SoundEarth Strategies, Inc.
2811 Fairview Avenue East, Suite 2000
Seattle, Washington 98102

May 28, 2019

Mr. Dale Myers
Washington State Department of Ecology
3190 160th Avenue Southeast
Bellevue, Washington 98008

SUBJECT: FIRST QUARTER 2019 SUMMARY REPORT
SKS Shell Station Site
3901 Southwest Alaska Street
Seattle, Washington
Project Number: 0914-001

Dear Mr. Myers:

SoundEarth Strategies, Inc. (SoundEarth) is pleased to present the Washington State Department of Ecology (Ecology) with a status report for the First Quarter 2019 post-cleanup compliance and reporting activities for the SKS Shell Station Site (SKS Site; Figure 1). The construction phase of the cleanup for the SKS Site was implemented in 2015 under the Prospective Purchaser Consent Decree #13-2-27556-2, entered on July 29, 2013 (PPCD). Remediation of petroleum-contaminated soil and groundwater, as well as post-cleanup groundwater monitoring has been performed in accordance with the PPCD and Chapter 173-340 of the Washington Administrative Code. Cleanup and development activities at the SKS Site included dewatering, extensive soil excavation, and the installation of a vapor barrier to eliminate the potential vapor intrusion exposure pathway in the mixed use building constructed on the property. Cleanup of the SKS Site has been coordinated with remedial activities conducted at the adjacent Huling Brothers Property and Kennedy Family Limited Partnership Property, which are being managed separately under the Voluntary Cleanup Program (VCP; ID #NW2716).

FIRST QUARTER 2019 SUMMARY

Monitoring well MW112 was installed in the Alaska Street right-of-way on March 1, 2019. This location was approved by Mr. Dale Myers in an email to SoundEarth dated February 13, 2019.

First Quarter groundwater sampling was conducted on March 14 and 15, 2019, for 13 on-property and off-property compliance wells (including MW112). Well MW103 in the intersection northeast of the SKS Site was not sampled due to an insufficient volume of water in the well.

The First Quarter groundwater sampling event is the 13th such event since cleanup was completed in 2015, and the 8th consecutive event in which all wells in the network work were sampled. SoundEarth uploaded Environmental Information Management (EIM) analytical and location data for the Fourth Quarter data, which was then approved by Ecology on May 8, 2019.

Data from the March 2019 sampling event is tabulated below. Washington State Model Toxics Control Act Method A exceedances are highlighted in red and bolded:

First Quarter 2019 Groundwater Analytical Results

Well ID	Sample Date	Analytical Results (micrograms per liter)		
		GRPH	Benzene	DRPH
MW101	03/14/19	<100	<1	<50
MW102	03/14/19	<100	<1	<50
MW104	03/14/19	170	<1	**690**
MW105	03/14/19	<100	<1	<50
MW108	03/14/19	<100	<1	**680**
MW109	03/14/19	140	<1	<60
MW110	03/14/19	<100	<1	74
MW111	03/14/19	<100	<1	83
MW112	03/14/19	<100	<1	58
MW113	03/14/19	<100	<1	79
RW03	03/14/19	**1,700**	1.9	**730**
RW04	03/14/19	300	<1	310
RW05	03/14/19	<100	<1	120
MTCA Method A Cleanup Level		**1,000/800**	**5**	**500**

NOTES:
RED denotes indicates concentration exceeds MTCA Method A cleanup level.
< = not detected above the laboratory reporting limit
DRPH = diesel-range petroleum hydrocarbons
GRPH = gasoline-range petroleum hydrocarbons
MTCA = Washington State Model Toxics Control Act

Please see the attached Groundwater Monitoring Report—First Quarter 2019 for a more detailed discussion of the results and overall decreasing groundwater concentration trends for the SKS Site over the past four years.

PLANNED SECOND QUARTER 2019 ACTIVITIES

SoundEarth plans to conduct Second Quarter 2019 groundwater sampling in June 2019. Groundwater levels and analytical data trends will continue to be evaluated.

PROJECT SCHEDULE

The following summarizes the work conducted to date and the current schedule for anticipated reporting and monitoring work at the SKS Site.

Cleanup Plan Task	Status: Date
UST Fuel Removal and Station Shutdown	Conducted: July 2013
Installation of Shoring for UST removal	Conducted: November 2013
UST System Cleaning and Removal	Conducted: December 2013
Submit UST Removal Report	Conducted: January 2014
Permitting for Wells	Conducted: May 2014
Master Use Permit	Conducted: June 2014
Install Dewatering Wells (8 Wells)	Conducted: July 2014

Cleanup Plan Task	Status: Date
Install West Bounding Well MW107 (post demolition)	Conducted: October 2014
SKS Site Demolition and Hoist Removal	Conducted: October–November 2014
Construct Dewatering System in ROW Wells	Conducted: March 2015
Operate Dewatering System	Conducted: March–June 2015
Contaminated Soil Excavation and Confirmation Sampling	Conducted: March–May 2015
Removal of Three Previously Unknown USTs	Conducted: March 2015
Backfill Excavation and Install Membrane Barrier	Conducted: August–September 2015
Install Compliance Wells MW108, MW109, and MW110	Conducted: September 2015
Prepare Interim Cleanup Action Report	Conducted: December–February 2016
First Quarter Post Cleanup Groundwater Monitoring	Conducted: March 2016
Submit preliminary Cleanup Action Report	Conducted: October 2016
Notice of Intent to Decommission Wells	Conducted: May 2017
Groundwater Elevation Study	In Progress: 2017–2018
Revised Agency-Review Cleanup Action Report	Conducted: January 2018
Alaska St. well closure technical meeting	Conducted: May 2018
Well Installation of MW113	Conducted: March 2018
Well Installation of MW111	Conducted: October 2018
Well Installation of MW112	Conducted: March 2019
Well Decommissioning (RW06–RW09, MW107)	Conducted: December 2018
Contingent ChemOx Injection*	Pending: 2020
Groundwater Monitoring (Quarterly)	Ongoing: 2019–2021

NOTES:
* = to be determined
ChemOx = Chemical Oxidant
ROW = right-of-way
SKS Site = SKS Shell Station Site
UST = underground storage tank

CLOSING

Please let me know if you would like to meet on-site or at your office to discuss any of the specific remedial activities. If you have any questions about the schedule and the cleanup activities, please contact me at 206-306-1900.

Respectfully,

SoundEarth Strategies, Inc.

Rob Roberts
Senior Scientist

Ryan K. Bixby, LG
Managing Principal

Attachment: Groundwater Monitoring Report—First Quarter 2019

cc: Mr. Phil Carmody, GID

Mr. Jason Sweatt, GID
Mr. William Joyce, Joyce Ziker Parkinson, PLLC
Mr. Dave Cook, Aspect Consulting

CER/RKB:rt

GROUNDWATER MONITORING REPORT—FIRST QUARTER 2019

SoundEarth Strategies, Inc.
2811 Fairview Avenue East, Suite 2000
Seattle, Washington 98102

May 28, 2019

Mr. Phil Carmody
LMI West Seattle Holdings, LLC
125 High Street
High Street Tower, 24th Floor
Boston, Massachusetts 02110

SUBJECT: GROUNDWATER MONITORING REPORT—FIRST QUARTER 2019
SKS Shell Station Site
3901 Southwest Alaska Street
Seattle, Washington
Project Number: 0914-001

Dear Mr. Carmody:

SoundEarth Strategies, Inc. (SoundEarth) has prepared this report to present the results of the First Quarter 2019 groundwater monitoring event conducted at the SKS Shell Station Site located generally at 3901 Southwest Alaska Street in Seattle, Washington (SKS Site), as shown on Figure 1. The groundwater monitoring event was conducted to evaluate the long-term effectiveness of the cleanup activities completed on and beneath the SKS Site that are being performed pursuant to the Cleanup Action Plan under Prospective Purchase Consent Decree #13-2-27556-2, entered on July 29, 2013.

BACKGROUND

The SKS Site was developed as a gasoline station and an automotive repair facility in 1934. In 1950, the original 1934 gasoline fueling equipment was removed and two 4,000-gallon underground storage tanks (USTs) were installed. The pump island and service station office were removed in 1961 and replaced with a new pump island, relocated to the locations shown on Figure 2. An additional 8,000-gallon UST was installed in 1974. The 1950-vintage USTs were removed in 1984 and replaced with one 10,000-gallon UST and two 12,000-gallon USTs. Over time, leaded and unleaded gasoline and diesel fuel have been used and stored in various USTs at the SKS Site. In December 2013, the three 1984-vintage USTs and the 1974-vintage UST were decommissioned and removed from the SKS Site.

SoundEarth conducted remedial activities on the SKS Site in 2015 as part of the Whittaker multifamily/mixed use development. Remedial activities included lot-line to lot-line remedial excavation of petroleum-contaminated soil to approximately 29.5 feet below ground surface (bgs; 240 feet North American Vertical Datum 1988 [NAVD88]), right-of-way (ROW) dewatering to facilitate removal of contaminated water, and vapor barrier installation. Approximately 9,755 tons of petroleum-contaminated soil were removed from the SKS Site.

On September 1, 2015, monitoring wells MW108 through MW110 were installed in the basement/parking garage level of the building now located on the SKS Site to complete compliance groundwater monitoring.

On March 16, 2018, monitoring well MW113 was installed west of the SKS Site at the former Howden-Kennedy Funeral Home parcel (Kennedy Property) in the basement/parking garage level of the building (Figure 2). This well was installed to assess the lateral extent of groundwater impacts to the southwest of the SKS Site and to confirm that no residual groundwater contamination remains on the Kennedy Property. This well was also installed to provide groundwater elevation information for the evaluation of the reversal in groundwater flow direction at the SKS Site.

On October 3, 2018, monitoring well MW111 was installed in the Southwest Alaska Street sidewalk on the northeastern portion of the SKS Site. On March 1, 2019, MW112 was installed in Southwest Alaska Street approximately 26 feet east of MW111. These wells were installed to evaluate groundwater flow direction and gradient, natural attenuation, the potential for plume expansion or contraction, and to evaluate whether future chemical injections are warranted.

FIELD ACTIVITIES

Monitoring Well MW112 Installation

Soil boring MW112 was advanced near the northeastern corner of the SKS Site in Southwest Alaska Street under the supervision of a licensed geologist. The location of the well was approved by Mr. Dale Myers of the Washington State Department of Ecology (Ecology). Prior to drilling activities, the regional public utility location service was notified to locate utilities within the public ROW, and a private utility location survey was conducted by Applied Professional Services, Inc. (APS) of North Bend, Washington. Drilling services were provided by Anderson Environmental Contracting LLC of Kelso, Washington, using a limited-access hollow-stem auger drill rig. Prior to drilling, the boring location was hand-cleared with an air knife to a depth of 7.5 feet bgs by APS to ensure that the boring location was clear of underground utilities. Soil boring MW112 was advanced to a depth of approximately 36.5 feet bgs.

Soil cuttings from the boring were described in general accordance with the Unified Soil Classification System (USCS) and were screened in the field for potential evidence of contamination using visual observations and notations of odor, and by conducting headspace analysis using a photoionization detector (PID) to detect the presence of volatile organic vapors. The USCS symbol, visual and olfactory notations, and PID readings were recorded on a boring log form provided as Attachment A.

Soil conditions encountered in boring MW112 consisted of gravel fill material in the upper 4 to 5 feet, underlain by brown sand with varying amounts of silt and gravel to the total depth explored of 36.5 feet. Groundwater was observed at approximately 29.5 feet bgs at the time of drilling. No hydrocarbon odors or elevated PID readings above 1.2 parts per million by volume were noted during the drilling.

After reaching a depth of 36.5 feet in soil boring MW112, monitoring well MW112 was installed using 2-inch-diameter Schedule 40 PVC well casing with flush-threaded joints and screened using Schedule 40 slotted PVC with 0.010-inch factory-machined slots. Well MW112 was installed to a depth of 36 feet below grade, with a screened interval from 26 to 36 feet. A filter pack consisting of 10-20 silica sand was installed

in the annular space around the well casing, and hydrated bentonite chips were installed from approximately 2 to 24 feet bgs, with a concrete seal from 0 to approximately 2 feet bgs.

Following installation, well MW112 was developed using a submersible well development pump. Approximately 35 gallons were purged from the well until the turbidity of the purge water had decreased. Soil cuttings and water removed during development activities were placed in labeled 55-gallon drums for subsequent waste characterization and disposal.

First Quarter Groundwater Monitoring Event

The First Quarter monitoring event was conducted on March 14 and 15, 2019, to evaluate the long-term effectiveness of cleanup activities. Groundwater sampling was conducted on a total of 13 on-property and off-property compliance wells. The monitoring event included measuring depths to groundwater and sampling monitoring wells MW108 through MW110 and MW113 located in the building parking garage; wells MW101, MW102, MW104, MW105, and RW03 through RW05, located within the Fauntleroy Way Southwest ROW; and wells MW111 and MW112, located within the Southwest Alaska Street ROW. Consistent with the Fourth Quarter 2018 monitoring event, remediation wells RW01 and RW02 were not included in this monitoring event, based on a telephone discussion between Dale Myers of Ecology and Rob Roberts of SoundEarth prior to the Third Quarter 2017 groundwater sampling event.

Upon arrival at the SKS Site, SoundEarth personnel opened the monitoring wells and permitted water levels to equilibrate with atmospheric pressure for a minimum of 30 minutes before groundwater level measurements were obtained. Groundwater levels were measured relative to the top of well casing to an accuracy of 0.01 feet using an electronic water level meter. Monitoring well MW103 was observed to be dry and was therefore not sampled.

Groundwater samples were collected from monitoring wells MW101, MW102, MW104, MW105, and MW108 through MW113 and remediation wells RW03 through RW05, in accordance with the US Environmental Protection Agency (EPA) *Low-Flow (Minimal Drawdown) Ground-Water Procedures* (April 1996). Purging and sampling of each monitoring well were performed using a peristaltic pump and dedicated polyethylene tubing at flow rates ranging from 100 to 130 milliliters per minute. The intake was placed approximately 2 to 3 feet below the surface of the groundwater or mid-screen, if well screen was submerged, in each monitoring well. During purging, water quality was monitored using a YSI water quality meter equipped with a flow-through cell. The water quality parameters that were monitored and recorded included temperature, pH, specific conductance, dissolved oxygen, turbidity, and oxidation-reduction potential. Each monitoring well was purged until a minimum subset of pH, specific conductivity, and dissolved oxygen and/or turbidity stabilized. Monitoring well MW108 was purged dry while filling the flow-through cell. Therefore, a grab sample was collected from this well once the well had recharged to its initial groundwater level. The low recharge rate observed during purging at well MW108 is similar to conditions observed during previous events.

Following purging, groundwater samples were collected from the pump outlet tubing located upstream of the flow-through cell and placed directly into clean, laboratory-prepared sample containers. Each container was labeled with a unique sample identification number, placed on ice in a cooler, and

transported to Friedman & Bruya, Inc., of Seattle, Washington, under standard chain-of-custody protocols for laboratory analysis.

The groundwater samples were submitted for analysis of gasoline-range petroleum hydrocarbons (GRPH) by Northwest Total Petroleum Hydrocarbon (NWTPH) Method NWTPH-Gx; benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 8021B; and diesel- and oil-range petroleum hydrocarbons (DRPH and ORPH, respectively) by Method NWTPH-Dx.

Purge water generated during the monitoring event was placed in an appropriately labeled 55-gallon steel drum and temporarily stored on the SKS Site pending receipt of analytical data and proper disposal.

RESULTS

Groundwater Elevations and Flow Direction

Groundwater elevations measured on March 14, 2019, ranged from approximately 241.56 (MW102 in the Fauntleroy Way Southwest ROW) to 239.98 (MW109 in the building parking garage) feet NAVD88 (Table 1). Historical groundwater measurements have indicated that groundwater at the Fauntleroy Way Southwest and Southwest Alaska Street intersection consistently flowed at a moderate gradient of 0.015 feet per foot to the north–northeast. However, groundwater elevation data collected more recently since 2017 indicate a groundwater flow direction to the west at an average gradient of approximately 0.014 feet per foot along the Fauntleroy Way Southwest property edge. During First Quarter 2019, the observed gradient was 0.0098 feet per foot, with a groundwater flow direction to the west-southwest beneath the eastern side of the SKS Site. Groundwater elevations are relatively flat on the eastern side of the SKS Site beneath the building. Groundwater elevations measured in wells MW108, MW109, and MW110, located within the parking garage adjacent to the building footings along the northern and eastern sides of the building, are approximately 0.5 foot lower than elevations measured in wells MW104, MW111, MW112, and RW03 through RW05, which are located outside of the building footings along the northern and eastern sides of the building. Figure 2 provides a rose diagram showing the groundwater flow directions and gradients prior to the remedial excavation, as well as the groundwater flow directions and gradients from all sampling events conducted after the remedial excavation. The change in groundwater flow observed during 2017 through First Quarter 2019 is likely due to the footing drains and associated sub-slab drainage system that were installed between July and September 2015 for the underground parking garage, as discussed in the Conclusions section. Groundwater on the eastern side of the SKS Site beneath the Fauntleroy Way Southwest and Southwest Alaska Street ROWs appears to have reversed its flow direction due to the lower groundwater elevations observed in the vicinity of the building footings.

Groundwater Chemical Analytical Results

Groundwater analytical results from the monitoring event are summarized below (Figure 3; Table 1). The analytical results for groundwater samples collected from MW101, MW102, MW105, MW109 through MW113, RW04, and RW05 were below Washington State Model Toxics Control Act (MTCA) Method A cleanup levels (CULs) for the chemicals of concern at the SKS Site, including GRPH, DRPH, ORPH, and BTEX. Please note that this includes the new monitoring well, MW112. Data from the First Quarter 2019 sampling event are tabulated in Table A below.

Table A, First Quarter 2019 Groundwater Analytical Results

Well ID	Sample Date	Analytical Results (micrograms per liter)		
		GRPH	Benzene	DRPH
MW101	03/14/19	<100	<1	<50
MW102	03/14/19	<100	<1	<50
MW103	Insufficient water column to sample			
MW104	03/14/19	170	<1	**690**
MW105	03/14/19	<100	<1	<50
MW108	03/14/19	<100	<1	**680**
MW109	03/14/19	140	<1	<60
MW110	03/14/19	<100	<1	74
MW111	03/14/19	<100	<1	83
MW112	03/14/19	<100	<1	58
MW113	03/14/19	<100	<1	79
RW03	03/15/19	**1,700**	1.9	**730**
RW04	03/15/19	300	<1	310
RW05	03/14/19	<100	<1	120
MTCA Method A Cleanup Level		**1,000/800**	**5**	**500**

NOTES:
Red indicates concentration exceeds MTCA Method A cleanup level.
< = not detected above the laboratory reporting limit
DRPH = diesel-range petroleum hydrocarbons
GRPH = gasoline-range petroleum hydrocarbons
MTCA = Washington State Model Toxics Control Act

A summary of the analytical results for the primary chemicals of concern for the SKS Site, including GRPH, benzene, and DRPH, is provided below:

- **Gasoline-Range Petroleum Hydrocarbons.** GRPH concentrations in groundwater samples collected from wells MW101, MW102, MW104, MW105, MW108 through MW113, RW04, and RW05 were below the MTCA Method A CUL of 800 micrograms per liter (µg/L) for GRPH. GRPH concentrations detected in wells MW104, MW109, and RW04 during the First Quarter 2019 sampling event were generally similar to the concentrations detected in these wells during the Fourth Quarter 2018 groundwater sampling event. The groundwater sample collected from RW03 contained 1,700 µg/L of GRPH, exceeding the MTCA Method A CUL. The concentration of GRPH in groundwater at well RW03 was 2,100 µg/L during the First Quarter 2018 monitoring event, and 2,800 µg/L during the Fourth Quarter 2018 event.
- **Benzene.** The groundwater samples collected from the monitoring wells MW101, MW102, MW104, MW105, MW108 through MW113, RW04, and RW05 were below the laboratory reporting limit for benzene. The groundwater sample collected from RW03 contained 1.9 µg/L of benzene, below the MTCA Method A CUL of 5 µg/L. The concentration of benzene in groundwater at well RW03 was 3.0 µg/L during the First Quarter 2018 monitoring event and 6.5 µg/L during the Fourth Quarter 2018 monitoring event.

- **Diesel-Range Petroleum Hydrocarbons.** DRPH concentrations in groundwater samples collected from wells MW101, MW102, MW105, MW109 through MW113, RW04, and RW05 were below the MTCA Method A CUL of 500 µg/L for DRPH. The groundwater samples collected from wells MW104, MW108, and RW03 contained DRPH concentrations of 690, 680, and 730 µg/L, respectively, exceeding the MTCA Method A CUL. The concentrations of DRPH in groundwater at wells MW104 and RW03 were 590 and 760 µg/L, respectively, during the First Quarter 2018.

  The detected concentration of DRPH in the First Quarter 2019 sample collected from well MW108 was unexpected and may be anomalous. Concentrations have not exceeded the CUL in well MW108 during any previous monitoring events. In order to evaluate the unexpected result in MW108, two additional samples were collected from MW108 on May 10, 2019. The samples were collected before and after purging the well. The DRPH results for the pre- and post-well-purging samples were 670 and 680 µg/L, respectively. The follow up sampling and testing in MW108 indicates that the original result was not due to sampling error, laboratory contamination, or other potential contributors to a false-positive result. Additional groundwater monitoring will be completed at MW108 to evaluate whether this was a one-time detection or whether this concentration represents a trend.

As shown in the attached Charts 1 through 6, which summarize trends in GRPH and benzene concentrations in monitoring wells MW104, MW108, MW109, MW110, RW03, and RW04 since 2011, GRPH and benzene in all four monitoring wells during First Quarter 2019 are significantly lower than concentrations observed before the remedial excavation was completed. Aside from well RW03, GRPH and benzene concentrations in these six wells have remained below laboratory reporting limits or the MTCA Method A CULs since First Quarter 2017. Figure 4 includes trend charts as well as data comparison tables from the six ROW monitoring wells. The tables on Figure 4 illustrate that ROW groundwater concentrations were either non-detect for GRPH and benzene before and after the 2015 excavation (MW101 through MW103 and MW105), or that concentrations are significantly reduced (RW02 and RW04).

A copy of the laboratory analytical report is provided as Attachment B.

DATA VALIDATION

SoundEarth contracted with Validata, LLC to conduct a Stage 2A-level quality assurance/quality control (QA/QC) review of the analytical results. The data were reviewed using the guidance and QC criteria documented in the EPA's *National Functional Guidelines for Organic Superfund Data Review* (2017). The quality control requirements that were reviewed included sample receipt, handling, and holding times; recoveries for method blanks, surrogates, spikes, and field duplicates; and reporting limits.

Results. The DRPH results for groundwater samples collected from wells MW104, MW108, MW110, MW111, MW112, MW113, RW03, RW04, and RW05 were qualified as estimated (J) since the laboratory reported the diesel range results as "x", indicating that the chromatographic pattern does not match the standard. The DRPH and ORPH results for the groundwater sample collected from well MW105 were qualified as estimated (UJ) since the laboratory indicated that the surrogate did not recover due to the

compounds in the matrix interfering with the quantitation of the sample results. All other QA/QC criteria were confirmed to be acceptable for the groundwater samples, and the analytical results are considered to be acceptable for use. A copy of the data validation report is provided as Attachment C.

Following data validation, the groundwater data were uploaded to Ecology's Environmental Information Management system on April 4, 2019 and confirmed by Ecology as successfully uploaded on May 8, 2019.

CONCLUSIONS

Petroleum hydrocarbons (GRPH, DRPH, ORPH, and BTEX) were either not detected above laboratory reporting limits or detected at concentrations less than MTCA Method A CULs in 10 of the 13 wells sampled for groundwater at the SKS Site during the First Quarter 2019 monitoring event, including the newly installed monitoring well MW112 in the Southwest Alaska Street ROW. The three wells in which MTCA Method A CUL exceedances were encountered included:

- Remediation well RW03, which contained concentrations of GRPH and DRPH exceeding the MTCA Method A CULs.
- Monitoring well MW104, which contained a concentration of DRPH exceeding the MTCA Method A CUL.
- Monitoring well MW108, which contained a concentration of DRPH slightly exceeding the MTCA Method A CUL.

Wells RW03 and MW104 are both located in the Fauntleroy Way southwest sidewalk. Well MW108 is located in the building parking garage near the northwestern corner of the SKS Site.

Although concentrations of GRPH and/or DRPH remain in exceedance of CULs at wells RW03 and MW104, analytical data trends indicate that concentrations of these contaminants have decreased significantly between December 2016 and December 2018. It is recommended that groundwater monitoring continue to further assess the natural attenuation of petroleum hydrocarbons at these well locations and to confirm the degradation trends. The DRPH concentration exceeding the MTCA cleanup level in on-property well MW108 is anomalously high compared to DRPH concentrations detected in this well since sampling began in First Quarter 2016. This well has not previously exhibited an exceedance of the applicable cleanup levels for any contaminants of concern. The DRPH detection was flagged by the laboratory as not representative of diesel fuel and may be the result of organic material in the sample. This data and associated trends will be reevaluated following subsequent groundwater monitoring events. At this time, the analytical groundwater data and monitoring trends indicate that no additional treatment is warranted.

The historical groundwater flow direction was documented to be north–northeast prior to development, but based on the most recent groundwater elevations, the flow direction has changed to the west (see Rose Diagrams in Figure 2). As shown on Figures 5 and 6, the building is equipped with a sub-slab drainage system that should (based on location) intercept groundwater at the southern and western boundaries of the new sub-grade parking levels. The two-level parking garage includes a grid-work of sub-slab drains and vertical wall footing drains that lead to a 300-foot-long, 6-foot-internal-diameter stormwater

retention pipe located beneath the eastern side of the building (Figure 5). The southwestern portion of the parking garage was constructed approximately 28 feet bgs, and the current building footing drain system appears to be intercepting that groundwater beneath the SKS Site and the entire Whittaker property. During First Quarter 2019, groundwater flow direction was measured to be toward the west-southwest on the eastern side of the SKS Site, with relatively consistent groundwater elevations on the western side of the SKS Site beneath the building. SoundEarth is currently analyzing whether the building drainage system is affecting the groundwater elevation and flow direction at the northeast corner of the Whittaker property.

During March 2018, monitoring well MW113 was installed in the parking garage beneath the building on the Kennedy Property to the west of the SKS Site. GRPH, DRPH, ORPH, and BTEX were all below the applicable MTCA Method A CULs in groundwater samples collected from this well during 2018 and First Quarter 2019, indicating that the change in groundwater flow direction has not impacted groundwater to the west of the SKS Site.

SCHEDULE

SoundEarth will conduct a monitoring event of the well network at the SKS Site in Second Quarter 2019; the results will be included in a groundwater monitoring report.

RECOMMENDATION

SoundEarth recommends the decommissioning of wells MW101 and MW102, which are located on the east side, and within, Fauntleroy Way, respectively. Groundwater samples collected from these wells have not contained any detectable concentrations of GRPH, DRPH, ORPH, or BTEX for 8 consecutive quarters; and neither well has ever had concentrations of petroleum hydrocarbons exceeding MTCA Method A cleanup levels since sampling was first conducted in 2012. Additionally, a significant redevelopment and mass excavation is occurring on the property to the east, near these wells. Furthermore, sampling of well MW102 is very difficult and costly to sample because it is located in the Alaska Street/Fauntleroy Way intersection, presenting safety concerns, creating obstructions to traffic flow in a major arterial, and affecting access to an adjacent Rapid Ride Metro bus stop.

CLOSING

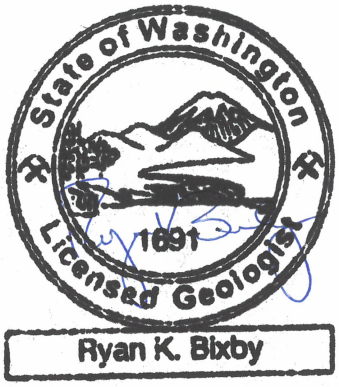
SoundEarth appreciates this opportunity to provide LMI West Seattle Holdings, LLC, with environmental consulting services. Please call Rob Roberts at 206-306-1900 if you have any questions or comments regarding the content of this report.

Respectfully,

SoundEarth Strategies, Inc.

Clare Tochilin, LG
Associate Geologist

Rob Roberts
Senior Scientist

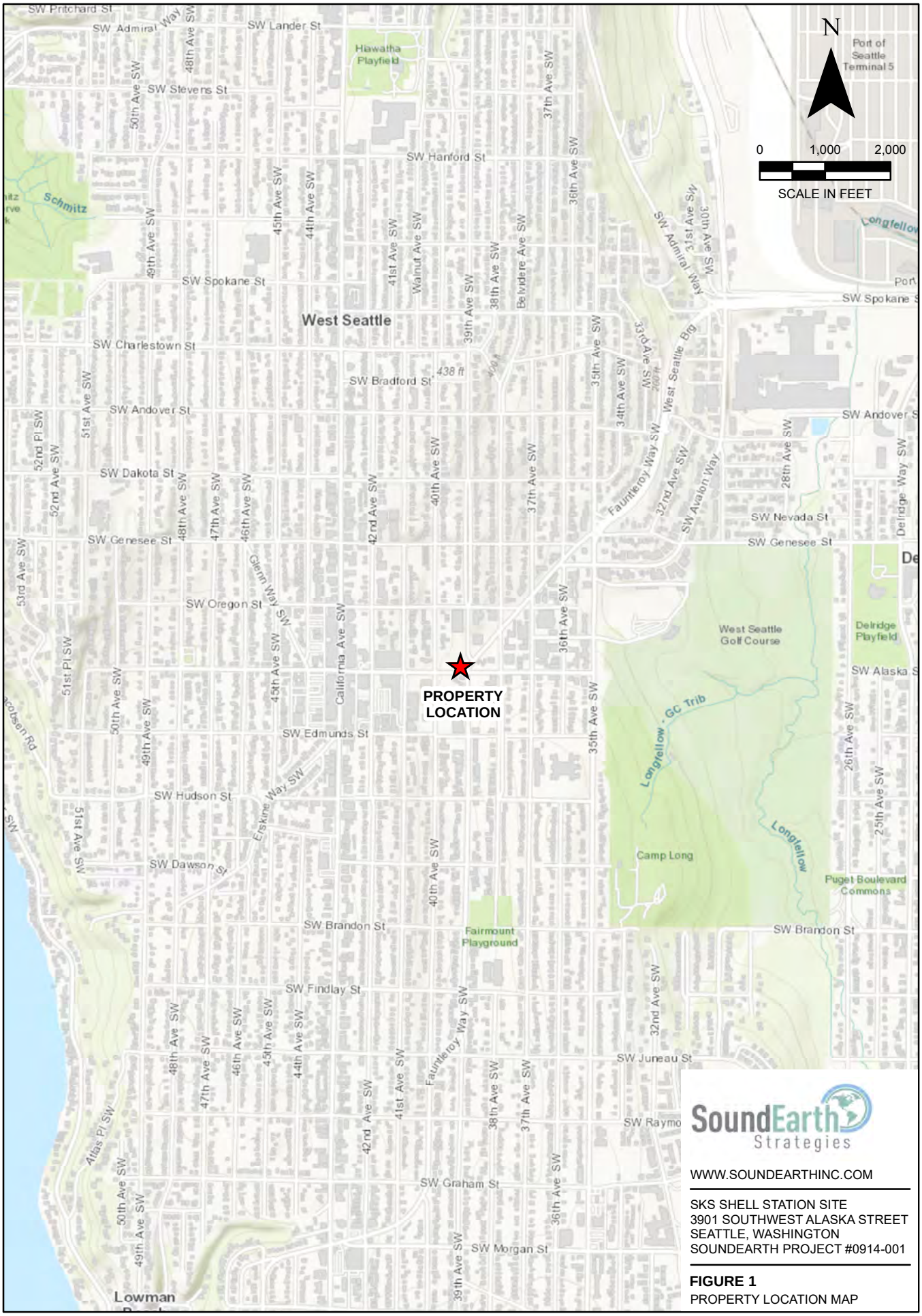


Ryan K. Bixby, LG
Managing Principal

Attachments:
Figure 1, Property Location Map
Figure 2, Groundwater Elevation Contour Map (March 14, 2019)
Figure 3, 2019 Q1 Groundwater Analytical Data
Figure 4, GRPH and Benzene Concentration Trends in Groundwater
Figure 5, Sub-Slab Drainage Plan with Cross Section Location
Figure 6, Cross Section A–A'
Table 1, Summary of Groundwater Data
Chart 1, GRPH and Benzene Concentrations—MW104
Chart 2, GRPH and Benzene Concentrations—GLMW01/MW109
Chart 3, GRPH and Benzene Concentrations—MW110/MW-2
Chart 4, GRPH and Benzene Concentrations—MW-3/MW108
Chart 5, GRPH and Benzene Concentrations—RW03
Chart 6, GRPH and Benzene Concentrations—RW04
A, Boring Log
B, Laboratory Analytical Report
Friedman & Bruya, Inc. #903299
C, Data Validation Report
Validata, LLC #903299

CJT/CER/RKB:dnm/cms

FIGURES



SoundEarth Strategies

WWW.SOUNDEARTHINC.COM

SKS SHELL STATION SITE
3901 SOUTHWEST ALASKA STREET
SEATTLE, WASHINGTON
SOUNDEARTH PROJECT #0914-001

FIGURE 1
PROPERTY LOCATION MAP

4/9/2019

P:\0914 LENNAR SHELL\0914-001 SKS SHELL ROW\TECHNICAL\CAD\2019\2019\2019Q1\0914-004 2019Q1 CM.DWG

SB401

MW113 (240.08')

FORMER HOWDEN-KENNEDY FUNERAL HOME

SIDEWALK

MW107

SEATTLE ELECTRIC COMPANY UTILIDORE

SOUTHWEST ALASKA STREET

SIDEWALK

N

0 10 20

APPROXIMATE SCALE IN FEET

FORMER USTs

B-6/MW-4 (NM)

STORMWATER SUMP

STORMWATER DETENTION PIPE

FORMER SKS SHELL

FORMER UST- #4

FORMER UST- #1

FORMER UST- #2

FORMER UST- #3

FORMER PUMP ISLANDS AND CANOPIES

MW108 (240.05')

RW09

240.5

MW111 (240.47')

RW08

RW07

MW109 (239.98')

MW112 (240.44')

240.5

MW110 (240.01')

RW06

RW02

RW03 (240.45')

RW04 (240.46')

RW05 (240.35')

MW104 (240.12')

RW01

MW103 (DRY)

SIDEWALK

240.5

MW105 (240.64')

241

FAUNTLEROY WAY SOUTHWEST

241

241.5

MW102 (241.56')

MW101 (241.52')

W 270° 225° 315° S 180° 0° N 135° 45° 90° E

0.005 0.010 0.015 0.020 0.025 0.030

PRE-EXCAVATION

- 1 05/06/12
- 2 08/07/12
- 3 11/07/12
- 4 03/06/13

POST-EXCAVATION

- 5 06/13/17
- 6 09/14/17
- 7 12/12/17
- 8 03/22/18
- 9 06/21/18
- 10 09/17/18
- 11 12/18/18
- 12 03/14/19

LEGEND

- EXISTING REMEDIATION WELL
- EXISTING MONITORING WELL
- DECOMMISSIONED REMEDIATION WELL
- DECOMMISSIONED MONITORING WELL
- FORMER TEMPORARY WELL
- PROPERTY BOUNDARY
- PARCEL BOUNDARY
- SEWER LINE
- WATER LINE
- GAS LINE
- HISTORICAL UTILITY LINES
- NM — NOT MEASURED
- UST — UNDERGROUND STORAGE TANK
- 0.5-FOOT INTERVAL GROUNDWATER CONTOUR (DASHED WHERE INFERRED)
- (240.40') — GROUNDWATER ELEVATION (FEET)
- GROUNDWATER FLOW DIRECTION (MARCH 14, 2019)

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SEATTLE, WASHINGTON
SOUNDEARTH PROJECT #0914-001

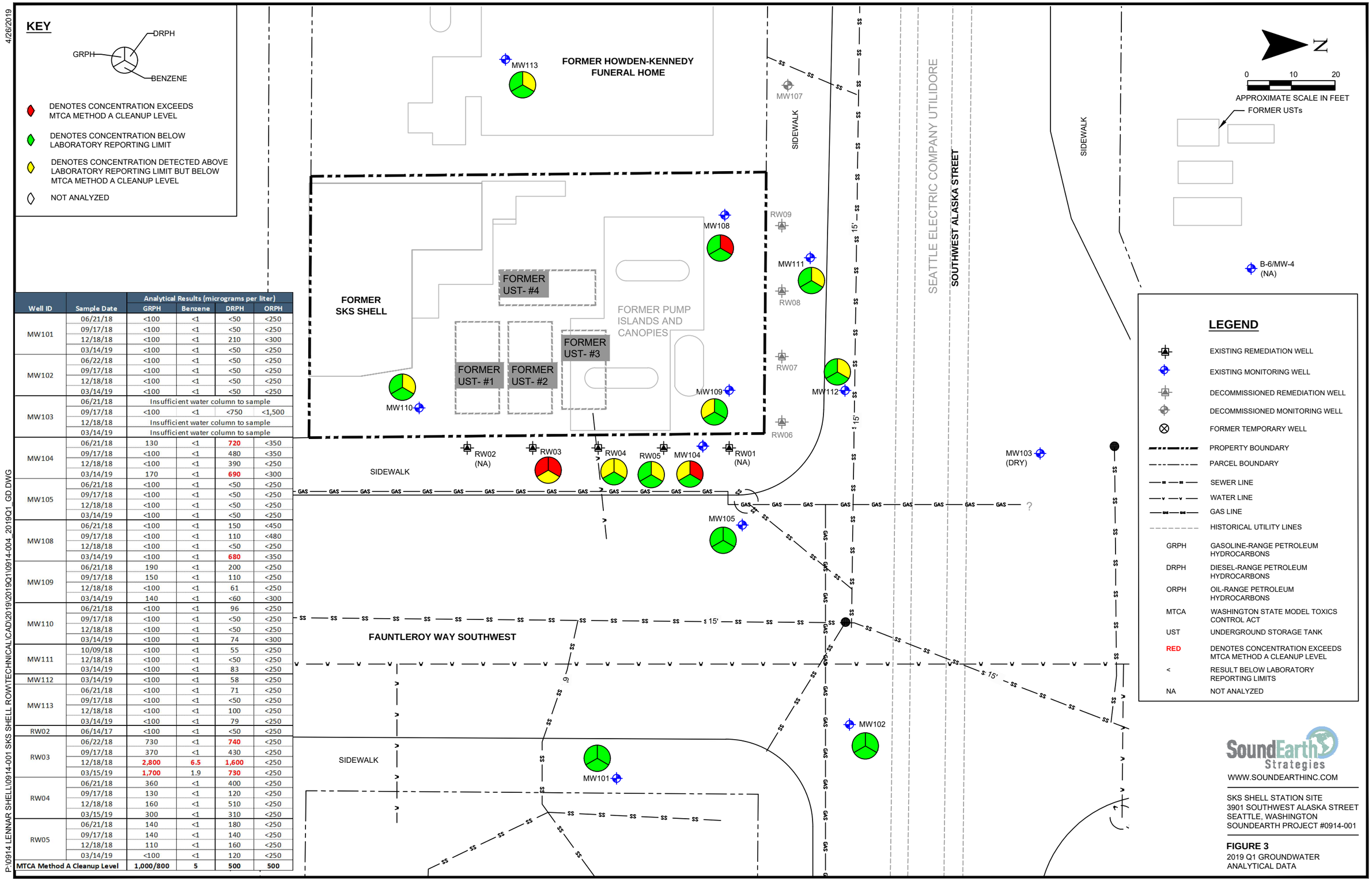
FIGURE 2
GROUNDWATER ELEVATION CONTOUR MAP
(MARCH 14, 2019)

4/26/2019

KEY

- DENOTES CONCENTRATION EXCEEDS MTCA METHOD A CLEANUP LEVEL
- DENOTES CONCENTRATION BELOW LABORATORY REPORTING LIMIT
- DENOTES CONCENTRATION DETECTED ABOVE LABORATORY REPORTING LIMIT BUT BELOW MTCA METHOD A CLEANUP LEVEL
- NOT ANALYZED

Well ID	Sample Date	Analytical Results (micrograms per liter) GRPH	Benzene	DRPH	ORPH
MW101	06/21/18	<100	<1	<50	<250
	09/17/18	<100	<1	<50	<250
	12/18/18	<100	<1	210	<300
	03/14/19	<100	<1	<50	<250
MW102	06/22/18	<100	<1	<50	<250
	09/17/18	<100	<1	<50	<250
	12/18/18	<100	<1	<50	<250
	03/14/19	<100	<1	<50	<250
MW103	06/21/18	Insufficient water column to sample			
	09/17/18	<100	<1	<750	<1,500
	12/18/18	Insufficient water column to sample			
	03/14/19	Insufficient water column to sample			
MW104	06/21/18	130	<1	**720**	<350
	09/17/18	<100	<1	480	<350
	12/18/18	<100	<1	390	<250
	03/14/19	170	<1	**690**	<300
MW105	06/21/18	<100	<1	<50	<250
	09/17/18	<100	<1	<50	<250
	12/18/18	<100	<1	<50	<250
	03/14/19	<100	<1	<50	<250
MW108	06/21/18	<100	<1	150	<450
	09/17/18	<100	<1	110	<480
	12/18/18	<100	<1	<50	<250
	03/14/19	<100	<1	**680**	<350
MW109	06/21/18	190	<1	200	<250
	09/17/18	150	<1	110	<250
	12/18/18	<100	<1	61	<250
	03/14/19	140	<1	<60	<300
MW110	06/21/18	<100	<1	96	<250
	09/17/18	<100	<1	<50	<250
	12/18/18	<100	<1	<50	<250
	03/14/19	<100	<1	74	<300
MW111	10/09/18	<100	<1	55	<250
	12/18/18	<100	<1	<50	<250
	03/14/19	<100	<1	83	<250
MW112	03/14/19	<100	<1	58	<250
MW113	06/21/18	<100	<1	71	<250
	09/17/18	<100	<1	<50	<250
	12/18/18	<100	<1	100	<250
	03/14/19	<100	<1	79	<250
RW02	06/14/17	<100	<1	<50	<250
RW03	06/22/18	730	<1	**740**	<250
	09/17/18	370	<1	430	<250
	12/18/18	**2,800**	**6.5**	**1,600**	<250
	03/15/19	**1,700**	1.9	**730**	<250
RW04	06/21/18	360	<1	400	<250
	09/17/18	130	<1	120	<250
	12/18/18	160	<1	510	<250
	03/15/19	300	<1	310	<250
RW05	06/21/18	140	<1	180	<250
	09/17/18	140	<1	140	<250
	12/18/18	110	<1	160	<250
	03/14/19	<100	<1	120	<250
MTCA Method A Cleanup Level		**1,000/800**	**5**	**500**	**500**



LEGEND

- EXISTING REMEDIATION WELL
- EXISTING MONITORING WELL
- DECOMMISSIONED REMEDIATION WELL
- DECOMMISSIONED MONITORING WELL
- FORMER TEMPORARY WELL
- PROPERTY BOUNDARY
- PARCEL BOUNDARY
- SEWER LINE
- WATER LINE
- GAS LINE
- HISTORICAL UTILITY LINES

GRPH	GASOLINE-RANGE PETROLEUM HYDROCARBONS
DRPH	DIESEL-RANGE PETROLEUM HYDROCARBONS
ORPH	OIL-RANGE PETROLEUM HYDROCARBONS
MTCA	WASHINGTON STATE MODEL TOXICS CONTROL ACT
UST	UNDERGROUND STORAGE TANK
RED	DENOTES CONCENTRATION EXCEEDS MTCA METHOD A CLEANUP LEVEL
<	RESULT BELOW LABORATORY REPORTING LIMITS
NA	NOT ANALYZED

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SOUNDEARTH PROJECT #0914-001

FIGURE 3
2019 Q1 GROUNDWATER ANALYTICAL DATA

P:\0914 LENNAR SHELL\0914-001 SKS SHELL ROW\TECHNICAL\CAD\2019\2019Q1\0914-004_2019Q1_GD.DWG

4/26/2019

P:\0914 LENNAR SHELL\0914-001 SKS SHELL ROW\TECHNICAL\CAD\2019\2019Q1\0914-004_2019Q1_CT.DWG

CHART 1: MW104 – GRPH AND BENZENE

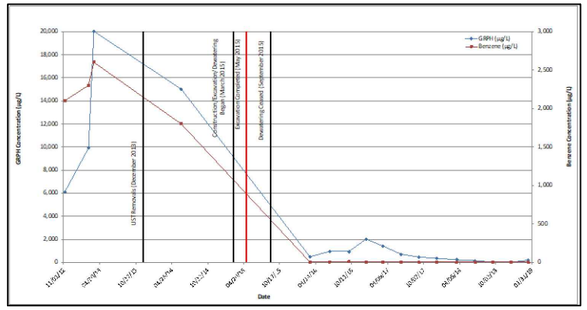


CHART 2: GLMW01 / MW109 – GRPH AND BENZENE

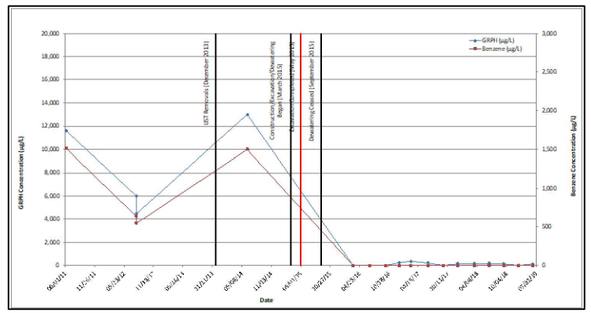


CHART 3: MW-2 / MW110 – GRPH AND BENZENE

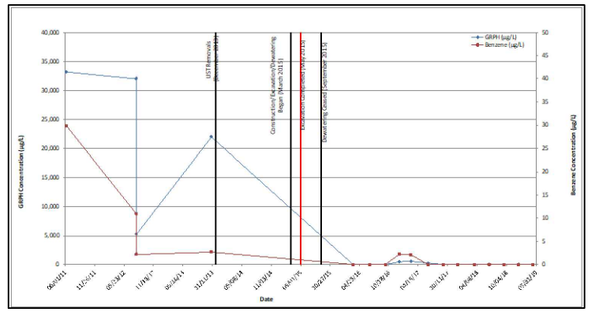
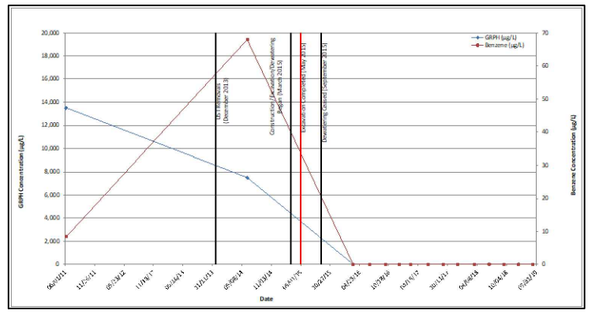


CHART 4: MW-3 / MW108 – GRPH AND BENZENE



SB401

MW113

FORMER HOWDEN-KENNEDY FUNERAL HOME

MW107

SIDEWALK

SIDEWALK

RW09

MW108

MW111

RW08

FORMER SKS SHELL

FORMER UST- #4

FORMER PUMP ISLANDS AND CANOPIES

FORMER UST- #3

FORMER UST- #1

FORMER UST- #2

RW07

MW109

MW112

MW110

RW06

RW02

RW03

RW04

RW05

MW104

RW01

MW103

SIDEWALK

RW02	Benzene	GRPH	DRPH
2014	1.1	16,000	3,200
2017	<1	<100	<50

RW04	Benzene	GRPH	DRPH
2014	1,200	17,000	4,600
2019	<1	300	310

MW103	Benzene	GRPH	DRPH
2012	<0.35	<100	<50
2018	<1	<100	<80

MW105

MW105	Benzene	GRPH	DRPH
2012	<1	140	<50
2019	<1	<100	<50

FAUNTLEROY WAY SOUTHWEST

SEATTLE ELECTRIC COMPANY UTILIDORE

SOUTHWEST ALASKA STREET

MW102

SIDEWALK

MW101

MW101	Benzene	GRPH	DRPH
2013	<1	<100	<50
2019	<1	<100	<50

MW102	Benzene	GRPH	DRPH
2012	<0.35	<100	<50
2019	<1	<100	<50

N

0 10 20

APPROXIMATE SCALE IN FEET

LEGEND

- EXISTING REMEDIATION WELL
- EXISTING MONITORING WELL
- DECOMMISIONED REMEDIATION WELL
- DECOMMISIONED MONITORING WELL
- FORMER TEMPORARY WELL
- PROPERTY BOUNDARY
- PARCEL BOUNDARY
- SEWER LINE
- WATER LINE
- GAS LINE
- HISTORICAL UTILITY LINES
- GRPH (µg/L)
- BENZENE (µg/L)
- RED LINE ON CHARTS INDICATES COMPLETION OF EXCAVATION

µg/L	MICROGRAMS PER LITER
GRPH	GASOLINE-RANGE PETROLEUM HYDROCARBONS
UST	UNDERGROUND STORAGE TANK
DRPH	DIESEL-RANGE PETROLEUM HYDROCARBONS
MTCA	WASHINGTON STATE MODEL TOXICS CONTROL ACT
<	RESULT BELOW LABORATORY REPORTING LIMIT
RED	DENOTES CONCENTRATION EXCEEDS MTCA METHOD A CLEANUP LEVELS FOR GROUNDWATER

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FIGURE 4
GRPH AND BENZENE CONCENTRATION TRENDS IN GROUNDWATER

4/8/2019

LEGEND

- EXISTING REMEDIATION WELL
- FORMER TEMPORARY WELL
- DECOMMISSIONED MONITORING WELL (SOUNDEARTH)
- DECOMMISSIONED MONITORING WELL (EPI 1997)
- DECOMMISSIONED REMEDIATION WELL
- EXISTING MONITORING WELL
- PROPERTY BOUNDARY
- PARCEL BOUNDARY
- CROSS SECTION LOCATION
- SS — SEWER LINE
- W — WATER LINE
- GAS — NATURAL GAS LINE
- FD — SUB-SLAB DRAINAGE/FOOTING DRAINS
- HYDRAULIC HOIST
- AST — ABOVEGROUND STORAGE TANK
- UST — UNDERGROUND STORAGE TANK

40TH AVENUE SOUTHWEST

SOUTHWEST EDMUNDS STREET

SOUTHWEST ALASKA STREET

SEATTLE ELECTRIC COMPANY UTILIDORE

FAUNTLEROY WAY SOUTHWEST

A

A'

MASONIC LODGE

OFFICE

TRENCH DRAIN

SEWER LINE

PAINT STORAGE

FORMER HULING BODY SHOP

FLOOR DRAIN

CANOPY

PAINT BOOTH

WASH AREA

WASTE OIL AST AND OIL/WATER SEPARATOR

SMW01

FORMER 500-GALLON HEATING OIL UST

SB401

MW113

FORMER HOWDEN-KENNEDY FUNERAL HOME

MW107

MW106

SMW04

FORMER 500-GALLON WASTE OIL UST

MW-3

MW-2

FORMER HULING CHEVROLET GARAGE

FORMER 2,500-GALLON GASOLINE UST

STORMWATER DETENTION PIPE

STORMWATER SUMP

SMW03

FORMER SKS SHELL

MW108

MW109

MW110

MW111

MW112

RW01

RW02

RW03

RW04

RW05

RW06

RW07

RW08

RW09

MW104

MW105

MW103

MW102

MW101

MW20

BOILER ROOM AND OIL/WATER SEPARATOR

SHOWROOM

FORMER 1,000-GALLON HEATING OIL UST

SMW02

SMW05

RCO03

LES SCHWAB PROPERTY

FORMER GASOLINE SERVICE STATION

N

0 25 50

APPROXIMATE SCALE IN FEET

FORMER USTs

FORMER GASOLINE SERVICE STATION

B-6/MW-4

FORMER PUMP ISLAND AND UST

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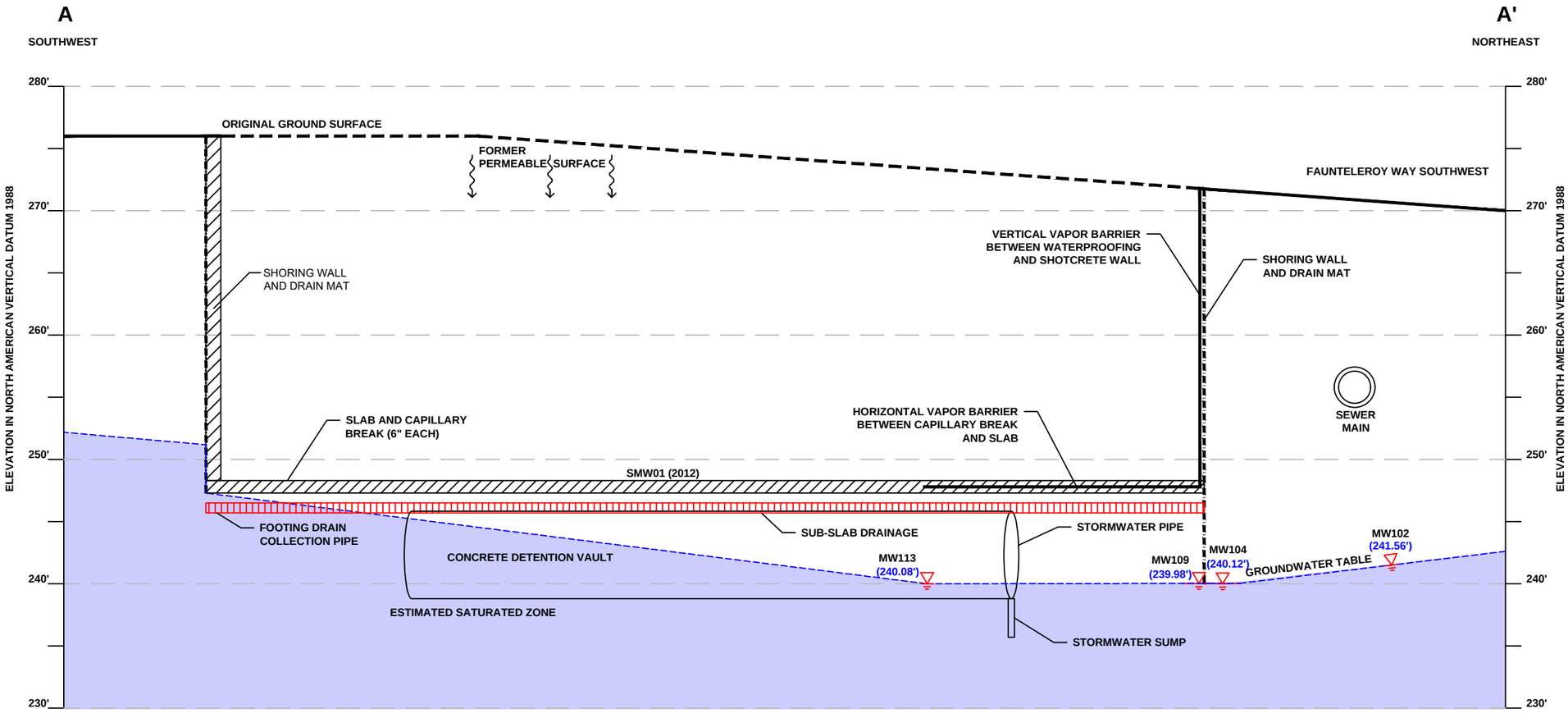
FIGURE 5
SUB-SLAB DRAINAGE PLAN WITH CROSS SECTION LOCATION

P:\0914 LENNAR SHELL\0914-001 SKS SHELL ROW\TECHNICAL\CAD\2019\2019Q1\0914-004_2019Q1_ELD.DWG



LEGEND

GROUNDWATER ELEVATION 3/14/19

0 5 10

0 25 50

APPROXIMATE SCALE IN FEET

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SKS SHELL STATION SITE
3901 SOUTHWEST ALASKA STREET
SEATTLE, WASHINGTON
SOUNDEARTH PROJECT #0914-001

FIGURE 6
CROSS SECTION A-A'

TABLE

Table 1
Summary of Groundwater Data
SKS Shell Station Site
3901 Southwest Alaska Street
Seattle, Washington

Well ID	Sample Date	Top of Well Casing	Depth to Groundwater (feet below TOC)	Relative Groundwater Elevation[1][7]	Analytical Results (µg/L)											
					GRPH[2]	Benzene[3]	Toluene[3]	Ethylbenzene[3]	Total Xylenes[3]	MTBE[3]	EDC[3]	EDB[3]	DRPH[2]	DRPH with Silica Gel[4]	ORPH[2]	ORPH with Silica Gel[4]
MW101	08/06/12	269.54	24.39	245.15	<100	<0.35	<1	<1	<3	<1	<1	<1	--	--	--	--
	04/01/13		24.67	244.87	<100	<1	<1	<1	<3	--	--	--	<50	--	<250	--
	06/14/17		25.80	243.74	<100	<1	<1	<1	<3	--	--	--	<50	--	<250	--
	09/13/17		26.91	242.63	<100	<1	<1	<1	<3	--	--	--	<60	--	<300	--
	12/12/17		27.62	241.92	<100	<1	<1	<1	<3	--	--	--	<50	--	<250	--
	03/22/18		27.20	242.34	<100	<1	<1	<1	<3	--	--	--	<60	--	<300	--
	06/21/18		27.34	242.20	<100	<1	<1	<1	<3	--	--	--	<50	--	<250	--
	09/17/18		28.07	241.47	<100	<1	<1	<1	<3	--	--	--	<50	--	<250	--
	12/18/18		28.55	240.99	<100	<1	<1	<1	<3	--	--	--	210	--	<300	--
	03/14/19		28.02	241.52	<100	<1	<1	<1	<3	--	--	--	<50	--	<250	--
MW102	11/07/12	269.06	25.41	243.65	<100	<0.35	<1	<1	<3	<1	<1	<1	100	<50	<250	<250
	06/13/17		25.42	243.64	<100	<1	<1	<1	<3	--	--	--	<50	--	<250	--
	09/13/17		26.54	242.52	<100	<1	<1	<1	<3	--	--	--	<50	--	<250	--
	12/12/17		27.15	241.91	<100	<1	<1	<1	<3	--	--	--	<50	--	<250	--
	03/22/18		26.69	242.37	<100	<1	<1	<1	<3	--	--	--	<65	--	<320	--
	06/22/18		27.37	241.69	<100	<1	<1	<1	<3	--	--	--	<50	--	<250	--
	09/17/18		27.75	241.31	<100	<1	<1	<1	<3	--	--	--	<50	--	<250	--
	12/18/18		28.25	240.81	<100	<1	<1	<1	<3	--	--	--	<50	--	<250	--
	03/14/19		27.50	241.56	<100	<1	<1	<1	<3	--	--	--	<50	--	<250	--
MW103[8]	11/07/12	269.55	27.80	241.75	<100	<0.35	<1	<1	<3	<1	<1	<1	130	<50	<250	<250
	06/13/17		28.56	240.99	<100	<1	<1	<1	<3	--	--	--	<60	--	<300	--
	09/13/17		29.12	240.43	<100	<1	<1	<1	<3	--	--	--	140[x]	--	<375	--
	12/12/17		29.29	240.26	<100	<1	<1	<1	<3	--	--	--	120	--	<250	--
	03/22/18		29.14	240.41	<100	<1	<1	<1	<3	--	--	--	<80	--	<400	--
	06/21/18		29.45	240.10	Insufficient water column to sample											
	09/17/18		29.66	239.89	<100	<1	<1	<1	<3	--	--	--	<750	--	<1,500	--
	12/18/18		Dry	--	--	--	--	--	--	--	--	--	--	--	--	--
	03/14/19		Dry	--	--	--	--	--	--	--	--	--	--	--	--	--
MW104	11/07/12	269.35	24.41	244.94	**6,100**	**2,100**	10	120	418	<1	<1	<1	**4,000**	--	<250	--
	03/06/13		23.24	246.11	**9,900**	**2,300**	110	470	870	--	--	--	**1,900[x]**	--	<250	--
	04/01/13		23.37	245.98	**20,000**	**2,600**	140	640	**1,300**	--	--	--	--	**540[x]**	--	<250
	06/12/14		25.50	243.85	**15,000**	**1,800**	120	480	**1,330**	--	--	<0.01	**14,000[x]**	--	250[x]	--
	03/17/16		26.41	242.94	480	1.2	1.8	2.2	5.7	--	--	--	**1,200[x]**	--	<300	--
	06/24/16		25.16	244.19	**940**	2.5	2.0	3.0	9.5	--	--	--	**3,200**	--	<250	--
	09/28/16		25.55	243.80	**940**	**7.2**	<1	3.7	7.4	--	--	--	**4,000[x]**	--	340[x]	--
	12/23/16		27.28	242.07	**2,000**	2.1	2.1	17	27	--	--	--	**16,000**	180[x]	380[x]	<250
	03/17/17		27.55	241.80	**1,400**	<1	<1	8.5	10	--	--	--	**7,900**	290[x]	<400	<400
	06/15/17	269.37	27.92	241.45	700	<1	<1	4.0	3.1	--	--	--	**3,000**	370[x]	<250	<250
	09/14/17		28.21	241.16	460	<1	<1	1.3	<3	--	--	--	**2,200**	230[x]	<300	<250
	12/12/17		28.86	240.51	340	<1	1.1	1.3	<3	--	--	--	**780[x]**	--	<350	--
	03/22/18		28.88	240.49	220	<1	<1	<1	<3	--	--	--	**590[x]**	--	<250	--
	06/21/18		28.96	240.41	130	<1	<1	<1	<3	--	--	--	**720**	--	<350	--
	09/17/18		29.27	240.10	<100	<1	<1	<1	<3	--	--	--	480	--	<350	--
	12/18/18		29.02	240.35	<100	<1	<1	<1	<3	--	--	--	390	--	<250	--
	03/14/19		29.25	240.12	170	<1	<1	<1	<3	--	--	--	**690[x]**	--	<300	--
MW105	12/13/12	269.30	24.25	245.05	140	<1	<1	<1	<3	--	--	--	820[x]	<50	<250	<250
	03/06/13		23.33	245.97	<100	<0.35	<1	<1	<3	--	--	--	61[x]	--	<250	--
	06/13/17		27.36	241.94	<100	<1	<1	<1	<3	--	--	--	<50	--	<250	--
	09/13/17		27.96	241.34	<100	<1	<1	<1	<3	--	--	--	<60	--	<300	--
	12/12/17		28.41	240.89	<100	<1	<1	<1	<3	--	--	--	<50	--	<250	--
	03/22/18		28.45	240.85	<100	<1	<1	<1	<3	--	--	--	<65	--	<320	--
	06/21/18		28.56	240.74	<100	<1	<1	<1	<3	--	--	--	<50	--	<250	--
	09/17/18		28.96	240.34	<100	<1	<1	<1	<3	--	--	--	<50	--	<250	--
	12/18/18		28.90	240.40	<100	<1	<1	<1	<3	--	--	--	<50	--	<250	--
	03/14/19		28.66	240.64	<100	<1	<1	<1	<3	--	--	--	<50	--	<250	--
RW02	07/16/14	268.60	--	--	**16,000**	1.1	2.5	380	**1,400**	--	--	--	**3,200[x]**	--	<250	--
	06/14/17		27.22	241.38	<100	<1	<1	<1	<3	--	--	--	<50	--	<250	--
MTCA Method A Cleanup Levels for Groundwater[5]					**1,000/800[6]**	**5**	**1,000**	**700**	**1,000**	**20**	**5**	**0.01**	**500**	**500**	**500**	**500**

SoundEarth Strategies

Table 1
Summary of Groundwater Data
SKS Shell Station Site
3901 Southwest Alaska Street
Seattle, Washington

Well ID	Sample Date	Top of Well Casing	Depth to Groundwater (feet below TOC)	Relative Groundwater Elevation[1][7]	Analytical Results (µg/L)											
					GRPH[2]	Benzene[3]	Toluene[3]	Ethylbenzene[3]	Total Xylenes[3]	MTBE[3]	EDC[3]	EDB[3]	DRPH[2]	DRPH with Silica Gel[4]	ORPH[2]	ORPH with Silica Gel[4]
RW03	03/17/16	--	26.23	--	2,300	41	6.9	51	260	--	--	--	1,400[x]	--	<250	--
	06/24/16		25.40	--	1,600	27	4.4	27	59	--	--	--	3,600	--	<250	--
	09/28/16		25.71	--	1,100	6.7	<1	20	45	--	--	--	2,400[x]	--	<300	--
	12/23/16		26.77	--	9,000	470	16	380	750	--	--	--	11,000	720[x]	<300	<300
	03/02/17		27.22	--	4,900	150	<10	220	190	--	--	--	11,000[x]	880[x]	<250	<250
	06/14/17	269.50	27.91	241.59	1,300	7.0	<1	32	11	--	--	--	1,500	320[x]	<250	<250
	09/14/17		28.30	241.20	560	2.8	1.3	15	4.5	--	--	--	690[x]	140[x]	<300	<300
	12/12/17		28.82	240.68	2,500	8.8	17	39	170	--	--	--	1,000[x]	--	<300	--
	03/22/18		28.85	240.65	2,100	3.0	5.2	29	140	--	--	--	760[x]	--	<250	--
	06/22/18		28.94	240.56	730	<1	2.3	31	34	--	--	--	740[x]	--	<250	--
	09/17/18		29.28	240.22	370	<1	<11	11	15	--	--	--	430	--	<250	--
	12/18/18		29.05	240.45	2,800	6.5	5.0	75	250	--	--	--	1,600	--	<250	--
	03/15/19		29.05	240.45	1,700	1.9	1.7	46	140	--	--	--	730[x]	--	<250	--
RW04	07/16/14	269.22	--	--	17,000	1,200	270	360	1,700	--	--	--	4,600[x]	--	270[x]	--
	06/14/17		27.62	241.60	790	2.5	<1	16	<3	--	--	--	400	--	<250	--
	09/14/17		27.93	241.29	400	6.4	<1	26	21	--	--	--	330[x]	--	<250	--
	12/12/17		28.55	240.67	360	3.0	1.1	12	5.2	--	--	--	200[x]	--	<300	--
	03/22/18		28.57	240.65	450	1.5	<1	14	<3	--	--	--	500[x]	--	<250	--
	06/21/18		28.60	240.62	360	<1	2.6	4.8	4.5	--	--	--	400[x]	--	<250	--
	09/17/18		29.08	240.14	130	<1	<1	1.5	<3	--	--	--	120	--	<250	--
	12/18/18		28.74	240.48	160	<1	<1	1.1	<3	--	--	--	510	--	<250	--
	03/15/19		28.76	240.46	300	<1	<1	1.9	<3	--	--	--	310[x]	--	<250	--
RW05	06/14/17	269.09	27.64	241.45	400	<1	<1	4.4	<3	--	--	--	470	--	<250	--
	09/14/17		27.91	241.18	280	<1	1.2	1.5	<3	--	--	--	300[x]	--	<300	--
	12/12/17		28.54	240.55	230	<1	1.3	1.5	<3	--	--	--	170[x]	--	<300	--
	03/22/18		28.56	240.53	180	<1	<1	1.4	<3	--	--	--	140[x]	--	<260	--
	06/21/18		28.63	240.46	140	<1	1.4	1.4	<3	--	--	--	180[x]	--	<250	--
	09/17/18		28.96	240.13	140	<1	<1	2.1	<3	--	--	--	140	--	<250	--
	12/18/18		28.75	240.34	110	<1	<1	1.4	<3	--	--	--	160[x]	--	<250	--
	03/14/19		28.74	240.35	<100	<1	<1	<1	<3	--	--	--	120[x]	--	<250	--
RW07	07/16/14	--	--	--	1,600	110	8.3	8.3	17	--	--	--	1,100[x]	--	<250	--
RW09	07/16/14	--	--	--	2,600	10	18	70	34	--	--	--	700[x]	--	<250	--
MW108	03/17/16	--	5.52	--	<100	<1	<1	<1	<3	--	--	--	93[x]	--	<300	--
	06/24/16		3.33	--	<100	<1	<1	<1	<3	--	--	--	<50	--	<250	--
	09/28/16		3.85	--	<100	<1	<1	<1	<3	--	--	--	<60	--	<300	--
	12/23/16		6.56	--	<100	<1	<1	<1	<3	--	--	--	94[x]	<70	<350	<350
	03/03/17		6.64	--	<100	<1	<1	<1	<3	--	--	--	<80	<80	<400	<400
	06/14/17	247.83	7.06	240.77	<100	<1	<1	<1	<3	--	--	--	140[x]	--	<250	--
	09/14/17		6.69	241.14	<100	<1	<1	<1	<3	--	--	--	160[x]	--	<250	--
	12/12/17		7.70	240.13	<100	<1	<1	<1	<3	--	--	--	<50	--	<250	--
	03/23/18		7.44	240.39	<100	<1	<1	<1	<3	--	--	--	71[x]	--	<250	--
	06/21/18		7.75	240.08	<100	<1	<1	<1	<3	--	--	--	150[x]	--	<450	--
	09/17/18		7.83	240.00	<100	<1	<1	<1	<3	--	--	--	110	--	<480	--
	12/18/18		7.98	239.85	<100	<1	<1	<1	<3	--	--	--	<50	--	<250	--
	03/14/19		7.78	240.05	<100	<1	<1	<1	<3	--	--	--	680[x]	--	<350	--
MW109	03/17/16	--	5.42	--	<100	<1	<1	<1	<3	--	--	--	97[x]	--	<250	--
	06/24/16		3.35	--	<100	<1	<1	<1	<3	--	--	--	160[x]	--	<250	--
	09/28/16		3.96	--	<100	<1	<1	<1	<3	--	--	--	260[x]	--	<250	--
	12/23/16		6.59	--	250	<1	<1	<1	<3	--	--	--	430[x]	<50	<250	<250
	03/03/17		6.70	--	370	<1	<1	1.2	<3	--	--	--	490[x]	55[x]	<250	<250
	06/14/17	247.92	6.87	241.05	220	<1	<1	<1	<3	--	--	--	330	--	<250	--
	09/14/17		6.84	241.08	<100	<1	<1	<1	<3	--	--	--	140[x]	--	<300	--
	12/12/17		7.69	240.23	150	<1	1.1	<1	<3	--	--	--	<50	--	<250	--
	03/23/18		7.75	240.17	190	<1	<1	1.1	<3	--	--	--	110[x]	--	<250	--
	06/21/18		7.87	240.05	190	<1	1.2	<1	<3	--	--	--	200	--	<250	--
	09/17/18		8.05	239.87	150	<1	<1	1.8	<3	--	--	--	110[x]	--	<250	--
	12/18/18		7.61	240.31	<100	<1	<1	<1	<3	--	--	--	61[x]	--	<250	--
	03/14/19		7.94	239.98	140	<1	<1	<1	<3	--	--	--	<60	--	<300	--
MTCA Method A Cleanup Levels for Groundwater[5]					**1,000/800[6]**	**5**	**1,000**	**700**	**1,000**	**20**	**5**	**0.01**	**500**	**500**	**500**	**500**

SoundEarth Strategies

Table 1
Summary of Groundwater Data
SKS Shell Station Site
3901 Southwest Alaska Street
Seattle, Washington

Well ID	Sample Date	Top of Well Casing	Depth to Groundwater (feet below TOC)	Relative Groundwater Elevation[1][7]	Analytical Results (µg/L)											
					GRPH[2]	Benzene[3]	Toluene[3]	Ethylbenzene[3]	Total Xylenes[3]	MTBE[3]	EDC[3]	EDB[3]	DRPH[2]	DRPH with Silica Gel[4]	ORPH[2]	ORPH with Silica Gel[4]
MW110	03/17/16	--	5.70	--	<100	<1	<1	<1	<3	--	--	--	<50	--	<250	--
	06/24/16		3.56	--	<100	<1	<1	<1	<3	--	--	--	100[x]	--	<250	--
	09/28/16		4.19	--	<100	<1	<1	<1	<3	--	--	--	**590**[x]	--	440[x]	--
	12/23/16		6.96	--	500	2.3	<1	9.7	18	--	--	--	**1,200**	68[x]	<300	<300
	03/03/17		7.57	--	570	2.1	<1	9.3	4.7	--	--	--	**1,000**[x]	110[x]	<250	<250
	06/14/17	248.21	7.78	240.43	260	<1	<1	2.0	<3	--	--	--	**520**	--	<250	--
	09/14/17		7.44	240.77	<100	<1	<1	<1	<3	--	--	--	150[x]	--	<250	--
	12/12/17		8.02	240.19	<100	<1	<1	<1	<3	--	--	--	99[x]	--	<250	--
	03/23/18		8.05	240.16	<100	<1	<1	<1	<3	--	--	--	73[x]	--	<250	--
	06/21/18		8.15	240.06	<100	<1	<1	<1	<3	--	--	--	96[x]	--	<250	--
	09/17/18		8.40	239.81	<100	<1	<1	<1	<3	--	--	--	<50	--	<250	--
	12/18/18		7.98	240.23	<100	<1	<1	<1	<3	--	--	--	<50	--	<250	--
	03/14/19		8.20	240.01	<100	<1	<1	<1	<3	--	--	--	74[x]	--	<300	--
MW111	10/09/18	270.62	30.51	240.11	<100	<1	<1	<1	<3	--	--	--	55[x]	--	<250	--
	12/18/18		29.90	240.72	<100	<1	<1	<1	<3	--	--	--	<50	--	<250	--
	03/14/19		30.15	240.47	<100	<1	<1	<1	<3	--	--	--	83[x]	--	<250	--
MW112	03/14/19	269.32	28.88	240.44	<100	<1	<1	<1	<3	--	--	--	58[x]	--	<250	--
MW113	03/23/18	248.06	7.68	240.38	<100	<1	<1	<1	<3	--	--	--	93[x]	--	<250	--
	06/21/18		7.81	240.25	<100	<1	<1	<1	<3	--	--	--	71[x]	--	<250	--
	09/17/18		8.05	240.01	<100	<1	<1	<1	<3	--	--	--	<50	--	<250	--
	12/18/18		7.58	240.48	<100	<1	<1	<1	<3	--	--	--	100[x]	--	<250	--
	03/14/19		7.98	240.08	<100	<1	<1	<1	<3	--	--	--	79[x]	--	<250	--
MTCA Method A Cleanup Levels for Groundwater[5]					**1,000/800[6]**	**5**	**1,000**	**700**	**1,000**	**20**	**5**	**0.01**	**500**	**500**	**500**	**500**

NOTES:

Red indicates concentrations exceeding MTCA Method A cleanup levels for groundwater.

Samples analyzed by Friedman & Bruya, Inc. of Seattle, Washington.

2011 Samples analyzed for G-Logics by Fremont Analytical of Seattle, Washington.

2012 Samples analyzed by Friedman & Bruya, Inc. of Seattle, Washington.

[1]Elevation reference datum North American Vertical Datum of 1988 (Dowl HKM November 2012).

[2]Analyzed by Method NWTPH-Gx (gasoline) and NWTPH-Dx (diesel and oil).

[3]Analyzed by EPA Method 8260B, 8260C, or 8021B.

[4]Analyzed by Method NWTPH-Dx; sample extracts passed through a silica gel column prior to analysis.

[5]MTCA Cleanup Regulation, Method A Cleanup Levels, Table 720-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, revised November 2007.

[6]1,000 µg/L when benzene is not present and 800 µg/L when benzene is present.

[7]Top of well casing elevations for MW108, MW109, MW110, and MW113 are estimated based on parking garage design elevations.

[8]MW103 elevated detection limits due to low sample volume.

Laboratory Note:

[x]The sample chromatographic pattern does not resemble the fuel standard used for quantitation. Concentration is estimated.

-- = not analyzed, not measured

< = not detected above the laboratory reporting limit

µg/L = micrograms per liter

DRPH = diesel-range petroleum hydrocarbons

EDB = 1,2 dibromoethane

EDC = 1,2 dichloroethane

EPA = US Environmental Protection Agency

GRPH = gasoline-range petroleum hydrocarbons

MTBE = methyl tertiary-butyl ether

MTCA = Washington State Model Toxics Control Act

NWTPH = Northwest Total Petroleum Hydrocarbon

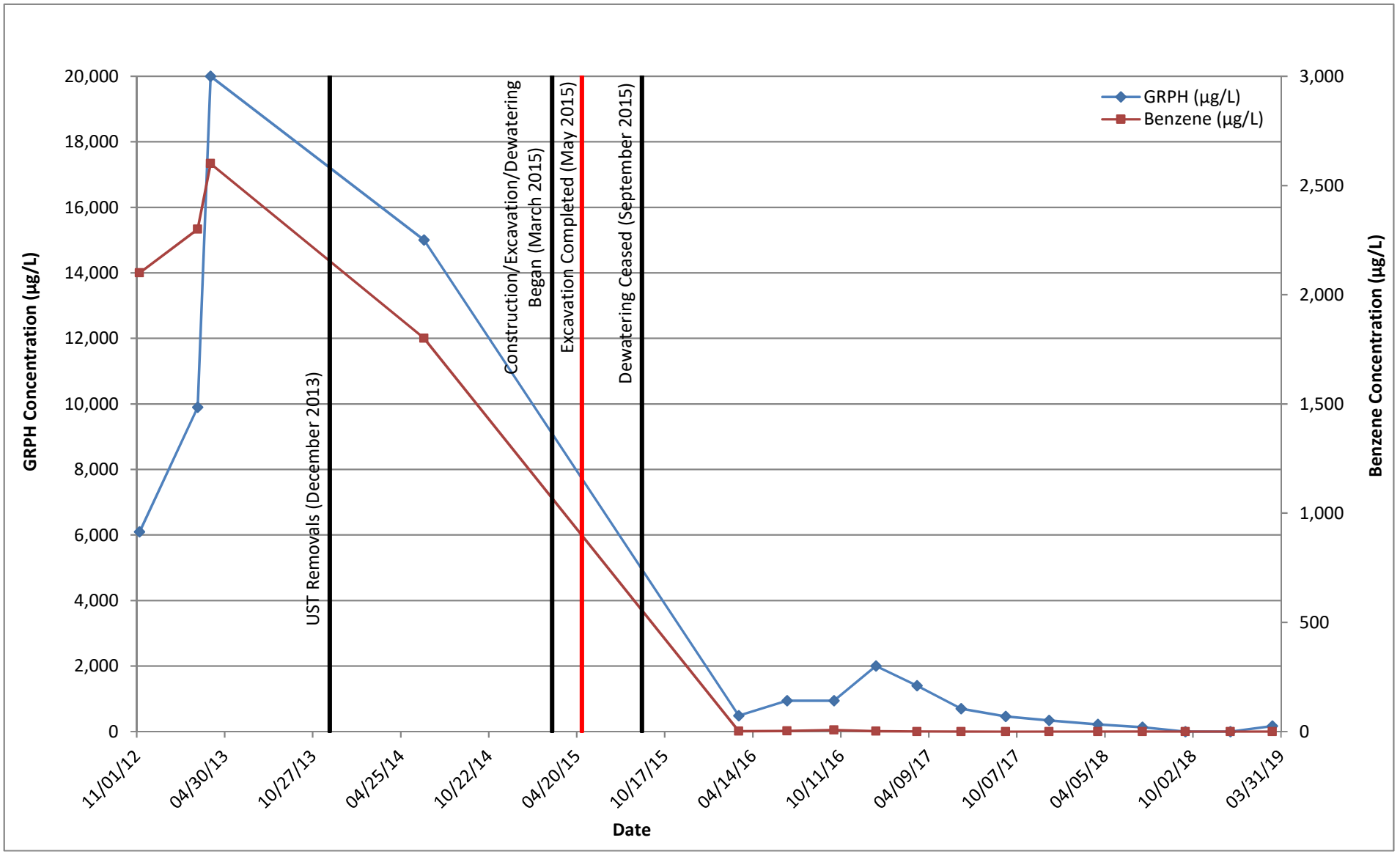
ORPH = oil-range petroleum hydrocarbons

TOC = top of casing elevation

CHARTS

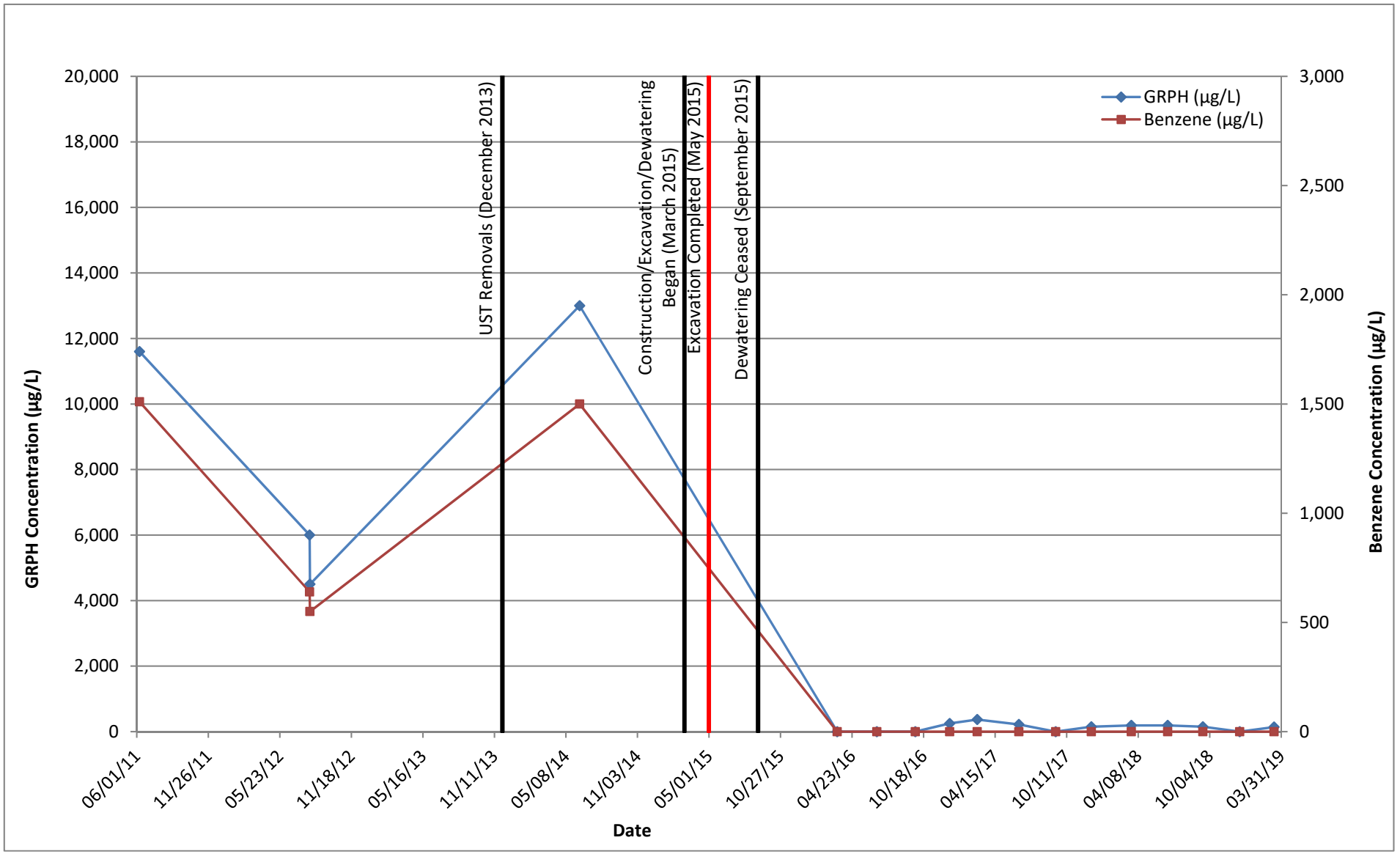
SoundEarth Strategies

Chart 1
GRPH and Benzene Concentrations - MW104
SKS Shell Station Site
3901 Southwest Alaska Street
Seattle, Washington



SoundEarth Strategies

Chart 2
GRPH and Benzene Concentrations - GLMW01/MW109
SKS Shell Station Site
3901 Southwest Alaska Street
Seattle, Washington



SoundEarth Strategies

Chart 3
GRPH and Benzene Concentrations - MW110/MW-2
SKS Shell Station Site
3901 Southwest Alaska Street
Seattle, Washington

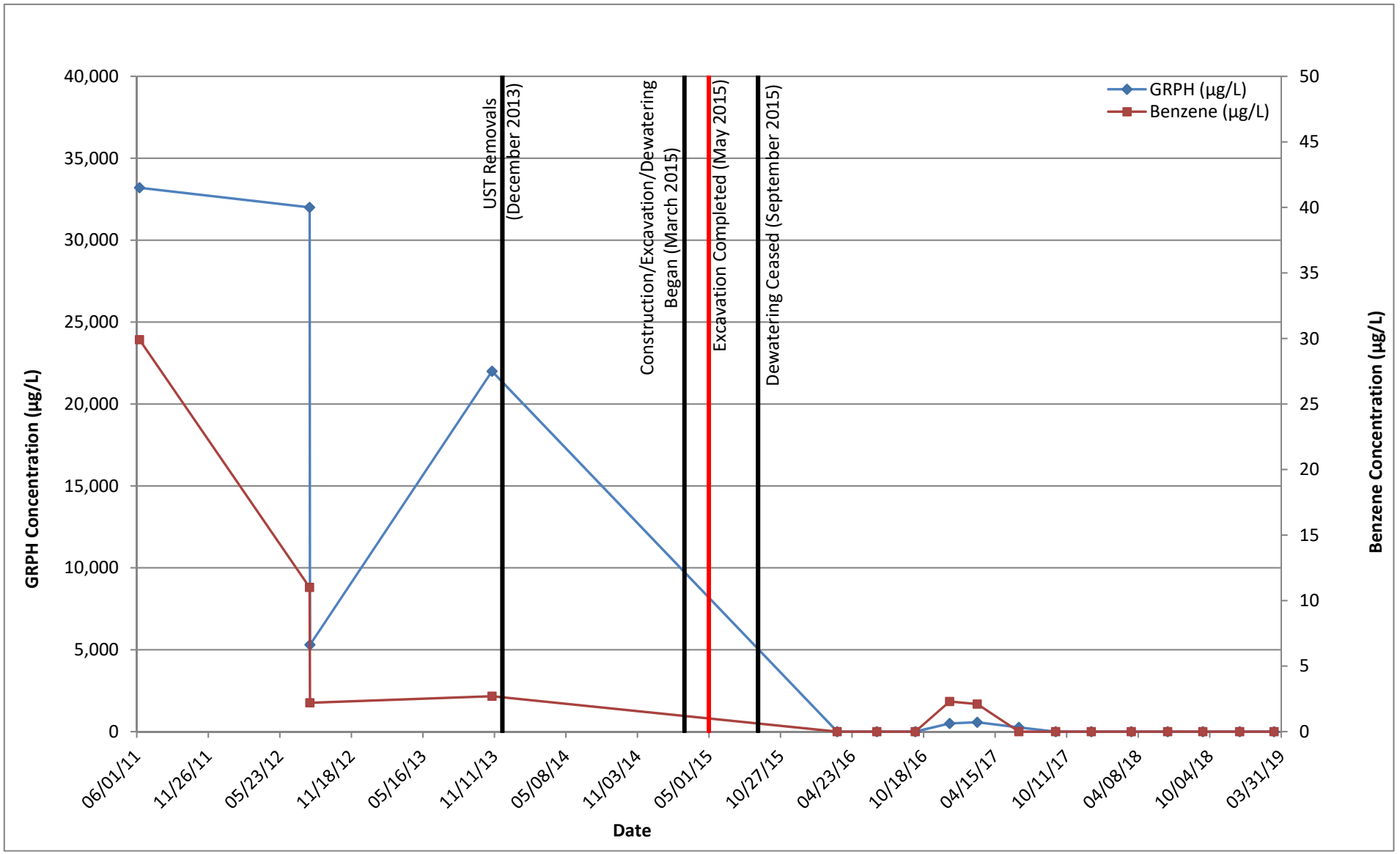
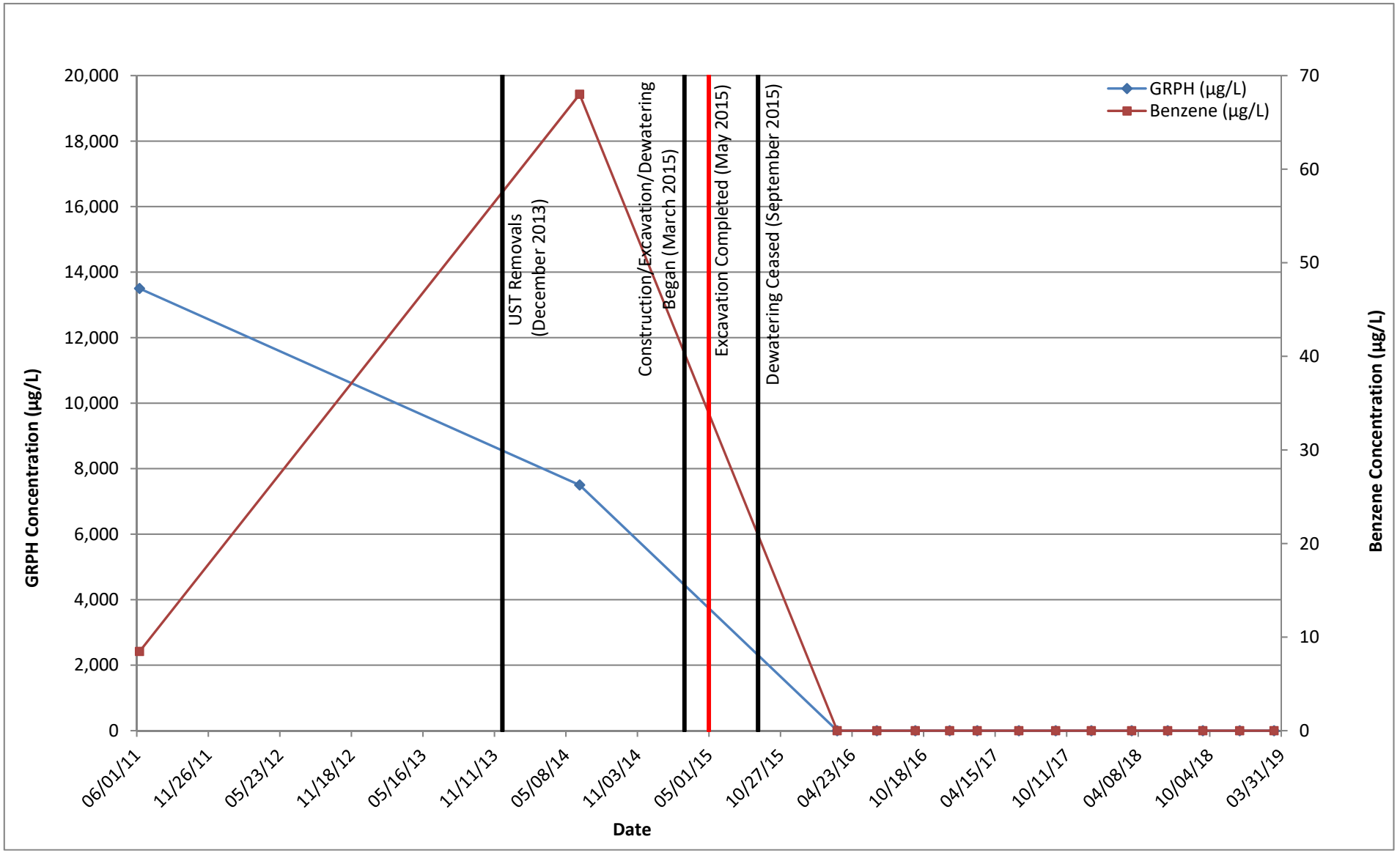


Chart 4
GRPH and Benzene Concentrations - MW-3/MW108
SKS Shell Station Site
3901 Southwest Alaska Street
Seattle, Washington



SoundEarth Strategies

Chart 5
GRPH and Benzene Concentrations - RW03
SKS Shell Station
3501 SW Alaskan Street
Seattle, Washington

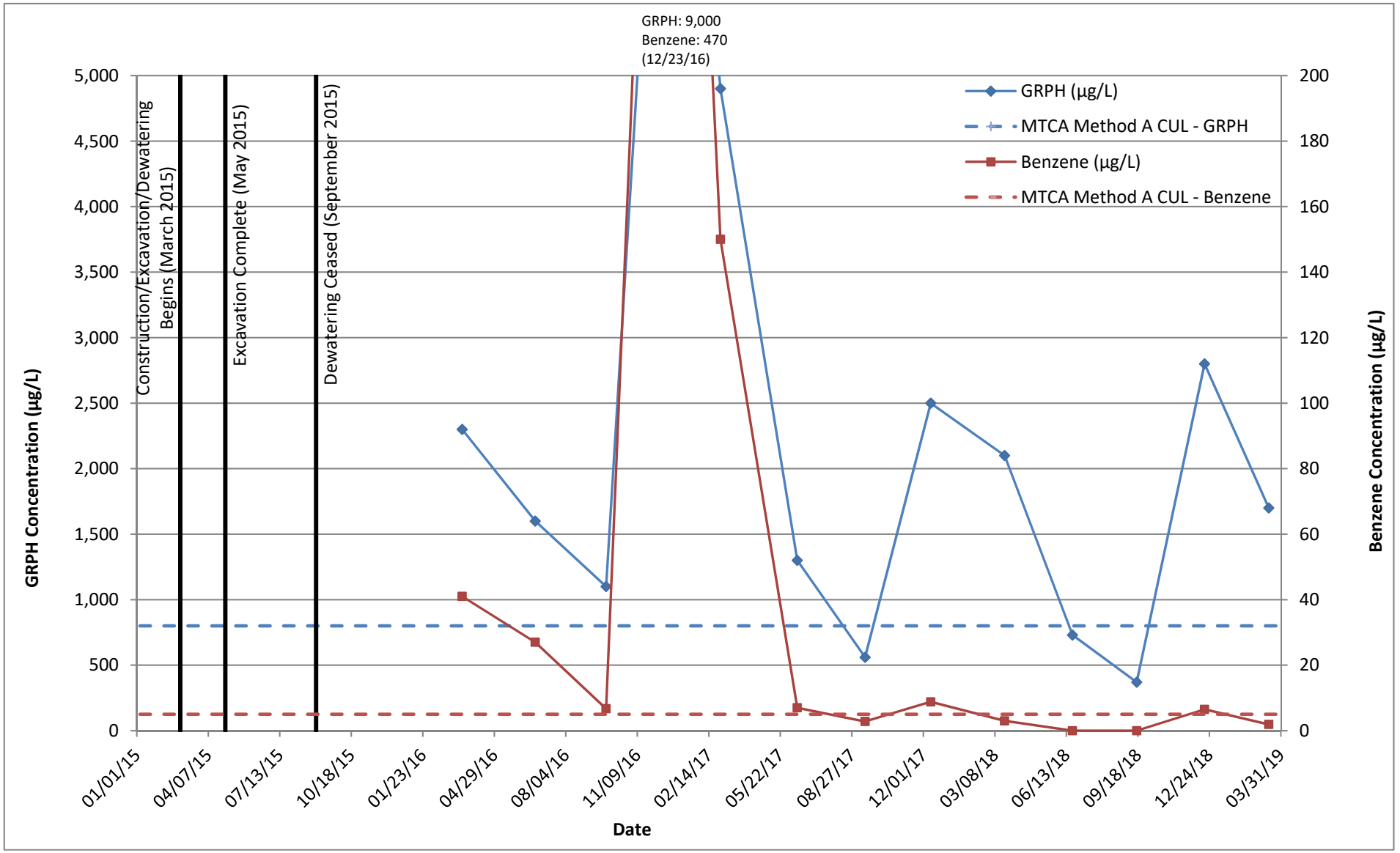
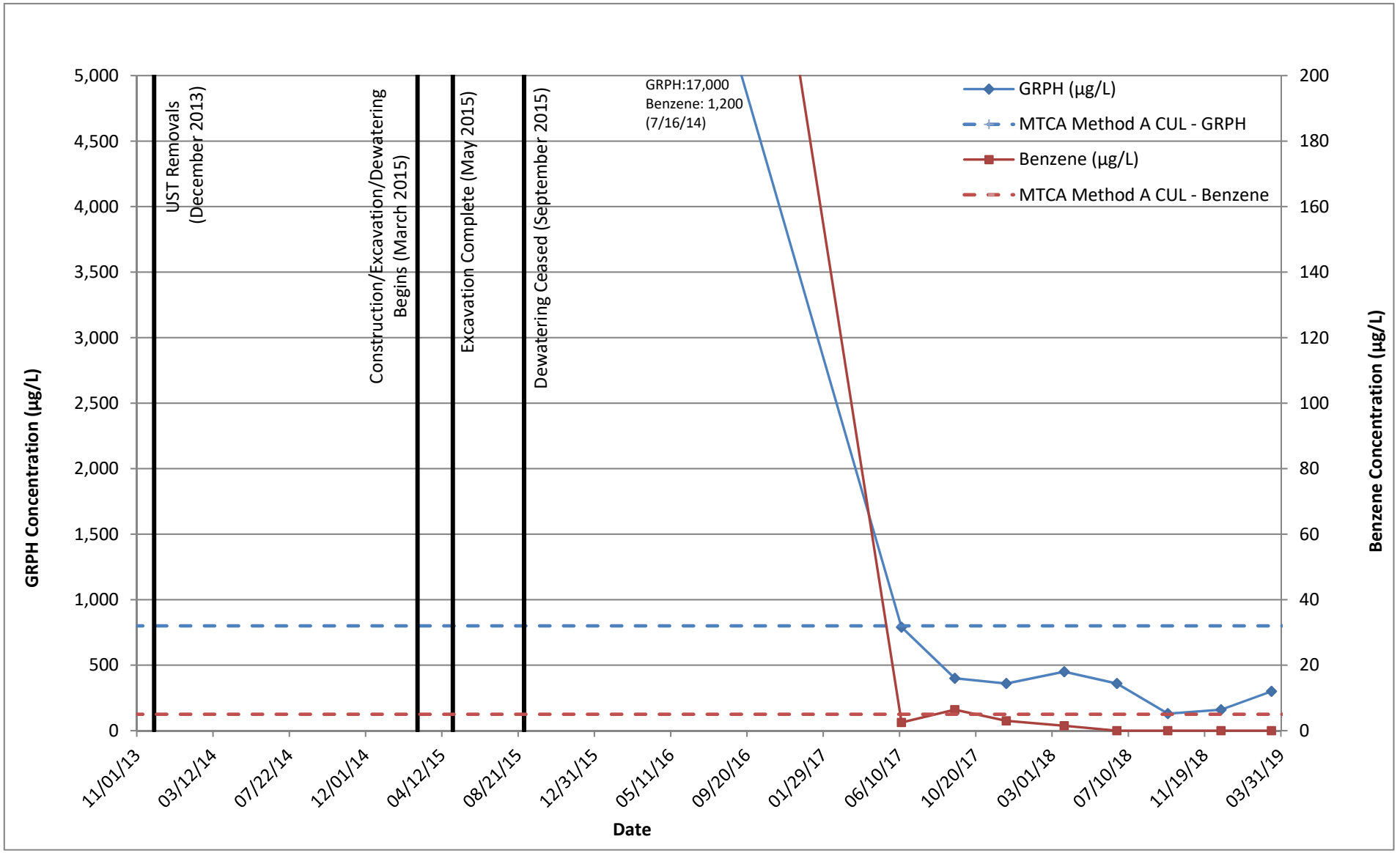


Chart 6
GRPH and Benzene Concentrations - RW04
SKS Shell Station
3501 SW Alaskan Street
Seattle, Washington



ATTACHMENT A
BORING LOG

SoundEarth Strategies

Project:	SKS Shell Station Site
Project Number:	0914-001
Logged by:	KJL
Date Started:	03/01/19
Surface Conditions:	Concrete
Location N/S:	5' N of sidewalk curb
Location E/W:	26' E of MW111
Reviewed by:	CJT
Date Completed:	03/01/19

BORING LOG | MW112

Site Address: 3901 Southwest Alaska Street, Seattle, Washington

Water Depth At Time of Drilling 29.5 feet bgs

Water Depth After Completion 31.35 feet bgs

Depth (feet bgs)	Interval	Blow Count	% Recovery	PID (ppm)	Sample ID	Sample Analyzed	Group Symbol	Graphic	Lithologic Description (ASTM texture, density, color, odor, moisture, supplemental descriptors, estimated grain size distribution) Field-estimated grain size distribution by volume (% Fines - % Sand - % Gravel)	Well Detail/ Water Depth
0									**0.0-1.0 feet bgs: Approximately 1 foot of concrete at surface. Air knifed to 7.5 feet below ground surface.**	
15		**5 24 35**	**100**	0.4	MW112-15		**SP-SM**		**15.0-16.5 feet bgs: Poorly graded fine to medium SAND with silt and gravel, medium dense, brown, no hydrocarbon odor, moist (10-80-10).**	

Drilling Co./Driller:	AEC / Dusty		**Well/Auger Diameter:**	2 / 8.25	inches
Drilling Equipment:	Hollow-stem auger		**Well Screened Interval:**	26 - 36	feet bgs
Sampler Type:	Dames & Moore		**Screen Slot Size:**	0.010	inches
Hammer Type/Weight:	Auto / 140	lbs	**Filter Pack Used:**	Sand	
Total Boring Depth:	36.5	feet bgs	**Surface Seal:**	Cement	
Total Well Depth:	36	feet bgs	**Annular Seal:**	Bentonite chips	
State Well ID No.:	BLN - 767		**Monument Type:**	Flush mount	

Notes/Comments:

SoundEarth Strategies

Project:	SKS Shell Station Site
Project Number:	0914-001
Logged by:	KJL
Date Started:	03/01/19
Surface Conditions:	Concrete
Location N/S:	5' N of sidewalk curb
Location E/W:	26' E of MW111
Reviewed by:	CJT
Date Completed:	03/01/19

BORING LOG | MW112

Site Address: 3901 Southwest Alaska Street, Seattle, Washington

Water Depth At Time of Drilling 29.5 feet bgs

Water Depth After Completion 31.35 feet bgs

Depth (feet bgs)	Interval	Blow Count	% Recovery	PID (ppm)	Sample ID	Sample Analyzed	Group Symbol	Graphic	Lithologic Description (ASTM texture, density, color, odor, moisture, supplemental descriptors, estimated grain size distribution) Field-estimated grain size distribution by volume (% Fines - % Sand - % Gravel)	Well Detail/ Water Depth
		21 34 37	100	0.6	MW112-20		SP-SM		**20.0-21.5 feet bgs: Poorly graded fine SAND with silt, trace gravel, medium dense, brown, no hydrocarbon odor, moist (10-85-5).**	
25		22 48 42	100	1.2	MW112-25		SP		**25.0-26.5 feet bgs: Poorly graded fine SAND, trace silt, dense, light brown, no hydrocarbon odor, moist (5-95-0).**	
30		19 23 29	100	0.7	MW112-30		SP		**30.0-31.5 feet bgs: Poorly graded fine SAND, trace silt, medium dense, light brown, no hydrocarbon odor, wet (5-95-0).**	
35		19 22 31	100	0.8	MW112-36		SP		**35.0-36.5 feet bgs: Poorly graded fine SAND, trace silt, medium dense, light brown, no hydrocarbon odor, wet (5-95-0).**	
40									**End of boring at 36.5 feet bgs. Complete boring as groundwater monitoring well MW112.**	

Drilling Co./Driller:	AEC / Dusty		**Well/Auger Diameter:**	2 / 8.25	inches
Drilling Equipment:	Hollow-stem auger		**Well Screened Interval:**	26 - 36	feet bgs
Sampler Type:	Dames & Moore		**Screen Slot Size:**	0.010	inches
Hammer Type/Weight:	Auto / 140	lbs	**Filter Pack Used:**	Sand	
Total Boring Depth:	36.5	feet bgs	**Surface Seal:**	Cement	
Total Well Depth:	36	feet bgs	**Annular Seal:**	Bentonite chips	
State Well ID No.:	BLN - 767		**Monument Type:**	Flush mount	

Notes/Comments:

ATTACHMENT B
LABORATORY ANALYTICAL REPORT

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

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Seattle, WA 98119-2029
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fbi@isomedia.com
www.friedmanandbruya.com

March 20, 2019

Rob Roberts, Project Manager
SoundEarth Strategies
2811 Fairview Ave. East, Suite 2000
Seattle, WA 98102

Dear Mr Roberts:

Included are the results from the testing of material submitted on March 15, 2019 from the SOU_ 0914-001_ 20190315, F&BI 903299 project. There are 8 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you should have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Jonathan Loeffler, Clare Tochilin
SOU0320R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on March 15, 2019 by Friedman & Bruya, Inc. from the SoundEarth Strategies SOU_ 0914-001_ 20190315, F&BI 903299 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	SoundEarth Strategies
903299 -01	MW105-20190314
903299 -02	MW108-20190314
903299 -03	MW102-20190314
903299 -04	MW113-20190314
903299 -05	MW112-20190314
903299 -06	MW109-20190314
903299 -07	MW111-20190314
903299 -08	MW110-20190314
903299 -09	MW101-20190314
903299 -10	MW104-20190314
903299 -11	RW05-20190314
903299 -12	MW99-20190314
903299 -13	RW04-20190315
903299 -14	RW03-20190315

All quality control requirements were acceptable.

Date of Report: 03/20/19
Date Received: 03/15/19
Project: SOU_ 0914-001_ 20190315, F&BI 903299
Date Extracted: 03/18/19
Date Analyzed: 03/18/19

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 52-124)
MW105-20190314 903299-01	<1	<1	<1	<3	<100	83
MW108-20190314 903299-02	<1	<1	<1	<3	<100	86
MW102-20190314 903299-03	<1	<1	<1	<3	<100	87
MW113-20190314 903299-04	<1	<1	<1	<3	<100	86
MW112-20190314 903299-05	<1	<1	<1	<3	<100	86
MW109-20190314 903299-06	<1	<1	<1	<3	140	84
MW111-20190314 903299-07	<1	<1	<1	<3	<100	85
MW110-20190314 903299-08	<1	<1	<1	<3	<100	84
MW101-20190314 903299-09	<1	<1	<1	<3	<100	85
MW104-20190314 903299-10	<1	<1	<1	<3	170	81

Date of Report: 03/20/19
Date Received: 03/15/19
Project: SOU_ 0914-001_ 20190315, F&BI 903299
Date Extracted: 03/18/19
Date Analyzed: 03/18/19

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 52-124)
RW05-20190314 903299-11	<1	<1	<1	<3	<100	84
MW99-20190314 903299-12	<1	<1	1.4	<3	170	82
RW04-20190315 903299-13	<1	<1	1.9	<3	300	82
RW03-20190315 903299-14	1.9	1.7	46	140	1,700	88
Method Blank 09-494 MB	<1	<1	<1	<3	<100	86

Date of Report: 03/20/19
Date Received: 03/15/19
Project: SOU_ 0914-001_ 20190315, F&BI 903299
Date Extracted: 03/18/19
Date Analyzed: 03/18/19

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 47-140)
MW105-20190314 903299-01	<50	<250	87
MW108-20190314 903299-02 1/1.4	680 x	<350	100
MW102-20190314 903299-03	<50	<250	96
MW113-20190314 903299-04	79 x	<250	92
MW112-20190314 903299-05	58 x	<250	70
MW109-20190314 903299-06 1/1.2	<60	<300	88
MW111-20190314 903299-07	83 x	<250	91
MW110-20190314 903299-08 1/1.2	74 x	<300	93
MW101-20190314 903299-09	<50	<250	95
MW104-20190314 903299-10 1/1.2	690 x	<300	95

Date of Report: 03/20/19
Date Received: 03/15/19
Project: SOU_ 0914-001_ 20190315, F&BI 903299
Date Extracted: 03/18/19
Date Analyzed: 03/18/19

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 47-140)
RW05-20190314 903299-11	120 x	<250	84
MW99-20190314 903299-12 1/1.2	670 x	<300	88
RW04-20190315 903299-13	310 x	<250	92
RW03-20190315 903299-14	730 x	<250	90
Method Blank 09-606 MB	<50	<250	108

Date of Report: 03/20/19
Date Received: 03/15/19
Project: SOU_ 0914-001_ 20190315, F&BI 903299

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 903299-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	ug/L (ppb)	<1	<1	nm
Toluene	ug/L (ppb)	<1	<1	nm
Ethylbenzene	ug/L (ppb)	<1	<1	nm
Xylenes	ug/L (ppb)	<3	<3	nm
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/L (ppb)	50	98	65-118
Toluene	ug/L (ppb)	50	101	72-122
Ethylbenzene	ug/L (ppb)	50	95	73-126
Xylenes	ug/L (ppb)	150	100	74-118
Gasoline	ug/L (ppb)	1,000	93	69-134

Date of Report: 03/20/19
Date Received: 03/15/19
Project: SOU_ 0914-001_ 20190315, F&BI 903299

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	ug/L (ppb)	2,500	84	100	61-133	17

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

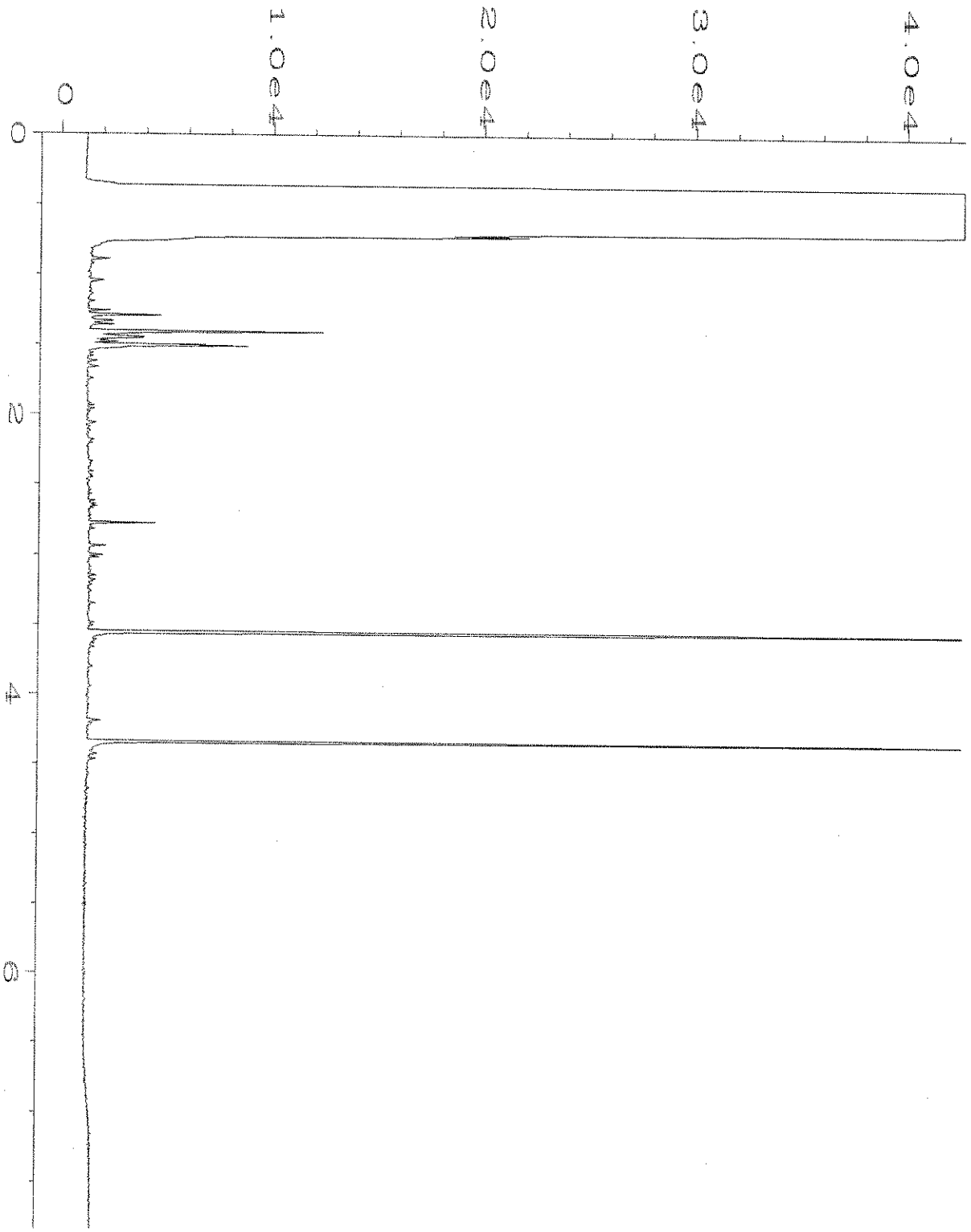
nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

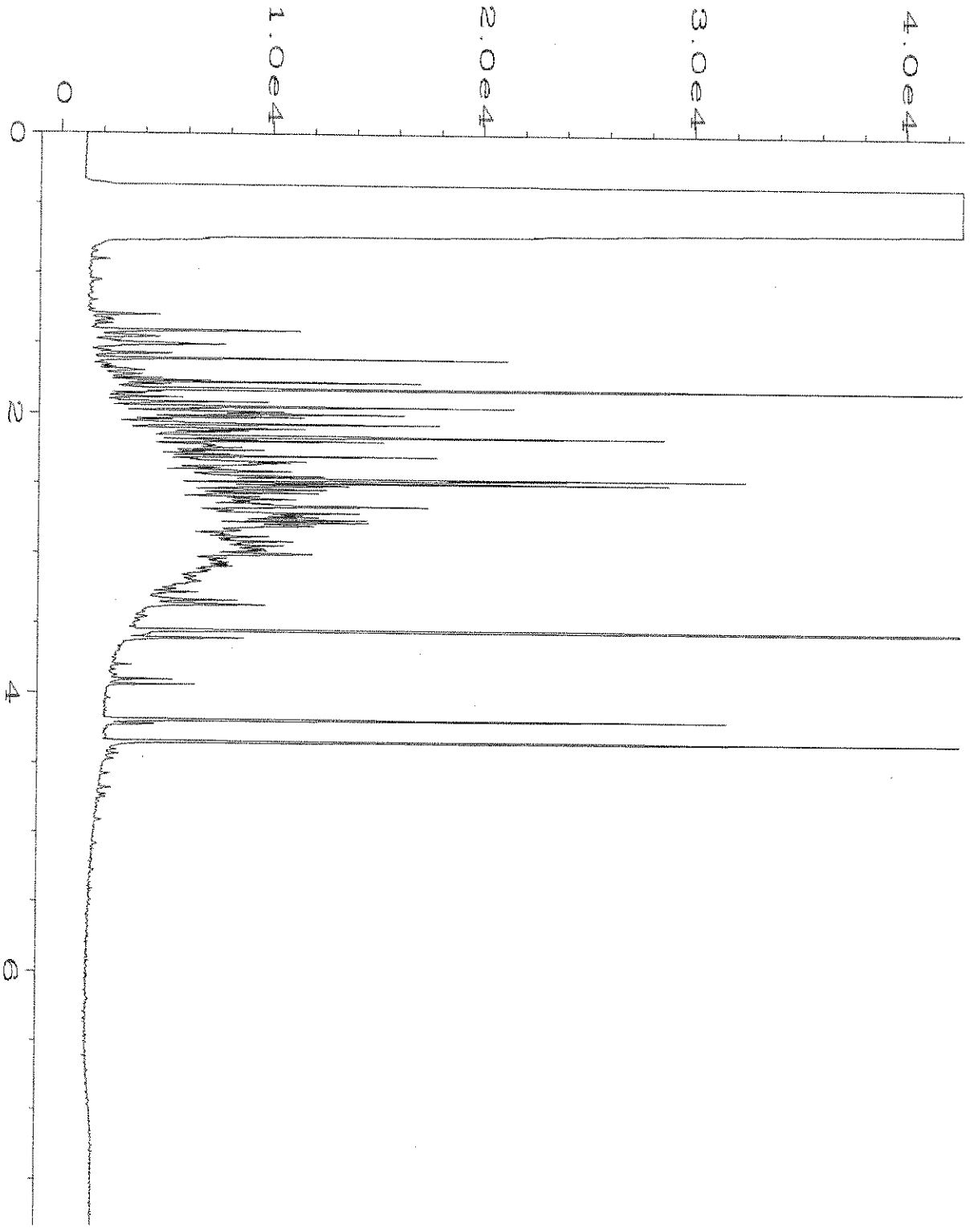
vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.



Data File Name : C:\HPCHEM\4\DATA\03-18-19\009F0301.D
Operator : TL
Instrument : GC#4
Sample Name : 903299-01
Run Time Bar Code:
Acquired on : 18 Mar 19 12:39 PM
Report Created on: 19 Mar 19 08:25 AM

Page Number : 1
Vial Number : 9
Injection Number : 1
Sequence Line : 3
Instrument Method: DX.MTH
Analysis Method : DX.MTH



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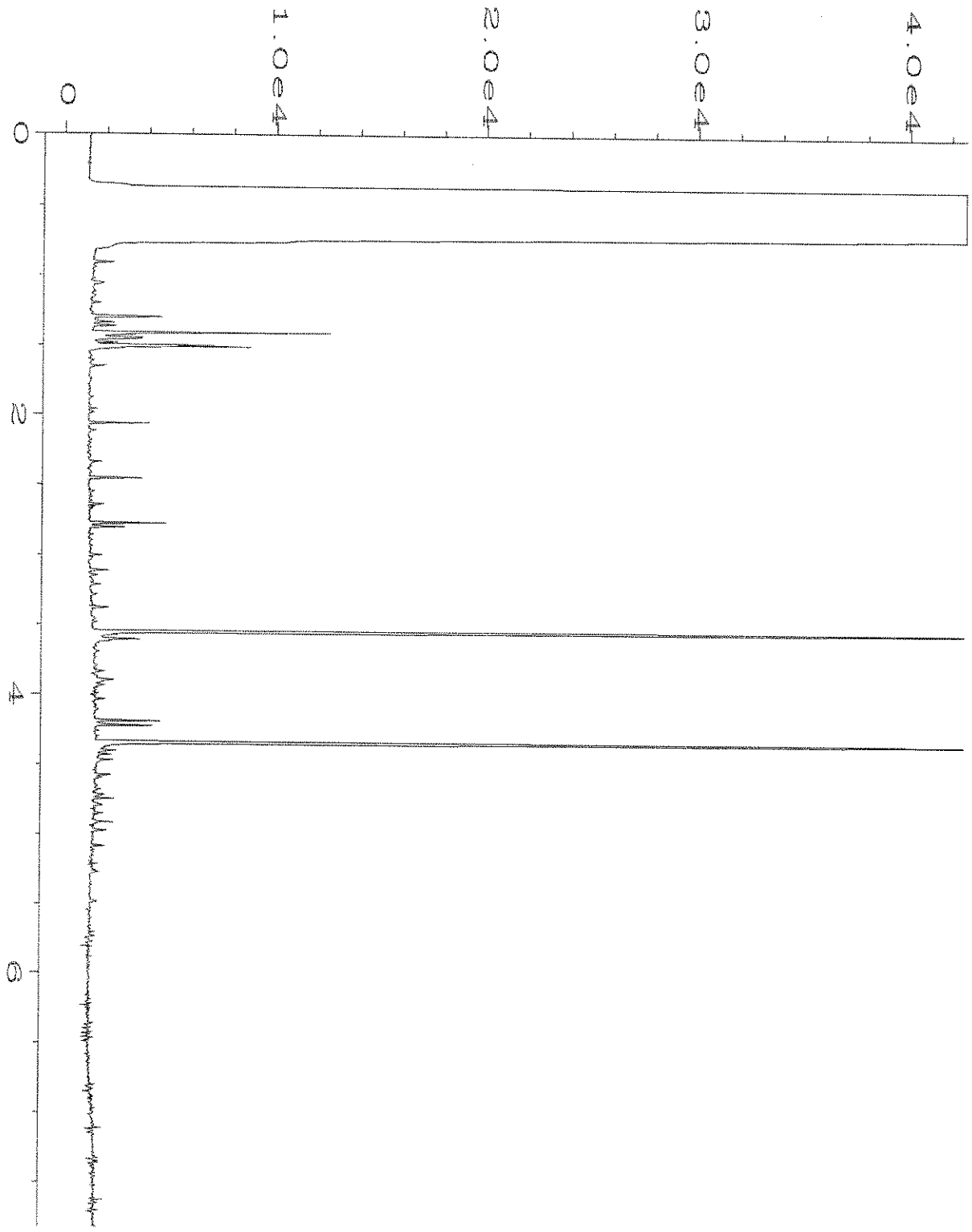
Operator	: TL	Page Number	: 1
Instrument	: GC#4	Vial Number	: 10
Sample Name	: 903299-02	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 3
Acquired on	: 18 Mar 19 12:51 PM	Instrument Method	: DX.MTH
Report Created on	: 19 Mar 19 08:25 AM	Analysis Method	: DX.MTH



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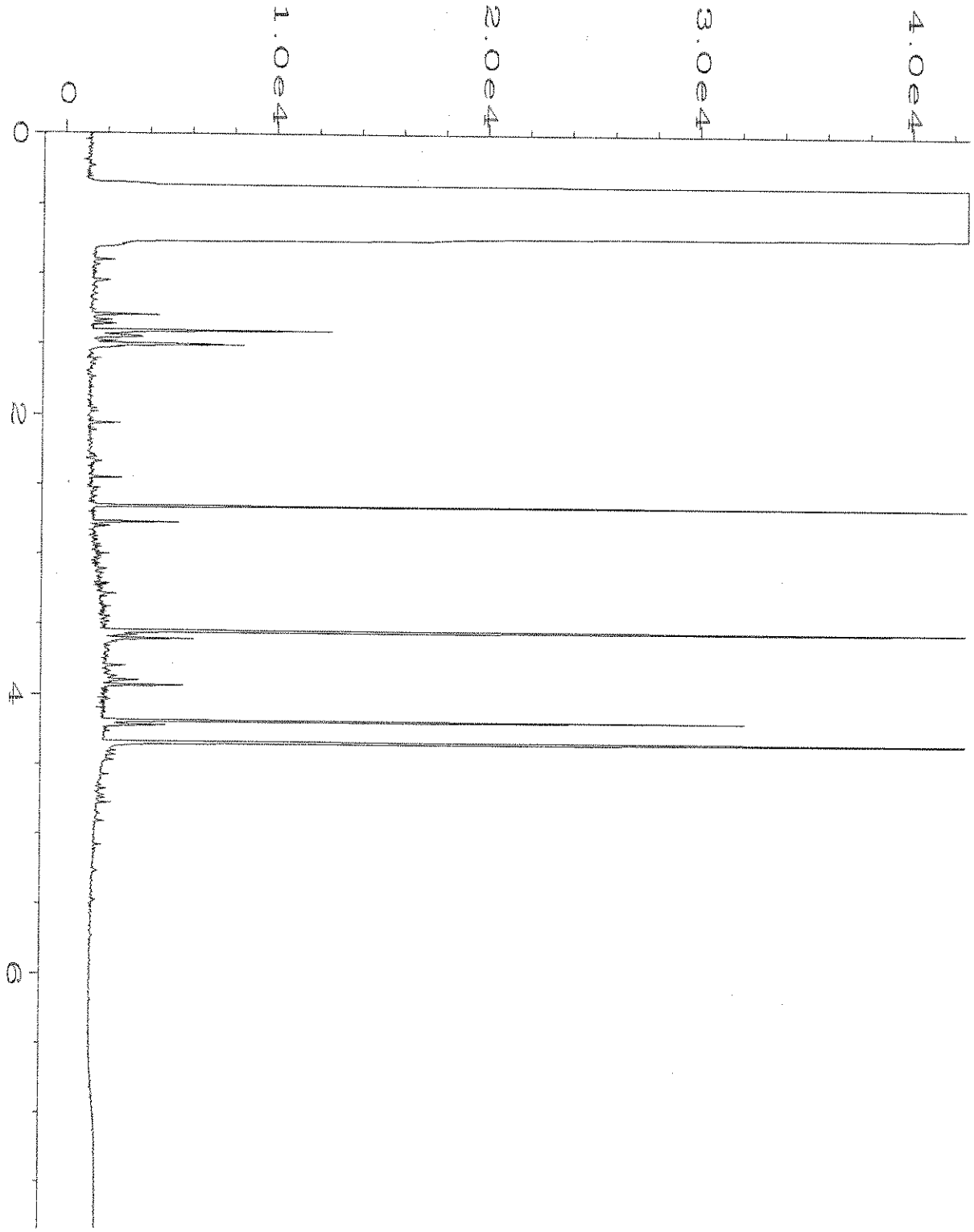
Operator	: TL	Page Number	: 1
Instrument	: GC#4	Vial Number	: 11
Sample Name	: 903299-03	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 3
Acquired on	: 18 Mar 19 01:03 PM	Instrument Method	: DX.MTH
Report Created on	: 19 Mar 19 08:26 AM	Analysis Method	: DX.MTH



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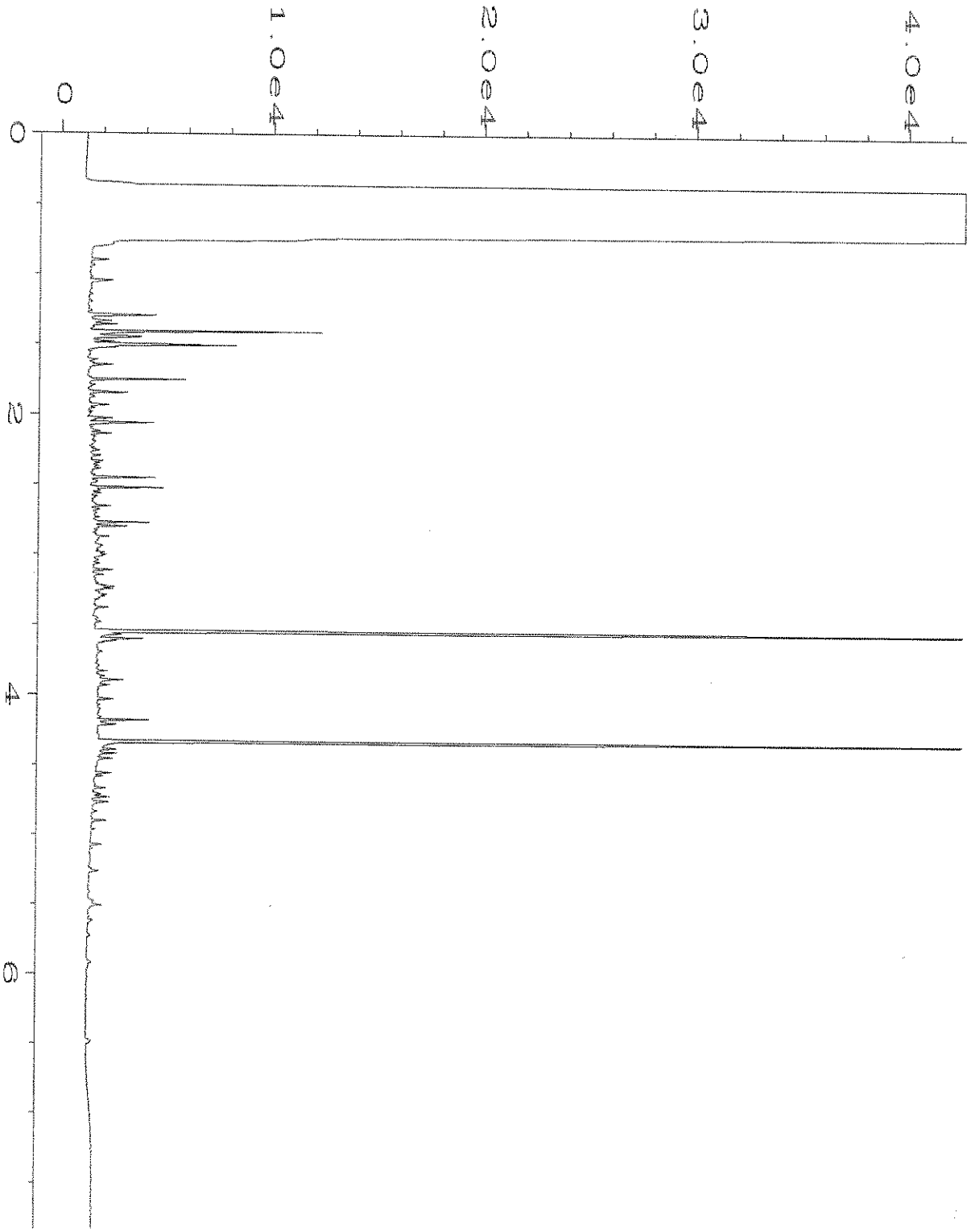
Operator	: TL	Page Number	: 1
Instrument	: GC#4	Vial Number	: 12
Sample Name	: 903299-04	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 3
Acquired on	: 18 Mar 19 01:15 PM	Instrument Method	: DX.MTH
Report Created on	: 19 Mar 19 08:26 AM	Analysis Method	: DX.MTH



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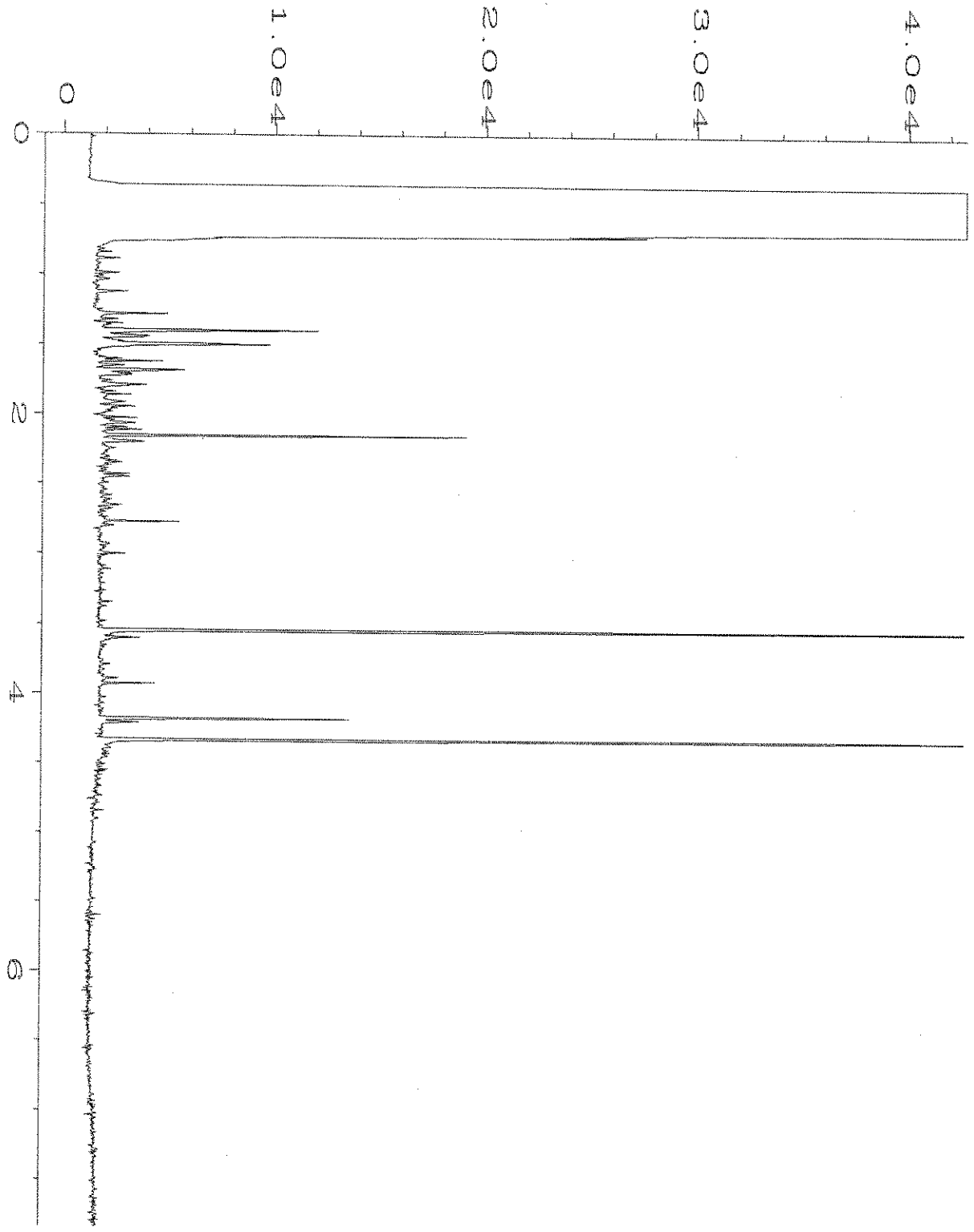
Operator : TL
Instrument : GC#4
Sample Name : 903299-05
Run Time Bar Code:
Acquired on : 18 Mar 19 01:27 PM
Report Created on: 19 Mar 19 08:26 AM

Page Number : 1
Vial Number : 13
Injection Number : 1
Sequence Line : 3
Instrument Method: DX.MTH
Analysis Method : DX.MTH



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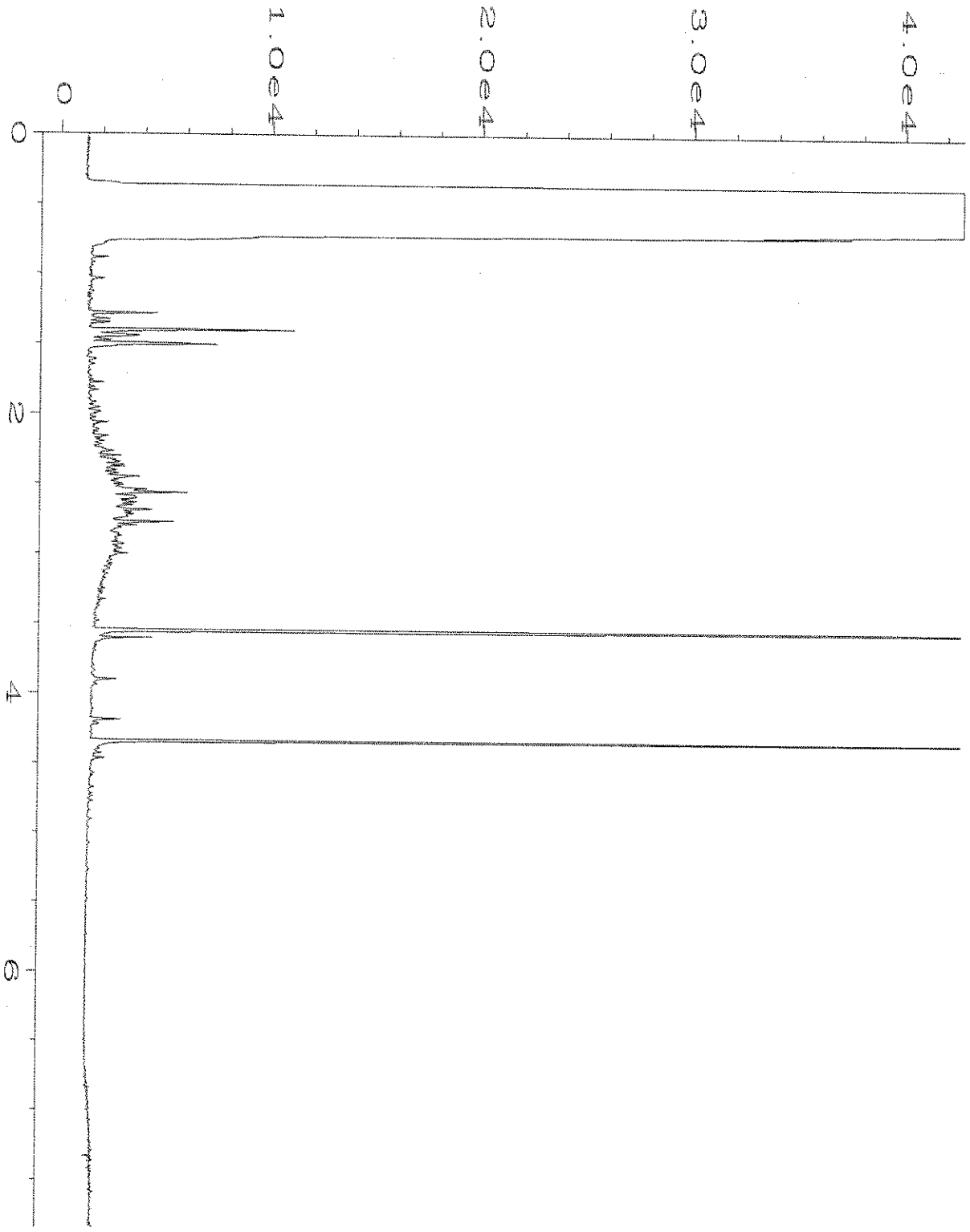
Operator : TL
Instrument : GC#4
Sample Name : 903299-06
Run Time Bar Code:
Acquired on : 18 Mar 19 01:52 PM
Report Created on: 19 Mar 19 08:26 AM

Page Number : 1
Vial Number : 14
Injection Number : 1
Sequence Line : 5
Instrument Method: DX.MTH
Analysis Method : DX.MTH



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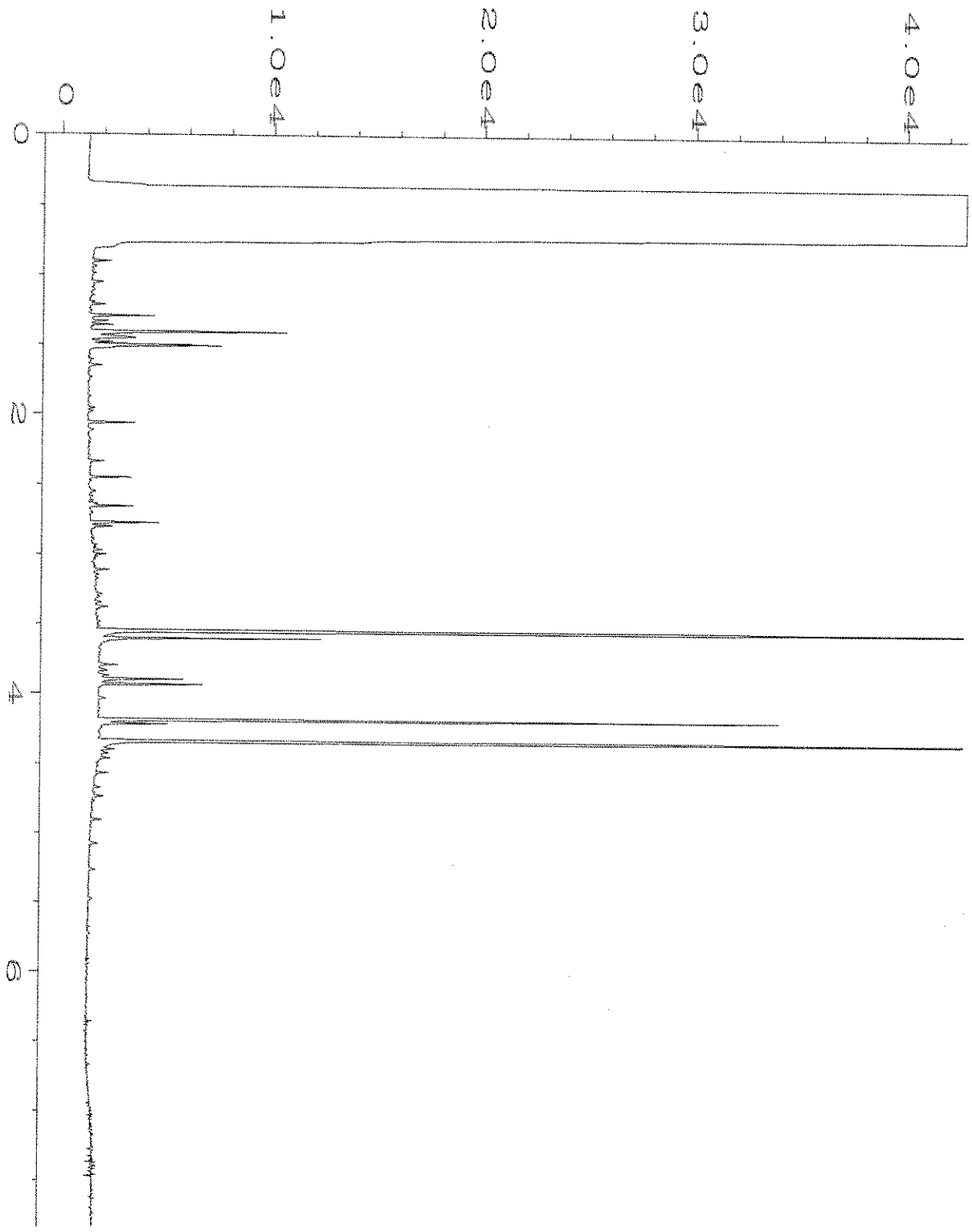
Operator : TL
Instrument : GC#4
Sample Name : 903299-07
Run Time Bar Code:
Acquired on : 18 Mar 19 02:04 PM
Report Created on: 19 Mar 19 08:26 AM

Page Number : 1
Vial Number : 15
Injection Number : 1
Sequence Line : 5
Instrument Method: DX.MTH
Analysis Method : DX.MTH



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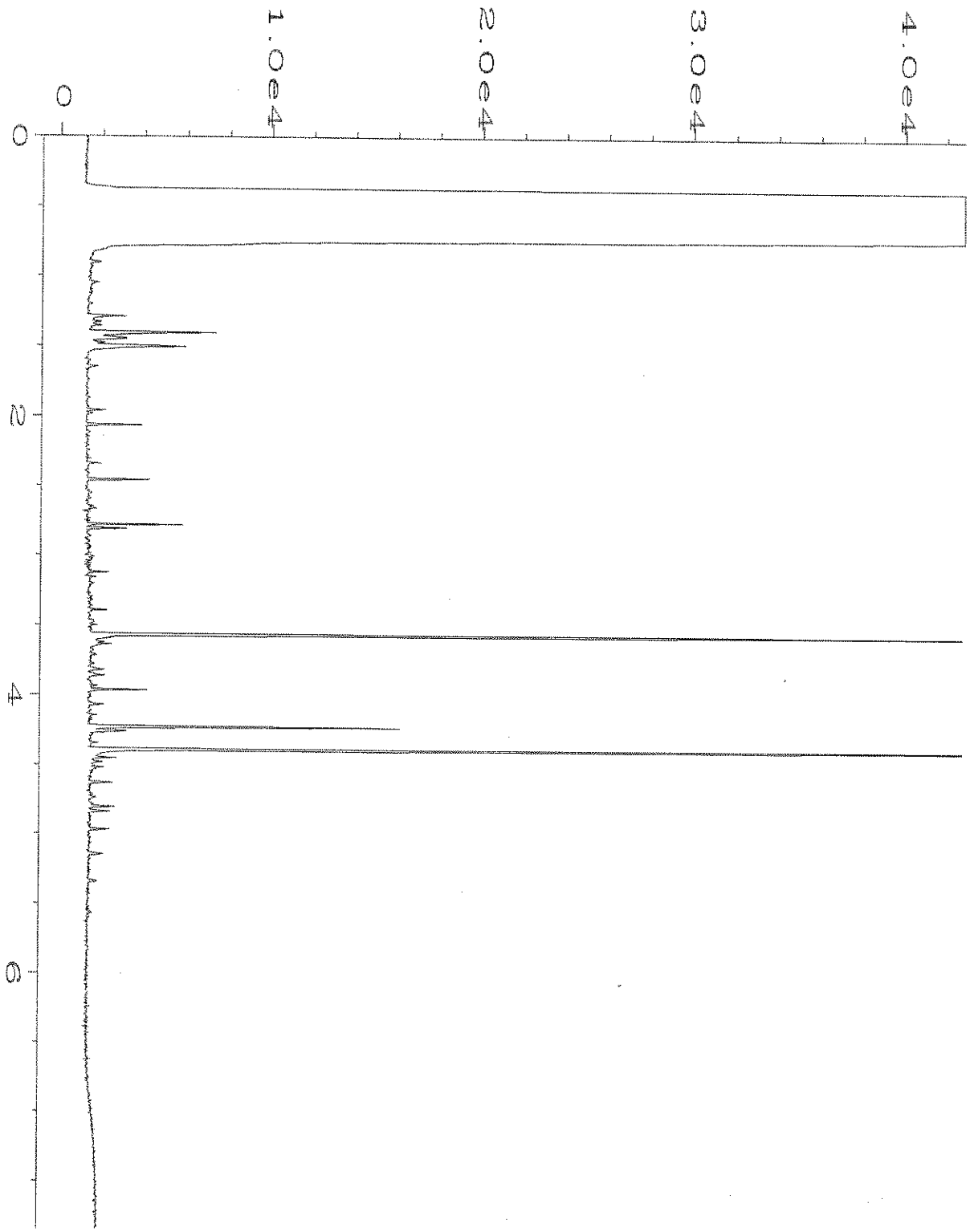
Operator : TL
Instrument : GC#4
Sample Name : 903299-08
Run Time Bar Code:
Acquired on : 18 Mar 19 02:16 PM
Report Created on: 19 Mar 19 08:26 AM

Page Number : 1
Vial Number : 16
Injection Number : 1
Sequence Line : 5
Instrument Method: DX.MTH
Analysis Method : DX.MTH



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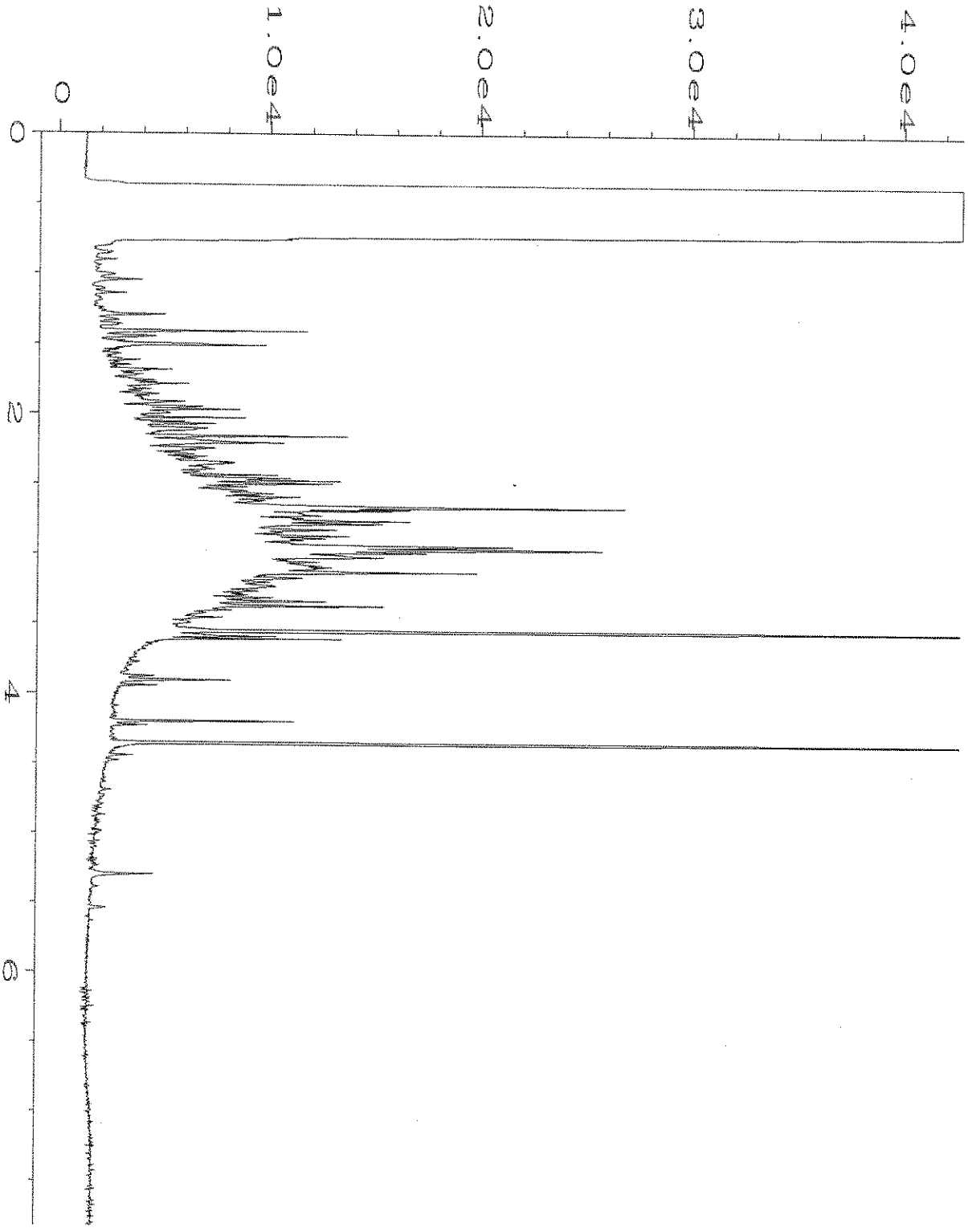
Operator : TL
Instrument : GC#4
Sample Name : 903299-09
Run Time Bar Code:
Acquired on : 18 Mar 19 03:41 PM
Report Created on: 19 Mar 19 08:26 AM

Page Number : 1
Vial Number : 17
Injection Number : 1
Sequence Line : 7
Instrument Method: DX.MTH
Analysis Method : DX.MTH



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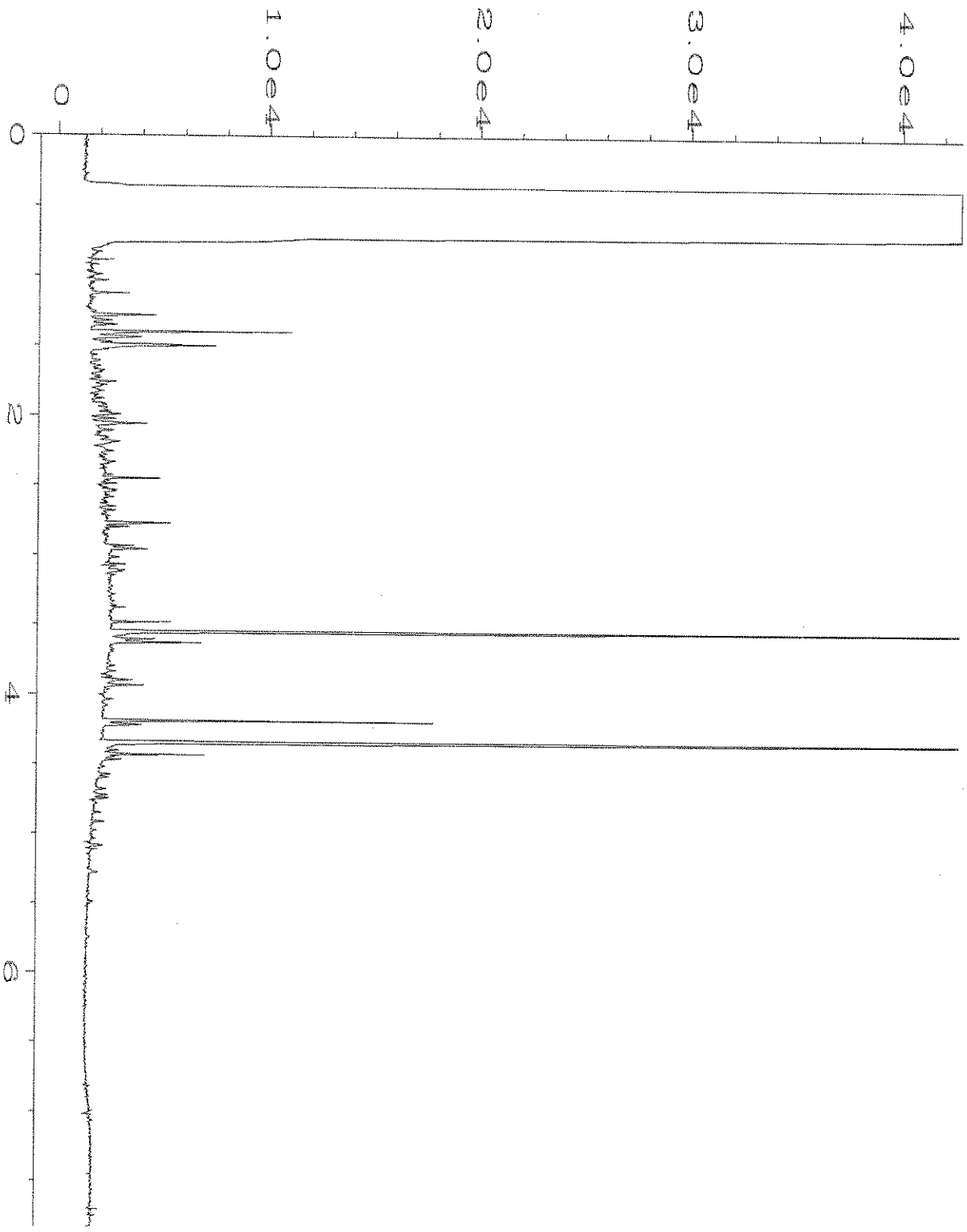
Operator	: TL	Page Number	: 1
Instrument	: GC#4	Vial Number	: 18
Sample Name	: 903299-10	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 7
Acquired on	: 18 Mar 19 03:51 PM	Instrument Method	: DX.MTH
Report Created on	: 19 Mar 19 08:27 AM	Analysis Method	: DX.MTH



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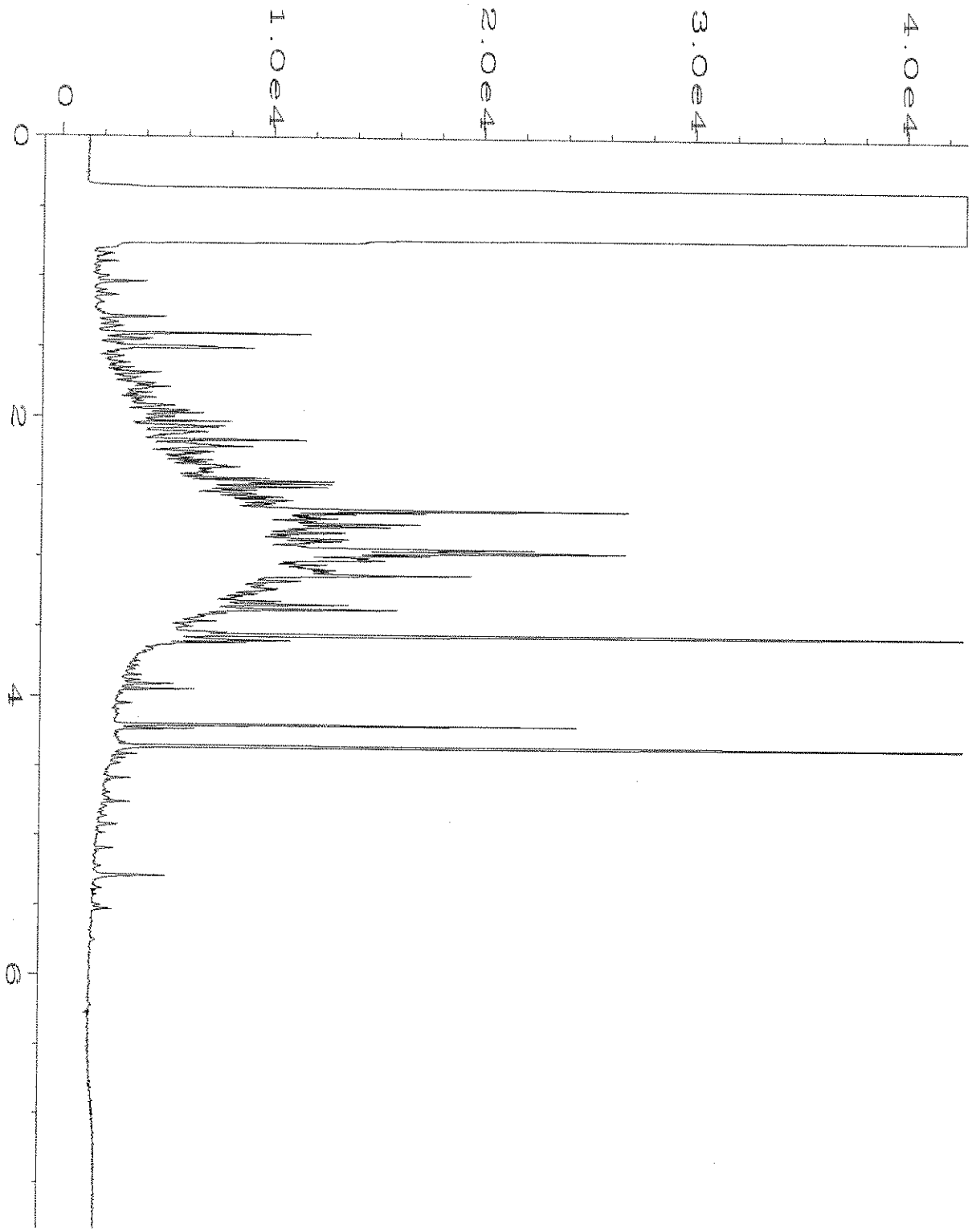
Operator : TL
Instrument : GC#4
Sample Name : 903299-11
Run Time Bar Code:
Acquired on : 18 Mar 19 04:03 PM
Report Created on: 19 Mar 19 08:27 AM

Page Number : 1
Vial Number : 19
Injection Number : 1
Sequence Line : 7
Instrument Method: DX.MTH
Analysis Method : DX.MTH



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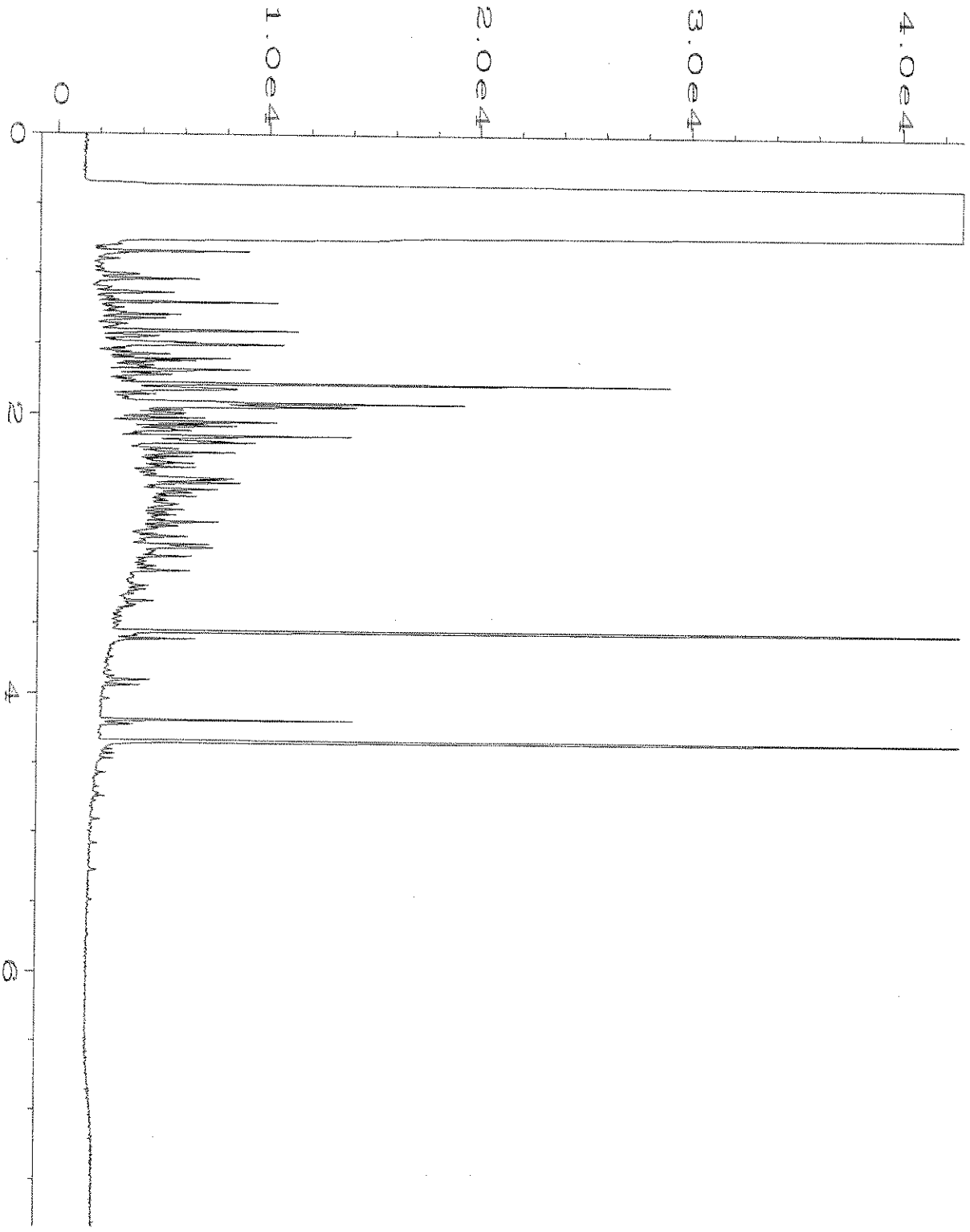
Operator : TL
Instrument : GC#4
Sample Name : 903299-12
Run Time Bar Code:
Acquired on : 18 Mar 19 04:28 PM
Report Created on: 19 Mar 19 08:27 AM

Page Number : 1
Vial Number : 20
Injection Number : 1
Sequence Line : 9
Instrument Method: DX.MTH
Analysis Method : DX.MTH



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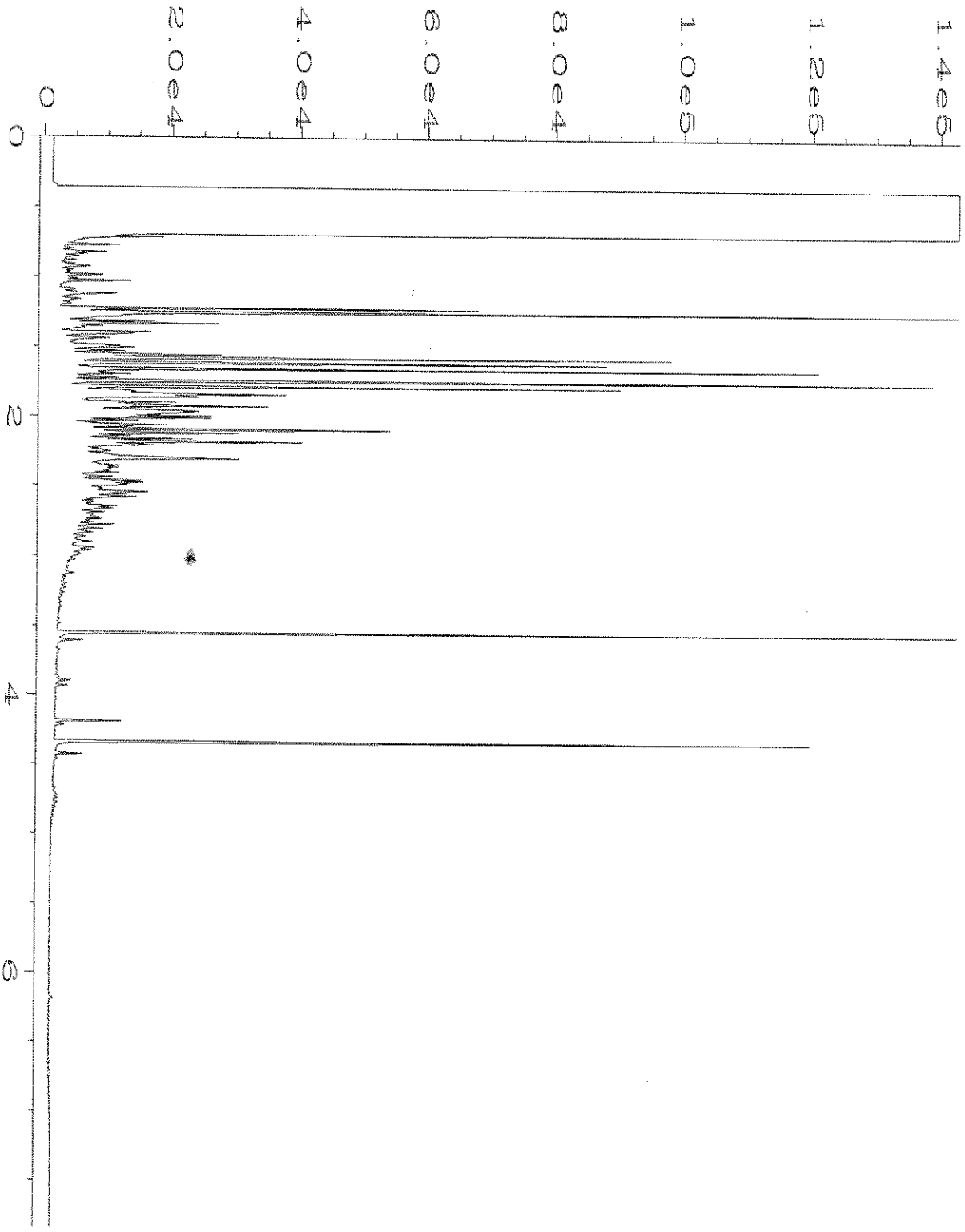
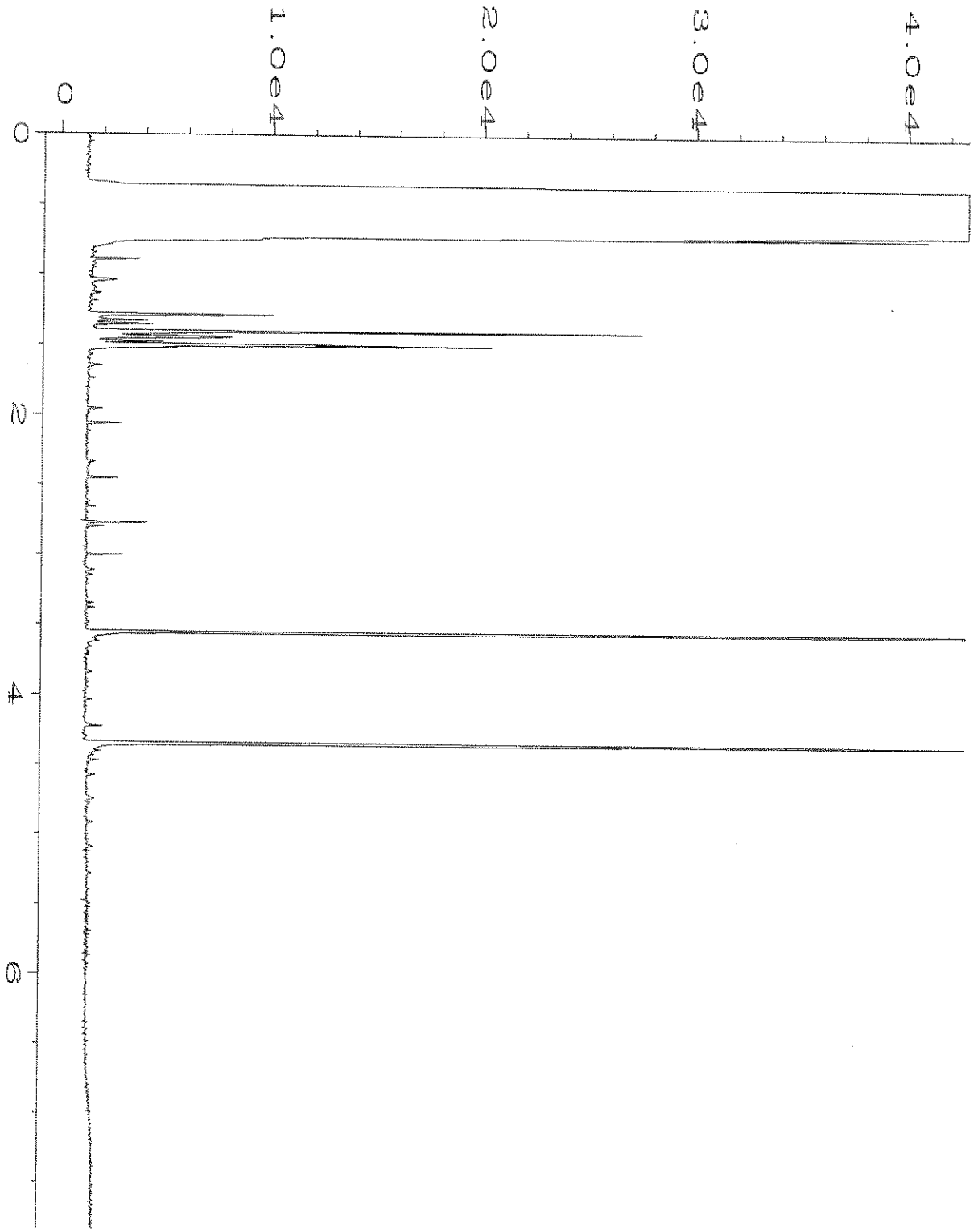
Operator : TL
Instrument : GC#4
Sample Name : 903299-13
Run Time Bar Code:
Acquired on : 18 Mar 19 04:40 PM
Report Created on: 19 Mar 19 08:27 AM

Page Number : 1
Vial Number : 21
Injection Number : 1
Sequence Line : 9
Instrument Method: DX.MTH
Analysis Method : DX.MTH



Data File Name : C:\HPCHEM\4\DATA\03-18-19\022F0901.D
Operator : TL
Instrument : GC#4
Sample Name : 903299-14
Run Time Bar Code:
Acquired on : 18 Mar 19 04:52 PM
Report Created on: 19 Mar 19 08:27 AM

Page Number : 1
Vial Number : 22
Injection Number : 1
Sequence Line : 9
Instrument Method: DX.MTH
Analysis Method : DX.MTH



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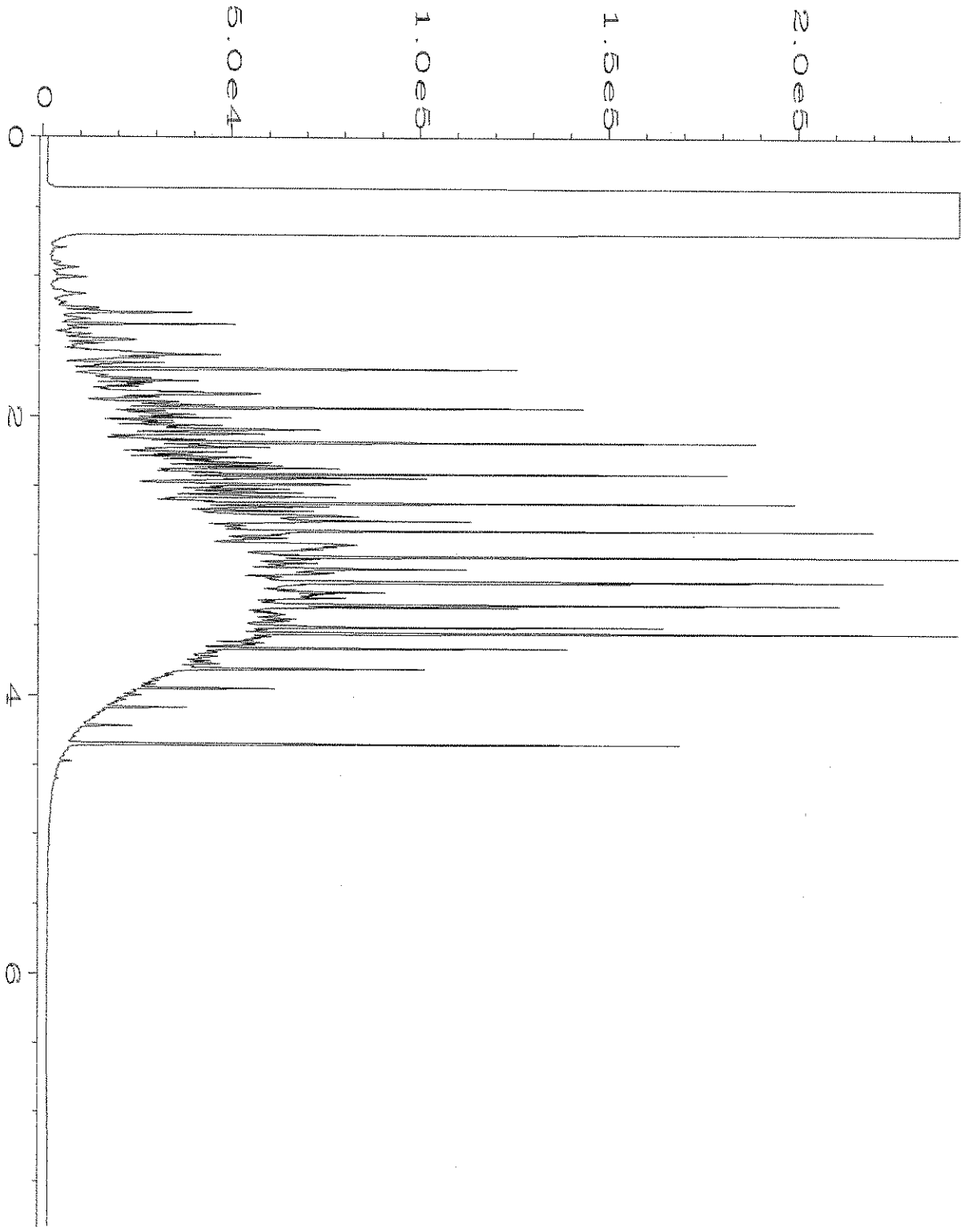
Operator : TL
Instrument : GC#4
Sample Name : 09-606 mb rex
Run Time Bar Code:
Acquired on : 18 Mar 19 04:15 PM
Report Created on: 19 Mar 19 08:28 AM

Page Number : 1
Vial Number : 82
Injection Number : 1
Sequence Line : 8
Instrument Method: DX.MTH
Analysis Method : DX.MTH



Data File Name	: C:\HPCHEM\4\DATA\03-18-19\005F0601.D		
Operator	: TL	Page Number	: 1
Instrument	: GC#4	Vial Number	: 5
Sample Name	: 1000 Dx 56-131C	Injection Number	: 1
Run Time Bar Code:		Sequence Line	: 6
Acquired on	: 18 Mar 19 02:40 PM	Instrument Method	: DX.MTH
Report Created on	: 19 Mar 19 08:28 AM	Analysis Method	: DX.MTH

903299

SAMPLE CHAIN OF CUSTODY

NE 03-15-19

MW4/E04

Page # 1 of 2

Send Report to: Rob Roberts, cc: Jon Loeffler, Clare Tochilin

Company SoundEarth Strategies, Inc.

Address 2811 Fairview Avenue E, Suite 2000

City, State, ZIP Seattle, Washington 98102

Phone # 206-306-1900 Fax # 206-306-1907

SAMPLERS (signature) Sarah Wilto

PROJECT NAME/NO.: SKS SHELL / 0914-001

PO #: 0914-001

REMARKS

TURNAROUND TIME: ~~Standard (2 Weeks)~~ RUSH

Rush charges authorized by:

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

Sample ID	Sample Location	Sample Depth	Lab ID (A-D)	Date Sampled	Time Sampled	Matrix	# of Jars	ANALYSES REQUESTED: NWTPH-Dx	NWTPH-Gx	BTEX by 8021B	CVOCs by 8260C			Notes
MW105-20190314	MW105	–	01	3/14/19	1041	W	4	X	X	X				
MW108-20190314	MW108	–	02		1055			X	X	X				
MW102-20190314	MW102	–	03		1227			X	X	X				
MW113-20190314	MW113	–	04		1248			X	X	X				
MW112-20190314	MW112	–	05		1420			X	X	X				
MW109-20190314	MW109	–	06		1420			X	X	X				
MW111-20190314	MW111	–	07		1510			X	X	X				
MW110-20190314	MW110	–	08		1516			X	X	X				
MW101-20190314	MW101	–	09		1649			X	X	X				
MW104-20190314	MW104	–	10		1625			X	X	X				

Samples received at 4 °C

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

FORMS\COC\COC.DOC

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Clare Tochilin	SoundEarth	3/15/19	1235
Received by:	Nhan Phan	FCBT	3/15/19	1235
Relinquished by:				
Received by:				

903299

SAMPLE CHAIN OF CUSTODY

ME-03-15-19

VW4/504

Page # 2 of 2

Send Report to: Rob Roberts, cc: Jon Loeffler, Clare Tochilin

Company SoundEarth Strategies, Inc.

Address 2811 Fairview Avenue E, Suite 2000

City, State, ZIP Seattle, Washington 98102

Phone # 206-306-1900 Fax # 206-306-1907

SAMPLERS (signature) Sarah White

PROJECT NAME/NO.: SKS SHELL / 0914-001

PO #: 0914-001

REMARKS

TURNAROUND TIME
~~Standard (2 Weeks)~~
RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

Sample ID	Sample Location	Sample Depth	Lab ID	Date Sampled	Time Sampled	Matrix	# of Jars	ANALYSES REQUESTED: NWTPH-Dx	NWTPH-Gx	BTEX by 8021B	CVOCs by 8260C			Notes
RW05-20190314	RW05	—	11	3/14/19	1715	W	4	X	X	X				
MW99-20190314	MW99	—	12	3/14/19	1200	W	4	X	X	X				
RW04-20190315	RW04	—	13	3/15/19	0901	W	4	X	X	X				
RW03-20190315	RW03	—	14	3/15/19	0939	W	4	X	X	X				

CT 3/15/19

Samples received at 4 °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Clare Tochilin	SoundEarth	3/15/19	1235
Received by:	Nhan Phan	FCBI	3/15/19	1235
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

FORMS\COC\COC.DOC

ATTACHMENT C
DATA VALIDATION REPORT

DATA VALIDATION REPORT

SKS SHELL
First Quarter 2019

Prepared for:
Sound Earth Strategies, Inc.
2811 Fairview Ave East, Suite 2000
Seattle, Washington 98102

Prepared by:
Validata, LLC
3346 NE 178th St.
Lake Forest Park, Washington 98155

PROJECT NARRATIVE

Data Validation

This report summarizes the results of the summary level validation (Stage 2A) performed on water samples for the SKS Shell sampling project. A complete list of samples is provided in the Sample Index. Samples were analyzed by Friedman & Bruya, Inc. laboratory, Seattle, Washington. The analytical methods are listed below:

Sample Index

ANALYSIS	METHOD	Reviewer
BTEX, TPH as Gasoline Range	SW8021B/NWTPH-Gx	C. Jensen
Total Petroleum Hydrocarbons – Diesel Range, Motor Oil	NWTPH-Dx	C. Jensen

The data were reviewed using guidance and quality control criteria documented in the analytical methods; *USEPA National Functional Guidelines for Organic Data Review* (EPA, 1999 & 2008).

The goal of data validation is to assign data assessment qualifiers for assistance in data interpretation. Results assigned as estimated (J or UJ), data may be used for site evaluation and risk assessment purposes but reasons for data qualification should be taken into consideration when interpreting sample concentrations. For results assigned an R, the data are rejected and should not be used for site evaluation purposes. Unqualified data implies the data meet the data quality objectives as stated in the documents and methods referenced above. A summary of the data qualifiers used in validation are included in Appendix A. The summary of Qualified Data are provided in Appendix B. All validation worksheets are provided in Appendix C.

SAMPLE INDEX

SDG	Sample ID	Lab Sample ID	BTEX	NWTPH-Gx	NWTPH-Dx
903299	MW105-20190314	903299-01	X	X	X
903299	MW102-20190314	903299-03	X	X	X
903299	MW101-20190314	903299-09	X	X	X
903299	RW03-20190315	903299-14	X	X	X
903299	RW04-20190315	903299-13	X	X	X
903299	RW05-20190314	903299-11	X	X	X
903299	MW104-20190314	903299-10 1/1.2	X	X	X
903299	MW99-20190314	903299-12 1/1.2	X	X	X
903299	MW113-20190314	903299-04	X	X	X
903299	MW108-20190314	903299-02 1/1.4	X	X	X
903299	MW109-20190314	903299-06 1/1.2	X	X	X
903299	MW110-20190314	903299-08	X	X	X
903299	MW112-20190314	903299-05	X	X	X
903299	MW111-20190314	903299-07	X	X	X

DATA VALIDATION REPORT

Volatile Organic Compounds - Method SW8021B – Benzene, Toluene, Ethylbenzene, Xylenes

This report documents the review of analytical data from the analyses of water samples and the associated laboratory and field quality control (QC) samples. Friedman & Bruya, Inc. laboratory, Seattle, Washington. Refer to the Sample Index for a complete list of samples.

SDG	NUMBER OF SAMPLES	VALIDATION LEVEL
903299	14	STAGE 2A

DATA PACKAGE COMPLETENESS

The laboratory submitted all required deliverables for a Stage 2A review. The laboratory followed adequate corrective action processes and all anomalies were discussed in the case narrative.

HARDCOPY VERIFICATION

Sample IDs and results reported in the data summary spreadsheet were verified (10% verification) by comparing the spreadsheet with the laboratory data package. Ten percent (10%) of the laboratory QC results were also verified.

TECHNICAL DATA VALIDATION

The QC requirements that were reviewed are listed below.

Sample Receipt, Preservation, and Holding Times	Matrix Spikes/Matrix Spike Duplicates (MS/MSD)
Laboratory Blanks	Field Duplicates
Field Blanks	Target Analyte List
Surrogate Compounds	Reporting Limits
Laboratory Control Samples (LCS)	Reported Results

Sample Receipt, Preservation, and Holding Times

The validation guidance documents state that the cooler temperatures should be within an advisory temperature range of 0° to 6°C. For volatiles analysis, no action is taken if the cooler temperature is<10°C. If the cooler temperature is >10°C, associated sample results are estimated (J/UJ-1). With the exceptions noted below, the laboratory received the sample coolers within the advisory temperature range.

SDG 903299: The cooler temperatures were within the recommended temperature range.

Method and Field Blanks

The method blanks were all reported as undetected for target compounds.

Surrogate Compounds

Surrogates were added to all samples. All surrogate recoveries were within the laboratory control limits.

Matrix Spike/Matrix Spike Duplicates

Matrix spike/matrix spike duplicate (MS/MSD) samples were not specifically analyzed for this dataset. The laboratory demonstrated precision and accuracy

through the analysis of laboratory control and laboratory control sample duplicate samples (LCS/LCSD) with acceptable results.

Field Duplicates

For water samples, the RPD control limit is 20% for results greater than 5x the reporting limit (RL). For results less than 5x the RL, the absolute difference between the sample and replicate must be less than 1x the RL.

SDG 903299: Sample pair MW99-20190314/MW104-20190314 were identified as a field duplicate pair. Field precision was acceptable as summarized below. Field data are not qualified for duplicate precision exceedance.

Sample ID	lab ID	analyte	903299-10	903299-12	RPD
MW99-20190314	**903299-10**	benzene	0	0	0%
MW104-20190314	**903299-12**	toluene	0	0	0%
		ethyl benzene	0	1.4	200% within 1RL
		xylenes	0	0	0%

Target Analyte List

A sampling plan was not available for review.

Reporting Limits

The laboratory reporting limits were sufficiently below the MTCA Method A cleanup levels provided in appendix B.

Reported Results

Reported results were considered acceptable.

OVERALL ASSESSMENT

As determined by this evaluation, the laboratory followed the specified analytical method. With the exceptions noted above, accuracy was acceptable as demonstrated by the surrogate, LCS recovery values. Precision was acceptable as demonstrated by the LCS and field duplicate RPD values. All data are acceptable for use.

DATA VALIDATION REPORT
TPH as Gasoline Range Organics - Method NWTPH-Gx

This report documents the review of analytical data from the analyses of water samples and the associated laboratory and field quality control (QC) samples. Friedman & Bruya, Inc. laboratory, Seattle, Washington. Refer to the Sample Index for a complete list of samples.

SDG	NUMBER OF SAMPLES	VALIDATION LEVEL
903299	14	STAGE 2A

DATA PACKAGE COMPLETENESS

With the exception noted below, the laboratory submitted all required deliverables. The laboratory followed adequate corrective action processes and all anomalies were discussed in the case narrative.

HARDCOPY VERIFICATION

Sample IDs and results reported in the data summary spreadsheet were verified (10% verification) by comparing the spreadsheet the laboratory data package. Ten percent (10%) of the laboratory QC results were also verified.

TECHNICAL DATA VALIDATION

The QC requirements that were reviewed are listed below.

Sample Receipt, Preservation, and Holding Times	Matrix Spikes/Matrix Spike Duplicates (MS/MSD)
Laboratory Blanks	Field Duplicates
Field Blanks	Target Analyte List
Surrogate Compounds	Reporting Limits
Laboratory Control Samples (LCS)	Reported Results

Sample Receipt, Preservation, and Holding Times

As stated in the validation guidance documents, sample shipping coolers should arrive at the laboratory within the advisory temperature range of 0°C-6°C and samples must be analyzed within 14 days. For volatiles analysis, no action is taken if the cooler temperature is <10°C. If the cooler temperature is >10°C, associated sample results are estimated (J/UJ-1). The following exceptions were noted during validation:

SDG 903299: The cooler temperatures were within the recommended temperature range.

Method and Field Blanks

The method blanks were all reported as undetected for target compounds.

Surrogate Compounds

Surrogates were added to all samples. All surrogate recoveries were within the laboratory control limits.

Matrix Spike/Matrix Spike Duplicates

Matrix spike/matrix spike duplicate (MS/MSD) samples were not specifically analyzed for this dataset. The laboratory demonstrated precision and accuracy through the analysis of laboratory control and laboratory control duplicate samples (LCS/LCSD) with acceptable results.

Field Duplicates

For water samples, the RPD control limit is 20% for results greater than 5x the reporting limit (RL). For results less than 5x the RL, the absolute difference between the sample and replicate must be less than 1x the RL.

SDG 903299: Sample pair MW99-20190314/MW104-20190314 were identified as a field duplicate pair. Field precision was acceptable as summarized below. Field data are not qualified for duplicate precision exceedance.

Sample ID	lab ID	analyte	903299-10	903299-12	RPD
MW99-20190314	**903299-10**	GRO	170	170	0%
MW104-20190314	**903299-12**				

Target Analyte List

A sampling plan was not available for review.

Reporting Limits

The laboratory reporting limits were sufficiently below the MTCA Method A cleanup levels provided in appendix B.

Reported Results

Results reported were deemed acceptable.

OVERALL ASSESSMENT

As determined by this evaluation, the laboratory followed the specified analytical method. With the exceptions noted above, accuracy was acceptable as demonstrated by the surrogate and LCS recovery values. Precision was acceptable as demonstrated by the LCS and laboratory and field duplicate RPD values. All data, as qualified, are acceptable for use.

DATA VALIDATION REPORT
Diesel Range, Motor Oil - Method NWTPH-Dx

This report documents the review of analytical data from the analyses of water samples and the associated laboratory and field quality control (QC) samples. Friedman & Bruya, Inc. laboratory, Seattle, Washington. Refer to the Sample Index for a complete list of samples.

SDG	NUMBER OF SAMPLES	VALIDATION LEVEL
903299	14	STAGE 2A

DATA PACKAGE COMPLETENESS

With the exception noted below, the laboratory submitted all required deliverables. The laboratory followed adequate corrective action processes and all anomalies were discussed in the case narrative if applicable.

HARDCOPY VERIFICATION

Sample IDs and results reported in the data summary spreadsheet were verified (10% verification) by comparing the spreadsheet the laboratory data package. Ten percent (10%) of the laboratory QC results were also verified.

TECHNICAL DATA VALIDATION

The QC requirements that were reviewed are listed below.

Sample Receipt, Preservation, and Holding Times	Matrix Spikes/Matrix Spike Duplicates (MS/MSD)
Laboratory Blanks	Field Duplicates
Field Blanks	Target Analyte List
Surrogate Compounds	Reporting Limits
Laboratory Control Samples (LCS)	Reported Results

Sample Preservation and Holding Times

As stated in validation guidance documents, sample shipping coolers should arrive at the laboratory within the advisory temperature range of 0°C - 6°C and be extracted within 7 days for aqueous samples and 14 days for soil samples. Sample extracts must be analyzed within 40 days of extraction.

SDG 903299: No problems were noted.

Method and Field Blanks

The method blanks were all reported as undetected for target compounds. Field blanks were not submitted with this sampling event.

Surrogate Compounds

Surrogates were added to all samples. All surrogate recoveries were within the laboratory control limits.

Matrix Spike/Matrix Spike Duplicates

Matrix spike/matrix spike duplicate (MS/MSD) samples were not specifically analyzed for this dataset. The laboratory demonstrated precision and accuracy through the analysis of laboratory control samples (LCS) and laboratory control sample duplicates (LCSD) with acceptable results.

Field Duplicates

For water samples, the RPD control limit is 20% for results greater than 5x the reporting limit (RL). For results less than 5x the RL, the absolute difference between the sample and replicate must be less than 1x the RL.

SDG 903299: Sample pair MW99-20190314/MW104-20190314 were identified as a field duplicate pair. Field precision was acceptable as summarized below. Field data are not qualified for duplicate precision exceedance.

Sample ID	lab ID	analyte	803405-04	803405-06	RPD
MW99-20190314	**903299-10**	Diesel Range	690	670	2.9%
MW104-20190314	**903299-12**	Motor Oil	0	0	0

Target Analyte List

A sampling plan was not available for review.

Reporting Limits

The laboratory reporting limits were sufficiently below the MTCA Method A cleanup levels provided in appendix B.

Reported Results

SDG 903299: All samples with the exception of MW05-20190314, MW102-20190314, MW109-20190314 and MW101-20190314 were qualified as estimated (J+) and reason code 2 since the laboratory reported the diesel range results as "x" indicating the chromatographic pattern does not match the standard.

OVERALL ASSESSMENT

As determined by this evaluation, the laboratory followed the specified analytical method. Accuracy was acceptable, as demonstrated by the surrogate and LCS/LCSD recovery values. Precision was also acceptable as demonstrated by the LCS/LCSD and laboratory and field duplicate relative percent difference values. The data were qualified due to sample versus fuel reference material not matching, as indicated by the laboratory. All data, as reported, are acceptable for use.

APPENDIX A
DATA QUALIFIER DEFINITIONS
REASON CODES
AND CRITERIA TABLES

DATA VALIDATION QUALIFIER CODES
Based on National Functional Guidelines

The following definitions provide brief explanations of the qualifiers assigned to results in the data review process.

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

J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

NJ - The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents the approximate concentration.

UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R - The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

DATA QUALIFIER REASON CODES

Group	Code	Reason for Qualification
Sample Handling	1	Improper Sample Handling or Sample Preservation (i.e., headspace, cooler)
Instrument Performance	24	Instrument Performance (i.e., tune, resolution, retention time window, endrin breakdown, lock-mass)
Instrument Performance	5A	Initial Calibration (RF, %RSD, r2)
Instrument Performance	5B	Calibration Verification (CCV, CCAL; RF, %D, %R) Use bias flags (H,L)1 where appropriate
Instrument Performance	5C	Initial Calibration Verification (ICV %D, %R) Use bias flags (H,L)1 where appropriate
Blank Contamination	7	Field Blank Contamination (Equipment Rinsate, Trip Blank, etc.)
Blank Contamination	6	Lab Blank Contamination (i.e., method blank, instrument blank, etc.) Use low bias flag (L)1 for negative instrument blanks
Precision and Accuracy	8	Matrix Spike (MS and/or MSD) Recoveries Use bias flags (H,L)1 where appropriate
Precision and Accuracy	9	Precision (all replicates: LCS/LCSD, MS/MSD, Lab Replicate, Field Replicate)
Precision and Accuracy	10	Laboratory Control Sample Recoveries (a.k.a. Blank Spikes) Use bias flags (H,L)1 where appropriate
Precision and Accuracy	12	Reference Material Use bias flags (H,L)1 where appropriate
Precision and Accuracy	13	Surrogate Spike Recoveries (a.k.a. labeled compounds, recovery standards) Use bias flags (H,L)1 where appropriate
Interferences	16	ICP/ICP-MS Serial Dilution Percent Difference
Interferences	17	ICP/ICP-MS Interference Check Standard Recovery Use bias flags (H,L)1 where appropriate
Interferences	19	Internal Standard Performance (i.e., area, retention time, recovery)
Interferences	22	Elevated Detection Limit due to Interference (i.e., chemical and/or matrix)
Interferences	23	Bias from Matrix Interference (i.e. diphenyl ether, PCB/pesticides)
Identification and Quantitation	2	Chromatographic pattern in sample does not match pattern of calibration standard
Identification and Quantitation	3	2nd column confirmation (RPD or %D)
Identification and Quantitation	4	Tentatively Identified Compound (TIC) (associated with NJ only)
Identification and Quantitation	20	Calibration Range or Linear Range Exceeded
Identification and Quantitation	25	Compound Identification (i.e., ion ratio, retention time, relative abundance, etc.)
Miscellaneous	11	A more appropriate result is reported (multiple reported analyses i.e., dilutions, reextractions, etc. Associated with "R" and "DNR" only)
Miscellaneous	14	Other (See DV report for details)
Miscellaneous	26	Method QC information not provided

DATA VALIDATION CRITERIA

Volatile Organic Compounds by Gas Chromatography-Mass Spectroscopy (GC-MS)
(Based on NFG 1999 & 2008 and SW-846 Method 8260, analyzed by SW8021B)

QC Element	Acceptance Criteria	Source of Criteria		Action for Non-Conformance	Reason Code	Discussion and Comments
		Blanks				
Method Blank (MB)	MB: One per matrix per batch (of ≤ 20 sample) No TICs present	NFG (2) Method (3)		U (pos) if result is < 5X or 10X action level R (pos) TICs using 10X rule	7	10X action level for methylene chloride, acetone, & 2-butanone. 5X for all other target analytes Hierarchy of blank review: #1 - Review MB, qualify as needed #2 - Review TB, qualify as needed #3 - Review FB, qualify as needed Note: Actions as per NFG 1999
Trip Blank (TB)	No detected compounds > MDL	NFG (2) Method (3)		U (pos) if result is < 5X or 10X action level	6	
Field Blank (FB)	No detected compounds > MDL	NFG (2) Method (3)		U (pos) if result is < 5X or 10X action level	6	
		Precision and Accuracy				
LCS/LCSD (recovery)	One per matrix per batch (of ≤ 20 samples)	Method (3))		J (pos) if %R > UCL J (pos)/UJ (ND) if %R < LCL J (pos)/R (ND)%R < 10%	10 (H,L)4	No action if only one spike %R is outside criteria when LCSD is analyzed, unless one recovery is <10%. QAPP may have overriding accuracy limits.
LCS/LCSD RPD	If LCSD analyzed RPD < lab limits	Method (3)		J (pos)	9	Qualify all associated samples. QAPP may have overriding precision limits.
Reference Material (RM, SRM, or CRM)	Result ±20% of the 95% confidence interval of the true value for analytes	Standard review		J (pos)/UJ (ND) if < LCL J (pos) if > UCL	12 (H,L)4	QAPP may have overriding accuracy limits. Some manufacturers may have different RM control limits
Surrogates	Added to all samples Within ethod/laboratory control limits	NFG (1) Method (3)		J (pos) if %R >UCL J (pos)/UJ (ND) if %R <LCL J (pos)/R (ND) if <10%	13 (H,L)4	No action if there are 4+ surrogates and only 1 outlier. Qualify all compounds if qualification is required.
Internal Standards	Added to all samples Acceptable Range: IS area 50% to 200% of CCAL area RT within 30 seconds of CC RT	NFG (1) Method (3)		J (pos) if > 200% J (pos)/UJ (ND) if < 50% J (pos)/R (ND) if < 25% if RT >30 seconds use PJ	19	Qualify compounds quantified using particular internal standard
MS/MSD (recovery)	One per matrix per batch (of ≤ 20 samples) Use method acceptance criteria/laboratory limits	NFG (1) Method (3)		J (pos) %R > UCL J (pos)/UJ (ND) if both %R < LCL J (pos)/R (ND) if both %R < 10% J (pos)/UJ (ND) if one > UCL & one < LCL, with no bias	8 (H,L)4	No action if only one spike %R is outside criteria. No action if parent concentration is >4x the amount spiked. Qualify parent sample only.
MS/MSD (RPD)	One per matrix per batch (of ≤ 20 samples) Use method acceptance criteria/laboratory limits	NFG (1) Method (3)		J (pos) If RPD > control limit	9	Qualify parent sample only
Field Duplicates	Solids: RPD < 50% OR difference < 2X RL (for results < 5X RL) Aqueous: RPD < 35%	Standard review		J (pos)/UJ (ND) Qualify only parent and field duplicate samples	9	Use project limits if specified

	OR difference < 1X RL (for results < 5X RL)					
Compound Identification and Quantitation						
Retention Time Relative Ion Intensities	RRT within 0.06 of standard RRT Ion relative intensity within 20% of standard All ions in std. at > 10% intensity must be present in sample	NFG (1) Method (3)		U (pos) if identification criteria not met	25	
TICs	Major ions (>10%) in reference must be present in sample; intensities agree within 20%; check identification	NFG (1) Method (3)		NJ TIC R (pos) if common laboratory contaminants	4	Common laboratory contaminants: aldol condensation products, solvent preservatives, and reagent contaminants
Calibration Range	Results greater than highest calibration standard	Standard review		Qualify J (pos)	20	If result from dilution analysis is not reported.
Dilutions, Reextractions and/or Reanalyses	Report only one result per analyte	Standard review		Report best result	11	Best value reported

1 National Functional Guidelines for Organic Data Review, June, 2008 (pos): Positive Result
2 National Functional Guidelines for Organic Data Review, Oct, 1999 (ND): Non-detect
3 Method SW846 8260C Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)
4 NFG 2013 suggests using "+ / -" to indicate bias; validation uses "H" = high bias indicated; "L" = low bias indicated.

DATA VALIDATION CRITERIA

Validation Guidelines for Total Petroleum Hydrocarbons-Gasoline Range
(Based on EPA National Functional Guidelines as applied to criteria in NWTPH-Gx, June 1997, Wa DOE & Oregon DEQ)

QC Element	Acceptance Criteria	Action for Non-Conformance	Reason Code	Discussion and Comments
Sample Handling				
Cooler Temperature & Preservation	4°C±2°C Water: HCl to pH < 2	J(+)/UJ(-) if greater than 6°C	1	
Holding Time	Waters: 14 days preserved 7 days unpreserved Solids: 14 Days	J(+)/UJ(-) if hold times exceeded J(+)/R(-) if exceeded > 3X	1	Professional Judgement
Instrument Performance				
Initial Calibration	5 calibration points (All within 15% of true value) Linear Regression: r2 ≥0.990 If used, RSD of response factors ≤20%	Narrate if fewer than 5 calibration levels or if %R >15% J(+)/UJ(-) if r2 <0.990 J(+)/UJ(-) if %RSD > 20% 5A Mid-range Calibration Check Std. Analyzed before and after each analysis shift & every 20 samples. Recovery range 80% to 120%	5A	
Mid-range Calibration Check Std.	Analyzed before and after each analysis shift & every 20 samples. Recovery range 80% to 120%	Narrate if frequency not met. J(+)/UJ(-) if %R < 80% J(+) if %R >120%	5B	
Blank Contamination				
Method Blank	At least one per batch (≤10 samples)	U (at the RL) if sample result is < RL & < 5X blank result. U (at reported sample value) if sample result is ≥ RL and < 5X blank result	7	
Trip Blank (if required by project)	No results >RL	Action is same as method blank for positive results remaining in trip blank after method blank qualifiers are assigned.	18	
Field Blanks (if required by project)	No results >RL	remaining in field blank after method and trip blank qualifiers are assigned.	6	
Precision and Accuracy				
MS samples (accuracy) (if required by project)	%R within lab control limits	Qualify parent only, unless other QC indicates systematic problems. J(+) if both %R > upper control limit (UCL) J(+)/UJ(-) if both %R < lower control limit (LCL) No action if parent conc. >5X the amount spiked.	8	Use Professional Judgement if only one %R outlier
Precision: MS/MSD or LCS/LCSD or sample/dup	At least one set per batch (≤10 samples) RPD ≤ lab control limit	J(+) if RPD > lab control limits	9	
LCS (not required by method)	%R within lab control limits	J(+)/UJ(-) if %R < LCL J(+) if %R > UCL J(+)/R(-) if any %R <10%	10	Professional Judgement
Surrogates	1,4-difluorobenzene added to all samples (inc. QC samples). %R = 50-150%	J(+)/UJ(-) if %R < LCL J(+) if %R >UCL J(+)/R(-) if any %R <10% No action if 2 or more surrogates are used, and only one is outside control limits.	13	Professional Judgement
Pattern Identification	Compare sample chromatogram to standard chromatogram to ensure range and pattern are reasonable match. Laboratory may flag results which have poor match.	J(+)	2	
Field Duplicates	Use project control limits, if stated in QAPP default: water: RPD < 35% solids: RPD < 50%	Narrate outliers If required by project, qualify with J(+)/UJ(-)	9	
Compound ID and Calculation				
Two analyses for one sample (e.g., dilution)	Report only one result per analyte	best value chosen	11	

DATA VALIDATION CRITERIA

Validation Guidelines for Total Petroleum Hydrocarbons-Diesel & Residual Range (Based on EPA National Functional Guidelines as applied to criteria in NWTPH-Dx, June 1997, Wa DOE & Oregon DEQ)

QC Element	Acceptance Criteria	Action for Non-Conformance	Reason Code	Discussion and Comments
Sample Handling				
Cooler Temperature & Preservation	4°C±2°C Water: HCl to pH < 2	J(+)/UJ(-) if greater than 6 deg. C	1	
Holding Time	Ext. Waters: 14 days preserved 7 days unpreserved Ext. Solids: 14 Days Analysis: 40 days from extraction	J(+)/UJ(-) if hold times exceeded J(+)/R(-) if exceeded > 3X	1	Professional Judgement
Instrument Performance				
Initial Calibration	5 calibration points (All within 15% of true value) Linear Regression: r2≥0.990 If used, RSD of response factors ≤20%	Narrate if fewer than 5 calibration levels or if %R >15% J(+)/UJ(-) if r2 <0.990 J(+)/UJ(-) if %RSD > 20%	5A	
Mid-range Calibration Check Std.	Analyzed before and after each analysis shift & every 20 samples. Recovery range 85% to 115%	Narrate if frequency not met. J(+)/UJ(-) if %R < 85% J(+) if %R >115%	5B	
Blank Contamination				
Method Blank	At least one per batch (≤20 samples) Method Blank No results >R	U (at the RL) if sample result is < RL & < 5X blank result. 7 U (at reported sample value) if sample result is ≥ RL and < 5X blank result	7	
Field Blanks (if required by project)	No results > RL	Action is same as method blank for positive results remaining in the field blank after method blank qualifiers are assigned.	6	
Precision and Accuracy				
MS samples (accuracy) (if required by project)	%R within lab control limits	Qualify parent only, unless other QC indicates systematic problems. J(+) if both %R > upper control limit (UCL) J(+)/UJ(-) if both %R < lower control limit (LCL) No action if parent conc. >5X the amount spiked.	8	Use Professional Judgement if only one %R outlier
Precision: MS/MSD or LCS/LCSD or sample/dup	At least one set per batch (≤10 samples) RPD ≤ lab control limit	J(+) if RPD > lab control limits	9	
LCS (not required by method)	%R within lab control limits	J(+)/UJ(-) if %R < LCL J(+) if %R > UCL J(+)/R(-) if any %R <10%	10	Professional Judgement
Surrogates	2-fluorobiphenyl, p-terphenyl, o-terphenyl, and/or pentacosane added to all samples (inc. QC samples). %R = 50-150%	J(+)/UJ(-) if %R < LCL J(+) if %R > UCL J(+)/R(-) if any %R <10% No action if 2 or more surrogates are used, and only one is outside control limits	13	Professional Judgement
Pattern Identification	Compare sample chromatogram to standard chromatogram to ensure range and pattern are reasonable match. Laboratory may flag results which have poor match.	J(+)	2	
Field Duplicates	Use project control limits, if stated in QAPP default: water: RPD < 35% solids: RPD < 50%	Narrate (Use Professional Judgement to qualify)	9	
Compound ID and Calculation				
Two analyses for one sample (dilution)	Report only one result per analyte	all results that should not be reported.	11	

APPENDIX B
QUALIFIED DATA SUMMARY TABLE

l ID	Sample Date	GRPH[2]	Benzene[3]	Toluene[3]	Ethyl-benzene[3]	Total Xylenes[3]	DRPH[2]	validation qualifier	ORPH[2]
MW101	3/14/19	<100	<1	<1	<1	<3	<60		<300
MW102	3/14/19	<100	<1	<1	<1	<3	<50		<250
MW104	3/14/19	170	<1	<1	<1	<3	690x	J+ 2	<250
MW105	3/14/19	<100	<1	<1	<1	<3	<50		<250
RW03	3/14/19	1,700	1.9	1.7	46	140	730x	J+ 2	**<250**
RW04	3/14/19	300	<1	<1	1.9	<3	310x	J+ 2	**<250**
RW05	3/14/19	<100	<1	<1	<1	<3	120x	J+ 2	**<250**
MW108	3/14/19	<100	<1	<1	<1	<3	680x	J+ 2	**<250**
MW109	3/14/19	140	<1	<1	<1	<3	<60	J+ 2	**<300**
MW99	3/14/19	170	<1	<1	1.4	<3	670x	J+ 2	**<300**
MW113	3/14/19	<100	<1	<1	<1	<3	79x	J+ 2	**<250**
MW112	3/14/19	<100	<1	<1	<1	<3	58x	J+ 2	**<250**
MW111	3/14/19	<100	<1	<1	<1	<3	83x	J+ 2	**<250**
MW110	3/14/19	<100	<1	<1	<1	<3	74x	J+ 2	**<300**
MTCA GW criteria		**1,000/800[6]**	**5**	**1,000**	**700**	**1,000**	**500**		**500**

Red indicates concentrations exceeding MTCA Method A cleanup levels for groundwater.

Samples analyzed by Friedman & Bruya, Inc. of Seattle, Washington.

[2]Analyzed by Method NWTPH-Gx (gasoline) and NWTPH-Dx (diesel and oil).

[3]Analyzed by EPA Method 8260B or 8260C.

[4]Analyzed by Method NWTPH-Dx; sample extracts passed through a silica gel column prior to analysis.

[5]MTCA Cleanup Regulation, Method A Cleanup Levels, Table 720-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, revised November 2007.

[6]1,000 µg/L when benzene is not present and 800 µg/L when benzene is present.

Laboratory Note:

[x]The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

Validation qualifiers

J+ numerical value is the approximate concentration

Validation Codes

2 Chromatographic pattern in sample does not match pattern of calibration standard

DRPH = diesel-range petroleum hydrocarbons

EPA = U.S. Environmental Protection Agency

GRPH = gasoline-range petroleum hydrocarbons

MTCA = Washington State Model Toxics Control Act

NWTPH = Northwest Total Petroleum Hydrocarbon

ORPH = oil-range petroleum hydrocarbons

SoundEarth = SoundEarth Strategies, Inc.

APPENDIX C
DATA VALIDATION CHECKLISTS

8021B NWTPH-GX

VALIDATION WORKSHEET

Method: BTEX / TPH Gasoline
Date Reviewed: 4.1.19
Sample Collection Dates: 3.14.19, 3.15.19

SDG: 903299
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 MW105-20190314	2 MW108-20190314	3 MW102-20190314	4 MW113-20190314	5 MW112-20190314	6 MW109-20190314	7 MW111-20190314	8 MW110-20190314	9 MW101-20190314	10 MW104-20190314	11 MW103-20190314	12 MW99-20190314	13 MW04-20190315	14 MW03-20190315	15	16	17	18	19	20
Sample results	A													→						
Holding Times	A													→						
Completion	A													→						
Method Blanks	A													→						
LCS	A													→						
duplicate RPD	A													→						
MS/MSD:																				

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

4°C

MW99 / MW104
Benz 1.4 <1 within IRL

Sul 3.14.19 3.15.19
Prep 3.18.19
Anl 3.18.19

Date of Report: 03/20/19
Date Received: 03/15/19
Project: SOU_ 0914-001_ 20190315, F&BI 903299
Date Extracted: 03/18/19
Date Analyzed: 03/18/19

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 52-124)
MW105-20190314 903299-01	<1	<1	<1	<3	<100	83
MW108-20190314 903299-02	<1	<1	<1	<3	<100	86
MW102-20190314 903299-03	<1	<1	<1	<3	<100	87
MW113-20190314 903299-04	<1	<1	<1	<3	<100	86
MW112-20190314 903299-05	<1	<1	<1	<3	<100	86
MW109-20190314 903299-06	<1	<1	<1	<3	140	84
MW111-20190314 903299-07	<1	<1	<1	<3	<100	85
MW110-20190314 903299-08	<1	<1	<1	<3	<100	84
MW101-20190314 903299-09	<1	<1	<1	<3	<100	85
MW104-20190314 903299-10	<1	<1	<1	<3	170	81

Date of Report: 03/20/19
Date Received: 03/15/19
Project: SOU_ 0914-001_ 20190315, F&BI 903299
Date Extracted: 03/18/19
Date Analyzed: 03/18/19

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 52-124)
RW05-20190314 903299-11	<1	<1	<1	<3	<100	84
MW99-20190314 903299-12	<1	<1	1.4	<3	170	82
RW04-20190315 903299-13	<1	<1	1.9	<3	300	82
RW03-20190315 903299-14	1.9	1.7	46	140	1,700	88
Method Blank 09-494 MB	<1	<1	<1	<3	<100	86

NWTPH-Dx

VALIDATION WORKSHEET

Method: Diesel ; Motor Oil
Date Reviewed: 9.1.19
Sample Collection Dates:

SDG: 903299
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 MW105-20190314	2 MW108-20190314	3 MW102-20190314	4 MW113-20190314	5 MW112-20190314	6 MW109-20190314	7 MW111-20190314	8 MW110-20190314	9 MW101-20190314	10 MW104-20190314	11 RW03-20190314	12 MW99-20190314	13 RW04-20190315	14 RW03-20190315	15	16	17	18	19	20
Sample results	A																			
Holding Times	A																			
Completion	A																			
Method Blanks	A																			
LCS /LCSD	A																			
duplicate RPD																				
MS/MSD:																				

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

4°C

MW99 / MW104

spld 3.14.19 3.15.19
mp 3.18.19
MM 3.18.19

X flags - patterns not matching Diesel MW108, RW04 MW113, RW03 MW112 MW111 MW110 MW104 RW05 MW99

J+, J

J.

Date of Report: 03/20/19
Date Received: 03/15/19
Project: SOU_ 0914-001_ 20190315, F&BI 903299
Date Extracted: 03/18/19
Date Analyzed: 03/18/19

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 47-140)
MW105-20190314 903299-01	<50	<250	87
MW108-20190314 903299-02 1/1.4	680 x J+Z	<350	100
MW102-20190314 903299-03	<50	<250	96
MW113-20190314 903299-04	79 x J+Z	<250	92
MW112-20190314 903299-05	58 x J+Z	<250	70
MW109-20190314 903299-06 1/1.2	<60	<300	88
MW111-20190314 903299-07	83 x J+Z	<250	91
MW110-20190314 903299-08 1/1.2	74 x J+Z	<300	93
MW101-20190314 903299-09	<50	<250	95
MW104-20190314 903299-10 1/1.2	690 x J+Z	<300	95

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 03/20/19
Date Received: 03/15/19
Project: SOU_ 0914-001_ 20190315, F&BI 903299
Date Extracted: 03/18/19
Date Analyzed: 03/18/19

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 47-140)
RW05-20190314 903299-11	120 x Jt 2	<250	84
MW99-20190314 903299-12 1/1.2	670 x Jt 2	<300	88
RW04-20190315 903299-13	310 x Jt 2	<250	92
RW03-20190315 903299-14	730 x Jt 2	<250	90
Method Blank 09-606 MB	<50	<250	108