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Geologic and Environmental Consulting Services

Jim Orr, RG
Oregon Department of Environmental Quality
NW Region Cleanup Program
700 NE Multnomah Street, Suite 600
Portland Oregon, 97232

November 5, 2024

Transmitted via email

Subject: **Work Plan for Interim Excavation Cleanup and Storm Drain Repair**
Lawrence Oil Company Bulk Plant (AKA St. Helens Pacific Pride)
845 N. Columbia River Hwy, Saint Helens, Oregon
OERS # 2024-2684

Mr. Orr:

Martin S. Burck Associates, Inc. (MSBA) has prepared this work plan for interim (emergency) excavation cleanup and storm drain excavation/repair activities at the property referenced above. The interim excavation will target shallow soil (approx. 0”-12”) containing product released from the oil water separator (OWS). The site features are shown on the attached site map. This material is primarily comprised of imported fill consisting of crushed rock (1” to ¾” minus or similar) and underlying imported (?) 3” to 4” crushed rock. The approximate maximum extent of the interim cleanup is shown on the attached site map. This outline represents the approximate areas of imported crushed rock, historically used for parking and storage. No excavation will occur in native, natural, or heavily vegetated areas in proximity of the wetland. Any work performed in or proximal to the wetland will be done when, and only when all required permits, notifications, and DEQ authorizations have been satisfied.

The interim excavation will begin at the oil water separator and continue in all directions until the presence of product is no longer observed, or the maximum extent is reached as illustrated on the attached site map. The purpose is to remove all readily available product and prevent any further migration or incursion into the adjacent wetland area. Confirmation sidewall samples will be collected at 20-30 foot intervals along the perimeter of the interim excavation for analysis to characterize the remaining material in furtherance of the overall site investigation. In addition, a

damaged stormwater line connected to the OWS will be replaced. The length of the trench will be observed and field-screened for possible indications of petroleum hydrocarbons and/or product. Samples will be collected for analysis at various locations along the trench, as warranted, and analyzed in furtherance of the overall site investigation.

This work will be performed in accordance with the following:

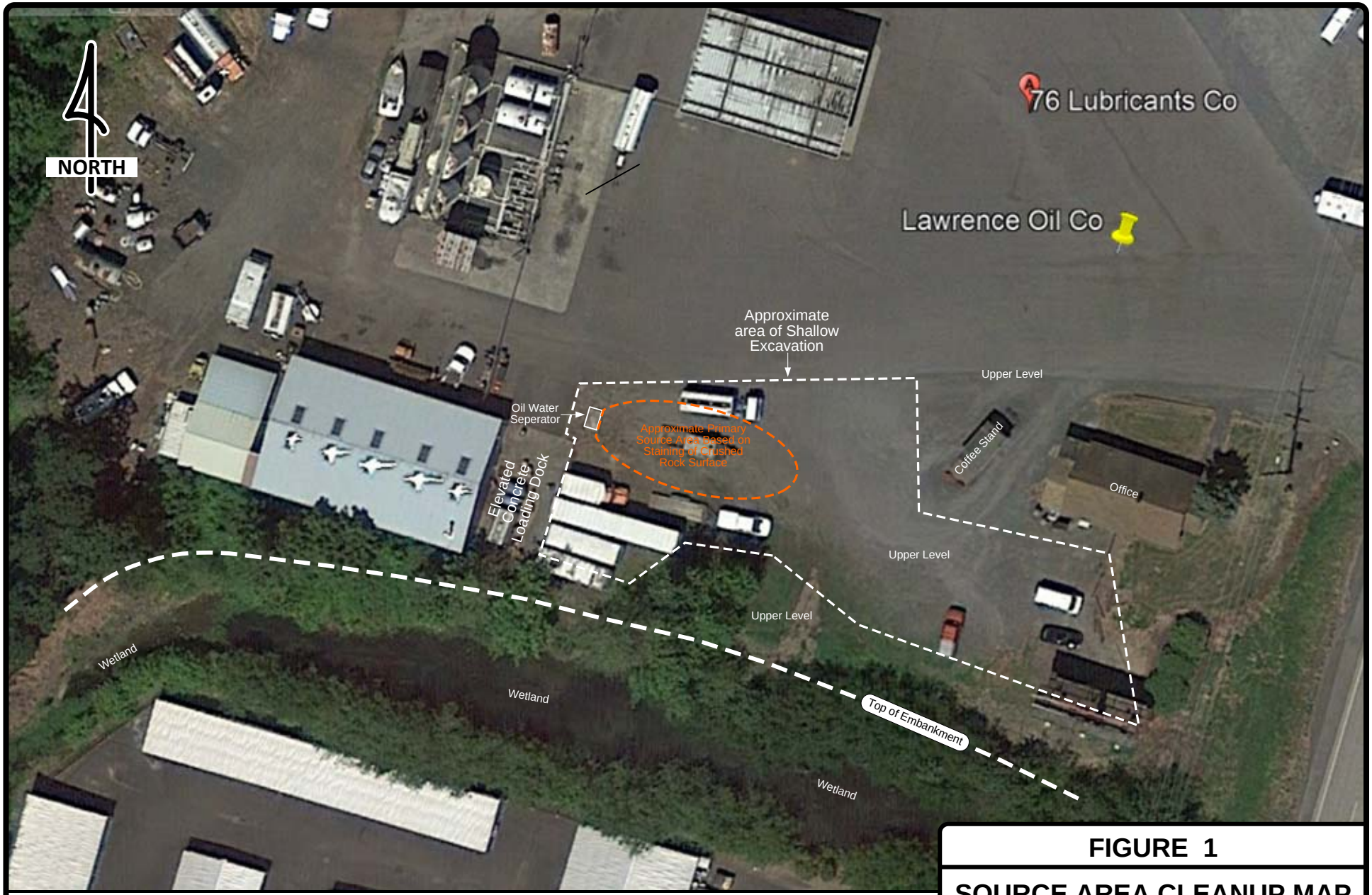
1. Oregon Department of Environmental Quality (DEQ) Risk-Based Decision Making for the Remediation of Contaminated Sites, updated in October 2017.
2. MSBA Field Methods and Procedures (attached).

Soil samples will be analyzed for diesel using method NWTPH-Dx. Selected samples will be analyzed for hydrocarbon identification (NWTPH-HCID), full list volatile organic compounds (8260), polycyclic aromatic hydrocarbons (PAHs) (8270), and RCRA 8 metals.

Sincerely,

Martin S. Burck Associates, Inc.

Martin S. Burck, LG/RG
Licensed/Registered Geologist: OR, WA, CA



Adapted from Google Earth Imagery (Imagery Date 7/23/2016)

Revised: 11/5/2024 1:02 PM

MSBA

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FIGURE 1

SOURCE AREA CLEANUP MAP

Lawrence Oil Company Bulk Plant
845 N. Columbia River Hwy, Saint Helens, Oregon
OERS # 2024-2684

S:\Project Files\Lawrence Oil Co - St Helens\Figures\Lawrence Oil - Source Area Cleanup Map.vsd

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FIELD METHODS AND PROCEDURES

General Field Methods and Procedures

The following section presents the general methods and procedures that are utilized to complete field activities. These activities include advancing borings and collecting soil and groundwater samples for laboratory analyses. Samples are collected, preserved, and transported for analysis in general accordance with DEQ methodology as presented in OAR 340-122-345 "Sample Collection Methods," and OAR 340-122-218 “Sampling and Analysis.” If not specified by current DEQ regulations, sampling and analytical methods are implemented in general accordance with EPA protocol and/or commonly accepted industry standards for this time and place.

Utility Locating

Utilities, including overhead and underground, are identified and located prior to conducting work at the site. For overhead utilities, a safe minimum working distance is maintained with all sampling equipment dependant on the activity. For drilling or direct push equipment, a minimum 15-20 foot buffer is recommended. For other work such as excavation by backhoe, hand augering, hand probing, etc., a minimum distance is maintained such that the sampling equipment cannot come in contact with the utilities.

Underground utilities are located by contacting Utility Notification Center (UNC) for all underground sampling, excavation, and all other activities performed below the surface. The notification is performed at least 48 hours in advance of the work or as required by local laws and regulations to allow sufficient time for marking of the affected utilities. When warranted, MSBA will arrange on-site meetings with the contracted locators for the utilities to resolve any issues of proximity to the planned work.

In addition to contacting the UNC, MSBA may also perform one or more of the following activities intended to help prevent incidental contact with underground utilities during subsurface activities.

1) **Field Observation**: MSBA observes the site and surroundings for any signs of overhead and/or underground utilities.

2) **Private Utility Locate**: MSBA may contract with private utility locators if warranted to provide additional clarification of potential utilities and their locations.

3) **Hand Clearing**: MSBA may clear up to a maximum of the first five feet of subsurface soil for potential underground utilities by hand digging, hand augering, or air knifing.

Grab Soil Sampling

Grab soil samples are collected by hand or using a decontaminated shovel or hand trowel directly from surface/shallow soil or the sidewalls/base of a test pit or excavation area up to a depth of 4 feet below surface grade (bsg). At depths deeper than 4 feet bsg, soil samples are collected from an excavator bucket. The excavator bucket may be decontaminated prior to sampling. Just prior to collecting each sample, several inches of soil are removed exposing a fresh surface to be sampled. Soil samples are collected with a minimum amount of disturbance.

Soil samples are placed into laboratory provided wide-mouth glass jars, leaving as little headspace as possible. Soil samples are also collected in 40 milliliter (ml) volatile organic analysis (VOA) EPA method 5035 vials with a preservative. The jar is immediately sealed firmly with a Teflon-lined screw cap. After the samples are properly sealed, they are placed in an ice chest with ice and maintained at a temperature of 4° C (+/- 2° C) until preparation for analysis by the laboratory. Soil samples are analyzed within the laboratory designated hold times.

Disposable latex gloves are worn by the sampler and discarded after each sample. Sampling equipment is thoroughly cleaned and decontaminated between sampling events to help eliminate the potential for cross-contamination between samples. Each sample is clearly labeled with a unique name. A written record is maintained which includes, but is not limited to, the date, time, and location where the sample is collected, and any conditions which may have affected the sample integrity.

Drilling Method and Soil Sampling

Subsurface explorations are completed using drilling equipment operated by a licensed drilling subcontractor. The drilling method is selected based on the anticipated subsurface conditions. In general, push-probe or hollow-stem methods are utilized for softer silty soils and sonic or air-rotary methods are utilized for harder, rocky conditions. An MSBA representative oversees and directs the explorations and obtains all soil and groundwater samples.

Soil samples are collected by MSBA and placed into laboratory provided wide-mouth glass jars, leaving as little headspace as possible. Soil samples are also collected in 40 ml VOA EPA method 5035 vials with a preservative. The jar is immediately sealed firmly with a Teflon-lined screw cap. After the samples are properly sealed, they are placed in an ice chest with ice and maintained at a temperature of 4° C (+/- 2° C) until preparation for analysis by the laboratory. Soil samples are analyzed within the laboratory designated hold times.

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Hand Auger Soil Boring and Sampling

Auger borings are advanced by hand. Samples of soil are collected directly from the barrel of the auger at the target depth or as warranted based on observed conditions. A written record is maintained which includes, but is not limited to, the date, time, and location where the sample is collected, and any unusual conditions which may affect the sample integrity.

Soil samples are collected by MSBA and placed into laboratory provided wide-mouth glass jars, leaving as little headspace as possible. Soil samples are also collected in 40 ml VOA EPA method 5035 vials with a preservative. The jar is immediately sealed firmly with a Teflon-lined screw cap. After the samples are properly sealed, they are placed in an ice chest with ice and maintained at a temperature of 4° C (+/- 2° C) until preparation for analysis by the laboratory. Soil samples are analyzed within the laboratory designated hold times.

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Soil Field Screening Methods

Field screening methods consist of visual observations, water sheen screening, and/or headspace vapor screening using a MiniRAE photoionization detector (PID). Visual screening methods include observations of staining, discoloration, and other indicators of petroleum. Water sheen screening involves placing a small amount of soil into water and making observations of any sheens. Water sheen classifications are made as follows:

No Sheen:	No visible sheen on the water surface.
Slight Sheen:	Faint and dull sheen with no color; dissipates quickly. Naturally occurring organic matter may produce a slight sheen.
Moderate Sheen:	May have some color or iridescence; spread of sheen is irregular to flowing; most of water surface covered with sheen.
Heavy Sheen:	Obvious color and iridescence; spread is rapid; entire water surface may be covered with sheen.

Headspace vapor screening is conducted by creating a small hole in the soil core or placing a small portion of soil into a Zip-Loc bag and sealing it shut. The probe of the PID is inserted into the soil core. The soil sample within the bag is allowed to volatilize and the probe of the PID is inserted into the bag. The reported accuracy of a MiniRAE PID is 10% discrepancy at concentrations between 1 and 2,000 ppm and 20% discrepancy at concentrations greater than 2,000 ppm. The PID is calibrated in accordance with the manufacturer recommended procedures prior to each day of use.

Temporary Well Installation

Following completion of the soil borings, temporary wells may be installed to allow for groundwater level monitoring and sample collection. Following completion of the groundwater level monitoring and sampling, the temporary well is abandoned within 72 hours in accordance with the Oregon Water Resources Department standards.

Well Development

Following installation, the temporary wells are developed to remove fines and to enhance the recharge and representative quality of water if sufficient water column and recharge is present. The development is performed using a bailer or pump (peristaltic or submersible). The well may be surged prior to development. Well development continues until the discharge is relatively sediment free. Well development may be discontinued if there is insufficient recharge.

Monitoring Well Elevation Survey

The top of each well casing is surveyed to within plus or minus (+/-) 0.01-foot relative to a common temporary benchmark. A temporary benchmark is designated with an assumed elevation relative to the approximate surface elevation above mean sea level (msl). The surveyed locations are marked on each casing for future reference and measuring. The purpose of the survey is to allow precise correlation of measured groundwater levels between each of the wells at the site. The survey information is recorded on a Site Survey Data sheet (see attached).

Groundwater Level Monitoring

The depth to groundwater (water level) is measured with an electronic, hand-held, water level indicator. The probe of the indicator is lowered in the well until contact with groundwater completes a circuit causing a buzzer to activate. The depth to water, measured from the surveyed point at the top of the well casing, is read directly from a graduated cord attached to the probe with marked increments of 0.01-foot. The measurements are recorded on a Groundwater Level Data sheet (see attached).

If present, free product thickness in a well is measured with an electronic, hand-held oil/water interface probe. The oil/water interface probe is lowered into the well until contact with fluids initiates a signal tone. An intermittent tone indicates water and a continuous tone indicates product. A measuring tape in increments of 0.01-foot is attached to the probe and is used to measure thickness of product in a well.

Groundwater Sampling

Prior to collecting a sample for laboratory analysis, the depth to water is measured and the wetted casing length and corresponding well volume is calculated. A minimum of three well volumes of groundwater is then purged with a bailer, submersible pump or peristaltic pump to remove potentially stagnant groundwater and allow the surrounding formation water to enter the well for sampling. During the purging process, the pH, conductivity, and turbidity may be monitored until these parameters are stabilized to confirm that representative formation water is collected for analysis. Stable parameters are generally defined by three successive readings within plus or minus 0.1 for pH, 3 percent for conductivity, and 10 percent for turbidity. Parameter stabilization is typically achieved in less than three well volumes.

After purging, a groundwater sample is collected when the water level in the well has recharged to within 85 percent of the initial static water level. If the desired amount of recharge is not achieved within a period of 60 minutes, the sample is collected and the deficient water level is recorded. If the water column does not contain sufficient volume, the sample may be collected incrementally as recharge allows. The sample is collected from the well using a bailer, submersible pump, or peristaltic pump with dedicated tubing, under low flow conditions to minimize the loss of volatile components, if present.

The groundwater is transferred into laboratory provided 40 ml glass VOA vials, one liter amber glass jars, and 250 ml polyethylene bottles. Some containers may contain a preservative. The type of container, and whether or not it is preserved, is determined by the type of laboratory analysis to be performed. Groundwater samples collected in VOAs are transferred with minimal agitation and sealed with Teflon-lined septum lids so that no head space is present. Samples collected in VOA vials are submitted for volatile organic compound (VOC) analysis. The vials may contain 2-5 drops of dilute HCL as a preservative increasing the sample hold time from 7 to 14 days. Groundwater samples are collected in preserved or non-preserved one liter amber glass jars for analysis of non-volatile petroleum constituents. Groundwater samples are collected in non-preserved 250 ml polyethylene bottles for analysis of metals. Samples collected for analysis of dissolved metals are filtered in the field to remove 0.45 micron size particles or immediately upon receipt by the laboratory. Samples collected for analysis of total metals are not filtered. Groundwater purge and sample data is recorded on a Groundwater Purge and Sample Data sheet (see attached). After the samples are properly sealed, they are placed immediately in an ice chest with ice and maintained at a temperature of 4° C (+/- 2° C) until being prepared by the laboratory for analysis.

Subslab/Soil Vapor and Air Sampling Procedures

Soil vapor, subslab vapor, and air samples are collected in general accordance with The Interstate Technology and Regulatory Council Vapor Intrusion Team guidance document titled, *Vapor Intrusion, Fundamentals of Screening, Investigation, and Management*, dated October 2014, and the Oregon Department of Environmental Quality (DEQ) guidance document titled, *Guidance for Assessing and Remediating Vapor Intrusion in Buildings* (GARVIB) dated March 25, 2010.

Subslab Vapor Sample Point Location and Installation

Upon entry to each building, MSBA inspects concrete floor to the extent possible based on exposure, for significant features including cracks, holes, and penetrations that may allow ambient air to compromise sample integrity. Any observed significant features are documented in the field notes and the sample data sheets as supplemental information. Floor coverings may prevent observation of significant features. Prior to drilling through the slab, MSBA evaluates potential conflicts with utilities and may retain a private utility locating company, as needed.

A rotary hammer drill is used to create a 1-inch diameter sample collection hole that penetrates the slab and approximately 1 to 2 inches of subslab material. A stainless steel vapor point is connected to Teflon tubing and placed just beneath the bottom of the slab. Filter sand is placed in the void around the vapor point to just above the bottom of the slab. A 0.25 to 0.5 inch layer of granulated bentonite is placed above the sand but not hydrated. Portland cement or bentonite slurry is used to seal the remainder of the borehole to the surface. MSBA will allow sufficient time for subslab equilibration prior to sampling, typically 45 to 60 minutes.

Soil Vapor Sampling Point Installation - Hand-Operated Push Probe

Soil vapor sample points are installed in temporary borings advanced using a 3/4-inch diameter, hand-driven push probe. Typically, the push probe is advanced and soil vapor samples are collected at a depth of 5 feet bsg; however, high groundwater conditions may warrant shallower sampling depths. The probe is generally fitted with either a retractable or dedicated screened slotted vapor sample attachment depending on subsurface conditions. A Teflon tube extends from the sample attachment to the surface. When using the dedicated tip, the following procedure is observed: 1) filter sand is placed in the borehole from 5 feet to 4 feet bsg; 2) a 0.5-inch granulated bentonite barrier is placed on the sand and not hydrated; and 3) a bentonite/cement slurry is used to seal the remainder of the borehole to the surface. When using the retractable probe there is no annular space, however, a bentonite and/or cement slurry seal is placed at surface grade.

Soil Vapor Sampling Point Installation - Hand Auger

Soil vapor points are installed in temporary borings advanced using a 3.25-inch diameter, stainless-steel hand auger. Typically, the auger is advanced and soil vapor samples are collected at a depth of 5 feet bsg; however, high groundwater conditions may warrant shallower sampling depths. Approval is obtained if/when possible prior to collecting subsurface vapor samples shallower than 5 feet bsg. Colorado silica sand (or similar) is placed in the bottom 6 to 12 inches of the boring. A stainless-steel sampling screen, connected to Teflon tubing by a hose barb, is placed near the middle of the sanded interval. A thin layer of powdered bentonite is placed on top of the sand and the bore hole is sealed to within 0.5 foot of the surface using a bentonite and/or cement slurry. Following the installation of the seal, the teflon tubing is supported in a vertical orientation until the seal has dried to ensure that the tubing remains within the middle of the boring not touching the sides. A brass threaded compression fitting is used to seal the tubing while the boring is allowed to equilibrate post subsurface disturbance for a minimum of approximately 48 hours. Borings advanced in this manner

may be completed as semi-permanent soil vapor sampling points. Semi-permanent soil vapor points are sealed at the surface with concrete and a flush-mount monument of the same specifications and standards as a groundwater monitoring well in order to be protective of the groundwater.

Soil Vapor Sampling Point Installation - Drill Rig

Soil vapor points are installed in temporary borings using a drill rig (push probe, auger, or sonic methods). The boring diameter may range from 2.25 to 8 inches. The sampling point is constructed the same way as described above in the hand auger soil vapor sampling point installation procedures. Borings advanced in this manner may be completed as semi-permanent soil vapor sampling points. Semi-permanent soil vapor points are sealed at the surface with concrete and a flush-mount monument of the same specifications and standards as a groundwater monitoring well in order to be protective of the groundwater.

Subslab/Soil Vapor Sample Purging and Leak Detection

Prior to purging and sampling activities, the certified laboratory-provided sample collection manifold is vacuum tested. A vacuum of 30 inches of mercury is applied to the manifold by connecting it to the sample canister. The manifold is then sealed at both ends and monitored for 5 minutes to verify that no vacuum is lost. If any decrease in vacuum is observed, then the sample canister may have been compromised and is not used.

MSBA allows the temporary or semi-permanent boring advanced with a hand-driven push probe or drill rig push probe to equilibrate a minimum of 20 minutes and a hand auger or auger/sonic drill rig advanced boring to equilibrate a minimum of 48 hours prior to purging in general accordance with GARVIB. A total of 3 times the cumulative volume of air from the sampling point, manifold, and sand pack is purged at a maximum flow rate of approximately 200 mL/minute. The purging is completed using a peristaltic pump, spare sample canister, or dedicated syringe. Leak testing is performed using a 2-propanol filled shroud and a photoionization detector (PID) with 10.6 eV lamp to monitor concentrations of total volatile organic compounds (TVOCs) during the purge and sampling process. The 2-propanol concentration inside the shroud is estimated based on historic laboratory data collected by MSBA which demonstrates a generalized linear relationship between TVOCs and 2-propanol. The 2-propanol shroud concentration calculation methodology is presented on Page 10. After completing the purge process successfully, soil vapor samples are collected for analysis at the same flow rate as the purge. The soil vapor samples are subsequently submitted for laboratory analysis of 2-propanol to evaluate whether ambient air has compromised the sample due to short circuiting with the surface or leaking fittings on the manifold. The ambient air leak percent calculation methodology is presented on Page 10.

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Subslab/Soil Vapor Sample Collection and Analysis

MSBA begins collecting the soil vapor sample immediately after the purging has been completed. The sample is collected using either a sample canister and manifold for analysis by EPA method TO-15, or a sampling tube and fixed rate pump for analysis by EPA method TO-17. The collection method is determined prior to the sampling event by MSBA based on soil and groundwater analytical data. The initial vacuum of the sample canister is tested prior to sampling. The anticipated initial vacuum reading will range from approximately 27 to 30 inches of mercury.

Subslab/soil vapor samples selected for TO-15 analysis are collected using a laboratory-provided, evacuated sample canister and sampling manifold with an intake regulator that ensures that the sample collection flow rate is no greater than 200 mL/minute; collection rate varies depending on the subsurface conditions. MSBA continues sampling until the final vacuum of the sample canister has reached approximately 3 to 6 inches of mercury. MSBA documents the purging and sampling data/info on a Subslab/Soil Vapor Purge & Sample Data sheet (see attached).

Subslab/soil vapor samples selected for TO-17 analysis are collected using a laboratory-provided sampling tube. The soil vapor is drawn through the sampling tube at a rate of no greater than 200ml/min using a calibrated sampling pump or a disposable syringe connected to a manifold with intake regulator that ensures that the sample collection flow rate is no greater than 200 mL/minute. MSBA documents the purging and sampling data/info on a Subslab/Soil Vapor Purge & Sample Data sheet (see attached).

Indoor Air Sampling - Ambient and Outdoor

Prior to sampling, a building survey (as specified in Appendix E of the GARVIB) is performed and all occupants are asked to keep windows and exterior doors closed, to the extent practicable, to minimize the contribution of outdoor air. The number of indoor air samples and their locations are determined prior to the sampling event based on the results of the building survey. Samples are collected at breathing zone height, approximately 3-5 feet. During the indoor air sample collection period, an outdoor ambient air sample is also collected upwind of the building to evaluate background levels of PHCs. The ambient air sample is also placed at breathing zone height of approximately 3-5 feet. Air samples are collected during a 24-hour period for residential buildings and an 8-hour period for commercial buildings in order to simulate the respective exposure conditions. Purging and leak detection are not conducted due to the nature of this type of sample. Air samples selected for TO-15 (VOCs and/or gasoline) analysis are collected using a laboratory-provided, evacuated sample canister with an intake regulator or critical orifice assembly that ensures the sample collection time is no greater than 8 hours or 24 hours, depending on the project specifications. The volume of the sample canister is 1-liter or 6-liters, depending on the reporting limits required. In general, larger sample volumes achieve lower reporting limits.

Chain-of-Custody and Labeling

The Chain-of-Custody (COC) is a form that documents the custody of a sample from the time of origin to the time of disposal or destruction. A COC is initiated in the field at the time the samples are collected. The sampler documents such information as the time, date, type of sample, and requested analyses. Any individual in custody of the samples, including the laboratory, is required to document the transfer of custody (beginning with the sampler) by signing the COC (including date and time of transfer). Every sample collected for analysis or testing is maintained under COC protocol.

Equipment Decontamination

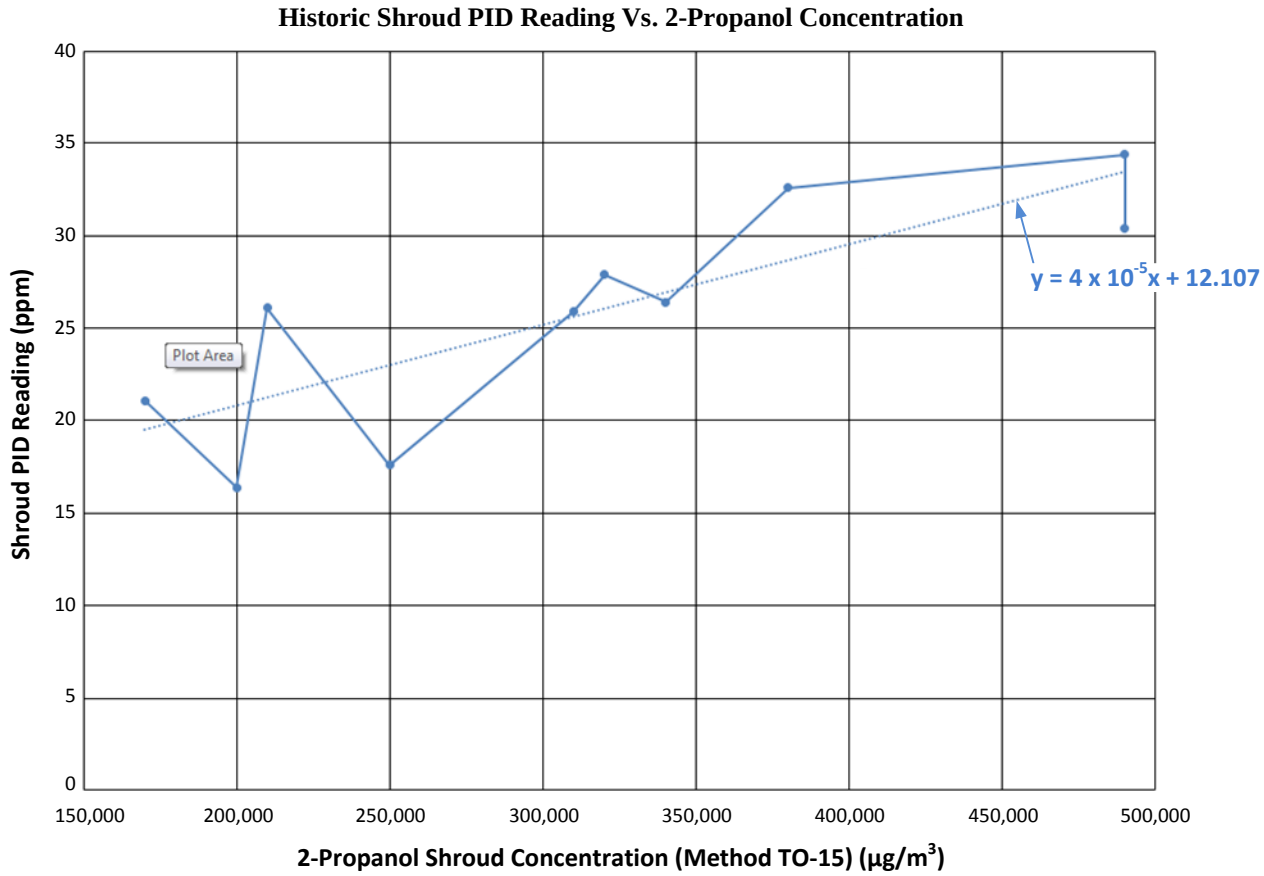
Equipment used to collect soil and groundwater samples such as; bailers, water level indicators, etc., is decontaminated prior to each use. Strict decontamination procedures are utilized to help eliminate the potential for cross-contamination between samples and sample locations.

The decontamination procedure includes a thorough washing in tap water with Liquinox followed by two rinses in tap water and a third and final spray rinse using distilled water. If time permits, the sampling equipment is allowed to air dry. Disposable latex gloves are worn during sampling to help eliminate the potential for cross-contamination by the sampler. The gloves are discarded after each sample event and a new pair is utilized for each subsequent sampling event.

Investigation Derived Waste

Investigation derived waste (IDW) accumulated during the eFiexplorations typically consists of soil, groundwater, or decontamination and rinse waters. Soil and water are collected and placed into suitable containers. A label is affixed to each storage container including the date, contents, and contact information. The containers are stored onsite in a secure location pending disposal at an authorized facility. Disposable items such as sampling gloves, paper towels, and plastic sheeting are placed into plastic garbage bags and disposed in a municipal trash receptacle.

2-PROPANOL SHROUD CONCENTRATION CALCULATION METHODOLOGY



Equation:

If $y = 4 \times 10^{-5}x + 12.107$, where
x = 2-Propanol Shroud Concentration (µg/m^3) and
y = Field PID Reading (ppm), then solving for x:

$$\mathbf{x = \frac{y - 12.107}{4 \times 10^{-5}}} = \text{2-Propanol Shroud Concentration } (\mu g/m^3)$$

AMBIENT AIR LEAK PERCENT CALCULATION METHODOLOGY

Equation:

$$\text{Leak Percent} = \frac{\text{2-Propanol Concentration in Vapor Sample}}{\text{2-Propanol Concentration in Shroud}} \times 100$$

SOIL BORING LOG

Site Address:

Boring Number

Page Number

1 of

Martin S. Burck Associates, Inc.
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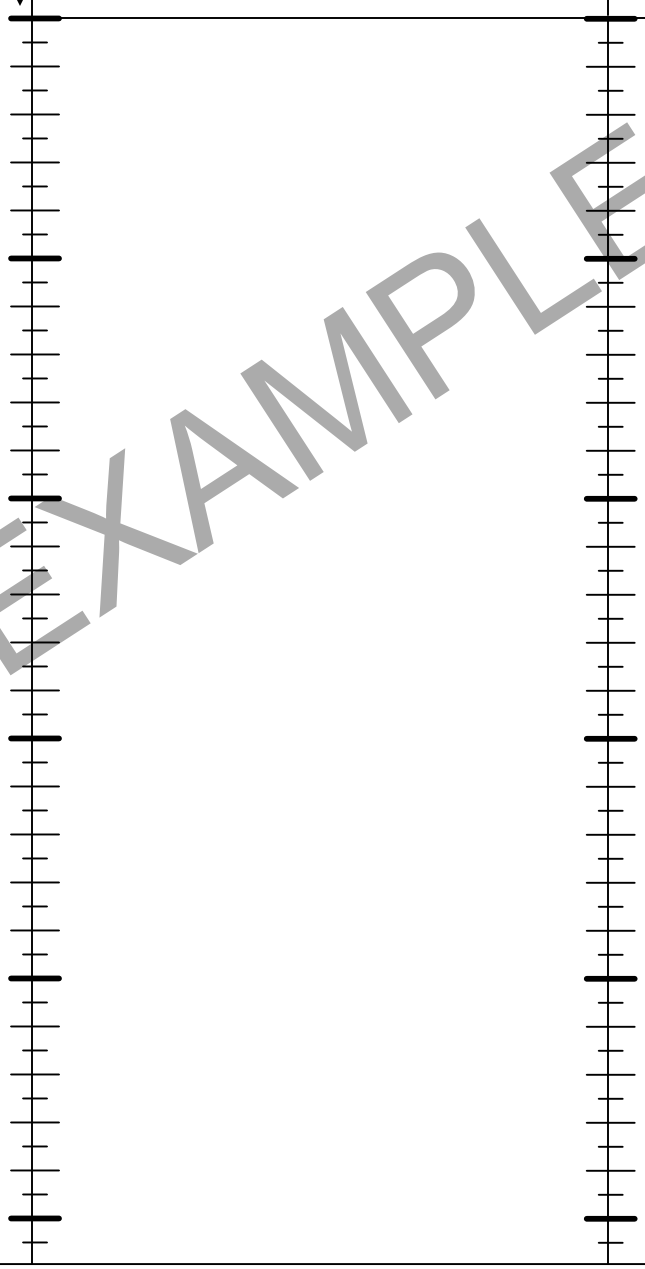
Drilling Contractor

Drilling Method

Sample Number	PID reading (ppm)	Sample Recovery (inches)	Depth (feet) Sample Interval	Start (Date - Time)	Finish (Date - Time)
				Elevation (Top of Well Casing)	Logged By
				Soil Description	



Comments:

Sample diameter : _____

Total Depth : _____

Hole abandonment : _____

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SITE SURVEY DATA

Project: _____

Date: _____ Surveyed By: _____

Location	Backsight (+)	Foresight (-)	Instrument Height	Elevation	Comments

Benchmark location sketch

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GROUNDWATER LEVEL DATA

Project: _____

Date: _____ Measured By: _____

Well No.	Time	DTW	Ref. Elev.	GW Elev.	Comments

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GROUNDWATER PURGE AND SAMPLE DATA

Sample Order ( )

Project: _____

Date: _____ Sampled By: _____

MONITORING WELL INFORMATION

Well Number: _____ General Location: _____

Well Diameter (in): _____ Total Depth (ft): _____ Depth to Groundwater (ft): _____

Wetted Casing Length (ft): _____ One Well Volume (gals): _____ No. of Well Volumes to Purge: _____

WELL CAPACITY (Gallons Per Foot): **0.75"** = 0.02; **1"** = 0.04; **1.25"** = 0.06; **1.5"** = 0.092; **2"** = 0.17; **3"** = 0.37; **4"** = 0.65; **5"** = 1.02; **6"** = 1.47; **12"** = 5.88

Total Purge Volume (gals): _____ Purge Method (Pump, Bailer, etc.): _____

WELL DEVELOPMENT/PURGING INFORMATION

Time	Depth to Water	Gallons Purged	Cumulative Total	T	C	pH	TDS	Comments

Comments: ≥ 85% static water column ≤ feet DtW WELL TYPE:

GROUNDWATER SAMPLE INFORMATION

Collection Time _____ Appearance ☐ Clear ☐ Cloudy ☐ Turbid Thermal Preservation ☐ Ice Chest & Ice ☐ Other

Containers ( ) 40 ml VOAs ( ) 1 liter Amber ( ) 500 ml Poly

☐ Preserved ☐ HCL ☐ Preserved ☐ HCL ☐ Preserved ☐ HCL

Requested Analyses: ☐ Gx ☐ Dx ☐ BTEX ☐ RBDM VOCs ☐ PAHs ☐ Other

Collection Method ☐ Disposable Bailer ☐ PVC Bailer ☐ Peristaltic Pump Comments _____

Comments _____

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SUBSLAB/SOIL VAPOR PURGE AND SAMPLE DATA

Sample Order ( )

Project: _____

Date: _____ Sampled By: _____

SAMPLE INFORMATION

Sample Name _____ General Location: _____

Tubing Diameter (ID) _____ Total Depth (ft) _____ Total Tubing/ Manifold Length _____

Installation Type _____ Installation Date/Time _____ One Purge Volume _____

No. of Volumes to Purge _____ Total Purge Volume _____

SUBSLAB/SOIL VAPOR PURGE AND LEAK TEST INFORMATION

Time	Shroud PID (ppm)	Purge PID (ppm)	Down-Hole Vacuum (inHg)	Canister Vacuum (inHg)	Comments

SUBSLAB/SOIL VAPOR SAMPLE INFORMATION

Start Time _____ End Time (Time of Collection on COC) _____ Start/End Vacuum _____

Container(s) _____ Requested Analyses: _____

Comments _____