLB-10-16** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34305		Analyst: MM
Diesel (Fuel Oil)	ND	52.1	H	mg/Kg-dry	1	11/5/2021 12:09:12 AM
Heavy Oil	ND	104	H	mg/Kg-dry	1	11/5/2021 12:09:12 AM
Total Petroleum Hydrocarbons	ND	156	H	mg/Kg-dry	1	11/5/2021 12:09:12 AM
Surr: 2-Fluorobiphenyl	95.2	50 - 150	H	%Rec	1	11/5/2021 12:09:12 AM
Surr: o-Terphenyl	96.9	50 - 150	H	%Rec	1	11/5/2021 12:09:12 AM
Sample Moisture (Percent Moisture)				Batch ID: R71006		Analyst: cb
Percent Moisture	11.8	0.500		wt%	1	11/4/2021 9:42:20 AM

Analytical Report

Work Order: **2110293**
Date Reported: **11/17/2021**

CLIENT: G-Logics
Project: Mossman

Lab ID: 2110293-025 **Collection Date:** 10/20/2021
Client Sample ID: **GLB-11-8** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34131		Analyst: MM
Diesel (Fuel Oil)	259	136		mg/Kg-dry	1	10/22/2021 1:18:52 PM
Heavy Oil	ND	273		mg/Kg-dry	1	10/22/2021 1:18:52 PM
Heavy Oil Range Organics (C24-37)	980	273		mg/Kg-dry	1	10/22/2021 1:18:52 PM
Total Petroleum Hydrocarbons	1,240	409		mg/Kg-dry	1	10/22/2021 1:18:52 PM
Surr: 2-Fluorobiphenyl	117	50 - 150		%Rec	1	10/22/2021 1:18:52 PM
Surr: o-Terphenyl	117	50 - 150		%Rec	1	10/22/2021 1:18:52 PM

NOTES:
Heavy Oil Range Organics - Indicates unresolved compounds in the Oil range inconsistent with a known petroleum standard.

Sample Moisture (Percent Moisture)				Batch ID: R70710		Analyst: MCH
Percent Moisture	66.3	0.500		wt%	1	10/21/2021 5:03:36 PM

Lab ID: 2110293-026 **Collection Date:** 10/20/2021
Client Sample ID: **GLB-11-10** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34305		Analyst: MM
Diesel (Fuel Oil)	ND	93.3	H	mg/Kg-dry	1	11/5/2021 12:22:08 AM
Heavy Oil	ND	187	H	mg/Kg-dry	1	11/5/2021 12:22:08 AM
Heavy Oil Range Organics (C24-37)	381	187	H	mg/Kg-dry	1	11/5/2021 12:22:08 AM
Total Petroleum Hydrocarbons	381	280	H	mg/Kg-dry	1	11/5/2021 12:22:08 AM
Surr: 2-Fluorobiphenyl	120	50 - 150	H	%Rec	1	11/5/2021 12:22:08 AM
Surr: o-Terphenyl	121	50 - 150	H	%Rec	1	11/5/2021 12:22:08 AM

NOTES:
Heavy Oil Range Organics - Indicates unresolved compounds in the Oil range inconsistent with a known petroleum standard.

Sample Moisture (Percent Moisture)				Batch ID: R71006		Analyst: cb
Percent Moisture	47.8	0.500		wt%	1	11/4/2021 9:42:20 AM

CLIENT: G-Logics
Project: Mossman

Lab ID: 2110293-027 **Collection Date:** 10/20/2021
Client Sample ID: **GLB-11-12** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34305		Analyst: MM
Diesel (Fuel Oil)	ND	87.2	H	mg/Kg-dry	1	11/5/2021 12:48:12 AM
Heavy Oil	ND	174	H	mg/Kg-dry	1	11/5/2021 12:48:12 AM
Total Petroleum Hydrocarbons	ND	262	H	mg/Kg-dry	1	11/5/2021 12:48:12 AM
Surr: 2-Fluorobiphenyl	103	50 - 150	H	%Rec	1	11/5/2021 12:48:12 AM
Surr: o-Terphenyl	107	50 - 150	H	%Rec	1	11/5/2021 12:48:12 AM
Sample Moisture (Percent Moisture)				Batch ID: R71006		Analyst: cb
Percent Moisture	48.3	0.500		wt%	1	11/4/2021 9:42:20 AM

Lab ID: 2110293-028 **Collection Date:** 10/20/2021
Client Sample ID: **GLB-11-14** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34305		Analyst: MM
Diesel (Fuel Oil)	ND	56.1	H	mg/Kg-dry	1	11/5/2021 1:14:00 AM
Heavy Oil	ND	112	H	mg/Kg-dry	1	11/5/2021 1:14:00 AM
Total Petroleum Hydrocarbons	ND	168	H	mg/Kg-dry	1	11/5/2021 1:14:00 AM
Surr: 2-Fluorobiphenyl	116	50 - 150	H	%Rec	1	11/5/2021 1:14:00 AM
Surr: o-Terphenyl	117	50 - 150	H	%Rec	1	11/5/2021 1:14:00 AM
Sample Moisture (Percent Moisture)				Batch ID: R71006		Analyst: cb
Percent Moisture	18.3	0.500		wt%	1	11/4/2021 9:42:20 AM

Work Order: 2110293
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

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

Sample ID: **MB-34131** SampType: **MBLK** Units: **mg/Kg** Prep Date: **10/21/2021** RunNo: **70729**
Client ID: **MBLKS** Batch ID: **34131** Analysis Date: **10/22/2021** SeqNo: **1438609**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	50.0									
Heavy Oil	ND	100									
Total Petroleum Hydrocarbons	ND	150									
Surr: 2-Fluorobiphenyl	10.8		10.00		108	50	150				
Surr: o-Terphenyl	11.1		10.00		111	50	150				

Sample ID: **LCS-34131** SampType: **LCS** Units: **mg/Kg** Prep Date: **10/21/2021** RunNo: **70729**
Client ID: **LCSS** Batch ID: **34131** Analysis Date: **10/22/2021** SeqNo: **1438610**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	603	150	500.0	0	121	77.2	122				
Surr: 2-Fluorobiphenyl	9.34		10.00		93.4	50	150				
Surr: o-Terphenyl	14.0		10.00		140	50	150				

Sample ID: **2110310-001ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **10/21/2021** RunNo: **70729**
Client ID: **BATCH** Batch ID: **34131** Analysis Date: **10/22/2021** SeqNo: **1438612**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	46.2						0		30	
Heavy Oil	ND	92.4						0		30	
Total Petroleum Hydrocarbons	ND	139						0		30	
Surr: 2-Fluorobiphenyl	9.86		9.239		107	50	150		0		
Surr: o-Terphenyl	9.88		9.239		107	50	150		0		

Sample ID: **MB-34211** SampType: **MBLK** Units: **mg/Kg** Prep Date: **10/28/2021** RunNo: **70870**
Client ID: **MBLKS** Batch ID: **34211** Analysis Date: **10/28/2021** SeqNo: **1441798**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	50.0									

Work Order: 2110293
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

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

Sample ID: **MB-34211** SampType: **MBLK** Units: **mg/Kg** Prep Date: **10/28/2021** RunNo: **70870**
Client ID: **MBLKS** Batch ID: **34211** Analysis Date: **10/28/2021** SeqNo: **1441798**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Heavy Oil	ND	100									
Total Petroleum Hydrocarbons	ND	150									
Surr: 2-Fluorobiphenyl	7.76		10.00		77.6	50	150				
Surr: o-Terphenyl	10.0		10.00		100	50	150				

Sample ID: **LCS-34211** SampType: **LCS** Units: **mg/Kg** Prep Date: **10/28/2021** RunNo: **70870**
Client ID: **LCSS** Batch ID: **34211** Analysis Date: **10/28/2021** SeqNo: **1441799**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	595	150	500.0	0	119	77.2	122				
Surr: 2-Fluorobiphenyl	8.96		10.00		89.6	50	150				
Surr: o-Terphenyl	12.6		10.00		126	50	150				

Sample ID: **2110293-010AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **10/28/2021** RunNo: **70870**
Client ID: **GLB-9-6** Batch ID: **34211** Analysis Date: **10/28/2021** SeqNo: **1441805**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	7,700	165	549.4	8,943	-227	68	132				S
Surr: 2-Fluorobiphenyl	8.46		10.99		77.0	50	150				
Surr: o-Terphenyl	14.1		10.99		129	50	150				

NOTES:
S - Analyte concentration was too high for accurate spike recovery(ies).

Sample ID: **2110293-010AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **10/28/2021** RunNo: **70870**
Client ID: **GLB-9-6** Batch ID: **34211** Analysis Date: **10/28/2021** SeqNo: **1441806**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	5,760	159	529.4	8,943	-601	68	132	7,697	28.8	30	S
Surr: 2-Fluorobiphenyl	8.68		10.59		82.0	50	150		0		
Surr: o-Terphenyl	8.79		10.59		83.0	50	150		0		

Work Order: 2110293
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

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

Sample ID: **2110293-010AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **10/28/2021** RunNo: **70870**
Client ID: **GLB-9-6** Batch ID: **34211** Analysis Date: **10/28/2021** SeqNo: **1441806**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

NOTES:
S - Analyte concentration was too high for accurate spike recovery(ies).

Sample ID: **MB-34305** SampType: **MBLK** Units: **mg/Kg** Prep Date: **11/4/2021** RunNo: **71057**
Client ID: **MBLKS** Batch ID: **34305** Analysis Date: **11/4/2021** SeqNo: **1446132**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	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	10.9		10.00		109	50	150				

Sample ID: **LCS-34305** SampType: **LCS** Units: **mg/Kg** Prep Date: **11/4/2021** RunNo: **71057**
Client ID: **LCSS** Batch ID: **34305** Analysis Date: **11/4/2021** SeqNo: **1446133**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	553	150	500.0	0	111	77.2	122				
Surr: 2-Fluorobiphenyl	10.7		10.00		107	50	150				
Surr: o-Terphenyl	13.4		10.00		134	50	150				

Sample ID: **2110293-013AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **11/4/2021** RunNo: **71057**
Client ID: **GLB-9-12** Batch ID: **34305** Analysis Date: **11/4/2021** SeqNo: **1446135**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	1,020	160	1,067	58.27	89.7	68	132				H
Surr: 2-Fluorobiphenyl	11.4		10.67		106	50	150				H
Surr: o-Terphenyl	14.5		10.67		136	50	150				H

Work Order: 2110293
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

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

Sample ID: **2110293-013AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **11/4/2021** RunNo: **71057**
Client ID: **GLB-9-12** Batch ID: **34305** Analysis Date: **11/4/2021** SeqNo: **1446136**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	899	158	1,055	58.27	79.7	68	132	1,016	12.2	30	H
Surr: 2-Fluorobiphenyl	10.7		10.55		101	50	150		0		H
Surr: o-Terphenyl	12.4		10.55		117	50	150		0		H

Sample ID: **2111088-001ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **11/4/2021** RunNo: **71057**
Client ID: **BATCH** Batch ID: **34305** Analysis Date: **11/5/2021** SeqNo: **1446155**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	66.0						0		30	
Heavy Oil	319	132						222.8	35.6	30	
Total Petroleum Hydrocarbons	319	198						222.8	35.6	30	
Surr: 2-Fluorobiphenyl	12.7		13.21		96.2	50	150		0		
Surr: o-Terphenyl	11.7		13.21		88.6	50	150		0		

Sample ID: **MB-34131** SampType: **MBLK** Units: **mg/Kg** Prep Date: **10/21/2021** RunNo: **70729**
Client ID: **MBLKS** Batch ID: **34131** Analysis Date: **11/9/2021** SeqNo: **1448935**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	50.0									SGT
Heavy Oil	ND	100									SGT
Total Petroleum Hydrocarbons	ND	150									SGT
Surr: 2-Fluorobiphenyl	9.82		10.00		98.2	50	150				SGT
Surr: o-Terphenyl	12.1		10.00		121	50	150				SGT

NOTES:
SGT - Silica Gel Treatment

Work Order: 2110293
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

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

Sample ID: **LCS-34131** SampType: **LCS** Units: **mg/Kg** Prep Date: **10/21/2021** RunNo: **70729**
Client ID: **LCSS** Batch ID: **34131** Analysis Date: **11/9/2021** SeqNo: **1449093**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	575	150	500.0	0	115	77.2	122				SGT
Surr: 2-Fluorobiphenyl	10.7		10.00		107	50	150				SGT
Surr: o-Terphenyl	12.7		10.00		127	50	150				SGT

NOTES:
SGT - Silica Gel Treatment

Work Order: 2110293
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **MB-34312** SampType: **MBLK** Units: **mg/Kg** Prep Date: **11/4/2021** RunNo: **71338**
Client ID: **MBLKS** Batch ID: **34312** Analysis Date: **11/15/2021** SeqNo: **1452490**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	ND	20.0									
Aliphatic Hydrocarbon (C10-C12)	ND	10.0									*
Aliphatic Hydrocarbon (C12-C16)	ND	10.0									
Aliphatic Hydrocarbon (C16-C21)	ND	10.0									
Aliphatic Hydrocarbon (C21-C34)	ND	10.0									
Surr: 1-Chlorooctadecane	77.1		100.0		77.1	60	140				

NOTES:
* - Associated LCS does not meet acceptance criteria; refer to QC summary.

Sample ID: **2110293-004AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **11/4/2021** RunNo: **71338**
Client ID: **GLB-8-8** Batch ID: **34312** Analysis Date: **11/15/2021** SeqNo: **1452672**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	187	19.0	238.1	102.1	35.6	10.3	130				H
Aliphatic Hydrocarbon (C10-C12)	407	9.52	119.0	315.4	77.2	70	130				H
Aliphatic Hydrocarbon (C12-C16)	1,550	9.52	119.0	1,446	88.1	70	130				H
Aliphatic Hydrocarbon (C16-C21)	1,590	9.52	119.0	1,476	94.5	70	130				H
Aliphatic Hydrocarbon (C21-C34)	312	9.52	119.0	192.5	100	70	130				H
Surr: 1-Chlorooctadecane	83.5		95.22		87.7	60	140				H

Sample ID: **MB-34312** SampType: **MBLK** Units: **mg/Kg** Prep Date: **11/4/2021** RunNo: **71339**
Client ID: **MBLKS** Batch ID: **34312** Analysis Date: **11/16/2021** SeqNo: **1453005**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	ND	20.0									
Aromatic Hydrocarbon (C10-C12)	ND	10.0									
Aromatic Hydrocarbon (C12-C16)	ND	10.0									
Aromatic Hydrocarbon (C16-C21)	ND	10.0									
Aromatic Hydrocarbon (C21-C34)	ND	10.0									
Surr: o-Terphenyl	79.7		100.0		79.7	60	140				

Work Order: 2110293
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **MB-34312** SampType: **MBLK** Units: **mg/Kg** Prep Date: **11/4/2021** RunNo: **71339**
Client ID: **MBLKS** Batch ID: **34312** Analysis Date: **11/16/2021** SeqNo: **1453005**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID: **2110293-004AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **11/4/2021** RunNo: **71339**
Client ID: **GLB-8-8** Batch ID: **34312** Analysis Date: **11/16/2021** SeqNo: **1453007**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	125	19.0	238.1	10.60	48.1	11.8	130				H
Aromatic Hydrocarbon (C10-C12)	189	9.52	119.0	103.7	72.0	70	130				H
Aromatic Hydrocarbon (C12-C16)	571	9.52	119.0	517.7	44.5	70	130				SH
Aromatic Hydrocarbon (C16-C21)	1,200	9.52	119.0	1,186	10.7	70	130				SH
Aromatic Hydrocarbon (C21-C34)	321	9.52	119.0	0	270	70	130				SH
Surr: o-Terphenyl	88.9		95.22		93.4	60	140				H

NOTES:
S - Outlying spike recovery(ies) observed. A duplicate analysis was performed with similar results indicating a possible matrix effect.

Sample ID: **2110293-004AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **11/4/2021** RunNo: **71339**
Client ID: **GLB-8-8** Batch ID: **34312** Analysis Date: **11/16/2021** SeqNo: **1453008**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	125	19.1	238.7	10.60	47.9	11.8	130	125.1	0.205	30	H
Aromatic Hydrocarbon (C10-C12)	167	9.55	119.3	103.7	52.8	70	130	189.4	12.7	30	SH
Aromatic Hydrocarbon (C12-C16)	448	9.55	119.3	517.7	-58.8	70	130	570.6	24.2	30	SH
Aromatic Hydrocarbon (C16-C21)	926	9.55	119.3	1,186	-218	70	130	1,198	25.7	30	SH
Aromatic Hydrocarbon (C21-C34)	276	9.55	119.3	0	232	70	130	320.8	14.9	30	SH
Surr: o-Terphenyl	85.5		95.46		89.6	60	140		0		H

NOTES:
S - Outlying spike recovery(ies) observed. A duplicate analysis was performed with similar results indicating a possible matrix effect.

Work Order: 2110293
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **LCS-34312** SampType: **LCS** Units: **mg/Kg** Prep Date: **11/4/2021** RunNo: **71339**
Client ID: **LCSS** Batch ID: **34312** Analysis Date: **11/16/2021** SeqNo: **1453011**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	126	20.0	250.0	0	50.5	16.9	130				
Aromatic Hydrocarbon (C10-C12)	89.2	10.0	125.0	0	71.3	70	130				
Aromatic Hydrocarbon (C12-C16)	94.3	10.0	125.0	0	75.5	70	130				
Aromatic Hydrocarbon (C16-C21)	102	10.0	125.0	0	81.3	70	130				
Aromatic Hydrocarbon (C21-C34)	122	10.0	125.0	0	97.5	70	130				
Surr: o-Terphenyl	108		100.0		108	60	140				

Sample ID: **LCS-34312** SampType: **LCS** Units: **mg/Kg** Prep Date: **11/4/2021** RunNo: **71338**
Client ID: **LCSS** Batch ID: **34312** Analysis Date: **11/16/2021** SeqNo: **1452498**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	98.5	20.0	250.0	0	39.4	15.7	130				
Aliphatic Hydrocarbon (C10-C12)	79.0	10.0	125.0	0	63.2	70	130				S
Aliphatic Hydrocarbon (C12-C16)	97.7	10.0	125.0	0	78.2	70	130				
Aliphatic Hydrocarbon (C16-C21)	100	10.0	125.0	0	80.4	70	130				
Aliphatic Hydrocarbon (C21-C34)	89.5	10.0	125.0	0	71.6	70	130				
Surr: 1-Chlorooctadecane	99.8		100.0		99.8	60	140				

NOTES:
S - Outlying spike recovery observed (C10-C12). Samples will be qualified with a *.

Work Order: 2110293
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **LCS-34227** SampType: **LCS** Units: **mg/Kg** Prep Date: **10/29/2021** RunNo: **70883**
Client ID: **LCSS** Batch ID: **34227** Analysis Date: **10/29/2021** SeqNo: **1442218**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	1.01	0.0200	1.000	0	101	80	120				
Toluene	1.02	0.0300	1.000	0	102	80	120				
Ethylbenzene	1.08	0.0250	1.000	0	108	80	120				
m,p-Xylene	2.07	0.0500	2.000	0	103	80	120				
o-Xylene	1.02	0.0250	1.000	0	102	80	120				
Naphthalene	1.01	0.100	1.000	0	101	80	120				
Surr: Dibromofluoromethane	1.32		1.250		106	75.5	120				
Surr: Toluene-d8	1.24		1.250		99.5	80	120				
Surr: 1-Bromo-4-fluorobenzene	1.29		1.250		103	78.5	120				

Sample ID: **MB-34227** SampType: **MBLK** Units: **mg/Kg** Prep Date: **10/29/2021** RunNo: **70883**
Client ID: **MBLKS** Batch ID: **34227** Analysis Date: **10/29/2021** SeqNo: **1442212**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.0200									
Toluene	ND	0.0300									
Ethylbenzene	ND	0.0250									
m,p-Xylene	ND	0.0500									
o-Xylene	ND	0.0250									
Naphthalene	ND	0.100									
Surr: Dibromofluoromethane	1.16		1.250		92.6	75.5	119				
Surr: Toluene-d8	1.24		1.250		99.2	82.4	115				
Surr: 1-Bromo-4-fluorobenzene	1.21		1.250		96.9	78.5	118				

Sample ID: **2110372-007BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **10/29/2021** RunNo: **70883**
Client ID: **BATCH** Batch ID: **34227** Analysis Date: **10/29/2021** SeqNo: **1442215**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.0256						0		30	

Work Order: 2110293
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **2110372-007BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **10/29/2021** RunNo: **70883**
Client ID: **BATCH** Batch ID: **34227** Analysis Date: **10/29/2021** SeqNo: **1442215**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Toluene	ND	0.0384						0		30	
Ethylbenzene	ND	0.0320						0		30	
m,p-Xylene	ND	0.0640						0		30	
o-Xylene	ND	0.0320						0		30	
Naphthalene	ND	0.128						0		30	
Surr: Dibromofluoromethane	1.49		1.601		93.2	75.5	119		0		
Surr: Toluene-d8	1.60		1.601		99.7	82.4	115		0		
Surr: 1-Bromo-4-fluorobenzene	1.56		1.601		97.2	78.5	118		0		

Sample ID: **2110372-006BMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **10/29/2021** RunNo: **70883**
Client ID: **BATCH** Batch ID: **34227** Analysis Date: **10/29/2021** SeqNo: **1442216**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	1.44	0.0272	1.358	0	106	75.3	131				
Toluene	1.45	0.0407	1.358	0	107	79.2	130				
Ethylbenzene	1.55	0.0339	1.358	0	114	79.7	133				
m,p-Xylene	2.95	0.0679	2.716	0	108	81.2	125				
o-Xylene	1.47	0.0339	1.358	0	108	76.9	130				
Naphthalene	1.29	0.136	1.358	0	94.9	72.3	141				
Surr: Dibromofluoromethane	1.75		1.697		103	75.5	119				
Surr: Toluene-d8	1.68		1.697		99.0	82.4	115				
Surr: 1-Bromo-4-fluorobenzene	1.74		1.697		103	78.5	118				

Sample ID: **LCS-34343** SampType: **LCS** Units: **mg/Kg** Prep Date: **11/8/2021** RunNo: **71120**
Client ID: **LCSS** Batch ID: **34343** Analysis Date: **11/8/2021** SeqNo: **1447527**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	1.08	0.0200	1.000	0	108	80	120				
Toluene	1.07	0.0300	1.000	0	107	80	120				

Work Order: 2110293
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **LCS-34343** SampType: **LCS** Units: **mg/Kg** Prep Date: **11/8/2021** RunNo: **71120**
Client ID: **LCSS** Batch ID: **34343** Analysis Date: **11/8/2021** SeqNo: **1447527**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethylbenzene	1.12	0.0250	1.000	0	112	80	120				
m,p-Xylene	2.11	0.0500	2.000	0	105	80	120				
o-Xylene	1.05	0.0250	1.000	0	105	80	120				
Naphthalene	0.941	0.100	1.000	0	94.1	80	120				
Surr: Dibromofluoromethane	1.31		1.250		105	75.5	120				
Surr: Toluene-d8	1.26		1.250		101	80	120				
Surr: 1-Bromo-4-fluorobenzene	1.29		1.250		103	78.5	120				

Sample ID: **MB-34343** SampType: **MBLK** Units: **mg/Kg** Prep Date: **11/8/2021** RunNo: **71120**
Client ID: **MBLKS** Batch ID: **34343** Analysis Date: **11/8/2021** SeqNo: **1447501**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.0200									
Toluene	ND	0.0300									
Ethylbenzene	ND	0.0250									
m,p-Xylene	ND	0.0500									
o-Xylene	ND	0.0250									
Naphthalene	ND	0.100									
Surr: Dibromofluoromethane	1.19		1.250		95.0	75.5	119				
Surr: Toluene-d8	1.27		1.250		101	82.4	115				
Surr: 1-Bromo-4-fluorobenzene	1.24		1.250		99.2	78.5	118				

Sample ID: **2111050-014BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **11/8/2021** RunNo: **71120**
Client ID: **BATCH** Batch ID: **34343** Analysis Date: **11/8/2021** SeqNo: **1447506**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.0337						0		30	
Toluene	0.0959	0.0506						0.09552	0.402	30	
Ethylbenzene	ND	0.0421						0		30	

Work Order: 2110293
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **2111050-014BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **11/8/2021** RunNo: **71120**
Client ID: **BATCH** Batch ID: **34343** Analysis Date: **11/8/2021** SeqNo: **1447506**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
m,p-Xylene	ND	0.0843						0		30	
o-Xylene	ND	0.0421						0		30	
Naphthalene	ND	0.169						0		30	
Surr: Dibromofluoromethane	2.03		2.107		96.2	75.5	119		0		
Surr: Toluene-d8	2.13		2.107		101	82.4	115		0		
Surr: 1-Bromo-4-fluorobenzene	2.13		2.107		101	78.5	118		0		

Sample ID: **2111102-001BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **11/8/2021** RunNo: **71120**
Client ID: **BATCH** Batch ID: **34343** Analysis Date: **11/8/2021** SeqNo: **1447510**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.0312						0		30	
Toluene	ND	0.0468						0		30	
Ethylbenzene	ND	0.0390						0		30	
m,p-Xylene	ND	0.0781						0		30	
o-Xylene	ND	0.0390						0		30	
Naphthalene	ND	0.156						0		30	
Surr: Dibromofluoromethane	1.83		1.951		93.9	75.5	119		0		
Surr: Toluene-d8	1.96		1.951		101	82.4	115		0		
Surr: 1-Bromo-4-fluorobenzene	1.96		1.951		100	78.5	118		0		

Sample ID: **2111050-020BMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **11/8/2021** RunNo: **71120**
Client ID: **BATCH** Batch ID: **34343** Analysis Date: **11/8/2021** SeqNo: **1447514**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	1.17	0.0225	1.123	0	104	75.3	131				
Toluene	1.16	0.0337	1.123	0	103	79.2	130				
Ethylbenzene	1.22	0.0281	1.123	0	108	79.7	133				
m,p-Xylene	2.32	0.0561	2.246	0	103	81.2	125				

Work Order: 2110293
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **2111050-020BMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **11/8/2021** RunNo: **71120**
Client ID: **BATCH** Batch ID: **34343** Analysis Date: **11/8/2021** SeqNo: **1447514**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
o-Xylene	1.15	0.0281	1.123	0	103	76.9	130				
Naphthalene	1.09	0.112	1.123	0	97.4	72.3	141				
Surr: Dibromofluoromethane	1.43		1.404		102	75.5	119				
Surr: Toluene-d8	1.41		1.404		101	82.4	115				
Surr: 1-Bromo-4-fluorobenzene	1.46		1.404		104	78.5	118				

Work Order: 2110293
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

Volatile Petroleum Hydrocarbons by NWVPH

Sample ID: **LCS-34320** SampType: **LCS** Units: **mg/Kg** Prep Date: **11/4/2021** RunNo: **71224**
Client ID: **LCSS** Batch ID: **34320** Analysis Date: **11/11/2021** SeqNo: **1449959**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	29.3	2.50	30.00	0	97.6	70	130				
Aliphatic Hydrocarbon (C6-C8)	9.97	1.50	10.00	0	99.7	70	130				
Aliphatic Hydrocarbon (C8-C10)	9.19	2.50	10.00	0	91.9	70	130				
Aliphatic Hydrocarbon (C10-C12)	9.79	0.500	10.00	0	97.9	70	130				
Aromatic Hydrocarbon (C8-C10)	40.8	3.00	40.00	0	102	70	130				
Aromatic Hydrocarbon (C10-C12)	9.66	0.500	10.00	0	96.6	70	130				
Aromatic Hydrocarbon (C12-C13)	9.92	0.500	10.00	0	99.2	70	130				
Surr: 1,4-Difluorobenzene	2.42		2.500		96.9	65	140				
Surr: Bromofluorobenzene	2.40		2.500		96.0	65	140				

Sample ID: **MB-34320** SampType: **MBLK** Units: **mg/Kg** Prep Date: **11/4/2021** RunNo: **71224**
Client ID: **MBLKS** Batch ID: **34320** Analysis Date: **11/11/2021** SeqNo: **1449960**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	ND	2.50		0	0						
Aliphatic Hydrocarbon (C6-C8)	ND	1.50		0	0						
Aliphatic Hydrocarbon (C8-C10)	ND	2.50		0	0						
Aliphatic Hydrocarbon (C10-C12)	ND	0.500		0	0						
Aromatic Hydrocarbon (C8-C10)	ND	3.00		0	0						
Aromatic Hydrocarbon (C10-C12)	ND	0.500		0	0						
Aromatic Hydrocarbon (C12-C13)	ND	0.500		0	0						
Surr: 1,4-Difluorobenzene	1.89		2.500		75.5	65	140				
Surr: Bromofluorobenzene	2.37		2.500		94.7	65	140				

Sample ID: **2110293-004BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **11/4/2021** RunNo: **71224**
Client ID: **GLB-8-8** Batch ID: **34320** Analysis Date: **11/11/2021** SeqNo: **1449950**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	3.43	2.31		0	0			3.555	3.56	25	H

Work Order: 2110293
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

Volatile Petroleum Hydrocarbons by NWVPH

Sample ID: **2110293-004BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **11/4/2021** RunNo: **71224**
Client ID: **GLB-8-8** Batch ID: **34320** Analysis Date: **11/11/2021** SeqNo: **1449950**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C6-C8)	12.6	1.39		0	0			11.77	7.01	25	H
Aliphatic Hydrocarbon (C8-C10)	45.5	2.31		0	0			48.60	6.60	25	H
Aliphatic Hydrocarbon (C10-C12)	215	0.462		0	0			202.6	6.08	25	EH
Aromatic Hydrocarbon (C8-C10)	107	2.77		0	0			110.6	3.26	25	H
Aromatic Hydrocarbon (C10-C12)	433	0.462		0	0			441.6	1.96	25	EH
Aromatic Hydrocarbon (C12-C13)	763	0.462		0	0			767.7	0.548	25	EH
Surr: 1,4-Difluorobenzene	1.97		2.309		85.1	65	140		0		H
Surr: Bromofluorobenzene	10.5		2.309		456	65	140		0		SH

NOTES:
S - Outlying surrogate recovery attributed to TPH interference.
E - Estimated value. The amount exceeds the calibrated range of the instrument.

Sample ID: **2110314-002BMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **11/4/2021** RunNo: **71224**
Client ID: **BATCH** Batch ID: **34320** Analysis Date: **11/11/2021** SeqNo: **1449954**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	34.1	2.57	30.89	3.803	98.2	70	130				H
Aliphatic Hydrocarbon (C6-C8)	12.9	1.54	10.30	1.289	113	70	130				H
Aliphatic Hydrocarbon (C8-C10)	11.3	2.57	10.30	6.440	47.2	70	130				SH
Aliphatic Hydrocarbon (C10-C12)	77.7	0.515	10.30	69.73	77.6	70	130				EH
Aromatic Hydrocarbon (C8-C10)	75.1	3.09	41.19	22.48	128	70	130				H
Aromatic Hydrocarbon (C10-C12)	207	0.515	10.30	193.2	136	70	130				SEH
Aromatic Hydrocarbon (C12-C13)	705	0.515	10.30	691.0	133	70	130				SEH
Surr: 1,4-Difluorobenzene	2.54		2.574		98.7	65	140				H
Surr: Bromofluorobenzene	3.59		2.574		140	65	140				H

NOTES:
S - Outlying spike recoveries were associated with this sample.
E - Estimated value. The amount exceeds the calibrated range of the instrument.

Sample Log-In Check List

Client Name:	**GL**	Work Order Number:	**2110293**
Logged by:	**Gabrielle Coeuille**	Date Received:	**10/20/2021 5:55:00 PM**

Chain of Custody

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

Log In

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

Special Handling (if applicable)

18.	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: _____

19. Additional remarks:

Item Information

Item #	Temp ºC
Sample 1	12.8

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

Chain of Custody Record & Laboratory Services Agreement

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 10-20-21 Page: 1 of: 3

Laboratory Project No (internal): 2110293

Project Name: Mossman

Special Remarks:

Project No: 01-0864-D

Collected by: Pamela Fleming

Location: Lake Sammamish

Report To (PM): Pamela Fleming

Sample Disposal: ☐ Return to client ☐ Disposal by lab (after 30 days)

PM Email: pamelaf@g-logics.com

Client: G-logics

Address:

City, State, Zip:

Telephone:

Fax:

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 GLB-8-2	0950	10-20-21	Soil	3												
2 GLB-8-4	0955	10-20-21														
3 GLB-8-6	10-20-21	1000														
4 GLB-8-8		1010						X								
5 GLB-8-10		1015														
6 GLB-8-12		1030														
7 GLB-8-14		1035														
8 GLB-8-16		1035														
9 GLB-9-4		1125														
10 GLB-9-6	↓	1130	↓	↓												

*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 Tiffany Chang	Tiffany Chang	10-20-21	x Alex Trejo	Alex Trejo	10/20/21 17:55
Relinquished (Signature) x	Print Name	Date/Time	Received (Signature) x	Print Name	Date/Time

Chain of Custody Record & Laboratory Services Agreement

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 10-20-21 | Page: 2 of: 3 | Laboratory Project No (internal): 2110293

Client: G-Logics
Address:
City, State, Zip:
Telephone:
Fax:

Project Name: Mossman
Project No: 01-0864-D
Collected by: Pamela f
Location: Lake Sammamish
Report To (PM): Pamela F
PM Email: pamelaf@g-logics.com

Special Remarks:

Sample Disposal: ☐ Return to client ☐ Disposal by lab (after 30 days)

	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	GLB-9-8	10-20-21	1140	soil	3				X								
2	GLB-9-10		1145						X								
3	GLB-9-12		1155														
4	GLB-9-14		1205														
5	GLB-9-16		1210														
6	GLB-10-4		1245														
7	GLB-10-6		1250														
8	GLB-10-8		1255						X								
9	GLB-10-10		1300														
10	GLB-10-12	↓	1305	↓	↓												

*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)

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Relinquished (Signature)	Print Name	Date/Time	Received (Signature)	Print Name	Date/Time
x Tiffany Qveny	Tiffany Qveny	10-20-21	x Alex Trejo	Alex Trejo	10-20-21 17:55
Relinquished (Signature) x	Print Name	Date/Time	Received (Signature) x	Print Name	Date/Time

Chain of Custody Record & Laboratory Services Agreement

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 10-20-21 | Page: 3 of: 3 | Laboratory Project No (internal): 2110293

Project Name: Mossman

Project No: 01-0864-D

Collected by: PamelaF + Tiffany Q

Location: Lake Sammamish

Report To (PM): Pamela F

PM Email: pamelaf@g-logics.com

Special Remarks:

Sample Disposal: ☐ Return to client ☐ Disposal by lab (after 30 days)

Client: G-Logics

Address:

City, State, Zip:

Telephone:

Fax:

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 GLB-10-14																	
2 GLB-10-16																	
3 GLB-11-4																	
4 GLB-11-6																	
5 GLB-11-8								X									
6 GLB-11-10																	
7 GLB-11-12																	
8 GLB-11-14																	
9 GLB-11-16																	
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

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

Turn-around Time:
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☐ 2 Day (specify)

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Relinquished (Signature)	Print Name	Date/Time	Received (Signature)	Print Name	Date/Time
x	Tiffany Quarry	10-20-21	x Alex Trejo	Alex Trejo	10/20/21 17:55
Relinquished (Signature)	Print Name	Date/Time	Received (Signature)	Print Name	Date/Time
x			x		

Chain of Custody Record & Laboratory Services Agreement

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 10-20-21 Page: 1 of: 3

Laboratory Project No (internal): 2110293

Project Name: Mossman

Special Remarks: Update per PF 10/27/21- gac

Project No: 01-0864-D

Client: G-logics

Address:

Collected by: Pamela Fleming

City, State, Zip:

Location: Lake Sammamish

Telephone:

Report To (PM): Pamela Fleming

Sample Disposal: ☐ Return to client ☐ Disposal by lab (after 30 days)

Fax:

PM Email: pamelaf@g-logics.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 GLB-8-2	0950	10-20-21	Soil	3												
2 GLB-8-4	0955	10-20-21														
3 GLB-8-6	10-20-21	1000							X							
4 GLB-8-8		1010							X							
5 GLB-8-10		1015							X							
6 GLB-8-12		1030														
7 GLB-8-14		1035														
8 GLB-8-16		1035														
9 GLB-9-4		1125														
10 GLB-9-6		1130							X							

*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

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***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)

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Relinquished (Signature)	Print Name	Date/Time	Received (Signature)	Print Name	Date/Time
x Tiffany Chang	Tiffany Chang	10-20-21	x Alex Trejo	Alex Trejo	10/20/21 17:55
Relinquished (Signature) x	Print Name	Date/Time	Received (Signature) x	Print Name	Date/Time

Chain of Custody Record & Laboratory Services Agreement

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 10-20-21 | Page: 2 of: 3 | Laboratory Project No (internal): 2110293

Client: G-Logics
Address:
City, State, Zip:
Telephone:
Fax:

Project Name: Mossman
Project No: 01-0864-D
Collected by: Pamela f
Location: Lake Sammamish
Report To (PM): Pamela F
PM Email: pamelaf@g-logics.com

Special Remarks:

Sample Disposal: ☐ Return to client ☐ Disposal by lab (after 30 days)

	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	GLB-9-8	10-20-21	1140	soil	3		X			X							
2	GLB-9-10		1145							X							
3	GLB-9-12		1155														
4	GLB-9-14		1205														
5	GLB-9-16		1210														
6	GLB-10-4		1245														
7	GLB-10-6		1250														
8	GLB-10-8		1255							X							
9	GLB-10-10		1300														
10	GLB-10-12	↓	1305	↓	↓												

*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)

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Relinquished (Signature)	Print Name	Date/Time	Received (Signature)	Print Name	Date/Time
x Tiffany Qveny	Tiffany Qveny	10-20-21	x Alex Trejo	Alex Trejo	10-20-21 17:55
Relinquished (Signature) x	Print Name	Date/Time	Received (Signature) x	Print Name	Date/Time

Chain of Custody Record & Laboratory Services Agreement

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 10-20-21 | Page: 3 of: 3 | Laboratory Project No (internal): 2110293

Project Name: Mossman

Project No: 01-0864-D

Collected by: PamelaF + Tiffany Q

Location: Lake Sammamish

Report To (PM): Pamela F

PM Email: pamelaf@g-logics.com

Special Remarks:

Sample Disposal: ☐ Return to client ☐ Disposal by lab (after 30 days)

Client: G-Logics

Address:

City, State, Zip:

Telephone:

Fax:

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 GLB-10-14																	
2 GLB-10-16																	
3 GLB-11-4																	
4 GLB-11-6																	
5 GLB-11-8								X									
6 GLB-11-10																	
7 GLB-11-12																	
8 GLB-11-14																	
9 GLB-11-16																	
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	Tiffany Queany	10-20-21	x Alex Trejo	Alex Trejo	10/20/21 17:55
Relinquished (Signature)	Print Name	Date/Time	Received (Signature)	Print Name	Date/Time
x			x		

Chain of Custody Record & Laboratory Services Agreement

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 10-20-21 | Page: 1 of: 3 | Laboratory Project No (internal): 2110293

Client: G-logics
Address:
City, State, Zip:
Telephone:
Fax:

Project Name: Mossman
Project No: 01-0864-D
Collected by: Pamela Fleming
Location: Lake Sammamish
Report To (PM): Pamela Fleming
PM Email: pamelaf@g-logics.com

Special Remarks:
Update per PF 10/27/21- gac
Edits per TQ, Std TAT 11/3/21 -CG

Sample Disposal: ☐ Return to client ☐ Disposal by lab (after 30 days)

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 (801)	BTEX & Naph	EPH, VPH		Comments
1 GLB-8-2	0950	10-20-21	Soil	3															
2 GLB-8-4	0955	10-20-21																	
3 GLB-8-6	10-20-21	1000							X										
4 GLB-8-8		1010							X							X	X		DX w/ SGC
5 GLB-8-10		1015							X										
6 GLB-8-12		1030																	
7 GLB-8-14		1035																	
8 GLB-8-16		1035																	
9 GLB-9-4		1125																	
10 GLB-9-6		1130							X										

*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)

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Relinquished (Signature)	Print Name	Date/Time	Received (Signature)	Print Name	Date/Time
x Tiffany Chang	Tiffany Chang	10-20-21	x Alex Trejo	Alex Trejo	10/20/21 17:55
Relinquished (Signature) x	Print Name	Date/Time	Received (Signature) x	Print Name	Date/Time

Chain of Custody Record & Laboratory Services Agreement

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 10-20-21 Page: 2 of: 3

Laboratory Project No (internal): 2110293

Project Name: Mossman

Special Remarks:

Client: G-Logics

Project No: 01-0864-D

Address:

Collected by: Pamela f

City, State, Zip:

Location: Lake Sammamish

Telephone:

Report To (PM): Pamela F

Sample Disposal: ☐ Return to client ☐ Disposal by lab (after 30 days)

Fax:

PM Email: pamelaf@g-logics.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)	Naph	EPH, VPH		Comments
1 GLB-9-8	10-20-21	1140	soil	3		X			X									X	X		DX w/ SGC
2 GLB-9-10		1145							X												
3 GLB-9-12		1155							X												
4 GLB-9-14		1205																			
5 GLB-9-16		1210																			
6 GLB-10-4		1245																			
7 GLB-10-6		1250							X												
8 GLB-10-8		1255							X												
9 GLB-10-10		1300							X												
10 GLB-10-12	↓	1305	↓	↓					X												

*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 Tiffany Qveny	Tiffany Qveny	10-20-21	x Alex Trejo	Alex Trejo	10-20-21 17:55
Relinquished (Signature) x	Print Name	Date/Time	Received (Signature) x	Print Name	Date/Time

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Chain of Custody Record & Laboratory Services Agreement

Date: 10-20-21 | Page: 3 of: 3 | Laboratory Project No (internal): 2110293

Project Name: Mossman

Special Remarks:

Client: G-Logics

Project No: 01-0864-D

Address:

Collected by: PamelaF + Tiffany Q

City, State, Zip:

Location: Lake Sammamish

Telephone:

Report To (PM): Pamela F

Sample Disposal: ☐ Return to client ☐ Disposal by lab (after 30 days)

Fax:

PM Email: pamelaf@g-logics.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 GLB-10-14								X									
2 GLB-10-16								X									
3 GLB-11-4																	
4 GLB-11-6																	
5 GLB-11-8								X									
6 GLB-11-10								X									
7 GLB-11-12								X									
8 GLB-11-14								X									
9 GLB-11-16																	
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	Tiffany Quarry	10-20-21	x Alex Trejo	Alex Trejo	10/20/21 17:55
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

G-Logics
Pamela Fleming
40 Second Ave. SE
Issaquah, WA 98027

RE: Mossman
Work Order Number: 2110314

November 17, 2021

Attention Pamela Fleming:

Fremont Analytical, Inc. received 21 sample(s) on 10/21/2021 for the analyses presented in the following report.

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.
Extractable Petroleum Hydrocarbons by NWEPH
Gasoline by NWTPH-Gx
Sample Moisture (Percent Moisture)
Volatile Organic Compounds by EPA Method 8260D
Volatile Petroleum Hydrocarbons by NWVPH

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: *11/17/2021*

CLIENT: G-Logics
Project: Mossman
Work Order: 2110314

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2110314-001	GLB-12-2	10/21/2021 9:10 AM	10/21/2021 4:35 PM
2110314-002	GLB-12-4	10/21/2021 9:20 AM	10/21/2021 4:35 PM
2110314-003	GLB-12-6	10/21/2021 9:15 AM	10/21/2021 4:35 PM
2110314-004	GLB-12-8	10/21/2021 9:25 AM	10/21/2021 4:35 PM
2110314-005	GLB-13-2	10/21/2021 10:10 AM	10/21/2021 4:35 PM
2110314-006	GLB-13-4	10/21/2021 10:15 AM	10/21/2021 4:35 PM
2110314-007	GLB-13-6	10/21/2021 10:25 AM	10/21/2021 4:35 PM
2110314-008	GLB-13-8	10/21/2021 10:30 AM	10/21/2021 4:35 PM
2110314-009	GLB-14-2	10/21/2021 11:30 AM	10/21/2021 4:35 PM
2110314-010	GLB-14-4	10/21/2021 11:50 AM	10/21/2021 4:35 PM
2110314-011	GLB-14-6	10/21/2021 11:55 AM	10/21/2021 4:35 PM
2110314-012	GLB-14-8	10/21/2021 12:00 PM	10/21/2021 4:35 PM
2110314-013	GLB-15-2	10/21/2021 12:40 PM	10/21/2021 4:35 PM
2110314-014	GLB-15-4	10/21/2021 12:45 PM	10/21/2021 4:35 PM
2110314-015	GLB-15-6	10/21/2021 12:50 PM	10/21/2021 4:35 PM
2110314-016	GLB-15-8	10/21/2021 12:25 PM	10/21/2021 4:35 PM
2110314-017	GLB-16-2	10/21/2021 1:15 PM	10/21/2021 4:35 PM
2110314-018	GLB-16-4	10/21/2021 1:15 PM	10/21/2021 4:35 PM
2110314-019	GLB-16-6	10/21/2021 1:20 PM	10/21/2021 4:35 PM
2110314-020	GLB-16-8	10/21/2021 1:22 PM	10/21/2021 4:35 PM
2110314-021	Trip Blank	10/18/2021 9:56 AM	10/21/2021 4:35 PM

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

Case Narrative

WO#: **2110314**
Date: **11/17/2021**

CLIENT: G-Logics
Project: Mossman

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.

11/17/21: Revision 1 includes additional analysis requested by the client.

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: **2110314**
Date Reported: **11/17/2021**

CLIENT: G-Logics
Project: Mossman

Lab ID: 2110314-001 **Collection Date:** 10/21/2021 9:10:00 AM
Client Sample ID: **GLB-12-2** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 34343		Analyst: CR
Benzene	ND	0.0271	H	mg/Kg-dry	1	11/8/2021 1:07:11 PM
Toluene	ND	0.0406	H	mg/Kg-dry	1	11/8/2021 1:07:11 PM
Ethylbenzene	ND	0.0338	H	mg/Kg-dry	1	11/8/2021 1:07:11 PM
m,p-Xylene	ND	0.0677	H	mg/Kg-dry	1	11/8/2021 1:07:11 PM
o-Xylene	ND	0.0338	H	mg/Kg-dry	1	11/8/2021 1:07:11 PM
Naphthalene	ND	0.135	H	mg/Kg-dry	1	11/8/2021 1:07:11 PM
Surr: Dibromofluoromethane	98.1	75.5 - 119	H	%Rec	1	11/8/2021 1:07:11 PM
Surr: Toluene-d8	103	82.4 - 115	H	%Rec	1	11/8/2021 1:07:11 PM
Surr: 1-Bromo-4-fluorobenzene	100	78.5 - 118	H	%Rec	1	11/8/2021 1:07:11 PM
Sample Moisture (Percent Moisture)				Batch ID: R71006		Analyst: cb
Percent Moisture	10.6	0.500		wt%	1	11/4/2021 9:42:20 AM

Analytical Report

Work Order: **2110314**
Date Reported: **11/17/2021**

CLIENT: G-Logics
Project: Mossman

Lab ID: 2110314-002 **Collection Date:** 10/21/2021 9:20:00 AM
Client Sample ID: **GLB-12-4** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34184		Analyst: MM
Diesel (Fuel Oil)	5,160	52.6		mg/Kg-dry	1	10/26/2021 8:35:07 PM
Diesel (Fuel Oil)	6,250	52.6	SGT	mg/Kg-dry	1	11/9/2021 2:25:08 PM
Heavy Oil	ND	105		mg/Kg-dry	1	10/26/2021 8:35:07 PM
Heavy Oil	ND	105	SGT	mg/Kg-dry	1	11/9/2021 2:25:08 PM
Total Petroleum Hydrocarbons	6,250	158	SGT	mg/Kg-dry	1	11/9/2021 2:25:08 PM
Total Petroleum Hydrocarbons	5,160	158		mg/Kg-dry	1	10/26/2021 8:35:07 PM
Surr: 2-Fluorobiphenyl	74.1	50 - 150		%Rec	1	10/26/2021 8:35:07 PM
Surr: 2-Fluorobiphenyl	107	50 - 150		%Rec	1	11/9/2021 2:25:08 PM
Surr: o-Terphenyl	126	50 - 150		%Rec	1	11/9/2021 2:25:08 PM
Surr: o-Terphenyl	118	50 - 150		%Rec	1	10/26/2021 8:35:07 PM

NOTES:
SGT - Silica Gel Treatment

Extractable Petroleum Hydrocarbons by NWEPH				Batch ID: 34312		Analyst: MM
Aliphatic Hydrocarbon (C8-C10)	ND	22.7		mg/Kg-dry	1	11/16/2021 12:18:55 AM
Aliphatic Hydrocarbon (C10-C12)	66.7	11.3	*	mg/Kg-dry	1	11/16/2021 12:18:55 AM
Aliphatic Hydrocarbon (C12-C16)	712	11.3		mg/Kg-dry	1	11/16/2021 12:18:55 AM
Aliphatic Hydrocarbon (C16-C21)	939	11.3		mg/Kg-dry	1	11/16/2021 12:18:55 AM
Aliphatic Hydrocarbon (C21-C34)	113	11.3		mg/Kg-dry	1	11/16/2021 12:18:55 AM
Aromatic Hydrocarbon (C8-C10)	ND	22.7		mg/Kg-dry	1	11/16/2021 8:20:04 AM
Aromatic Hydrocarbon (C10-C12)	12.9	11.3		mg/Kg-dry	1	11/16/2021 8:20:04 AM
Aromatic Hydrocarbon (C12-C16)	103	11.3		mg/Kg-dry	1	11/16/2021 8:20:04 AM
Aromatic Hydrocarbon (C16-C21)	477	11.3		mg/Kg-dry	1	11/16/2021 8:20:04 AM
Aromatic Hydrocarbon (C21-C34)	99.5	11.3		mg/Kg-dry	1	11/16/2021 8:20:04 AM
Surr: 1-Chlorooctadecane	81.7	60 - 140		%Rec	1	11/16/2021 12:18:55 AM
Surr: o-Terphenyl	83.9	60 - 140		%Rec	1	11/16/2021 8:20:04 AM

NOTES:
* - Associated LCS does not meet acceptance criteria; refer to QC summary.

Volatile Petroleum Hydrocarbons by NWVPH				Batch ID: 34320		Analyst: SLL
Aliphatic Hydrocarbon (C5-C6)	3.80	2.57	H	mg/Kg-dry	1	11/11/2021 4:46:55 AM
Aliphatic Hydrocarbon (C6-C8)	ND	1.54	H	mg/Kg-dry	1	11/11/2021 4:46:55 AM
Aliphatic Hydrocarbon (C8-C10)	6.44	2.57	H	mg/Kg-dry	1	11/11/2021 4:46:55 AM
Aliphatic Hydrocarbon (C10-C12)	71.3	51.5	DH	mg/Kg-dry	100	11/11/2021 7:24:58 PM
Aromatic Hydrocarbon (C8-C10)	22.5	3.09	H	mg/Kg-dry	1	11/11/2021 4:46:55 AM
Aromatic Hydrocarbon (C10-C12)	253	51.5	DH	mg/Kg-dry	100	11/11/2021 7:24:58 PM
Aromatic Hydrocarbon (C12-C13)	2,180	51.5	DH	mg/Kg-dry	100	11/11/2021 7:24:58 PM

CLIENT: G-Logics
Project: Mossman

Volatile Petroleum Hydrocarbons by NWVPH

Batch ID: 34320 Analyst: SLL

Benzene	ND	0.618	H	mg/Kg-dry	1	11/11/2021 4:46:55 AM
Toluene	ND	0.515	H	mg/Kg-dry	1	11/11/2021 4:46:55 AM
Ethylbenzene	ND	1.75	H	mg/Kg-dry	1	11/11/2021 4:46:55 AM
m,p-Xylene	ND	1.03	H	mg/Kg-dry	1	11/11/2021 4:46:55 AM
o-Xylene	ND	0.515	H	mg/Kg-dry	1	11/11/2021 4:46:55 AM
Naphthalene	3.89	2.68	H	mg/Kg-dry	1	11/11/2021 4:46:55 AM
Methyl tert-butyl ether (MTBE)	ND	1.13	H	mg/Kg-dry	1	11/11/2021 4:46:55 AM
Surr: 1,4-Difluorobenzene	72.4	65 - 140	H	%Rec	1	11/11/2021 4:46:55 AM
Surr: Bromofluorobenzene	129	65 - 140	H	%Rec	1	11/11/2021 4:46:55 AM

Sample Moisture (Percent Moisture)

Batch ID: R70800 Analyst: MCH

Percent Moisture	14.4	0.500		wt%	1	10/26/2021 3:14:00 PM

Lab ID: 2110314-003 **Collection Date:** 10/21/2021 9:15:00 AM
Client Sample ID: GLB-12-6 **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed

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

Batch ID: 34184 Analyst: MM

Diesel (Fuel Oil)	60.6	49.3		mg/Kg-dry	1	10/26/2021 9:26:42 PM
Heavy Oil	ND	98.6		mg/Kg-dry	1	10/26/2021 9:26:42 PM
Total Petroleum Hydrocarbons	ND	148		mg/Kg-dry	1	10/26/2021 9:26:42 PM
Surr: 2-Fluorobiphenyl	88.4	50 - 150		%Rec	1	10/26/2021 9:26:42 PM
Surr: o-Terphenyl	103	50 - 150		%Rec	1	10/26/2021 9:26:42 PM

Sample Moisture (Percent Moisture)

Batch ID: R70800 Analyst: MCH

Percent Moisture	13.7	0.500		wt%	1	10/26/2021 3:14:00 PM

CLIENT: G-Logics
Project: Mossman

Lab ID: 2110314-005 **Collection Date:** 10/21/2021 10:10:00 AM
Client Sample ID: **GLB-13-2** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34305		Analyst: MM
Diesel (Fuel Oil)	ND	47.2		mg/Kg-dry	1	11/5/2021 2:05:50 AM
Heavy Oil	ND	94.5		mg/Kg-dry	1	11/5/2021 2:05:50 AM
Total Petroleum Hydrocarbons	ND	142		mg/Kg-dry	1	11/5/2021 2:05:50 AM
Surr: 2-Fluorobiphenyl	115	50 - 150		%Rec	1	11/5/2021 2:05:50 AM
Surr: o-Terphenyl	119	50 - 150		%Rec	1	11/5/2021 2:05:50 AM
Sample Moisture (Percent Moisture)				Batch ID: R71006		Analyst: cb
Percent Moisture	6.73	0.500		wt%	1	11/4/2021 9:42:20 AM

Lab ID: 2110314-006 **Collection Date:** 10/21/2021 10:15:00 AM
Client Sample ID: **GLB-13-4** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34184		Analyst: MM
Diesel (Fuel Oil)	ND	50.6		mg/Kg-dry	1	10/26/2021 9:52:36 PM
Heavy Oil	ND	101		mg/Kg-dry	1	10/26/2021 9:52:36 PM
Total Petroleum Hydrocarbons	ND	152		mg/Kg-dry	1	10/26/2021 9:52:36 PM
Surr: 2-Fluorobiphenyl	97.1	50 - 150		%Rec	1	10/26/2021 9:52:36 PM
Surr: o-Terphenyl	112	50 - 150		%Rec	1	10/26/2021 9:52:36 PM
Sample Moisture (Percent Moisture)				Batch ID: R70800		Analyst: MCH
Percent Moisture	9.61	0.500		wt%	1	10/26/2021 3:14:00 PM

CLIENT: G-Logics
Project: Mossman

Lab ID: 2110314-007 **Collection Date:** 10/21/2021 10:25:00 AM
Client Sample ID: **GLB-13-6** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34184		Analyst: MM
Diesel (Fuel Oil)	ND	51.5		mg/Kg-dry	1	10/26/2021 10:18:21 PM
Heavy Oil	ND	103		mg/Kg-dry	1	10/26/2021 10:18:21 PM
Total Petroleum Hydrocarbons	ND	154		mg/Kg-dry	1	10/26/2021 10:18:21 PM
Surr: 2-Fluorobiphenyl	91.2	50 - 150		%Rec	1	10/26/2021 10:18:21 PM
Surr: o-Terphenyl	103	50 - 150		%Rec	1	10/26/2021 10:18:21 PM
Sample Moisture (Percent Moisture)				Batch ID: R70800		Analyst: MCH
Percent Moisture	9.85	0.500		wt%	1	10/26/2021 3:14:00 PM

Lab ID: 2110314-008 **Collection Date:** 10/21/2021 10:30:00 AM
Client Sample ID: **GLB-13-8** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34305		Analyst: MM
Diesel (Fuel Oil)	ND	55.8		mg/Kg-dry	1	11/5/2021 2:18:42 AM
Heavy Oil	ND	112		mg/Kg-dry	1	11/5/2021 2:18:42 AM
Total Petroleum Hydrocarbons	ND	167		mg/Kg-dry	1	11/5/2021 2:18:42 AM
Surr: 2-Fluorobiphenyl	91.4	50 - 150		%Rec	1	11/5/2021 2:18:42 AM
Surr: o-Terphenyl	92.1	50 - 150		%Rec	1	11/5/2021 2:18:42 AM
Sample Moisture (Percent Moisture)				Batch ID: R71006		Analyst: cb
Percent Moisture	11.1	0.500		wt%	1	11/4/2021 9:42:20 AM

CLIENT: G-Logics
Project: Mossman

Lab ID: 2110314-009 **Collection Date:** 10/21/2021 11:30:00 AM
Client Sample ID: **GLB-14-2** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34184		Analyst: MM
Diesel (Fuel Oil)	ND	48.1		mg/Kg-dry	1	10/26/2021 10:44:06 PM
Heavy Oil	ND	96.1		mg/Kg-dry	1	10/26/2021 10:44:06 PM
Total Petroleum Hydrocarbons	ND	144		mg/Kg-dry	1	10/26/2021 10:44:06 PM
Surr: 2-Fluorobiphenyl	84.9	50 - 150		%Rec	1	10/26/2021 10:44:06 PM
Surr: o-Terphenyl	98.8	50 - 150		%Rec	1	10/26/2021 10:44:06 PM
Sample Moisture (Percent Moisture)				Batch ID: R70800		Analyst: MCH
Percent Moisture	7.62	0.500		wt%	1	10/26/2021 3:14:00 PM

Lab ID: 2110314-010 **Collection Date:** 10/21/2021 11:50:00 AM
Client Sample ID: **GLB-14-4** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34184		Analyst: MM
Diesel (Fuel Oil)	ND	55.1		mg/Kg-dry	1	10/26/2021 11:10:02 PM
Heavy Oil	ND	110		mg/Kg-dry	1	10/26/2021 11:10:02 PM
Total Petroleum Hydrocarbons	ND	165		mg/Kg-dry	1	10/26/2021 11:10:02 PM
Surr: 2-Fluorobiphenyl	91.2	50 - 150		%Rec	1	10/26/2021 11:10:02 PM
Surr: o-Terphenyl	102	50 - 150		%Rec	1	10/26/2021 11:10:02 PM
Sample Moisture (Percent Moisture)				Batch ID: R70800		Analyst: MCH
Percent Moisture	10.5	0.500		wt%	1	10/26/2021 3:14:00 PM

CLIENT: G-Logics
Project: Mossman

Lab ID: 2110314-011 **Collection Date:** 10/21/2021 11:55:00 AM
Client Sample ID: **GLB-14-6** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34305		Analyst: MM
Diesel (Fuel Oil)	ND	50.1		mg/Kg-dry	1	11/5/2021 2:31:35 AM
Heavy Oil	ND	100		mg/Kg-dry	1	11/5/2021 2:31:35 AM
Total Petroleum Hydrocarbons	ND	150		mg/Kg-dry	1	11/5/2021 2:31:35 AM
Surr: 2-Fluorobiphenyl	97.9	50 - 150		%Rec	1	11/5/2021 2:31:35 AM
Surr: o-Terphenyl	98.9	50 - 150		%Rec	1	11/5/2021 2:31:35 AM
Sample Moisture (Percent Moisture)				Batch ID: R71006		Analyst: cb
Percent Moisture	12.9	0.500		wt%	1	11/4/2021 9:42:20 AM

Lab ID: 2110314-012 **Collection Date:** 10/21/2021 12:00:00 PM
Client Sample ID: **GLB-14-8** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Gasoline by NWTPH-Gx				Batch ID: 34343		Analyst: CR
Gasoline	ND	6.55	H	mg/Kg-dry	1	11/8/2021 12:36:02 PM
Gasoline Range Organics (C6-C12)	8.00	6.55	H	mg/Kg-dry	1	11/8/2021 12:36:02 PM
Surr: Toluene-d8	98.3	65 - 135	H	%Rec	1	11/8/2021 12:36:02 PM
Surr: 4-Bromofluorobenzene	105	65 - 135	H	%Rec	1	11/8/2021 12:36:02 PM

NOTES:
Gasoline Range Organics - Chromatographic pattern indicates that detection is due to a single non-target compound.

Sample Moisture (Percent Moisture)				Batch ID: R71006		Analyst: cb
Percent Moisture	10.4	0.500		wt%	1	11/4/2021 9:42:20 AM

CLIENT: G-Logics
Project: Mossman

Lab ID: 2110314-013 **Collection Date:** 10/21/2021 12:40:00 PM
Client Sample ID: **GLB-15-2** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34305		Analyst: MM
Diesel (Fuel Oil)	ND	49.3		mg/Kg-dry	1	11/5/2021 2:44:25 AM
Heavy Oil	ND	98.6		mg/Kg-dry	1	11/5/2021 2:44:25 AM
Total Petroleum Hydrocarbons	ND	148		mg/Kg-dry	1	11/5/2021 2:44:25 AM
Surr: 2-Fluorobiphenyl	107	50 - 150		%Rec	1	11/5/2021 2:44:25 AM
Surr: o-Terphenyl	111	50 - 150		%Rec	1	11/5/2021 2:44:25 AM
Sample Moisture (Percent Moisture)				Batch ID: R71006		Analyst: cb
Percent Moisture	9.41	0.500		wt%	1	11/4/2021 9:42:20 AM

Lab ID: 2110314-014 **Collection Date:** 10/21/2021 12:45:00 PM
Client Sample ID: **GLB-15-4** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34184		Analyst: MM
Diesel (Fuel Oil)	ND	48.8		mg/Kg-dry	1	10/26/2021 11:35:49 PM
Heavy Oil	ND	97.5		mg/Kg-dry	1	10/26/2021 11:35:49 PM
Total Petroleum Hydrocarbons	ND	146		mg/Kg-dry	1	10/26/2021 11:35:49 PM
Surr: 2-Fluorobiphenyl	90.7	50 - 150		%Rec	1	10/26/2021 11:35:49 PM
Surr: o-Terphenyl	105	50 - 150		%Rec	1	10/26/2021 11:35:49 PM
Sample Moisture (Percent Moisture)				Batch ID: R70800		Analyst: MCH
Percent Moisture	10.9	0.500		wt%	1	10/26/2021 3:14:00 PM

CLIENT: G-Logics
Project: Mossman

Lab ID: 2110314-015 **Collection Date:** 10/21/2021 12:50:00 PM
Client Sample ID: **GLB-15-6** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34184		Analyst: MM
Diesel (Fuel Oil)	ND	51.3		mg/Kg-dry	1	10/27/2021 12:01:42 AM
Heavy Oil	ND	103		mg/Kg-dry	1	10/27/2021 12:01:42 AM
Total Petroleum Hydrocarbons	ND	154		mg/Kg-dry	1	10/27/2021 12:01:42 AM
Surr: 2-Fluorobiphenyl	93.6	50 - 150		%Rec	1	10/27/2021 12:01:42 AM
Surr: o-Terphenyl	110	50 - 150		%Rec	1	10/27/2021 12:01:42 AM
Sample Moisture (Percent Moisture)				Batch ID: R70800		Analyst: MCH
Percent Moisture	11.0	0.500		wt%	1	10/26/2021 3:14:00 PM

Lab ID: 2110314-016 **Collection Date:** 10/21/2021 12:25:00 PM
Client Sample ID: **GLB-15-8** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34305		Analyst: MM
Diesel (Fuel Oil)	ND	51.3		mg/Kg-dry	1	11/5/2021 2:57:28 AM
Heavy Oil	ND	103		mg/Kg-dry	1	11/5/2021 2:57:28 AM
Total Petroleum Hydrocarbons	ND	154		mg/Kg-dry	1	11/5/2021 2:57:28 AM
Surr: 2-Fluorobiphenyl	101	50 - 150		%Rec	1	11/5/2021 2:57:28 AM
Surr: o-Terphenyl	99.5	50 - 150		%Rec	1	11/5/2021 2:57:28 AM
Sample Moisture (Percent Moisture)				Batch ID: R71006		Analyst: cb
Percent Moisture	12.8	0.500		wt%	1	11/4/2021 9:42:20 AM

CLIENT: G-Logics
Project: Mossman

Lab ID: 2110314-017 **Collection Date:** 10/21/2021 1:15:00 PM
Client Sample ID: **GLB-16-2** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34184		Analyst: MM
Diesel (Fuel Oil)	125	51.3		mg/Kg-dry	1	10/27/2021 12:27:28 AM
Heavy Oil	ND	103		mg/Kg-dry	1	10/27/2021 12:27:28 AM
Total Petroleum Hydrocarbons	ND	154		mg/Kg-dry	1	10/27/2021 12:27:28 AM
Surr: 2-Fluorobiphenyl	95.7	50 - 150		%Rec	1	10/27/2021 12:27:28 AM
Surr: o-Terphenyl	108	50 - 150		%Rec	1	10/27/2021 12:27:28 AM
Sample Moisture (Percent Moisture)				Batch ID: R70800		Analyst: MCH
Percent Moisture	6.90	0.500		wt%	1	10/26/2021 3:14:00 PM

Lab ID: 2110314-018 **Collection Date:** 10/21/2021 1:15:00 PM
Client Sample ID: **GLB-16-4** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34184		Analyst: MM
Diesel (Fuel Oil)	ND	60.4		mg/Kg-dry	1	10/27/2021 12:53:11 AM
Heavy Oil	ND	121		mg/Kg-dry	1	10/27/2021 12:53:11 AM
Total Petroleum Hydrocarbons	ND	181		mg/Kg-dry	1	10/27/2021 12:53:11 AM
Surr: 2-Fluorobiphenyl	96.3	50 - 150		%Rec	1	10/27/2021 12:53:11 AM
Surr: o-Terphenyl	105	50 - 150		%Rec	1	10/27/2021 12:53:11 AM
Sample Moisture (Percent Moisture)				Batch ID: R70800		Analyst: MCH
Percent Moisture	20.5	0.500		wt%	1	10/26/2021 3:14:00 PM

CLIENT: G-Logics
Project: Mossman

Lab ID: 2110314-019 **Collection Date:** 10/21/2021 1:20:00 PM
Client Sample ID: **GLB-16-6** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34305		Analyst: MM
Diesel (Fuel Oil)	ND	49.2		mg/Kg-dry	1	11/5/2021 3:10:19 AM
Heavy Oil	ND	98.3		mg/Kg-dry	1	11/5/2021 3:10:19 AM
Total Petroleum Hydrocarbons	ND	147		mg/Kg-dry	1	11/5/2021 3:10:19 AM
Surr: 2-Fluorobiphenyl	98.9	50 - 150		%Rec	1	11/5/2021 3:10:19 AM
Surr: o-Terphenyl	100	50 - 150		%Rec	1	11/5/2021 3:10:19 AM
Sample Moisture (Percent Moisture)				Batch ID: R71006		Analyst: cb
Percent Moisture	12.3	0.500		wt%	1	11/4/2021 9:42:20 AM

Lab ID: 2110314-020 **Collection Date:** 10/21/2021 1:22:00 PM
Client Sample ID: **GLB-16-8** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34305		Analyst: MM
Diesel (Fuel Oil)	ND	54.4		mg/Kg-dry	1	11/5/2021 3:23:12 AM
Heavy Oil	ND	109		mg/Kg-dry	1	11/5/2021 3:23:12 AM
Total Petroleum Hydrocarbons	ND	163		mg/Kg-dry	1	11/5/2021 3:23:12 AM
Surr: 2-Fluorobiphenyl	96.8	50 - 150		%Rec	1	11/5/2021 3:23:12 AM
Surr: o-Terphenyl	97.5	50 - 150		%Rec	1	11/5/2021 3:23:12 AM
Sample Moisture (Percent Moisture)				Batch ID: R71006		Analyst: cb
Percent Moisture	13.0	0.500		wt%	1	11/4/2021 9:42:20 AM

Work Order: 2110314
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

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

Sample ID: **MB-34184**	SampType: **MBLK**	Units: **mg/Kg**	Prep Date: **10/26/2021**	RunNo: **70807**
Client ID: **MBLKS**	Batch ID: **34184**		Analysis Date: **10/26/2021**	SeqNo: **1440172**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	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	11.5		10.00		115	50	150				

Sample ID: **LCS-34184**	SampType: **LCS**	Units: **mg/Kg**	Prep Date: **10/26/2021**	RunNo: **70807**
Client ID: **LCSS**	Batch ID: **34184**		Analysis Date: **10/26/2021**	SeqNo: **1440173**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	507	150	500.0	0	101	77.2	122				
Surr: 2-Fluorobiphenyl	11.6		10.00		116	50	150				
Surr: o-Terphenyl	14.0		10.00		140	50	150				

Sample ID: **2110314-002AMS**	SampType: **MS**	Units: **mg/Kg-dry**	Prep Date: **10/26/2021**	RunNo: **70807**
Client ID: **GLB-12-4**	Batch ID: **34184**		Analysis Date: **10/26/2021**	SeqNo: **1440238**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	5,840	162	540.8	5,159	127	68	132				
Surr: 2-Fluorobiphenyl	8.31		10.82		76.8	50	150				
Surr: o-Terphenyl	11.8		10.82		109	50	150				

Sample ID: **2110314-002AMSD**	SampType: **MSD**	Units: **mg/Kg-dry**	Prep Date: **10/26/2021**	RunNo: **70807**
Client ID: **GLB-12-4**	Batch ID: **34184**		Analysis Date: **10/26/2021**	SeqNo: **1440239**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	5,830	160	532.4	5,159	126	68	132	5,843	0.241	30	
Surr: 2-Fluorobiphenyl	8.97		10.65		84.2	50	150		0		
Surr: o-Terphenyl	11.8		10.65		110	50	150		0		

Work Order: 2110314
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

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

Sample ID: **2110314-002AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **10/26/2021** RunNo: **70807**
Client ID: **GLB-12-4** Batch ID: **34184** Analysis Date: **10/26/2021** SeqNo: **1440239**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID: **2110340-003ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **10/26/2021** RunNo: **70807**
Client ID: **BATCH** Batch ID: **34184** Analysis Date: **10/27/2021** SeqNo: **1440189**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	195	53.2						584.5	100	30	R
Heavy Oil	ND	106						0		30	
Total Petroleum Hydrocarbons	195	159						584.5	100	30	R
Surr: 2-Fluorobiphenyl	10.2		10.63		95.9	50	150		0		
Surr: o-Terphenyl	11.6		10.63		109	50	150		0		

NOTES:
R - High RPD due to sample inhomogeneity.

Sample ID: **MB-34305** SampType: **MBLK** Units: **mg/Kg** Prep Date: **11/4/2021** RunNo: **71057**
Client ID: **MBLKS** Batch ID: **34305** Analysis Date: **11/4/2021** SeqNo: **1446132**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	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	10.9		10.00		109	50	150				

Sample ID: **LCS-34305** SampType: **LCS** Units: **mg/Kg** Prep Date: **11/4/2021** RunNo: **71057**
Client ID: **LCSS** Batch ID: **34305** Analysis Date: **11/4/2021** SeqNo: **1446133**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	553	150	500.0	0	111	77.2	122				
Surr: 2-Fluorobiphenyl	10.7		10.00		107	50	150				
Surr: o-Terphenyl	13.4		10.00		134	50	150				

Work Order: 2110314
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

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

Sample ID: **LCS-34305** SampType: **LCS** Units: **mg/Kg** Prep Date: **11/4/2021** RunNo: **71057**
Client ID: **LCSS** Batch ID: **34305** Analysis Date: **11/4/2021** SeqNo: **1446133**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID: **2110293-013AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **11/4/2021** RunNo: **71057**
Client ID: **BATCH** Batch ID: **34305** Analysis Date: **11/4/2021** SeqNo: **1446135**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	1,020	160	1,067	58.27	89.7	68	132				H
Surr: 2-Fluorobiphenyl	11.4		10.67		106	50	150				H
Surr: o-Terphenyl	14.5		10.67		136	50	150				H

Sample ID: **2110293-013AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **11/4/2021** RunNo: **71057**
Client ID: **BATCH** Batch ID: **34305** Analysis Date: **11/4/2021** SeqNo: **1446136**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	899	158	1,055	58.27	79.7	68	132	1,016	12.2	30	H
Surr: 2-Fluorobiphenyl	10.7		10.55		101	50	150		0		H
Surr: o-Terphenyl	12.4		10.55		117	50	150		0		H

Sample ID: **2111088-001ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **11/4/2021** RunNo: **71057**
Client ID: **BATCH** Batch ID: **34305** Analysis Date: **11/5/2021** SeqNo: **1446155**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	66.0						0		30	
Heavy Oil	319	132						222.8	35.6	30	
Total Petroleum Hydrocarbons	319	198						222.8	35.6	30	
Surr: 2-Fluorobiphenyl	12.7		13.21		96.2	50	150		0		
Surr: o-Terphenyl	11.7		13.21		88.6	50	150		0		

Work Order: 2110314
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

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

Sample ID: **MB-34184** SampType: **MBLK** Units: **mg/Kg** Prep Date: **10/26/2021** RunNo: **70807**
Client ID: **MBLKS** Batch ID: **34184** Analysis Date: **11/9/2021** SeqNo: **1448668**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	98.6	50.0									SGT
Heavy Oil	303	100									SGT
Total Petroleum Hydrocarbons	401	150									SGT
Surr: 2-Fluorobiphenyl	12.2		10.00		122	50	150				
Surr: o-Terphenyl	14.0		10.00		140	50	150				

NOTES:
SGT - Silica Gel Treatment

Sample ID: **LCS-34184** SampType: **LCS** Units: **mg/Kg** Prep Date: **10/26/2021** RunNo: **70807**
Client ID: **LCSS** Batch ID: **34184** Analysis Date: **11/9/2021** SeqNo: **1448669**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	542	150	500.0	0	108	77.2	122				BSGT
Surr: 2-Fluorobiphenyl	12.6		10.00		126	50	150				SGT
Surr: o-Terphenyl	14.8		10.00		148	50	150				SGT

NOTES:
SGT - Silica Gel Treatment

Sample ID: **2110314-002AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **10/26/2021** RunNo: **70807**
Client ID: **GLB-12-4** Batch ID: **34184** Analysis Date: **11/9/2021** SeqNo: **1448671**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	7,460	162	540.8	6,248	225	68	132				SSGT
Surr: 2-Fluorobiphenyl	12.1		10.82		112	50	150				SGT
Surr: o-Terphenyl	16.0		10.82		148	50	150				SGT

NOTES:
S - Analyte concentration was too high for accurate spike recovery(ies).
SGT - Silica Gel Treatment

Work Order: 2110314
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

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

Sample ID: **2110314-002AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **10/26/2021** RunNo: **70807**
Client ID: **GLB-12-4** Batch ID: **34184** Analysis Date: **11/9/2021** SeqNo: **1448672**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	7,740	160	532.4	6,248	280	68	132	7,463	3.60	30	SSGT
Surr: 2-Fluorobiphenyl	11.5		10.65		108	50	150		0		SGT
Surr: o-Terphenyl	14.6		10.65		137	50	150		0		SGT

NOTES:
S - Analyte concentration was too high for accurate spike recovery(ies).
SGT - Silica Gel Treatment

Work Order: 2110314
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **MB-34312** SampType: **MBLK** Units: **mg/Kg** Prep Date: **11/4/2021** RunNo: **71338**
Client ID: **MBLKS** Batch ID: **34312** Analysis Date: **11/15/2021** SeqNo: **1452490**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	ND	20.0									
Aliphatic Hydrocarbon (C10-C12)	ND	10.0									*
Aliphatic Hydrocarbon (C12-C16)	ND	10.0									
Aliphatic Hydrocarbon (C16-C21)	ND	10.0									
Aliphatic Hydrocarbon (C21-C34)	ND	10.0									
Surr: 1-Chlorooctadecane	77.1		100.0		77.1	60	140				

NOTES:
* - Associated LCS does not meet acceptance criteria; refer to QC summary.

Sample ID: **2110293-004AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **11/4/2021** RunNo: **71338**
Client ID: **BATCH** Batch ID: **34312** Analysis Date: **11/15/2021** SeqNo: **1452672**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	187	19.0	238.1	102.1	35.6	10.3	130				H
Aliphatic Hydrocarbon (C10-C12)	407	9.52	119.0	315.4	77.2	70	130				H
Aliphatic Hydrocarbon (C12-C16)	1,550	9.52	119.0	1,446	88.1	70	130				H
Aliphatic Hydrocarbon (C16-C21)	1,590	9.52	119.0	1,476	94.5	70	130				H
Aliphatic Hydrocarbon (C21-C34)	312	9.52	119.0	192.5	100	70	130				H
Surr: 1-Chlorooctadecane	83.5		95.22		87.7	60	140				H

Sample ID: **MB-34312** SampType: **MBLK** Units: **mg/Kg** Prep Date: **11/4/2021** RunNo: **71339**
Client ID: **MBLKS** Batch ID: **34312** Analysis Date: **11/16/2021** SeqNo: **1453005**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	ND	20.0									
Aromatic Hydrocarbon (C10-C12)	ND	10.0									
Aromatic Hydrocarbon (C12-C16)	ND	10.0									
Aromatic Hydrocarbon (C16-C21)	ND	10.0									
Aromatic Hydrocarbon (C21-C34)	ND	10.0									
Surr: o-Terphenyl	79.7		100.0		79.7	60	140				

Work Order: 2110314
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **MB-34312** SampType: **MBLK** Units: **mg/Kg** Prep Date: **11/4/2021** RunNo: **71339**
Client ID: **MBLKS** Batch ID: **34312** Analysis Date: **11/16/2021** SeqNo: **1453005**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID: **2110293-004AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **11/4/2021** RunNo: **71339**
Client ID: **BATCH** Batch ID: **34312** Analysis Date: **11/16/2021** SeqNo: **1453007**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	125	19.0	238.1	10.60	48.1	11.8	130				H
Aromatic Hydrocarbon (C10-C12)	189	9.52	119.0	103.7	72.0	70	130				H
Aromatic Hydrocarbon (C12-C16)	571	9.52	119.0	517.7	44.5	70	130				SH
Aromatic Hydrocarbon (C16-C21)	1,200	9.52	119.0	1,186	10.7	70	130				SH
Aromatic Hydrocarbon (C21-C34)	321	9.52	119.0	0	270	70	130				SH
Surr: o-Terphenyl	88.9		95.22		93.4	60	140				H

NOTES:
S - Outlying spike recovery(ies) observed. A duplicate analysis was performed with similar results indicating a possible matrix effect.

Sample ID: **2110293-004AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **11/4/2021** RunNo: **71339**
Client ID: **BATCH** Batch ID: **34312** Analysis Date: **11/16/2021** SeqNo: **1453008**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	125	19.1	238.7	10.60	47.9	11.8	130	125.1	0.205	30	H
Aromatic Hydrocarbon (C10-C12)	167	9.55	119.3	103.7	52.8	70	130	189.4	12.7	30	SH
Aromatic Hydrocarbon (C12-C16)	448	9.55	119.3	517.7	-58.8	70	130	570.6	24.2	30	SH
Aromatic Hydrocarbon (C16-C21)	926	9.55	119.3	1,186	-218	70	130	1,198	25.7	30	SH
Aromatic Hydrocarbon (C21-C34)	276	9.55	119.3	0	232	70	130	320.8	14.9	30	SH
Surr: o-Terphenyl	85.5		95.46		89.6	60	140		0		H

NOTES:
S - Outlying spike recovery(ies) observed. A duplicate analysis was performed with similar results indicating a possible matrix effect.

Work Order: 2110314
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

Extractable Petroleum Hydrocarbons by NWEPH

Sample ID: **LCS-34312** SampType: **LCS** Units: **mg/Kg** Prep Date: **11/4/2021** RunNo: **71339**
Client ID: **LCSS** Batch ID: **34312** Analysis Date: **11/16/2021** SeqNo: **1453011**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aromatic Hydrocarbon (C8-C10)	126	20.0	250.0	0	50.5	16.9	130				
Aromatic Hydrocarbon (C10-C12)	89.2	10.0	125.0	0	71.3	70	130				
Aromatic Hydrocarbon (C12-C16)	94.3	10.0	125.0	0	75.5	70	130				
Aromatic Hydrocarbon (C16-C21)	102	10.0	125.0	0	81.3	70	130				
Aromatic Hydrocarbon (C21-C34)	122	10.0	125.0	0	97.5	70	130				
Surr: o-Terphenyl	108		100.0		108	60	140				

Sample ID: **LCS-34312** SampType: **LCS** Units: **mg/Kg** Prep Date: **11/4/2021** RunNo: **71338**
Client ID: **LCSS** Batch ID: **34312** Analysis Date: **11/16/2021** SeqNo: **1452498**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	98.5	20.0	250.0	0	39.4	15.7	130				
Aliphatic Hydrocarbon (C10-C12)	79.0	10.0	125.0	0	63.2	70	130				S
Aliphatic Hydrocarbon (C12-C16)	97.7	10.0	125.0	0	78.2	70	130				
Aliphatic Hydrocarbon (C16-C21)	100	10.0	125.0	0	80.4	70	130				
Aliphatic Hydrocarbon (C21-C34)	89.5	10.0	125.0	0	71.6	70	130				
Surr: 1-Chlorooctadecane	99.8		100.0		99.8	60	140				

NOTES:
S - Outlying spike recovery observed (C10-C12). Samples will be qualified with a *.

Work Order: 2110314
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

Gasoline by NWTPH-Gx

Sample ID: **LCS-34343** SampType: **LCS** Units: **mg/Kg** Prep Date: **11/8/2021** RunNo: **71121**
Client ID: **LCSS** Batch ID: **34343** Analysis Date: **11/8/2021** SeqNo: **1447529**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	29.6	5.00	25.00	0	118	65	135				
Surr: Toluene-d8	1.23		1.250		98.4	65	135				
Surr: 4-Bromofluorobenzene	1.33		1.250		107	65	135				

Sample ID: **MB-34343** SampType: **MBLK** Units: **mg/Kg** Prep Date: **11/8/2021** RunNo: **71121**
Client ID: **MBLKS** Batch ID: **34343** Analysis Date: **11/8/2021** SeqNo: **1447530**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	5.00									
Surr: Toluene-d8	1.23		1.250		98.3	65	135				
Surr: 4-Bromofluorobenzene	1.30		1.250		104	65	135				

Sample ID: **2111050-014BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **11/8/2021** RunNo: **71121**
Client ID: **BATCH** Batch ID: **34343** Analysis Date: **11/8/2021** SeqNo: **1447534**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	8.43						0		30	
Gasoline Range Organics (C6-C12)	18.9	8.43						24.19	24.8	30	
Surr: Toluene-d8	2.03		2.107		96.5	65	135		0		
Surr: 4-Bromofluorobenzene	2.24		2.107		106	65	135		0		

NOTES:
GRO - Indicates the presence of unresolved compounds in the gasoline range.

Sample ID: **2111102-001BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **11/8/2021** RunNo: **71121**
Client ID: **BATCH** Batch ID: **34343** Analysis Date: **11/8/2021** SeqNo: **1447538**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	7.81						0		30	
Surr: Toluene-d8	1.93		1.951		98.8	65	135		0		
Surr: 4-Bromofluorobenzene	2.06		1.951		105	65	135		0		

Work Order: 2110314
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

Gasoline by NWTPH-Gx

Sample ID: **2111102-001BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **11/8/2021** RunNo: **71121**
Client ID: **BATCH** Batch ID: **34343** Analysis Date: **11/8/2021** SeqNo: **1447538**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID: **2111084-012BMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **11/8/2021** RunNo: **71121**
Client ID: **BATCH** Batch ID: **34343** Analysis Date: **11/8/2021** SeqNo: **1447542**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	88.1	6.05	30.26	51.26	122	65	135				
Surr: Toluene-d8	1.49		1.513		98.6	65	135				
Surr: 4-Bromofluorobenzene	1.60		1.513		106	65	135				

Work Order: 2110314
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **LCS-34343** SampType: **LCS** Units: **mg/Kg** Prep Date: **11/8/2021** RunNo: **71120**
Client ID: **LCSS** Batch ID: **34343** Analysis Date: **11/8/2021** SeqNo: **1447527**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	1.08	0.0200	1.000	0	108	80	120				
Toluene	1.07	0.0300	1.000	0	107	80	120				
Ethylbenzene	1.12	0.0250	1.000	0	112	80	120				
m,p-Xylene	2.11	0.0500	2.000	0	105	80	120				
o-Xylene	1.05	0.0250	1.000	0	105	80	120				
Naphthalene	0.941	0.100	1.000	0	94.1	80	120				
Surr: Dibromofluoromethane	1.31		1.250		105	75.5	120				
Surr: Toluene-d8	1.26		1.250		101	80	120				
Surr: 1-Bromo-4-fluorobenzene	1.29		1.250		103	78.5	120				

Sample ID: **MB-34343** SampType: **MBLK** Units: **mg/Kg** Prep Date: **11/8/2021** RunNo: **71120**
Client ID: **MBLKS** Batch ID: **34343** Analysis Date: **11/8/2021** SeqNo: **1447501**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.0200									
Toluene	ND	0.0300									
Ethylbenzene	ND	0.0250									
m,p-Xylene	ND	0.0500									
o-Xylene	ND	0.0250									
Naphthalene	ND	0.100									
Surr: Dibromofluoromethane	1.19		1.250		95.0	75.5	119				
Surr: Toluene-d8	1.27		1.250		101	82.4	115				
Surr: 1-Bromo-4-fluorobenzene	1.24		1.250		99.2	78.5	118				

Sample ID: **2111050-014BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **11/8/2021** RunNo: **71120**
Client ID: **BATCH** Batch ID: **34343** Analysis Date: **11/8/2021** SeqNo: **1447506**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.0337						0		30	

Work Order: 2110314
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **2111050-014BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **11/8/2021** RunNo: **71120**
Client ID: **BATCH** Batch ID: **34343** Analysis Date: **11/8/2021** SeqNo: **1447506**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Toluene	0.0959	0.0506						0.09552	0.402	30	
Ethylbenzene	ND	0.0421						0		30	
m,p-Xylene	ND	0.0843						0		30	
o-Xylene	ND	0.0421						0		30	
Naphthalene	ND	0.169						0		30	
Surr: Dibromofluoromethane	2.03		2.107		96.2	75.5	119		0		
Surr: Toluene-d8	2.13		2.107		101	82.4	115		0		
Surr: 1-Bromo-4-fluorobenzene	2.13		2.107		101	78.5	118		0		

Sample ID: **2111102-001BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **11/8/2021** RunNo: **71120**
Client ID: **BATCH** Batch ID: **34343** Analysis Date: **11/8/2021** SeqNo: **1447510**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.0312						0		30	
Toluene	ND	0.0468						0		30	
Ethylbenzene	ND	0.0390						0		30	
m,p-Xylene	ND	0.0781						0		30	
o-Xylene	ND	0.0390						0		30	
Naphthalene	ND	0.156						0		30	
Surr: Dibromofluoromethane	1.83		1.951		93.9	75.5	119		0		
Surr: Toluene-d8	1.96		1.951		101	82.4	115		0		
Surr: 1-Bromo-4-fluorobenzene	1.96		1.951		100	78.5	118		0		

Sample ID: **2111050-020BMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **11/8/2021** RunNo: **71120**
Client ID: **BATCH** Batch ID: **34343** Analysis Date: **11/8/2021** SeqNo: **1447514**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	1.17	0.0225	1.123	0	104	75.3	131				
Toluene	1.16	0.0337	1.123	0	103	79.2	130				

Work Order: 2110314
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **2111050-020BMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **11/8/2021** RunNo: **71120**
Client ID: **BATCH** Batch ID: **34343** Analysis Date: **11/8/2021** SeqNo: **1447514**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethylbenzene	1.22	0.0281	1.123	0	108	79.7	133				
m,p-Xylene	2.32	0.0561	2.246	0	103	81.2	125				
o-Xylene	1.15	0.0281	1.123	0	103	76.9	130				
Naphthalene	1.09	0.112	1.123	0	97.4	72.3	141				
Surr: Dibromofluoromethane	1.43		1.404		102	75.5	119				
Surr: Toluene-d8	1.41		1.404		101	82.4	115				
Surr: 1-Bromo-4-fluorobenzene	1.46		1.404		104	78.5	118				

Work Order: 2110314
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

Volatile Petroleum Hydrocarbons by NWVPH

Sample ID: **LCS-34320** SampType: **LCS** Units: **mg/Kg** Prep Date: **11/4/2021** RunNo: **71224**
Client ID: **LCSS** Batch ID: **34320** Analysis Date: **11/11/2021** SeqNo: **1449959**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	29.3	2.50	30.00	0	97.6	70	130				
Aliphatic Hydrocarbon (C6-C8)	9.97	1.50	10.00	0	99.7	70	130				
Aliphatic Hydrocarbon (C8-C10)	9.19	2.50	10.00	0	91.9	70	130				
Aliphatic Hydrocarbon (C10-C12)	9.79	0.500	10.00	0	97.9	70	130				
Aromatic Hydrocarbon (C8-C10)	40.8	3.00	40.00	0	102	70	130				
Aromatic Hydrocarbon (C10-C12)	9.66	0.500	10.00	0	96.6	70	130				
Aromatic Hydrocarbon (C12-C13)	9.92	0.500	10.00	0	99.2	70	130				
Benzene	9.82	0.600	10.00	0	98.2	70	130				
Toluene	9.90	0.500	10.00	0	99.0	70	130				
Ethylbenzene	9.97	1.70	10.00	0	99.7	70	130				
m,p-Xylene	20.5	1.00	20.00	0	103	70	130				
o-Xylene	10.2	0.500	10.00	0	102	70	130				
Naphthalene	9.38	2.60	10.00	0	93.8	70	130				
Methyl tert-butyl ether (MTBE)	10.6	1.10	10.00	0	106	70	130				
Surr: 1,4-Difluorobenzene	2.42		2.500		96.9	65	140				
Surr: Bromofluorobenzene	2.40		2.500		96.0	65	140				

Sample ID: **MB-34320** SampType: **MBLK** Units: **mg/Kg** Prep Date: **11/4/2021** RunNo: **71224**
Client ID: **MBLKS** Batch ID: **34320** Analysis Date: **11/11/2021** SeqNo: **1449960**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	ND	2.50		0	0						
Aliphatic Hydrocarbon (C6-C8)	ND	1.50		0	0						
Aliphatic Hydrocarbon (C8-C10)	ND	2.50		0	0						
Aliphatic Hydrocarbon (C10-C12)	ND	0.500		0	0						
Aromatic Hydrocarbon (C8-C10)	ND	3.00		0	0						
Aromatic Hydrocarbon (C10-C12)	ND	0.500		0	0						
Aromatic Hydrocarbon (C12-C13)	ND	0.500		0	0						
Benzene	ND	0.600		0	0						
Toluene	ND	0.500		0	0						

Work Order: 2110314
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

Volatile Petroleum Hydrocarbons by NWVPH

Sample ID: **MB-34320** SampType: **MBLK** Units: **mg/Kg** Prep Date: **11/4/2021** RunNo: **71224**
Client ID: **MBLKS** Batch ID: **34320** Analysis Date: **11/11/2021** SeqNo: **1449960**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethylbenzene	ND	1.70		0	0						
m,p-Xylene	ND	1.00		0	0						
o-Xylene	ND	0.500		0	0						
Naphthalene	ND	2.60		0	0						
Methyl tert-butyl ether (MTBE)	ND	1.10		0	0						
Surr: 1,4-Difluorobenzene	1.89		2.500		75.5	65	140				
Surr: Bromofluorobenzene	2.37		2.500		94.7	65	140				

Sample ID: **2110293-004BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **11/4/2021** RunNo: **71224**
Client ID: **BATCH** Batch ID: **34320** Analysis Date: **11/11/2021** SeqNo: **1449950**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	3.43	2.31		0	0			3.555	3.56	25	H
Aliphatic Hydrocarbon (C6-C8)	12.6	1.39		0	0			11.77	7.01	25	H
Aliphatic Hydrocarbon (C8-C10)	45.5	2.31		0	0			48.60	6.60	25	H
Aliphatic Hydrocarbon (C10-C12)	215	0.462		0	0			202.6	6.08	25	EH
Aromatic Hydrocarbon (C8-C10)	107	2.77		0	0			110.6	3.26	25	H
Aromatic Hydrocarbon (C10-C12)	433	0.462		0	0			441.6	1.96	25	EH
Aromatic Hydrocarbon (C12-C13)	763	0.462		0	0			767.7	0.548	25	EH
Benzene	ND	0.554		0	0			0		25	H
Toluene	ND	0.462		0	0			0		25	H
Ethylbenzene	ND	1.57		0	0			0		25	H
m,p-Xylene	ND	0.924		0	0			0		25	H
o-Xylene	0.764	0.462		0	0			0.8075	5.57	25	H
Naphthalene	31.7	2.40		0	0			32.61	2.98	25	H
Methyl tert-butyl ether (MTBE)	ND	1.02		0	0			0		25	H
Surr: 1,4-Difluorobenzene	1.97		2.309		85.1	65	140		0		H
Surr: Bromofluorobenzene	10.5		2.309		456	65	140		0		SH

Work Order: 2110314
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

Volatile Petroleum Hydrocarbons by NWVPH

Sample ID: **2110293-004BDUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **11/4/2021** RunNo: **71224**
Client ID: **BATCH** Batch ID: **34320** Analysis Date: **11/11/2021** SeqNo: **1449950**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

NOTES:
S - Outlying surrogate recovery attributed to TPH interference.
E - Estimated value. The amount exceeds the calibrated range of the instrument.

Sample ID: **2110314-002BMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **11/4/2021** RunNo: **71224**
Client ID: **GLB-12-4** Batch ID: **34320** Analysis Date: **11/11/2021** SeqNo: **1449954**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	34.1	2.57	30.89	3.803	98.2	70	130				H
Aliphatic Hydrocarbon (C6-C8)	12.9	1.54	10.30	1.289	113	70	130				H
Aliphatic Hydrocarbon (C8-C10)	11.3	2.57	10.30	6.440	47.2	70	130				SH
Aliphatic Hydrocarbon (C10-C12)	77.7	0.515	10.30	69.73	77.6	70	130				EH
Aromatic Hydrocarbon (C8-C10)	75.1	3.09	41.19	22.48	128	70	130				H
Aromatic Hydrocarbon (C10-C12)	207	0.515	10.30	193.2	136	70	130				SEH
Aromatic Hydrocarbon (C12-C13)	705	0.515	10.30	691.0	133	70	130				SEH
Benzene	10.2	0.618	10.30	0	99.5	70	130				H
Toluene	10.7	0.515	10.30	0	104	70	130				H
Ethylbenzene	11.6	1.75	10.30	0	113	70	130				H
m,p-Xylene	23.2	1.03	20.60	0	113	70	130				H
o-Xylene	12.1	0.515	10.30	0	118	70	130				H
Naphthalene	13.2	2.68	10.30	3.887	90.1	70	130				H
Methyl tert-butyl ether (MTBE)	9.77	1.13	10.30	0	94.9	70	130				H
Surr: 1,4-Difluorobenzene	2.54		2.574		98.7	65	140				H
Surr: Bromofluorobenzene	3.59		2.574		140	65	140				H

NOTES:
S - Outlying spike recoveries were associated with this sample.
E - Estimated value. The amount exceeds the calibrated range of the instrument.

Sample Log-In Check List

Client Name:	**GL**	Work Order Number:	**2110314**
Logged by:	**Clare Griggs**	Date Received:	**10/21/2021 4:35:00 PM**

Chain of Custody

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

Log In

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

Special Handling (if applicable)

18.	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: _____

19. Additional remarks:

Item Information

Item #	Temp ºC
Sample	5.5

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

Chain of Custody Record & Laboratory Services Agreement

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 10/21/21 Page: 1 of: 2

Laboratory Project No (internal): 2119314

Project Name: Mossman

Special Remarks:

Project No: 01-0864-D

Client: G-Logics

Collected by: Pamela Fleming/Tiffany Querry

Address: 140 2nd Ave SE

Location: Sammamish, WA

City, State, Zip: Issaquah, WA 98027

Sample Disposal: ☐ Return to client ☐ Disposal by lab (after 30 days)

Telephone:

Report To (PM):

Fax:

PM Email:

	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	GLB-12-2	10/21/21	0910	S	3														
2	GLB-12-4	10/	0920							X									
3	GLB-12-6		0915							X									
4	GLB-12-8		0925																
5	GLB-13-2		1010																
6	GLB-13-4		1015							X									
7	GLB-13-6		1025							X									
8	GLB-13-8		1030																
9	GLB-14-2		1130							X									
10	GLB-14-4	↓	1150	↓	↓					X									

*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	Chris Smith	10/21/21 1625	x	Alex Tryo	10-21-21 16:35
Relinquished (Signature)	Print Name	Date/Time	Received (Signature)	Print Name	Date/Time
x			x		

Chain of Custody Record & Laboratory Services Agreement

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 10/21/21 Page: 2 of: 2

Laboratory Project No (internal): 2110314

Project Name: Mossman

Special Remarks:

Client: G-Logics

Project No: 01-0864-D

Address:

Collected by: PMF/TLQ

City, State, Zip:

Location: Sammamish, WA

Telephone:

Report To (PM): P. Fleming

Sample Disposal: ☐ Return to client ☐ Disposal by lab (after 30 days)

Fax:

PM Email: Pamela F@G-Logics.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	GLB-14-6	10/21/21	1155	S	3				P	X								
2	GLB-14-8		1200															
3	GLB-15-2		1240															
4	GLB-15-4		1245							X								
5	GLB-15-6		1250							X								
6	GLB-15-8		1255															
7	GLB-16-2		1315							X								
8	GLB-16-4		1315							X								
9	GLB-16-6		1320															
10	GLB-16-8	↓	1322	↓	↓													

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Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 10/21/21 Page: 1 of: 2

Laboratory Project No (internal): 2119314

Project Name: Mossman

Special Remarks: Edits per TQ, Std TAT, 11/3/21 -CG

Project No: 01-0864-D

Client: G-Logics

Collected by: Pamela Fleming/Tiffany Querry

Address: 140 2nd Ave SE

Location: Sammamish, WA

City, State, Zip: Issaquah, WA 98027

Sample Disposal: ☐ Return to client ☐ Disposal by lab (after 30 days)

Telephone:

Report To (PM):

Fax:

PM Email:

	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 (801)*	BTEX & Naph	EPH, VPH		Comments
1	GLB-12-2	10/21/21	0910	S	3													X			
2	GLB-12-4	"	0920						X										X		DX w/ SGC
3	GLB-12-6		0915						X												
4	GLB-12-8		0925																		
5	GLB-13-2		1010						X												
6	GLB-13-4		1015						X												
7	GLB-13-6		1025						X												
8	GLB-13-8		1030						X												
9	GLB-14-2		1130						X												
10	GLB-14-4	↓	1150	↓	↓				X												

*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

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Relinquished (Signature)	Print Name	Date/Time	Received (Signature)	Print Name	Date/Time
x			x		

Chain of Custody Record & Laboratory Services Agreement

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 10/21/21 Page: 2 of: 2

Laboratory Project No (internal): 2110314

Project Name: Mossman

Special Remarks:

Client: G-Logics

Project No: 01-0864-D

Address:

Collected by: PMF/TLQ

City, State, Zip:

Location: Sammamish, WA

Telephone:

Report To (PM): P. Fleming

Sample Disposal: ☐ Return to client ☐ Disposal by lab (after 30 days)

Fax:

PM Email: Pamela F@G-Logics.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	GLB-14-6	10/21/21	1155	S	3				P	X							
2	GLB-14-8		1200					X									
3	GLB-15-2		1240							X							
4	GLB-15-4		1245							X							
5	GLB-15-6		1250							X							
6	GLB-15-8		1255							X							
7	GLB-16-2		1315							X							
8	GLB-16-4		1315							X							
9	GLB-16-6		1320							X							
10	GLB-16-8	↓	1322	↓	↓					X							

*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

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Turn-around Time:
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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

G-Logics
Pamela Fleming
40 Second Ave. SE
Issaquah, WA 98027

RE: Mossman
Work Order Number: 2110315

November 11, 2021

Attention Pamela Fleming:

Fremont Analytical, Inc. received 10 sample(s) on 10/21/2021 for the analyses presented in the following report.

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.
Total Organic Carbon by SM 5310C
Volatile Organic Compounds by EPA Method 8260D

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: *11/11/2021*

CLIENT: G-Logics
Project: Mossman
Work Order: 2110315

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2110315-001	MW-9	10/21/2021 9:27 AM	10/21/2021 4:35 PM
2110315-002	MW-3	10/21/2021 9:59 AM	10/21/2021 4:35 PM
2110315-003	MW-4	10/21/2021 11:48 AM	10/21/2021 4:35 PM
2110315-004	MW-7	10/21/2021 12:32 PM	10/21/2021 4:35 PM
2110315-005	GLB-12-GW	10/21/2021 11:00 AM	10/21/2021 4:35 PM
2110315-006	GLB-13-GW	10/21/2021 11:15 AM	10/21/2021 4:35 PM
2110315-007	GLB-14-GW	10/21/2021 11:55 AM	10/21/2021 4:35 PM
2110315-008	GLB-15-GW	10/21/2021 12:15 PM	10/21/2021 4:35 PM
2110315-009	GLB-16-GW	10/21/2021 1:40 PM	10/21/2021 4:35 PM
2110315-010	Trip Blank		10/21/2021 4:35 PM

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

Case Narrative

WO#: **2110315**
Date: **11/11/2021**

CLIENT: G-Logics
Project: Mossman

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.

11/11/21: Revisoin 1 includes additional analysis requested by the client.

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: **2110315**
Date Reported: **11/11/2021**

CLIENT: G-Logics
Project: Mossman

Lab ID: 2110315-001 **Collection Date:** 10/21/2021 9:27:00 AM
Client Sample ID: **MW-9** **Matrix:** Groundwater

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34145		Analyst: MM
Diesel (Fuel Oil)	263	98.6		µg/L	1	10/26/2021 1:02:10 PM
Heavy Oil	ND	98.6		µg/L	1	10/26/2021 1:02:10 PM
Total Petroleum Hydrocarbons	263	197		µg/L	1	10/26/2021 1:02:10 PM
Surr: 2-Fluorobiphenyl	80.8	50 - 150		%Rec	1	10/26/2021 1:02:10 PM
Surr: o-Terphenyl	91.0	50 - 150		%Rec	1	10/26/2021 1:02:10 PM

Lab ID: 2110315-002 **Collection Date:** 10/21/2021 9:59:00 AM
Client Sample ID: **MW-3** **Matrix:** Groundwater

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34145		Analyst: MM
Diesel (Fuel Oil)	2,270	98.1		µg/L	1	10/26/2021 1:15:08 PM
Heavy Oil	ND	98.1		µg/L	1	10/26/2021 1:15:08 PM
Total Petroleum Hydrocarbons	2,270	196		µg/L	1	10/26/2021 1:15:08 PM
Surr: 2-Fluorobiphenyl	82.6	50 - 150		%Rec	1	10/26/2021 1:15:08 PM
Surr: o-Terphenyl	92.4	50 - 150		%Rec	1	10/26/2021 1:15:08 PM

Analytical Report

Work Order: **2110315**
Date Reported: **11/11/2021**

CLIENT: G-Logics
Project: Mossman

Lab ID: 2110315-003 **Collection Date:** 10/21/2021 11:48:00 AM
Client Sample ID: **MW-4** **Matrix:** Groundwater

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34145		Analyst: MM
Diesel (Fuel Oil)	197	98.7	SGT	µg/L	1	11/9/2021 1:46:29 PM
Diesel (Fuel Oil)	2,650	98.7		µg/L	1	10/26/2021 1:28:00 PM
Heavy Oil	ND	98.7		µg/L	1	10/26/2021 1:28:00 PM
Total Petroleum Hydrocarbons	2,690	197		µg/L	1	10/26/2021 1:28:00 PM
Total Petroleum Hydrocarbons	197	197	SGT	µg/L	1	11/9/2021 1:46:29 PM
Surr: 2-Fluorobiphenyl	34.2	50 - 150	SSGT	%Rec	1	11/9/2021 1:46:29 PM
Surr: 2-Fluorobiphenyl	103	50 - 150		%Rec	1	10/26/2021 1:28:00 PM
Surr: o-Terphenyl	38.4	50 - 150	SSGT	%Rec	1	11/9/2021 1:46:29 PM
Surr: o-Terphenyl	106	50 - 150		%Rec	1	10/26/2021 1:28:00 PM

NOTES:
S - Outlying spike recovery(ies) observed
SGT - Silica Gel Treatment

Volatile Organic Compounds by EPA Method 8260D				Batch ID: 34341		Analyst: CR
Benzene	ND	0.440	H	µg/L	1	11/8/2021 5:50:36 PM
Toluene	ND	0.750	H	µg/L	1	11/8/2021 5:50:36 PM
Ethylbenzene	ND	0.400	H	µg/L	1	11/8/2021 5:50:36 PM
m,p-Xylene	ND	1.00	H	µg/L	1	11/8/2021 5:50:36 PM
o-Xylene	ND	0.500	H	µg/L	1	11/8/2021 5:50:36 PM
Naphthalene	ND	1.25	H	µg/L	1	11/8/2021 5:50:36 PM
Surr: Dibromofluoromethane	107	80 - 120	H	%Rec	1	11/8/2021 5:50:36 PM
Surr: Toluene-d8	103	80 - 120	H	%Rec	1	11/8/2021 5:50:36 PM
Surr: 1-Bromo-4-fluorobenzene	102	80 - 120	H	%Rec	1	11/8/2021 5:50:36 PM

Total Organic Carbon by SM 5310C				Batch ID: R70840		Analyst: SS
Total Organic Carbon	11.2	0.500		mg/L	1	10/27/2021 6:19:00 PM

CLIENT: G-Logics
Project: Mossman

Lab ID: 2110315-004 **Collection Date:** 10/21/2021 12:32:00 PM
Client Sample ID: **MW-7** **Matrix:** Groundwater

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34145		Analyst: MM
Diesel (Fuel Oil)	ND	99.8		µg/L	1	10/26/2021 1:40:55 PM
Heavy Oil	ND	99.8		µg/L	1	10/26/2021 1:40:55 PM
Total Petroleum Hydrocarbons	ND	200		µg/L	1	10/26/2021 1:40:55 PM
Surr: 2-Fluorobiphenyl	87.1	50 - 150		%Rec	1	10/26/2021 1:40:55 PM
Surr: o-Terphenyl	99.2	50 - 150		%Rec	1	10/26/2021 1:40:55 PM

Lab ID: 2110315-005 **Collection Date:** 10/21/2021 11:00:00 AM
Client Sample ID: **GLB-12-GW** **Matrix:** Groundwater

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34145		Analyst: MM
Diesel (Fuel Oil)	7,750	99.9		µg/L	1	10/26/2021 1:53:49 PM
Heavy Oil	ND	99.9		µg/L	1	10/26/2021 1:53:49 PM
Total Petroleum Hydrocarbons	7,750	200		µg/L	1	10/26/2021 1:53:49 PM
Surr: 2-Fluorobiphenyl	69.8	50 - 150		%Rec	1	10/26/2021 1:53:49 PM
Surr: o-Terphenyl	81.4	50 - 150		%Rec	1	10/26/2021 1:53:49 PM

Lab ID: 2110315-006 **Collection Date:** 10/21/2021 11:15:00 AM
Client Sample ID: **GLB-13-GW** **Matrix:** Groundwater

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34145		Analyst: MM
Diesel (Fuel Oil)	165	99.3		µg/L	1	10/26/2021 2:06:44 PM
Heavy Oil	ND	99.3		µg/L	1	10/26/2021 2:06:44 PM
Total Petroleum Hydrocarbons	ND	199		µg/L	1	10/26/2021 2:06:44 PM
Surr: 2-Fluorobiphenyl	85.6	50 - 150		%Rec	1	10/26/2021 2:06:44 PM
Surr: o-Terphenyl	96.0	50 - 150		%Rec	1	10/26/2021 2:06:44 PM

Analytical Report

Work Order: **2110315**
Date Reported: **11/11/2021**

CLIENT: G-Logics
Project: Mossman

Lab ID: 2110315-007 **Collection Date:** 10/21/2021 11:55:00 AM
Client Sample ID: **GLB-14-GW** **Matrix:** Groundwater

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34162		Analyst: MM
Diesel (Fuel Oil)	534	98.9		µg/L	1	10/26/2021 5:47:28 PM
Heavy Oil	ND	98.9		µg/L	1	10/26/2021 5:47:28 PM
Total Petroleum Hydrocarbons	534	198		µg/L	1	10/26/2021 5:47:28 PM
Surr: 2-Fluorobiphenyl	104	50 - 150		%Rec	1	10/26/2021 5:47:28 PM
Surr: o-Terphenyl	102	50 - 150		%Rec	1	10/26/2021 5:47:28 PM

Analytical Report

Work Order: **2110315**
Date Reported: **11/11/2021**

CLIENT: G-Logics
Project: Mossman

Lab ID: 2110315-008 **Collection Date:** 10/21/2021 12:15:00 PM
Client Sample ID: **GLB-15-GW** **Matrix:** Groundwater

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34162		Analyst: MM
Diesel (Fuel Oil)	9,290	99.2		µg/L	1	10/26/2021 6:13:16 PM
Diesel (Fuel Oil)	7,950	99.2	SGT	µg/L	1	11/10/2021 10:16:57 AM
Heavy Oil	ND	99.2		µg/L	1	10/26/2021 6:13:16 PM
Heavy Oil	ND	99.2	SGT	µg/L	1	11/10/2021 10:16:57 AM
Total Petroleum Hydrocarbons	7,950	198	SGT	µg/L	1	11/10/2021 10:16:57 AM
Total Petroleum Hydrocarbons	9,290	198		µg/L	1	10/26/2021 6:13:16 PM
Surr: 2-Fluorobiphenyl	81.1	50 - 150	SGT	%Rec	1	11/10/2021 10:16:57 AM
Surr: 2-Fluorobiphenyl	84.8	50 - 150		%Rec	1	10/26/2021 6:13:16 PM
Surr: o-Terphenyl	106	50 - 150		%Rec	1	10/26/2021 6:13:16 PM
Surr: o-Terphenyl	77.8	50 - 150	SGT	%Rec	1	11/10/2021 10:16:57 AM

NOTES:
SGT - Silica Gel Treatment

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 34341		Analyst: CR
Benzene	ND	0.440	H	µg/L	1	11/8/2021 6:20:37 PM
Toluene	ND	0.750	H	µg/L	1	11/8/2021 6:20:37 PM
Ethylbenzene	ND	0.400	H	µg/L	1	11/8/2021 6:20:37 PM
m,p-Xylene	ND	1.00	H	µg/L	1	11/8/2021 6:20:37 PM
o-Xylene	ND	0.500	H	µg/L	1	11/8/2021 6:20:37 PM
Naphthalene	ND	1.25	H	µg/L	1	11/8/2021 6:20:37 PM
Surr: Dibromofluoromethane	103	80 - 120	H	%Rec	1	11/8/2021 6:20:37 PM
Surr: Toluene-d8	100	80 - 120	H	%Rec	1	11/8/2021 6:20:37 PM
Surr: 1-Bromo-4-fluorobenzene	100	80 - 120	H	%Rec	1	11/8/2021 6:20:37 PM

Analytical Report

Work Order: **2110315**
Date Reported: **11/11/2021**

CLIENT: G-Logics
Project: Mossman

Lab ID: 2110315-009 **Collection Date:** 10/21/2021 1:40:00 PM
Client Sample ID: **GLB-16-GW** **Matrix:** Groundwater

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 34162		Analyst: MM
Diesel (Fuel Oil)	5,120	98.6	SGT	µg/L	1	11/9/2021 4:20:49 PM
Diesel (Fuel Oil)	4,970	98.6		µg/L	1	10/26/2021 6:51:58 PM
Heavy Oil	ND	98.6		µg/L	1	10/26/2021 6:51:58 PM
Heavy Oil	ND	98.6	SGT	µg/L	1	11/9/2021 4:20:49 PM
Total Petroleum Hydrocarbons	5,120	197	BSGT	µg/L	1	11/9/2021 4:20:49 PM
Total Petroleum Hydrocarbons	4,970	197		µg/L	1	10/26/2021 6:51:58 PM
Surr: 2-Fluorobiphenyl	90.3	50 - 150		%Rec	1	10/26/2021 6:51:58 PM
Surr: 2-Fluorobiphenyl	105	50 - 150	SGT	%Rec	1	11/9/2021 4:20:49 PM
Surr: o-Terphenyl	99.8	50 - 150		%Rec	1	10/26/2021 6:51:58 PM
Surr: o-Terphenyl	123	50 - 150	SGT	%Rec	1	11/9/2021 4:20:49 PM

NOTES:
SGT - Silica Gel Treatment

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260D				Batch ID: 34341		Analyst: CR
Benzene	ND	0.440	H	µg/L	1	11/8/2021 6:50:43 PM
Toluene	ND	0.750	H	µg/L	1	11/8/2021 6:50:43 PM
Ethylbenzene	ND	0.400	H	µg/L	1	11/8/2021 6:50:43 PM
m,p-Xylene	ND	1.00	H	µg/L	1	11/8/2021 6:50:43 PM
o-Xylene	ND	0.500	H	µg/L	1	11/8/2021 6:50:43 PM
Naphthalene	ND	1.25	H	µg/L	1	11/8/2021 6:50:43 PM
Surr: Dibromofluoromethane	102	80 - 120	H	%Rec	1	11/8/2021 6:50:43 PM
Surr: Toluene-d8	100	80 - 120	H	%Rec	1	11/8/2021 6:50:43 PM
Surr: 1-Bromo-4-fluorobenzene	100	80 - 120	H	%Rec	1	11/8/2021 6:50:43 PM

Work Order: 2110315
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

Total Organic Carbon by SM 5310C

Sample ID: **MB-R70840** SampType: **MBLK** Units: **mg/L** Prep Date: **10/27/2021** RunNo: **70840**
Client ID: **MBLKW** Batch ID: **R70840** Analysis Date: **10/27/2021** SeqNo: **1440962**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	ND	0.500									

Sample ID: **LCS-R70840** SampType: **LCS** Units: **mg/L** Prep Date: **10/27/2021** RunNo: **70840**
Client ID: **LCSW** Batch ID: **R70840** Analysis Date: **10/27/2021** SeqNo: **1440963**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	5.02	0.500	5.000	0	100	93.1	106				

Sample ID: **2110315-003CDUP** SampType: **DUP** Units: **mg/L** Prep Date: **10/27/2021** RunNo: **70840**
Client ID: **MW-4** Batch ID: **R70840** Analysis Date: **10/27/2021** SeqNo: **1440966**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	11.5	0.500						11.22	2.12	20	

Sample ID: **2110315-003CMS** SampType: **MS** Units: **mg/L** Prep Date: **10/27/2021** RunNo: **70840**
Client ID: **MW-4** Batch ID: **R70840** Analysis Date: **10/27/2021** SeqNo: **1440967**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	16.0	0.500	5.000	11.22	95.8	69.1	124				

Sample ID: **2110315-003CMSD** SampType: **MSD** Units: **mg/L** Prep Date: **10/27/2021** RunNo: **70840**
Client ID: **MW-4** Batch ID: **R70840** Analysis Date: **10/27/2021** SeqNo: **1440968**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Organic Carbon	15.8	0.500	5.000	11.22	91.6	69.1	124	16.01	1.30	30	

Work Order: 2110315
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

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

Sample ID: **LCS-34145** SampType: **LCS** Units: **µg/L** Prep Date: **10/22/2021** RunNo: **70787**
Client ID: **LCSW** Batch ID: **34145** Analysis Date: **10/26/2021** SeqNo: **1439716**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	1,050	198	991.6	0	106	55	117				
Surr: 2-Fluorobiphenyl	17.3		19.83		87.0	50	150				
Surr: o-Terphenyl	23.0		19.83		116	50	150				

Sample ID: **MB-34145** SampType: **MBLK** Units: **µg/L** Prep Date: **10/22/2021** RunNo: **70787**
Client ID: **MBLKW** Batch ID: **34145** Analysis Date: **10/26/2021** SeqNo: **1439717**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	98.2									
Heavy Oil	ND	98.2									
Total Petroleum Hydrocarbons	ND	196									
Surr: 2-Fluorobiphenyl	17.5		19.64		89.1	50	150				
Surr: o-Terphenyl	20.4		19.64		104	50	150				

Sample ID: **2110292-001BMS** SampType: **MS** Units: **µg/L** Prep Date: **10/22/2021** RunNo: **70787**
Client ID: **BATCH** Batch ID: **34145** Analysis Date: **10/26/2021** SeqNo: **1439721**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	2,170	199	994.8	944.0	123	37.1	131				
Surr: 2-Fluorobiphenyl	17.9		19.90		90.1	50	150				
Surr: o-Terphenyl	22.2		19.90		112	50	150				

Sample ID: **2110302-001ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **10/22/2021** RunNo: **70787**
Client ID: **BATCH** Batch ID: **34145** Analysis Date: **10/26/2021** SeqNo: **1439729**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	99.0						0		30	
Heavy Oil	ND	99.0						0		30	
Total Petroleum Hydrocarbons	ND	198						0		30	

Work Order: 2110315
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

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

Sample ID: **2110302-001ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **10/22/2021** RunNo: **70787**
Client ID: **BATCH** Batch ID: **34145** Analysis Date: **10/26/2021** SeqNo: **1439729**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: 2-Fluorobiphenyl	16.5		19.81		83.5	50	150		0		
Surr: o-Terphenyl	17.9		19.81		90.6	50	150		0		

Sample ID: **MB-34162** SampType: **MBLK** Units: **µg/L** Prep Date: **10/25/2021** RunNo: **70822**
Client ID: **MBLKW** Batch ID: **34162** Analysis Date: **10/26/2021** SeqNo: **1440575**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	98.9									
Heavy Oil	ND	98.9									
Total Petroleum Hydrocarbons	ND	198									
Surr: 2-Fluorobiphenyl	20.0		19.79		101	50	150				
Surr: o-Terphenyl	22.3		19.79		113	50	150				

Sample ID: **LCS-34162** SampType: **LCS** Units: **µg/L** Prep Date: **10/25/2021** RunNo: **70822**
Client ID: **LCSW** Batch ID: **34162** Analysis Date: **10/26/2021** SeqNo: **1440576**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	923	196	981.8	0	94.1	55	117				
Surr: 2-Fluorobiphenyl	19.1		19.64		97.3	50	150				
Surr: o-Terphenyl	24.9		19.64		127	50	150				

Sample ID: **2110315-008BMS** SampType: **MS** Units: **µg/L** Prep Date: **10/25/2021** RunNo: **70822**
Client ID: **GLB-15-GW** Batch ID: **34162** Analysis Date: **10/26/2021** SeqNo: **1440583**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	9,770	198	988.5	9,287	48.6	37.1	131				
Surr: 2-Fluorobiphenyl	19.3		19.77		97.4	50	150				
Surr: o-Terphenyl	20.1		19.77		102	50	150				

Work Order: 2110315
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

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

Sample ID: **2110315-009BDUP** SampType: **DUP** Units: **µg/L** Prep Date: **10/25/2021** RunNo: **70822**
Client ID: **GLB-16-GW** Batch ID: **34162** Analysis Date: **10/26/2021** SeqNo: **1440585**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	4,350	99.5						4,968	13.4	30	
Heavy Oil	ND	99.5						0		30	
Total Petroleum Hydrocarbons	4,350	199						4,968	13.4	30	
Surr: 2-Fluorobiphenyl	16.8		19.91		84.5	50	150		0		
Surr: o-Terphenyl	19.6		19.91		98.4	50	150		0		

Sample ID: **MB-34145** SampType: **MBLK** Units: **µg/L** Prep Date: **10/22/2021** RunNo: **70787**
Client ID: **MBLKW** Batch ID: **34145** Analysis Date: **11/9/2021** SeqNo: **1448762**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	124	98.2									SGT
Heavy Oil	429	98.2									SGT
Total Petroleum Hydrocarbons	553	196									SGT
Surr: 2-Fluorobiphenyl	18.6		19.64		94.6	50	150				SGT
Surr: o-Terphenyl	22.3		19.64		114	50	150				SGT

NOTES:
SGT - Silica Gel Treatment

Sample ID: **LCS-34145** SampType: **LCS** Units: **µg/L** Prep Date: **10/22/2021** RunNo: **70787**
Client ID: **LCSW** Batch ID: **34145** Analysis Date: **11/9/2021** SeqNo: **1448763**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	1,190	198	991.6	0	120	55	117				BSSGT
Surr: 2-Fluorobiphenyl	18.8		19.83		94.8	50	150				SGT
Surr: o-Terphenyl	26.1		19.83		132	50	150				SGT

NOTES:
SGT - Silica Gel Treatment

Work Order: 2110315
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

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

Sample ID: **LCS-34162** SampType: **LCS** Units: **µg/L** Prep Date: **10/25/2021** RunNo: **70822**
Client ID: **LCSW** Batch ID: **34162** Analysis Date: **11/9/2021** SeqNo: **1448846**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	860	196	981.8	0	87.6	55	117				BSGT
Surr: 2-Fluorobiphenyl	17.5		19.64		89.1	50	150				SGT
Surr: o-Terphenyl	24.0		19.64		122	50	150				SGT

NOTES:
SGT - Silica Gel Treatment

Sample ID: **MB-34162** SampType: **MBLK** Units: **µg/L** Prep Date: **10/25/2021** RunNo: **70822**
Client ID: **MBLKW** Batch ID: **34162** Analysis Date: **11/9/2021** SeqNo: **1448847**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	143	98.9									SGT
Heavy Oil	477	98.9									SGT
Total Petroleum Hydrocarbons	620	198									SGT
Surr: 2-Fluorobiphenyl	21.6		19.79		109	50	150				SGT
Surr: o-Terphenyl	25.2		19.79		127	50	150				SGT

NOTES:
SGT - Silica Gel Treatment

Sample ID: **2110315-008BMS** SampType: **MS** Units: **µg/L** Prep Date: **10/25/2021** RunNo: **70822**
Client ID: **GLB-15-GW** Batch ID: **34162** Analysis Date: **11/9/2021** SeqNo: **1448848**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Total Petroleum Hydrocarbons	9,410	198	988.5	7,946	148	37.1	131				SSGT
Surr: 2-Fluorobiphenyl	20.8		19.77		105	50	150				SGT
Surr: o-Terphenyl	18.1		19.77		91.5	50	150				SGT

NOTES:
S - Analyte concentration was too high for accurate spike recovery(ies).
SGT - Silica Gel Treatment

Work Order: 2110315
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

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

Sample ID: **2110315-009BDUP** SampType: **DUP** Units: **µg/L** Prep Date: **10/25/2021** RunNo: **70822**
Client ID: **GLB-16-GW** Batch ID: **34162** Analysis Date: **11/9/2021** SeqNo: **1448850**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	3,890	99.5						5,118	27.2	30	SGT
Heavy Oil	ND	99.5						0		30	SGT
Total Petroleum Hydrocarbons	3,890	199						5,118	27.2	30	BSGT
Surr: 2-Fluorobiphenyl	17.2		19.91		86.4	50	150		0		SGT
Surr: o-Terphenyl	17.2		19.91		86.2	50	150		0		SGT

NOTES:
SGT - Silica Gel Treatment

Work Order: 2110315
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **LCS-34341** SampType: **LCS** Units: **µg/L** Prep Date: **11/8/2021** RunNo: **71118**
Client ID: **LCSW** Batch ID: **34341** Analysis Date: **11/8/2021** SeqNo: **1447446**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	20.8	0.440	20.00	0	104	80	120				
Toluene	20.4	0.750	20.00	0	102	80	120				
Ethylbenzene	20.9	0.400	20.00	0	104	80	120				
m,p-Xylene	40.3	1.00	40.00	0	101	80	120				
o-Xylene	20.6	0.500	20.00	0	103	80	120				
Naphthalene	21.4	1.25	20.00	0	107	80	120				
Surr: Dibromofluoromethane	26.0		25.00		104	80	120				
Surr: Toluene-d8	26.0		25.00		104	80	120				
Surr: 1-Bromo-4-fluorobenzene	26.4		25.00		106	80	120				

Sample ID: **MB-34341** SampType: **MBLK** Units: **µg/L** Prep Date: **11/8/2021** RunNo: **71118**
Client ID: **MBLKW** Batch ID: **34341** Analysis Date: **11/8/2021** SeqNo: **1447445**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	0.440									
Toluene	ND	0.750									
Ethylbenzene	ND	0.400									
m,p-Xylene	ND	1.00									
o-Xylene	ND	0.500									
Naphthalene	ND	1.25									
Surr: Dibromofluoromethane	27.2		25.00		109	80	120				
Surr: Toluene-d8	26.3		25.00		105	80	120				
Surr: 1-Bromo-4-fluorobenzene	24.1		25.00		96.2	80	120				

Sample ID: **2110512-008ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **11/8/2021** RunNo: **71118**
Client ID: **BATCH** Batch ID: **34341** Analysis Date: **11/8/2021** SeqNo: **1447432**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	0.724	0.440						0.8784	19.3	30	

Work Order: 2110315
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **2110512-008ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **11/8/2021** RunNo: **71118**
Client ID: **BATCH** Batch ID: **34341** Analysis Date: **11/8/2021** SeqNo: **1447432**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Toluene	ND	0.750						0.8535	18.1	30	
Ethylbenzene	ND	0.400						0.7428	200	30	R
m,p-Xylene	1.54	1.00						1.872	19.3	30	
o-Xylene	0.618	0.500						0.7353	17.4	30	
Naphthalene	ND	1.25						0		30	
Surr: Dibromofluoromethane	25.2		25.00		101	80	120		0		
Surr: Toluene-d8	25.1		25.00		100	80	120		0		
Surr: 1-Bromo-4-fluorobenzene	23.7		25.00		94.9	80	120		0		

NOTES:
R - High RPD due to low analyte concentration. In this range, high RPD's may be expected.

Sample ID: **2111047-002ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **11/8/2021** RunNo: **71118**
Client ID: **BATCH** Batch ID: **34341** Analysis Date: **11/9/2021** SeqNo: **1447442**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	0.621	0.440						0.6147	1.06	30	
Toluene	ND	0.750						0		30	
Ethylbenzene	ND	0.400						0.6275	200	30	R
m,p-Xylene	1.48	1.00						1.464	1.26	30	
o-Xylene	ND	0.500						0		30	
Naphthalene	ND	1.25						0		30	
Surr: Dibromofluoromethane	26.4		25.00		106	80	120		0		
Surr: Toluene-d8	25.6		25.00		102	80	120		0		
Surr: 1-Bromo-4-fluorobenzene	25.3		25.00		101	80	120		0		

NOTES:
R - High RPD due to low analyte concentration. In this range, high RPD's may be expected.

Work Order: 2110315
CLIENT: G-Logics
Project: Mossman

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260D

Sample ID: **2111047-001AMS** SampType: **MS** Units: **µg/L** Prep Date: **11/8/2021** RunNo: **71118**
Client ID: **BATCH** Batch ID: **34341** Analysis Date: **11/9/2021** SeqNo: **1447698**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	23.2	0.440	20.00	0	116	76.9	135				
Toluene	22.2	0.750	20.00	0.6056	108	76.2	131				
Ethylbenzene	20.2	0.400	20.00	0	101	82.1	129				
m,p-Xylene	43.1	1.00	40.00	0	108	84.3	123				
o-Xylene	20.8	0.500	20.00	0	104	83.5	122				
Naphthalene	20.3	1.25	20.00	0	102	60.3	141				
Surr: Dibromofluoromethane	28.7		25.00		115	80	120				
Surr: Toluene-d8	27.0		25.00		108	80	120				
Surr: 1-Bromo-4-fluorobenzene	26.5		25.00		106	80	120				

Sample Log-In Check List

Client Name:	**GL**	Work Order Number:	**2110315**
Logged by:	**Gabrielle Coeuille**	Date Received:	**10/21/2021 4:35:00 PM**

Chain of Custody

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

Log In

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

Special Handling (if applicable)

18.	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: _____

19. Additional remarks:

Item Information

Item #	Temp ºC
Sample 1	5.5

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

Chain of Custody Record & Laboratory Services Agreement

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 10/21/21 Page: 1 of:

Laboratory Project No (internal): 2110315

Project Name: Mossman

Special Remarks:

Project No: 01-0864-D

Client: GeoEngineers

Collected by: Tiffany Query/Pamela Fleming

Address: 40 2nd Ave SE

Location: Snoqualmie, WA 98027

City, State, Zip: Issaquah, WA 98027

Report To (PM):

Sample Disposal: ☐ Return to client ☐ Disposal by lab (after 30 days)

Telephone:

PM Email:

Fax:

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)	TOC				Comments
1 MW-1	10/21/21	0927	GW	4				X												
2 MW-3		0959		↓				X												
3 MW-4		1148		5				X							X					
4 MW-7		1232		4																
5 GLB-12-GW		1100																		
6 GLB-13-GW		1115																		
7 GLB-14-GW		1155																		
8 GLB-15-GW		1215																		
9 GLB-16-GW	↓	1348	↓	↓				↓												
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	Chris Smith	10/21/21 1625	x Alex Trejo	Alex Trejo	10-21-21 16:35
Relinquished (Signature)	Print Name	Date/Time	Received (Signature)	Print Name	Date/Time
x			x		

Chain of Custody Record & Laboratory Services Agreement

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 10/21/21 Page: 1 of:

Laboratory Project No (internal): 2110315

Project Name: Mossman

Special Remarks: Edits per TQ, Std TAT, 11/3/21 -CG

Project No: 01-0864-D

Client: GeoEngineers

Collected by: Tiffany Query/Pamela Fleming

Address: 40 2nd Ave SE

Location: Issaquah, WA 98027

City, State, Zip: Issaquah, WA 98027

Report To (PM):

Sample Disposal: ☐ Return to client ☐ Disposal by lab (after 30 days)

Telephone:

PM Email:

Fax:

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)	TOC	BTEX&Naph		Comments
1 MW-1	10/21/21	0927	GW	4				X											
2 MW-3		0959						X											
3 MW-4		1148		5				X							X		X		DX w/ Silica Gel Cleanup
4 MW-7		1232		4															
5 GLB-12-GW		1100																	
6 GLB-13-GW		1115																	
7 GLB-14-GW		1155																	
8 GLB-15-GW		1215															X		DX w/ Silica Gel Cleanup
9 GLB-16-GW		1348															X		DX w/ Silica Gel Cleanup
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	Chris Smith	10/21/21 1625	x	Alex Trejo	10-21-21 16:35
Relinquished (Signature)	Print Name	Date/Time	Received (Signature)	Print Name	Date/Time
x			x		

ATTACHMENTS

Permission and Conditions for Use and Copying Form

2021 Soil and Groundwater Sampling
Mossman Residence
3461 East Lake Sammamish Shore Lane NE
Sammamish, WA 98074

G-Logics Project 01-0864-D
January 11, 2022

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- I understand and accept that there may be limitations to the reliability of the Document's findings due to circumstances beyond the control of G-Logics, the limited scope of funding, and/or limitations inherent in the nature of the performed services.
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Mailing Address _____

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Contact Name & Title _____

Signature & Date _____

Telephone & Fax Numbers _____

Planned Use of Document _____

_____

_____

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Client Review and Acknowledgment of Use and Copying Request

Per the notification of G-Logics, I, the Client, have reviewed this request for copying/use of this Document, have discussed the request with G-Logics, and grant my consent as indicated by my signature below.

Client Company _____

Client Contact Name & Title _____

Signature & Date _____

Telephone & Fax Numbers _____

G-Logics review and Acknowledgment of Use and Copying Request

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Title _____

Date _____