AEI Consultants

November 25th, 2019

WELL INSTALLATION AND SAMPLING REPORT

Property Identification:
837 North 34th Street
Seattle, Washington 98103

AEI Project No. 307024

Prepared for:
Washington Department of Ecology
Voluntary Cleanup Program – NWRO
3190 160th Avenue SE
Bellevue, Washington 98008

Prepared by:
AEI Consultants
115 North 85th Street, Ste. 202
Seattle, Washington 98103

Environmental Due Diligence

Building Assessments

Site Investigation & Remediation

Energy Performance & Benchmarking

Industrial Hygiene

Construction Risk Management

Zoning Analysis Reports & ALTA Surveys

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November 25, 2019

Washington Department of Ecology
Voluntary Cleanup Program – NWRO
3190 160th Avenue SE
Bellevue, Washington 98008

Subject: **Well Installation And Sampling Report**
837 North 34th Street
Seattle, Washington 98103
AEI Project No. 307024

AEI Consultants (AEI) is pleased to provide this report which describes the activities and results of the groundwater well installation and sampling performed at 837 North 34th Street in Seattle, Washington (Property'). This investigation was completed in accordance with the Workplan dated June 19th, 2019 as well as the Washington Department of Ecology's (Ecology) request for additional data regarding the consideration of a No Further Action (NFA) determination for the Property.

1.0 PROPERTY DESCRIPTION

The Property is located to the south of North 34th Street and to the west of Aurora Avenue North/State Route (SR) 99 within a commercial area of Seattle, Washington. The location of the Property is shown on Figure 1. The Property totals 1.79 acres and is improved with a multi-tenant commercial office building, identified as the Lakeview Building, and an associated sub-grade parking garage.

The entirety of the building and majority of the land area at the Property is underlain by parking structures. The only portion of the Property not underlain by a parking structure is along the east side of the northeastern corner of the building. The parking structure is continuous offsite to the south and west on adjacent parcels and beneath offsite buildings. An access ramp located under the SR 99 Bridge provides access from North 34th Street. On-site operations are primarily corporate office functions.

The lowest level of the sub-grade parking structure is equipped with four (4) "wells" and a storm water vault. Surface water runoff from the building drainage system and parking areas are directed into these "wells" and vault, which represent a closed drainage system for the building. None of these "wells" and vault are known to intersect the groundwater table. These features are not expected to alter groundwater flow conditions (i.e., flow direction and/or gradient) beneath the building.

Refer to Section 4.1 below for additional information on the Site subsurface conditions.

2.0 BACKGROUND

The Property has undergone several phases of environmental investigation and remediation as part of prior developments. A detailed history has been reviewed with Ecology, along with the review of other available information. Previous investigation areas depicting soil sample locations and exploratory test pits are shown on the Site Map, Figure 2. The results of environmental investigation and remedial activities were presented in the following documents:

- *Independent Remedial Action Report (IRAR), Lakeview Building, Seattle, Washington* prepared by AESI dated July 7, 2008.

- *Phase I Environmental Site Assessment (ESA*), *Lakeview Building, 837 North 34th Street, Seattle, Washington* (Parcel Number 197320-0389), prepared by AEI Consultants, dated April 27, 2012.

- *Subsurface Investigation for the Lakeview Building, 837 North 34th Street, Seattle, Washington,* prepared by AEI Consultants, dated September 26, 2014.

- McRoberts & Associates, P.C., *Correspondence Re: Response to Ecology's Opinion Pursuant to WAC 173-340-515(5) on Remedial Action for the Following Hazardous Waste Site: Fremont Lake View, 837 North 34th Street, Seattle, WA 98103, Facility No.: 5471899, VCP No.: NW2977, Cleanup Site ID: 11902* dated January 31,2017.

Based on review of Ecology correspondence, it was found the Property would be eligible for an NFA determination, subject to an Environmental Covenant, pending results of additional limited groundwater testing. The issues of concern for groundwater as expressed by Ecology included: (1) the historical presence of pentachlorophenol (PCP) detected in dewatering wells W-2 and W-5 at concentrations as high as 1.26 micrograms per liter (μg/l) in 2000, and (2) the historical presence of petroleum hydrocarbons in soils at the southeastern corner of the Property. Each issue is discussed further below to provide context for the completion of MW-1 and MW-2.

2.1 Pentachlorophenol

PCP was detected in dewatering wells W-2 and W-5 during groundwater sampling events in November and December of 2000. Ecology requested further investigation of groundwater as the groundwater concentrations for PCP remained above Ecology's Model Toxics Control Act (MTCA) Method B concertation of 0.73 micrograms per liter (μg/L) when last tested in December 2000. Soil and groundwater samples collected during the investigation conducted by AEI in 2014 did not included analyses for PCP.

The PCP was hypothesized to have resulted from the historical presence of creosote pilings utilized in the construction of the prior generation of buildings on the Property. Please refer to Appendix A for prior PCP sample results summary table and to the IRAR completed by AESI in July 2008 which contains the table and discussion of PCP analysis performed previously.

2.2 Petroleum Hydrocarbons

The IRAR conducted by AESI identified diesel and motor oil in soil above Ecology's Method A concentration of 2,000 micrograms per kilogram (mg/kg) in the southeastern portion of the Property in two sample locations, TP-205 and ES-48. The additional investigation conducted by AEI in 2014 was intended to identify the extent of this potential remaining petroleum hydrocarbons impacted soil in the southeastern portion of the Property.

The 2014 investigation identified no detectable concentrations of diesel range, residual range, or gasoline range organics in soil or groundwater and no concentration of benzene, toluene, ethylbenzene and xylenes (BTEX) above Ecology's MTCA Method A. Based on the 2014 investigation results, AESI concluded that no residual petroleum impact remained on or beneath the Property.

Appendix A contains the IRAR soil data, the 2000 groundwater sample results from Dewatering wells W-2 and W-5 included in the IRAR, and the soil results from the Phase II conducted by AEI in 2014. The groundwater results from the Phase II conducted by AEI in 2014 are included in Table 1.

3.0 INVESTIGATION EFFORTS

Based on the specific contaminants of concern discussed with Ecology, the presumed groundwater flow direction, and physical constraints of the Property, two (2) groundwater monitoring wells were installed within the southeast and southwest corners of the Property. The wells were installed within the lowest level of the existing parking garage. Upon well installation, the wells were developed, followed by groundwater sampling.

3.1 Health and Safety Plan

A site-specific health and safety plan was prepared, reviewed by onsite personnel, and kept onsite for the duration of the fieldwork.

3.2 Permitting and Utility Clearance

Drilling permits were not required for this investigation; however, a Notice of Intent was filed by the selected drilling contractor (Cascade Services) with Ecology regarding the well installations (Appendix B).

The public underground utility locating service Washington Utility Notification Center was contacted, who, in turn, notified subscribing utility companies of the planned investigation work in order for their underground utility locations to be marked along the ground surface around the property boundaries and proposed boring locations, where accessible.

Private utility locating was conducted by Ground Penetrating Radar Systems (GPRS) of Seattle, Washington under subcontract to AEI to further identify and locate underground utilities, as well as to shift proposed locations, as appropriate.

3.3 Drilling Activities

On August 24, 2019, two (2) groundwater monitoring wells were advanced by Cascade Services using a direct push drilling rig for the installation of MW-1 and MW-2 (Start Card No. RE18068). The borings were advanced to a depth of 12 feet bgs. The locations of each well is listed below:

- MW-1 was installed within parking stall 420 on parking level P3.
- MW-2 was installed in parking stall 720 on parking level P3.

The locations of the borings were adjusted slightly from the planned locations due to structures and utility clearance. Final locations are shown on Figure 2.

Soil cores from MW-1 and MW-2 were continuously collected for the purposes of lithologic logging, headspace testing, and soil sample collection for potential laboratory analyses. Soil samples were obtained using a single-walled coring system approximately 2.25 inches and 5 feet in length containing plastic liners. The coring system was connected to 1-inch diameter, flush-jointed drill rod hydraulically driven (pushed) by the rig to each target sample depth. Upon retrieval from each sample depth interval, the coring system was opened, followed by the removal and opening of the plastic liners and preparation of soil samples for laboratory analyses. After opening the liners, the soils were visually inspected and screened for organic vapors for the potential presence of impacted soils. Recovered soils were described on field boring logs in general conformance with the United Soil Classification System (USCS). Additional lithologic descriptions and drilling information were recorded on the boring logs for MW-1 and MW-2 presented in Appendix C. Figure 3 presents the well construction for the monitoring wells. Appendix D contains the groundwater development and sampling forms.

Soil samples were collected from the soil cutting, for waste profiling purposes, and were placed into a 4-ounce glass mason jar, as well as placed into methanol preserved, 40-milliter (mL) glass vials using disposable Terra Core™ samplers. Upon collection, each sample was labeled with the project name, project number, boring number, sample depth, and sampling date/time of sampling. After labeling, each sample was sealed, labeled, entered onto chain-of-custody documentation, and were placed into an insulated, chilled ice chest for transportation to a State of Washington-certified laboratory. Chain-of-custody documentation was prepared and accompanied the samples to the analytical laboratory, a copy of which is included in Appendix E.

3.3.1 Headspace Testing

Headspace testing was performed with a photo-ionization detector (PID) equipped with an electrodeless 10.6 eV ultraviolet lamp or equivalent for detecting the presence of total VOCs in the soil samples. To initiate the headspace testing procedure, soil samples were removed from the sample liners, placed into labeled, plastic bags, and sealed for conducting the tests. After sufficient time (15 to 30 minutes) had elapsed for gas build-up inside the bag, each bag was punctured with the probe tip of the PID to allow for measurement of the headspace.

Measurements of the headspace were obtained in the parts per million (ppm) range for total VOCs. The PID readings were recorded on the boring logs presented in Appendix C.

3.4 Monitoring Well Installation, Development and Sampling

On August 24, 2019, monitoring wells MW-1 and MW-2 were constructed using ¾-inch Schedule 40 PVC factory slotted 0.010-inch well screen from 2 to 12 feet bgs. A ¾-inch diameter PVC riser pipe was installed from 0.3 to 2 feet bgs. The well annulus was then filled by using the 2-inch steel casing of the direct-push drilling rig as a tremie pipe during withdrawal. The annular space around the well screen was filled with a filter pack consisting of #2/12 silica sand from the bottom of the wellbore between 6 inches and 1-foot above the screened interval. Bentonite pellets were then placed as a seal and hydrated, followed by a surface seal of cement to grade and steel traffic-rated well box. The well casing was sealed with a well cap. Due to the shallow depth of groundwater; pre-packed wells were not installed as planned. At the suggestion of the drilling subcontractor, wells were constructed as described above.

The wells were developed to remove fine-grained materials inside the filter pack and well casing, to stabilize the filter pack around the well screen, and to allow for the collection of representative groundwater samples. The wells were developed using a combination of surging and pumping methods. The well was surged for a minimum period of 15 minutes. Surging was immediately followed by purging using a peristaltic pump.

Groundwater parameters, including pH, conductivity, temperature, and turbidity, were monitored during purging. Well development procedures continued until at least ten volumes of water were removed, groundwater parameters had stabilized, and visual turbidity had decreased. A total of 1.86 and 2.48 gallons of water were removed from MW-1 and MW-2, respectively, during the well development activities. Monitoring well construction are provided in Figure 4.

After well development was complete, the well was allowed to recharge and a groundwater sample was collected from MW-1 and MW-2 using a peristaltic groundwater pump on August 24, 2019. The collected sample was then placed into laboratory-supplied, HCl preserved 40-mL amber, and HCl preserved 40 milliliter VOA sample containers, sealed, labeled with a unique identifier, and placed in an ice chilled cooler. Chain of custody documentation is included in Appendix E.

3.5 Decontamination and Investigation Derived Waste

Drilling and sampling equipment were cleaned prior to and/or after drilling each boring. The equipment was cleaned using a triple-rinse method, which consisted of an initial rinse containing an Alconox and water solution, followed by two tap water rinses (second and third, final rinses).

On August 24, 2019, investigation-derived soil drill cuttings and purge water waste were placed in two 55-gallon sealed drums, labeled, and stored adjacent to parking stall 420 on parking

level P3. One composite sample collected from the soil drum during this investigation was used to characterize the investigation derived waste for future disposal.

3.6 Laboratory Analyses

The soil and groundwater samples were labeled and placed into a cooler with ice following sampling. The samples were transferred under appropriate chain-of-custody documentation to Pace Analytical Laboratories of Mount Juliette, Tennessee. Laboratory analyses of groundwater samples consisted of the following Total Petroleum Hydrocarbons (TPH) as diesel range organics (DRO) and residual range organics (RRO) using Testing Method NWTPH-Dx and PCP using US EPA Testing Method 8270. The soil sample collected from the soil cuttings was analyzed for Volatile Organic Compounds (VOCs) using EPA Method 8260, NWTPH-Gx (gasoline range organics), NWTPH-Dx, and RCRA 8 Metals using EPA Method 6020.

Chain-of-custody documentations and the certified analytical reports are provided in Appendix E. No further sample analysis was conducted as part of this investigation.

4.0 FINDINGS

The findings of this investigation are summarized below.

4.1 Subsurface Conditions

Soils encountered in each of the borings generally consisted of silty sandy gravel and silty clay to approximately 12 feet bgs. There was no visual or olfactory evidence (i.e., soil discoloration, odor) of potentially impacted soils observed during drilling activities. The maximum PID reading was 4.8 ppm in boring MW-1 at 5 feet bgs.

The first indications of moisture were encountered in borings MW-1 and MW-2 at a depth of 5 feet bgs. with Groundwater equilibrated at 0.62 feet bgs (MW-1) and 4.36 feet bgs MW-2) prior to development. Groundwater was measured again prior to development at 0.72 feet below top of casing (btoc) (MW-1) and 1.95 feet btoc (MW-2). Groundwater measurements after development were 0.70 feet btoc (MW-1) and 1.97 feet btoc (MW-2). Based on prior subsurface investigation and local topography (Figure 1), estimated groundwater flow is to the south towards Lake Union shipping channel. Depth to water from surrounding land surface ranges from 10 to 20 feet bgs which coincides with where groundwater is observed in the parking garage at MW-1 and MW-2.

4.3 Analytical Results

For purposes of providing context to the data generated during this investigation, analytical results were compared to the Ecology's MTCA Methods A (unrestricted land use) and the State of Washington Maximum Contaminant Level (MCL) for PCP was included as no Method A concentration for PCP has been established.

4.3.1 Groundwater Sample Analytical Results

Table 1 presents a summary of the groundwater sample analytical results for MW-1 and MW-2. Laboratory analytical documentation is provided in Appendix E. The groundwater results can be further summarized as follows:

- TPH-DRO was detected in the sample collected from MW-1 and MW-2 at a concentration of 1,070 and 150 micrograms per liter (µg/L), respectively. The concentration in MW-1 exceeds Ecology's MTCA Method A cleanup level of 500 µg/L.

- TPH-RRO was detected in the samples collected from MW-1 and MW-2 at a concentration of 2,480 and 379 µg/L, respectively. The concentration in MW-1 exceeds Ecology's Method A cleanup level of 500 µg/L.

- PCP was not detected at or above the respective laboratory RDLs.

4.3.2 Waste Characterization Sample Analytical Results

Waste characterization sample, DRUM-01, had no detections over Ecology's MTCA Methods A or B.

5.0 SUMMARY AND CONCLUSIONS

AEI has completed the monitoring well installation at the Property, including the collection of groundwater samples. This investigation was completed in accordance with the Workplan dated June 19th, 2019 as well as Ecology's request for additional groundwater assessment for PCP and petroleum hydrocarbons in consideration of a Restricted NFA determination for the Property. A total of two borings (MW-1 and MW-2) were advanced at the Site for the installation of groundwater monitoring wells.

Groundwater sample analytical results from this investigation indicated a concentration of TPH-RRO at 2,480 µg/L in MW-1, which exceeded the MTCA Method A cleanup standard. The concentration of TPH-DRO at 1,070 µg/L in MW-1 also exceeded the MTCA Method A cleanup standard. No other remaining chemicals of concern were detected at concentrations exceeding the MTCA comparison values.

MW-1 was advanced in the immediate area of historical residual petroleum hydrocarbons detected in the soil at soil sampling locations ES-48 and TP-205 to assess if groundwater was impacted. Further, AEI advanced SB-2 in 2014 to confirm the results from ES-48 and TP-205 which resulted in non-detection of petroleum hydrocarbons. The soil samples collected from SB-2 were deeper in depth than ES-48 and TP-205. In light of prior sampling results on the Property, the presence of petroleum hydrocarbons appears localized to the vicinity of MW-1. Migration of petroleum hydrocarbons beyond the boundary of the Property at MW-1 is possible, but unlikely to be present at significant concentrations as indicated by previous sampling results. Migration of residual petroleum hydrocarbons to Lake Union, which is 375 feet in the downgradient direction, is unlikely. Further, and importantly, PCP was not detected at or above

laboratory reporting limits or above the State of Washington MCL and therefore at this time no further assessment of PCP is necessary

Based on these results, we are requesting Ecology review the existing request and issue a determination regarding a Restricted NFA for the Property.

6.0 REFERENCES

Independent Remedial Action Report (IRAR), Lakeview Building, Seattle, Washington prepared by AESI dated July 7, 2008.

Phase I Environmental Site Assessment (ESA), *Lakeview Building, 837 North 34th Street, Seattle, Washington* (Parcel Number 197320-0389), prepared by AEI Consultants, dated April 27, 2012.

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Washington State Department of Ecology, 2019, Cleanup Levels and Risk Calculation (CLARC) website, CLARC Master Table.

7.0 REPORT LIMITATION AND RELIANCE

This report presents a summary of work completed by AEI Consultants. The completed work includes observations and descriptions of site conditions encountered. Where appropriate, it includes analytical results for samples taken during the course of the work. The number and location of samples are chosen to provide the requested information, subject to scope of work for which AEI was retained and limitations inherent in this type of work, but it cannot be assumed that they are representative of areas not sampled. This report should not be regarded as a guarantee that no further contamination beyond that which could have been detected within the scope of this investigation is present beneath the subject property. Undocumented, unauthorized releases of hazardous material, the remains of which are not readily identifiable by visual inspection and are of different chemical constituents, are difficult and often impossible to detect within the scope of a chemical specific investigation.

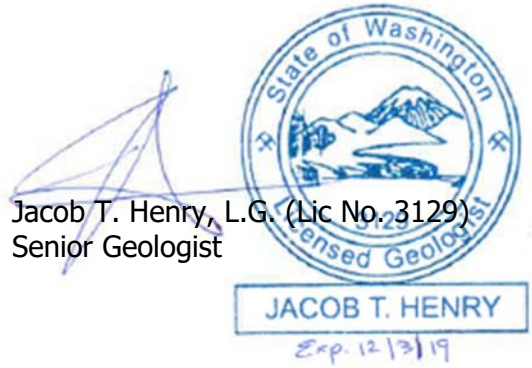
Any conclusions and/or recommendations are based on these analyses and observations, and the governing regulations. Conclusions beyond those stated and reported herein should not be inferred from this document. These services were performed in accordance with generally accepted practices, in the environmental engineering and construction field, which existed at the time and location of the work. No other warranty, either expressed or implied, has been made.

If there are any questions regarding our investigation, please do not hesitate to contact Peter McIntyre at (925) 746-6000.

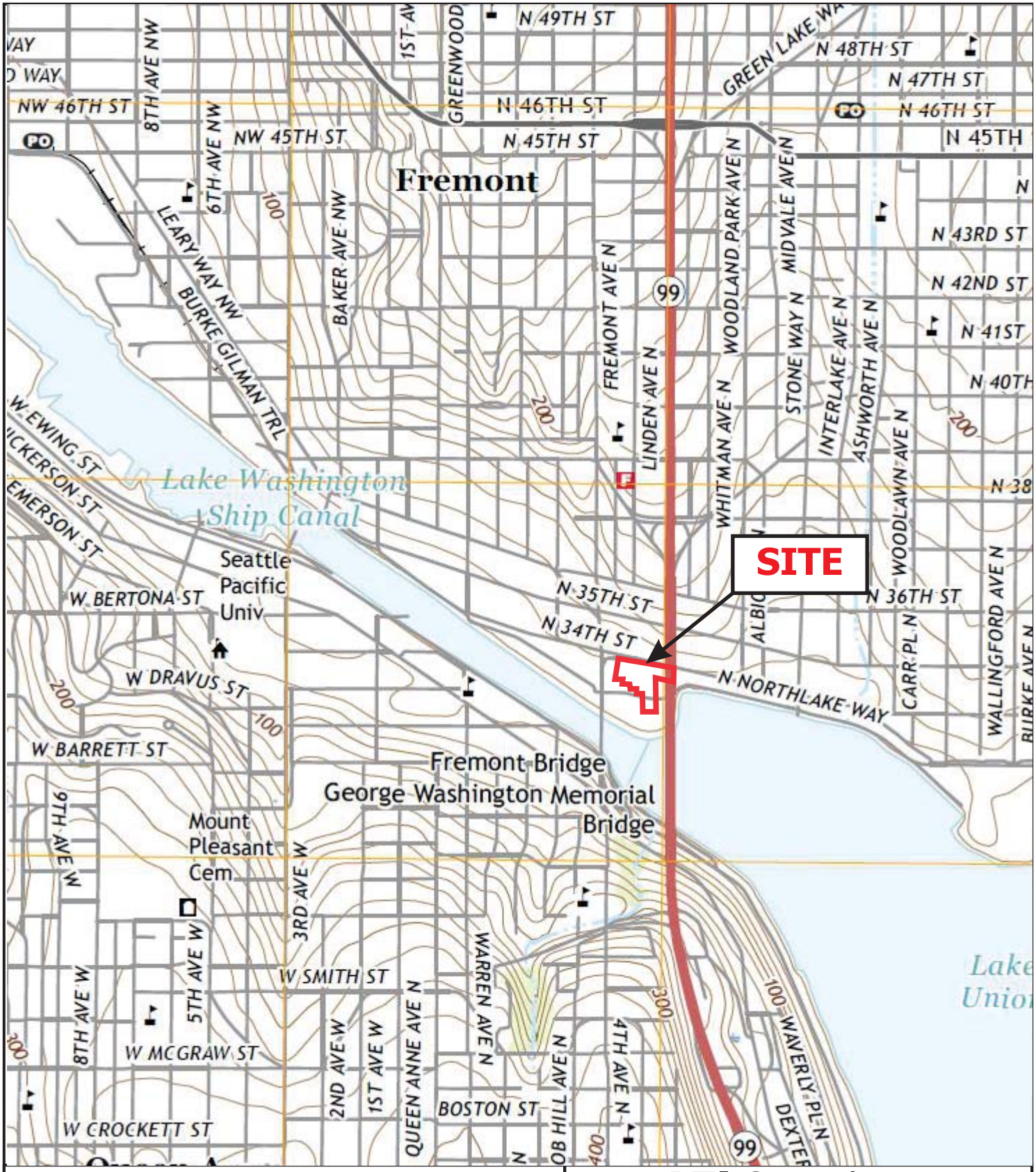
Sincerely,
AEI Consultants

Peter McIntyre
Executive Vice President

Jacob T. Henry, L.G. (Lic No. 3129)
Senior Geologist



FIGURES



LEGEND

Map: Seattle North
Date: 2017
Source: USGS

N

0 1,000 2,000
APPROXIMATE SCALE

AEI Consultants
2500 Camino Diablo, Walnut Creek, California

SITE LOCATION MAP

Lakeview Building
Seattle, Washington

FIGURE 1
Project No. 307024

P:\Companywide Projects\307000 Series\307024 Seattle, WA\Figures\2016 10 17 - Figures\2016 10 17 - Figure4 9/18/2016

North 34th Street

Retaining Wall

A

A'

Former Railroad Spurs
(AEI Phase I ESA Sanborn Maps)

Former Railroad Spur
(1998 EMCON Report)

Native Soils Exposed at
Bottom of Building Excavation

Fill Soils Exposed at
Bottom of Building Excavation

Native/Fill Contact

Aurora Street Bridge

TP-212
ES-20
TP-210
TP-211
ES-60
TP-206
ES-57
ES-58
ES-63
ES-59
ES-61/62
TP-209
TP-204
DTP - 31
TP-207
DTP - 31
DTP - 32
ES-65
ES-64
W-5
ES-36
ES-35
ES-34
DTP - 33
TP-203
ES-54
TP-202
ES-53
DTP - 34
ES-38
ES-31
DTP - 36
ES-52
W-4/MW S-1
SB-4
TP-201
SB-3
SB-6
SB-5
DTP - 35
DTP - 37
ES-48
SB-2
TP-205
ES-49
MW-2
TP-208
W-2
MW-1
SB-1

LEGEND

- Excavation Area Test Pit [1997]
- Soil Sample, In Place [May 2007]
- Soil Sample, Removed [May 2007]
- Exploration Pit, Removed [May 2007]
- Exploration Pit, In Place [May 2007]
- Wood Pile, With Creosote [May to Aug 2007]
- Wood Pile, Without Creosote [May to Aug 2007]
- AEI Soil Sample [July 2014]
- Monitoring Well Location (August-2019)

N

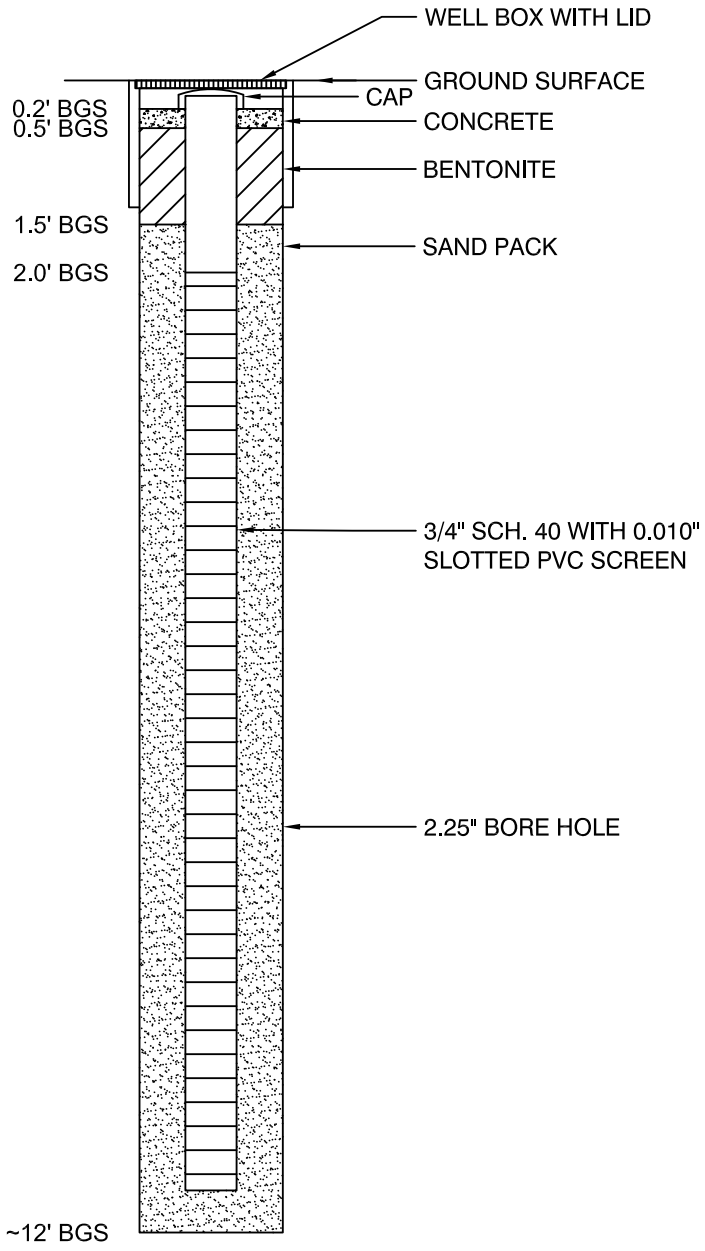
0 40 80
APPROXIMATE SCALE IN FEET

AEI CONSULTANTS
2500 CAMINO DIABLO, WALNUT CREEK, CALIFORNIA

Site Plan

Lakeview Building
Seattle, WA

FIGURE 2
Project No. 307024



NOT TO SCALE

AEI Consultants

2500 Camino Diablo, Walnut Creek, California

MONITORING WELL CONSTRUCTION DETAIL MW-1 and MW-2

Lakeview Building
Seattle, Washington

FIGURE 3
Project No. 307024

TABLES

TABLE 1: GROUNDWATER SAMPLE DATA SUMMARY
Lakeview Building, Seattle, Washington

Location ID	Date	Depth of Boring (feet bgs)	Depth to Water (feet bgs)	Diesel Range Organics (µg/L)	Residual Range Organics (µg/L)	Gasoline Range Organics (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	Pentachlorophenol (µg/L)
SB-2	7/16/2014	4	4	<250	<500	<100	<1.0	5.1	<1.0	3.4	NA
SB-3	7/16/2014	4	4	<250	<500	<100	<1.0	3.7	<1.0	<3.0	NA
SB-4	7/16/2014	4	4	<250	<500	<100	<1.0	3.6	<1.0	<3.0	NA
SB-5	7/16/2014	4	4	<250	<500	<100	<1.0	5.4	<1.0	<3.0	NA
SB-6	7/16/2014	10	10	<250	<500	<100	<1.0	<1.0	<1.0	<3.0	NA
MW-1	8/24/2019	12	0.72	1,070	2,480	NA	NA	NA	NA	NA	<1.0
MW-2	8/24/2019	12	1.97	150J	379	NA	NA	NA	NA	NA	<1.0
Comparison Values:											
MTCA Method A				500	500	800/1,000 (1)	5	1,000	700	1,000	Not Established
State of WA MCL				--	--	--	5	1,000	700	10,000	1.0

Notes:

µg/L	micrograms per liter
bgs	below ground surface
(1)	Benzene present in groundwater / No benzene present in groundwater
NA	Not Analyzed
J	The identification of the analyte is acceptable; the reported value is an estimate
--	Not Established

Comparison Values:
MTCA Method A: Model Toxics Control Cleanup, Metod A Cleanup Levels for Ground Water
MCL: Maximum Contaminant Level

APPENDIX A

PREVIOUS INVESTIGATION SOIL AND GROUNDWATER TABLES

1. Independent Remedial Action Report (IRAR), July 2008, Lakeview Building, Seattle, Washington - Soil Analytical Table

Table 1
Summary of Laboratory Test Results

Sampling Point	Media	Elevation (feet amsl[2])	Date Sampled	Diesel	Motor Oil	Analytical Test Results (ppm[1,8])									R[6]/I[7]
						Chromium	Arsenic	Selenium	Silver	Cadmium	Barium	Lead	Mercury	Penta-chloro-phenol	
TP 201	Soil Composite	14 to 24	5/2/2007	120x[3]	470	N/A[5]								<1	R
TP 201	Soil	7 to 7.5	5/9/2007	<50	<150	17.2	4.72	<1	<1	<1	47.8	4.97	<0.2	<0.1	I
TP 202	Soil	11	5/2/2007	83x	190j[4]									<1	R
TP 202	Soil	9	5/2/2007	140x	690									<1	I
TP 202A	Soil	8.5	5/9/2007	<50	<150	12.7	3.02	<1	<1	<1	68.2	38.5	<0.2	<0.1	I
TP 203	Soil	11 to 19	5/2/2007	120x	400									<1	R
TP 203	Soil	9	5/2/2007	210x	460									<1	I
TP 203A	Soil	9	5/9/2007	<50	160	15.6	2.36	<1	<1	<1	83.5	39.7	<0.2	<1	I
TP 204	Soil	12 to 19	5/2/2007	100x	460									<1	R
TP 204	Soil	9.5 to 10.5	5/2/2007	88x	280									<1	R
TP 204A	Soil	7.23	5/9/2007	<50	<150	10.1	1.51	<1	<1	<1	14.8	1.86	<0.2	<0.1	I
TP 205	Soil Composite	15 to 19	5/4/2007	<50	<125j									<0.1	R
TP 205	Soil	9.5 to 10.5	5/4/2007	4,700x	10,000									<5	R
TP 205	Soil	8	5/9/2007	6,300	18,000	9.91	2.65	<1	<1	<1	53.3	45.7	<0.2	<1	I
TP 206	Soil Composite	15 to 20	5/4/2007	<50	<125j									<0.1	R
TP 207	Soil Composite	12 to 19	5/4/2007	87x	300									<1	R
TP 207	Soil	10 to 10.5	5/4/2007	<50	<125j									<0.1	R
TP 208	Soil	15	5/9/2007	<50	160	15.7	3.91	<1	<1	<1	56.7	27.9	<0.2	<1	R
TP 208	Soil	9	5/9/2007	<50	<150	8.73	3.04	<1	<1	<1	80.4	55.6	0.27	<0.1	I
TP 208	Soil	7	5/9/2007	<50	<150	12.2	3.97	<1	<1	<1	89.4	28.8	<0.2	<0.1	I
TP 209	Soil	15	5/9/2007	<50	<150	14	1.52	<1	<1	<1	37.7	10.4	<0.2	<0.1	R
TP 209	Soil	8	5/9/2007	<50	<150	8.79	1.69	<1	<1	<1	26.5	1.65	<0.2	<0.1	I
TP 210	Soil	16.5	5/15/2007	<50	<125	12.4	5.61	<1	<1	<1	48.1	2.52	<0.2	<0.1	R
TP 211	Soil	15 to 16.5	5/15/2007	<50	<125	20.9	18	<1	<1	<1	95	16.6	<0.2	<1	R
TP 211	Soil	13.5	5/15/2007	<50	<125	16.9	40.8	<1	<1	<1	51.5	16.3	<0.2	<0.1	R
TP 212	Soil	17	5/16/2007	69x	260	12.8	3.34	<1	<1	<1	44.5	35.4	<0.2	<1	R
TP 212	Soil	13	5/16/2007	<50	<125	10.3	2.04	<1	<1	<1	33	1.95	<0.2	<0.1	R
ES 20	Soil		5/10/2007	<50	<125	7.27	1.73	<1	<1	<1	23.4	1.88	<0.2	<0.1	

Sampling Point	Media	Elevation (feet amsl[2])	Date Sampled	Diesel	Motor Oil	Analytical Test Results (ppm[1,8])									R[6]/I[7]
						Chromium	Arsenic	Selenium	Silver	Cadmium	Barium	Lead	Mercury	Penta-chloro-phenol	
ES 31	Soil	13	5/15/2007	79	150	11	2.56	<1	<1	<1	51.6	30.3	<0.2	<1	R
ES 34	Soil	15 to 20	5/15/2007	<50	<125	11.7	1.96	<1	<1	<1	31.3	6.81	<0.2	<0.1	R
ES 35	Soil	14 to 20	5/15/2007	<50	<125	18.4	3.06	<1	<1	<1	49.5	12.5	<0.2	<0.1	R
ES 36	Soil	13	5/15/2007	93x	410	17	5.11	<1	<1	<1	68.1	33.7	<0.2	<1	R
ES 38	Soil	9	5/15/2007	320x	1,200	21.1	9.99	<1	<1	<1	123	236	<0.2	<0.1	I
ES 48	Soil	8.25	5/16/2007	63,000	46,000										I
ES 49	Soil	8.25 to 8.5	5/16/2007	<50	<125										I
ES 52	Soil	8.33	5/17/2007	300	170	12.3	4.58	<1	<1	<1	63.1	46.7	<0.2	<1	I
ES 53	Soil	8.5	5/17/2007	<50	<125	11.4	2.23	<1	<1	<1	59.1	13.2	<0.2	<0.1	I
ES 54	Soil	9.5	5/17/2007	440	280	9.76	3.33	<1	<1	<1	70.7	63.4	<0.2	<1	R
ES 57	Soil	Stockpile	5/18/2007	<50	<125										R
ES 58	Soil	Stockpile	5/18/2007	<50	<125										R
ES 59	Soil	Stockpile	5/18/2007	<50	<125										R
ES 60	Soil	17	5/21/2007	<50	490	13	3.3	<1	<1	<1	63.1	17.3	<0.2	<1	R
ES 61	Soil	12	5/21/2007	130	390	6.96	7.91	<1	<1	<1	163	118	<0.2	<1	R
ES 62	Soil	14	5/21/2007	<50	<125	7.63	<1	<1	<1	<1	16.2	1.28	<0.2	<0.1	R
ES 63	Soil	10.5	5/21/2007	380	420	14.3	4.92	<1	<1	<1	58.1	23.9	<0.2	<1	R
ES 64	Soil	14	5/21/2007	<50	<125	9.07	1.02	<1	<1	<1	21.7	3.77	<0.2	<0.1	R
ES 65	Soil	15 to 20	5/21/2007	<50	<125	9.61	1.85	<1	<1	<1	21	2.4	<0.2	<0.1	R
W4 (MW S-1)	Water		5/2/2007	<50	<250	<1	<1	<1	<1	<1	63.8	<1	<0.2	<2	R
Cleanup Levels (MTCA Method A or B)				2,000	2,000	2,000[9]	20	400	400	2	5,600	250	2	8.33	

NOTES:
[1] ppm Parts per million
[2] amsl Above mean sea level
[3] x The pattern of peaks present is not indicative of diesel. The result is due to overlap from the motor oil range.
[4] j The result is below normal reporting limits. The value reported is an estimate.
[5] N/A Not applicable
[6] R Tested soils were removed and exported from the site.
[7] I Tested soils remain in place below the building floor slab.
[8] Results for water sample MW-5-1 in micrograms per liter (μg/l) equal to parts per billion (ppb).
[9] Based on chromium III cleanup standard.

2. Groundwater Analytical Results from December 26, 2000 Sampling Event - Proposed Lakeview Building

Table 2

Summary of Groundwater Sampling Results

Pentachlorophenol, pH, and Turbidity

Lake View Building
Quadrant Lake Union Center

Location	Date Sampled	PCP (µg/L)	Turbidity (NTUs)	pH
Method B Cleanup Level/MCL[a]		0.73/1.0	NA	NA
Freshwater Aquatic Chronic Criteria[b]		3.13 – 4.68[c]	NA	NA
W-2	11/28/00	1.26	--	--
	12/11/00	NR	44.7	6.4
	12/20/00	<0.500	43.1	6.4
	12/26/00	1.2	14.7	6.7
W-5	11/28/00	1.22	--	--
	12/11/00	NR	4.27	6.6
	12/20/00	<0.500	9.58	6.5
	12/26/00	0.67	16.2	6.8

NOTE: NR = not reported.
NA = not available.
-- = not analyzed.

a MTCA Method B Cleanup Level/ Maximum Contaminant Level.

b Freshwater Aquatic Chronic Criteria from Water Quality Standards for Surface waters of the State of Washington. Chapter 173-201A WAC.

c Freshwater aquatic criteria are based on pH. Range provided is for pH range of 6.4 to 6.8.

3. Subsurface Investigation for the Lakeview Building, September 2014 - Soil and Groundwater Analytical Tables

TABLE 1: SOIL SAMPLE DATA SUMMARY
Lakeview Building, Seattle, Washington

Location ID	Date	Depth (feet bgs)	Diesel Range Organics (mg/kg)	Lube Oil Range Organics (mg/kg)	Gasoline Range Organics (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	Chromium (mg/kg)
SB-2	7/16/2014	3	<50	<100	<10	<0.02	<0.05	<0.05	<0.15	NA
SB-2	7/16/2014	5	<50	<100	<10	<0.02	<0.05	<0.05	<0.15	12
SB-3	7/16/2014	3.5	<50	<100	<10	<0.02	<0.05	<0.05	<0.15	NA
SB-3	7/16/2014	5	<50	<100	<10	<0.02	<0.05	<0.05	<0.15	NA
SB-4	7/16/2014	3.25	<50	<100	<10	<0.02	<0.05	<0.05	<0.15	NA
SB-4	7/16/2014	5	<50	<100	<10	0.03	0.06	<0.05	<0.15	NA
SB-5	7/16/2014	3.5	<50	<100	<10	<0.02	0.33	<0.05	<0.15	NA
SB-6	7/16/2014	7.5	<50	<100	<10	<0.02	<0.05	<0.05	<0.15	NA
SB-6	7/16/2014	9	<50	<100	<10	<0.02	<0.05	<0.05	<0.15	NA
Comparison Values:										
MTCA Method A			2,000	2,000	100	0.03	7	6	9	19 / 2,000 *

Notes:

mg/kg	milligrams per kilogram
bgs	below ground surface
NA	not analyzed
*	Chromium VI / Chromium III
Bold	Result exceeds applicable Comparison Value

Comparison Values:
MTCA Method A: Model Toxics Control Cleanup, Table 740-1, Metod A Soil Cleanup Levels for Unrestricted Land Use

TABLE 2: GROUNDWATER SAMPLE DATA SUMMARY
Lakeview Building, Seattle, Washington

Location ID	Date	Depth (feet bgs)	Diesel Range Organics (µg/L)	Lube Oil Range Organics (µg/L)	Gasoline Range Organics (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)
SB-2	7/16/2014	4	<250	<500	<100	<1.0	5.1	<1.0	3.4
SB-3	7/16/2014	4	<250	<500	<100	<1.0	3.7	<1.0	<3.0
SB-4	7/16/2014	4	<250	<500	<100	<1.0	3.6	<1.0	<3.0
SB-5	7/16/2014	4	<250	<500	<100	<1.0	5.4	<1.0	<3.0
SB-6	7/16/2014	10	<250	<500	<100	<1.0	<1.0	<1.0	<3.0
Comparison Values: MTCA Method A			500	500	800/1,000 (1)	5	1,000	700	1,000

Notes:

µg/L	micrograms per liter
bgs	below ground surface
(1)	Benzene present in groundwater / No benzene present in groundwater
Bold	Result exceeds applicable Comparison Value

Comparison Values:
MTCA Method A: Model Toxics Control Cleanup, Table 720-1, Metod A Cleanup Levels for Ground Water

APPENDIX B

DRILLER NOTICE OF INTENT

DEPARTMENT OF ECOLOGY
State of Washington

Notice of Intent to Construct an Resource Protection Well

Notification Number

RE18068

This form and required fees **MUST BE RECEIVED** by the Department of Ecology **72 HOURS BEFORE** you construct a well.

Submit one completed form for each job site and required fee (check or money order only) to:
Department of Ecology Cashiering Unit, P.O. Box 47611, Olympia, WA 98504-7611

NOTE: Please print. Processing your Notice of Intent may be delayed if all fields are not filled in completely.

1. Property Owner: Fremont Lakeview — Phone Number: (925) 746-6066
   Mailing Address: C-o AEI Consultants — City: Walnut Creek — State: CA — Zip Code: 94597
2. Agent (if different from above): AEI Consultants — Phone Number: (925) 746-6066
   Mailing Address: 2500 Camino Diablo Su 200 — City: Walnut Creek — State: CA — Zip Code: 94597
3. Well Location

Tax Parcel Number, Township, Range, Section, ¼, and ¼ ¼ are Required. Latitude and longitude (if available).

County Name: King - 17

Well Site Street Address	City	State	Zip Code
837 N 34th St	Seattle	WA	98103

Tax Parcel Number	Township	Range	Section	¼ (within 160 acres)	¼ -¼ (within 40 acres)
1973200389	25N	4E	18	SW	SE

Latitude Degrees	Latitude Time	Horizontal Collection Method
	min sec	
Longitude Degrees	Longitude Time	
	min sec	

4. Estimated Start Date: 8/24/2019 — Project Name: 103-19-1327 08-20
5. Professional's License Number
6. Well Drilling Company Name: Cascade Drilling LP (425) — Phone Number
7. Well Driller Name: TBD — Driller License Number
8. **Send the entire form.**

Please copy the notification number (located in the upper and lower right corners) and keep in a safe place. Use this reference number when communicating with the Department of Ecology.

Total Number of wells to be constructed
Fee Amount: $40.00 per well

Total Number of wells = 1 x $ 40 each

Total Due and Amount Enclosed $40.00

This notification number must be provided to your driller:

RE18068

pswan@cascade-env.com

Accepted: 8/23/2019 14:31. Confirmation Number: 19082338503118. This begins your 72 hour wait period.

APPENDIX C

BORING LOGS

AEI Consultants
2500 Camino Diablo
Walnut Creek, CA 94596
Telephone: 925-746-6000
Fax: 925-746-6099

BORING NUMBER MW-1

CLIENT Kilroy Realty
PROJECT NAME Lakeview Building
PROJECT NUMBER 307024
PROJECT LOCATION 837 North 34th Street, Seattle, WA
DATE STARTED 8/24/19 **COMPLETED** 8/24/19
GROUND ELEVATION _____ **HOLE SIZE** 2.25 inches
DRILLING CONTRACTOR Cascade Drilling, Inc.
GROUND WATER LEVELS:
DRILLING METHOD Direct Push
AT TIME OF DRILLING 4.46 ft
LOGGED BY M. Zaunius **CHECKED BY** J. Henry
AT END OF DRILLING ---
NOTES Parking stall 420
AFTER DRILLING 0.58 ft

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS	PID DATA (ppm)	GRAPHIC LOG	MATERIAL DESCRIPTION	COMPLETION
0					0.6 CONCRETE	
			0.1		SANDY GRAVEL (GP), dark gray (3/1 10YR), medium dense, moist, fine grained, sub-angular, poorly graded with some silt and fine sand, no odor	
					at 5 feet bgs, becomes saturated	
5			4.8		6.0	
					SILTY GRAVEL (GM), dark gray (3/1 10YR), saturated, loose poorly graded with some silt, trace fine sand, no odor	
			0.2			
10						
			0.0		12.0	

Bottom of borehole at 12.0 feet.

AEI Consultants
2500 Camino Diablo
Walnut Creek, CA 94596
Telephone: 925-746-6000
Fax: 925-746-6099

BORING NUMBER MW-2

CLIENT Kilroy Realty
PROJECT NAME Lakeview Building
PROJECT NUMBER 307024
PROJECT LOCATION 837 North 34th Street, Seattle, WA
DATE STARTED 8/24/19 **COMPLETED** 8/24/19
GROUND ELEVATION _____ **HOLE SIZE** 2.25 inches
DRILLING CONTRACTOR Cascade Drilling, Inc.
GROUND WATER LEVELS:
DRILLING METHOD Direct Push
▽ **AT TIME OF DRILLING** 6.92 ft
LOGGED BY M. Zaunius **CHECKED BY** J. Henry
AT END OF DRILLING ---
NOTES Parking stall 720
▼ **AFTER DRILLING** 4.36 ft

DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS	PID DATA (ppm)	GRAPHIC LOG	MATERIAL DESCRIPTION	COMPLETION
0					0.6 CONCRETE	
					SILTY SANDY GRAVEL (GP), dark gray (3/1 10YR), moist, medium dense, fine, sub-angular gravel with silt and fine grained sand, poorly graded, no odor	
			0.1		3.0 SILTY CLAY (CL), dark gray (3/1 10YR), moist to 4.5 feet bgs, saturated belwo 5 feet bgs, soft, low to moderate plasticity, no odor	
5			0.9		at 9 feet bgs some fine grained, sub-angular gravel lenses	
10					12.0	

Bottom of borehole at 12.0 feet.

APPENDIX D

GROUNDWATER DEVELOPMENT/SAMPLING FORMS

DATE:_____ **AEI CONSULTANTS** PAGE:_____ OF:_____

MONITORING WELL DEVELOPMENT LOG

Project Name: Lakeview Seattle
Technician: M. Zaunius
Location: 837 North 34th Street, Seattle WA
Project Manager: M. Zaunius
Project No.: 307024
Date 8/24/2019
Start Time: 16:55PM End Time: 17:45PM
Development Method: Surge block w/ peri pump

MONITORING WELL DATA

Well ID: **MW-1**
Well Diameter: 0.75" SCH40 PVC
Constructed Depth of Well: 12
Screened Interval: 2-12 Feet BGS
Slot Size: 0.010
Filter Pack Material/Size: No. 2/12 Sand
Depth to Water (Start): 0.70
Depth to Water (End): 0.72

Casing Volume (gal): 0.26
Actual Well Volumes Removed: 10
Surge Start Time __1630___ Surge Stop Time __1645___
Free Product Present? No
Well Depth Before Development: 10.88
Well Depth After Development: 11.49

FIELD PARAMETERS MEASURED

Time	Volume Removed (gallons)	Temp (deg C)	pH	Conductivity (µsec/cm)	DO (mg/L)	ORP (meV)	Appearance of Purge Water
16:55PM			Start				
17:00PM	0.31	18.78	6.86	1368	4.86	-173.6	clowdy
17:05PM	0.62	18.75	6.85	1185	4.11	-205.6	clear
17:10PM	0.93	18.71	6.84	1162	4.37	-222.0	clear
17:15PM	1.24	18.70	6.84	1139	3.95	-244.6	clear
17:20PM	1.55	18.69	6.84	1128	3.45	-200.1	clear
17:25PM	1.86	18.69	6.83	1120	3.19	-213.7	clear
17:30PM	2.17	18.68	6.83	1119	3.21	-240.1	clear
17:35PM	2.48	18.69	6.83	1119	3.18	-238.4	clear
			Stop to let	well recharge			
17:45PM			Sample				

COMMENTS (i.e., pumped dry, sample odor, well recharge time & percent, etc.)

DATE:_____ **AEI CONSULTANTS** PAGE:_____ OF:_____

MONITORING WELL DEVELOPMENT LOG

Project Name: Lakeview Seattle
Technician: M. Zaunius
Location: 837 North 34th Street, Seattle WA
Project Manager: M. Zaunius
Project No.: 307024
Date 8/24/2019
Start Time: 18:45 PM End Time: 19:30 PM
Development Method: Surge block w/peri pump

MONITORING WELL DATA

Well ID: **MW-2**
Well Diameter: 0.75" SCH40 PVC
Constructed Depth of Well: 12 Feet BGS
Screened Interval: 2-12 Feet BGS
Slot Size: 0.010
Filter Pack Material/Size: No. 2/12 Sand
Depth to Water Start: 1.95
Depth to Water End: 1.97

Casing Volume (gal): 0.23
Actual Well Volumes Removed: 10
Surge Start Time __1820__ Surge Stop Time _1835____
Free Product Present? No
Well Depth Before Development: 11.38
Well Depth After Development: 11.7

FIELD PARAMETERS MEASURED

Time	Volume Removed (gallons)	Temp (deg C)	pH	Conductivity (µsec/cm)	DO (mg/L)	ORP (meV)	Appearance of Purge Water
18:45PM			Start				
18:50PM	0.31	15.50	6.40	490.00	0.68	-47.30	clowdy
18:55PM	0.62	15.45	6.40	487.00	0.55	-64.10	clowdy
19:00PM	0.93	15.39	6.40	480.00	0.44	-82.30	clear
19:05PM	1.24	15.34	6.39	470.00	0.39	-93.90	clear
19:10PM	1.55	15.34	6.39	469.00	0.39	-98.10	clear
19:15PM	1.86	15.35	6.39	470.00	0.37	-99.60	clear
			Stop	to let well	recharge		
19:30PM			Sample	Well			

COMMENTS (i.e., pumped dry, sample odor, well recharge time & percent, etc.)

APPENDIX E

LABORATORY ANALYTICAL REPORTS

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

September 04, 2019

AEI Consultants - CA

Sample Delivery Group:	L1133273
Samples Received:	08/27/2019
Project Number:	307204
Description:	837 N. 34th St.

Report To: Mallory Zaunius
2500 Camino Diablo
Walnut Creek, CA 94597

Entire Report Reviewed By: Brian Ford

Brian Ford
Project Manager

TABLE OF CONTENTS

DRUM-01 L1133273-01 Solid

Collected by: M. Zaunius
Collected date/time: 08/24/19 18:00
Received date/time: 08/27/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1339056	1	09/03/19 18:48	09/03/19 18:55	KDW	Mt. Juliet, TN
Mercury by Method 7471B	WG1335793	1	08/28/19 15:47	08/29/19 09:37	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1336561	1	08/28/19 18:39	08/29/19 11:19	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1337988	43.75	08/24/19 18:00	08/31/19 09:03	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1338373	1.1	08/24/19 18:00	09/01/19 03:01	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1338759	1.1	08/24/19 18:00	09/03/19 12:05	JAH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1338494	1	09/01/19 21:05	09/02/19 10:41	KME	Mt. Juliet, TN

MW-1 L1133273-02 GW

Collected by: M. Zaunius
Collected date/time: 08/24/19 17:45
Received date/time: 08/27/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1336566	1	08/29/19 08:51	09/01/19 18:14	JN	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270 D	WG1336296	1	08/28/19 16:08	08/29/19 06:27	JNJ	Mt. Juliet, TN

MW-2 L1133273-03 GW

Collected by: M. Zaunius
Collected date/time: 08/24/19 19:30
Received date/time: 08/27/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT	WG1336566	1	08/29/19 08:51	09/01/19 18:37	JN	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270 D	WG1336296	1	08/28/19 16:08	08/29/19 06:48	JNJ	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Brian Ford
Project Manager

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	82.3		1	09/03/2019 18:55	WG1339056

Mercury by Method 7471B

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Mercury	0.0368		0.00340	0.0364	1	08/29/2019 09:37	WG1335793

Metals (ICP) by Method 6010D

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Arsenic	3.14		0.559	2.43	1	08/29/2019 11:19	WG1336561
Barium	93.9		0.207	0.607	1	08/29/2019 11:19	WG1336561
Cadmium	0.0903	J	0.0850	0.607	1	08/29/2019 11:19	WG1336561
Chromium	28.0		0.170	1.21	1	08/29/2019 11:19	WG1336561
Lead	39.3		0.231	0.607	1	08/29/2019 11:19	WG1336561
Selenium	1.09	J	0.753	2.43	1	08/29/2019 11:19	WG1336561
Silver	U		0.146	1.21	1	08/29/2019 11:19	WG1336561

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Gasoline Range Organics-NWTPH	U		1.80	5.32	43.75	08/31/2019 09:03	WG1337988
(S) a,a,a-Trifluorotoluene(FID)	*99.8*			*77.0-120*		*08/31/2019 09:03*	WG1337988

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Acetone	0.0914		0.0183	0.0334	1.1	09/01/2019 03:01	WG1338373
Acrylonitrile	U		0.00254	0.0167	1.1	09/03/2019 12:05	WG1338759
Benzene	0.00227		0.000535	0.00134	1.1	09/01/2019 03:01	WG1338373
Bromobenzene	U		0.00141	0.0167	1.1	09/01/2019 03:01	WG1338373
Bromodichloromethane	U		0.00105	0.00334	1.1	09/01/2019 03:01	WG1338373
Bromoform	U		0.00799	0.0334	1.1	09/01/2019 03:01	WG1338373
Bromomethane	U		0.00494	0.0167	1.1	09/01/2019 03:01	WG1338373
n-Butylbenzene	U		0.00513	0.0167	1.1	09/01/2019 03:01	WG1338373
sec-Butylbenzene	U		0.00338	0.0167	1.1	09/01/2019 03:01	WG1338373
tert-Butylbenzene	U		0.00207	0.00668	1.1	09/01/2019 03:01	WG1338373
Carbon tetrachloride	U		0.00145	0.00668	1.1	09/01/2019 03:01	WG1338373
Chlorobenzene	U		0.000765	0.00334	1.1	09/01/2019 03:01	WG1338373
Chlorodibromomethane	U		0.000601	0.00334	1.1	09/01/2019 03:01	WG1338373
Chloroethane	U		0.00145	0.00668	1.1	09/01/2019 03:01	WG1338373
Chloroform	U		0.000554	0.00334	1.1	09/01/2019 03:01	WG1338373
Chloromethane	U		0.00186	0.0167	1.1	09/01/2019 03:01	WG1338373
2-Chlorotoluene	U		0.00123	0.00334	1.1	09/01/2019 03:01	WG1338373
4-Chlorotoluene	U		0.00151	0.00668	1.1	09/01/2019 03:01	WG1338373
1,2-Dibromo-3-Chloropropane	U	J0	0.00682	0.0334	1.1	09/01/2019 03:01	WG1338373
1,2-Dibromoethane	U		0.000702	0.00334	1.1	09/01/2019 03:01	WG1338373
Dibromomethane	U		0.00134	0.00668	1.1	09/01/2019 03:01	WG1338373
1,2-Dichlorobenzene	U		0.00194	0.00668	1.1	09/01/2019 03:01	WG1338373
1,3-Dichlorobenzene	U		0.00227	0.00668	1.1	09/01/2019 03:01	WG1338373
1,4-Dichlorobenzene	U		0.00264	0.00668	1.1	09/01/2019 03:01	WG1338373
Dichlorodifluoromethane	U		0.00109	0.00334	1.1	09/01/2019 03:01	WG1338373
1,1-Dichloroethane	U		0.000768	0.00334	1.1	09/01/2019 03:01	WG1338373
1,2-Dichloroethane	U		0.000634	0.00334	1.1	09/01/2019 03:01	WG1338373

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
1,1-Dichloroethene	U		0.000668	0.00334	1.1	09/01/2019 03:01	WG1338373
cis-1,2-Dichloroethene	U		0.000922	0.00334	1.1	09/01/2019 03:01	WG1338373
trans-1,2-Dichloroethene	U		0.00191	0.00668	1.1	09/01/2019 03:01	WG1338373
1,2-Dichloropropane	U		0.00170	0.00668	1.1	09/01/2019 03:01	WG1338373
1,1-Dichloropropene	U		0.000935	0.00334	1.1	09/01/2019 03:01	WG1338373
1,3-Dichloropropane	U		0.00233	0.00668	1.1	09/01/2019 03:01	WG1338373
cis-1,3-Dichloropropene	U		0.000906	0.00334	1.1	09/01/2019 03:01	WG1338373
trans-1,3-Dichloropropene	U		0.00204	0.00668	1.1	09/01/2019 03:01	WG1338373
2,2-Dichloropropane	U		0.00106	0.00334	1.1	09/03/2019 12:05	WG1338759
Di-isopropyl ether	U		0.000468	0.00134	1.1	09/01/2019 03:01	WG1338373
Ethylbenzene	U		0.000708	0.00334	1.1	09/01/2019 03:01	WG1338373
Hexachloro-1,3-butadiene	U		0.0170	0.0334	1.1	09/01/2019 03:01	WG1338373
Isopropylbenzene	U		0.00115	0.00334	1.1	09/01/2019 03:01	WG1338373
p-Isopropyltoluene	U		0.00311	0.00668	1.1	09/01/2019 03:01	WG1338373
2-Butanone (MEK)	0.0274	J	0.0168	0.0334	1.1	09/01/2019 03:01	WG1338373
Methylene Chloride	0.0317	J	0.00887	0.0334	1.1	09/01/2019 03:01	WG1338373
4-Methyl-2-pentanone (MIBK)	U		0.0134	0.0334	1.1	09/01/2019 03:01	WG1338373
Methyl tert-butyl ether	U		0.000394	0.00134	1.1	09/01/2019 03:01	WG1338373
Naphthalene	U		0.00417	0.0167	1.1	09/01/2019 03:01	WG1338373
n-Propylbenzene	U		0.00158	0.00668	1.1	09/01/2019 03:01	WG1338373
Styrene	U		0.00364	0.0167	1.1	09/01/2019 03:01	WG1338373
1,1,1,2-Tetrachloroethane	U		0.000668	0.00334	1.1	09/01/2019 03:01	WG1338373
1,1,2,2-Tetrachloroethane	U		0.000521	0.00334	1.1	09/03/2019 12:05	WG1338759
1,1,2-Trichlorotrifluoroethane	U		0.000901	0.00334	1.1	09/01/2019 03:01	WG1338373
Tetrachloroethene	0.00210	J	0.000935	0.00334	1.1	09/01/2019 03:01	WG1338373
Toluene	0.0139		0.00168	0.00668	1.1	09/01/2019 03:01	WG1338373
1,2,3-Trichlorobenzene	U		0.000836	0.00334	1.1	09/01/2019 03:01	WG1338373
1,2,4-Trichlorobenzene	U		0.00644	0.0167	1.1	09/01/2019 03:01	WG1338373
1,1,1-Trichloroethane	U		0.000367	0.00334	1.1	09/01/2019 03:01	WG1338373
1,1,2-Trichloroethane	U		0.00118	0.00334	1.1	09/01/2019 03:01	WG1338373
Trichloroethene	U		0.000535	0.00134	1.1	09/01/2019 03:01	WG1338373
Trichlorofluoromethane	U		0.000668	0.00334	1.1	09/01/2019 03:01	WG1338373
1,2,3-Trichloropropane	U		0.00682	0.0167	1.1	09/01/2019 03:01	WG1338373
1,2,4-Trimethylbenzene	0.00332	J	0.00156	0.00668	1.1	09/01/2019 03:01	WG1338373
1,2,3-Trimethylbenzene	U		0.00153	0.00668	1.1	09/01/2019 03:01	WG1338373
Vinyl chloride	U		0.000912	0.00334	1.1	09/01/2019 03:01	WG1338373
1,3,5-Trimethylbenzene	U		0.00145	0.00668	1.1	09/01/2019 03:01	WG1338373
Xylenes, Total	0.0118		0.00639	0.00869	1.1	09/01/2019 03:01	WG1338373
(S) Toluene-d8	*105*			*75.0-131*		*09/01/2019 03:01*	WG1338373
(S) Toluene-d8	*104*			*75.0-131*		*09/03/2019 12:05*	WG1338759
(S) 4-Bromofluorobenzene	*102*			*67.0-138*		*09/01/2019 03:01*	WG1338373
(S) 4-Bromofluorobenzene	*97.6*			*67.0-138*		*09/03/2019 12:05*	WG1338759
(S) 1,2-Dichloroethane-d4	*101*			*70.0-130*		*09/01/2019 03:01*	WG1338373
(S) 1,2-Dichloroethane-d4	*95.7*			*70.0-130*		*09/03/2019 12:05*	WG1338759

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

Analyte	Result (dry) mg/kg	Qualifier	MDL (dry) mg/kg	RDL (dry) mg/kg	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	U		1.62	4.86	1	09/02/2019 10:41	WG1338494
Residual Range Organics (RRO)	U		4.05	12.1	1	09/02/2019 10:41	WG1338494
(S) o-Terphenyl	*65.2*			*18.0-148*		*09/02/2019 10:41*	WG1338494

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Diesel Range Organics (DRO)	1070		66.7	200	1	09/01/2019 18:14	WG1336566
Residual Range Organics (RRO)	2480		83.3	250	1	09/01/2019 18:14	WG1336566
(S) o-Terphenyl	*84.2*			*52.0-156*		*09/01/2019 18:14*	WG1336566

Semi Volatile Organic Compounds (GC/MS) by Method 8270 D

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Pentachlorophenol	U		0.313	1.00	1	08/29/2019 06:27	WG1336296
(S) 2-Fluorophenol	*25.9*			*10.0-120*		*08/29/2019 06:27*	WG1336296
(S) Phenol-d5	*15.2*			*10.0-120*		*08/29/2019 06:27*	WG1336296
(S) 2,4,6-Tribromophenol	*80.5*			*10.0-155*		*08/29/2019 06:27*	WG1336296

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-NO SGT

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Diesel Range Organics (DRO)	150	J	66.7	200	1	09/01/2019 18:37	WG1336566
Residual Range Organics (RRO)	379		83.3	250	1	09/01/2019 18:37	WG1336566
(S) o-Terphenyl	*94.2*			*52.0-156*		*09/01/2019 18:37*	WG1336566

Semi Volatile Organic Compounds (GC/MS) by Method 8270 D

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Pentachlorophenol	U		0.313	1.00	1	08/29/2019 06:48	WG1336296
(S) 2-Fluorophenol	*28.2*			*10.0-120*		*08/29/2019 06:48*	WG1336296
(S) Phenol-d5	*16.1*			*10.0-120*		*08/29/2019 06:48*	WG1336296
(S) 2,4,6-Tribromophenol	*83.5*			*10.0-155*		*08/29/2019 06:48*	WG1336296

Method Blank (MB)

(MB) R3447099-1 09/03/19 18:55

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0.000			

L1133189-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1133189-04 09/03/19 18:55 • (DUP) R3447099-3 09/03/19 18:55

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	88.1	89.3	1	1.36		10

Laboratory Control Sample (LCS)

(LCS) R3447099-2 09/03/19 18:55

Analyte	Spike Amount %	LCS Result %	LCS Rec. %	Rec. Limits %	LCS Qualifier
Total Solids	50.0	50.0	100	85.0-115	

Method Blank (MB)

(MB) R3445365-1 08/29/19 08:28

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/kg		mg/kg	mg/kg
Mercury	U		0.00280	0.0300

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3445365-2 08/29/19 08:31 • (LCSD) R3445365-3 08/29/19 08:33

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	%	%	%			%	%
Mercury	0.500	0.522	0.524	104	105	80.0-120			0.260	20

L1132569-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1132569-04 08/29/19 08:36 • (MS) R3445365-4 08/29/19 08:38 • (MSD) R3445365-5 08/29/19 08:41

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Mercury	0.500	ND	0.545	0.521	108	103	1	75.0-125			4.51	20

Method Blank (MB)

(MB) R3445514-1 08/29/19 10:47

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.460	2.00
Barium	U		0.170	0.500
Cadmium	U		0.0700	0.500
Chromium	U		0.140	1.00
Lead	U		0.190	0.500
Selenium	U		0.620	2.00
Silver	U		0.120	1.00

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3445514-2 08/29/19 10:49 • (LCSD) R3445514-3 08/29/19 10:51

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Arsenic	100	94.0	93.7	94.0	93.7	80.0-120			0.319	20
Barium	100	102	101	102	101	80.0-120			0.797	20
Cadmium	100	95.9	95.2	95.9	95.2	80.0-120			0.756	20
Chromium	100	100	100	100	100	80.0-120			0.283	20
Lead	100	99.9	99.2	99.9	99.2	80.0-120			0.767	20
Selenium	100	94.1	93.0	94.1	93.0	80.0-120			1.14	20
Silver	20.0	17.9	17.8	89.7	88.8	80.0-120			0.997	20

L1133160-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1133160-01 08/29/19 10:54 • (MS) R3445514-6 08/29/19 11:01 • (MSD) R3445514-7 08/29/19 11:04

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	100	4.49	95.5	96.8	91.0	92.3	1	75.0-125			1.36	20
Barium	100	18.1	114	118	96.1	99.7	1	75.0-125			3.12	20
Cadmium	100	0.310	93.4	94.1	93.1	93.8	1	75.0-125			0.772	20
Chromium	100	20.1	120	118	99.8	98.3	1	75.0-125			1.26	20
Lead	100	41.7	138	141	96.1	99.2	1	75.0-125			2.21	20
Selenium	100	U	91.5	92.0	91.5	92.0	1	75.0-125			0.521	20
Silver	20.0	U	17.0	17.2	85.2	85.9	1	75.0-125			0.764	20

Method Blank (MB)

(MB) R3446508-1 08/31/19 02:12

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Gasoline Range Organics-NWTPH	U		0.0339	0.100
(S) a,a,a-Trifluorotoluene(FID)	*100*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3446508-2 08/31/19 11:03

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Gasoline Range Organics-NWTPH	5.50	5.53	101	71.0-124	
(S) a,a,a-Trifluorotoluene(FID)			*110*	*77.0-120*	

L1133377-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1133377-01 08/31/19 09:27 • (MS) R3446508-3 08/31/19 12:02 • (MSD) R3446508-4 08/31/19 12:26

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Gasoline Range Organics-NWTPH	5.50	U	113	136	82.3	99.0	25	10.0-149			18.5	27
(S) a,a,a-Trifluorotoluene(FID)					*110*	*109*		*77.0-120*				

Method Blank (MB)

(MB) R3446449-3 08/31/19 21:58

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Acetone	U		0.0137	0.0250
Benzene	U		0.000400	0.00100
Bromobenzene	U		0.00105	0.0125
Bromodichloromethane	U		0.000788	0.00250
Bromoform	U		0.00598	0.0250
Bromomethane	U		0.00370	0.0125
n-Butylbenzene	U		0.00384	0.0125
sec-Butylbenzene	U		0.00253	0.0125
tert-Butylbenzene	U		0.00155	0.00500
Carbon tetrachloride	U		0.00108	0.00500
Chlorobenzene	U		0.000573	0.00250
Chlorodibromomethane	U		0.000450	0.00250
Chloroethane	U		0.00108	0.00500
Chloroform	U		0.000415	0.00250
Chloromethane	U		0.00139	0.0125
2-Chlorotoluene	U		0.000920	0.00250
4-Chlorotoluene	U		0.00113	0.00500
1,2-Dibromo-3-Chloropropane	U		0.00510	0.0250
1,2-Dibromoethane	U		0.000525	0.00250
Dibromomethane	U		0.00100	0.00500
1,2-Dichlorobenzene	U		0.00145	0.00500
1,3-Dichlorobenzene	U		0.00170	0.00500
1,4-Dichlorobenzene	U		0.00197	0.00500
Dichlorodifluoromethane	U		0.000818	0.00250
1,1-Dichloroethane	U		0.000575	0.00250
1,2-Dichloroethane	U		0.000475	0.00250
1,1-Dichloroethene	U		0.000500	0.00250
cis-1,2-Dichloroethene	U		0.000690	0.00250
trans-1,2-Dichloroethene	U		0.00143	0.00500
1,2-Dichloropropane	U		0.00127	0.00500
1,1-Dichloropropene	U		0.000700	0.00250
1,3-Dichloropropane	U		0.00175	0.00500
cis-1,3-Dichloropropene	U		0.000678	0.00250
trans-1,3-Dichloropropene	U		0.00153	0.00500
Di-isopropyl ether	U		0.000350	0.00100
Ethylbenzene	U		0.000530	0.00250
Hexachloro-1,3-butadiene	U		0.0127	0.0250
Isopropylbenzene	U		0.000863	0.00250
p-Isopropyltoluene	U		0.00233	0.00500
2-Butanone (MEK)	U		0.0125	0.0250

Method Blank (MB)

(MB) R3446449-3 08/31/19 21:58

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Methylene Chloride	U		0.00664	0.0250
4-Methyl-2-pentanone (MIBK)	U		0.0100	0.0250
Methyl tert-butyl ether	U		0.000295	0.00100
Naphthalene	U		0.00312	0.0125
n-Propylbenzene	U		0.00118	0.00500
Styrene	U		0.00273	0.0125
1,1,1,2-Tetrachloroethane	U		0.000500	0.00250
Tetrachloroethene	U		0.000700	0.00250
Toluene	U		0.00125	0.00500
1,1,2-Trichlorotrifluoroethane	U		0.000675	0.00250
1,2,3-Trichlorobenzene	U		0.000625	0.00250
1,2,4-Trichlorobenzene	U		0.00482	0.0125
1,1,1-Trichloroethane	U		0.000275	0.00250
1,1,2-Trichloroethane	U		0.000883	0.00250
Trichloroethene	U		0.000400	0.00100
Trichlorofluoromethane	U		0.000500	0.00250
1,2,3-Trichloropropane	U		0.00510	0.0125
1,2,3-Trimethylbenzene	U		0.00115	0.00500
1,2,4-Trimethylbenzene	U		0.00116	0.00500
1,3,5-Trimethylbenzene	U		0.00108	0.00500
Vinyl chloride	U		0.000683	0.00250
Xylenes, Total	U		0.00478	0.00650
(S) Toluene-d8	*106*			*75.0-131*
(S) 4-Bromofluorobenzene	*99.6*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*99.5*			*70.0-130*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3446449-1 08/31/19 20:16 • (LCSD) R3446449-2 08/31/19 20:37

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	0.625	0.511	0.467	81.7	74.7	10.0-160			8.92	31
Benzene	0.125	0.122	0.125	97.2	100	70.0-123			3.19	20
Bromobenzene	0.125	0.125	0.115	99.8	92.2	73.0-121			7.97	20
Bromodichloromethane	0.125	0.130	0.132	104	106	73.0-121			2.06	20
Bromoform	0.125	0.102	0.103	81.6	82.1	64.0-132			0.698	20
Bromomethane	0.125	0.124	0.129	99.1	103	56.0-147			3.77	20
n-Butylbenzene	0.125	0.109	0.113	87.2	90.3	68.0-135			3.46	20
sec-Butylbenzene	0.125	0.127	0.129	102	104	74.0-130			1.70	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3446449-1 08/31/19 20:16 • (LCSD) R3446449-2 08/31/19 20:37

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
tert-Butylbenzene	0.125	0.127	0.126	101	100	75.0-127			0.989	20
Carbon tetrachloride	0.125	0.122	0.129	97.7	103	66.0-128			5.22	20
Chlorobenzene	0.125	0.103	0.104	82.5	83.5	76.0-128			1.26	20
Chlorodibromomethane	0.125	0.121	0.118	97.0	94.4	74.0-127			2.66	20
Chloroethane	0.125	0.133	0.134	106	107	61.0-134			1.06	20
Chloroform	0.125	0.106	0.107	84.6	85.2	72.0-123			0.704	20
Chloromethane	0.125	0.124	0.126	99.3	101	51.0-138			1.63	20
2-Chlorotoluene	0.125	0.117	0.115	93.9	92.0	75.0-124			2.05	20
4-Chlorotoluene	0.125	0.127	0.121	102	97.1	75.0-124			4.61	20
1,2-Dibromo-3-Chloropropane	0.125	0.0995	0.0892	79.6	71.3	59.0-130			10.9	20
1,2-Dibromoethane	0.125	0.115	0.116	92.2	92.4	74.0-128			0.213	20
Dibromomethane	0.125	0.114	0.109	91.5	86.8	75.0-122			5.22	20
1,2-Dichlorobenzene	0.125	0.122	0.116	97.2	92.7	76.0-124			4.80	20
1,3-Dichlorobenzene	0.125	0.126	0.122	101	97.7	76.0-125			2.82	20
1,4-Dichlorobenzene	0.125	0.116	0.115	92.6	91.9	77.0-121			0.689	20
Dichlorodifluoromethane	0.125	0.131	0.127	104	101	43.0-156			3.16	20
1,1-Dichloroethane	0.125	0.129	0.130	103	104	70.0-127			0.947	20
1,2-Dichloroethane	0.125	0.127	0.126	102	101	65.0-131			0.509	20
1,1-Dichloroethene	0.125	0.127	0.139	101	111	65.0-131			9.09	20
cis-1,2-Dichloroethene	0.125	0.113	0.114	90.2	91.4	73.0-125			1.33	20
trans-1,2-Dichloroethene	0.125	0.126	0.130	101	104	71.0-125			3.13	20
1,2-Dichloropropane	0.125	0.125	0.125	100	100	74.0-125			0.00560	20
1,1-Dichloropropene	0.125	0.133	0.134	107	107	73.0-125			0.253	20
1,3-Dichloropropane	0.125	0.113	0.113	90.4	90.3	80.0-125			0.0452	20
cis-1,3-Dichloropropene	0.125	0.111	0.110	88.7	88.2	76.0-127			0.624	20
trans-1,3-Dichloropropene	0.125	0.109	0.112	87.4	89.9	73.0-127			2.89	20
Di-isopropyl ether	0.125	0.107	0.110	85.6	87.9	60.0-136			2.69	20
Ethylbenzene	0.125	0.119	0.120	95.1	96.3	74.0-126			1.31	20
Hexachloro-1,3-butadiene	0.125	0.119	0.113	94.8	90.8	57.0-150			4.35	20
Isopropylbenzene	0.125	0.101	0.105	80.9	84.1	72.0-127			3.90	20
p-Isopropyltoluene	0.125	0.123	0.120	98.1	96.1	72.0-133			2.06	20
2-Butanone (MEK)	0.625	0.557	0.519	89.2	83.0	30.0-160			7.13	24
Methylene Chloride	0.125	0.120	0.135	96.3	108	68.0-123			11.6	20
4-Methyl-2-pentanone (MIBK)	0.625	0.517	0.513	82.8	82.0	56.0-143			0.891	20
Methyl tert-butyl ether	0.125	0.131	0.130	104	104	66.0-132			0.747	20
Naphthalene	0.125	0.116	0.107	92.4	85.9	59.0-130			7.36	20
n-Propylbenzene	0.125	0.115	0.114	92.0	91.0	74.0-126			1.07	20
Styrene	0.125	0.108	0.111	86.2	89.0	72.0-127			3.12	20
1,1,1,2-Tetrachloroethane	0.125	0.110	0.115	87.9	92.1	74.0-129			4.63	20
Tetrachloroethene	0.125	0.127	0.128	102	103	70.0-136			1.18	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3446449-1 08/31/19 20:16 • (LCSD) R3446449-2 08/31/19 20:37

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Toluene	0.125	0.108	0.111	86.2	88.5	75.0-121			2.58	20
1,1,2-Trichlorotrifluoroethane	0.125	0.112	0.123	89.8	98.7	61.0-139			9.47	20
1,2,3-Trichlorobenzene	0.125	0.109	0.108	87.6	86.8	59.0-139			0.907	20
1,2,4-Trichlorobenzene	0.125	0.123	0.122	98.5	97.8	62.0-137			0.726	20
1,1,1-Trichloroethane	0.125	0.117	0.127	93.7	102	69.0-126			8.22	20
1,1,2-Trichloroethane	0.125	0.125	0.122	99.6	98.0	78.0-123			1.64	20
Trichloroethene	0.125	0.138	0.130	110	104	76.0-126			5.93	20
Trichlorofluoromethane	0.125	0.122	0.124	97.4	99.0	61.0-142			1.62	20
1,2,3-Trichloropropane	0.125	0.119	0.107	95.6	85.6	67.0-129			11.0	20
1,2,3-Trimethylbenzene	0.125	0.121	0.121	97.1	96.7	74.0-124			0.441	20
1,2,4-Trimethylbenzene	0.125	0.118	0.122	94.5	97.6	70.0-126			3.20	20
1,3,5-Trimethylbenzene	0.125	0.120	0.118	96.1	94.8	73.0-127			1.39	20
Vinyl chloride	0.125	0.142	0.156	113	125	63.0-134			9.59	20
Xylenes, Total	0.375	0.337	0.340	89.9	90.7	72.0-127			0.886	20
(S) Toluene-d8				*104*	*103*	*75.0-131*				
(S) 4-Bromofluorobenzene				*102*	*103*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*103*	*105*	*70.0-130*				

Method Blank (MB)

(MB) R3446845-3 09/03/19 10:29

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Acrylonitrile	U		0.00190	0.0125
2,2-Dichloropropane	U		0.000793	0.00250
1,1,2,2-Tetrachloroethane	U		0.000390	0.00250
(S) Toluene-d8	*104*			*75.0-131*
(S) 4-Bromofluorobenzene	*94.6*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*95.3*			*70.0-130*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3446845-1 09/03/19 09:13 • (LCSD) R3446845-2 09/03/19 09:32

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acrylonitrile	0.625	0.841	0.824	135	132	45.0-153			2.00	22
2,2-Dichloropropane	0.125	0.138	0.131	110	105	59.0-135			4.98	20
1,1,2,2-Tetrachloroethane	0.125	0.123	0.127	98.3	102	68.0-128			3.40	20
(S) Toluene-d8				*103*	*103*	*75.0-131*				
(S) 4-Bromofluorobenzene				*96.8*	*96.8*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*103*	*97.6*	*70.0-130*				

Method Blank (MB)

(MB) R3446367-1 08/31/19 21:28

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Residual Range Organics (RRO)	U		83.3	250
Diesel Range Organics (DRO)	U		66.7	200
(S) o-Terphenyl	*98.0*			*52.0-156*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3446367-2 08/31/19 21:51 • (LCSD) R3446367-3 08/31/19 22:14

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	%	%	%			%	%
Diesel Range Organics (DRO)	1500	1660	1630	111	109	50.0-150			1.82	20
(S) o-Terphenyl				*103*	*99.0*	*52.0-156*				

Method Blank (MB)

(MB) R3446548-1 09/02/19 08:53

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Residual Range Organics (RRO)	U		3.33	10.0
Diesel Range Organics (DRO)	U		1.33	4.00
(S) o-Terphenyl	*66.1*			*18.0-148*

Laboratory Control Sample (LCS)

(LCS) R3446548-2 09/02/19 09:06

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Diesel Range Organics (DRO)	50.0	36.5	73.0	50.0-150	
(S) o-Terphenyl			*87.1*	*18.0-148*	

L1133259-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1133259-01 09/02/19 11:37 • (MS) R3446548-3 09/02/19 11:50 • (MSD) R3446548-4 09/02/19 12:03

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Diesel Range Organics (DRO)	50.0	U	12.8	34.6	25.6	69.2	1	50.0-150	J6	J3	92.0	20
(S) o-Terphenyl					*24.2*	*67.9*		*18.0-148*				

Method Blank (MB)

(MB) R3445459-2 08/29/19 02:15

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Pentachlorophenol	U		0.313	1.00
(S) Phenol-d5	*14.5*			*10.0-120*
(S) 2-Fluorophenol	*24.3*			*10.0-120*
(S) 2,4,6-Tribromophenol	*54.5*			*10.0-155*

Laboratory Control Sample (LCS)

(LCS) R3445459-1 08/29/19 01:54

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Pentachlorophenol	50.0	34.4	68.8	23.0-120	
(S) Phenol-d5			*18.8*	*10.0-120*	
(S) 2-Fluorophenol			*29.3*	*10.0-120*	
(S) 2,4,6-Tribromophenol			*71.0*	*10.0-155*	

L1133325-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1133325-01 08/29/19 05:24 • (MS) R3445459-3 08/29/19 05:45 • (MSD) R3445459-4 08/29/19 06:06

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Pentachlorophenol	45.5	U	46.9	40.4	103	88.8	1	10.0-128			14.9	37
(S) Phenol-d5					*61.0*	*30.3*		*10.0-120*				
(S) 2-Fluorophenol					*25.1*	*20.6*		*10.0-120*				
(S) 2,4,6-Tribromophenol					*87.4*	*83.5*		*10.0-155*				

Sample Narrative:

OS: Surrogate impacted by matrix interference

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
MDL	Method Detection Limit.
MDL (dry)	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
RDL (dry)	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J0	J0: The identification of the analyte is acceptable, but the reported concentration is an estimate. The calibration met method criteria.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
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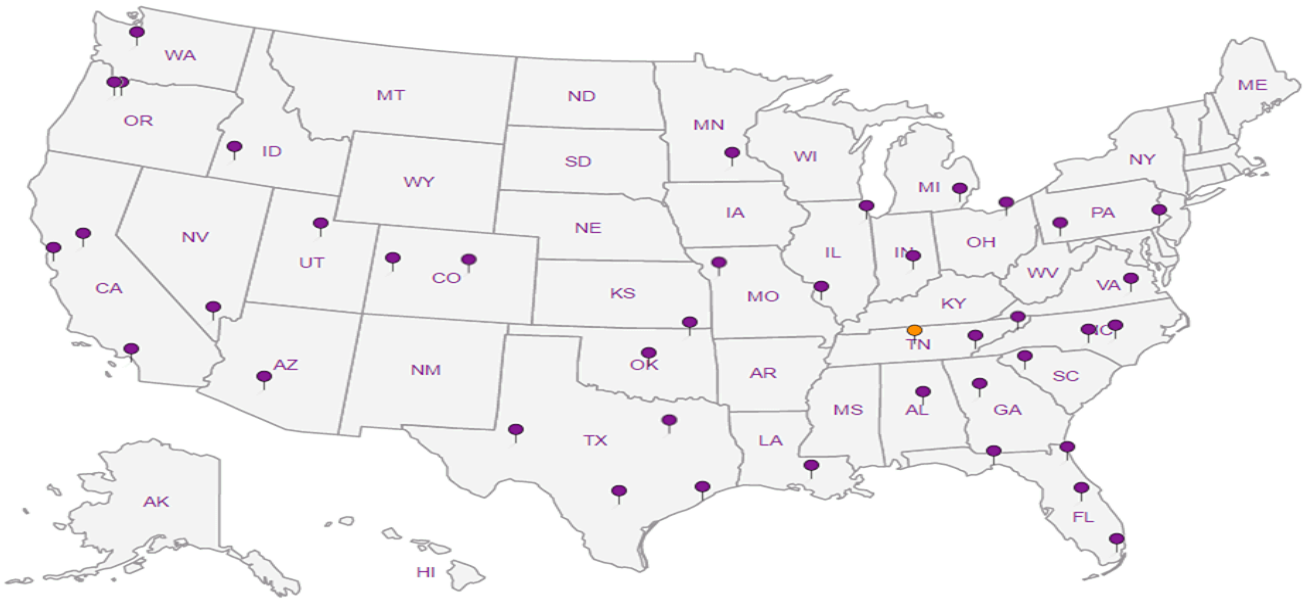
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



AEI Consultants - CA

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City/State Collected: Seattle WA

Please Circle: (PT) MT CT ET

Phone: 925-746-6000
Fax:

Client Project # 307204

Lab Project # AEICONWCCA-307204

Collected by (print): M. Zaunius

Site/Facility ID #

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day X Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No of Cntrs	soil NWTPHDX NOSGT 4ozClr-NoPres	soil NWTPHGX 40mlAmb/MeOH5ml/Syr	soil RCRA8 Metals 4ozClr-NoPres	soil VOCs 8260C 40mlAmb/MeOH5ml/Syr	soil dry weight 2ozClr-NoPres	water LL PCP 8270D 100ml Amb NoPres	water NWTPHDX NOSGT 40mlAmb-HCl-BT			Remarks	Sample # (lab only)
DRUM-01		SS	—	8/24/19	1800	5	X	X	X	X	X						-1
MW-1		GW	—	↓	1745	4						X	X				-2
MW-2		GW	—	↓	1930	4						X	X				-3
		GW															

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

Pace Analytical® National Center for Testing & Innovation

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SDG # 1133273
B085

Acctnum: AEICONWCCA
Template: T154801
Prelogin: P725668
PM: 110 - Brian Ford
PB:
Shipped Via:

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Samples returned via: __ UPS __ FedEx __ Courier _____

Tracking # 1145 2229 1160

Sample Receipt Checklist

COC Seal Present/Intact:	NP ✓Y N
COC Signed/Accurate:	✓Y N
Bottles arrive intact:	✓Y N
Correct bottles used:	✓Y N
Sufficient volume sent:	✓Y N
If Applicable	
VOA Zero Headspace:	✓Y N
Preservation Correct/Checked:	Y N
RAD Screen <0.5 mR/hr:	✓Y N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	If preservation required by Login: Date/Time
	8/26/19	900		2	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C Bottles Received: 5.3-1-5.2 12 13	
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature) Hailey Mc	Date: 8/27/19 Time: 8:45	Hold: / Condition: NCF / OK