September 2017

FEDERAL WAY LINK EXTENSION

AE 0044-12 3.7.N Phase II Environmental Site Assessment FL232 Draft 2

Tax Parcel 2500600520

SOUNDTRANSIT

CENTRAL PUGET SOUND
REGIONAL TRANSIT AUTHORITY

Phase II Environmental Site Assessment Report
Sound Transit – Federal Way Link Extension
Parcel FL232
Restaurant and Used Car Sales Lot
23646 Pacific Highway South
Kent, Washington 98032

File No. 4082-039-01

September 11, 2017

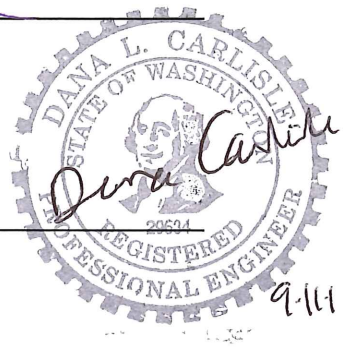
Prepared for:

Sound Transit, Inc.
401 South Jackson Street
Seattle, Washington 98104-2826
Attention: Mark Menard

Prepared by:

GeoEngineers, Inc.
1101 South Fawcett Avenue, Suite 200
Tacoma, Washington 98402
253.383.4940

Ron M. Bek, LG
Geologist



Dana L. Carlisle, PE
Principal

RMB:DLC:ch

Contents

List of Tables

List of Figures

List of Appendices

RECORD OF REVISIONS TO FEDERAL WAY LINK EXTENSION, PHASE 3 QUALITY MANAGEMENT PLAN

Revision No.	Revision	Revision Date
0	Draft 1 Report	July 2017
1	Draft 2 Report – Final Report	September 2017

Acronyms and Abbreviations

AST	above-ground storage tank
ASTM	ASTM International
bgs	below ground surface
CLARC	Cleanup Levels and Risk Calculation
Ecology	Washington State Department of Ecology
EPA	United States Environmental Protection Agency
ESA	environmental site assessment
HREC	Historical Recognized Environmental Condition
mg/kg	milligrams per kilogram
MTCA	Model Toxics Control Act
NAVD 88	North American Vertical Datum of 1988
PAH	polycyclic aromatic hydrocarbon
PCBs	polychlorinated biphenyls
PID	photoionization detector
ppm	parts per million
PRT	post-run tubing
QC	quality control
RCRA	Resource Conservation and Recovery Act
REC	Recognized Environmental Condition
TSP	Tacoma Smelter Plume
UST	underground storage tank
VOC	volatile organic compound
WAC	Washington Administrative Code

EXECUTIVE SUMMARY

This report summarizes the results of the Phase II Environmental Site Assessment (ESA) of the property at 23646 Pacific Highway South in Kent, Washington, King County Tax Parcel 2500600520, identified by Sound Transit as Federal Way parcel FL232. The 0.56-acre property is currently developed with a restaurant building in use since the 1940s and a used car sales lot with a mobile office building and shed in use since the late 1980s. Prior to the 1940s, the property was undeveloped. This Phase II ESA was conducted to evaluate potential soil contamination associated with the Recognized Environmental Conditions (RECs) for the property as identified in the Phase I ESA prepared by GeoEngineers, Inc. dated March 2017.

Phase I ESA Summary

The RECs identified for the subject property were:

- The southern portion of the subject property is currently used for used car sales. An auto towing business, limousine business, and auto sales business previously used this portion of the property dating back to the late 1980s. An oil/water separator is currently located north of the mobile office building on the subject property. The oil/water separator is connected to the sanitary sewer which is extends along the eastern margin of the property. Small quantities of used oil were reportedly at a location outside of the used car sales building in 2005, indicating that oil changing had occurred on site in the past. The former auto tow yard with oil/water separator is considered a REC to the subject property based on the potential for possible past leaks, spills or release of automotive-related fluids (e.g., fuels, lube oil, motor oil, used oil). Although the property used an on-site septic system prior to the 1970s, the auto tow yard, auto sales and oil/water separator on the property all apparently occurred after the property had been connected to the municipal sanitary sewer.
- A pad-mounted transformer, presumed to be utility-owned, is located on the subject property southwest of the restaurant building, directly adjacent to Pacific Highway South and the western property entrance drive where numerous vehicles may enter and leave the site. The transformer represents a material threat of a release if it were to be damaged by vehicles; therefore, the transformer meets the ASTM definition of REC in our opinion. However, visual evidence of potential releases from the transformer or damage to the device was not observed. Therefore, none of the Phase II ESA borings were completed in the vicinity of the transformer.
- The subject property is within Ecology's mapped footprint of the Tacoma Smelter Plume (areawide contamination) where arsenic concentrations in surface/near surface soil are predicted to exceed the MTCA Method A cleanup level for unrestricted land use. Therefore, the Tacoma Smelter Plume is considered a REC for the subject property.
- Adjacent properties to the east and south have a history of automotive repair and boat manufacturing and were collectively considered a REC to the subject property based on the potential for contaminant migration to the subject property from possible past leaks, spills or release of automotive-related fluids.

Phase II ESA Conclusions

The purpose of the Phase II ESA was to evaluate the potential for RECs or other potential sources of contamination to affect the subject property, and/or to impact soil that may be encountered during Sound Transit construction activities at the site.

Potential On-Site Sources (Former Auto Towing/Current Auto Sales and Oil/Water Separator)

The geophysical study was used in part to assess the layout of the former septic system and the existing sanitary sewer (Figure 2).

GeoEngineers observed the completion of six environmental borings in the eastern margin of the property in the vicinity of the former auto towing/current auto sales area, oil/water separator and drain line, and off-site potential sources of contamination to the east and south. The borings were completed in May 2017 to depths ranging from 8 to 15 feet below ground surface (bgs) using direct-push drilling methods. Based on chemical analytical results for the nine soil samples tested, we conclude as follows:

- Only one of the samples had contaminants detected at a concentration greater than the MTCA Method A cleanup level: cPAHs were detected in the soil sample from FL232-B5 at 3.5 to 4.5 feet bgs at a concentration (0.14 mg/kg) greater than the MTCA Method A cleanup level of 0.1 mg/kg. Lube oil-range hydrocarbons were also detected in this sample at a concentration of 1,400 mg/kg, which is less than the MTCA Method A cleanup level of 2,000 mg/kg.
- Lube oil-range petroleum hydrocarbons were detected at concentrations less than the MTCA Method A cleanup level of 2,000 mg/kg in soil samples from FL232-B4 at 3.5 to 4.5 feet bgs and at FL232-B5 at 3.5 to 4.5 feet bgs and 7 to 8 feet bgs. Field screening did not indicate evidence of lube-oil range hydrocarbons in the deeper soil samples collected from FL232-B4 at 8 to 9.5 feet bgs and FL232-B5 at 8 to 11 feet bgs. Petroleum hydrocarbons were not detected in the soil samples tested from FL232-B1, FL232-B3 and FL232-B6. VOCs and PAHs were not detected in the soil sample tested from FL232-B3. VOCs were not detected in the soil sample testing from FL232-B5.
- Metals either were not detected in the samples tested or the detected concentrations were less than MTCA Method A or B cleanup levels. The detected concentrations of lead in the soil samples from three of the borings (FL232-B1 at 3.5 to 4.5 feet, FL232B5 at 3.5 to 4.5 feet, and FL232-B6 at 3.5 to 4.5 feet bgs) were greater than the published naturally occurring background concentration for lead.
- Evidence of isolated, perched shallow groundwater was encountered in two of the borings; however, the quantity of groundwater was insufficient for sampling. Based on currently available information and the anticipated depths to groundwater more than 50 feet below ground surface, the risk of groundwater contamination from the identified potential on-site sources is relatively low, in our opinion.

Potential Off-site Sources

In general, the results of the Phase II ESA explorations, sampling and chemical analysis suggest a low risk of significant impact from off-site potential sources of contamination identified on the eastern and southern adjacent properties.

Tacoma Smelter Plume

Residual impacts from the Tacoma Smelter Plume are typically in the upper two feet of the soil profile. No shallow soil samples were obtained from the upper two feet of the soil profile due to drilling recovery issues; therefore, we were unable to fully characterize residual impacts from the Tacoma Smelter Plume during drilling. Additional testing of shallow soil for Tacoma Smelter Plume impacts is recommended during construction.

Sound Transit Acquisition and Future Construction Recommendations

Based on current design information for the Federal Way Link Extension (FWLE) alignment (HDR - Sound Transit, August 2017), Sound Transit proposes a full take on FL232, with building impacts to existing structures (restaurant, mobile office and temporary enclosure/shed). Sound Transit's proposed use for the property is as a staging area during construction (Figure 3). Future use has not been determined. Proposed construction and development activities by Sound Transit could change as project design is refined.

Contaminated soil greater than MTCA cleanup levels was identified during the Phase II ESA and therefore a remediation cost estimate is necessary for FL232. Carcinogenic PAHs (cPAHs) were detected in the soil sample from FL232-B5 at 3.5 to 4.5 feet bgs at a concentration (0.14 mg/kg) greater than the MTCA Method A cleanup level of 0.1 mg/kg.

The cPAH and lube oil-range petroleum hydrocarbon results for sample FL232-B5 at 3.5 to 4.5 feet bgs indicate evidence of a reportable release under MTCA WAC 173-340-300 and Ecology Toxics Cleanup Program Policy 300 in our opinion, given that there was reported used oil storage on the property as of 2005, the most likely sources of petroleum releases based on site history are surface-related, this sample is near surface at 3.5 to 4.5 feet bgs, and the result for cPAHs exceeds the MTCA Method A cleanup level for cPAHs. It is the property owner/operator's responsibility to report the discovery of a release of hazardous substances that may pose a threat to human health and the environment, in accordance with MTCA release reporting criteria in WAC 173-340-300, Site Discovery and Reporting. The MTCA reporting requirement is within ninety calendar days of discovery.

The findings of the Phase II ESA indicate that remediation cost estimates for construction purposes are necessary because evidence of impacted and contaminated soil were identified in soil samples obtained at FL232. In addition, we recommend an impacted and contaminated soil handling plan be prepared prior to construction activities that outlines a soil segregation, handling, stockpiling, and end use/disposal plan with potential follow-up chemical analytical testing as needed. Ecology's "Guidance for Remediation of Petroleum-Contaminated Soil" should be used as a guidance document for soil

handling end use options for petroleum-related soil impacts.

We were unable to fully characterize residual impacts from the Tacoma Smelter Plume during drilling; therefore, additional testing of near surface soil for Tacoma Smelter Plume impacts is recommended during construction.

The table below summarizes the Phase II ESA findings relative to Sound Transit's proposed acquisition and future construction; the findings are grouped by on-site potential sources, potential areawide sources, and off-site potential sources.

Potential Sources of Contamination	Potential Source Within Construction Area	Potential Source Within Acquisition Area	Impacted Soil Present	Contaminated Soil Present	Remedial Cost Estimate Necessary For Acquisition	Remedial Cost Estimate Necessary For Construction
On-Site Potential Sources: Former auto towing/current auto sales, oil/water separator and sewer drain	Yes	Yes	Yes	Yes, cPAHs at F232-B5, sample 3.5 to 4.5 feet bgs	Yes	Yes
Areawide: Tacoma Smelter Plume	Yes	Yes	Yes, lead concentrations not indicative of smelter plume impacts but detected above natural background levels for Puget Sound	No	No	Not specifically due to Tacoma Smelter Plume; however, additional testing of shallow soil for TSP impacts is recommended
Off-Site Potential Sources	No	No	No	No	No	No

This Executive Summary should be used only in the context of the full report for which it is intended.

1.0 Introduction

This report presents the results of the Phase II Environmental Site Assessment (ESA) for the property located at 23646 Pacific Highway South in Kent, Washington, King County Tax Parcel 2500600520 identified by Central Puget Sound Regional Transit Authority (Sound Transit) as Federal Way Link Extension (FWLE) Parcel FL232 ("subject property"). The northern half of the parcel is developed with a restaurant building; the southern half of the property is occupied by a used car sales lot with a mobile office building and a shed. The subject property is shown relative to surrounding physical features on the Vicinity Map, Figure 1. The layout of the subject property and surrounding properties is shown on the Site Plan and Boring Location Map – FL232, Figure 2.

Based on current design information for the FWLE project (HDR, provided in August 2017), Sound Transit plans to acquire all of FL232, with building impacts anticipated. Sound Transit's proposed use for the property is as a staging area during construction (Figure 3). Future use has not been determined. Proposed construction and development activities by Sound Transit could change as project design is refined.

The results of this Phase II ESA will be used by ST as part of their evaluation of potential environmental liabilities associated with ownership of the property and future design and construction of the FWLE. This report has been prepared for the exclusive use of Sound Transit, their agents and project design team. Because this environmental report is not intended for use by others, no one else should rely on this report without first conferring with GeoEngineers, Inc. (GeoEngineers).

Throughout the report, references to "the FWLE", the "project", the "proposed project", "the alignment," or the "light rail corridor" refer to the alignment selected by the Sound Transit Board in January 2017 after publication of the FEIS.

1.1 FWLE Project Description

Sound Transit intends to extend light rail between the cities of SeaTac and Federal Way, through the Federal Way Link Extension Preferred Alternative route. The Sound Transit 2 (ST2) Plan, approved by voters in 2008, included environmental study and design of this extension. This 7.8-mile extension would extend light rail south from the Angle Lake Station terminus of the Central Link system at South 200th Street in SeaTac to the Federal Way Transit Center (FWTC) at South 317th Street. The FWLE would travel within the cities of SeaTac, Des Moines, Kent, and Federal Way in King County.

Link Light Rail is currently operating between University of Washington, Seattle and Sea-Tac International Airport. In 2008 the ST2 program was approved by voters. This package added nearly 36 new miles of service to the north, south, and east, to Sound Transit's initial light rail line, resulting in 55 miles of light rail open for revenue service by 2023. The ST2 program of projects includes construction of light rail from the Angle Lake Station, just south of SeaTac Airport, to Kent/Des Moines Station. ST2 funds were also programmed to provide environmental clearance and preliminary engineering design

to downtown Federal Way.

In June 2016, the ST Board unanimously approved to move forward with a November 2016 ballot asking taxpayers to fund Sound Transit 3 (ST3) which was subsequently passed by the taxpayers. ST3 funds the remaining segments from Kent/Des Moines station to the FWTC. Revenue service to the FWTC Station is targeted to open by 2024.

1.2 Authorization

This report was prepared under the terms of the subcontract between HDR and GeoEngineers dated August 24, 2012, along with Amendments 1 through 9. The subcontract authorizes GeoEngineers to provide environmental services for the Sound Transit Federal Way Link Extension in accordance with Agreement No. RTA/AE 044-12 between HDR and Sound Transit.

1.3 Site History and Summary of RECs

In March 2017, GeoEngineers completed as Phase I ESA for the subject property. A summary of pertinent site history and recognized environmental conditions (RECs) in connection with the subject property are described below.

The earliest development on the subject property was the existing restaurant building constructed in 1946. The existing mobile office located south of the restaurant and currently used in connection with the used car sales lot was first identified on the subject property in the late 1980s. A limousine business, auto towing business, and auto sales business operated in the southern portion of the subject property between the mid-1990s and 2013.

Three septic tanks (1,250-gallon, 750-gallon, and 50-gallon) and one septic drainfield are, or were, situated east of the restaurant building but are no longer in use. The septic system pre-dated use of the southern portion of the property for auto sales, a tow yard and oil-changing. The historic layout of the septic system is shown in Figure 2. The property owner indicated that a septic tank was removed from the subject property when sanitary sewer was installed in the 1970s.

The oil/water separator north of the mobile office was installed in the early 1990s. The oil/water separator has always been connected to the sanitary sewer.

The following RECs were identified in connection with the subject property:

- The southern portion of the subject property is currently used for used car sales. An auto towing business, limousine business, and auto sales business previously used this portion of the property dating back to the late 1980s. An oil/water separator is currently located north of the mobile office building on the subject property. Small quantities of used oil were reportedly at a location outside of the used car sales building in 2005, indicating that oil changing had occurred in the past. The former auto tow yard with oil/water separator is considered a REC to the subject property based on the potential for possible past leaks, spills or release of automotive-related fluids (e.g., fuels, lube oil, motor oil, used oil). In addition, up to about the 1970s, the property used a septic tank

system located east of the restaurant building.

- A pad-mounted transformer is located on the subject property. Although it is assumed to be utility-owned, we did not confirm ownership of the transformer and we were unable to identify whether the transformer contains oil or polychlorinated biphenyls (PCBs). The transformer is located directly adjacent to Pacific Highway South and the property entrance drive where property usage suggests that numerous vehicles may enter and leave the site. The transformer represents a material threat of a release if it were to be damaged by vehicles; therefore, the transformer meets the ASTM definition of REC in our opinion.
- The subject property is within Ecology's mapped footprint of the Tacoma Smelter Plume (areawide contamination) where arsenic concentrations in surface/near surface soil are predicted to exceed the MTCA Method A cleanup level for unrestricted land use. Therefore, the Tacoma Smelter Plume is considered a REC for the subject property.
- The existing automotive repair shop on the adjacent property to the east was listed as an automotive repair shop (with oil heat) in 2003, 2011, and 2012 and the adjacent property to the south was used for boat manufacturing (with oil heat) from the mid-1940s until at least the 1960s. Automotive service and boat manufacturing activities at adjacent properties are both collectively considered a REC to the subject property based on the potential for contaminant migration to the subject property from possible past leaks, spills or release of automotive-related fluids (e.g., fuels, lube oil, waste oil and degreasing solvents), boat manufacturing-related chemicals (solvents, metals, petroleum products, hazardous manufacturing chemicals), or heating oil.

Our Phase I ESA research did not identify prior environmental reports pertaining specifically to the subject property.

1.4 Purpose and Scope of Services

The purpose of the Phase II ESA is to evaluate the potential for RECs or other potential sources of contamination to affect the subject property, and/or to impact soil that may be encountered during Sound Transit construction activities at the site. GeoEngineers' scope of services consisted of the following:

1. Performed a site reconnaissance of the property.
2. Developed a health and safety plan for use by our field representatives in accordance with WAC 296-24.
3. Coordinated the marking of subsurface utilities at the exploration locations by notifying the one-call locate service for underground utilities in public rights-of-way and a private utility locate service for underground utilities on private property.
4. Retained a geophysical survey subcontractor to identify septic and sanitary sewer system piping and drain features.
5. Retained a drilling subcontractor to advance 6 direct-push soil borings to evaluate soil

conditions near potential sources of contamination.

6. Obtained continuous core soil samples from each of the direct-push explorations. Field screened the soil samples for evidence of petroleum and volatiles using visual, water sheen and headspace vapor screening methods. Visually classified the samples in general accordance with ASTM D 2488 and maintained a detailed log of each boring.
7. Submitted select soil samples for chemical analysis of one or more of the following: hydrocarbon identification by NWTPH-HCID, diesel- and lube oil-range petroleum hydrocarbons by NWTPH-Dx, Resource Conservation and Recovery Act (RCRA) metals by EPA Method 6000/7000 series, PAHs by EPA Method 8270D/SIM, and VOCs by EPA Method 8260.
8. Evaluated the soil sampling field and chemical analytical data relative to Model Toxics Control Act (MTCA) cleanup levels and naturally occurring background metals concentrations in Puget Sound region soil.

2.0 Site Description

2.1 Location and Property Description

General location and property description information for the subject property are summarized in Table 2-1 below. The location is shown relative to surrounding physical features in Figure 1. The current layout of the subject property and surrounding properties are shown in Figure 2.

Table 2-1. Subject Property Location and Description

Quarter/Quarter, Section, Township and Range	SE/SE quarter of Section 16, Township 22, Range 4, Willamette Meridian
Address	23646 Pacific Highway South, Kent, King County, Washington
Tax Parcel Number	King County Parcel 2500600520
Approximate Area	0.56 acres
Existing Use(s)	Restaurant and used car sales lot with mobile office building

2.2 Site Vicinity and General Characteristics

The subject property is located in an area of predominantly commercial and residential land uses. An auto repair facility is located to the east. Apartment buildings are located to the north. A retail building is located to the south. A dry cleaner and a retail building are located across Pacific Highway South to the west. Figure 2 shows the configuration of the subject property and surrounding properties.

2.3 Site Reconnaissance

GeoEngineers personnel conducted a visual site reconnaissance on May 11, 2017 to evaluate current conditions on the property relative to previously identified RECs, and to assess the property for potential RECs not identified previously. The GeoEngineers representative briefly met with the property owner Louis Gadini and his son Alex Gadini during the May 2017 reconnaissance. We did not enter the restaurant building or mobile office building.

Car washing supplies and a few, retail-sized containers with automotive fluids were observed inside a tarped enclosure (i.e., shed) located north of the mobile office building. The tarped enclosure was apparently used for auto detailing. Oil staining was observed on the pavement within the enclosure. An oil/water separator and nearby catch basin were observed between the mobile office building and the tarped enclosure.

No used oil or used oil containers were observed on the east side of the mobile office building in the area where used oil storage containers had been identified in 2005; however, the overgrown vegetation precluded detailed observation of the ground surface in this area. The area on the east side of the mobile office building could not be accessed with the drill rig and

no Phase II ESA explorations were completed in this area of the property.

No visual evidence of mineral oil releases or device damage was observed at the pad-mounted transformer southwest of the restaurant building, so no Phase II ESA explorations were performed in this area of the property.

3.0 Physical Setting

3.1 Topography and Hydrogeologic Setting

The topography and general hydrogeologic setting of the subject property area are summarized in Table 3-1 below.

Table 3-1. Topography and Hydrogeologic Setting

Approximate Surface Elevation	Approximately 410 feet (North American Vertical Datum of 1988 [NAVD 88], sea level). Land surface at the site is generally flat.
Geologic Setting	Vashon stade till (Qvt)
Soil and Geologic Conditions	Sand and gravel glacial deposits
Depth to Groundwater	Wet soil indicative of perched groundwater was encountered from approximately 8 to 13.5 feet bgs in FL232-B1 and 6 to 7 feet bgs in FL232-B3. A temporary 1-inch diameter PVC well was placed with 10 feet of screen 5 to 15 feet bgs in FL232-B1; no measurable groundwater was observed after one hour.
Inferred Direction of Shallow Groundwater Flow	To the east based on surface topography.

Our knowledge of the general physiographic setting, geology and groundwater occurrence in the vicinity of the subject property is based on our general experience in the area and our recent soil explorations. Subsurface conditions observed during our recent soil explorations are described in the following sections of this report.

3.1.1 Geologic Setting

Glaciation events in the Puget Lowland left thick deposits of glacially-derived and reworked sediments across the region. The upland plateau in the Project area was formed during the latest glacial epoch called the Vashon stade of the continental Fraser glaciation. The advance and retreat of the Vashon-age Puget glacial lobe, approximately 14,000 to 10,000 years ago, deposited most of the near-surface materials and sculpted most of the present landforms within the Puget Lowland.

After the latest glaciation, Holocene period sediments were deposited over the glacial soils. These deposits typically consist of alluvial soils commonly found in river valleys as well as colluvial deposits (landslide materials) on slopes. Peat and other organic soils occur in numerous depressional areas at the surface. Some of these Holocene period sediments have been modified by human activity, including placement of roadway embankment fill for construction of I-5.

3.1.2 Groundwater Conditions

The Phase II ESA explorations did not extend to groundwater. Below is a general description of groundwater conditions throughout the Project area.

Groundwater encountered in the FWLE project area may be grouped into one of three main aquifer types: unconfined, semi-confined and confined artesian. Unconfined aquifers may include groundwater within recent alluvium along streams and creeks, within recessional outwash that is perched above low-permeability glacial till, within discontinuous lenses of permeable layers in glacial till, or within advance outwash that is exposed at the ground surface. The semi-confined aquifer is present in the advance outwash where it is overlain by less permeable soils but the groundwater level is below the confining layer, making the aquifer semi-confined. Confined aquifers encountered in the project area are either flowing artesian (elevated groundwater levels aboveground surface) or sub-artesian (elevated groundwater levels at or near ground surface).

Groundwater was encountered at approximately 71 feet bgs in a monitoring well installed in a boring completed approximately 270 feet to the east for FWLE (FWLE-D04). The groundwater is noted as being in a semi-confined aquifer type (GeoEngineers, January 2017).

4.0 Contaminants of Concern and Cleanup Levels

Potential contaminants in soil are associated with auto towing, auto sales, and auto detailing activities; specifically, the use, storage and handling of automotive fluids in areas where there are or were potential pathways for releases to impact the subsurface (such as the oil/water separator, piping connections to the sewer system, drain pipes or cracks in floor and/or pavement [if any], and previously unpaved areas). Potential contaminants include petroleum hydrocarbon-related constituents, VOCs, metals, and PAHs.

The chemical analytical data for samples obtained during this investigation were compared to the respective Model Toxics Control Act (MTCA) Method A cleanup levels. MTCA Method B cleanup levels were used for analytes where MTCA Method A cleanup levels are not established. Where appropriate, detected concentrations of metals in soil also were compared to naturally occurring background metals concentrations in Puget Sound region soil (Washington State Department of Ecology [Ecology], 1994).

4.1 Contaminated and Impacted Soil Classifications

For purposes of Sound Transit's property acquisition and future construction activities at FL232, impacted soil and contaminated soil are defined as follows:

- **Contaminated Soil**: Soil containing concentrations of contaminants greater than applicable cleanup levels such as MTCA Method A Cleanup Levels for Unrestricted Use, or other relevant cleanup levels established by state, local, or federal regulation, law, or permit condition, if no Method A level has been developed.
- **Impacted Soil**: Soil containing detectable concentrations of contaminants that are less than applicable cleanup levels, specifically MTCA Method A Cleanup Levels for Unrestricted Land Use, or other relevant cleanup levels established by state, local, or federal regulation, law, or permit condition, if no Method A level has been developed. Also, soil containing detectable concentrations of total metals that are less than MTCA Cleanup Levels but greater than naturally occurring background metals concentrations in Puget Sound region soil (Ecology, 1994). Impacted soil is not considered contaminated, but may be subject to restrictions or conditions for end use at off-site facilities.

5.0 Subsurface Explorations

5.1 General

The Phase II ESA explorations included 6 direct-push soil borings from which soil samples were obtained to characterize subsurface conditions. The field explorations were completed on May 24, 2017. Holt Services Inc. performed drilling services. Ground surface elevations at the boring locations were determined by Sound Transit personnel.

Six borings (FL232-B1 through FL232-B6) were completed to depths of 8.5 to 15 feet bgs using direct-push methods. Subsurface boring logs and the field exploration program are presented in Appendix A. Boring locations are shown on Figure 2. The site plan and boring locations are shown in Figure 2. Used oil was reportedly stored previously on the east side of the mobile office building at the approximate location shown in Figure 2. However, we were unable to advance a boring to assess soil conditions because the area was not accessible. No visual evidence of mineral oil releases or device damage was observed at the pad-mounted transformer southwest of the restaurant building, so no Phase II ESA explorations were performed in this area of the property.

Explorations were monitored by a representative of GeoEngineers who visually classified and field screened soil samples collected from the explorations for evidence of petroleum and volatiles. Subsurface conditions and field screening results are shown on the exploration logs presented in Appendix A. Soil samples were submitted to OnSite Environmental, Inc. in Redmond, Washington for chemical analysis. The soil chemical analytical results are summarized in Table 1. Copies of the laboratory reports are presented in Appendix B.

5.2 Geophysical Survey

Prior to drilling activities, a geophysical survey was conducted in the vicinity of the auto sales area and the oil/water separator and drain line to the sanitary sewer. Information about the sewer drain line locations and orientation is included in Figure 2. The results of the geophysical survey were used in part to select locations for the Phase II ESA explorations. The geophysics study report is included in Appendix A.

5.3 Sampling and Analysis Plan

Subsurface conditions and field screening results were evaluated to develop the sampling and analysis plan for each boring location. Features of potential concern and analyses completed for each exploration are summarized in the table below.

Table 5.1 Sampling and Analysis Summary

General Description of Boring Location	Potential Contamination Source(s)	Direct-Push Boring ID	Analyses Completed						
			HCID	Diesel- and Lube-Oil Range PHC	Gasoline-Range PHC	PAHs	VOCs	RCRA 8 Metals	As, Pb
Vicinity of oil/water separator, sewer drain lines and auto sales lot/former tow yard	Surface releases from auto detailing and previous auto tow yard; subsurface releases from oil/water separator. Near surface soil TSP As and Pb	FL232-B1	S	--	--	--	--	--	S
		FL232-B2	--	--	--	--	--	--	S
		FL232-B3	S	--	--	S	S	S[1]	S
		FL232-B4	S	S	--	--	--	--	--
		FL232-B5	S	S	--	S	S	S	S
		FL232-B6	S	--	--	--	--	--	--

Notes:

[1] Sample analyzed for hexavalent chromium

"S" = Soil Sample Analyzed

"—" = not analyzed

HCID = Hydrocarbon Identification

PHC = Petroleum Hydrocarbon

6.0 Findings

6.1 Subsurface Observations and Field Screening

Borings FL232-B1 through FL232-B6 were advanced to depths of approximately 8.5 to 15 feet bgs using direct-push drilling methods. Continuous-core soil samples were collected from each direct-push boring for field screening and possible chemical analysis. Subsurface soils observed beneath the asphalt concrete pavement generally consisted of fine to coarse sand with silt and silty sand to the total depth explored (15 feet bgs).

Evidence of perched shallow groundwater was encountered in FL232-B1 from approximately 8 to 10 and 13 to 13 ½ feet bgs and FL232-B3 from 6 to 7 feet bgs. However, a sufficient quantity of groundwater for sampling did not accumulate in the borings.

Physical evidence of petroleum or volatiles was not observed in soil samples collected from FL232-B1, FL232-B2, and FL232-B4. Physical evidence of petroleum (slight sheens) were observed in soil samples from borings FL232-B3 from approximately 6 to 7 feet bgs, BL232-B5 from 4 to 5 feet bgs, and FL232-B6 from 11.5 to 12 feet bgs.

6.2 Analytical Testing Results

Nine soil samples collected from direct-push borings were submitted for chemical analysis of one or more of the following: petroleum hydrocarbon identification, diesel- and lube oil-range petroleum hydrocarbons, VOCs, PAHs, and RCRA metals or arsenic and lead.

Petroleum Hydrocarbons

Lube-oil range petroleum hydrocarbons were detected in three samples (FL232-B4-3.5-4.5, FL232-B5-3.5-4.5 and FL232-B5-7-8) at concentrations ranging between 190 and 1,400 mg/kg; these detected concentrations are less than the MTCA Method A cleanup level of 2,000 mg/kg for unrestricted land use. These soil samples were obtained from depths of approximately 3.5 to 8 feet bgs.

Lube-oil range petroleum hydrocarbons were not detected in the remaining soil samples analyzed.

Diesel-range petroleum hydrocarbons were not detected in the soil samples analyzed.

VOCs

VOCs were not detected in the soil samples analyzed.

PAHs

Carcinogenic and other PAHs were not detected in the soil sample analyzed from FL232-B3. Carcinogenic and noncarcinogenic PAHs were detected in soil sample FL232-B5-3.5-4.5, the same sample where lube-oil range hydrocarbons (1,400 mg/kg) also were detected. Non-carcinogenic PAHs (acenaphthene, anthracene, benzo(g,h,i)perylene, fluoranthene, fluorene,

phenanthrene, and pyrene) were detected in FL232-B5-3.5-4.5; the detected concentrations were less than the corresponding MTCA cleanup levels. However, cPAHs were detected at a concentration (0.14 mg/kg) greater than the MTCA Method A cleanup level (0.1 mg/kg) in soil sample FL232-B5-3.5-4.5.

Metals

Metals, including arsenic and lead, either were not detected or were detected at concentrations less than the corresponding MTCA cleanup levels in the soil samples analyzed.

7.0 Conclusions and Recommendations

7.1 Phase II ESA Conclusions and Recommendations

The purpose of the Phase II ESA was to evaluate the potential for RECs or other potential sources of contamination to affect the subject property, and/or to impact soil that may be encountered during Sound Transit construction activities at the site.

7.1.1 Potential On-site Sources (Former Auto Towing/Current Auto Sales and Oil/Water Separator)

The geophysical study was used in part to assess the layout of the former septic system and the existing sanitary sewer (Figure 2).

GeoEngineers observed the completion of six environmental borings in the eastern margin of the property in the vicinity of the former auto towing/current auto sales area, oil/water separator and drain line, and off-site potential sources of contamination to the east and south. The borings were completed in May 2017 to depths ranging from 8 to 15 feet below ground surface (bgs) using direct-push drilling methods. Based on chemical analytical results for the nine soil samples tested, we conclude as follows:

- Only one of the samples had contaminants detected at a concentration greater than the MTCA Method A cleanup level: cPAHs were detected in the soil sample from FL232-B5 at 3.5 to 4.5 feet bgs at a concentration (0.14 mg/kg) greater than the MTCA Method A cleanup level of 0.1 mg/kg. Lube oil-range hydrocarbons were also detected in this sample at a concentration of 1,400 mg/kg, which is less than the MTCA Method A cleanup level of 2,000 mg/kg.
- Lube oil-range petroleum hydrocarbons were detected at concentrations less than the MTCA Method A cleanup level of 2,000 mg/kg in soil samples from FL232-B4 at 3.5 to 4.5 feet bgs and at FL232-B5 at 3.5 to 4.5 feet bgs and 7 to 8 feet bgs. Field screening did not indicate evidence of lube-oil range hydrocarbons in the deeper soil samples collected from FL232-B4 at 8 to 9.5 feet bgs and FL232-B5 at 8 to 11 feet bgs. Petroleum hydrocarbons were not detected in the soil samples tested from FL232-B1, FL232-B3 and FL232-B6. VOCs and PAHs were not detected in the soil sample tested from FL232-B3. VOCs were not detected in the soil sample testing from FL232-B5.
- Metals either were not detected in the samples tested or the detected concentrations were less than MTCA Method A or B cleanup levels. The detected concentrations of lead in the soil samples from three of the borings (FL232-B1 at 3.5 to 4.5 feet, FL232B5 at 3.5 to 4.5 feet bgs, and FL232-B6 at 3.5 to 4.5 feet bgs) were greater than the published naturally occurring background concentration for lead.

- Evidence of isolated, perched shallow groundwater was encountered in two of the borings; however, the quantity of groundwater was insufficient for sampling. Based on currently available information and the anticipated depths to groundwater more than 50 feet below ground surface, the risk of groundwater contamination from the identified potential on-site sources is relatively low, in our opinion.

7.1.2 Potential Off-site Sources

In general, the results of the Phase II ESA explorations, sampling and chemical analysis suggest a low risk of significant impact from off-site potential sources of contamination identified on the eastern and southern adjacent properties.

7.1.3 Tacoma Smelter Plume

Residual impacts from the Tacoma Smelter Plume are typically in the upper two feet of the soil profile. No shallow soil samples were obtained from the upper two feet of the soil profile due to drilling recovery issues; therefore, we were unable to fully characterize residual impacts from the Tacoma Smelter Plume during drilling. Additional testing of shallow soil for Tacoma Smelter Plume impacts is recommended during construction.

7.2 Sound Transit Acquisition and Future Construction Recommendations

Based on current design information for the Federal Way Link Extension (FWLE) alignment (HDR - Sound Transit, August 2017), Sound Transit proposes a full take on FL232, with building impacts to existing structures (restaurant, mobile office and temporary enclosure/shed). Sound Transit's proposed use for the property is as a staging area during construction (Figure 3). Future use has not been determined. Proposed construction and development activities by Sound Transit could change as project design is refined.

Contaminated soil greater than MTCA cleanup levels was identified during the Phase II ESA and therefore a remediation cost estimate is necessary for FL232. Carcinogenic PAHs (cPAHs) were detected in the soil sample from FL232-B5 at 3.5 to 4.5 feet bgs at a concentration (0.14 mg/kg) greater than the MTCA Method A cleanup level of 0.1 mg/kg.

The cPAH and lube oil-range petroleum hydrocarbon results for sample FL232-B5 at 3.5 to 4.5 feet bgs indicate evidence of a reportable release under MTCA WAC 173-340-300 and Ecology Toxics Cleanup Program Policy 300 in our opinion, given that there was reported used oil storage on the property as of 2005, the most likely sources of petroleum releases based on site history are surface-related, this sample is near surface at 3.5 to 4.5 feet bgs, and the result for cPAHs exceeds the MTCA Method A cleanup level for cPAHs. It is the property owner/operator's responsibility to report the discovery of a release of hazardous substances that may pose a threat to human health and the environment, in accordance with MTCA release reporting criteria in WAC 173-340-300, Site Discovery and Reporting. The MTCA

reporting requirement is within ninety calendar days of discovery.

The findings of the Phase II ESA indicate that remediation cost estimates for construction purposes are necessary because evidence of impacted and contaminated soil were identified in soil samples obtained at FL232. In addition, we recommend an impacted and contaminated soil handling plan be prepared prior to construction activities that outlines a soil segregation, handling, stockpiling, and end use/disposal plan with potential follow-up chemical analytical testing as needed. Ecology's "Guidance for Remediation of Petroleum-Contaminated Soil" should be used as a guidance document for soil handling end use options for petroleum-related soil impacts.

We were unable to fully characterize residual impacts from the Tacoma Smelter Plume during drilling; therefore, additional testing of near surface soil for Tacoma Smelter Plume impacts is recommended during construction.

The table below summarizes the Phase II ESA findings relative to Sound Transit's proposed acquisition and future construction; the findings are grouped by on-site potential sources, potential areawide sources, and off-site potential sources.

Potential Sources of Contamination	**Potential Source Within Construction Area**	**Potential Source Within Acquisition Area**	**Impacted Soil Present**	**Contaminated Soil Present**	**Remedial Cost Estimate Necessary For Acquisition**	**Remedial Cost Estimate Necessary For Construction**
On-Site Potential Sources: Former auto towing/current auto sales, oil/water separator and sewer drain	Yes	Yes	Yes	Yes, cPAHs at F232-B5, sample 3.5 to 4.5 feet bgs	Yes	Yes
Areawide: Tacoma Smelter Plume	Yes	Yes	Yes, lead concentrations not indicative of smelter plume impacts but detected above natural background levels for Puget Sound	No	No	Not specifically due to Tacoma Smelter Plume; however, additional testing of shallow soil for TSP impacts is recommended.
Off-Site Potential Sources	No	No	No	No	No	No

8.0 Limitations and Guidelines for Use

These Limitations provide information to help you manage your risks with respect to the use of this report. Some clients, design professionals and contractors may not recognize that the geoscience practices (geotechnical engineering, geology and environmental science) are far less exact than other engineering and natural science disciplines. This lack of understanding can create unrealistic expectations that could lead to disappointments, claims and disputes. GeoEngineers includes these explanatory "limitations" provisions in our reports to help reduce such risks. Please confer with GeoEngineers if you are unclear how these "Limitations and Guidelines for Use" apply to your project or site.

This Phase II ESA has been prepared, in general accordance with the scope and limitations of the subcontract between HDR and GeoEngineers dated August 24, 2012, along with Amendments 1 through 9 and Agreement No. RTA/AE 044-12 between HDR and Sound Transit.

This report has been prepared for the exclusive use of Sound Transit and their agents. This report is not intended for use by others, and the information contained herein is not applicable to other properties. No other party may rely on the product of our services unless we agree in advance to such reliance in writing. This is to provide our firm with reasonable protection against open-ended liability claims by third parties with whom there would otherwise be no contractual limits to their actions. Within the limitations of scope, schedule and budget, our services have been executed in accordance with our Agreement with the Client and generally accepted environmental practices in this area at the time this report was prepared.

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

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

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

9.0 References

GeoEngineers, Inc. January 2017. Federal Way Link Extension, AE 0044-12 3.1.L, Geotechnical Recommendations Report.

GeoEngineers, Inc. March 2017. Federal Way Link Extension, AE 0044-12 WP 3.S, Phase I Environmental Site Assessment FL232, Tax Parcel 2500600520.

HDR - Electronic Design Drawings provided in August 2017.

Sound Transit, 2016. Basis of Design Geotechnical report, in press.

Washington State Department of Ecology. 1994. Natural Background Soil Metals Concentrations in Washington State, Washington State Department of Ecology Toxics Cleanup Program. Publication No. 94-115. Issued October 1994.

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

Washington State Department of Ecology. 2011. "Guidance for Remediation of Petroleum Contaminated Sites" Toxics Cleanup Program Publication No. 10-09-057.

Washington State Department of Ecology. 2015. "Soil – Method B and Groundwater Protection (unrestricted land use)". Cleanup Levels and Risk Calculation (CLARC). Department of Ecology. Web. Accessed June 20, 2017. https://fortress.wa.gov/ecy/clarc/CLARCHome.aspx

Table 1

Summary of Soil Chemical Analytical Results[1]
Sound Transit - Federal Way Link Extension FL232
Kent, Washington

Boring Identification	FL232-B1		FL232-B2	FL232-B3	FL232-B4	FL232-B5		FL232-B6		MTCA Method A/B Cleanup Level[10]	Naturally Occurring Background Metals in Puget Sound Soils[14]
Sample Identification[2]	FL232-B1-3.5-4.5	FL232-B1-7.5-8.5	FL232-B2-3.5-4.5	FL232-B3-6.5-7.5	FL232-B4-3.5-4.5	FL232-B5-3.5-4.5	FL232-B5-7-8	FL232-B6-3.5-4.5	FL232-B6-11.5-12.5		
Sample Date	5/24/2017	5/24/2017	5/24/2017	5/24/2017	5/24/2017	5/24/2017	5/24/2017	5/24/2017	5/24/2017		
Sample Start Depth (feet bgs)	3.5	7.5	3.5	6.5	3.5	3.5	7.0	3.5	11.5		
Sample End Depth (feet bgs)	4.5	8.5	4.5	7.5	4.5	4.5	8.0	4.5	12.5		
NWTPH-HCID[3] (mg/kg)											
Gasoline-range hydrocarbons	--	22 U	--	22 U	22 U	22 U	--	--	22 U	30/100[11]	N/A
Diesel-range hydrocarbons	--	55 U	--	56 U	54 U	130 U	--	--	54 U	2,000	
Lube Oil-range hydrocarbons	--	110 U	--	110 U	**Detected**	**Detected**	--	--	110 U	2,000	
NWTPH-Dx[4] (mg/kg)											
Diesel-range hydrocarbons	--	--	--	--	--	140 U	28 U	--	--	2,000	N/A
Lube Oil-range hydrocarbons	--	--	--	--	**390 Est**	**1,400**	**190**	--	--	2,000	
Metals[5] (mg/kg)											
Arsenic	11 U	--	11 U	11 U	--	11 U	--	11 U	--	20	7
Barium	--	--	--	**59**	--	**66**	--	--	--	16,000	NE
Cadmium	--	--	--	0.56 U	--	0.55 U	--	--	--	2	1
Chromium	--	--	--	**25**	--	**33**	--	--	--	2,000[12]	48
Chromium, Hexavalent	--	--	--	1.1 U	--	--	--	--	--	19	NE
Lead	**38**	--	5.7 U	5.6 U	--	**36**	--	**66**	--	250	24
Mercury	--	--	--	0.28 U	--	0.28 U	--	--	--	2	0.07
Selenium	--	--	--	11 U	--	11 U	--	--	--	400	NE
Silver	--	--	--	1.1 U	--	1.1 U	--	--	--	400	NE
VOCs[6] (mg/kg)											
1,1,1,2-Tetrachloroethane	--	--	--	0.00090 U	--	0.00094 U	--	--	--	38.5	N/A
1,1,1-Trichloroethane	--	--	--	0.00090 U	--	0.00094 U	--	--	--	2	
1,1,2,2-Tetrachloroethane	--	--	--	0.00090 U	--	0.00094 U	--	--	--	5	
1,1,2-Trichloroethane	--	--	--	0.00090 U	--	0.00094 U	--	--	--	17.5	
1,1-Dichloroethane	--	--	--	0.00090 U	--	0.00094 U	--	--	--	175	
1,1-Dichloroethene	--	--	--	0.00090 U	--	0.00094 U	--	--	--	4,000	
1,1-Dichloropropene	--	--	--	0.00090 U	--	0.00094 U	--	--	--	NE	
1,2,3-Trichlorobenzene	--	--	--	0.0012 U	--	0.00094 U	--	--	--	NE	
1,2,3-Trichloropropane	--	--	--	0.00090 U	--	0.00094 U	--	--	--	0.0333	
1,2,4-Trichlorobenzene	--	--	--	0.0012 U	--	0.00094 U	--	--	--	34.5	
1,2,4-Trimethylbenzene	--	--	--	0.0012 U	--	0.00094 U	--	--	--	NE	
1,2-Dibromo-3-Chloropropane	--	--	--	0.0045 U	--	0.0047 U	--	--	--	1.25	
1,2-Dibromoethane	--	--	--	0.00090 U	--	0.00094 U	--	--	--	0.005	
1,2-Dichlorobenzene (o-Dichlorobenzene)	--	--	--	0.0012 U	--	0.00094 U	--	--	--	7,200	
1,2-Dichloroethane	--	--	--	0.00090 U	--	0.00094 U	--	--	--	11	
1,2-Dichloropropane	--	--	--	0.00090 U	--	0.00094 U	--	--	--	27.8	
1,3,5-Trimethylbenzene	--	--	--	0.0012 U	--	0.00094 U	--	--	--	800	
1,3-Dichlorobenzene (m-Dichlorobenzene)	--	--	--	0.0012 U	--	0.00094 U	--	--	--	NE	
1,3-Dichloropropane	--	--	--	0.00090 U	--	0.00094 U	--	--	--	NE	
1,4-Dichlorobenzene (p-Dichlorobenzene)	--	--	--	0.0012 U	--	0.00094 U	--	--	--	185	
2,2-Dichloropropane	--	--	--	0.00090 U	--	0.00094 U	--	--	--	NE	
2-Butanone (MEK)	--	--	--	0.0045 U	--	0.0047 U	--	--	--	48,000	

Boring Identification	FL232-B1		FL232-B2	FL232-B3	FL232-B4	FL232-B5		FL232-B6		MTCA Method A/B Cleanup Level[10]	Naturally Occurring Background Metals in Puget Sound Soils[14]
Sample Identification[2]	FL232-B1-3.5-4.5	FL232-B1-7.5-8.5	FL232-B2-3.5-4.5	FL232-B3-6.5-7.5	FL232-B4-3.5-4.5	FL232-B5-3.5-4.5	FL232-B5-7-8	FL232-B6-3.5-4.5	FL232-B6-11.5-12.5		
Sample Date	5/24/2017	5/24/2017	5/24/2017	5/24/2017	5/24/2017	5/24/2017	5/24/2017	5/24/2017	5/24/2017		
Sample Start Depth (feet bgs)	3.5	7.5	3.5	6.5	3.5	3.5	7.0	3.5	11.5		
Sample End Depth (feet bgs)	4.5	8.5	4.5	7.5	4.5	4.5	8.0	4.5	12.5		
2-Chloroethyl vinyl ether	--	--	--	0.0045 U	--	0.0073 U	--	--	--	NE	
2-Chlorotoluene	--	--	--	0.0012 U	--	0.00094 U	--	--	--	1,600	
2-Hexanone	--	--	--	0.0045 U	--	0.0047 U	--	--	--	NE	
4-Chlorotoluene	--	--	--	0.0012 U	--	0.00094 U	--	--	--	NE	
4-Methyl-2-Pentanone (Methyl isobutyl ketone)	--	--	--	0.0045 U	--	0.0047 U	--	--	--	6,400	
Acetone	--	--	--	0.0045 U	--	0.0094 U	--	--	--	72,000	
Benzene	--	--	--	0.00090 U	--	0.00094 U	--	--	--	0.03	
Bromobenzene	--	--	--	0.00090 U	--	0.00094 U	--	--	--	NE	
Bromochloromethane	--	--	--	0.00090 U	--	0.00094 U	--	--	--	NE	
Bromodichloromethane	--	--	--	0.00090 U	--	0.00094 U	--	--	--	16.1	
Bromoform (Tribromomethane)	--	--	--	0.0045 U	--	0.0047 U	--	--	--	127	
Bromomethane	--	--	--	0.00090 U	--	0.00094 U	--	--	--	112	
Carbon Disulfide	--	--	--	0.0013 U	--	0.00094 U	--	--	--	8,000	
Carbon Tetrachloride	--	--	--	0.00090 U	--	0.00094 U	--	--	--	14.3	
Chlorobenzene	--	--	--	0.00090 U	--	0.00094 U	--	--	--	1,600	
Chloroethane	--	--	--	0.0045 U	--	0.0047 U	--	--	--	NE	
Chloroform	--	--	--	0.00090 U	--	0.00094 U	--	--	--	32.3	
Chloromethane	--	--	--	0.0045 U	--	0.0047 U	--	--	--	NE	
cis-1,2-Dichloroethene	--	--	--	0.00090 U	--	0.00094 U	--	--	--	160	
cis-1,3-Dichloropropene	--	--	--	0.00090 U	--	0.00094 U	--	--	--	NE	
Dibromochloromethane	--	--	--	0.00090 U	--	0.00094 U	--	--	--	11.9	
Dibromomethane	--	--	--	0.00090 U	--	0.00094 U	--	--	--	800	
Dichlorodifluoromethane (CFC-12)	--	--	--	0.00090 U	--	0.00094 U	--	--	--	16,000	
Ethylbenzene	--	--	--	0.00090 U	--	0.00094 U	--	--	--	6	N/A
Hexachlorobutadiene	--	--	--	0.0045 U	--	0.0047 U	--	--	--	12.8	
Isopropylbenzene (Cumene)	--	--	--	0.00090 U	--	0.00094 U	--	--	--	8,000	
Methyl Iodide (Iodomethane)	--	--	--	0.0045 U	--	0.0047 U	--	--	--	NE	
Methyl t-butyl ether	--	--	--	0.00090 U	--	0.00094 U	--	--	--	0.1	
Methylene Chloride	--	--	--	0.0045 U	--	0.0094 U	--	--	--	0.02	
Naphthalene	--	--	--	0.00090 U	--	0.00094 U	--	--	--	5	
n-Butylbenzene	--	--	--	0.00090 U	--	0.00094 U	--	--	--	4,000	
n-Propylbenzene	--	--	--	0.00090 U	--	0.00094 U	--	--	--	8,000	
p-Isopropyltoluene	--	--	--	0.0012 U	--	0.00094 U	--	--	--	NE	
Sec-Butylbenzene	--	--	--	0.00090 U	--	0.00094 U	--	--	--	8,000	
Styrene	--	--	--	0.00090 U	--	0.00094 U	--	--	--	16,000	
Tert-Butylbenzene	--	--	--	0.0012 U	--	0.00094 U	--	--	--	8,000	
Tetrachloroethene	--	--	--	0.00090 U	--	0.00094 U	--	--	--	0.05	
Toluene	--	--	--	0.0045 U	--	0.0047 U	--	--	--	7	
Trans-1,2-Dichloroethene	--	--	--	0.00090 U	--	0.00094 U	--	--	--	1,600	
Trans-1,3-Dichloropropene	--	--	--	0.00090 U	--	0.00094 U	--	--	--	NE	
Trichloroethene	--	--	--	0.00090 U	--	0.00094 U	--	--	--	0.03	
Trichlorofluoromethane (CFC-11)	--	--	--	0.00090 U	--	0.00094 U	--	--	--	24,000	
Vinyl Acetate	--	--	--	0.0045 U	--	0.0047 U	--	--	--	80,000	
Vinyl Chloride	--	--	--	0.00090 U	--	0.00094 U	--	--	--	240	
Xylene, m-,p-	--	--	--	0.0018 U	--	0.0019 U	--	--	--	9	
Xylene, o-	--	--	--	0.00090 U	--	0.00094 U	--	--	--		
Total Xylenes[7]	--	--	--	0.0018 U	--	0.0019 U	--	--	--		

Boring Identification	FL232-B1		FL232-B2	FL232-B3	FL232-B4	FL232-B5		FL232-B6		MTCA Method A/B Cleanup Level[10]	Naturally Occurring Background Metals in Puget Sound Soils[14]
Sample Identification[2]	FL232-B1-3.5-4.5	FL232-B1-7.5-8.5	FL232-B2-3.5-4.5	FL232-B3-6.5-7.5	FL232-B4-3.5-4.5	FL232-B5-3.5-4.5	FL232-B5-7-8	FL232-B6-3.5-4.5	FL232-B6-11.5-12.5		
Sample Date	5/24/2017	5/24/2017	5/24/2017	5/24/2017	5/24/2017	5/24/2017	5/24/2017	5/24/2017	5/24/2017		
Sample Start Depth (feet bgs)	3.5	7.5	3.5	6.5	3.5	3.5	7.0	3.5	11.5		
Sample End Depth (feet bgs)	4.5	8.5	4.5	7.5	4.5	4.5	8.0	4.5	12.5		
PAHs[8] (mg/kg)											
1-Methylnaphthalene	--	--	--	0.0074 U	--	0.0073 U	--	--	--	5	N/A
2-Methylnaphthalene	--	--	--	0.0074 U	--	0.0073 U	--	--	--		
Naphthalene	--	--	--	0.0074 U	--	0.0073 U	--	--	--		
Total Naphthalenes[9]	--	--	--	0.0074 U	--	0.0073 U	--	--	--		
Acenaphthene	--	--	--	0.0074 U	--	**0.013**	--	--	--	4,800	
Acenaphthylene	--	--	--	0.0074 U	--	0.0073 U	--	--	--	NE	
Anthracene	--	--	--	0.0074 U	--	**0.027**	--	--	--	24,000	
Benzo(a)anthracene (TEF 0.1)	--	--	--	0.0074 U	--	**0.11**	--	--	--	See cPAHs	
Benzo(a)pyrene (TEF 1)	--	--	--	0.0074 U	--	**0.10**	--	--	--	See cPAHs	
Benzo(b)fluoranthene (TEF 0.1)	--	--	--	0.0074 U	--	**0.12**	--	--	--	See cPAHs	
Benzo(g,h,i)perylene	--	--	--	0.0074 U	--	**0.086**	--	--	--	NE	
Benzo(j,k)fluoranthene (TEF 0.1)	--	--	--	0.0074 U	--	**0.037**	--	--	--	See cPAHs	
Chrysene (TEF 0.01)	--	--	--	0.0074 U	--	**0.12**	--	--	--	See cPAHs	
Dibenzo(a,h)anthracene (TEF 0.1)	--	--	--	0.0074 U	--	**0.016**	--	--	--	See cPAHs	
Fluoranthene	--	--	--	0.0074 U	--	**0.19**	--	--	--	3,200	
Fluorene	--	--	--	0.0074 U	--	**0.010**	--	--	--	3,200	
Indeno(1,2,3-c,d)pyrene (TEF 0.1)	--	--	--	0.0074 U	--	**0.086**	--	--	--	See cPAHs	
Phenanthrene	--	--	--	0.0074 U	--	**0.14**	--	--	--	NE	
Pyrene	--	--	--	0.0074 U	--	**0.17**	--	--	--	2,400	
cPAHs (benzo(a)pyrene toxicity equivalent concentration)[13]	--	--	--	0.0056 U	--	**0.14**	--	--	--	0.1	

Notes:

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

[2] Sample ID = Parcel ID - boring number - depth of sample [feet bgs]. FL232-B1-3.5-4.5 = Boring 1 from Parcel FL232, collected from a depth of 3.5 to 4.5 feet bgs.

[3] Petroleum Hydrocarbon Identification by Northwest Method NWTPH-HCID.

[4] Diesel- and lube oil-range petroleum hydrocarbons by Northwest Method NWTPH-Dx.

[5] Resource Conservation Recovery Act (RCRA) metals analyzed by EPA 6000/7000 series method.

[6] Volatile organic compounds (VOCs) analyzed by United States Environmental Protection Agency (EPA) Method 8260C.

[7] Total xylenes consists of m,p- and o- xylenes. The higher detection limit is used for non-detects.

[8] Polycyclic aromatic hydrocarbons (PAHs) and carcinogenic PAHs (cPAHs) analyzed by EPA Method 8270D/SIM.

[9] Total naphthalenes consists of 1-methylnaphthalene, 2-methylnaphthalene and naphthalene.

[10] MTCA Method B cleanup level used when Method A cleanup level has not been established.

[11] Model Toxics Control Act (MTCA) Method A cleanup level for gasoline is 30 mg/kg if benzene is detected or if the sum of toluene, ethylbenzene and xylenes are greater than or equal to 1% of the total gasoline detection.

[12] MTCA Method A cleanup level for Trivalent Chromium.

[13] Results for cPAHs are shown as the sum of the benzo[a]pyrene toxicity equivalent concentrations, calculated by multiplying each individual cPAH concentration by its corresponding TEF. In this sum, nondetects are represented as ½ of the corresponding analyte reporting limit multiplied by the TEF.

[14] 90th Percentile for natural background soil metals concentrations in Puget Sound region, Department of Ecology, publication #94-115, dated October 1994.

"--" = not tested

bgs = below ground surface

MTCA = Model Toxics Control Act

mg/kg = milligrams per kilogram

NE = not established

N/A = not applicable

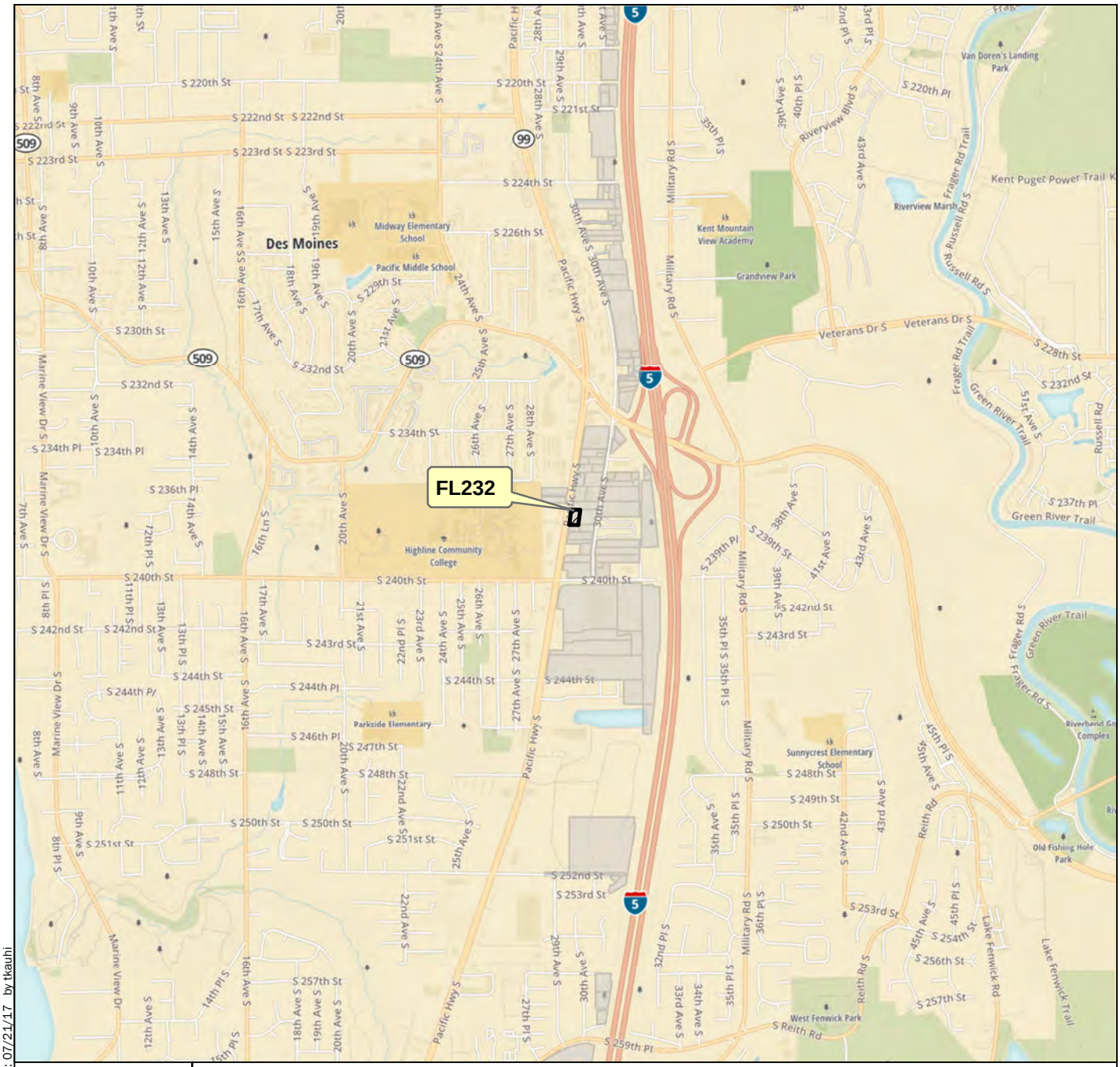
U = Analyte was not detected at or greater than the listed reporting limit.

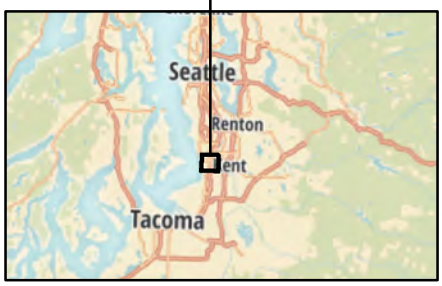
TEF = Toxicity Equivalency Factor as defined in WAC 173-340-900 Table 708-2.

Est = Estimated from NWTPH-HCID chromatogram

Bold font type indicates that the analyte was detected at a concentration greater than the respective laboratory reporting limit.

Gray shading indicates that the detected result exceeds the specified MTCA Cleanup Level.





Legend

- Subject Property
- Project Parcel

N
W E
S

2,000 0 2,000

Feet

Notes:

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

Data Source: Mapbox Open Street Map, 2017

Projection: NAD 1983 UTM Zone 10N

Vicinity Map

Phase II Environmental Site Assessment
Federal Way Link Extension
Washington

GeoEngineers

Figure 1

P:\4\4082039\GIS\MXD\4082039901_F01_VicinityMap_FL232.mxd Date Exported: 07/21/17 by tkauhi

Legend

GeoEngineers Exploration
Site Feature
Current Sewer Line
Historic Sewer Line
Subject Property
Fee Take
Temporary Construction Easement

Notes:

1. Based on current design information for the FWLE project (HDR, provided in June 2017)
2. The locations of all features shown are approximate. 3. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Aerial and road names from King County 2015.

Parcel #: 2500600520
Address: 23646 PACIFIC HWY S
City: Kent
Owner: GADINI, LOUIS A.
Current Use: Restaurant/Lounge

N W E S

30 0 30

Feet

Site Plan - FL-232

Federal Way Link Extension
Washington

GeoEngineers

Figure 2

P:\1.40820039\GIS\MXD\40820390l_F02_SitePlanPhase2FL232.mxd Date Exported: 09/06/17 by cchelf

Legend

- GeoEngineers Exploration
- Site Feature
- Current Sewer Line
- Historic Sewer Line
- Subject Property
- Parcel

Planned Construction Features

- Column
- Road/Parking/Sidewalk
- Station (line)
- Utilities
- Striping (Pavement Markings)
- Structure

Notes:

1. Based on current design information for the FWLE project (HDR, provided in June 2017)
2. The locations of all features shown are approximate. 3. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Aerial and road names from King County 2015.

Parcel #: 2500600520
Address: 23646 PACIFIC HWY S
City: Kent
Owner: GADINI, LOUIS A.
Current Use: Restaurant/Lounge

N
W E
S

30 0 30
Feet

Proposed Construction Plan - FL232

Phase II ESA
Federal Way Link Extension
Washington

GeoEngineers

Figure 3

P:\4\4082039\GIS\MXD\408203901_F03_ConstructionPlanPhase2_FL232.mxd Date Exported: 09/06/17 by cheff

APPENDIX A
FIELD EXPLORATION PROGRAM

APPENDIX A
FIELD PROCEDURES AND BORING LOGS

Underground Utility Locate

Prior to drilling activities, an underground utility locate was conducted in the areas of the proposed boring locations to identify subsurface utilities and/or potential underground physical hazards. The underground utility check consisted of contacting a local utility alert service (one-call) and hiring a private utility locating service.

Geophysical Survey

Prior to drilling activities, a geophysical survey was conducted at the site to identify features associated with the prior use of a septic system on the property.

Soil Sampling

The direct-push explorations were completed using direct-push drilling equipment. Soil samples were obtained using a 5-foot-long core sampler. The sampler was driven into the soil using a pneumatic hammer. Upon retrieval, the sampler was opened and a GeoEngineers representative examined the soil and performed field screening tests. The boring logs are presented in Figures A-2 through A-7. Selected photographs taken during the Phase II ESA drilling are presented as Figures A-8 and A-9.

Selected soil samples were obtained in glass jars (supplied by the analytical laboratory), labeled and stored in a cooler with ice pending delivery to the laboratory. VOC samples were collected first, directly from the sample sleeve using the 5035A sampling method. Following the VOC sample collection, the remaining soil was placed in sample containers provided by the analytical laboratory. All sampling equipment was decontaminated between samples using a Liqui-Nox® wash solution and distilled water rinse.

Soil samples obtained from the direct-push explorations were collected from the sampler with a stainless-steel knife, a stainless-steel trowel and/or new gloves. A portion of each sample was placed in laboratory-prepared sample jars for possible chemical analysis. The remaining portion of each sample was used for field screening.

The samples collected from the direct-push borings were identified using the following identification system: FL232-B1-3.5-4.5, where FL232 is the identified Federal Way Link Extension parcel on which the boring was located, B1 is the direct-push boring number and the approximate depth at which the sample was obtained (e.g., FL232-B1-3.5-4.5 was collected from the FL232 parcel at boring B1 at a depth of approximately 3.5 to 4.5 feet bgs).

Selected samples from the explorations were submitted for chemical analysis based on field

screening results. The soil samples were placed in a cooler with ice for transport to the laboratory. Standard chain-of-custody procedures were followed in transporting the soil samples to the laboratory. Drill cuttings were placed in drums pending disposal.

Field Screening of Soil Samples

Soil samples obtained from the borings were screened in the field for evidence of contamination using: 1) visual examination; 2) sheen screening and 3) vapor headspace screening with a photo-ionization detector (PID). The results of headspace and sheen screening are included in the boring logs.

Visual screening consists of inspecting the soil for stains indicative of petroleum-related contamination. Visual screening is generally more effective when contamination is related to heavy petroleum hydrocarbons, such as motor oil or hydraulic oil, or when hydrocarbon concentrations are high. Sheen screening and headspace vapor screening are more sensitive methods that have been effective in detecting contamination at concentrations less than regulatory cleanup guidelines. Sheen screening involves placing soil in a pan of water and observing the water surface for signs of sheen. Sheen classifications are as follows:

No Sheen (NS)	No visible sheen on water surface.
Slight Sheen (SS)	Light, colorless, dull sheen; spread is irregular, not rapid; sheen dissipates rapidly.
Moderate Sheen (MS)	Light to heavy sheen, may have some color/iridescence; spread is irregular to flowing; few remaining areas of no sheen on water surface.
Heavy Sheen (HS)	Heavy sheen with color/iridescence; spread is rapid; entire water surface may be covered with sheen.

Headspace vapor screening involves placing a soil sample in a plastic sample bag. Air is captured in the bag and the bag is shaken to expose the soil to the air trapped in the bag. The probe of a PID is inserted in the bag and the instrument measures the concentration of combustible vapor in the air removed from the sample headspace. The PID measures concentrations in ppm (parts per million) and is calibrated to isobutylene. The PID is designed to quantify combustible gas and organic vapor concentrations up to 2,500 ppm. A lower threshold of significance of 1 ppm was used in this application. Field screening results are site-specific and vary with soil type, soil moisture content, temperature and type of contaminant.

Groundwater Sampling

Direct-Push Borings

Temporary drill casing and well screen were left in place in one boring to collect a groundwater

sample. Groundwater did not accumulate in the temporary drill casing and well screen after one hour. The temporary casing and well screen was removed from the boring and the boring location abandoned in accordance with Washington State regulations.

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% RETAINED ON NO. 200 SIEVE	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS
				SP	POORLY-GRADED SANDS, GRAVELLY SAND
	MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS, ROCK FLOUR, CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% PASSING NO. 200 SIEVE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS AND SILTS OF MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: Multiple symbols are used to indicate borderline or dual soil classifications

ADDITIONAL MATERIAL SYMBOLS

SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
	AC	Asphalt Concrete
	CC	Cement Concrete
	CR	Crushed Rock/ Quarry Spalls
	SOD	Sod/Forest Duff
	TS	Topsoil

Groundwater Contact

Measured groundwater level in exploration, well, or piezometer

Measured free product in well or piezometer

Graphic Log Contact

Distinct contact between soil strata

Approximate contact between soil strata

Material Description Contact

Contact between geologic units

Contact between soil of the same geologic unit

Sampler Symbol Descriptions

2.4-inch I.D. split barrel

Standard Penetration Test (SPT)

Shelby tube

Piston

Direct-Push

Bulk or grab

Continuous Coring

Blowcount is recorded for driven samplers as the number of blows required to advance sampler 12 inches (or distance noted). See exploration log for hammer weight and drop.

"P" indicates sampler pushed using the weight of the drill rig.

"WOH" indicates sampler pushed using the weight of the hammer.

Laboratory / Field Tests

%F	Percent fines
%G	Percent gravel
AL	Atterberg limits
CA	Chemical analysis
CP	Laboratory compaction test
CS	Consolidation test
DD	Dry density
DS	Direct shear
HA	Hydrometer analysis
MC	Moisture content
MD	Moisture content and dry density
Mohs	Mohs hardness scale
OC	Organic content
PM	Permeability or hydraulic conductivity
PI	Plasticity index
PP	Pocket penetrometer
SA	Sieve analysis
TX	Triaxial compression
UC	Unconfined compression
VS	Vane shear

Sheen Classification

NS	No Visible Sheen
SS	Slight Sheen
MS	Moderate Sheen
HS	Heavy Sheen

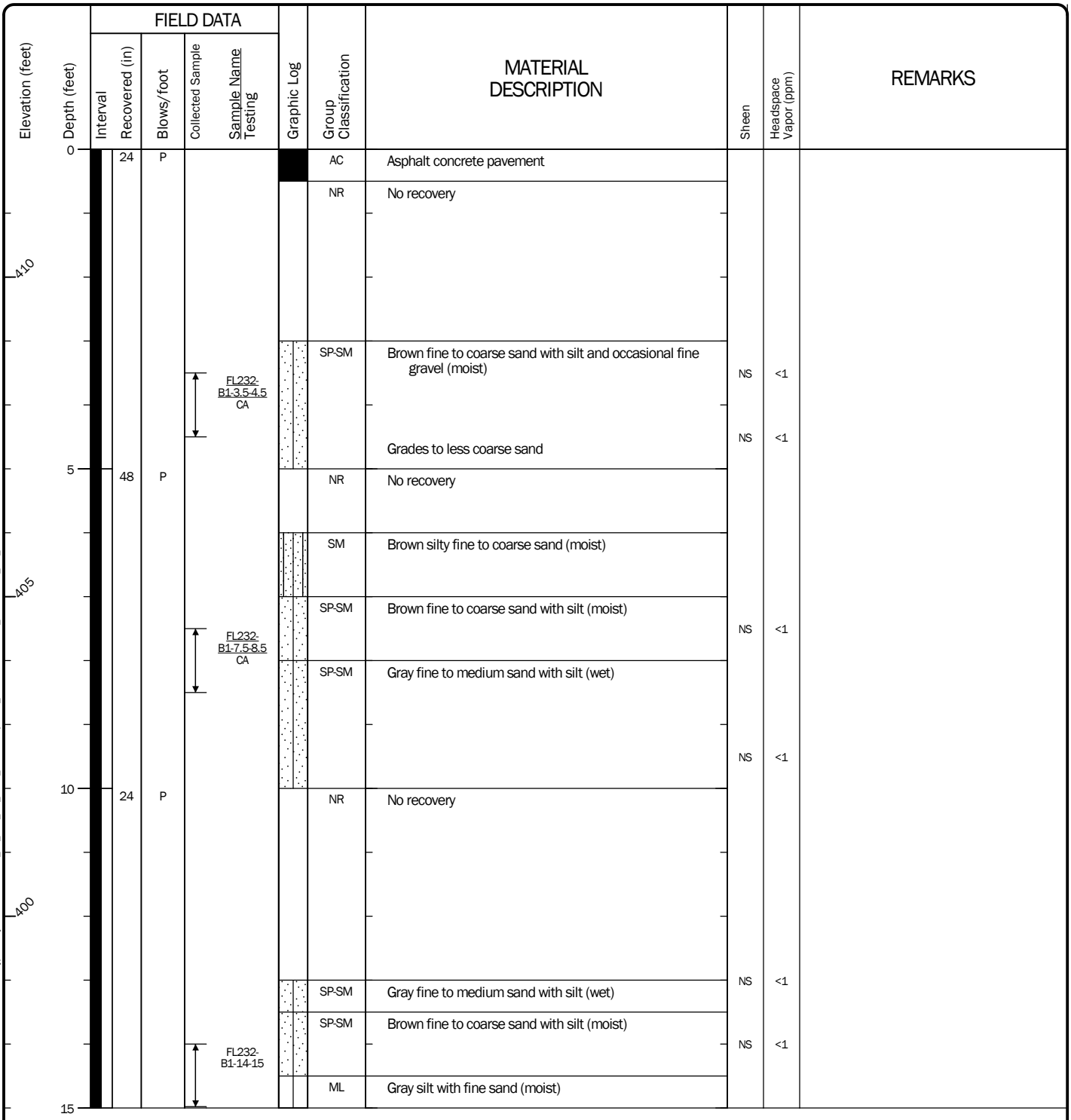
NOTE: The reader must refer to the discussion in the report text and the logs of explorations for a proper understanding of subsurface conditions. Descriptions on the logs apply only at the specific exploration locations and at the time the explorations were made; they are not warranted to be representative of subsurface conditions at other locations or times.

Key to Exploration Logs

GeoEngineers

Figure A-1

Drilled Start 5/24/2017 End 5/24/2017	Total Depth (ft) 15	Logged By PDR Checked By DLC	Driller Holt Services, Inc.	Drilling Method Direct-Push	
Surface Elevation (ft) 412 Vertical Datum NAVD88		Hammer Data		Drilling Equipment Geoprobe 7800	
Easting (X) 1278261.4746 Northing (Y) 145216.5345		System Datum WA State Plane North NAD83		Groundwater not observed at time of exploration	
Notes:					



Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on hand-held GPS, Vertical approximated based on hand-held GPS

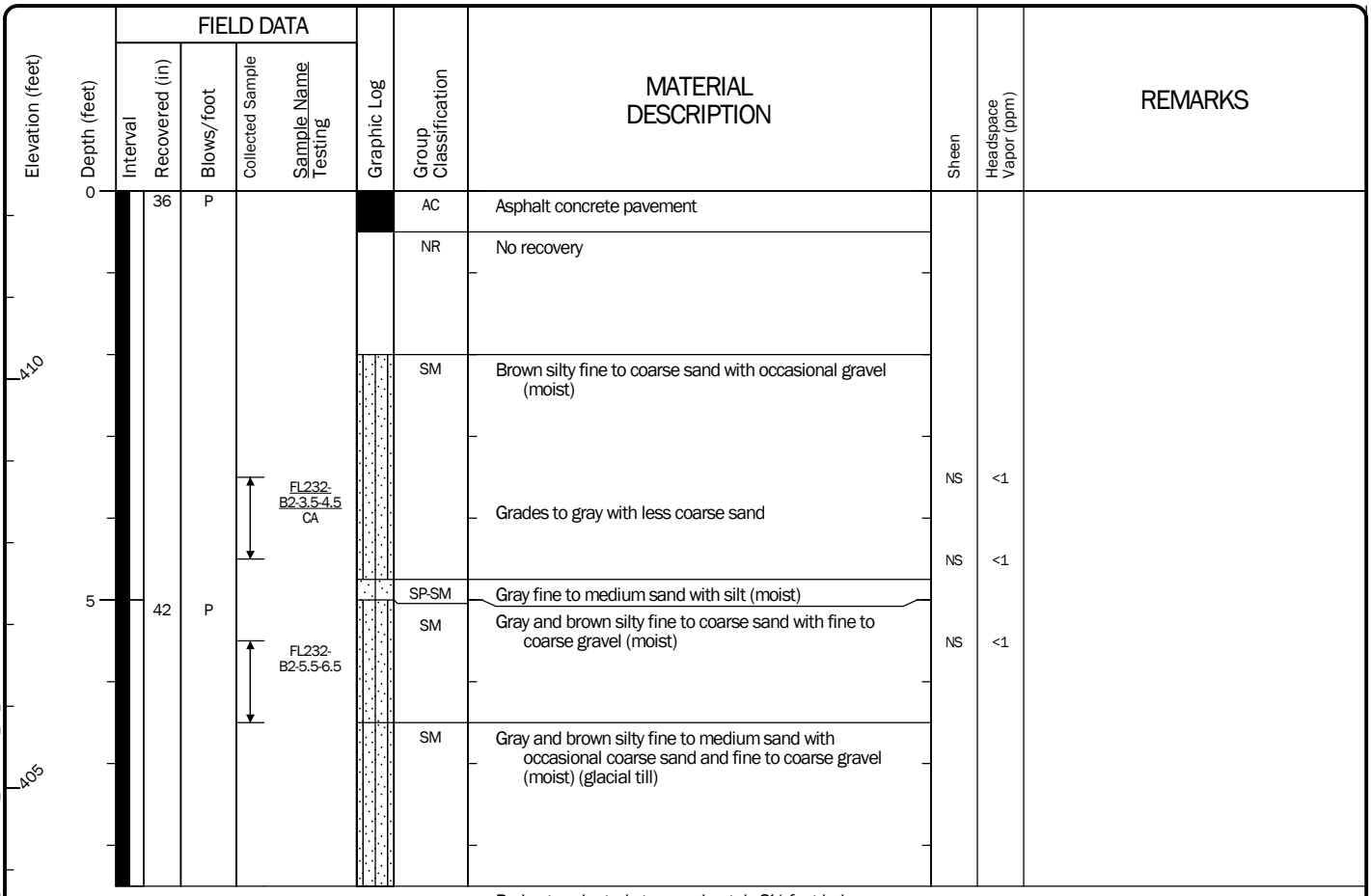
Log of Direct-Push Boring FL232-B1

GeoEngineers

Project: Sound Transit - Federal Way Link Extension FL232
Project Location: 23646 Pacific Highway S., Kent, Washington
Project Number: 4082-039-01

Figure A-2
Sheet 1 of 1

Drilled Start 5/24/2017 End 5/24/2017	Total Depth (ft) 8.5	Logged By PDR Checked By DLC	Driller Holt Services, Inc.	Drilling Method Direct-Push	
Surface Elevation (ft) 412.3 Vertical Datum NAVD88		Hammer Data		Drilling Equipment Geoprobe 7800	
Easting (X) 1278244.4244 Northing (Y) 145184.5995		System Datum WA State Plane North NAD83		Groundwater not observed at time of exploration	
Notes:					



Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on hand-held GPS, Vertical approximated based on hand-held GPS

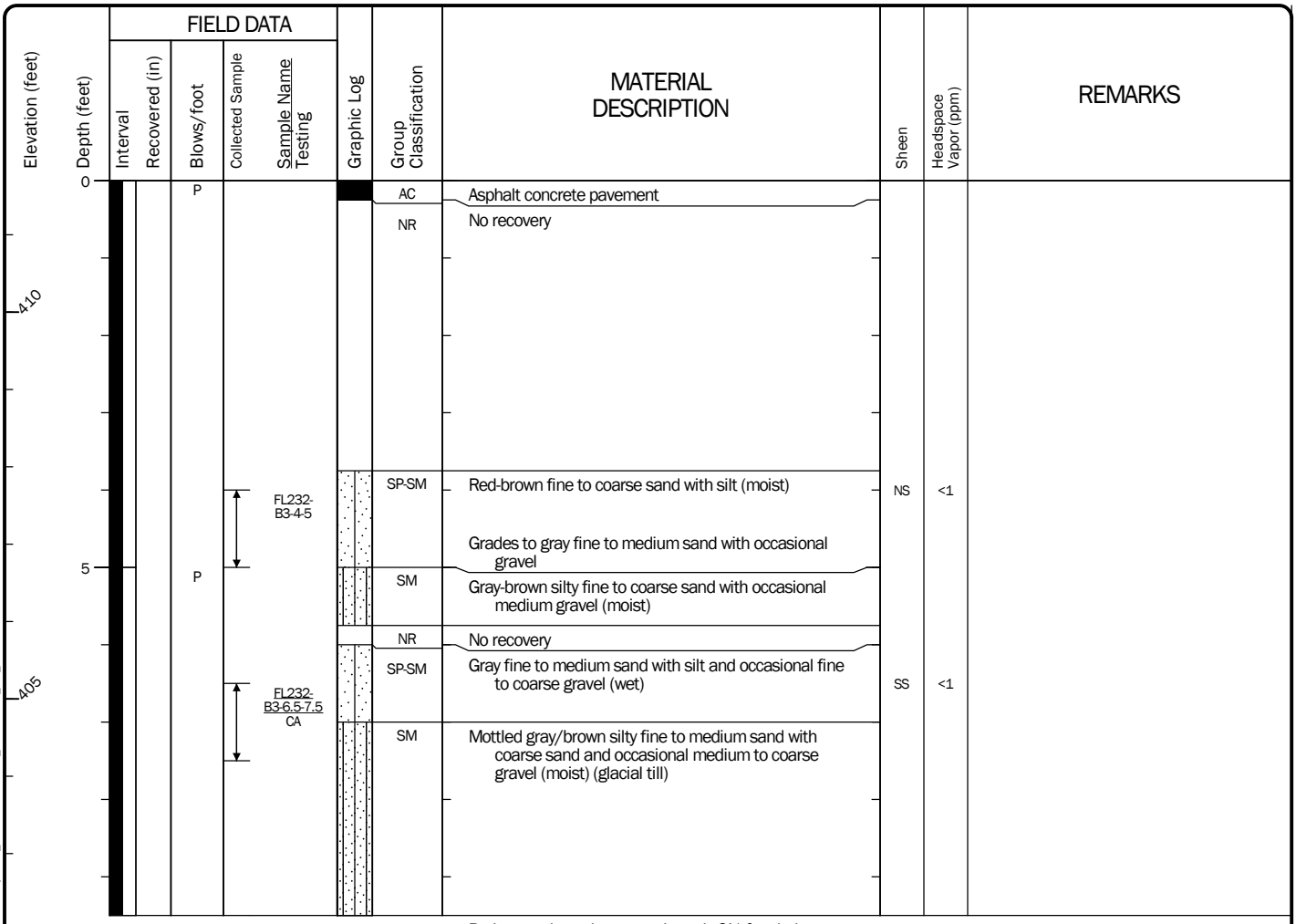
Log of Direct-Push Boring FL232-B2

GeoEngineers

Project: Sound Transit - Federal Way Link Extension FL232
Project Location: 23646 Pacific Highway S., Kent, Washington
Project Number: 4082-039-01

Figure A-3
Sheet 1 of 1

Drilled Start 5/24/2017 End 5/24/2017	Total Depth (ft) 9.5	Logged By PDR Checked By DLC	Driller Holt Services, Inc.	Drilling Method Direct-Push	
Surface Elevation (ft) 411.7 Vertical Datum NAVD88		Hammer Data		Drilling Equipment Geoprobe 7800	
Easting (X) 1278245.3729 Northing (Y) 145203.6103		System Datum WA State Plane North NAD83		Groundwater not observed at time of exploration	
Notes:					



Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on hand-held GPS, Vertical approximated based on hand-held GPS

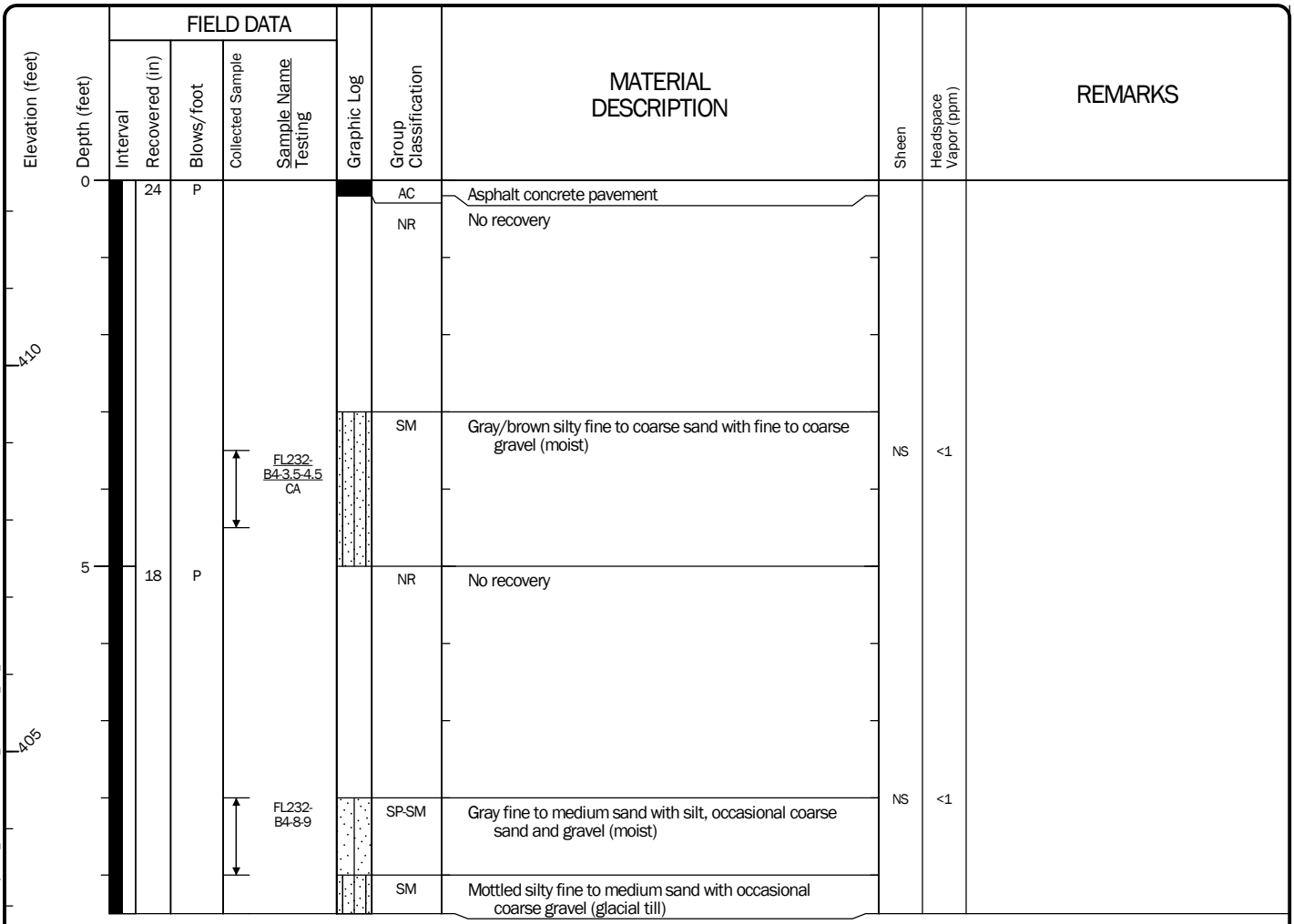
Log of Direct-Push Boring FL232-B3

GeoEngineers

Project: Sound Transit - Federal Way Link Extension FL232
Project Location: 23646 Pacific Highway S., Kent, Washington
Project Number: 4082-039-01

Figure A-4
Sheet 1 of 1

Drilled Start 5/24/2017 End 5/24/2017	Total Depth (ft) 9.5	Logged By PDR Checked By DLC	Driller Holt Services, Inc.	Drilling Method Direct-Push	
Surface Elevation (ft) 412.4 Vertical Datum NAVD88		Hammer Data		Drilling Equipment Geoprobe 7800	
Easting (X) 1278290.8656 Northing (Y) 145227.1368		System Datum WA State Plane North NAD83		Groundwater not observed at time of exploration	
Notes:					



Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on hand-held GPS, Vertical approximated based on hand-held GPS

Log of Direct-Push Boring FL232-B4

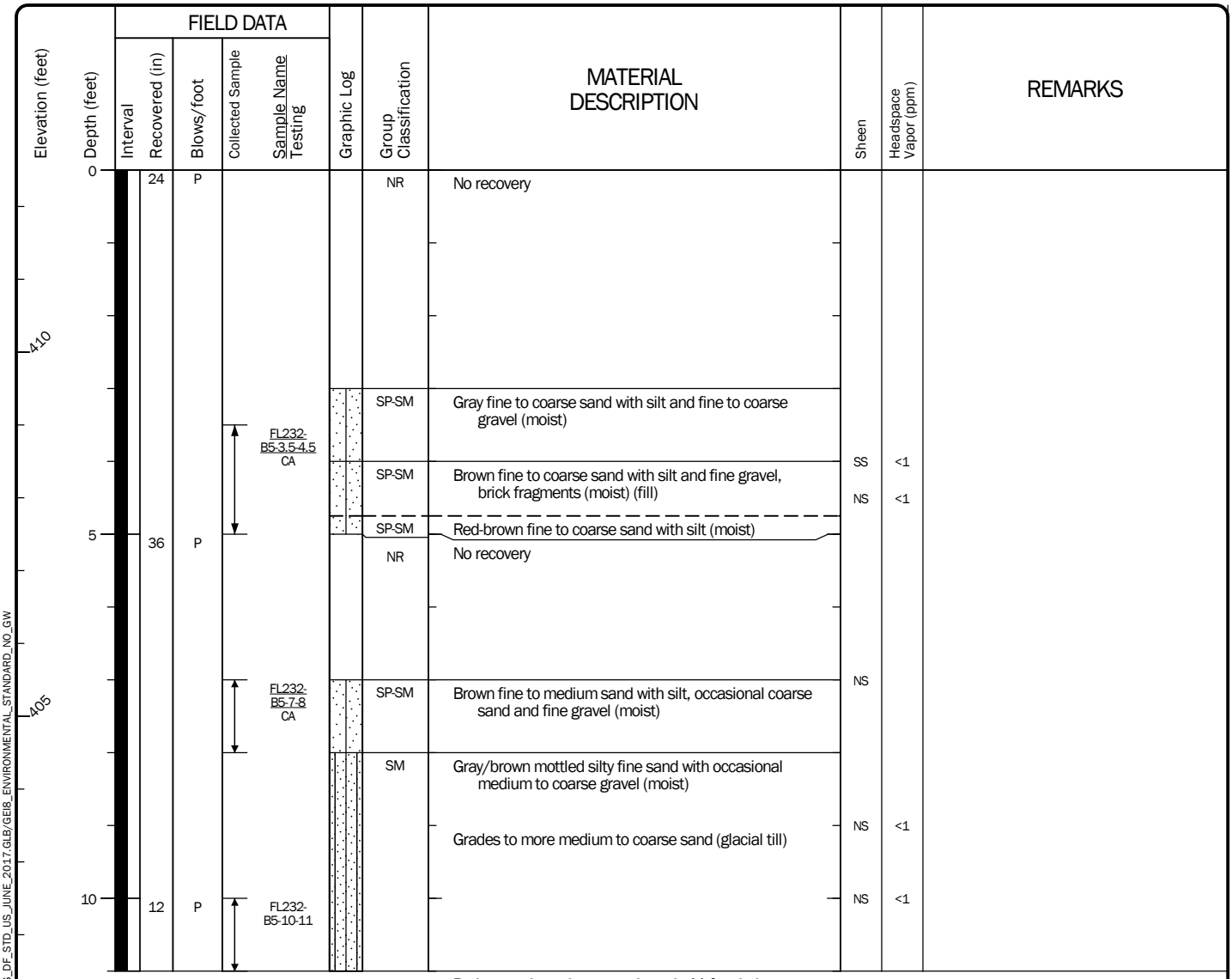
GeoEngineers

Project: Sound Transit - Federal Way Link Extension FL232
Project Location: 23646 Pacific Highway S., Kent, Washington
Project Number: 4082-039-01

Figure A-5
Sheet 1 of 1

Drilled	Start 5/24/2017	End 5/24/2017	Total Depth (ft)	11	Logged By	PDR	Checked By	DLC	Driller	Holt Services, Inc.	Drilling Method	Direct-Push
Surface Elevation (ft) Vertical Datum	412.5 NAVD88				Hammer Data						Drilling Equipment	Geoprobe 7800
Easting (X) Northing (Y)	1278282.8617 145245.2254				System Datum	WA State Plane North NAD83					Groundwater not observed at time of exploration	

Notes:



Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on hand-held GPS, Vertical approximated based on hand-held GPS

Log of Direct-Push Boring FL232-B5

GeoEngineers

Project: Sound Transit - Federal Way Link Extension FL232
Project Location: 23646 Pacific Highway S., Kent, Washington
Project Number: 4082-039-01

Figure A-6
Sheet 1 of 1

Drilled Start 5/24/2017 End 5/24/2017	Total Depth (ft) 14.5	Logged By PDR Checked By DLC	Driller Holt Services, Inc.	Drilling Method Direct-Push	
Surface Elevation (ft) 412.2 Vertical Datum NAVD88		Hammer Data		Drilling Equipment Geoprobe 7800	
Easting (X) 1278311.9167 Northing (Y) 145328.8456		System Datum WA State Plane North NAD83		Groundwater not observed at time of exploration	
Notes:					

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		24	P				AC	Asphalt concrete pavement			
								NR	No recovery			
410								SP-SM	Gray fine to coarse sand with silt and fine to coarse gravel (moist)	NS	<1	
						FL232-B6-3.5-4.5 CA		OH	Dark brown organic silt (moist)			
								SM	Brown silty fine sand with occasional fine gravel (moist)	NS	<1	
	5		24	P				NR	No recovery			
405								SM	Brown silty fine to coarse sand with fine to coarse gravel (moist)	NS	<1	
								SP-SM	Gray/brown fine to medium sand with silt (moist)			
								SP-SM	Gray fine to coarse sand with silt and fine to coarse gravel (moist)			
	10		36	P				NR	No recovery			
400						FL232-B6-11.5-12.5 CA		SP-SM	Brown fine to coarse sand with silt and occasional fine to coarse gravel (moist)	SS	<1	
								SM	Gray silty fine to coarse sand with fine to coarse gravel (moist)			
						FL232-B6-13-14				NS	<1	
								SM	Gray silty fine sand with fine gravel (moist) (glacial till)			

Boring terminated at approximately 14½ feet below ground surface due to refusal

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on hand-held GPS, Vertical approximated based on hand-held GPS

Log of Direct-Push Boring FL232-B6

GeoEngineers

Project: Sound Transit - Federal Way Link Extension FL232
Project Location: 23646 Pacific Highway S., Kent, Washington
Project Number: 4082-039-01

Figure A-7
Sheet 1 of 1

Photograph 1 – Drilling FL232-B1 in front of the auto detailing enclosure, view to east.

Photograph 2 – Drilling FL232-B4 north of the auto detailing enclosure, view to south.

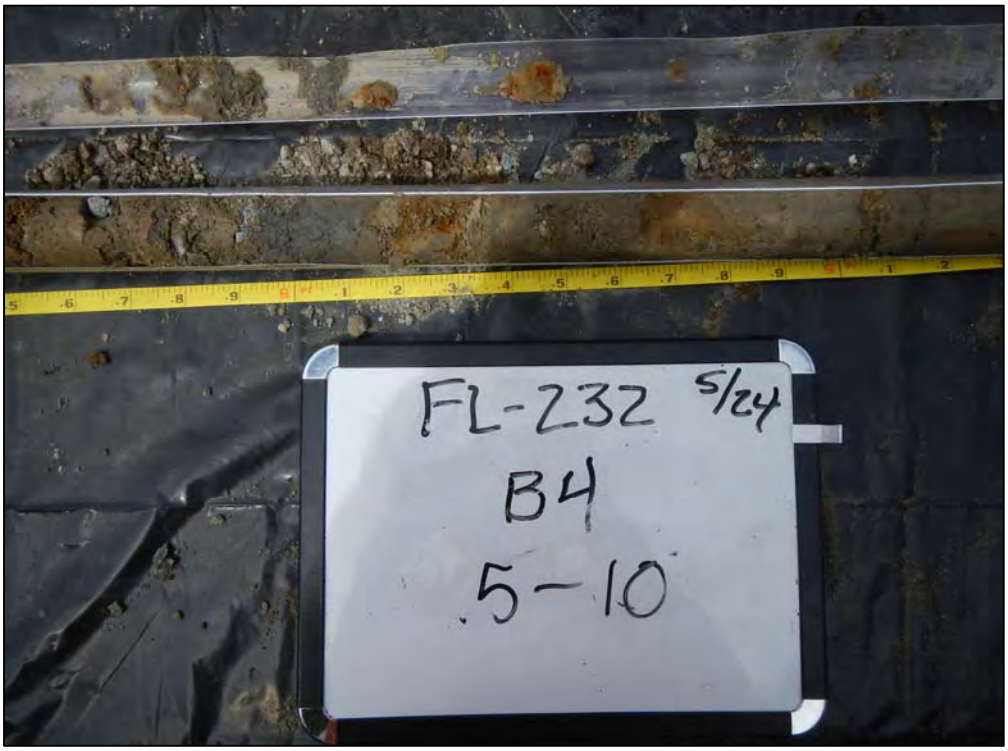
Site Photographs May 2017
FL232

Phase II Environmental Site Assessment
Federal Way Link Extension
Washington

GeoEngineers

Figure A-8

Photograph 3 – Soil from FL232-B5, 0 to 5 feet below ground surface.



Photograph 4 – Soil from FL232-B5, 5 to 10 feet below ground surface.

Site Photographs May 2017
FL232

Phase II Environmental Site Assessment
Federal Way Link Extension
Washington

GeoEngineers

Figure A-9

Global Geophysics

P. O. Box 2229
Redmond, WA 98053
Tel: 425-890-4321
Fax: 360-805-0259

July 12, 2017 Our Ref.: 107-0428-002.000

GeoEngineers, Inc.
1101 Fawcett Avenue, Suite 200
Tacoma, WA 98402

Attention: Ms.Tricia DeOme

RE: REPORT ON THE GEOPHYSICAL SURVEY AT 23646 PACIFIC HIGHWAY S, KENT, WA

Dear Ms. DeOme:

Global Geophysics conducted geophysical survey on May 17, 2017 at 23646 Pacific Highway S, Kent, WA. The proposed objective of the geophysical investigation is to assist in locating a potential septic tank.

METHODOLOGY AND INSTRUMENTATION

GPR and EM61 were used for this study. The following paragraphs describe the methods and field procedures.

Time Domain Electromagnetic (EM61)

The time-domain electromagnetic system is capable of detecting buried metal objects. It transmits a pulsed electromagnetic field into the ground, which induces eddy currents in buried metallic objects. These eddy currents generate secondary electromagnetic fields that are detected by the system. The time duration or decay rate, of the secondary EM field is related to the electrical conductivity characteristics of the buried object.

A four-channel (gate) high sensitivity metal detector, Geonics EM61 Mk2, will be used to collect the data along the same traverses as the GPR. The low channel number (1) represents anomalies produced by shallow objects and the high channel number (4) represents anomalies produced by deeper objects. The subsurface depth range is from approximately 1 to 15 feet. The data will be stored digitally and downloaded after the survey for analysis and mapping.

Ground Penetrating Radar

The GPR method uses electromagnetic pulses, emitted at regular intervals by an antenna to map subsurface features. The electromagnetic pulses are reflected where changes in electrical properties of materials occur such as changes in lithology or where underground utilities are present. The reflected electromagnetic energy is received by an antenna, converted into an electrical signal, and recorded on the GPR unit. The data is recorded and viewed in real time on a graphical display that depicts a continuous profile or cross-section image of the subsurface directly beneath the path of the antenna.

The depth of penetration of the GPR signal varies according to antenna frequency and the conductivity of the subsurface material. The depth of subsurface penetration with GPR decreases with an increase in the frequency of the antenna and an increase in soil conductivity. Low frequency antennas (50 to 500 MHz) provide the best compromise between obtaining good subsurface penetration and resolution.

The data were collected along the same EM transects using Geophysical Survey Systems, Inc. (GSSI) SIR 2000 GPR system with antennas having a center frequency of 200 MHz. The data was digitally recorded for post processing.

RESULTS

The EM61 data are contoured and presented in Figure 1. GPR profiles are shown in Figures 2 -13. The interpreted GPR anomalies are overlaid on the EM61 data. The interpreted locations of potential septic tank is marked on the map. Other linear GPR anomalies are likely to be utilities.

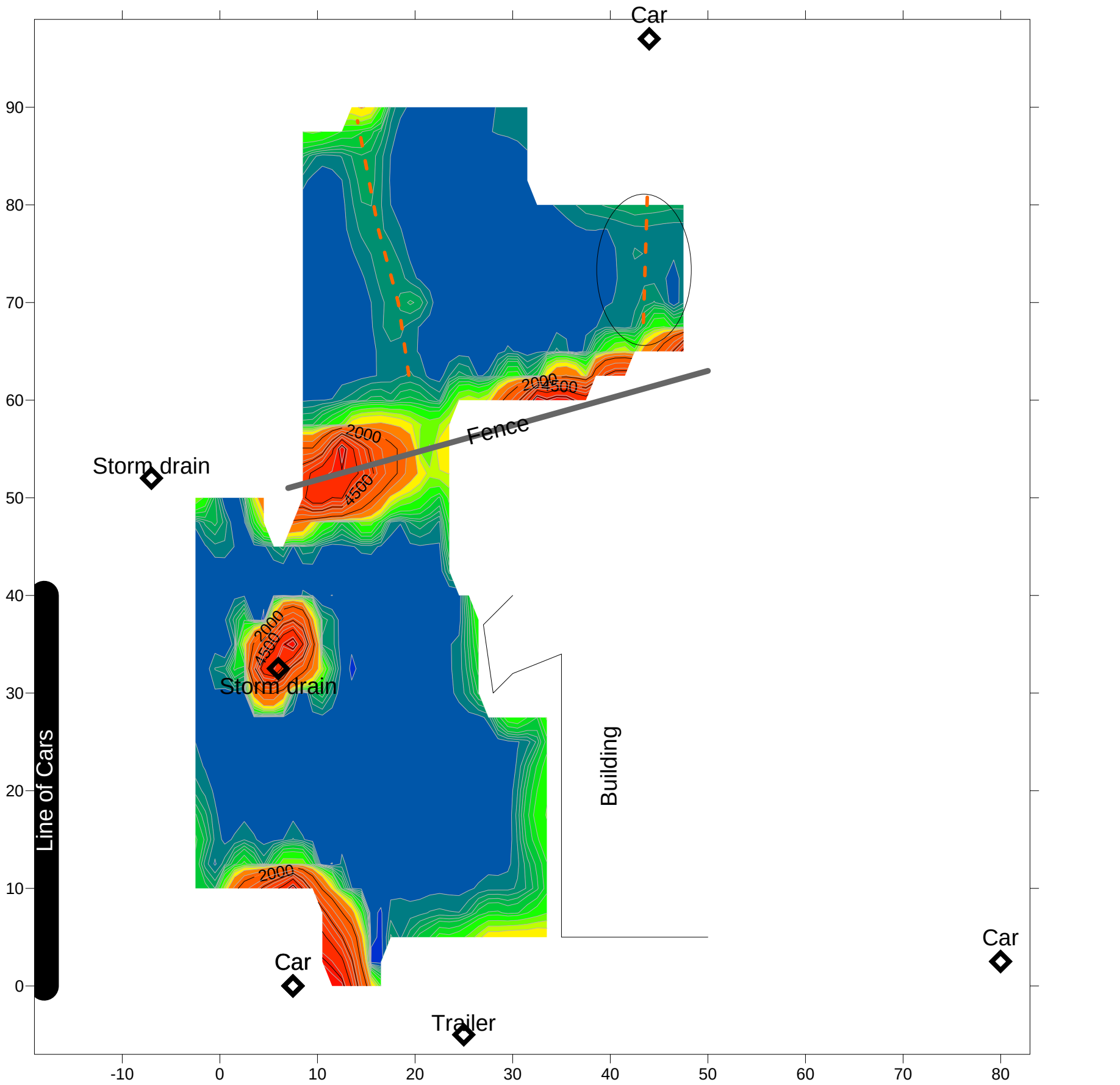
LIMITATIONS OF THE GEOPHYSICAL METHOD

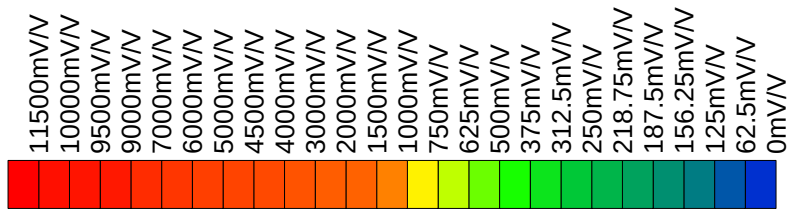
Global geophysics services are conducted in a manner consistent with the level of care and skill ordinarily exercised by other members of the geophysical community currently practicing under similar conditions subject to the time limits and financial and physical constraints applicable to the services. GPR and EM are remote sensing geophysical methods that may not detect all subsurface conditions due to the limitations of the methods, soil conditions, size of the features and their depths.

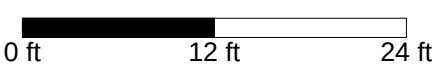
Sincerely,

Global Geophysics

John Liu, Ph.D., R.G.
Principal Geophysicist







N

PROJECT
SoundTransit Federal Way Link Extension
23646 Pacific Highway S, Kent, WA (FL-232)

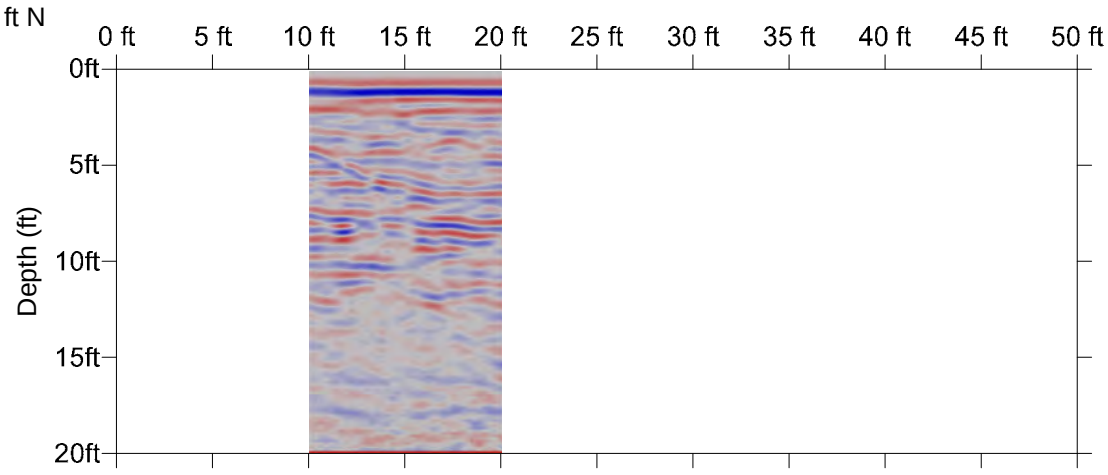
TITLE
EM61 Data Contour Plan

Global Geophysics
P.O. Box 2229
Redmond, WA 98073-2229
Tel: 425-890-4321

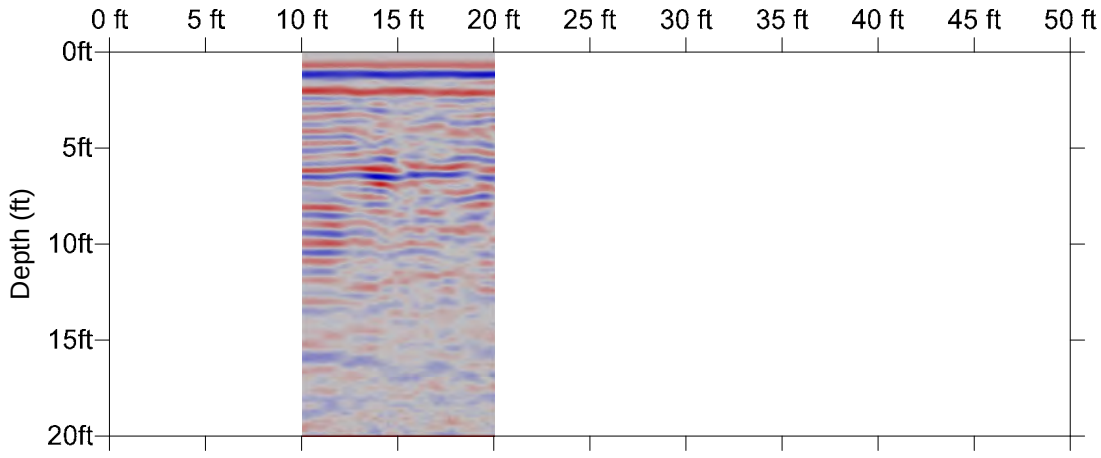
Project #: 107-0428.002			FILE No.
DESIGN	--		SCALE AS SHOWN REV.
CADD	JL		**FIGURE 1**
CHECK	JL		
REVIEW	--		

West-East Profiles

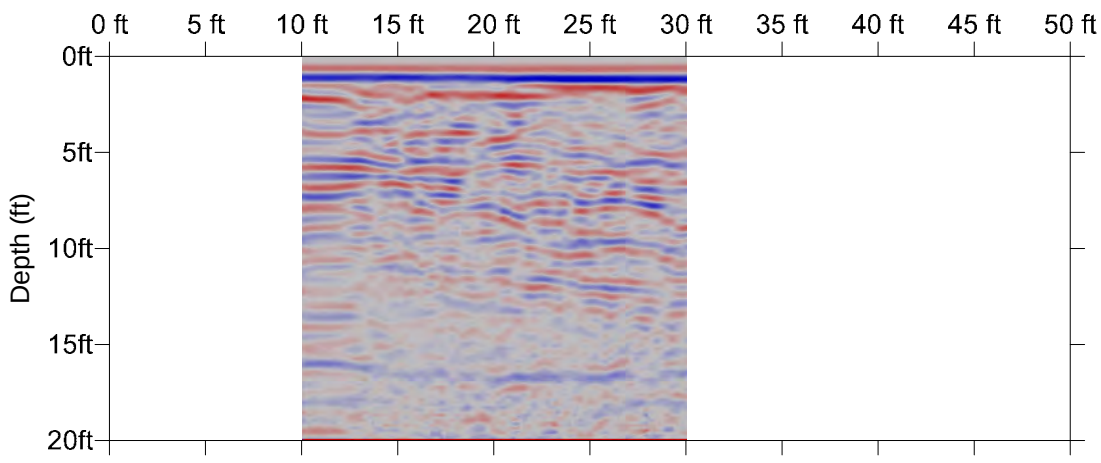
0 ft N



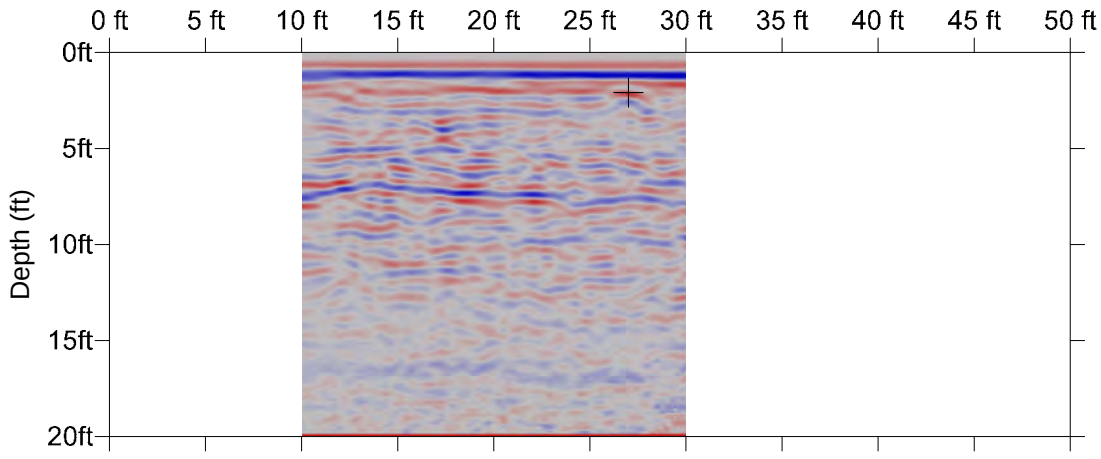
2.5 ft N



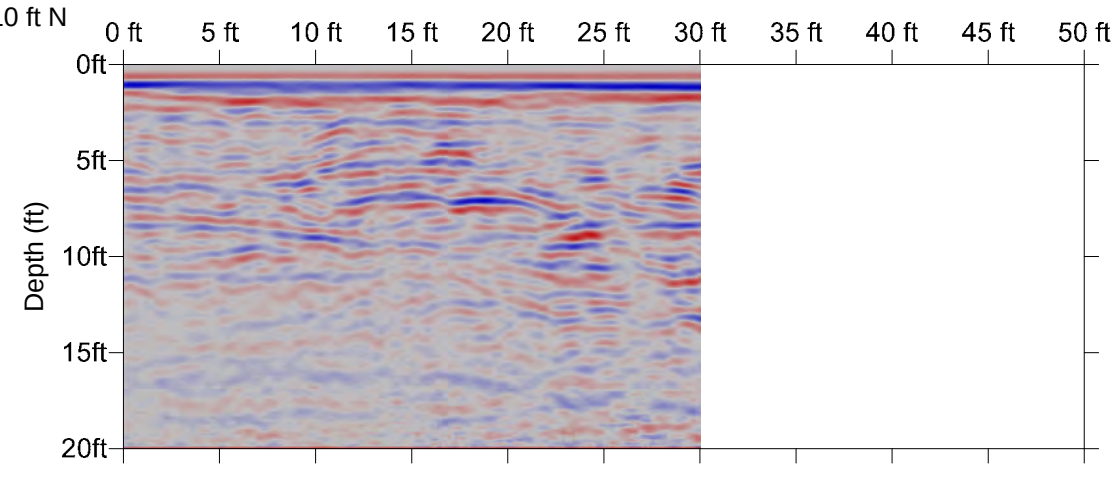
5 ft N



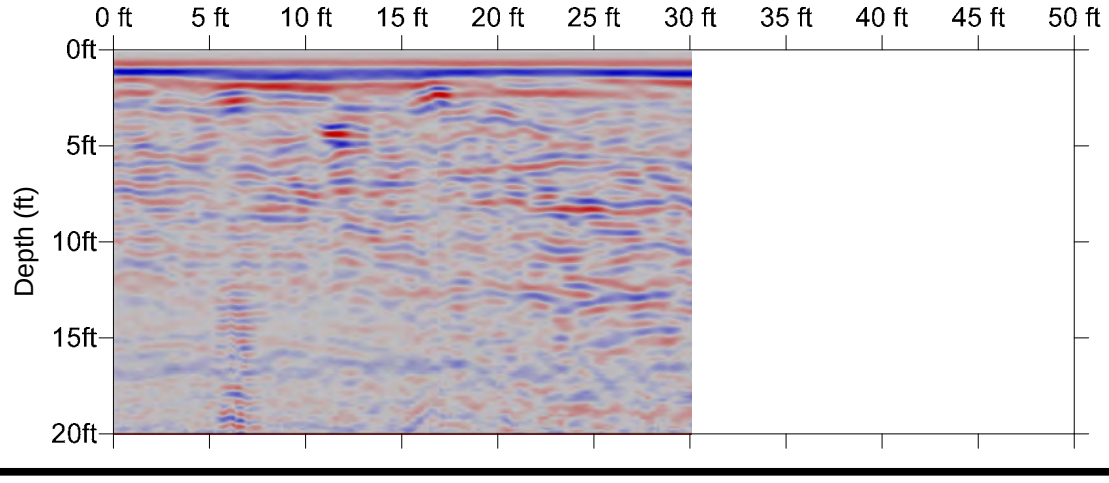
7.5 ft N

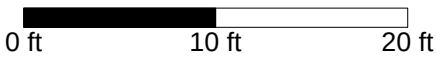


10 ft N



12.5 ft N





PROJECT
SoundTransit Federal Way Link Extension
23646 Pacific Highway S, Kent, WA (FL-232)

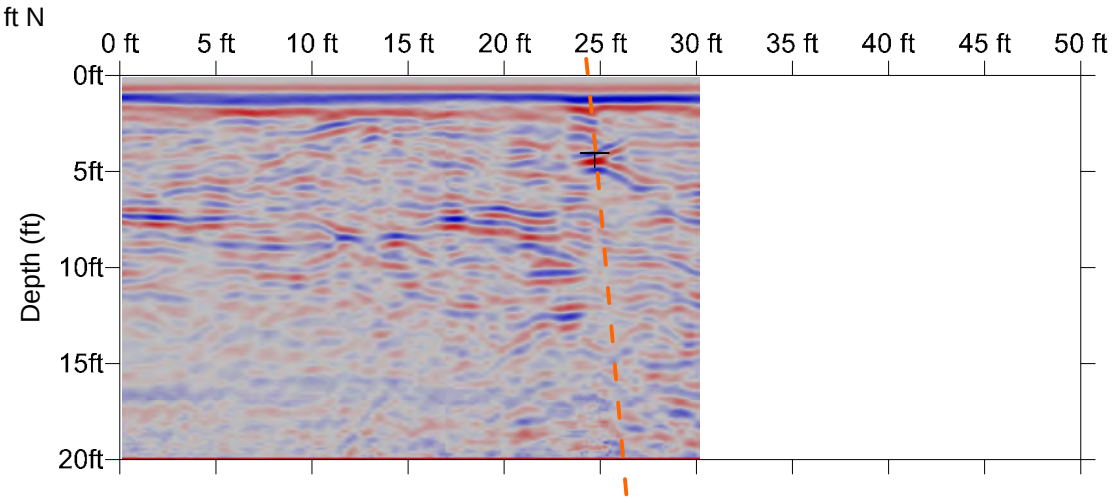
TITLE
GPR Profiles in W-E Direction

Global Geophysics
P.O. Box 2229
Redmond, WA 98073-2229
Tel: 425-890-4321

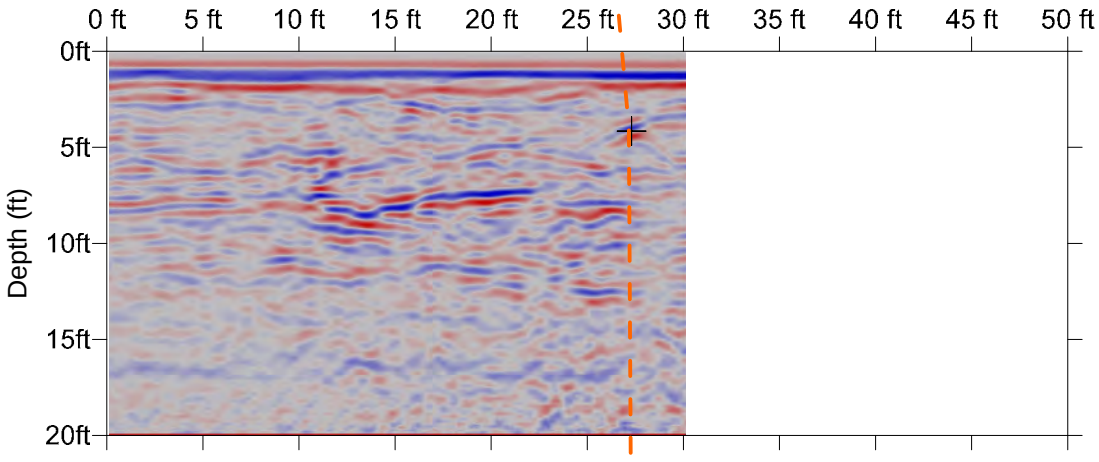
Project #: 107-0428.002		FILE No.
DESIGN	--	SCALE AS SHOWN REV.
CADD	JL	
CHECK	JL	FIGURE 2
REVIEW	--	

West-East Profiles

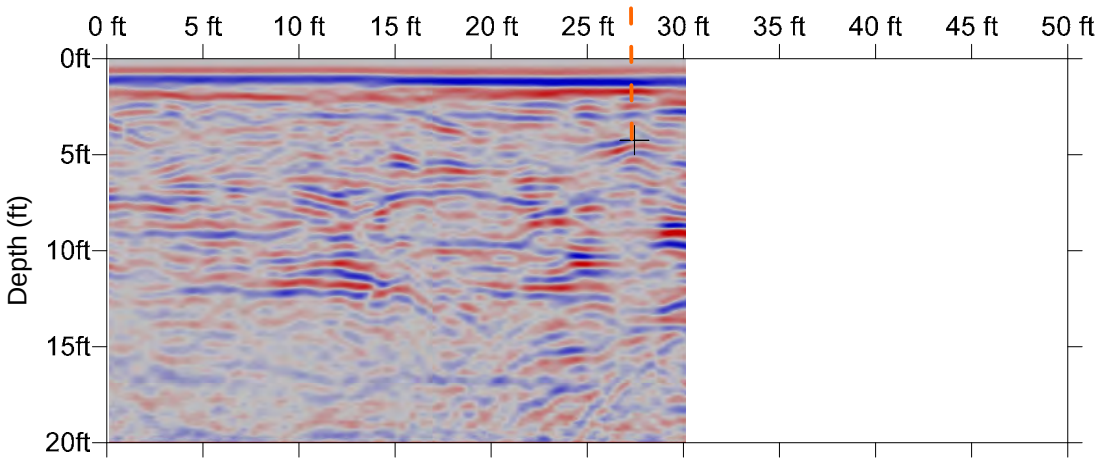
15 ft N



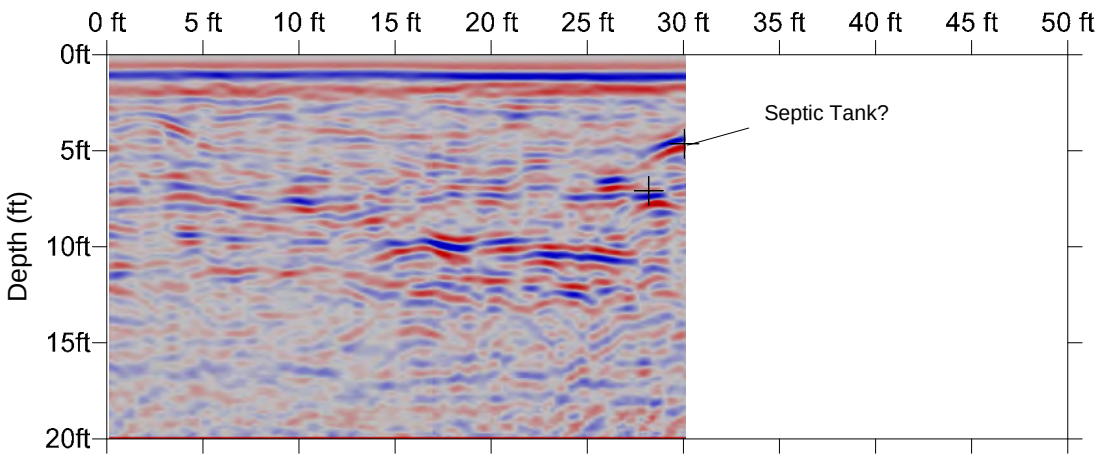
17.5 ft N



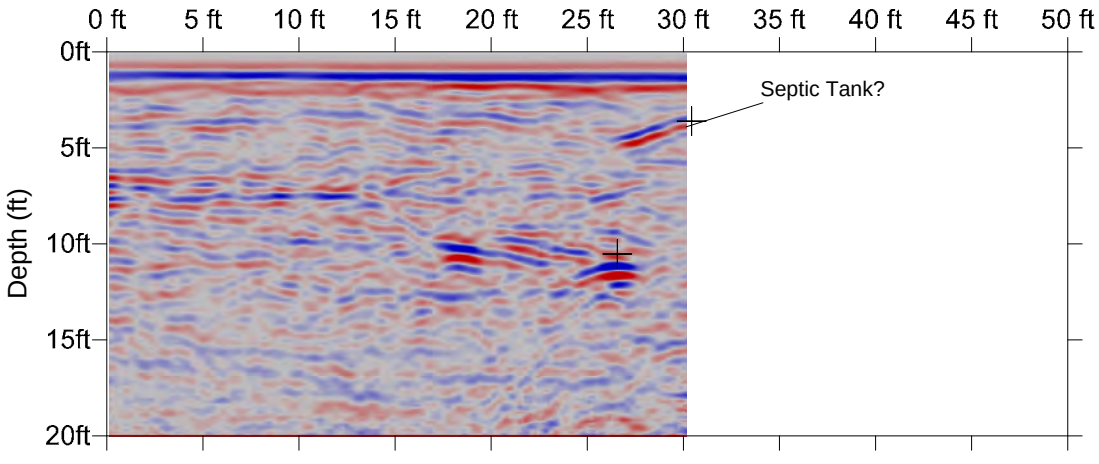
20 ft N



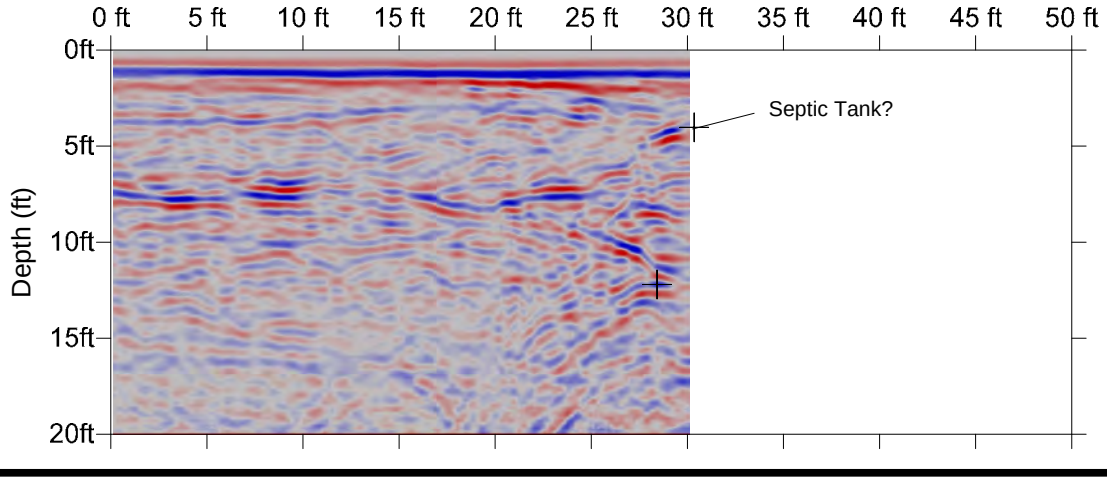
22.5 ft N

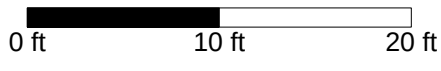


25 ft N



27.5 ft N





PROJECT
SoundTransit Federal Way Link Extension
23646 Pacific Highway S, Kent, WA (FL-232)

TITLE
GPR Profiles in W-E Direction

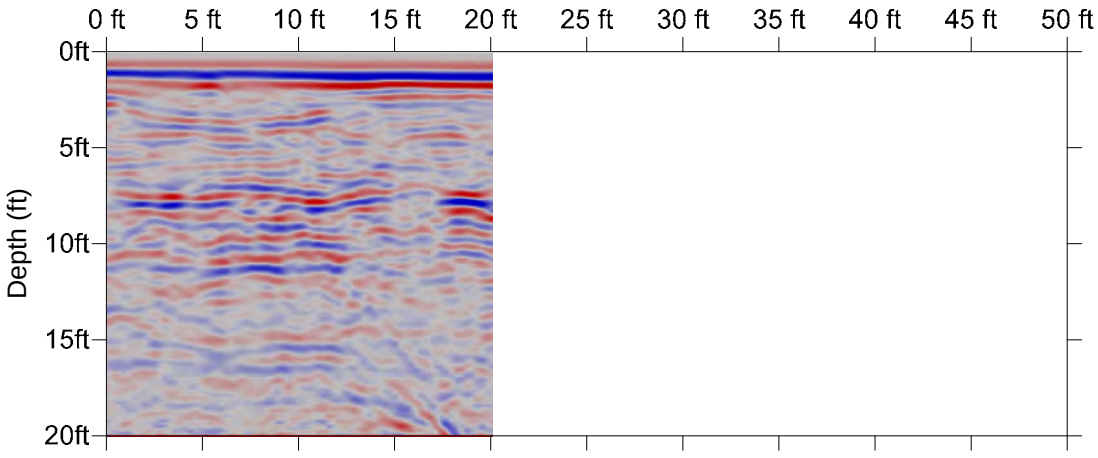
Global Geophysics
P.O. Box 2229
Redmond, WA 98073-2229
Tel: 425-890-4321

Project #: 107-0428.002			FILE No.	
DESIGN	--		SCALE AS SHOWN	REV.
CADD	JL			
CHECK	JL			
REVIEW	--			

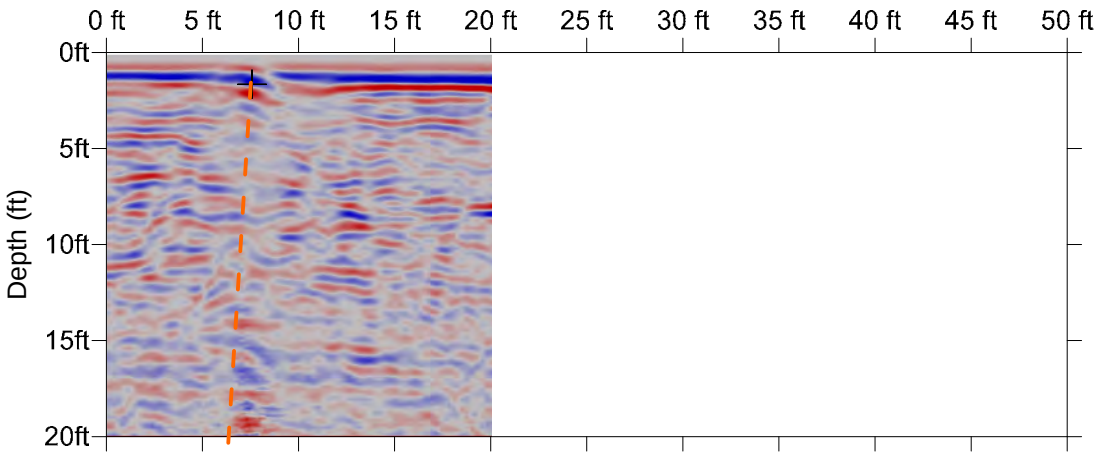
FIGURE 3

West-East Profiles

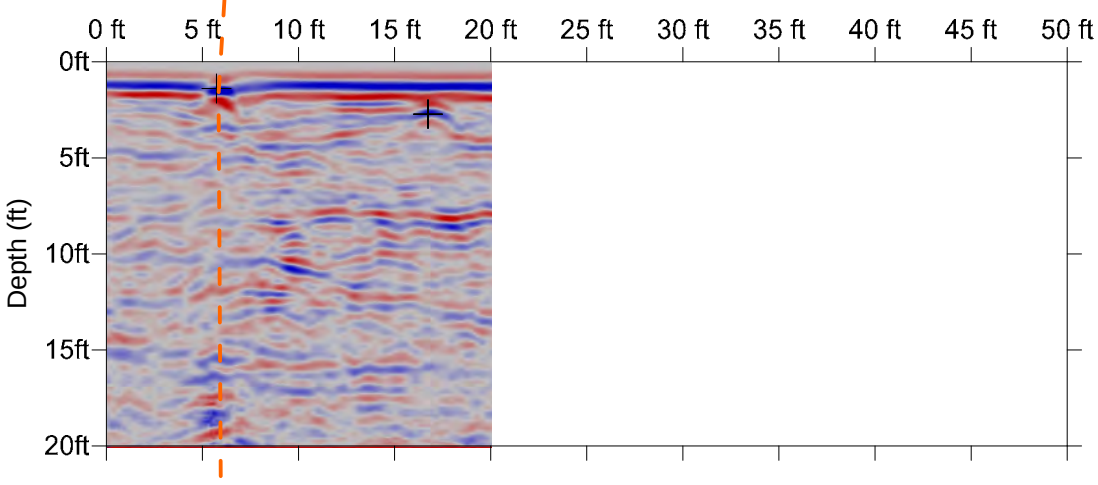
30 ft N



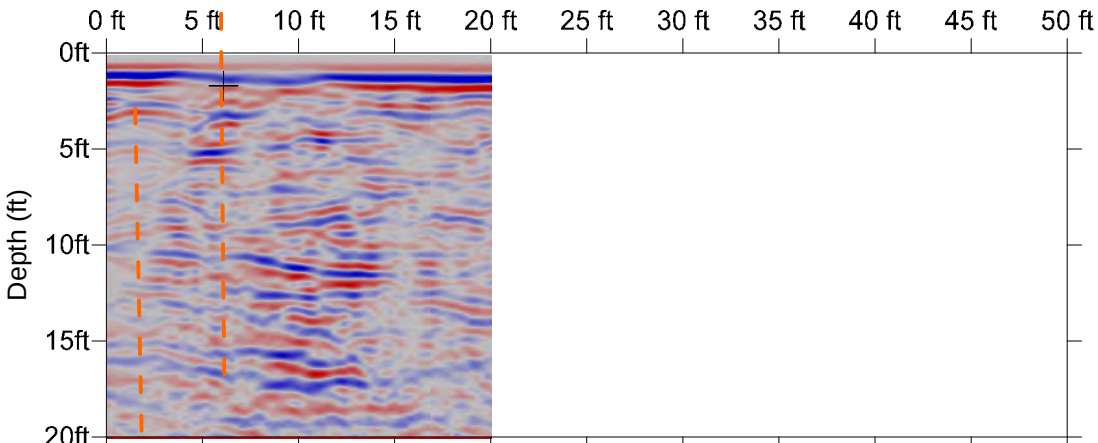
32.5 ft N



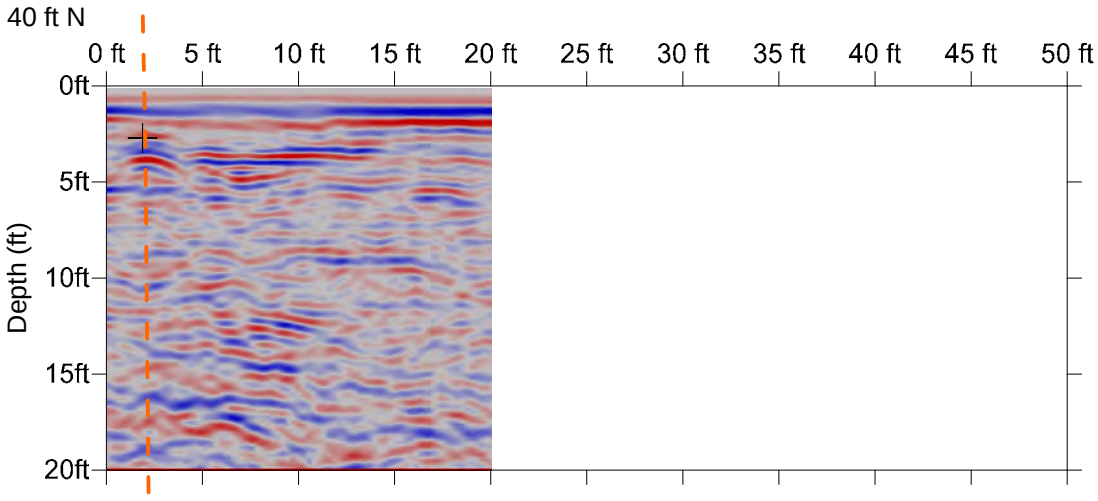
35 ft N



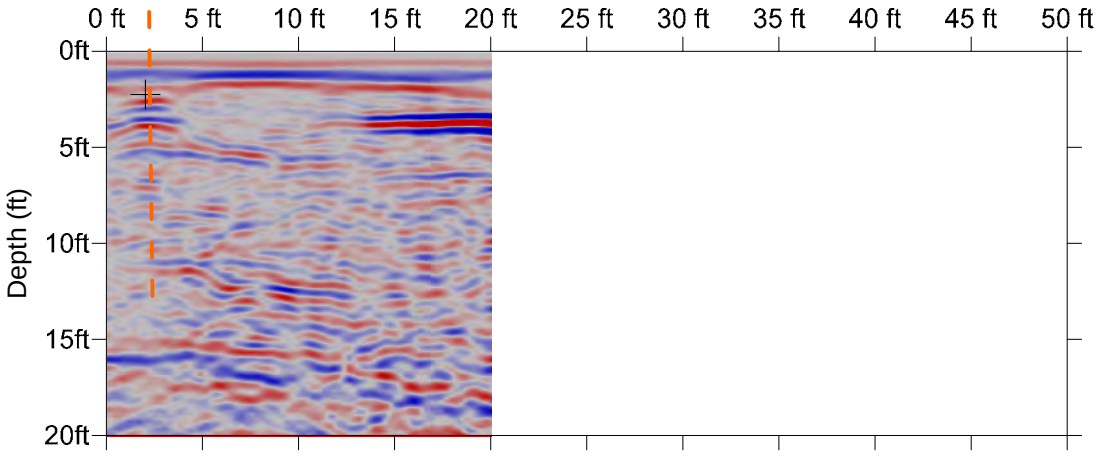
37.5 ft N

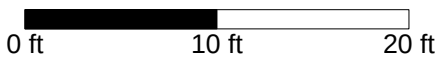


40 ft N



42.5 ft N





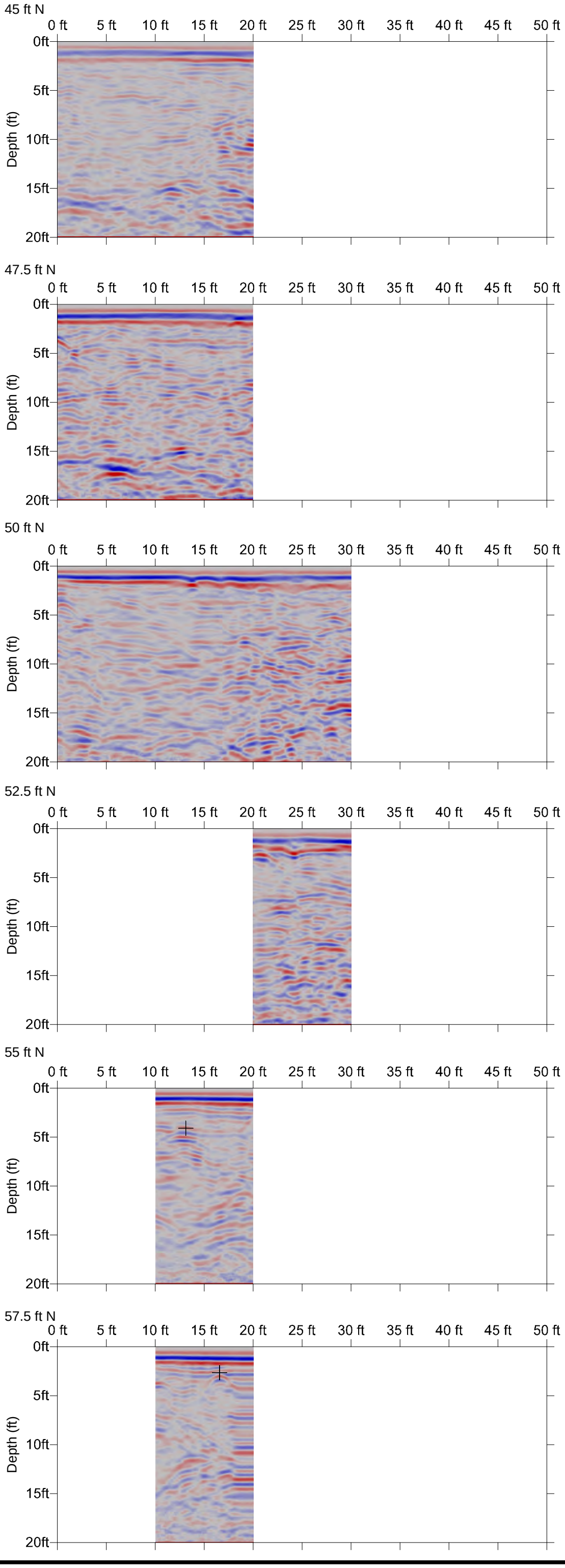
PROJECT
SoundTransit Federal Way Link Extension
23646 Pacific Highway S, Kent, WA (FL-232)

TITLE
GPR Profiles in W-E Direction

Global Geophysics
P.O. Box 2229
Redmond, WA 98073-2229
Tel: 425-890-4321

Project #: 107-0428.002			FILE No.	
DESIGN	--		SCALE AS SHOWN	REV.
CADD	JL		FIGURE 4	
CHECK	JL			
REVIEW	--			

West-East Profiles



0 ft 10 ft 20 ft

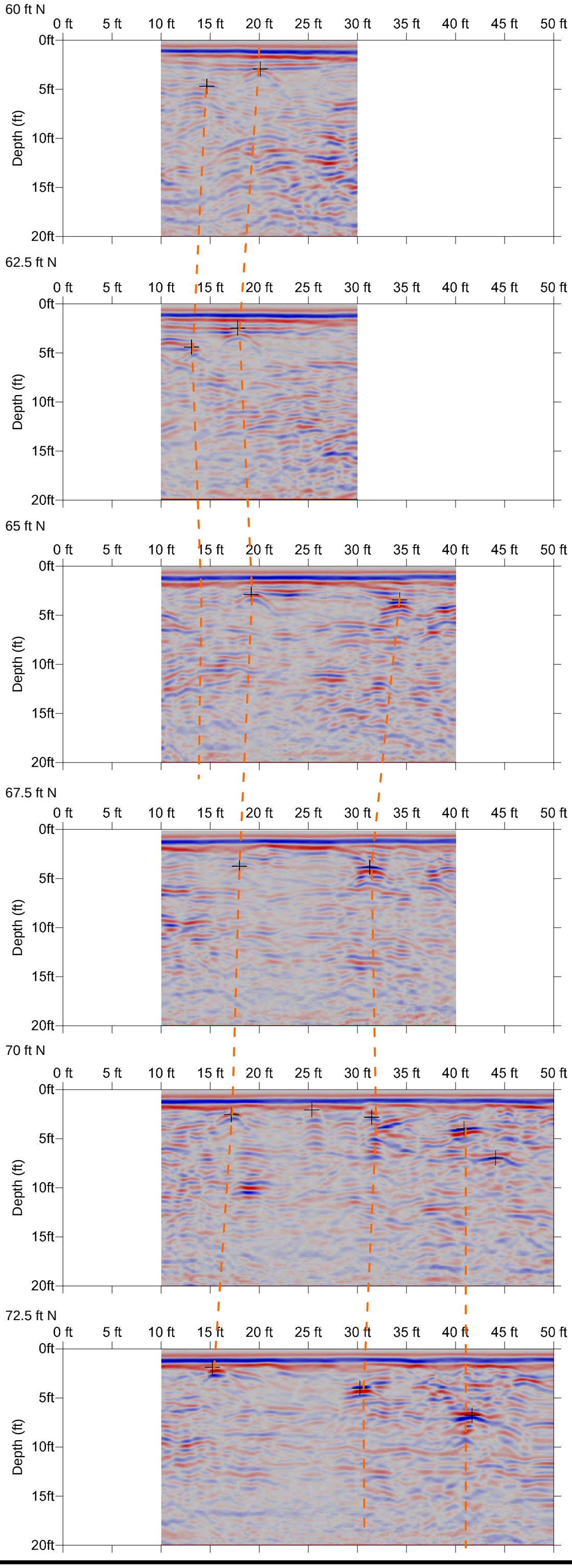
PROJECT
SoundTransit Federal Way Link Extension
23646 Pacific Highway S, Kent, WA (FL-232)

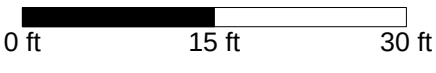
TITLE
GPR Profiles in W-E Direction

Global Geophysics
P.O. Box 2229
Redmond, WA 98073-2229
Tel: 425-890-4321

Project #: 107-0428.002			FILE No.
DESIGN	--		SCALE AS SHOWN REV.
CADD	JL		
CHECK	JL		**FIGURE 5**
REVIEW	--		

West-East Profiles





PROJECT
SoundTransit Federal Way Link Extension
23646 Pacific Highway S, Kent, WA (FL-232)

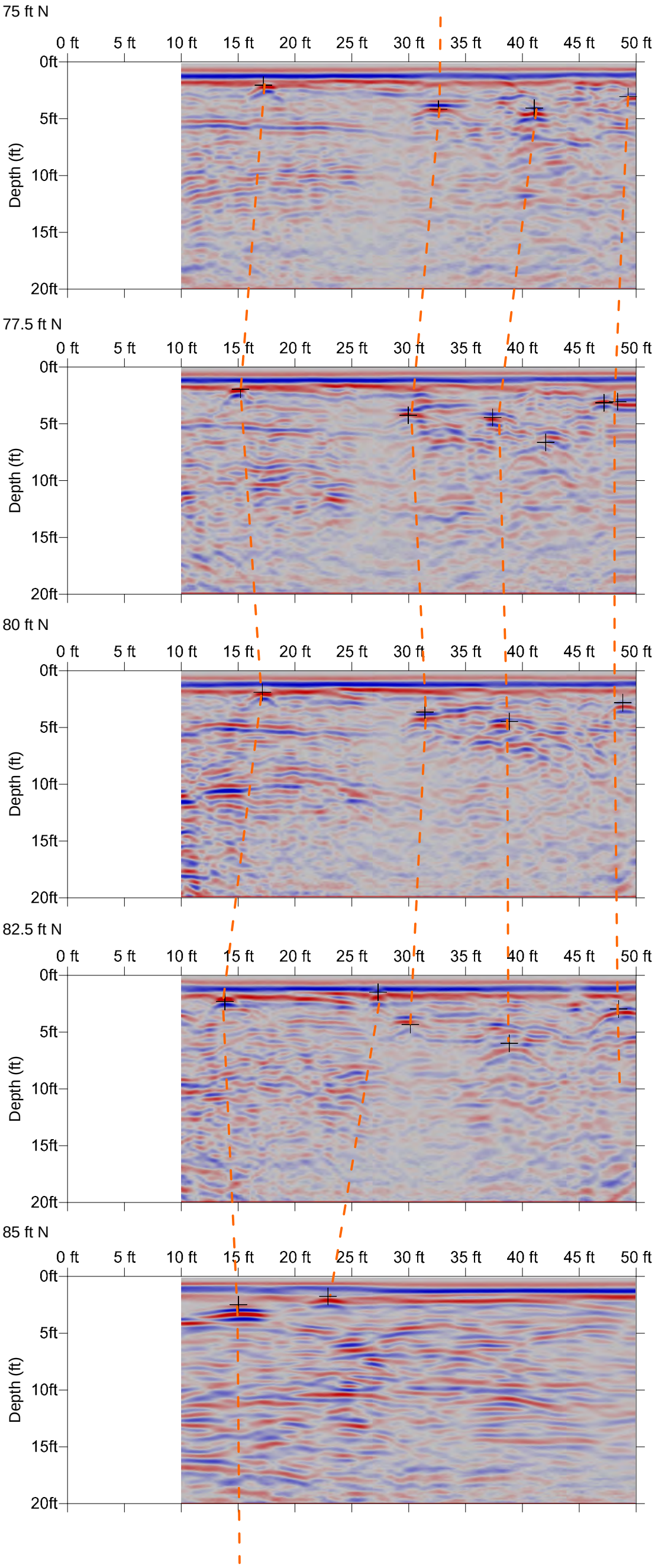
TITLE
GPR Profiles in W-E Direction

Global Geophysics
P.O. Box 2229
Redmond, WA 98073-2229
Tel: 425-890-4321

Project #: 107-0428.002			FILE No.	
DESIGN	--		SCALE AS SHOWN	REV.
CADD	JL			
CHECK	JL			
REVIEW	--			

FIGURE 6

West-East Profiles



0 ft 10 ft 20 ft

PROJECT
SoundTransit Federal Way Link Extension
23646 Pacific Highway S, Kent, WA (FL-232)

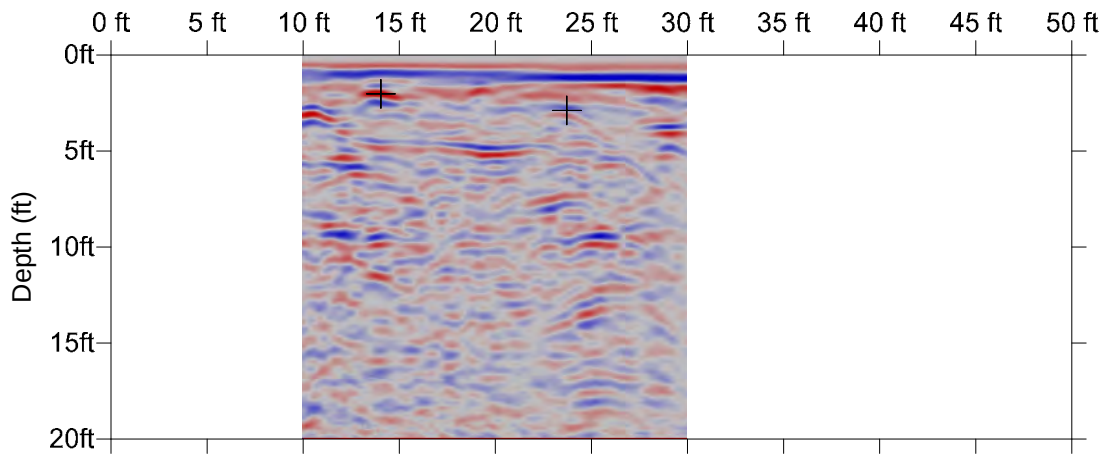
TITLE
GPR Profiles in W-E Direction

Global Geophysics
P.O. Box 2229
Redmond, WA 98073-2229
Tel: 425-890-4321

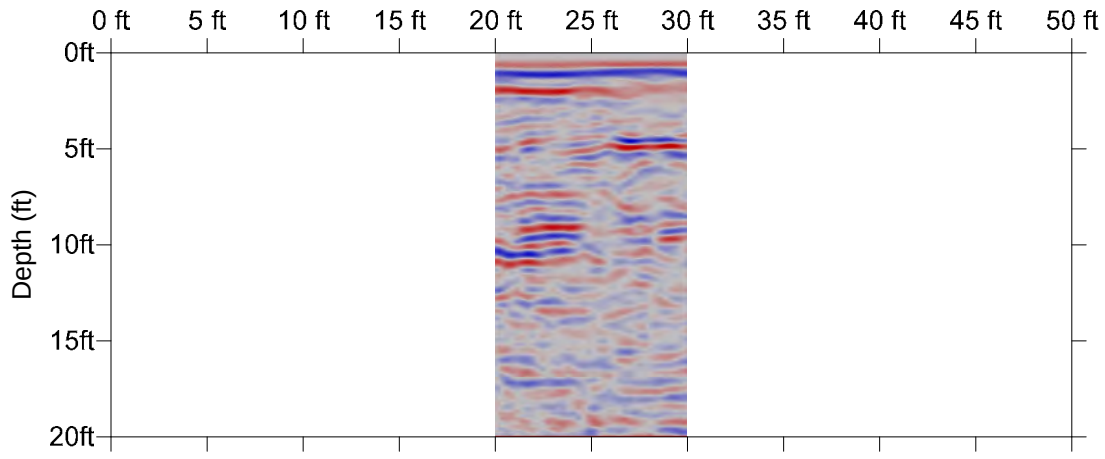
Project #: 107-0428.002			FILE No.
DESIGN	--		SCALE AS SHOWN REV.
CADD	JL		FIGURE 7
CHECK	JL		
REVIEW	--		

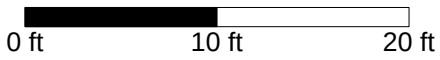
West-East Profiles

87.5 ft N



90 ft N





PROJECT
SoundTransit Federal Way Link Extension
23646 Pacific Highway S, Kent, WA (FL-232)

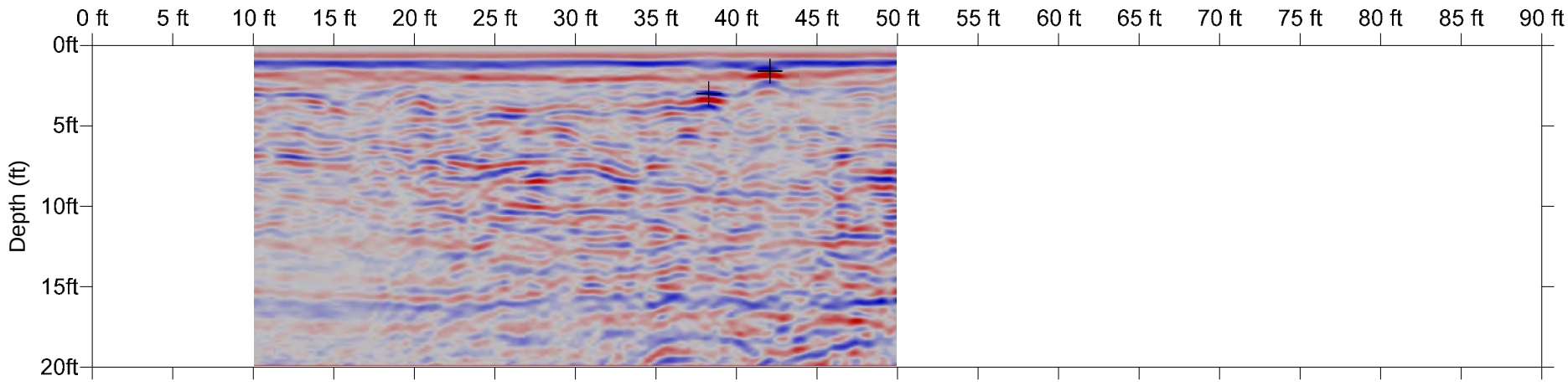
TITLE
GPR Profiles in W-E Direction

Global Geophysics
P.O. Box 2229
Redmond, WA 98073-2229
Tel: 425-890-4321

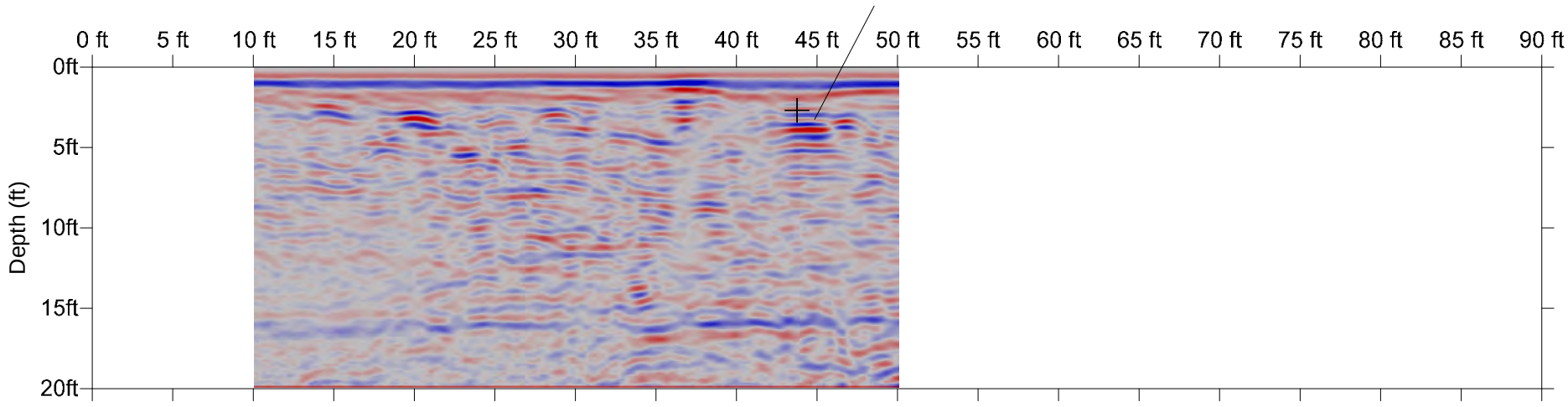
Project #: 107-0428.002			FILE No.
DESIGN	--		SCALE AS SHOWN REV.
CADD	JL		**FIGURE 8**
CHECK	JL		
REVIEW	--		

South-North Profiles

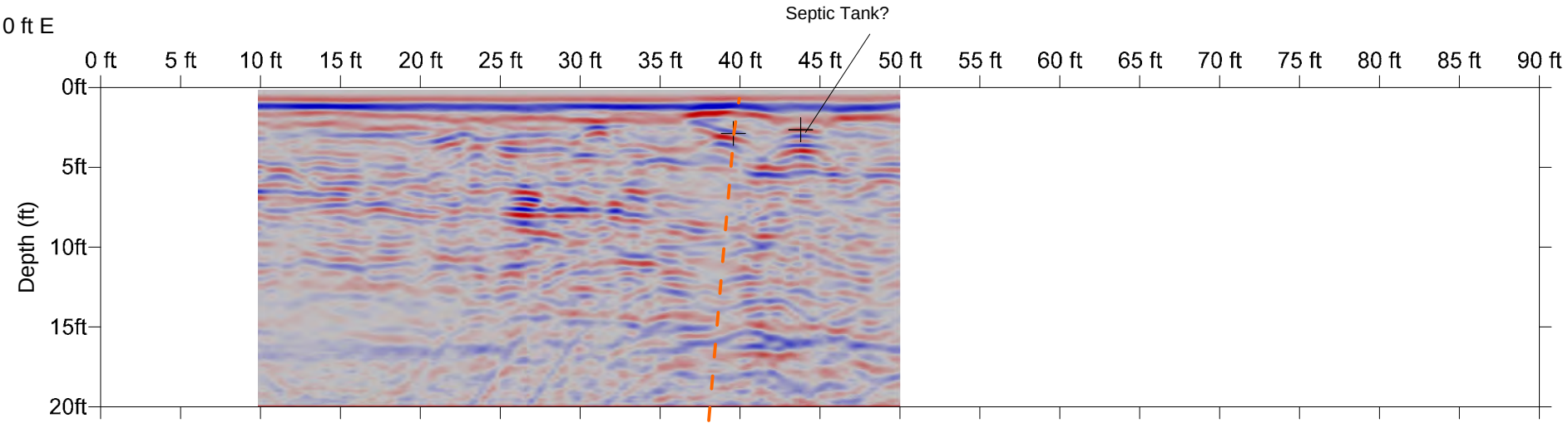
-5 ft E



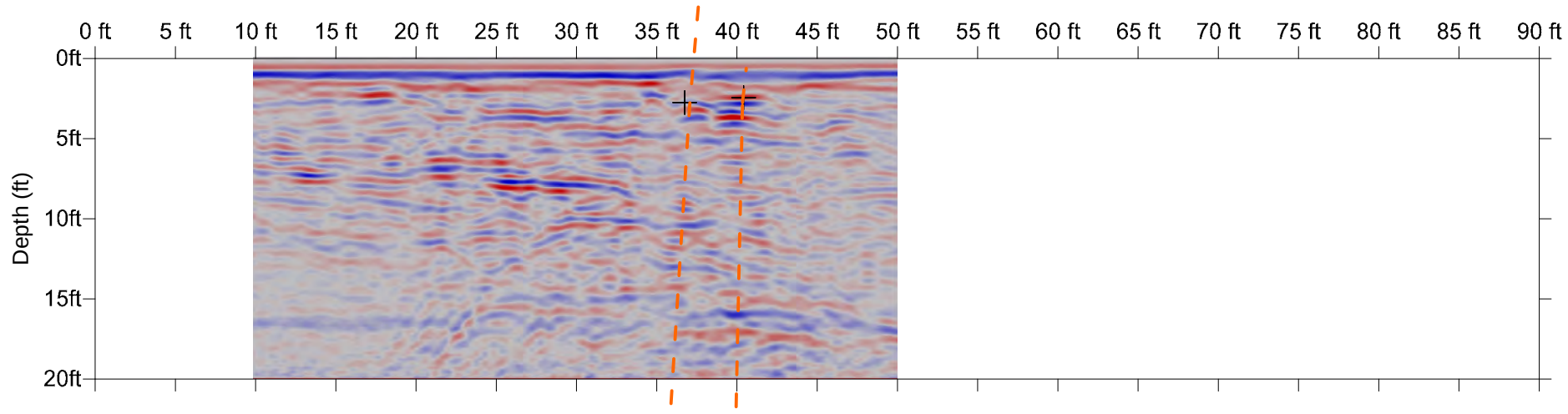
-2.5 ft E



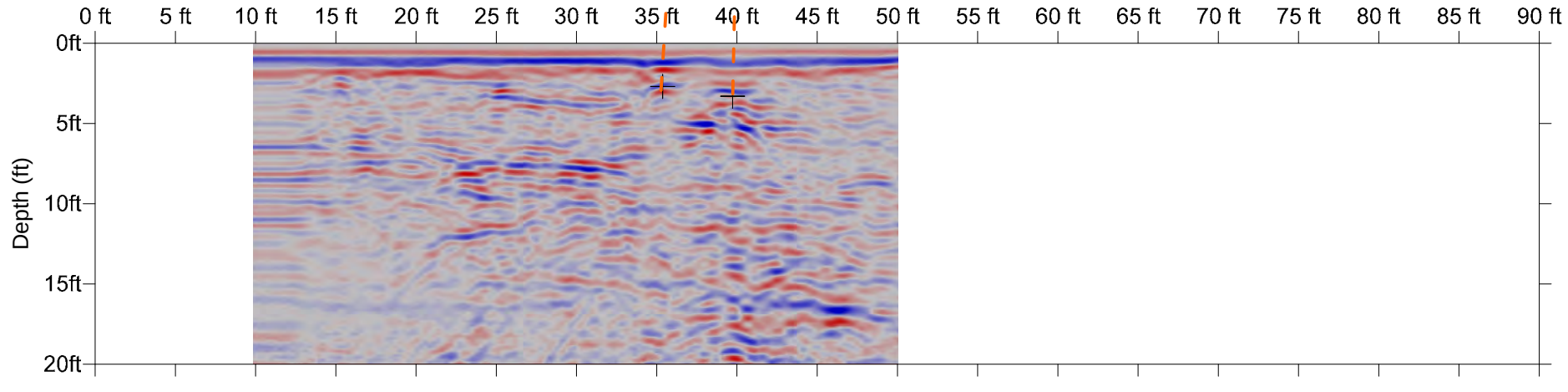
0 ft E

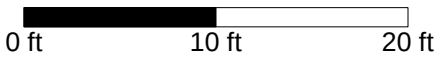


2.5 ft E



5 ft E





PROJECT
SoundTransit Federal Way Link Extension
23646 Pacific Highway S, Kent, WA (FL-232)

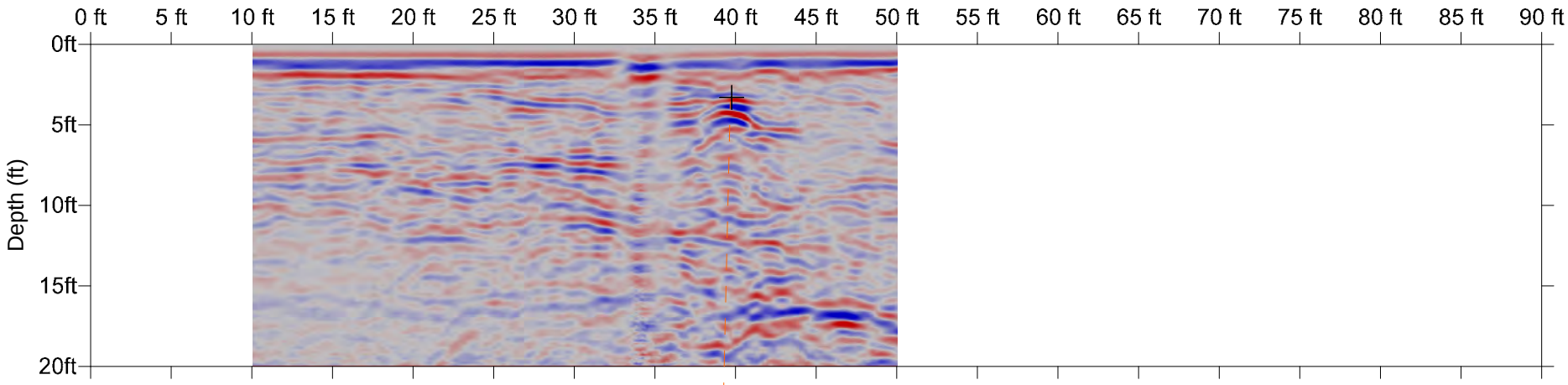
TITLE
GPR Profiles in N-S Direction

Global Geophysics
P.O. Box 2229
Redmond, WA 98073-2229
Tel: 425-890-4321

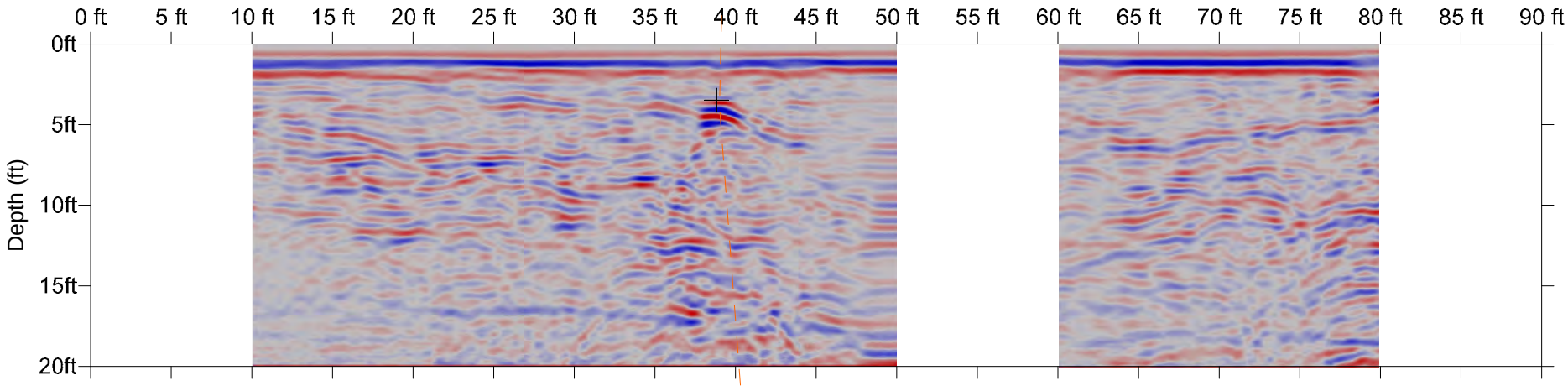
Project #: 107-0428.002			FILE No.
DESIGN	--		SCALE AS SHOWN REV.
CADD	JL		
CHECK	JL		**FIGURE 9**
REVIEW	--		

South-North Profiles

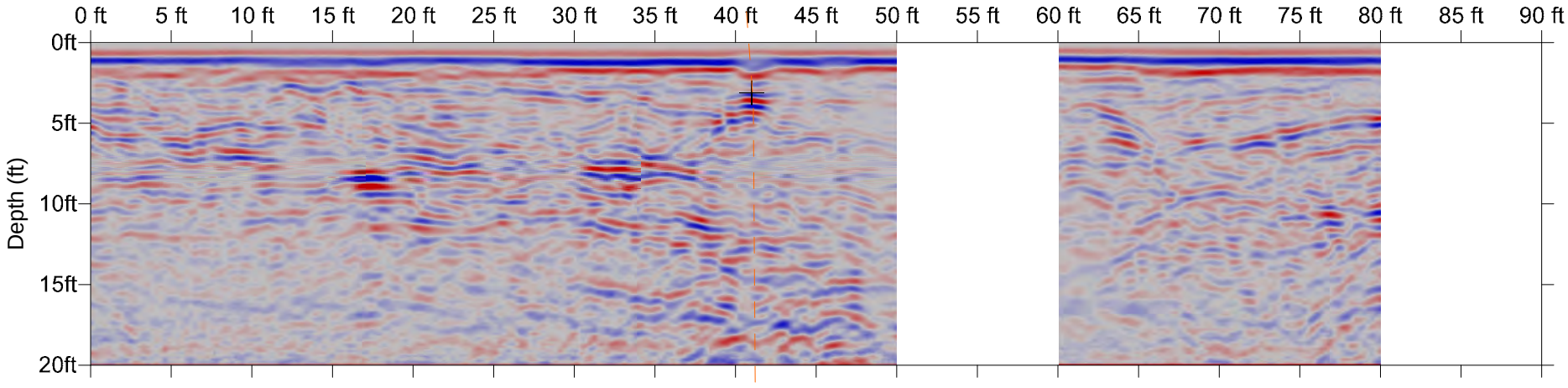
7.5 ft E



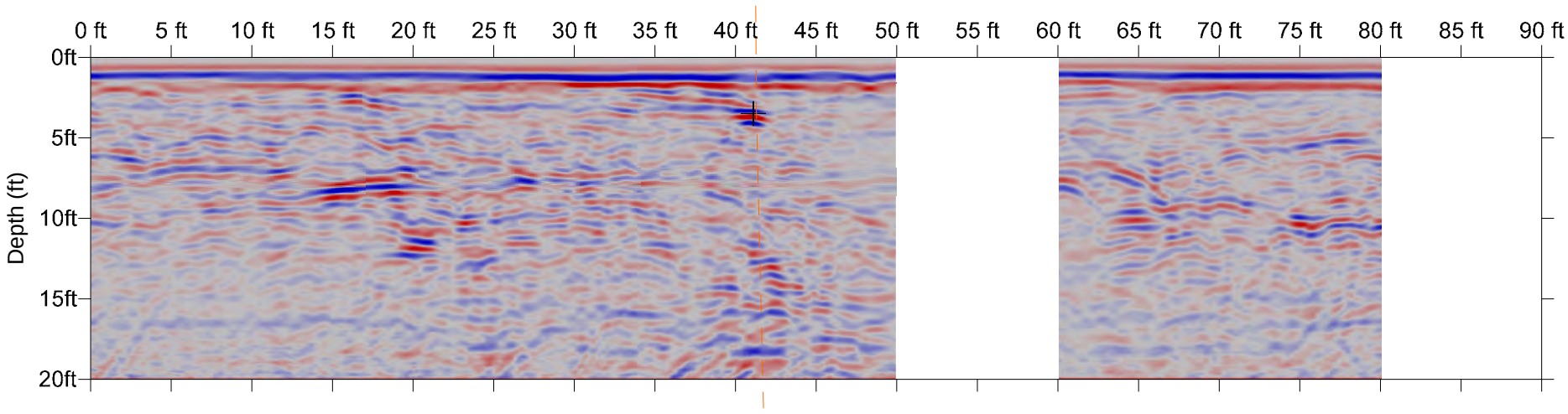
10 ft E



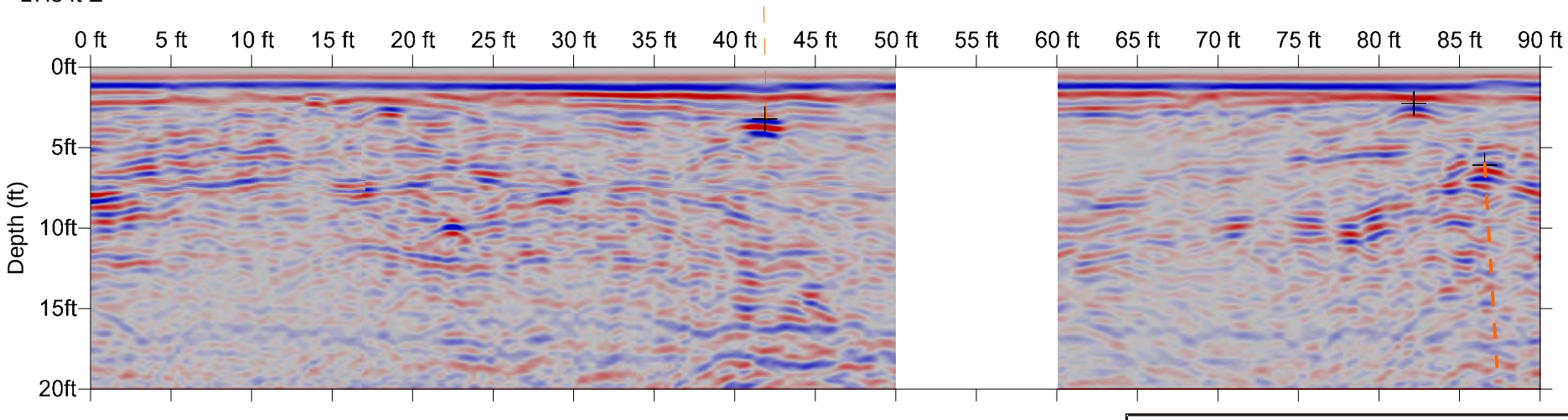
12.5 ft E

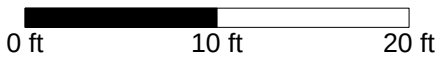


15 ft E



17.5 ft E





PROJECT
SoundTransit Federal Way Link Extension
23646 Pacific Highway S, Kent, WA (FL-232)

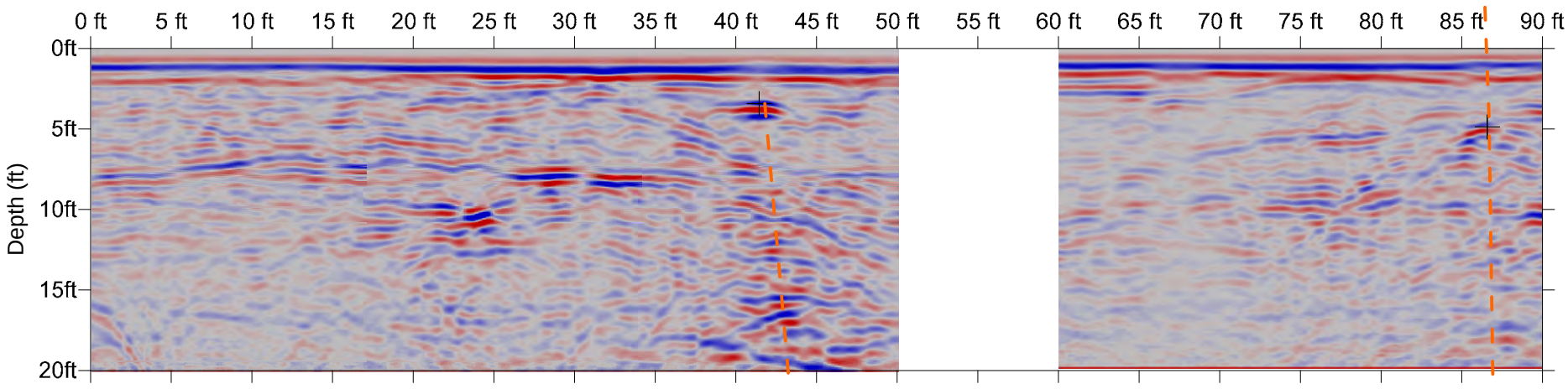
TITLE
GPR Profiles in N-S Direction

Global Geophysics
P.O. Box 2229
Redmond, WA 98073-2229
Tel: 425-890-4321

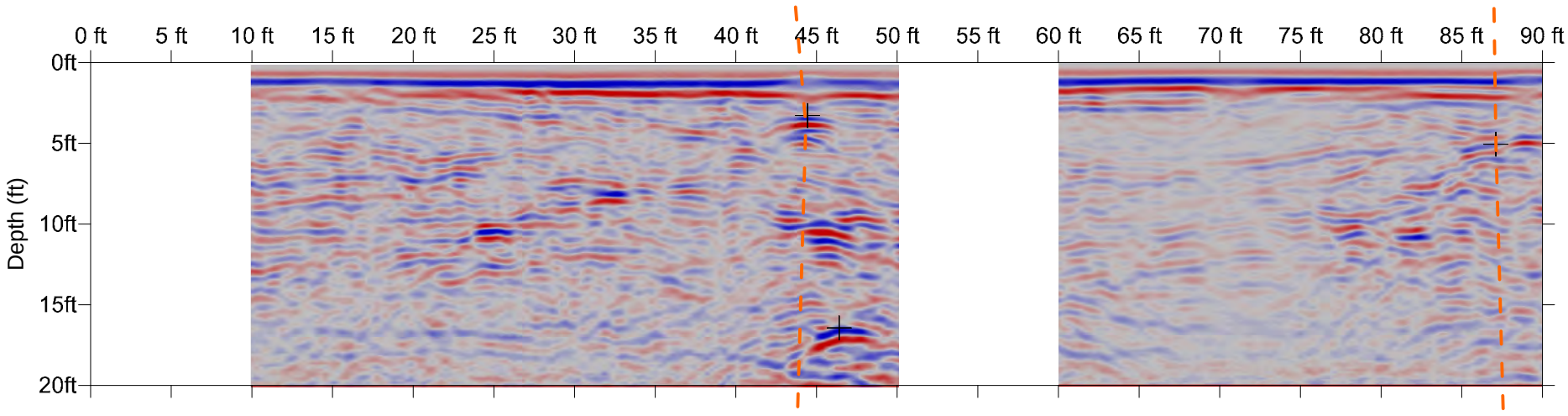
Project #: 107-0428.002			FILE No.
DESIGN	--		SCALE AS SHOWN REV.
CADD	JL		FIGURE 10
CHECK	JL		
REVIEW	--		

South-North Profiles

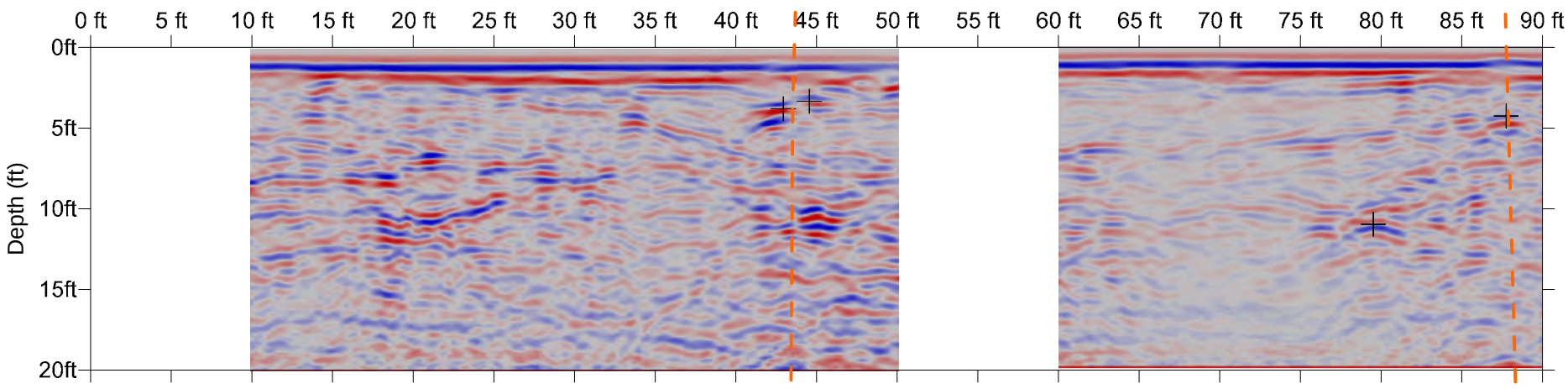
20 ft E



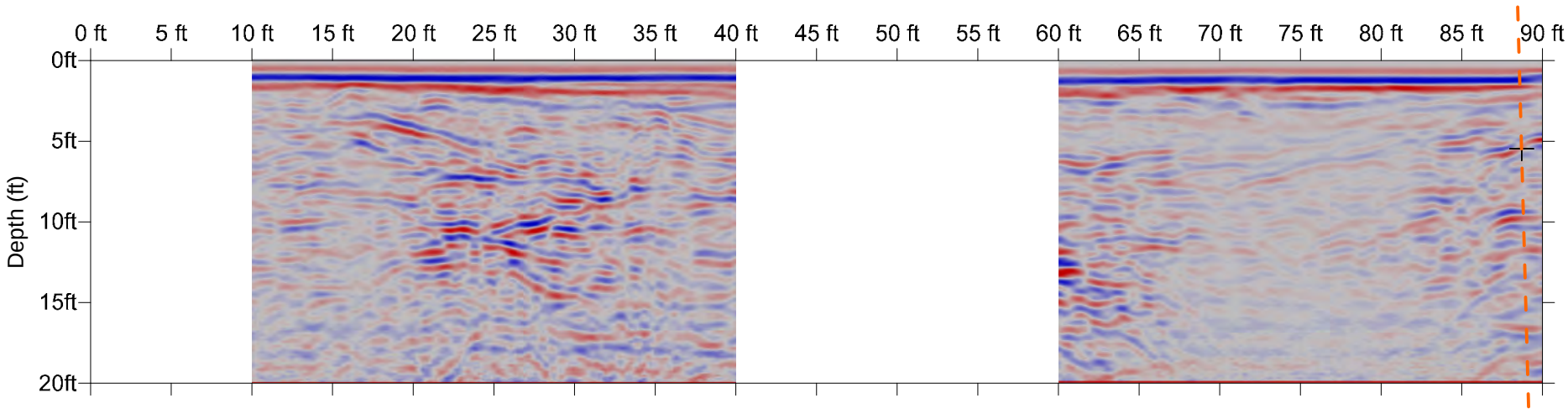
22.5 ft E



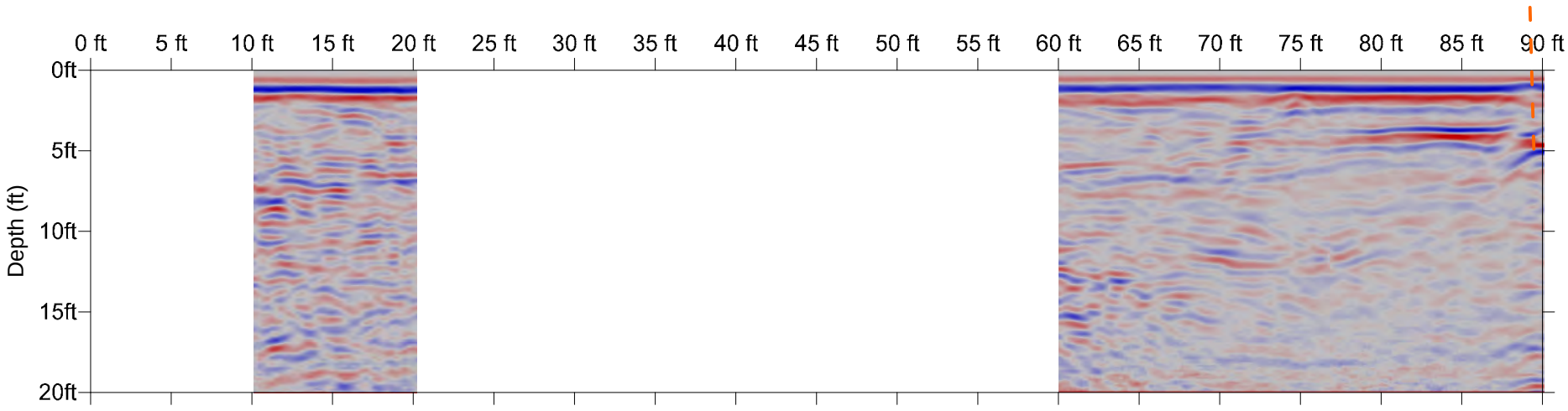
25 ft E

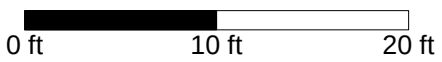


27.5 ft E



30 ft E





PROJECT
SoundTransit Federal Way Link Extension
23646 Pacific Highway S, Kent, WA (FL-232)

TITLE
GPR Profiles in N-S Direction

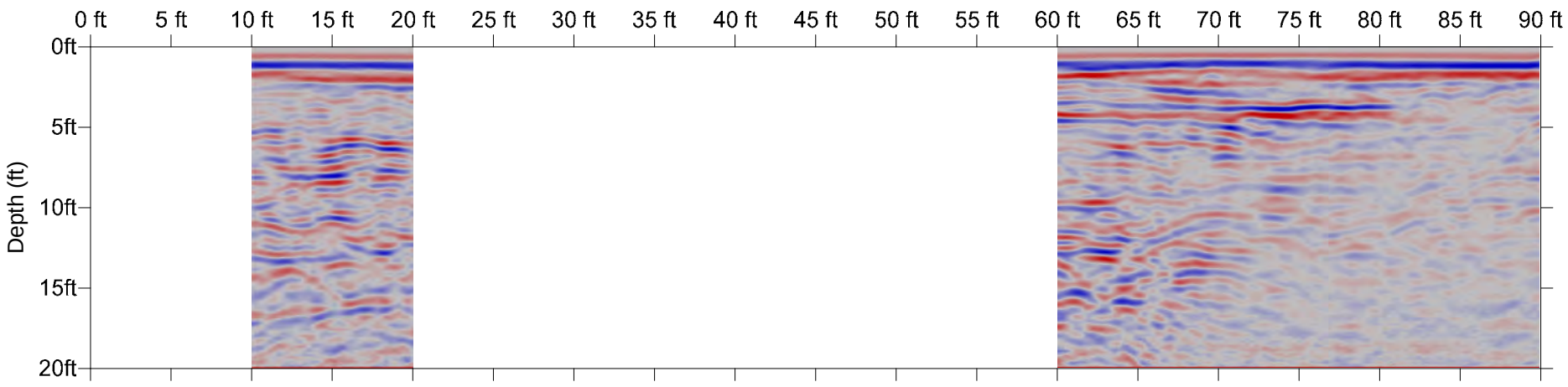
Global Geophysics
P.O. Box 2229
Redmond, WA 98073-2229
Tel: 425-890-4321

Project #: 107-0428.002			FILE No.	
DESIGN	--		SCALE AS SHOWN	REV.
CADD	JL			
CHECK	JL			
REVIEW	--			

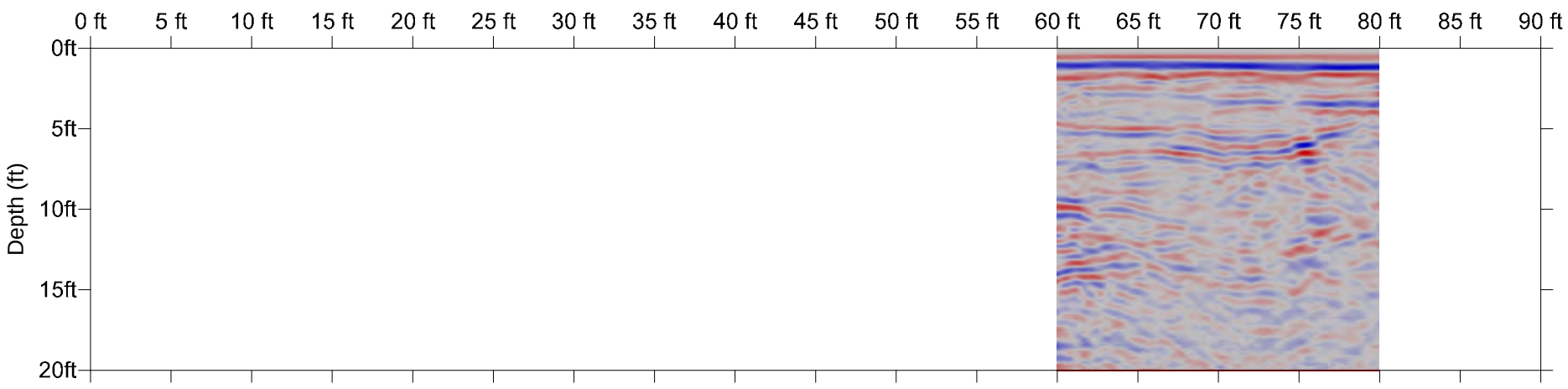
FIGURE 11

South-North Profiles

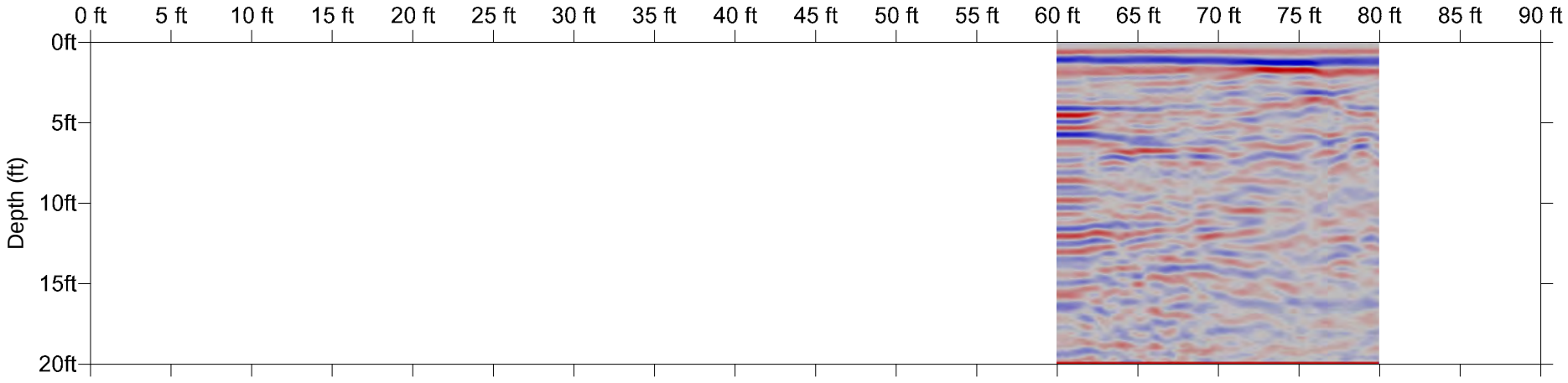
32.5 ft E



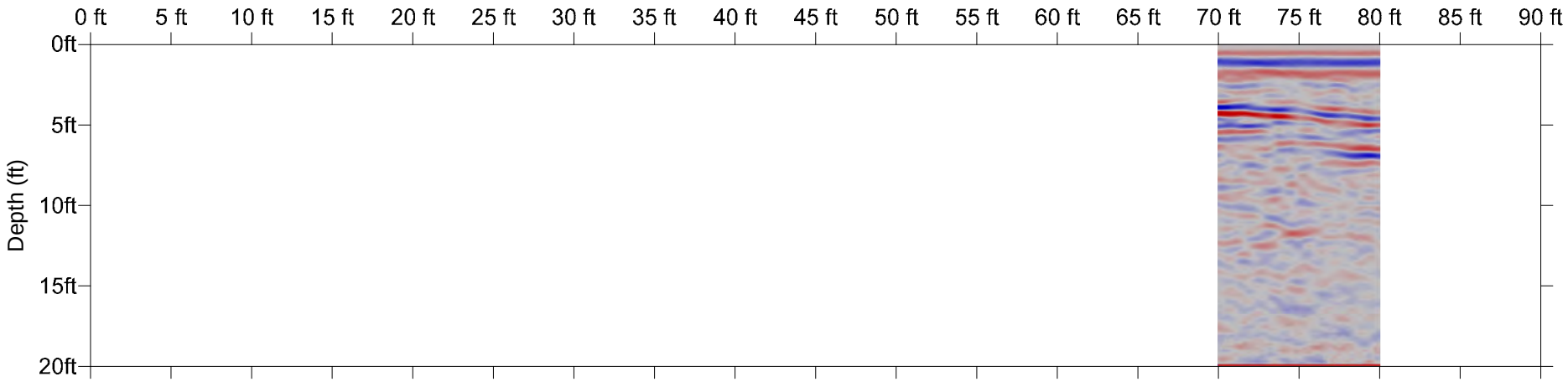
35 ft E



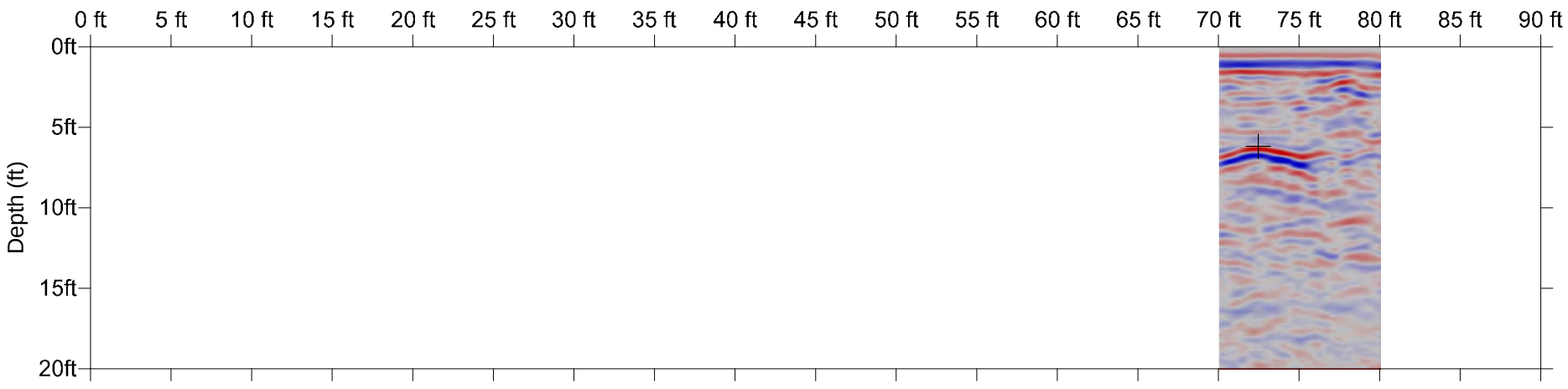
37.5 ft E

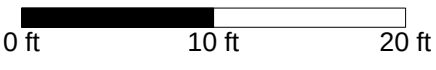


40 ft E



42.5 ft E





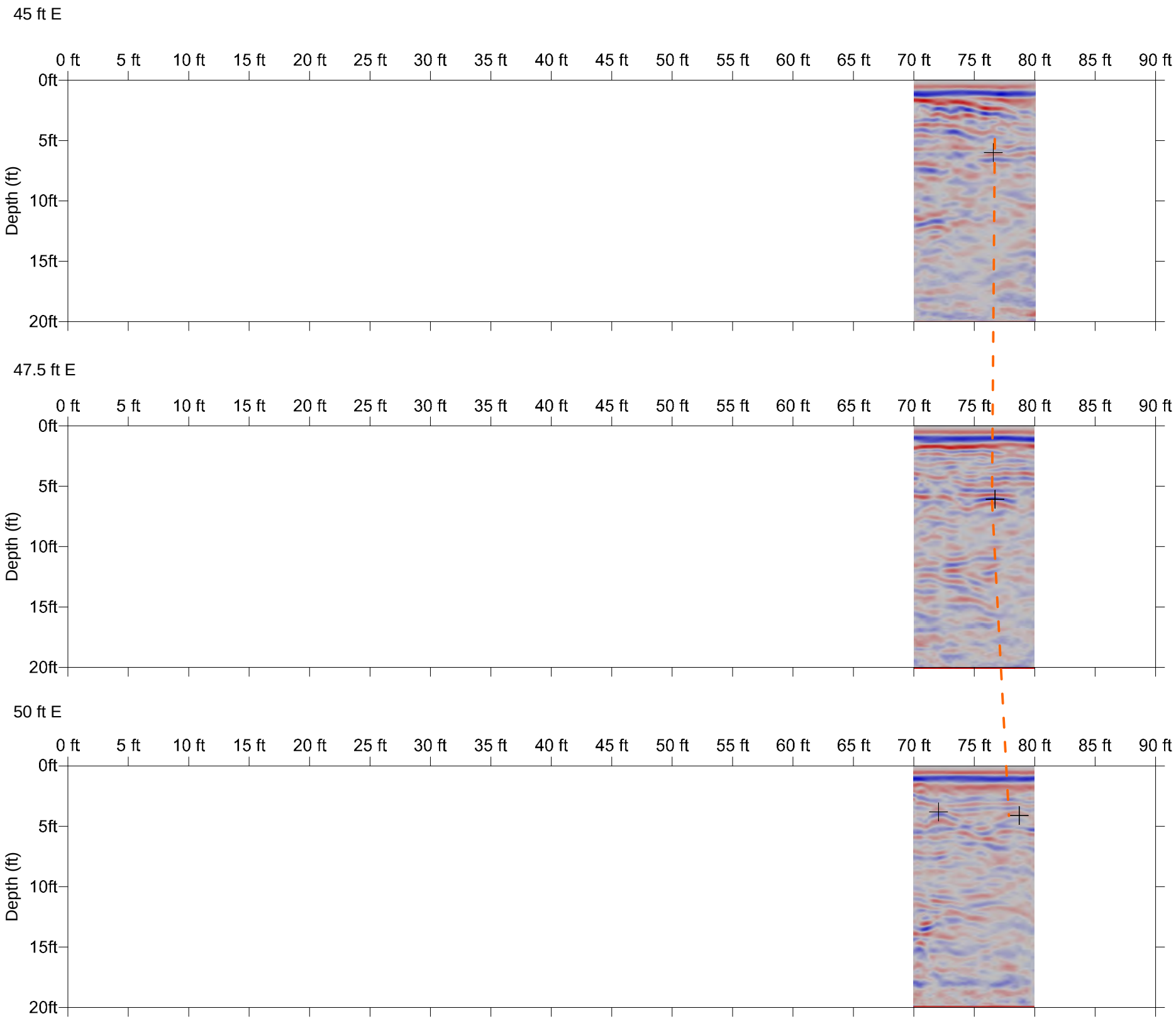
PROJECT
SoundTransit Federal Way Link Extension
23646 Pacific Highway S, Kent, WA (FL-232)

TITLE
GPR Profiles in N-S Direction

Global Geophysics
P.O. Box 2229
Redmond, WA 98073-2229
Tel: 425-890-4321

Project #: 107-0428.002			FILE No.
DESIGN	--		SCALE AS SHOWN REV.
CADD	JL		FIGURE 12
CHECK	JL		
REVIEW	--		

South-North Profiles



0 ft 10 ft 20 ft

PROJECT
SoundTransit Federal Way Link Extension
23646 Pacific Highway S, Kent, WA (FL-232)

TITLE
GPR Profiles in N-S Direction

Global Geophysics
P.O. Box 2229
Redmond, WA 98073-2229
Tel: 425-890-4321

Project #: 107-0428.002			FILE No.
DESIGN	--		SCALE AS SHOWN REV.
CADD	JL		**FIGURE 13**
CHECK	JL		
REVIEW	--		

APPENDIX B
CHEMICAL ANALYTICAL PROGRAM

APPENDIX B
CHEMICAL ANALYTICAL DATA

Analytical Methods

Chain-of-custody procedures were followed during the transport of the soil and groundwater samples to the analytical laboratory. The samples were held in cold storage pending extraction and/or analysis. The analytical results, analytical methods reference and laboratory quality control (QC) records are included in this appendix. The analytical results are also summarized in the text and tables of this report.

Analytical Data Review

The laboratory maintains an internal quality assurance program as documented in its laboratory quality assurance manual. The laboratory uses a combination of blanks, surrogate recoveries, duplicates, matrix spike recoveries, matrix spike duplicate recoveries, blank spike recoveries and blank spike duplicate recoveries to evaluate the validity of the analytical results. The laboratory also uses data quality goals for individual chemicals or groups of chemicals based on the long-term performance of the test methods. The data quality goals were included in the laboratory reports. The laboratory compared each group of samples with the existing data quality goals and noted any exceptions in the laboratory report. Data quality exceptions documented by the accredited laboratory were reviewed by GeoEngineers and are addressed in the data quality exception section of this appendix.

Analytical Data Review Summary

The following data quality exceptions were noted in the laboratory reports during our review:

- Sample FL232-B3-6.5-7.5 was extracted 2 days out of holding time; this data quality exception is not significant given that the sample was analyzed for lube oil-range hydrocarbons which are generally not volatile.
- Lube oil-range hydrocarbons in sample FL232-B4-3.5-4.5 were estimated by the laboratory from the NWTPH-HCID chromatogram.

Based on our data quality review, it is our opinion that the laboratory data qualifiers listed for the sample above are not significant with regard to the use of the data for characterization purposes. The samples/results were considered of acceptable quality for their intended use in this report.

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

June 19, 2017

Marsi Beeson
GeoEngineers, Inc.
15055 SW Sequoia Parkway,
Suite 140
Portland, OR 97224

Re: Analytical Data for Project 4082-039-01
Laboratory Reference No. 1705-315

Dear Marsi:

Enclosed are the analytical results and associated quality control data for samples submitted on May 25, 2017.

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

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

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

Case Narrative

Samples were collected on May 24, 2017 and received by the laboratory on May 25, 2017. They were maintained at the laboratory at a temperature of 2°C to 6°C.

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

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

NWTPH Gx and Volatiles EPA 8260C Analysis

Per EPA Method 5035A, samples were received by the laboratory in pre-weighed 40 mL VOA vials within 48 hours of sample collection. They were stored in a freezer at between -7°C and -20°C until extraction or analysis.

PAHs EPA 8270D/SIM

Sample FL232-B3-6.5-7.5 was extracted 2 days out of holding time.

Please note that any other QA/QC issues associated with these extractions and analyses will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

ANALYTICAL REPORT FOR SAMPLES

Client ID	Laboratory ID	Matrix	Date Sampled	Date Received	Notes
FL232-B1-3.5-4.5	05-315-01	Soil	5-24-17	5-25-17	
FL232-B1-7.5-8.5	05-315-02	Soil	5-24-17	5-25-17	
FL232-B2-3.5-4.5	05-315-04	Soil	5-24-17	5-25-17	
FL232-B3-6.5-7.5	05-315-07	Soil	5-24-17	5-25-17	
FL232-B4-3.5-4.5	05-315-08	Soil	5-24-17	5-25-17	
FL232-B5-3.5-4.5	05-315-10	Soil	5-24-17	5-25-17	
FL232-B5-7-8	05-315-11	Soil	5-24-17	5-25-17	
FL232-B6-3.5-4.5	05-315-13	Soil	5-24-17	5-25-17	
FL232-B6-11.5-12.5	05-315-14	Soil	5-24-17	5-25-17	
FL232-DRUM-1	05-315-16	Soil	5-24-17	5-25-17	

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

NWTPH-HCID

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FL232-B1-7.5-8.5**					
Laboratory ID:	05-315-02					
Gasoline Range Organics	**ND**	22	NWTPH-HCID	5-30-17	5-30-17	
Diesel Range Organics	**ND**	55	NWTPH-HCID	5-30-17	5-30-17	
Lube Oil Range Organics	**ND**	110	NWTPH-HCID	5-30-17	5-30-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*105*	*50-150*				
Client ID:	**FL232-B3-6.5-7.5**					
Laboratory ID:	05-315-07					
Gasoline Range Organics	**ND**	22	NWTPH-HCID	5-30-17	5-30-17	
Diesel Range Organics	**ND**	56	NWTPH-HCID	5-30-17	5-30-17	
Lube Oil Range Organics	**ND**	110	NWTPH-HCID	5-30-17	5-30-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*114*	*50-150*				
Client ID:	**FL232-B4-3.5-4.5**					
Laboratory ID:	05-315-08					
Gasoline Range Organics	**ND**	22	NWTPH-HCID	5-30-17	5-31-17	
Diesel Range Organics	**ND**	54	NWTPH-HCID	5-30-17	5-31-17	
Lube Oil	**Detected**	110	NWTPH-HCID	5-30-17	5-31-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*119*	*50-150*				
Client ID:	**FL232-B5-3.5-4.5**					
Laboratory ID:	05-315-10					
Gasoline Range Organics	**ND**	22	NWTPH-HCID	5-30-17	5-31-17	
Diesel Range Organics	**ND**	130	NWTPH-HCID	5-30-17	5-31-17	U1
Lube Oil	**Detected**	110	NWTPH-HCID	5-30-17	5-31-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*107*	*50-150*				
Client ID:	**FL232-B6-11.5-12.5**					
Laboratory ID:	05-315-14					
Gasoline Range Organics	**ND**	22	NWTPH-HCID	5-30-17	5-30-17	
Diesel Range Organics	**ND**	54	NWTPH-HCID	5-30-17	5-30-17	
Lube Oil Range Organics	**ND**	110	NWTPH-HCID	5-30-17	5-30-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*114*	*50-150*				

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

NWTPH-Gx

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FL232-DRUM-1**					
Laboratory ID:	05-315-16					
Gasoline	**ND**	5.6	NWTPH-Gx	5-26-17	5-26-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*75*	*63-124*				

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FL232-DRUM-1**					
Laboratory ID:	05-315-16					
Diesel Range Organics	**ND**	140	NWTPH-Dx	5-26-17	5-30-17	
Lube Oil	**730**	280	NWTPH-Dx	5-26-17	5-30-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*92*	*50-150*				

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FL232-B5-3.5-4.5**					
Laboratory ID:	05-315-10					
Diesel Range Organics	**ND**	140	NWTPH-Dx	5-31-17	6-1-17	
Lube Oil	**1400**	280	NWTPH-Dx	5-31-17	6-1-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*82*	*50-150*				
Client ID:	**FL232-B5-7-8**					
Laboratory ID:	05-315-11					
Diesel Range Organics	**ND**	28	NWTPH-Dx	5-31-17	6-1-17	
Lube Oil	**190**	56	NWTPH-Dx	5-31-17	6-1-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*74*	*50-150*				

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

VOLATILES EPA 8260C
page 1 of 2

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FL232-B3-6.5-7.5**					
Laboratory ID:	05-315-07					
Dichlorodifluoromethane	ND	0.00090	EPA 8260C	5-26-17	5-26-17	
Chloromethane	ND	0.0045	EPA 8260C	5-26-17	5-26-17	
Vinyl Chloride	ND	0.00090	EPA 8260C	5-26-17	5-26-17	
Bromomethane	ND	0.00090	EPA 8260C	5-26-17	5-26-17	
Chloroethane	ND	0.0045	EPA 8260C	5-26-17	5-26-17	
Trichlorofluoromethane	ND	0.00090	EPA 8260C	5-26-17	5-26-17	
1,1-Dichloroethene	ND	0.00090	EPA 8260C	5-26-17	5-26-17	
Acetone	ND	0.0045	EPA 8260C	5-26-17	5-26-17	
Iodomethane	ND	0.0045	EPA 8260C	5-26-17	5-26-17	
Carbon Disulfide	ND	0.0013	EPA 8260C	5-26-17	5-26-17	
Methylene Chloride	ND	0.0045	EPA 8260C	5-26-17	5-26-17	
(trans) 1,2-Dichloroethene	ND	0.00090	EPA 8260C	5-26-17	5-26-17	
Methyl t-Butyl Ether	ND	0.00090	EPA 8260C	5-26-17	5-26-17	
1,1-Dichloroethane	ND	0.00090	EPA 8260C	5-26-17	5-26-17	
Vinyl Acetate	ND	0.0045	EPA 8260C	5-26-17	5-26-17	
2,2-Dichloropropane	ND	0.00090	EPA 8260C	5-26-17	5-26-17	
(cis) 1,2-Dichloroethene	ND	0.00090	EPA 8260C	5-26-17	5-26-17	
2-Butanone	ND	0.0045	EPA 8260C	5-26-17	5-26-17	
Bromochloromethane	ND	0.00090	EPA 8260C	5-26-17	5-26-17	
Chloroform	ND	0.00090	EPA 8260C	5-26-17	5-26-17	
1,1,1-Trichloroethane	ND	0.00090	EPA 8260C	5-26-17	5-26-17	
Carbon Tetrachloride	ND	0.00090	EPA 8260C	5-26-17	5-26-17	
1,1-Dichloropropene	ND	0.00090	EPA 8260C	5-26-17	5-26-17	
Benzene	ND	0.00090	EPA 8260C	5-26-17	5-26-17	
1,2-Dichloroethane	ND	0.00090	EPA 8260C	5-26-17	5-26-17	
Trichloroethene	ND	0.00090	EPA 8260C	5-26-17	5-26-17	
1,2-Dichloropropane	ND	0.00090	EPA 8260C	5-26-17	5-26-17	
Dibromomethane	ND	0.00090	EPA 8260C	5-26-17	5-26-17	
Bromodichloromethane	ND	0.00090	EPA 8260C	5-26-17	5-26-17	
2-Chloroethyl Vinyl Ether	ND	0.0045	EPA 8260C	5-26-17	5-26-17	
(cis) 1,3-Dichloropropene	ND	0.00090	EPA 8260C	5-26-17	5-26-17	
Methyl Isobutyl Ketone	ND	0.0045	EPA 8260C	5-26-17	5-26-17	
Toluene	ND	0.0045	EPA 8260C	5-26-17	5-26-17	
(trans) 1,3-Dichloropropene	ND	0.00090	EPA 8260C	5-26-17	5-26-17	

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

VOLATILES EPA 8260C
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FL232-B3-6.5-7.5**					
Laboratory ID:	05-315-07					
1,1,2-Trichloroethane	ND	0.00090	EPA 8260C	5-26-17	5-26-17	
Tetrachloroethene	ND	0.00090	EPA 8260C	5-26-17	5-26-17	
1,3-Dichloropropane	ND	0.00090	EPA 8260C	5-26-17	5-26-17	
2-Hexanone	ND	0.0045	EPA 8260C	5-26-17	5-26-17	
Dibromochloromethane	ND	0.00090	EPA 8260C	5-26-17	5-26-17	
1,2-Dibromoethane	ND	0.00090	EPA 8260C	5-26-17	5-26-17	
Chlorobenzene	ND	0.00090	EPA 8260C	5-26-17	5-26-17	
1,1,1,2-Tetrachloroethane	ND	0.00090	EPA 8260C	5-26-17	5-26-17	
Ethylbenzene	ND	0.00090	EPA 8260C	5-26-17	5-26-17	
m,p-Xylene	ND	0.0018	EPA 8260C	5-26-17	5-26-17	
o-Xylene	ND	0.00090	EPA 8260C	5-26-17	5-26-17	
Styrene	ND	0.00090	EPA 8260C	5-26-17	5-26-17	
Bromoform	ND	0.0045	EPA 8260C	5-26-17	5-26-17	
Isopropylbenzene	ND	0.00090	EPA 8260C	5-26-17	5-26-17	
Bromobenzene	ND	0.00090	EPA 8260C	5-26-17	5-26-17	
1,1,2,2-Tetrachloroethane	ND	0.00090	EPA 8260C	5-26-17	5-26-17	
1,2,3-Trichloropropane	ND	0.00090	EPA 8260C	5-26-17	5-26-17	
n-Propylbenzene	ND	0.00090	EPA 8260C	5-26-17	5-26-17	
2-Chlorotoluene	ND	0.0012	EPA 8260C	5-26-17	5-26-17	
4-Chlorotoluene	ND	0.0012	EPA 8260C	5-26-17	5-26-17	
1,3,5-Trimethylbenzene	ND	0.0012	EPA 8260C	5-26-17	5-26-17	
tert-Butylbenzene	ND	0.0012	EPA 8260C	5-26-17	5-26-17	
1,2,4-Trimethylbenzene	ND	0.0012	EPA 8260C	5-26-17	5-26-17	
sec-Butylbenzene	ND	0.00090	EPA 8260C	5-26-17	5-26-17	
1,3-Dichlorobenzene	ND	0.0012	EPA 8260C	5-26-17	5-26-17	
p-Isopropyltoluene	ND	0.0012	EPA 8260C	5-26-17	5-26-17	
1,4-Dichlorobenzene	ND	0.0012	EPA 8260C	5-26-17	5-26-17	
1,2-Dichlorobenzene	ND	0.0012	EPA 8260C	5-26-17	5-26-17	
n-Butylbenzene	ND	0.00090	EPA 8260C	5-26-17	5-26-17	
1,2-Dibromo-3-chloropropane	ND	0.0045	EPA 8260C	5-26-17	5-26-17	
1,2,4-Trichlorobenzene	ND	0.0012	EPA 8260C	5-26-17	5-26-17	
Hexachlorobutadiene	ND	0.0045	EPA 8260C	5-26-17	5-26-17	
Naphthalene	ND	0.00090	EPA 8260C	5-26-17	5-26-17	
1,2,3-Trichlorobenzene	ND	0.0012	EPA 8260C	5-26-17	5-26-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*78*	*73-134*				
Toluene-d8	*91*	*81-124*				
4-Bromofluorobenzene	*116*	*80-131*				

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

VOLATILES EPA 8260C
page 1 of 2

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FL232-DRUM-1**					
Laboratory ID:	05-315-16					
Dichlorodifluoromethane	ND	0.0011	EPA 8260C	5-26-17	5-26-17	
Chloromethane	ND	0.0054	EPA 8260C	5-26-17	5-26-17	
Vinyl Chloride	ND	0.0011	EPA 8260C	5-26-17	5-26-17	
Bromomethane	ND	0.0011	EPA 8260C	5-26-17	5-26-17	
Chloroethane	ND	0.0054	EPA 8260C	5-26-17	5-26-17	
Trichlorofluoromethane	ND	0.0011	EPA 8260C	5-26-17	5-26-17	
1,1-Dichloroethene	ND	0.0011	EPA 8260C	5-26-17	5-26-17	
Acetone	0.0090	0.0054	EPA 8260C	5-26-17	5-26-17	
Iodomethane	ND	0.0054	EPA 8260C	5-26-17	5-26-17	
Carbon Disulfide	ND	0.0015	EPA 8260C	5-26-17	5-26-17	
Methylene Chloride	ND	0.0054	EPA 8260C	5-26-17	5-26-17	
(trans) 1,2-Dichloroethene	ND	0.0011	EPA 8260C	5-26-17	5-26-17	
Methyl t-Butyl Ether	ND	0.0011	EPA 8260C	5-26-17	5-26-17	
1,1-Dichloroethane	ND	0.0011	EPA 8260C	5-26-17	5-26-17	
Vinyl Acetate	ND	0.0054	EPA 8260C	5-26-17	5-26-17	
2,2-Dichloropropane	ND	0.0011	EPA 8260C	5-26-17	5-26-17	
(cis) 1,2-Dichloroethene	ND	0.0011	EPA 8260C	5-26-17	5-26-17	
2-Butanone	ND	0.0054	EPA 8260C	5-26-17	5-26-17	
Bromochloromethane	ND	0.0011	EPA 8260C	5-26-17	5-26-17	
Chloroform	ND	0.0011	EPA 8260C	5-26-17	5-26-17	
1,1,1-Trichloroethane	ND	0.0011	EPA 8260C	5-26-17	5-26-17	
Carbon Tetrachloride	ND	0.0011	EPA 8260C	5-26-17	5-26-17	
1,1-Dichloropropene	ND	0.0011	EPA 8260C	5-26-17	5-26-17	
Benzene	ND	0.0011	EPA 8260C	5-26-17	5-26-17	
1,2-Dichloroethane	ND	0.0011	EPA 8260C	5-26-17	5-26-17	
Trichloroethene	ND	0.0011	EPA 8260C	5-26-17	5-26-17	
1,2-Dichloropropane	ND	0.0011	EPA 8260C	5-26-17	5-26-17	
Dibromomethane	ND	0.0011	EPA 8260C	5-26-17	5-26-17	
Bromodichloromethane	ND	0.0011	EPA 8260C	5-26-17	5-26-17	
2-Chloroethyl Vinyl Ether	ND	0.0054	EPA 8260C	5-26-17	5-26-17	
(cis) 1,3-Dichloropropene	ND	0.0011	EPA 8260C	5-26-17	5-26-17	
Methyl Isobutyl Ketone	ND	0.0054	EPA 8260C	5-26-17	5-26-17	
Toluene	ND	0.0054	EPA 8260C	5-26-17	5-26-17	
(trans) 1,3-Dichloropropene	ND	0.0011	EPA 8260C	5-26-17	5-26-17	

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

VOLATILES EPA 8260C
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FL232-DRUM-1**					
Laboratory ID:	05-315-16					
1,1,2-Trichloroethane	ND	0.0011	EPA 8260C	5-26-17	5-26-17	
Tetrachloroethene	ND	0.0011	EPA 8260C	5-26-17	5-26-17	
1,3-Dichloropropane	ND	0.0011	EPA 8260C	5-26-17	5-26-17	
2-Hexanone	ND	0.0054	EPA 8260C	5-26-17	5-26-17	
Dibromochloromethane	ND	0.0011	EPA 8260C	5-26-17	5-26-17	
1,2-Dibromoethane	ND	0.0011	EPA 8260C	5-26-17	5-26-17	
Chlorobenzene	ND	0.0011	EPA 8260C	5-26-17	5-26-17	
1,1,1,2-Tetrachloroethane	ND	0.0011	EPA 8260C	5-26-17	5-26-17	
Ethylbenzene	ND	0.0011	EPA 8260C	5-26-17	5-26-17	
m,p-Xylene	ND	0.0022	EPA 8260C	5-26-17	5-26-17	
o-Xylene	ND	0.0011	EPA 8260C	5-26-17	5-26-17	
Styrene	ND	0.0011	EPA 8260C	5-26-17	5-26-17	
Bromoform	ND	0.0054	EPA 8260C	5-26-17	5-26-17	
Isopropylbenzene	ND	0.0011	EPA 8260C	5-26-17	5-26-17	
Bromobenzene	ND	0.0011	EPA 8260C	5-26-17	5-26-17	
1,1,2,2-Tetrachloroethane	ND	0.0011	EPA 8260C	5-26-17	5-26-17	
1,2,3-Trichloropropane	ND	0.0011	EPA 8260C	5-26-17	5-26-17	
n-Propylbenzene	ND	0.0011	EPA 8260C	5-26-17	5-26-17	
2-Chlorotoluene	ND	0.0014	EPA 8260C	5-26-17	5-26-17	
4-Chlorotoluene	ND	0.0014	EPA 8260C	5-26-17	5-26-17	
1,3,5-Trimethylbenzene	ND	0.0014	EPA 8260C	5-26-17	5-26-17	
tert-Butylbenzene	ND	0.0014	EPA 8260C	5-26-17	5-26-17	
1,2,4-Trimethylbenzene	ND	0.0014	EPA 8260C	5-26-17	5-26-17	
sec-Butylbenzene	ND	0.0011	EPA 8260C	5-26-17	5-26-17	
1,3-Dichlorobenzene	ND	0.0014	EPA 8260C	5-26-17	5-26-17	
p-Isopropyltoluene	ND	0.0014	EPA 8260C	5-26-17	5-26-17	
1,4-Dichlorobenzene	ND	0.0014	EPA 8260C	5-26-17	5-26-17	
1,2-Dichlorobenzene	ND	0.0014	EPA 8260C	5-26-17	5-26-17	
n-Butylbenzene	ND	0.0011	EPA 8260C	5-26-17	5-26-17	
1,2-Dibromo-3-chloropropane	ND	0.0054	EPA 8260C	5-26-17	5-26-17	
1,2,4-Trichlorobenzene	ND	0.0014	EPA 8260C	5-26-17	5-26-17	
Hexachlorobutadiene	ND	0.0054	EPA 8260C	5-26-17	5-26-17	
Naphthalene	ND	0.0011	EPA 8260C	5-26-17	5-26-17	
1,2,3-Trichlorobenzene	ND	0.0014	EPA 8260C	5-26-17	5-26-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*80*	*73-134*				
Toluene-d8	*94*	*81-124*				
4-Bromofluorobenzene	*114*	*80-131*				

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

VOLATILES EPA 8260C
page 1 of 2

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FL232-B5-3.5-4.5**					
Laboratory ID:	05-315-10					
Dichlorodifluoromethane	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
Chloromethane	ND	0.0047	EPA 8260C	6-2-17	6-2-17	
Vinyl Chloride	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
Bromomethane	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
Chloroethane	ND	0.0047	EPA 8260C	6-2-17	6-2-17	
Trichlorofluoromethane	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
1,1-Dichloroethene	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
Acetone	ND	0.0094	EPA 8260C	6-2-17	6-2-17	
Iodomethane	ND	0.0047	EPA 8260C	6-2-17	6-2-17	
Carbon Disulfide	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
Methylene Chloride	ND	0.0094	EPA 8260C	6-2-17	6-2-17	
(trans) 1,2-Dichloroethene	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
Methyl t-Butyl Ether	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
1,1-Dichloroethane	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
Vinyl Acetate	ND	0.0047	EPA 8260C	6-2-17	6-2-17	
2,2-Dichloropropane	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
(cis) 1,2-Dichloroethene	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
2-Butanone	ND	0.0047	EPA 8260C	6-2-17	6-2-17	
Bromochloromethane	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
Chloroform	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
1,1,1-Trichloroethane	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
Carbon Tetrachloride	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
1,1-Dichloropropene	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
Benzene	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
1,2-Dichloroethane	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
Trichloroethene	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
1,2-Dichloropropane	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
Dibromomethane	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
Bromodichloromethane	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
2-Chloroethyl Vinyl Ether	ND	0.0073	EPA 8260C	6-2-17	6-2-17	
(cis) 1,3-Dichloropropene	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
Methyl Isobutyl Ketone	ND	0.0047	EPA 8260C	6-2-17	6-2-17	
Toluene	ND	0.0047	EPA 8260C	6-2-17	6-2-17	
(trans) 1,3-Dichloropropene	ND	0.00094	EPA 8260C	6-2-17	6-2-17	

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

VOLATILES EPA 8260C
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FL232-B5-3.5-4.5**					
Laboratory ID:	05-315-10					
1,1,2-Trichloroethane	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
Tetrachloroethene	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
1,3-Dichloropropane	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
2-Hexanone	ND	0.0047	EPA 8260C	6-2-17	6-2-17	
Dibromochloromethane	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
1,2-Dibromoethane	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
Chlorobenzene	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
1,1,1,2-Tetrachloroethane	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
Ethylbenzene	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
m,p-Xylene	ND	0.0019	EPA 8260C	6-2-17	6-2-17	
o-Xylene	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
Styrene	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
Bromoform	ND	0.0047	EPA 8260C	6-2-17	6-2-17	
Isopropylbenzene	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
Bromobenzene	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
1,1,2,2-Tetrachloroethane	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
1,2,3-Trichloropropane	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
n-Propylbenzene	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
2-Chlorotoluene	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
4-Chlorotoluene	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
1,3,5-Trimethylbenzene	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
tert-Butylbenzene	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
1,2,4-Trimethylbenzene	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
sec-Butylbenzene	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
1,3-Dichlorobenzene	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
p-Isopropyltoluene	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
1,4-Dichlorobenzene	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
1,2-Dichlorobenzene	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
n-Butylbenzene	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
1,2-Dibromo-3-chloropropane	ND	0.0047	EPA 8260C	6-2-17	6-2-17	
1,2,4-Trichlorobenzene	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
Hexachlorobutadiene	ND	0.0047	EPA 8260C	6-2-17	6-2-17	
Naphthalene	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
1,2,3-Trichlorobenzene	ND	0.00094	EPA 8260C	6-2-17	6-2-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*117*	*73-134*				
Toluene-d8	*110*	*81-124*				
4-Bromofluorobenzene	*98*	*80-131*				

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

PAHs EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FL232-B5-3.5-4.5**					
Laboratory ID:	05-315-10					
Naphthalene	**ND**	0.0073	EPA 8270D/SIM	6-5-17	6-5-17	
2-Methylnaphthalene	**ND**	0.0073	EPA 8270D/SIM	6-5-17	6-5-17	
1-Methylnaphthalene	**ND**	0.0073	EPA 8270D/SIM	6-5-17	6-5-17	
Acenaphthylene	**ND**	0.0073	EPA 8270D/SIM	6-5-17	6-5-17	
Acenaphthene	**0.013**	0.0073	EPA 8270D/SIM	6-5-17	6-5-17	
Fluorene	**0.010**	0.0073	EPA 8270D/SIM	6-5-17	6-5-17	
Phenanthrene	**0.14**	0.0073	EPA 8270D/SIM	6-5-17	6-5-17	
Anthracene	**0.027**	0.0073	EPA 8270D/SIM	6-5-17	6-5-17	
Fluoranthene	**0.19**	0.0073	EPA 8270D/SIM	6-5-17	6-5-17	
Pyrene	**0.17**	0.0073	EPA 8270D/SIM	6-5-17	6-5-17	
Benzo[a]anthracene	**0.11**	0.0073	EPA 8270D/SIM	6-5-17	6-5-17	
Chrysene	**0.12**	0.0073	EPA 8270D/SIM	6-5-17	6-5-17	
Benzo[b]fluoranthene	**0.12**	0.0073	EPA 8270D/SIM	6-5-17	6-5-17	
Benzo(j,k)fluoranthene	**0.037**	0.0073	EPA 8270D/SIM	6-5-17	6-5-17	
Benzo[a]pyrene	**0.10**	0.0073	EPA 8270D/SIM	6-5-17	6-5-17	
Indeno(1,2,3-c,d)pyrene	**0.086**	0.0073	EPA 8270D/SIM	6-5-17	6-5-17	
Dibenz[a,h]anthracene	**0.016**	0.0073	EPA 8270D/SIM	6-5-17	6-5-17	
Benzo[g,h,i]perylene	**0.086**	0.0073	EPA 8270D/SIM	6-5-17	6-5-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*76*	*32 - 122*				
Pyrene-d10	*65*	*33 - 125*				
Terphenyl-d14	*83*	*36 - 118*				

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

TOTAL METALS
EPA 6010C/7471B

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	05-315-01					
Client ID:	**FL232-B1-3.5-4.5**					
Arsenic	**ND**	11	6010C	5-31-17	5-31-17	
Lead	**38**	5.6	6010C	5-31-17	5-31-17	
Lab ID:	05-315-04					
Client ID:	**FL232-B2-3.5-4.5**					
Arsenic	**ND**	11	6010C	5-31-17	5-31-17	
Lead	**ND**	5.7	6010C	5-31-17	5-31-17	
Lab ID:	05-315-07					
Client ID:	**FL232-B3-6.5-7.5**					
Arsenic	**ND**	11	6010C	5-31-17	5-31-17	
Barium	**59**	2.8	6010C	5-31-17	5-31-17	
Cadmium	**ND**	0.56	6010C	5-31-17	5-31-17	
Chromium	**25**	0.56	6010C	5-31-17	5-31-17	
Lead	**ND**	5.6	6010C	5-31-17	5-31-17	
Mercury	**ND**	0.28	7471B	5-26-17	5-26-17	
Selenium	**ND**	11	6010C	5-31-17	5-31-17	
Silver	**ND**	1.1	6010C	5-31-17	5-31-17	
Lab ID:	05-315-10					
Client ID:	**FL232-B5-3.5-4.5**					
Arsenic	**ND**	11	6010C	5-31-17	5-31-17	
Lead	**36**	5.5	6010C	5-31-17	5-31-17	

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

TOTAL METALS
EPA 6010C/7471B

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	05-315-13					
Client ID:	**FL232-B6-3.5-4.5**					
Arsenic	**ND**	11	6010C	5-31-17	5-31-17	
Lead	**66**	5.6	6010C	5-31-17	5-31-17	
Lab ID:	05-315-16					
Client ID:	**FL232-DRUM-1**					
Arsenic	**ND**	11	6010C	5-31-17	5-31-17	
Barium	**49**	2.8	6010C	5-31-17	5-31-17	
Cadmium	**ND**	0.55	6010C	5-31-17	5-31-17	
Chromium	**49**	0.55	6010C	5-31-17	5-31-17	
Lead	**ND**	5.5	6010C	5-31-17	5-31-17	
Mercury	**ND**	0.28	7471B	5-26-17	5-26-17	
Selenium	**ND**	11	6010C	5-31-17	5-31-17	
Silver	**ND**	1.1	6010C	5-31-17	5-31-17	

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

TOTAL METALS
EPA 6010C/7471B

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	05-315-10					
Client ID:	**FL232-B5-3.5-4.5**					
Barium	**66**	2.8	6010C	6-1-17	6-1-17	
Cadmium	**ND**	0.55	6010C	6-1-17	6-1-17	
Chromium	**33**	0.55	6010C	6-1-17	6-1-17	
Mercury	**ND**	0.28	7471B	6-12-17	6-12-17	
Selenium	**ND**	11	6010C	6-1-17	6-1-17	
Silver	**ND**	1.1	6010C	6-1-17	6-1-17	

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

PAHs EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**FL232-B3-6.5-7.5**					
Laboratory ID:	05-315-07					
Naphthalene	**ND**	0.0074	EPA 8270D/SIM	6-14-17	6-16-17	
2-Methylnaphthalene	**ND**	0.0074	EPA 8270D/SIM	6-14-17	6-16-17	
1-Methylnaphthalene	**ND**	0.0074	EPA 8270D/SIM	6-14-17	6-16-17	
Acenaphthylene	**ND**	0.0074	EPA 8270D/SIM	6-14-17	6-16-17	
Acenaphthene	**ND**	0.0074	EPA 8270D/SIM	6-14-17	6-16-17	
Fluorene	**ND**	0.0074	EPA 8270D/SIM	6-14-17	6-16-17	
Phenanthrene	**ND**	0.0074	EPA 8270D/SIM	6-14-17	6-16-17	
Anthracene	**ND**	0.0074	EPA 8270D/SIM	6-14-17	6-16-17	
Fluoranthene	**ND**	0.0074	EPA 8270D/SIM	6-14-17	6-16-17	
Pyrene	**ND**	0.0074	EPA 8270D/SIM	6-14-17	6-16-17	
Benzo[a]anthracene	**ND**	0.0074	EPA 8270D/SIM	6-14-17	6-16-17	
Chrysene	**ND**	0.0074	EPA 8270D/SIM	6-14-17	6-16-17	
Benzo[b]fluoranthene	**ND**	0.0074	EPA 8270D/SIM	6-14-17	6-16-17	
Benzo(j,k)fluoranthene	**ND**	0.0074	EPA 8270D/SIM	6-14-17	6-16-17	
Benzo[a]pyrene	**ND**	0.0074	EPA 8270D/SIM	6-14-17	6-16-17	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0074	EPA 8270D/SIM	6-14-17	6-16-17	
Dibenz[a,h]anthracene	**ND**	0.0074	EPA 8270D/SIM	6-14-17	6-16-17	
Benzo[g,h,i]perylene	**ND**	0.0074	EPA 8270D/SIM	6-14-17	6-16-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*67*	*32 - 122*				
Pyrene-d10	*77*	*33 - 125*				
Terphenyl-d14	*86*	*36 - 118*				

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

SOLUBLE HEXAVALENT CHROMIUM
WATER EXTRACTION
EPA 7196A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	05-315-07					
Client ID:	**FL232-B3-6.5-7.5**					
Hexavalent Chromium	**ND**	1.1	7196A mod	6-14-17	6-14-17	

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

NWTPH-HCID
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0530S1					
Gasoline Range Organics	**ND**	20	NWTPH-HCID	5-30-17	5-30-17	
Diesel Range Organics	**ND**	50	NWTPH-HCID	5-30-17	5-30-17	
Lube Oil Range Organics	**ND**	100	NWTPH-HCID	5-30-17	5-30-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*101*	*50-150*				

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

NWTPH-Gx
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0526S1					
Gasoline	**ND**	5.0	NWTPH-Gx	5-26-17	5-26-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*71*	*63-124*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	05-314-07										
	ORIG	DUP									
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*81*	*83*	*63-124*			

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0526S2					
Diesel Range Organics	**ND**	25	NWTPH-Dx	5-26-17	5-26-17	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	5-26-17	5-26-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*72*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	05-297-04										
	ORIG	DUP									
Diesel Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Lube Oil Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Surrogate:											
o-Terphenyl						*65*	*62*	*50-150*			

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

NWTPH-Dx
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0531S3					
Diesel Range Organics	**ND**	25	NWTPH-Dx	5-31-17	6-1-17	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	5-31-17	6-1-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*85*	*50-150*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	05-314-01										
	ORIG	DUP									
Diesel Range Organics	**313**	**152**	NA	NA		NA		NA	69	NA	
Lube Oil Range Organics	**872**	**657**	NA	NA		NA		NA	28	NA	
Surrogate:											
o-Terphenyl						*68*	*78*	*50-150*			

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

VOLATILES by EPA 8260C
METHOD BLANK QUALITY CONTROL
page 1 of 2

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0526S2					
Dichlorodifluoromethane	ND	0.0010	EPA 8260C	5-26-17	5-26-17	
Chloromethane	ND	0.0050	EPA 8260C	5-26-17	5-26-17	
Vinyl Chloride	ND	0.0010	EPA 8260C	5-26-17	5-26-17	
Bromomethane	ND	0.0010	EPA 8260C	5-26-17	5-26-17	
Chloroethane	ND	0.0050	EPA 8260C	5-26-17	5-26-17	
Trichlorofluoromethane	ND	0.0010	EPA 8260C	5-26-17	5-26-17	
1,1-Dichloroethene	ND	0.0010	EPA 8260C	5-26-17	5-26-17	
Acetone	ND	0.010	EPA 8260C	5-26-17	5-26-17	
Iodomethane	ND	0.0050	EPA 8260C	5-26-17	5-26-17	
Carbon Disulfide	ND	0.0014	EPA 8260C	5-26-17	5-26-17	
Methylene Chloride	ND	0.0050	EPA 8260C	5-26-17	5-26-17	
(trans) 1,2-Dichloroethene	ND	0.0010	EPA 8260C	5-26-17	5-26-17	
Methyl t-Butyl Ether	ND	0.0010	EPA 8260C	5-26-17	5-26-17	
1,1-Dichloroethane	ND	0.0010	EPA 8260C	5-26-17	5-26-17	
Vinyl Acetate	ND	0.0050	EPA 8260C	5-26-17	5-26-17	
2,2-Dichloropropane	ND	0.0010	EPA 8260C	5-26-17	5-26-17	
(cis) 1,2-Dichloroethene	ND	0.0010	EPA 8260C	5-26-17	5-26-17	
2-Butanone	ND	0.0050	EPA 8260C	5-26-17	5-26-17	
Bromochloromethane	ND	0.0010	EPA 8260C	5-26-17	5-26-17	
Chloroform	ND	0.0010	EPA 8260C	5-26-17	5-26-17	
1,1,1-Trichloroethane	ND	0.0010	EPA 8260C	5-26-17	5-26-17	
Carbon Tetrachloride	ND	0.0010	EPA 8260C	5-26-17	5-26-17	
1,1-Dichloropropene	ND	0.0010	EPA 8260C	5-26-17	5-26-17	
Benzene	ND	0.0010	EPA 8260C	5-26-17	5-26-17	
1,2-Dichloroethane	ND	0.0010	EPA 8260C	5-26-17	5-26-17	
Trichloroethene	ND	0.0010	EPA 8260C	5-26-17	5-26-17	
1,2-Dichloropropane	ND	0.0010	EPA 8260C	5-26-17	5-26-17	
Dibromomethane	ND	0.0010	EPA 8260C	5-26-17	5-26-17	
Bromodichloromethane	ND	0.0010	EPA 8260C	5-26-17	5-26-17	
2-Chloroethyl Vinyl Ether	ND	0.0050	EPA 8260C	5-26-17	5-26-17	
(cis) 1,3-Dichloropropene	ND	0.0010	EPA 8260C	5-26-17	5-26-17	
Methyl Isobutyl Ketone	ND	0.0050	EPA 8260C	5-26-17	5-26-17	
Toluene	ND	0.0050	EPA 8260C	5-26-17	5-26-17	
(trans) 1,3-Dichloropropene	ND	0.0010	EPA 8260C	5-26-17	5-26-17	

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

VOLATILES by EPA 8260C
METHOD BLANK QUALITY CONTROL
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0526S2					
1,1,2-Trichloroethane	ND	0.0010	EPA 8260C	5-26-17	5-26-17	
Tetrachloroethene	ND	0.0010	EPA 8260C	5-26-17	5-26-17	
1,3-Dichloropropane	ND	0.0010	EPA 8260C	5-26-17	5-26-17	
2-Hexanone	ND	0.0050	EPA 8260C	5-26-17	5-26-17	
Dibromochloromethane	ND	0.0010	EPA 8260C	5-26-17	5-26-17	
1,2-Dibromoethane	ND	0.0010	EPA 8260C	5-26-17	5-26-17	
Chlorobenzene	ND	0.0010	EPA 8260C	5-26-17	5-26-17	
1,1,1,2-Tetrachloroethane	ND	0.0010	EPA 8260C	5-26-17	5-26-17	
Ethylbenzene	ND	0.0010	EPA 8260C	5-26-17	5-26-17	
m,p-Xylene	ND	0.0020	EPA 8260C	5-26-17	5-26-17	
o-Xylene	ND	0.0010	EPA 8260C	5-26-17	5-26-17	
Styrene	ND	0.0010	EPA 8260C	5-26-17	5-26-17	
Bromoform	ND	0.0050	EPA 8260C	5-26-17	5-26-17	
Isopropylbenzene	ND	0.0010	EPA 8260C	5-26-17	5-26-17	
Bromobenzene	ND	0.0010	EPA 8260C	5-26-17	5-26-17	
1,1,2,2-Tetrachloroethane	ND	0.0010	EPA 8260C	5-26-17	5-26-17	
1,2,3-Trichloropropane	ND	0.0010	EPA 8260C	5-26-17	5-26-17	
n-Propylbenzene	ND	0.0010	EPA 8260C	5-26-17	5-26-17	
2-Chlorotoluene	ND	0.0013	EPA 8260C	5-26-17	5-26-17	
4-Chlorotoluene	ND	0.0013	EPA 8260C	5-26-17	5-26-17	
1,3,5-Trimethylbenzene	ND	0.0013	EPA 8260C	5-26-17	5-26-17	
tert-Butylbenzene	ND	0.0013	EPA 8260C	5-26-17	5-26-17	
1,2,4-Trimethylbenzene	ND	0.0013	EPA 8260C	5-26-17	5-26-17	
sec-Butylbenzene	ND	0.0010	EPA 8260C	5-26-17	5-26-17	
1,3-Dichlorobenzene	ND	0.0013	EPA 8260C	5-26-17	5-26-17	
p-Isopropyltoluene	ND	0.0013	EPA 8260C	5-26-17	5-26-17	
1,4-Dichlorobenzene	ND	0.0013	EPA 8260C	5-26-17	5-26-17	
1,2-Dichlorobenzene	ND	0.0013	EPA 8260C	5-26-17	5-26-17	
n-Butylbenzene	ND	0.0010	EPA 8260C	5-26-17	5-26-17	
1,2-Dibromo-3-chloropropane	ND	0.0050	EPA 8260C	5-26-17	5-26-17	
1,2,4-Trichlorobenzene	ND	0.0013	EPA 8260C	5-26-17	5-26-17	
Hexachlorobutadiene	ND	0.0050	EPA 8260C	5-26-17	5-26-17	
Naphthalene	ND	0.0010	EPA 8260C	5-26-17	5-26-17	
1,2,3-Trichlorobenzene	ND	0.0013	EPA 8260C	5-26-17	5-26-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*79*	*73-134*				
Toluene-d8	*94*	*81-124*				
4-Bromofluorobenzene	*116*	*80-131*				

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

VOLATILES by EPA 8260C
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0526S2									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**0.0504**	**0.0471**	0.0500	0.0500	101	94	66-127	7	15	
Benzene	**0.0548**	**0.0511**	0.0500	0.0500	110	102	76-122	7	15	
Trichloroethene	**0.0556**	**0.0509**	0.0500	0.0500	111	102	78-120	9	15	
Toluene	**0.0588**	**0.0551**	0.0500	0.0500	118	110	83-120	6	15	
Chlorobenzene	**0.0503**	**0.0467**	0.0500	0.0500	101	93	81-120	7	15	
Surrogate:										
Dibromofluoromethane					*77*	*75*	*73-134*			
Toluene-d8					*89*	*89*	*81-124*			
4-Bromofluorobenzene					*116*	*112*	*80-131*			

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

VOLATILES by EPA 8260C
METHOD BLANK QUALITY CONTROL
page 1 of 2

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0602S1					
Dichlorodifluoromethane	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
Chloromethane	ND	0.0050	EPA 8260C	6-2-17	6-2-17	
Vinyl Chloride	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
Bromomethane	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
Chloroethane	ND	0.0050	EPA 8260C	6-2-17	6-2-17	
Trichlorofluoromethane	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
1,1-Dichloroethene	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
Acetone	ND	0.010	EPA 8260C	6-2-17	6-2-17	
Iodomethane	ND	0.0050	EPA 8260C	6-2-17	6-2-17	
Carbon Disulfide	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
Methylene Chloride	ND	0.010	EPA 8260C	6-2-17	6-2-17	
(trans) 1,2-Dichloroethene	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
Methyl t-Butyl Ether	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
1,1-Dichloroethane	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
Vinyl Acetate	ND	0.0050	EPA 8260C	6-2-17	6-2-17	
2,2-Dichloropropane	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
(cis) 1,2-Dichloroethene	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
2-Butanone	ND	0.0050	EPA 8260C	6-2-17	6-2-17	
Bromochloromethane	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
Chloroform	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
1,1,1-Trichloroethane	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
Carbon Tetrachloride	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
1,1-Dichloropropene	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
Benzene	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
1,2-Dichloroethane	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
Trichloroethene	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
1,2-Dichloropropane	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
Dibromomethane	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
Bromodichloromethane	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
2-Chloroethyl Vinyl Ether	ND	0.0078	EPA 8260C	6-2-17	6-2-17	
(cis) 1,3-Dichloropropene	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
Methyl Isobutyl Ketone	ND	0.0050	EPA 8260C	6-2-17	6-2-17	
Toluene	ND	0.0050	EPA 8260C	6-2-17	6-2-17	
(trans) 1,3-Dichloropropene	ND	0.0010	EPA 8260C	6-2-17	6-2-17	

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

VOLATILES by EPA 8260C
METHOD BLANK QUALITY CONTROL
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0602S1					
1,1,2-Trichloroethane	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
Tetrachloroethene	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
1,3-Dichloropropane	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
2-Hexanone	ND	0.0050	EPA 8260C	6-2-17	6-2-17	
Dibromochloromethane	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
1,2-Dibromoethane	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
Chlorobenzene	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
1,1,1,2-Tetrachloroethane	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
Ethylbenzene	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
m,p-Xylene	ND	0.0020	EPA 8260C	6-2-17	6-2-17	
o-Xylene	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
Styrene	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
Bromoform	ND	0.0050	EPA 8260C	6-2-17	6-2-17	
Isopropylbenzene	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
Bromobenzene	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
1,1,2,2-Tetrachloroethane	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
1,2,3-Trichloropropane	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
n-Propylbenzene	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
2-Chlorotoluene	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
4-Chlorotoluene	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
1,3,5-Trimethylbenzene	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
tert-Butylbenzene	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
1,2,4-Trimethylbenzene	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
sec-Butylbenzene	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
1,3-Dichlorobenzene	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
p-Isopropyltoluene	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
1,4-Dichlorobenzene	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
1,2-Dichlorobenzene	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
n-Butylbenzene	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
1,2-Dibromo-3-chloropropane	ND	0.0050	EPA 8260C	6-2-17	6-2-17	
1,2,4-Trichlorobenzene	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
Hexachlorobutadiene	ND	0.0050	EPA 8260C	6-2-17	6-2-17	
Naphthalene	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
1,2,3-Trichlorobenzene	ND	0.0010	EPA 8260C	6-2-17	6-2-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*113*	*73-134*				
Toluene-d8	*112*	*81-124*				
4-Bromofluorobenzene	*106*	*80-131*				

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

VOLATILES by EPA 8260C
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0602S1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**0.0626**	**0.0632**	0.0500	0.0500	125	126	66-127	1	15	
Benzene	**0.0568**	**0.0581**	0.0500	0.0500	114	116	76-122	2	15	
Trichloroethene	**0.0549**	**0.0547**	0.0500	0.0500	110	109	78-120	0	15	
Toluene	**0.0558**	**0.0574**	0.0500	0.0500	112	115	83-120	3	15	
Chlorobenzene	**0.0503**	**0.0497**	0.0500	0.0500	101	99	81-120	1	15	
Surrogate:										
Dibromofluoromethane					*105*	*104*	*73-134*			
Toluene-d8					*110*	*109*	*81-124*			
4-Bromofluorobenzene					*101*	*102*	*80-131*			

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

PAHs EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0605S1					
Naphthalene	**ND**	0.0067	EPA 8270D/SIM	6-5-17	6-5-17	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270D/SIM	6-5-17	6-5-17	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270D/SIM	6-5-17	6-5-17	
Acenaphthylene	**ND**	0.0067	EPA 8270D/SIM	6-5-17	6-5-17	
Acenaphthene	**ND**	0.0067	EPA 8270D/SIM	6-5-17	6-5-17	
Fluorene	**ND**	0.0067	EPA 8270D/SIM	6-5-17	6-5-17	
Phenanthrene	**ND**	0.0067	EPA 8270D/SIM	6-5-17	6-5-17	
Anthracene	**ND**	0.0067	EPA 8270D/SIM	6-5-17	6-5-17	
Fluoranthene	**ND**	0.0067	EPA 8270D/SIM	6-5-17	6-5-17	
Pyrene	**ND**	0.0067	EPA 8270D/SIM	6-5-17	6-5-17	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270D/SIM	6-5-17	6-5-17	
Chrysene	**ND**	0.0067	EPA 8270D/SIM	6-5-17	6-5-17	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270D/SIM	6-5-17	6-5-17	
Benzo(j,k)fluoranthene	**ND**	0.0067	EPA 8270D/SIM	6-5-17	6-5-17	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270D/SIM	6-5-17	6-5-17	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270D/SIM	6-5-17	6-5-17	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270D/SIM	6-5-17	6-5-17	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270D/SIM	6-5-17	6-5-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*92*	*32 - 122*				
Pyrene-d10	*85*	*33 - 125*				
Terphenyl-d14	*98*	*36 - 118*				

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

PAHs EPA 8270D/SIM
MS/MSD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	05-281-10										
	MS	MSD	MS	MSD		MS	MSD				
Naphthalene	**0.0657**	**0.0710**	0.0833	0.0833	ND	79	85	39 - 112	8	27	
Acenaphthylene	**0.0672**	**0.0739**	0.0833	0.0833	ND	81	89	40 - 121	9	34	
Acenaphthene	**0.0665**	**0.0722**	0.0833	0.0833	ND	80	87	44 - 113	8	28	
Fluorene	**0.0686**	**0.0729**	0.0833	0.0833	ND	82	88	43 - 119	6	27	
Phenanthrene	**0.0622**	**0.0674**	0.0833	0.0833	ND	75	81	35 - 124	8	30	
Anthracene	**0.0680**	**0.0722**	0.0833	0.0833	ND	82	87	30 - 140	6	26	
Fluoranthene	**0.0658**	**0.0703**	0.0833	0.0833	ND	79	84	29 - 136	7	32	
Pyrene	**0.0651**	**0.0686**	0.0833	0.0833	ND	78	82	35 - 128	5	33	
Benzo[a]anthracene	**0.0747**	**0.0801**	0.0833	0.0833	ND	90	96	30 - 143	7	31	
Chrysene	**0.0726**	**0.0783**	0.0833	0.0833	ND	87	94	32 - 129	8	33	
Benzo[b]fluoranthene	**0.0693**	**0.0740**	0.0833	0.0833	ND	83	89	23 - 140	7	29	
Benzo(j,k)fluoranthene	**0.0709**	**0.0766**	0.0833	0.0833	ND	85	92	32 - 119	8	30	
Benzo[a]pyrene	**0.0703**	**0.0761**	0.0833	0.0833	ND	84	91	31 - 131	8	32	
Indeno(1,2,3-c,d)pyrene	**0.0698**	**0.0744**	0.0833	0.0833	ND	84	89	31 - 130	6	28	
Dibenz[a,h]anthracene	**0.0670**	**0.0731**	0.0833	0.0833	ND	80	88	40 - 119	9	27	
Benzo[g,h,i]perylene	**0.0696**	**0.0752**	0.0833	0.0833	ND	84	90	39 - 119	8	29	
Surrogate:											
2-Fluorobiphenyl						*83*	*90*	*32 - 122*			
Pyrene-d10						*76*	*79*	*33 - 125*			
Terphenyl-d14						*96*	*100*	*36 - 118*			

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

TOTAL METALS
EPA 6010C
METHOD BLANK QUALITY CONTROL

Date Extracted: 5-31-17
Date Analyzed: 5-31-17

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0531SM1

Analyte	Method	Result	PQL
Arsenic	6010C	**ND**	10
Barium	6010C	**ND**	2.5
Cadmium	6010C	**ND**	0.50
Chromium	6010C	**ND**	0.50
Lead	6010C	**ND**	5.0
Selenium	6010C	**ND**	10
Silver	6010C	**ND**	1.0

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

TOTAL MERCURY
EPA 7471B
METHOD BLANK QUALITY CONTROL

Date Extracted:	5-26-17
Date Analyzed:	5-26-17
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0526S3

Analyte	Method	Result	PQL
Mercury	7471B	**ND**	0.25

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

TOTAL METALS
EPA 6010C
DUPLICATE QUALITY CONTROL

Date Extracted: 5-31-17
Date Analyzed: 5-31-17

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 05-315-07

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Barium	**52.9**	**52.0**	2	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**22.6**	**21.8**	3	0.50	
Lead	**ND**	**ND**	NA	5.0	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	1.0	

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

TOTAL MERCURY
EPA 7471B
DUPLICATE QUALITY CONTROL

Date Extracted: 5-26-17
Date Analyzed: 5-26-17

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 05-312-02

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Mercury	**ND**	**ND**	NA	0.25	

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

TOTAL METALS
EPA 6010C
MS/MSD QUALITY CONTROL

Date Extracted: 5-31-17
Date Analyzed: 5-31-17

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 05-315-07

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**88.5**	88	**86.0**	86	3	
Barium	100	**145**	92	**141**	88	3	
Cadmium	50.0	**46.4**	93	**45.9**	92	1	
Chromium	100	**112**	89	**113**	91	2	
Lead	250	**227**	91	**224**	89	2	
Selenium	100	**86.2**	86	**87.6**	88	2	
Silver	25.0	**19.9**	79	**19.7**	79	1	

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

TOTAL MERCURY
EPA 7471B
MS/MSD QUALITY CONTROL

Date Extracted: 5-26-17
Date Analyzed: 5-26-17

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 05-312-02

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Mercury	0.500	**0.531**	106	**0.530**	106	0	

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

TOTAL METALS
EPA 6010C
METHOD BLANK QUALITY CONTROL

Date Extracted: 6-1-17
Date Analyzed: 6-1-17

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0601SM1

Analyte	Method	Result	PQL
Barium	6010C	**ND**	2.5
Cadmium	6010C	**ND**	0.50
Chromium	6010C	**ND**	0.50
Selenium	6010C	**ND**	10
Silver	6010C	**ND**	1.0

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

TOTAL MERCURY
EPA 7471B
METHOD BLANK QUALITY CONTROL

Date Extracted:	6-12-17
Date Analyzed:	6-12-17
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0612S1

Analyte	Method	Result	PQL
Mercury	7471B	**ND**	0.25

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

TOTAL METALS
EPA 6010C
DUPLICATE QUALITY CONTROL

Date Extracted: 6-1-17
Date Analyzed: 6-1-17

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 05-348-02

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Barium	**15.9**	**15.1**	5	2.5	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**13.1**	**11.6**	12	0.50	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	1.0	

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

TOTAL MERCURY
EPA 7471B
DUPLICATE QUALITY CONTROL

Date Extracted: 6-12-17
Date Analyzed: 6-12-17

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 06-127-06

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Mercury	**ND**	**ND**	NA	0.25	

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

TOTAL METALS
EPA 6010C
MS/MSD QUALITY CONTROL

Date Extracted: 6-1-17
Date Analyzed: 6-1-17

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 05-348-02

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Barium	100	**109**	93	**111**	95	2	
Cadmium	50.0	**48.1**	96	**48.4**	97	1	
Chromium	100	**110**	97	**111**	98	1	
Selenium	100	**92.2**	92	**91.8**	92	0	
Silver	25.0	**21.1**	84	**20.8**	83	1	

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

TOTAL MERCURY
EPA 7471B
MS/MSD QUALITY CONTROL

Date Extracted: 6-12-17
Date Analyzed: 6-12-17

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 06-127-06

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Mercury	0.500	**0.524**	105	**0.515**	103	2	

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

PAHs EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0614S1					
Naphthalene	**ND**	0.0067	EPA 8270D/SIM	6-14-17	6-15-17	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270D/SIM	6-14-17	6-15-17	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270D/SIM	6-14-17	6-15-17	
Acenaphthylene	**ND**	0.0067	EPA 8270D/SIM	6-14-17	6-15-17	
Acenaphthene	**ND**	0.0067	EPA 8270D/SIM	6-14-17	6-15-17	
Fluorene	**ND**	0.0067	EPA 8270D/SIM	6-14-17	6-15-17	
Phenanthrene	**ND**	0.0067	EPA 8270D/SIM	6-14-17	6-15-17	
Anthracene	**ND**	0.0067	EPA 8270D/SIM	6-14-17	6-15-17	
Fluoranthene	**ND**	0.0067	EPA 8270D/SIM	6-14-17	6-15-17	
Pyrene	**ND**	0.0067	EPA 8270D/SIM	6-14-17	6-15-17	
Benzo[a]anthracene	**ND**	0.0067	EPA 8270D/SIM	6-14-17	6-15-17	
Chrysene	**ND**	0.0067	EPA 8270D/SIM	6-14-17	6-15-17	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270D/SIM	6-14-17	6-15-17	
Benzo(j,k)fluoranthene	**ND**	0.0067	EPA 8270D/SIM	6-14-17	6-15-17	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270D/SIM	6-14-17	6-15-17	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270D/SIM	6-14-17	6-15-17	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270D/SIM	6-14-17	6-15-17	
Benzo[g,h,i]perylene	**ND**	0.0067	EPA 8270D/SIM	6-14-17	6-15-17	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*89*	*32 - 122*				
Pyrene-d10	*94*	*33 - 125*				
Terphenyl-d14	*110*	*36 - 118*				

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

PAHs EPA 8270D/SIM
MS/MSD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	06-088-04										
	MS	MSD	MS	MSD		MS	MSD				
Naphthalene	**0.0657**	**0.0700**	0.0833	0.0833	ND	79	84	39 - 112	6	27	
Acenaphthylene	**0.0610**	**0.0651**	0.0833	0.0833	ND	73	78	40 - 121	7	34	
Acenaphthene	**0.0645**	**0.0675**	0.0833	0.0833	ND	77	81	44 - 113	5	28	
Fluorene	**0.0716**	**0.0751**	0.0833	0.0833	ND	86	90	43 - 119	5	27	
Phenanthrene	**0.0565**	**0.0582**	0.0833	0.0833	ND	68	70	35 - 124	3	30	
Anthracene	**0.0829**	**0.0861**	0.0833	0.0833	ND	100	103	30 - 140	4	26	
Fluoranthene	**0.0716**	**0.0733**	0.0833	0.0833	ND	86	88	29 - 136	2	32	
Pyrene	**0.0709**	**0.0738**	0.0833	0.0833	ND	85	89	35 - 128	4	33	
Benzo[a]anthracene	**0.0638**	**0.0650**	0.0833	0.0833	ND	77	78	30 - 143	2	31	
Chrysene	**0.0823**	**0.0852**	0.0833	0.0833	ND	99	102	32 - 129	3	33	
Benzo[b]fluoranthene	**0.0614**	**0.0630**	0.0833	0.0833	ND	74	76	23 - 140	3	29	
Benzo(j,k)fluoranthene	**0.0831**	**0.0850**	0.0833	0.0833	ND	100	102	32 - 119	2	30	
Benzo[a]pyrene	**0.0729**	**0.0755**	0.0833	0.0833	ND	88	91	31 - 131	4	32	
Indeno(1,2,3-c,d)pyrene	**0.0611**	**0.0638**	0.0833	0.0833	ND	73	77	31 - 130	4	28	
Dibenz[a,h]anthracene	**0.0651**	**0.0682**	0.0833	0.0833	ND	78	82	40 - 119	5	27	
Benzo[g,h,i]perylene	**0.0687**	**0.0714**	0.0833	0.0833	ND	82	86	39 - 119	4	29	
Surrogate:											
2-Fluorobiphenyl						*77*	*85*	*32 - 122*			
Pyrene-d10						*84*	*86*	*33 - 125*			
Terphenyl-d14						*98*	*105*	*36 - 118*			

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

SOLUBLE HEXAVALENT CHROMIUM
WATER EXTRACTION
EPA 7196A
METHOD BLANK QUALITY CONTROL

Date Extracted:	6-14-17
Date Analyzed:	6-14-17
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0614S1

Analyte	Method	Result	PQL
Hexavalent Chromium	7196A mod	**ND**	1.0

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

SOLUBLE HEXAVALENT CHROMIUM
WATER EXTRACTION
EPA 7196A
DUPLICATE QUALITY CONTROL

Date Extracted:	6-14-17
Date Analyzed:	6-14-17
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	05-281-08

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Hexavalent Chromium	**ND**	**ND**	NA	1.0	

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

SOLUBLE HEXAVALENT CHROMIUM
WATER EXTRACTION
EPA 7196A
MS/MSD QUALITY CONTROL

Date Extracted:	6-14-17
Date Analyzed:	6-14-17
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	05-281-08

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Hexavalent Chromium	5.00	**4.01**	80	**3.92**	78	2	

Date of Report: June 19, 2017
Samples Submitted: May 25, 2017
Laboratory Reference: 1705-315
Project: 4082-039-01

% MOISTURE

Date Analyzed: 5-26,30&31-17

Client ID	Lab ID	% Moisture
FL232-B1-3.5-4.5	05-315-01	11
FL232-B1-7.5-8.5	05-315-02	9
FL232-B2-3.5-4.5	05-315-04	12
FL232-B3-6.5-7.5	05-315-07	10
FL232-B4-3.5-4.5	05-315-08	7
FL232-B5-3.5-4.5	05-315-10	9
FL232-B5-7-8	05-315-11	11
FL232-B6-3.5-4.5	05-315-13	10
FL232-B6-11.5-12.5	05-315-14	8
FL232-DRUM-1	05-315-16	10

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

Page 1 of 2

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Company: GEI
Project Number: 4082-039-01
Project Name: ST Phase 2
Project Manager: Mars. Beeson
Sampled by: Paul Robinette + Chelsey Bohr

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days) (TPH analysis 5 Days)
☐ _____ (other)

Laboratory Number: 05-315

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A					% Moisture
																							Total As, Pb	Hex Chrome			
1	FL232-B1-3.5-4.5	5/24/17	915	S	5																	X					X
2	FL232-B1-7.5-8.5		925		5	X																					↓
3	FL232-B1-14-15		935		5																		X				
4	FL232-B2-3.5-4.5		950		5																	X					X
5	FL232-B2-5.5-6.5		955		5																		X				
6	FL232-B3-4-5		1010		5																		X				
7	FL232-B3-6.5-7.5		1020		5	X				X				●					X					●			X
8	FL232-B4-3.5-4.5		1045		5	X																					↓
9	FL232-B4-8-9		1100		5																		X				
10	FL232-B5-3.5-4.5		1130		5	X			⊗	○				○					○ - MINUS As, Pb				X				X

	Signature	Company	Date	Time
Relinquished	Paul Robinette	GEI	5/24/17	1530
Received		GEI	5/24/17	1530
Relinquished		GEI	5/25/17	12:20pm
Received	Celia Forrest	SPEEDY	5/25/17	12:20
Relinquished	Celia Forrest	SPEEDY	5/25/17	1:23
Received			5/25/17	1323
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
⊗ Added 5/31/17. DB (STA)
○ Added 6/1/17. DB (STA)
● Added 6/13/17. DB (STA)

Data Package: Standard ☐ Level III ☐ Level IV ☐
Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

Chain of Custody

Page 2 of 2

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Company: GET
Project Number: 4082-039-01
Project Name: ST Phase 2
Project Manager: Mars Bason
Sampled by: Paul Robinette + Chelsey Gohr

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days) (TPH analysis 5 Days)
☐ _____ (other)

Laboratory Number: 05-315

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	Total As, Pb	Hold			% Moisture
11	FL232-B5-7-8	5/24/17	1140	S	5				X															X			X
12	FL232-B5-10-11		1145		5																			X			
13	FL232-B6-3.5-4.5		1200		5																	X					X
14	FL232-B6-11.5-12.5		1210		5	X																					X
15	FL232-B6-13-14		1215		5																			X			X
16	FL232-Drum-1		1230		6			X	X	X									X	X	X						X

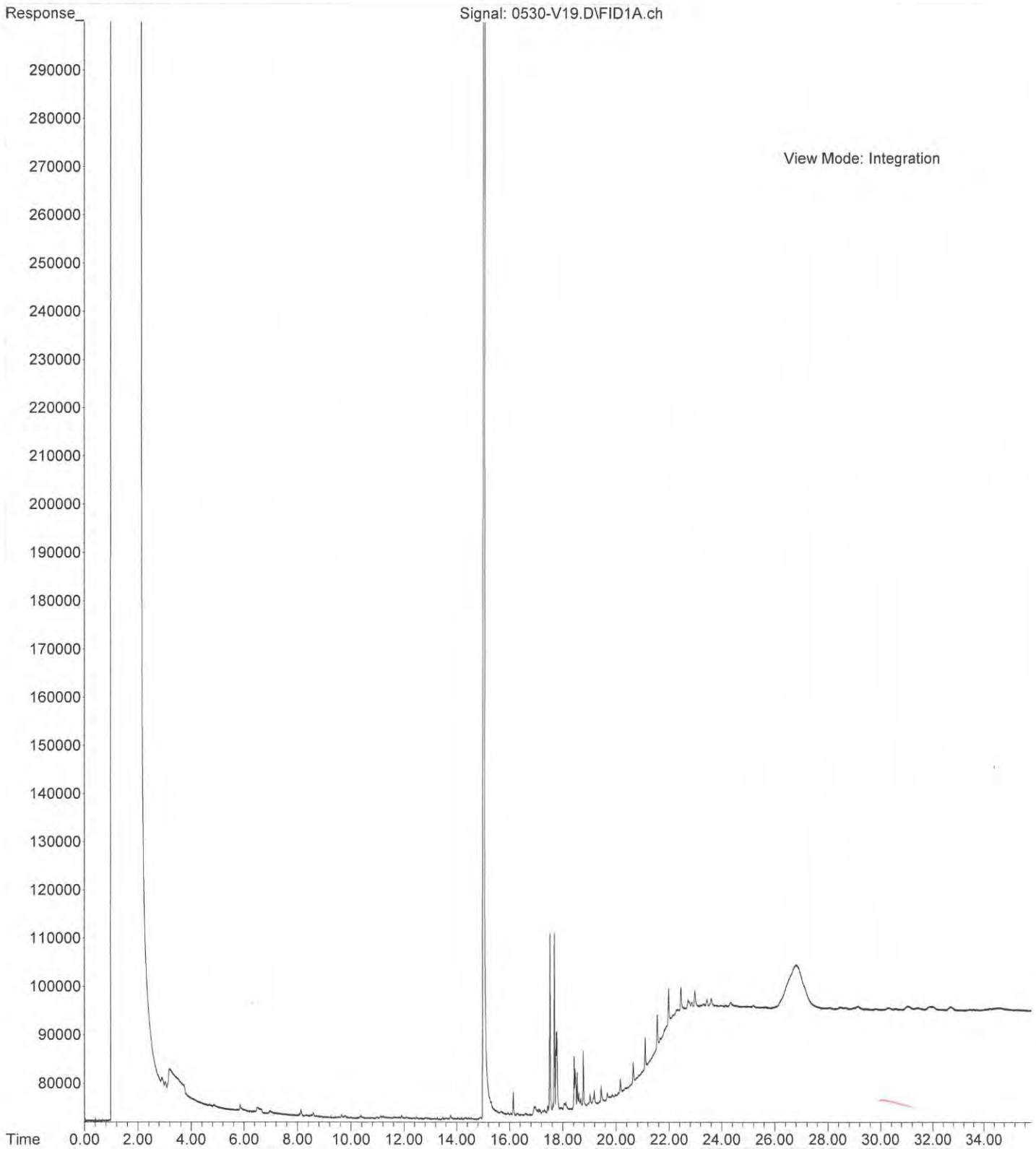
	Signature	Company	Date	Time
Relinquished	Paul Robinette	GET	5/24/17	1530
Received	[illegible]	GET	5/24/17	1530
Relinquished	[illegible]	GET	5/25/17	12:20pm
Received	Celia Forrest	SPEDY	5/25/17	12:20
Relinquished	Celia Forrest	SPEDY	5/25/17	1:23
Received	[illegible]	ONE	5/25/17	1323
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

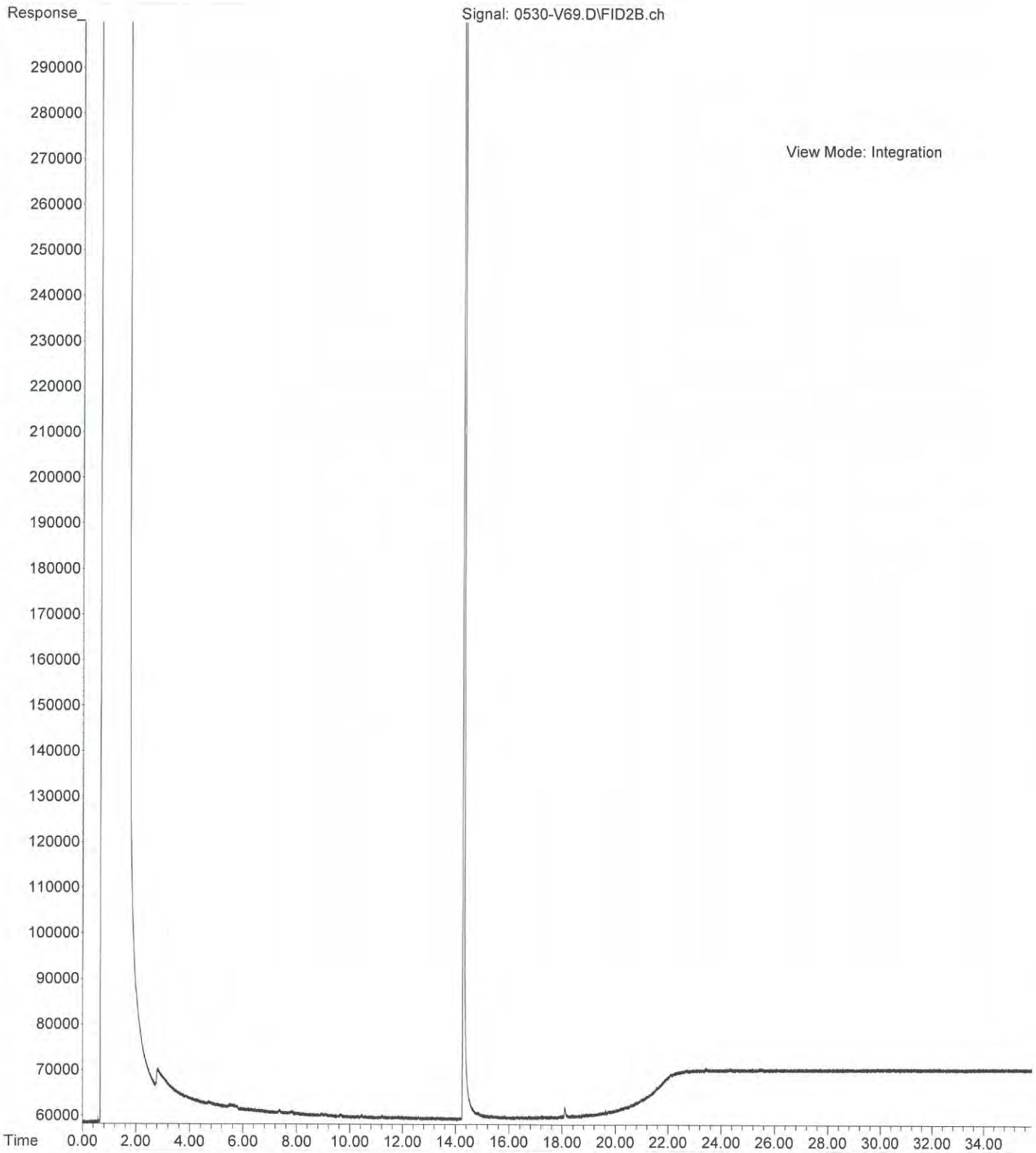
Data Package: Standard ☐ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

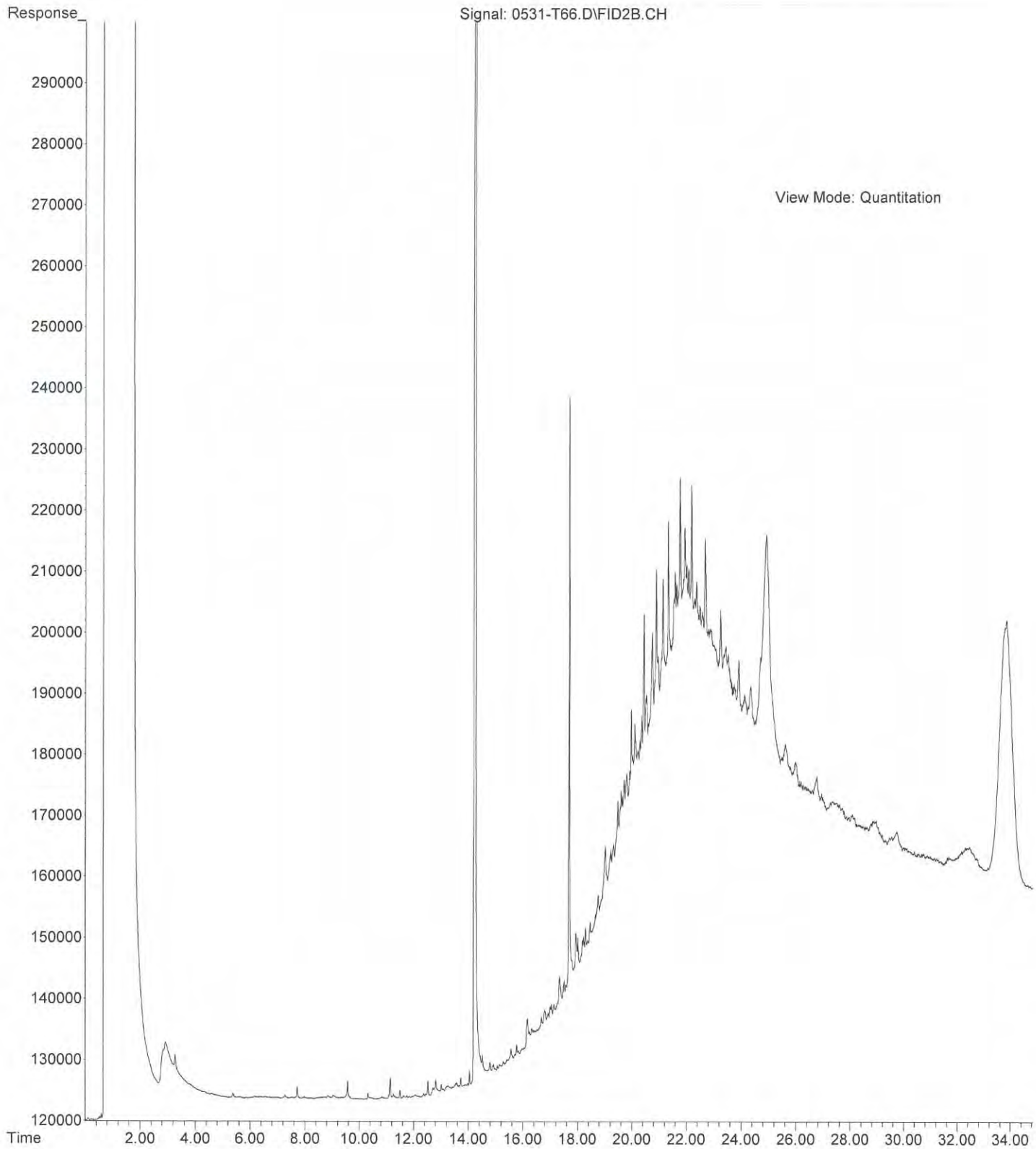
File : X:\DIESELS\VIGO\DATA\V170530\0530-V19.D
Operator :
Acquired : 30 May 2017 20:17 using AcqMethod V170519F.M
Instrument : Vigo
Sample Name: 05-315-02
Misc Info :
Vial Number: 19



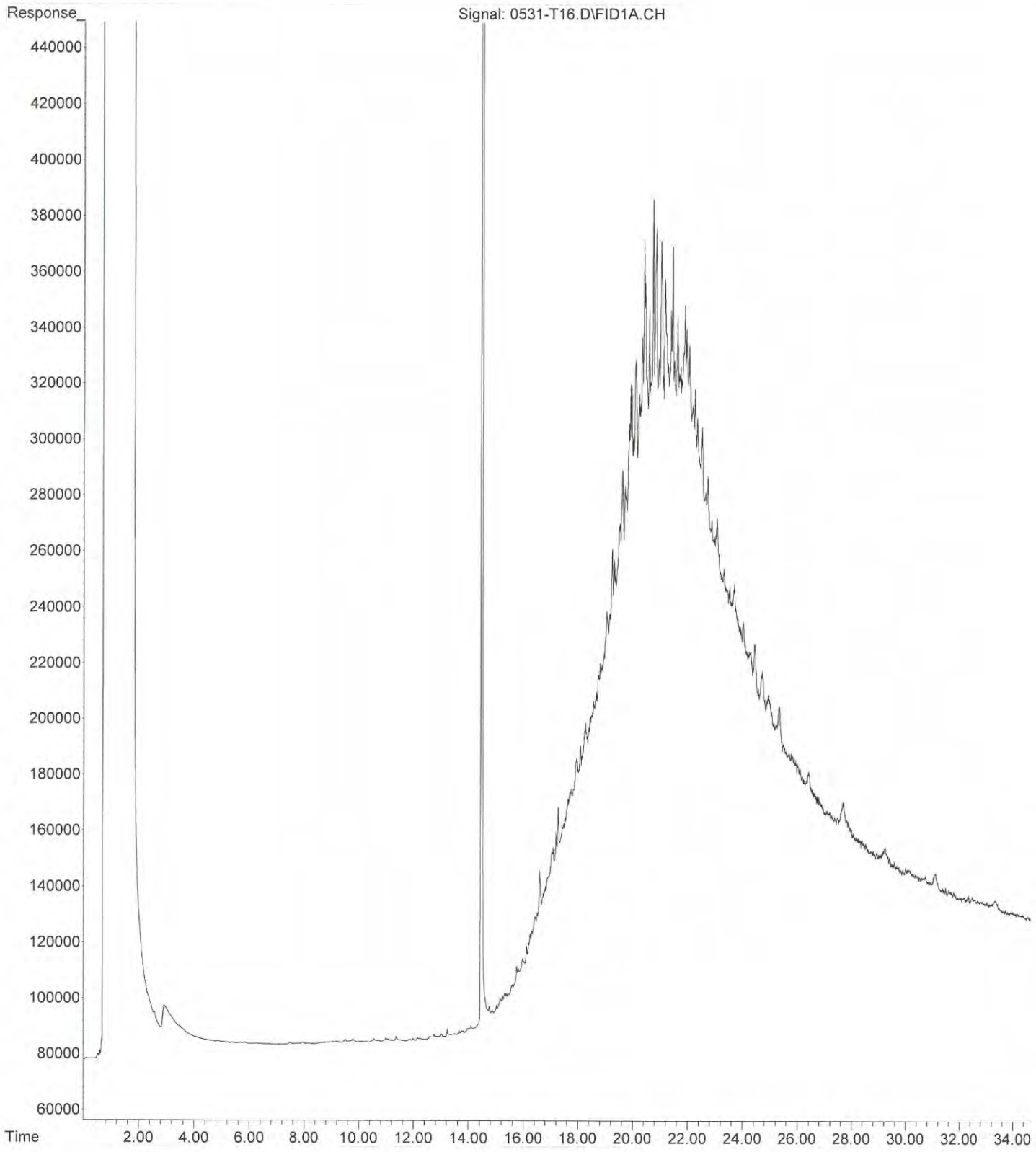
File :X:\DIESELS\VIGO\DATA\V170530.SEC\0530-V69.D
Operator :
Acquired : 30 May 2017 20:17 using AcqMethod V170519F.M
Instrument : Vigo
Sample Name: 05-315-07
Misc Info :
Vial Number: 69



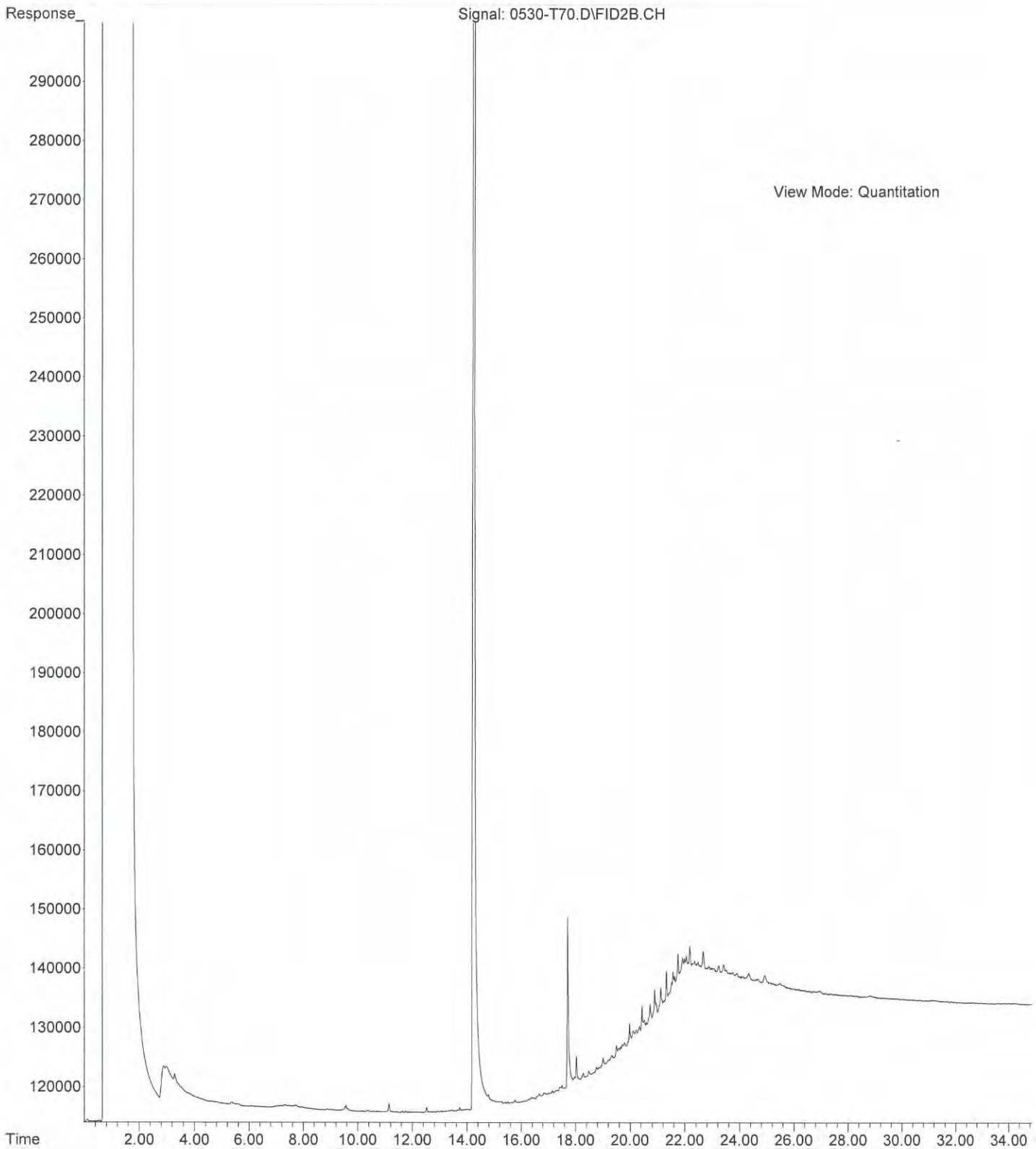
File : X:\DIESELS\TERI\DATA\T170531.SEC\0531-T66.D
Operator : ZT
Acquired : 31 May 2017 18:06 using AcqMethod T161216F.M
Instrument : Teri
Sample Name: 05-315-08
Misc Info :
Vial Number: 66



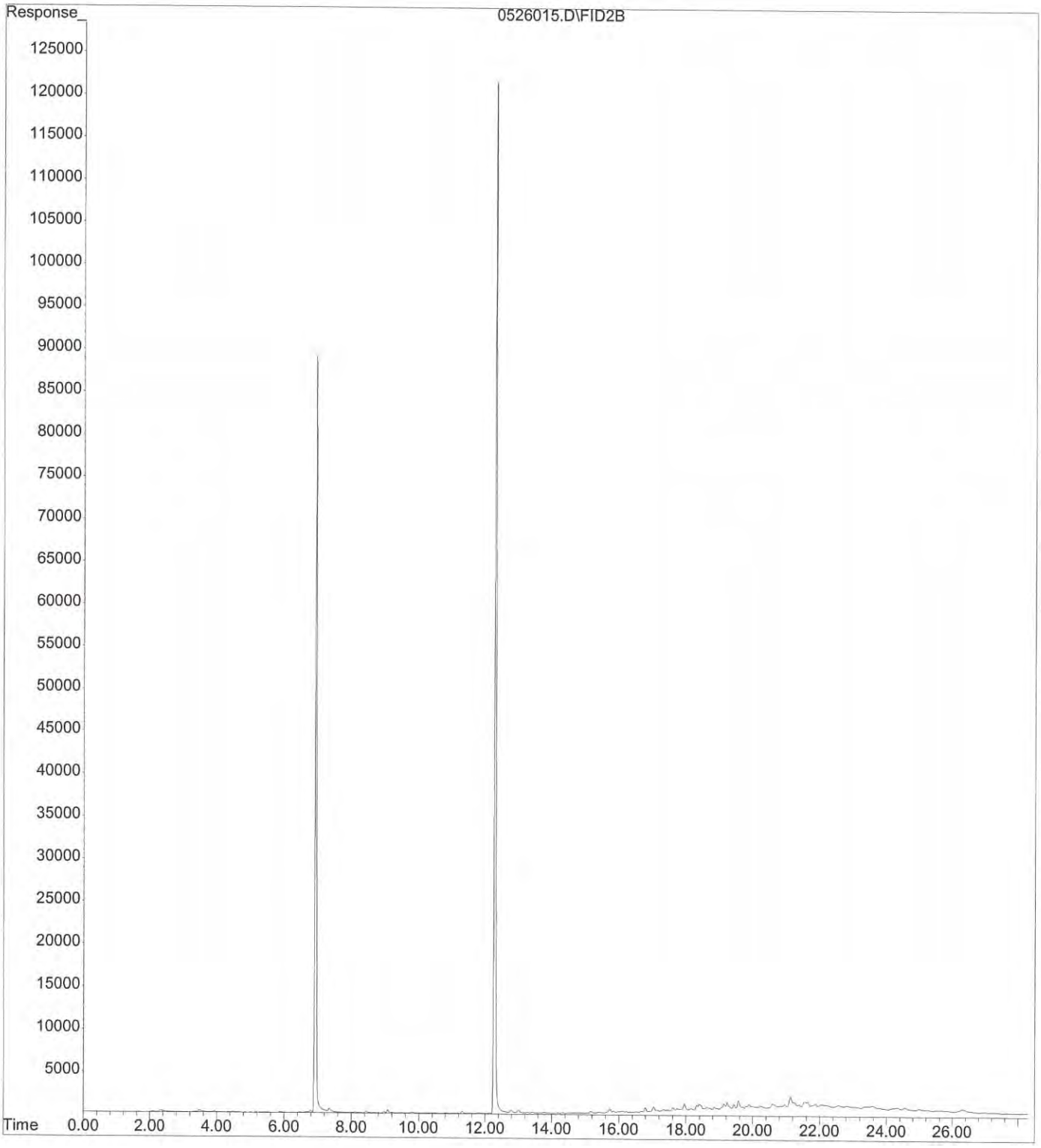
File :X:\DIESELS\TERI\DATA\T170531\0531-T16.D
Operator : ZT
Acquired : 31 May 2017 18:06 using AcqMethod T161216F.M
Instrument : Teri
Sample Name: 05-315-10
Misc Info :
Vial Number: 16



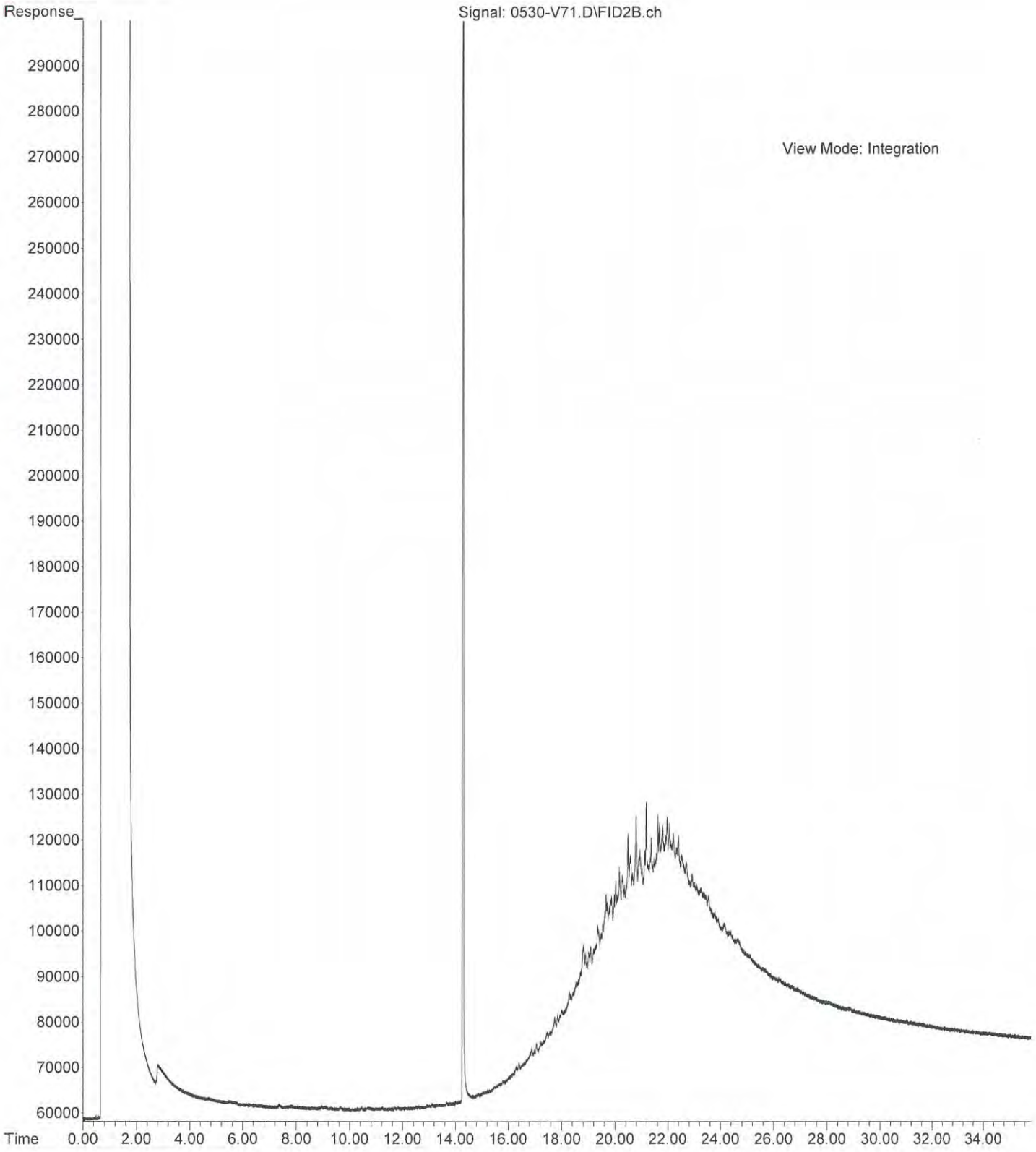
File : X:\DIESELS\TERI\DATA\T170530.SEC\0530-T70.D
Operator : ZT
Acquired : 30 May 2017 21:37 using AcqMethod T161216F.M
Instrument : Teri
Sample Name: 05-315-14
Misc Info :
Vial Number: 70



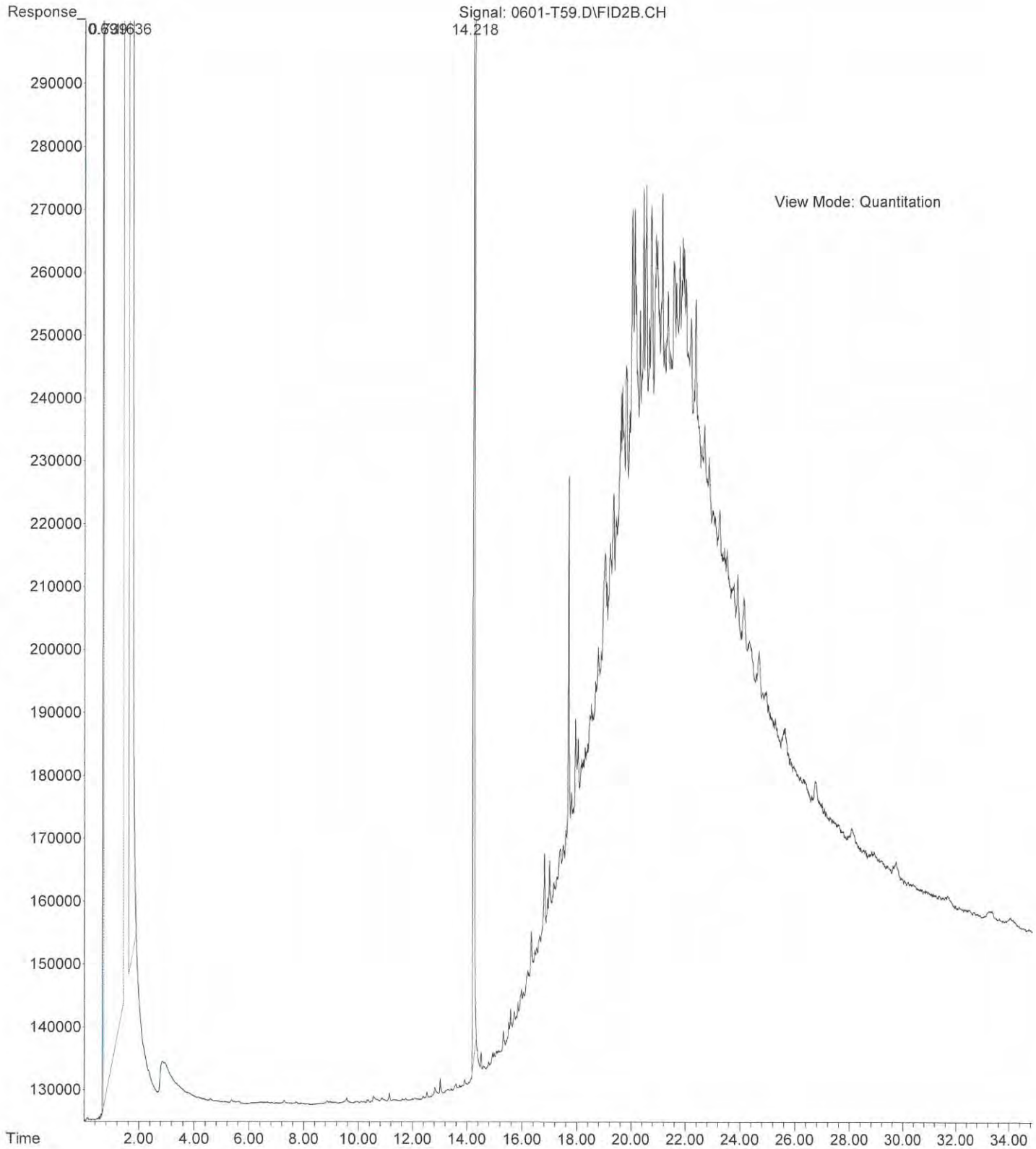
File : X:\BTEX\DARYL\DATA\D170526\0526015.D
Operator :
Acquired : 26 May 2017 19:16 using AcqMethod 170203BB.M
Instrument : Daryl
Sample Name: 05-315-16s
Misc Info :
Vial Number: 15



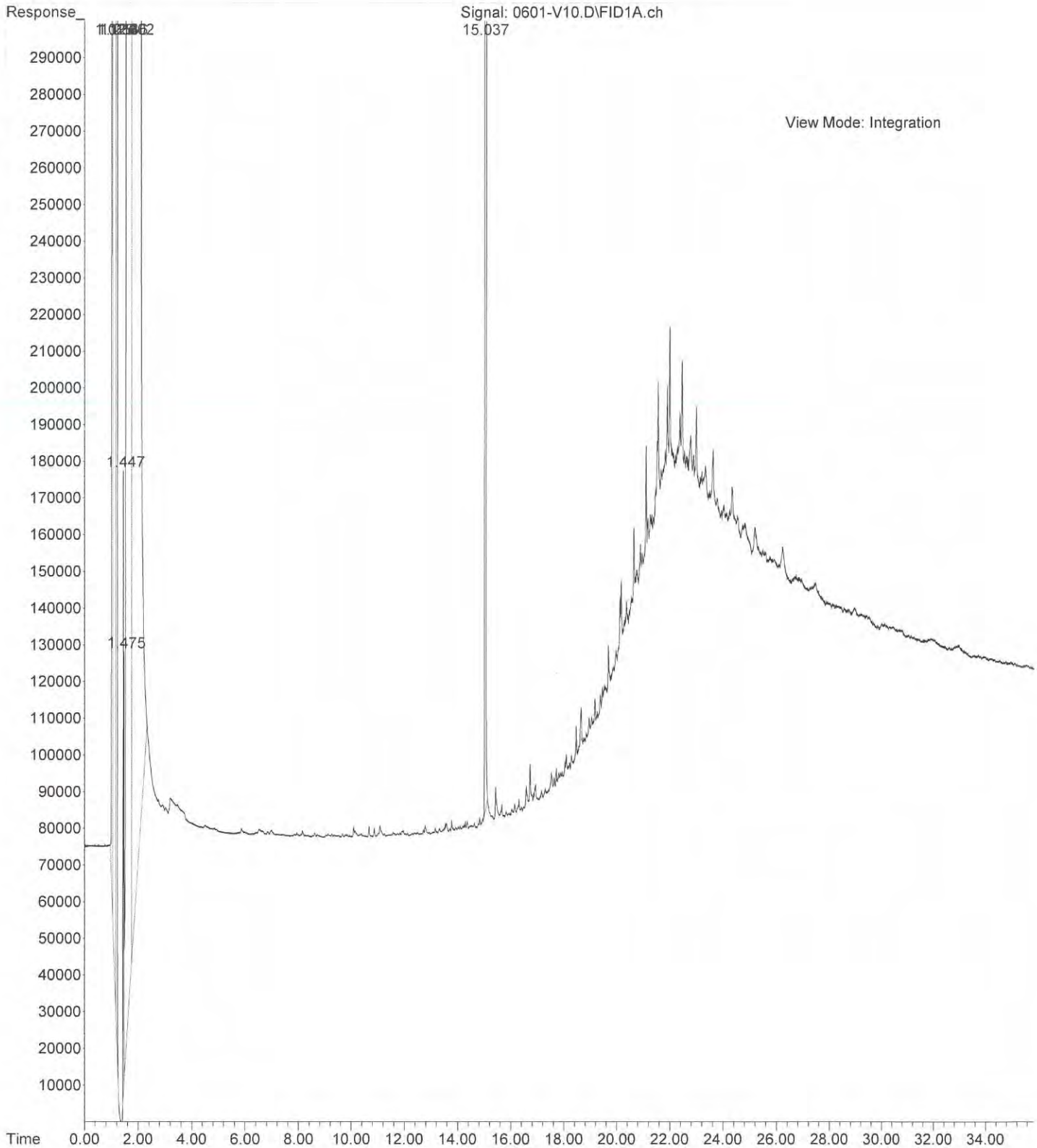
File :X:\DIESELS\VIGO\DATA\V170530.SEC\0530-V71.D
Operator :
Acquired : 30 May 2017 21:37 using AcqMethod V170519F.M
Instrument : Vigo
Sample Name: 05-315-16 5X
Misc Info :
Vial Number: 71



File :X:\DIESELS\TERI\DATA\T170601.SEC\0601-T59.D
Operator : ZT
Acquired : 01 Jun 2017 13:38 using AcqMethod T161216F.M
Instrument : Teri
Sample Name: 05-315-10 5X
Misc Info :
Vial Number: 59



File : X:\DIESELS\VIGO\DATA\V170601\0601-V10.D
Operator :
Acquired : 1 Jun 2017 13:49 using AcqMethod V170519F.M
Instrument : Vigo
Sample Name: 05-315-11
Misc Info :
Vial Number: 10



APPENDIX C
REPORT LIMITATIONS AND GUIDELINES FOR USE

APPENDIX C
REPORT LIMITATIONS AND GUIDELINES FOR USE[1]

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

Read These Provisions Closely

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

Environmental Services Are Performed for Specific Purposes, Persons and Projects

GeoEngineers has performed this Phase II ESA of the property at 23646 Pacific Highway South in Kent, Washington, King County Tax Parcel 2500600520, identified by Sound Transit as Federal Way parcel FL232, in general accordance with the scope and limitations of the subcontract between HDR and GeoEngineers dated August 24, 2012, along with Amendments 1 through 9 and Agreement No. RTA/AE 044-12 between HDR and Sound Transit. This report has been prepared for the exclusive use of Sound Transit and their authorized agents. This report is not intended for use by others, and the information contained herein is not applicable to other properties.

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

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

This report has been prepared for the property at 23646 Pacific Highway South in Kent, Washington, King County Tax Parcel 2500600520, identified by Sound Transit as Federal Way parcel FL232. GeoEngineers considered a number of unique, project-specific factors when establishing the scope of services for this Project. Unless GeoEngineers specifically indicates

[1] Developed based on material provided by ASFE, Professional Firms Practicing in the Geosciences; www.asfe.org.

otherwise, it is important not to rely on this report if it was:

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

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

Reliance Conditions for Third Parties

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

Understand That Geotechnical Issues Have Not Been Addressed

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

Do Not Separate Documentation from the Report

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

Environmental Regulations Change and Evolve

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

Uncertainty May Remain Even After This Phase II ESA is Completed

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

Information Provided by Others

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

Subsurface Conditions Can Change

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

Soil and Groundwater End Use

The cleanup levels referenced in this report are site- and situation-specific. The cleanup levels may not be applicable for other properties or for other on-site uses of the affected soil and/or groundwater. Note that hazardous substances may be present in some of the on-site soil and/or groundwater at detectable concentrations that are less than the referenced cleanup levels. GeoEngineers should be contacted prior to the export of soil or groundwater from the subject property or reuse of the affected soil or groundwater on-site to evaluate the potential for associated environmental liabilities. GeoEngineers will not assume responsibility for potential environmental liability arising out of the transfer of soil and/or groundwater from the subject property to another location, or the reuse of such soil and/or groundwater on-site in any instances that we did not recommend, know of, or control.

Our interpretations of subsurface conditions are based on field observations and chemical analytical data from widely spaced sampling locations at the subject property. Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted and/or samples are taken. GeoEngineers reviewed field and laboratory data and then applied

our professional judgment to render an informed opinion about subsurface conditions throughout the property. Actual subsurface conditions may differ significantly from those indicated in this report. Our report, conclusions and interpretations should not be construed as a warranty of the subsurface conditions.

Do Not Redraw the Exploration Logs

Environmental scientists prepare final exploration logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions by others, the logs included in an environmental report should never be redrawn for inclusion in other design documents. Only photographic or electronic reproduction that preserves the entire original exploration log is acceptable, but separating logs from the report can create increase the risk of potential misinterpretation.

Biological Pollutants

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

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