Groundwater Monitoring Well Installation Report

Performed at:
Fife RV Center
3410 Pacific Highway East
Fife, Washington 98424

AEROTECH
Environmental Consulting Inc.

August 16, 2017

Anchorage Seattle Portland

Cost-effective environmental solutions
for the western United States and Alaska

www.AerotechEnvironmental.com

Groundwater Monitoring Well Installation Report

Performed at:
Fife RV Center
3410 Pacific Highway East
Fife, Washington 98424

August 16, 2017

Performed by:
Aerotech Environmental Consulting, Inc.
13925 Interurban Avenue South, Suite No. 210
Seattle, Washington 98168
Fax (206) 402-3872
(866) 800-4030

www.AeroTechEnvironmental.com

GROUNDWATER MONITORING WELL
INSTALLATION REPORT

performed for:
MR. CHRIS LaVERDIERE
3410 Pacific Highway East
Fife, Washington 98424

Clients:	**MR. CHRIS LaVERDIERE** 3410 Pacific Highway East Fife, Washington 98424
Point of Contact:	Mr. Chris LaVerdiere Representative of Ownership Group
Property:	**FIFE RV CENTER** 3910 Pacific Highway East Fife, Washington 98424
County:	Pierce County, Washington Parcel Number: 0320111067
Commercial Activity:	RV Retail
Project Number:	217-4025
Licensed Geologist:	James McDermott (Washington State License No. 3063)
Report Date:	August 16, 2017

EXECUTIVE SUMMARY

The subject Property consists of one irregularly-shaped 3.76-acre Parcel of commercial land located on the south side of Pacific Highway East in Fife, Washington. One approximately 10,763 square foot, 2-story structure, occupied by *Fife RV Center*, is situated near the southeastern corner of the Property. Asphalt parking areas surround the structure on all sides and are utilized to display RVs. A 0.77-acre gravel parking lot utilized to store RVs, and the subject of this investigation, is situated on the west side of the Property.

Adjoining to the south is a drainage ditch that appear to discharge to the east, followed by Interstate 5. The neighboring Parcel to the east includes approximately 5.24 acres, currently leased by the Fife RV Center for use as additional storage. The Puyallup River approaches the Site within 3,000 feet to the southwest, and the Blair Waterway and Commencement Bay are located over 3,500 feet to the north.

Formerly included within the same Parcel, and now adjoining to the north, is a Tahoma Express Gas Station and a Jack in the Box restaurant followed by Pacific Highway East and an *Econolodge*. The Tahoma Express Gas Station was listed on Ecology's Site Cleanup List as Site No. 5015. Petroleum hydrocarbons were documented at the Tahoma site prior to remediation, at concentrations above the State Cleanup Levels in soil and groundwater. Ecology issued a No Further Action determination for that site in 1993.

From the mid 1960's to the late 1980's a *Gasamet* gasoline station occupied the western portion of the western gravel paved lot on the Subject Property. Fuel dispenser islands were located south and southeast of the eastern terminus of the current restaurant drive-thru, with Underground Storage Tank Basins situated both to the east and west, and a building farther south. A triangular-shaped wooded water retention area (Bio-Swale) at the west side of the Site. Test pit exploration conducted in 2000 indicated strong petroleum odor in soil both south and southeast of the current restaurant location, in the bio-swale area and the gravel lot.

In 2014, *Associated Earth Sciences*, Inc. conducted a *Supplemental Phase II Environmental Site Assessment* at the subject Property. Petroleum hydrocarbons were detected at concentrations above the Model Toxic Control Act ("MTCA") Method A Cleanup Levels in soil and groundwater samples in the vicinity of the former Gasamet pump islands and UST Basins. Based on these results, Mr. Chris LaVerdiere, the Client, requested *Langseth Environmental* ("Langseth") and *Aerotech Environmental Consulting, Inc.* ("Aerotech") initiate site remedial excavation and environmental consulting services to address petroleum impacted soils. 1,685.24 tons of petroleum impacted soil were removed to the LRI Landfill in Graham, Washington.

Groundwater Monitoring Well Installation: Summary and Conclusions:

Well Installation and Design: On July 14, 2017, Aerotech Environmental Consulting, Inc. installed three 1-inch PVC Groundwater Monitoring Wells south and east of the former *Gasamet* Pump island and UST areas. Two wells, MW-7 and MW-8, were installed in the cross-gradient groundwater flow direction to the south, and one well, MW9, was installed in the upgradient groundwater flow direction to the east. Screens were placed at 14 feet bgs.

Groundwater Analytical Results: Nine monitoring wells (MW-1 to MW-9) were sampled on August 1, 2017. Gasoline constituent exceedances were documented at only two wells, MW-2 and MW-4. Diesel fuel, VOCs, naphthalenes, and lead were not detected in groundwater. Refer to the July 2017 quarterly groundwater monitoring report for details.

Groundwater Flow Direction: Wellhead elevations were surveyed for new wells. Consistent with previous calculations, groundwater flow was calculated to the west and west-southwest for August 1, 2017, toward the bio-swale and the adjoining drainage ditch. Low water levels reflect the absence of local precipitation between June 18 and August 1.

Soil Analytical Results: Four soil samples collected during well installation operations were analyzed. Lead, gasoline, diesel, and oil constituents were not detected. One additional borehole (B-1) was advanced in the unexcavated water main *hot zone* northwest of MW-3 in order to document additional MCTA Table 830 parameters; PCBs, cPAHs, and fuel additives were not detected or were below CULs, while methylene chloride and trichloroethylene (TCE) exceedances were documented in soil at B-1. Refer to Table 1.

TABLE of CONTENTS

Page Number:

INTRODUCTION

Aerotech Environmental Consulting, Inc., was retained by Mr. Chris LaVerdiere, the Client to install six recommended groundwater monitoring wells at the subject Property at 3410 Pacific Highway East in Fife, Washington, following the completion of remediation activities at the Site in October 2016. Six groundwater monitoring wells were to be installed around the perimeter of fuel tanks and fuel dispenser pump islands associated with a former Gasamet retail station, formerly located at the western portion of the Fife RV Center gravel parking area. In response to comments in a Department of Ecology opinion letter dated May 31, 2017, the client approved the installation three additional groundwater monitoring wells south and east of the former fuel tank and fuel pump island area.

SECTION I.

SITE DESCRIPTION

Property Exterior Description:

The subject Property consists of one irregularly-shaped 3.76-acre Parcel of commercial land located on the south side of Pacific Highway East in Fife, Washington. One approximately 10,763 square foot, 2-story structure, occupied by *Fife RV Center*, is situated near the southeastern corner of the Property. An approximately 1,000 square foot, 1-story structure is situated northeast of the main building along the eastern Property boundary. Asphalt parking areas surround the structure on all sides and are utilized for the storage and display of the RV inventory. An approximately 0.77 acre gravel parking lot, the subject of this investigation, and utilized to store RV inventory, is situated on the west side of the Property.

Adjoining to the south is a drainage that appears to discharge to the east and then south, followed by Interstate 5. The neighboring Parcel to the east includes approximately 5.24 acres, currently leased by the Fife RV Center for use as additional storage. The Puyallup River is approaches the Site within 3,000 feet to the southwest, and the Blair Waterway and Commencement Bay are located over 3,500 feet to the north. Wapato Creek is situated 2,000 feet to the east and Hylobos Creek is located two miles to the east.

Formerly included within the same Parcel, and now adjoining to the north, is a Tahoma Express Gas Station and a Jack in the Box restaurant followed by Pacific Highway East and an *Econolodge.* The Tahoma Express Gas Station was listed on Ecology's Site Cleanup List as Site No. 5015. Petroleum hydrocarbons were documented historically at the Tahoma site prior to remediation at concentrations above the State Cleanup Levels in soil and groundwater. Ecology issued a No Further Action determination in 1993.

Numerous utilities were located at the Site by private and public locators, included a water main oriented northwest ot southeast, extending from the northwest corner of the Property. Parallel and to the northeast, nearer the Tahoma building, are electrical and natural gas conduits, as well as a storm sewer line. Electrical lines also extend from a power pole along the southern perimeter of the Site toward both the restaurant and the Tahoma building. A storm sewer pipe also extends toward the southwestern corner of the gravel lot, from the vicinity of the Tahoma building. Refer to the attached figures. Updated maps will be available in the July 2017 Groundwater Monitoring Report.

A fenced and wooded water retention pond, known as a bioswale, is situated on the subject Prperty, west of the area of this investigation.

Recognized Environmental Conditions

Site Development Description:

From the mid 1960's until the late 1980's a *Gasamet* gasoline station occupied the southeast portion of the adjoining Jack in the Box Property and the western portion of the western gravel paved lot on the Subject Property. Based upon an as-built plan on file with the City of Fife, fuel dispenser islands were located between 5 and 65 feet south and southeast of the eastern terminus of the restaurant drive-thru, with Underground Storage Tank ("UST") Basins situated both to the east and west, and building farther south. A triangular-shaped wooded water retention area, known as a Bio-Swale, is located on the west corner of the Parcel. A qualitative account of test pit activities conducted in 2000 and available in the permit documents maintained by the City of Fife, indicated strong petroleum odor in soil above depths of four feet.

In 2014, *Associated Earth Sciences*, Inc. conducted a *Supplemental Phase II Environmental Site Assessment* at the subject Property. Petroleum hydrocarbons were detected at concentrations above the Model Toxic Control Act ("MTCA") Method A Cleanup Levels in soil and groundwater samples in the vicinity of the former Gasamet pump islands and UST Basins. Based on these results, Mr. Chris LaVerdiere, the Client, requested *Langseth Environmental* ("Langseth") and *Aerotech Environmental Consulting, Inc.* ("Aerotech") initiate site remedial excavation and environmental consulting services to petroleum impacted soils.

Previously Identified Contaminants of Concern:

Conclusions derived from previous investigations at the Site identified gasoline range petroleum constituents, benzene, ethyl benzene, toluene, and xylenes as Contaminants of Concern at the subject Property. One additional borehole (B-1) was advanced in the unexcavated water main *hot zone* northwest of MW-3 in order to document additional MCTA Table 830 parameters: PCBs, Carcinogenic PAHs, Chlorinated Volatile Organic Compounds, and fuel additives (EDB, EDC, and MTBE).

Site Observations and Reported Conditions:

With the exception of the above referenced environmental concern, there were no additional Recognized Environmental Conditions or concerns identified as potential impacts to the Property.

SECTION II.
FIELD WORK

Notifications - "Public" Utilities:

A public utilities locate notification was performed prior to the start of work. Aerotech Environmental Consulting, Inc.[1] Performed the "public" utilities notification on July 6, 2017, and was issued Ticket Number16334078 by the Utilities Underground Location Center.

According to the Utilities Underground Location Center the utilities necessary for notification included:

Washington Ticket#: 17252517 2 FULL BUSINESS DAYS
Transmit Date: 07/06/17Time: 6:06 PM
Type of Work: INSTALL MONITORING WELLS
Work Being Done For: OWNER
Dig Site Location
County: PIERCE State: WA Place: FIFE
Address / Street: 3410 PACIFIC HWY E Nearest Intersection: PORT OF TACOMA RD

District	Company	Marking Concerns	Customer Service	Repair
CC7711 COMCAST CABLE		(800)762-0592	(800)266-2278	(888)824-8289
LKVWLP01	LAKEVIEW LIGHT & POWER CO	(253)584-6060	(253)584-6060	(253)584-6060
LKWOOD01	LAKEWOOD WATER DISTRICT	(253)588-4423	(253)588-4423	(253)588-4423
PIERCE01	PIERCE COUNTY UTILITIES	(253)565-3440	(253)565-3440	(253)565-3440
PUGE07	PUGET SOUND ENERGY ELECTRIC	(888)728-9343	(888)225-5773	(888)225-5773
PUGG07	PUGET SOUND ENERGY GAS	(888)728-9343	(888)225-5773	(888)225-5773
QLNWA24	CTLQL-CENTURYLINK	(800)778-9140	(800)283-4237	(800)573-1311
TACH2O01	TACOMA WATER DEPARTMENT	(253)502-8398	(253)502-8344	(253)502-8344

Private Utilities Location

Additionally, Aerotech engaged personnel of Mountain View Locating Services of Bonney Lake, Washington to locate building and site utilities on July 14, 2017, prior to the start of the on Site drilling activities. No unanticipated or unexpected situations were discovered or encountered during the "private" locating activities.

Based in part upon pavement markings made by utility location technicians; the location of utility fixtures such as water, electrical, or manholes, and the presence of anomalies detected by induction or ground radar methodologies, monitoring well locations were chosen.

Ground Penetrating Radar Survey:

A Ground Penetrating Radar ("GPR") Survey conducted by Mountain View Locating Services staff on July 14, 2017 in order to augment the induced current methodology, and to verify the presence of utility trenches such as sewer and water main trenches. Mr. Dave Schaff of Mountain View Locating Services, LLC employed Radar equipment utilizing Dual Frequency Antennae (300 MHz/800 MHz) manufactured by Geophysical Survey Systems. The locations of the water main and storm sewers were confirmed by means of GPR activities.

[1] Aerotech Environmental Consulting, Inc., was previously issued a Contractor Identification Number by the non-profit Utilities Underground Location Center (www.callbeforeyoudig.com).

Site Activities:

Three groundwater monitoring wells were installed on July 14, 2017 , under contract with Aerotech Environmental Consulting, Inc. All the work was performed during normal business hours No unusual or unforeseen circumstances occurred during the Site activities.

Drilling Activities:

Drilling operations employing a Truck-mounted Direct Push Drilling Rig, equipped with 2-foot macro-core sampling tools.

The subsurface soil borings were performed by equipment owned by and operated by a Licensed Driller from Standard Environmental Probe, Inc of Tacoma, Washington. The on Site drilling equipment was operated by personnel employed by SEP. All subsurface work was overseen by State of Washington Licensed Geologist, Mr. James McDermott (State of Washington License No. 3063) and conducted on Site by environmental scientist, Nick Gerkin. The laboratory analytical services were performed by a State of Washington Licensed Lab, Advanced Analytical Labs of Redmond, Washington.

Soil Borings:

A total of four soil borings were advanced and three groundwater monitoring wells were installed in the gravel lot situated south of the Tahoma Gasoline Station convenience store building, south and east of the former Gasamet Gasoline Station tank and fuel pump area.

Soil Sample Collection:

A total of 8 discrete soil samples were collected on July 14, 2017 at four soil boring locations. Olfactory indications believed to reflect the possible presence of petroleum-impacted soil were observed in association with PID responses between 123 and 462ppm at one of four locations, borehole B-1.

Soils collected from each location were visually inspected for color quality and evidence of discoloration, and physically observed for the purpose of recording composition and noting odor, where distinctive. Each sample was handled with a fresh pair of clean latex gloves. Samples were placed in sterile four-ounce glass jars and/or 40cc glass vials preserved with 5ml methanol in accordance with procedures specified for USEPA Method 5035A.

Water samples were collected utilizing a fresh pair of nitrile gloves, utilizing a fresh disposable poly-bailer lowered to the middle of the available water column within temporary wells installed in boreholes, in order to permit suspended silt, where present, to be reduced.

Each sample was given a unique identifier number and placed in an iced cooler for sample preservation. Samples were held in the custody of the project manager, James McDermott, and ice was checked and replenished while samples were held in the evening, and maintained to the time of delivery to the lab. A Chain of Custody was maintained in order to record details associated with the collection and handling of each sample. The remaining soil samples were retained by the laboratory for analysis in the event that the soil samples selected for laboratory analysis revealed elevated levels of constituents. Following the production of the initial Site sample results for soil, no follow-up laboratory analyses were requested for the subject Site, as of the date of this report.

Installation and Design of Groundwater Monitoring Wells:

On July 14, 2017, groundwater monitoring wells MW-7, MW-8, and MW-9 were installed at the subject Site.

At each well location, a one-inch diameter Schedule 80 PVC groundwater monitoring well was installed to a depth between 14. feet bgs, with ten feet of 2-inch diameter no. 10 PVC slotted screen situated between depths of approximately 4 and 14 feet bgs.

The annular space in each case was completed with clean Colorado silica sand sized to the No. 10 screen (No. 10 to 20 grade), to a depth of one foot above the top of the well screen interval. The remaining annular space was sealed with bentonite chips to within one foot of the surface to prevent the infiltration of surface water or contaminants.

The well was completed with a sealable pressure cap, and cement was placed above the bentonite to secure a flush mountedwell-head monument.

Well design details are depicted in the attached Soil Boring Logs. The Department of Ecology does not permit groundwater to be collected from a newly installed groundwater well until the well system has been allowed to chemically equilibrate for a period of at least 72 hours. This delay is intended to permit the groundwater environment to return to its natural chemical and physical state. Groundwater samples were collected on August 1, 2017. Refer to the August 2017 Quarterly Groundwater Sampling Report for additional details.

Well Identification	Well Tag	Total Depth (feet bgs)	Approximate Screened Interval (feet bgs)	Elevation of Well Head (feet above MSL)*a
MW-1	BIS 683	14.0	4-14 ft	8.37
MW-2	BIS 684	14.0	4-14 ft	9.40
MW-3	BIS 685	14.0	4-14 ft	9.43
MW-4	BIS 686	15.0	5-15 ft	10.12
MW-5	BIT 785	14.0	4-14 ft	11.27 **
MW-6	BIT786	14.0	4-14 ft	11.40 **
MW-7	**BJP689**	**14.5**	**4-14.5 ft**	**10.09**
MW-8	**BJP788**	**14.0**	**4-14.5 ft**	**10.26**
MW-9	**BJP787**	**14.0**	**4-14.5 ft**	**8.84**

* Estimated relative to Mean Sea Level ("MSL"). Catch Basin along north Site/gravel lot perimeter. BGS = Below ground surface
** Above ground steel monument, otherwise flush mounted. Wells installed in July 2017 are highlighted. *a Adjusted elevations.

Equipment Decontamination:

All sample acquisition equipment was decontaminated before and after the completion of each borehole in order to eliminate the potential for cross-contamination between borings, as required. All reusable sampling equipment for soil sampling, drive rods, and probes were decontaminated after each sampling point by washing with an Alconox-distilled water solution and rinsing with distilled water.

Site Restoration:

Each borehole was completed with bentonite chips, and finished with a concrete concrete pad. No landscape restoration was necessary.

SECTION III.

GEOLOGY AND HYDROGEOLOGY

Site and Regional Topography and Hydrology:

The precise Property location is N 47E 14' 34.44" / W 122E 22' 58.80" as determined by DeLorme mapping data. The Site is located in Universal Transverse Mercator Zone 11, and has an elevation of approximately 9 to 12 feet above mean sea level. As observed during the Site visit and confirmed on the USGS topographic map, the subject Property is relatively flat, with graded gravel or adjoining paved surfaces in the study area sloping toward two storm water catch basins located near the north fence line. The surface within five to ten feet of the southern Property margin slopes markedly to the level of the ditch to the south, which may perhaps as much as 6 to 8 feet below the average grade of the gravel lot.

Similarly, adjoining to the west is a triangular-shaped bioswale in which a pond was observed near its center. The water level in this pond appears to be situated at a depths of approaching 6 to 8 feet below the elevation of the gravel lot, consistent with groundwater depths documented at locations MW-4, MW-5, and MW-6. Although isopleth maps generated by the excavation team in the Remedial Excavation Report dated November 18, 2016, generated by the excavation team's software, were depicted with closed isoconcentration contours beyond (west of) the western perimeter of the current study area (within the fenced bioswale area), based upon observed but unsurveyed bioswale water levels in 2017 (not readily accessible in July and August 2017 due to thick overgrowth), it is assumed that the bioswale is likely unlined and that a hydraulic connection between groundwater at the Site and the adjoining bioswale and ditch does exist. Future investigation is planned in order to measure surface water level elevations at these adjoining surface water bodies.

The Work at the Site in October and November 2016 was completed during a period of exceptionally high rainfall, whereas work completed in July and August were completed during a period characterized by drought conditions. No rainfall was recorded at SeaTacAirport between June 17 and August 11, 2017. Consistent with the limited recharge associated with drought conditions, water levels at the Site were recorded as much as 2 to 3 feet below levels recorded in May 2017. Surface water was not observed in either the adjoining ditch or bioswale, although access and visual obstructions created by heavy overgrowth interfered with observations.

As is commonly the case in low-lying areas near sea level, many roads and properties appear to be elevated as much as four or more feet above the original grade. Evidence of the original grade may be seen in the decrease in elevation evident north of Pacific Highway East, north of the subject Property. The 1897 USGS 15-Minute topographic Map depicts Commencement Bay estuaries and tidelands as they existed prior to development with fill. The subject Site is depicted as located within a few hundred feet of a small embayment, representing the relatively close approach of the high tide mark during that period.

A ditch is located a few tens of feet south of the Property. A second tributary ditch is located east of the property adjoining to the east. Pacific Avenue East is elevated approximately four feet above the Site. A Storm Water Systems Map update, published by the city of Fife, suggests that the adjoining ditch to the south discharges to the east, and is subsequently directed via pipe to the south, underneath Interstate 5, and ultimately to a ditch system parallel to the east side of the Puyallup River levee system, and to Commencement Bay.

The regional topography within the Commencement Bay tidal flats is that of the nearly planar surface generated by the placement of artificial fill material in the later decades of the nineteenth century and the early years of the twentieth century. Elevations on ridges over one mile to the south increase to more than 200 feet MSL, at the northernmost margins of the south Tacoma upland area.

Site and Regional Geology:

The Puget Sound lies within a tectonic trough situated between the Olympic Mountains to the west, and the northern Cascade Mountains to the east. This trough is characterized by fault zones accommodating north-south compressional rotation, commonly resulting in predominant north-south and northwest-southeast oriented faults and fault zones. Elliott Bay lies north of the Seattle Fault Zone while Tacoma's Commencement Bay lies south of the northernmost Tacoma Fault zone rupture. A major fault is mapped below the bluffs on which central Tacoma was developed, along the western margin of Commencement Bay. Commencement Bay and the Puyallup River Basin lie on the down dropped side of the fault. The original surface within Commencement Bay intertidal zone has been elevated by the emplacement of fill throughout the early20th century. The uppermost soils in the Puyallup River Valley are dominated by alluvial and fluvial sediments.

Volcanic mudflow-lahar deposits, commonly 50 to 135 feet in thickness, originating below the slopes of the Mount Rainier volcano 1,500 and 5,700 years bp, serve to provide a somewhat extensive and uniform hydraulic barrier, separating the Holocene alluvial deposits into upper and lower hydraulic units. These alluvial deposits have been progressing northward over the last several millennia since the last ice sheet retreated, so much so that, approximately6,000years before present the estuary and Puget Sound inlet were located near Sumner, Washington. Isopach maps, depicting the thickness of the upper alluvial deposits, the thickness oft the Electron and Osceola mud flow deposits, and the lower alluvial aquifer (the latter deposited near the City of Puyallup andt o the southeast), are attached to an Appendix of this report.

Deep borehole data indicate a total ofapproximately 1,800feet ofunconsolidated glacial and interglacial sediments in the former tidal flats in the vicinity of the subject Property.

The subject Property and vicinity, south of the Blair Waterway, are mapped as Quaternary Alluvium. These soils are characterized as:

> "Gravel, sand, silt, and clay. Deposited chiefly by modern streams, but includes some swamp deposits. Includes marine deposits near the mouth of the Puyallup river.... thickness ranges from a few feet to as much as 600 feet. Yields small to moderate quantities of water to wells. Locally capable of large yields."

Hydrogeologic Framework, Groundwater Movement, and Water Budget in the Puyallup River Watershed and Vicinity, Pierce and King Counties, Washington, U.S. Geological SurveyScientificInvestigations Report 2015-5068, Wendy B. Welch, et al, 2015.

Ground-Water Occurrence and Stratigraphy of Unconsolidated Deposits, Central Pierce County, Washington, Water Supply Bulletin No. 22, State of Washington, Department of Water Resources, Kenneth L. Walters and Grant E. Kimmel, 1968

Geologic Map of the Tacoma North 7.5' Quadrangle, King and Pierce Counties, Washington, USGeological Survey, unpublished draft.

Geologic Map of the City of Tacoma, Pierce County Washington, Mackey Smith, 1977, and unpublished maps on topographic base by Timothy J Walsh, Washington State Department of Natural Resources, circa 1987.

Groundwater Hydrology of the Tacoma-Puyallup Area, Pierce Country, Washington, USGS Water Resources Investigation 99-4013, M.A. Jones, L.A. Orr, J.C. Ebbert, and S.S. Sumioka, 1999.

The following soils were encountered during drilling activities: Approximately 5 to 6 feet

of gravelly well-graded sand fill was generally underlain by 8 or more feet of silt or very fine sand and silt. Two 2-4-foot thick poorly graded sand lens(es) were encountered above or below the silt encountered. Consistent with historical evidence, MW-3 and MW-4appear to have been advanced within the sandy backfilled former underground tank basins situated west and east of the former pump island location. Refer to Figure 3c for a depiction of soils on Site in the form of a Hydrogeologic Cross-section. Expanded geologic cross-sections including data requested by Ecology will be included in a future report.

Soils encountered during the July 2017 well installation and boring activities, are depicted in soil boring logs attached to this report. They are summarized as follows, with upper units indicated first:

UPPER: Gravel and Sand Fill - 2.5 to 10 feet thick; increasing fill thickness to the east

MIDDLE: Silt with some to little fine sand - 1 to 10 feet thick

LOWER: Sand, very fine - at least 2 to 5 feet thick

A Washington Department of Transportation test boring advanced near the intersection of the Port ofTacoma Road and Interstate 5, documents the presence of gravel with sand and sand to a depth of 8 feet, underlain by at least 12 feet of silt or silt with sand. The shallow gravels may represent fill material placed atop natural fluvially and alluvially deposited silts and sandy silts. These fill materials may be expected underneath roadways and developed properties, and are often designed to elevate the surface above shallow groundwater and reduce susceptibility to flooding due to groundwater flooding during wet periods, and flooding due to heavy precipitation or breaches and overtopping of the levee system or the associated ditch systems.

Subsurface and Hydrogeological Characteristics - Groundwater Flow:

The principal aquifers in the Puget Sound Region occur within a series of units of glacial drift, hydraulically separated by less permeable deposits commonly including interglacial deposits. One exception, the Vashon till, serves as an aquitard as well, restricting the vertical and lateral migration of groundwater and of contaminants. These deposits underlie the Puget Lowlands basin to depths often approaching 2,000 feet or more. Sand and gravel units within the glacial drift form the principle aquifers. These aquifers receive ample recharge from the typically heavy precipitation characteristic of western Washington. The glacial drift in the Puget Sound region varies greatly in composition and water yielding capacity. Typically, wells in glacial drift tapping sand- or gravel-rich glacial deposits or till in the region above depths of 100 feet may have yields of 100 gallons or more per minute. Deeper wells tapping thick, confined aquifers of highly permeable gravel and coarse sand, often at depths greater than 250 feet, can yield over 1,000 gallons per minute.

Water levels measured on August 1, 2017 in nine wells on Site were at depths between 2.92 and 8.31 feet, reflect drought conditions in the area, with no precipitation documented at Seatac Airport between June 17 and August 11, 2017. The calculated groundwater flow direction at the Site is to the west and west southwest. Flow, based upon the potentiometric surface map, consistent with that calculated during previous quarterly sampling events, is toward the bioswale to the west and the ditch to the west-southwest. As previously noted, groundwater gradients increased markedly in close proximity to the ditch and bioswale areas, within a few tens of feet of the southwest corner of the Site. Surface water and groundwater data is not yet available for either the ditch or bioswale area. However, visual observations of water levels in the bioswale during 2016 suggest hydraulic connectivity between groundwater and both the bioswale and ditch are likely. The August 1, 2017 potentiometric surface map may be found in the August 2017 Quarterly Monitoring report.

Potentiometric Surface Maps associated with February and May 2017 are attached to this report.

Static water levels north and east of the subject Property have been recorded by other consultants between depths of three to six feet bgs. During the AESI Phase II, water levels were reported to range from three to seven feet bgs on the subject Property. Ditches in the vicinity are estimated to be as much as four to five feet deep. Groundwater flow direction has been documented at the property to the north as flowing to the south-southwest; to the west and southwest at the current *Travelodge* property, adjacent to the east; and at the former Texaco Station, adjacent to the northwest, as flowing to the west-southwest, or to the south or southwest. Topography is not always a reliable basis for predicting groundwater flow direction, and flow may vary considerably from site to site, according to local influences such as the presence of production or irrigation wells and variations in geologic material and the geometry of distinct geologic units.

A groundwater divide, north of which groundwater flow may be expected to flow toward Commencement Bay, is likely present perhaps as near as a few hundred feet to the north of the Site; this groundwater divide may migrate considerable. The straightened and levi-bound Lower Puyallup River channel is located approximately 3,000 feet south west of the subject Property. Groundwater in the vicinity of the Site, based upon water level data may flow predominantly in the direction of the Puyallup River channel, but may also flow to the west or northwest where the groundwater system is influence by elevated Puyallup River water levels during flood stage or the wet winter seasons.

Components of an extensive ditch system are visible south of the Site, along the northern and southern margins of Interstate 5, and north of Pacific Highway East. Portions of the ditch system to the north may discharge to Wapato Creek to the east. Ditches to the south do not appear to be connected to the system to the north. The ditch adjoining the Site appears todischarge to the east, and then to the south via pipe underneath US 5. When the water table is low, during dry summer months, water entering ditches may, in part, infiltrate vertically to a seasonally low water table; when the water table is higher, during wet winter periods, groundwater may discharge to deeper drainage ditches.

Because tidal fluctuations approach 15 or more feet in the Tacoma area, rythmic fluctuations in ground water levels twice daily and flow direction may occur within some low lying areas near Commencement Bay. Under some conditions, tidal fluctuations may potentially influence groundwater flow at the subject Property, given its location approximately 3,000 feet from the Blair Waterway and approximately 3,000 feet northeast of the Puyallup River channel. Groundwater flow direction at low tide may potentially be diverted somewhat to the west or even northwest. The predominant groundwater flow direction south of this nearby section of Pacific Highway appears to be to the west-southwest or west. At this time, insufficient data is available and determinations associated with tidal influence upon groundwater flow direction cannot be made. The Puyallup River in the area has been straightened and is protected by a levy system. Aside from the immedate influence of the designed ditch system at and near the Site, it is at this time expected to represent the primary boundary condition likely to influence overall groundwater flow near the Site.

Jones, Orr and Ebbert depict the shallow alluvial aquifer of Commencement Bay as hydraulically connected to adjoining glacial aquifers above; in general groundwater is expected to flow from the bluffs above, toward Commencement Bay and the Puyallup River, with a significant flow component in the direction of river flow, toward Commencement Bay.

The upper alluvial aquifer is characterized as a distinct hydrogeologic unit, hydraulically connected to more permeable sandy or gravelly units along the valley margins, often lying underneath glacial till:

> "Aquifer Qc1 [Jones 1999] is generally a confined aquifer except where it is exposed at the surface, where it is unconfined, or not completely saturated beneath Qvt [Vashon Till]. It consists largely of

> sand and gravel deposits but does contain silt and clay within the sand and gravel matrix. ... The altitude of the top of this aquifer ranges from 50 feet below sea level to 509 feet above sea level."

Groundwater Hydrology of the Tacoma-Puyallup Area, Pierce Country, Washington, USGS Water Resources Investigation 99-4013, M.A. Jones, L.A. Orr, J.C. Ebbert, and S.S. Sumioka, 1999.

Ground-Water Occurrence and Stratigraphy of Unconsolidated Deposits, Central Pierce County, Washington, Water Supply Bulletin No. 22, State of Washington, Department of Water Resources, Kenneth L. Walters and Grant E. Kimmel, 1968

Lower Duwamish Waterway, Phase I Remedial Investigation Report, Final, *Lower Duwamish Waterway Group*, and *Development of a Three-Dimensional, Numerical Groundwater Flow Model for the Duwamish River Basin,* Booth and Herman 1998.

Tidal Along-shore Groundwater Flow in a Coastal Aquifer, L. Li, D.A. Barry, F. Stagnitti, and J.Y. Parlange, Environmental Modeling and Assessment 4 (1999), pp 179-188.

The shallow gravel and sand fill is generally expected to readily transmit groundwater, and where present, groundwater contaminants, while the underlying silts and sandy silts are generally expected to impede both the vertical and horizontal flow of groundwater, and where present, groundwater contaminants. Where porous fill materials associated with utility trenches, such as those that may be present underneath Pacific Highway East, are present, these trenches may serve to intercept and divert shallow groundwater. The ten-foot well screen intervals at the Site are designed to penetrate both the near-surface gravel fill and the underlying silts and sands.

Puyallup River Levee and Flow:

The lower Puyallup River levee system was constructed in the 1940s:

> "The Flood Control Act of June28, 1938 provided for the construction and maintenance of a channel conveyance project. The project provides for a channel with a capacity of 50,000 cfs between the East 11th Street bridge and the lower 2.2 miles at Commencement Bay, by straightening the channel, building levees, and making all necessary bridge changes. The East 11th Street bridge at the lower end of the project is 0.75 mile above the mouth of the Puyallup River. The project was completed in 1950."

During a period of record flooding in January 2009, Puyallup River flow peaked at 41,500 cfs; channel sedimentation during the last six decades is believed to have decreased the channel cross section and therefore capacity. The USACE estimates that, in the absence of flood control efforts imposed by the management of releases from the Mud Mountain Dam, "the peak flow in the Puyallup River at Puyallup would have exceeded 70,000 cfs" in January 2009.

> "The Puyallup River enters Commencement Bay in the City of Tacoma. The estuary historically covered an area approximately 5,800 acres in size. From 1877 to 1988, over 98 percent of the estuary was modified, leaving only 187 acres of mudflat, 90 acres of subtidal and intertidal vegetated shallows, and only 57 acres of the original tidal marsh. ... Additional alterations to the Commencement Bay contributed to the now degraded and filled delta region."

"The lower Puyallup River levees are primarily constructed on fine-grained silt and clay, with deposits of clean sand to silty sand and gravelly sand. On a large scale, these soils are generally uniform .... the levees themselves are composed of a mixture of the existing native deposits with the embankments and nearby foundation soils containing cobbles, boulders, and wood pilings."

"Sediment transport has been estimate to range from 440,000 to 1,400,000 tons annually, with the majority of these sediments characterized as fine sediments..."

Puyallup River Section 905(b) WRDA 86 Analysis, U.S. Army Corps of Engineers, Seattle District, March 18, 2009.

The City of Tacoma supplies potable water within the city limits. The City of Tacoma reports its water source as the upper eastern sections of the Green River watershed along the western flanks of the Cascade Mountains; the city also maintains groundwater production wells within the same area, in the vicinity of the Eagle Gorge Reservoir and the Howard Hanson Dam, some twenty miles east of the subject Property. A municipal well field, utilized during high demand periods, is located near Interstate 5 in south Tacoma, over three miles west of the subject Property.

SUMMARY OF SAMPLE ACQUISITION

A total of 4 soil borings were advanced in the Area of Concern to a maximum depth of 16 feet below ground surface (“bgs”). Two soil samples were collected from each of four boreholes (8 soil samples in total). Three groundwater monitoring wells were subsequently installed in boreholes with the base of 10-foot screens placed at 14.5 feet bgs, and groundwater samples were collected from these and six additional wells on August 1, 2017. Detailed descriptions of each soil boring location, observations made during the acquisition, sampling information, and the field screening process are documented in soil boring logs attached to this report.

SECTION IV.

ANALYTICAL RESULTS

Petroleum Hydrocarbons-Gasoline Constituents, Diesel Fuel and MTCA Table 830 Parameters:

Groundwater Analytical Results:

Nine monitoring wells (MW-1 to MW-9) were sampled on August 1, 2017. Gasoline constituent exceedances were documented at only two wells, MW-2 and MW-4.

At location MW-3, situated within the unexcavated 'hot zone' underneath the water main on Site, Gasoline Range Organics and benzene concentrations have diminished steadily during the last four quarters monitored. Gasoline was present at concentrations of 42,000 µg/L in November2016 and have diminished to 620 µg/L in August 2017, perhaps reflecting in part the impact of enhanced biodegradation facilitated by the placement of oxidant pellets in those excavations the former tank and fuel pump areas. Benzene, previously present at 130 µg/L at MW-3, was not detected in the August 2017 sample.

Diesel fuel, VOCs, naphthalenes, and lead were not detected in groundwater. Refer to the July 2017 quarterly groundwater monitoring report for details.

Soil Analytical Results:

Four soil samples collected during well installation operations were analyzed.

Lead, gasoline, diesel, and oil constituents were not detected in soils. As requested in the May 31, 2017 Ecology Further Action letter, the chromatogram associated with one contaminated sample is attached to this report as evidence indicating that the trace diesel range organics detected represent the common heavy gasoline fraction'bleed-over' into the diesel range.

One additional borehole (B-1) was advanced in the unexcavated water main *hot zone* northwest of MW-3 in order to document additional MCTA Table 830 parameters; PCBs, cPAHs, and fuel additives were not detected or were below CULs. TPH-gasoline constituents were present at concentrations of 1,200 mg/kg, and benzene was present at concentrations of 2.1 mg/kg, well above MTCA Method A CULs, but considerably less than sample P-25, collected nearby during remedial excavation operations on October 21, 2016, where TPH-gasoline concentrations were 5,200 mg/kg and benzene concentrations were 4.6 mg/kg.

Methylene chloride and trichloroethylene (TCE) exceedances were documented in soil at B-1. Refer to Table 1. As as result, groundwater collected on August 1st was analyzed for VOCs. No VOCs were detected in groundwater on Site.

APPLICABLE ANALYTICAL METHODOLOGIES AND PARAMETERS

The analytical parameters requested were chosen, based upon the results of previous investigations, including the Remedial Excavation Report dated November 1,2016, in order to provide a comprehensive characterization of the subsurface soils and groundwater present at the Site Areas of Concern and to comply with State of Washington recommendations.

Analytical Methodology for Soils:

Soil: Gasoline Range Organics & Benzene, Ethylbenzene, Toluene, and Xylenes
State of Washington NWTPH-Gx/8021B

Soil: Diesel and Lubricant Range Organics
State of Washington NWTPH-Dx/Dx Extended

Soil: Lead
USEPA 7010

Soil: PCBs
USEPA 8082

Soil: Carcinogenic PAHs
USEPA 8270

Soil: Chlorinated Volatile Organic Compounds
USEPA 8260B

Laboratory Analysis:

Laboratory analysis was provided by:

Advanced Analytical Laboratory, LLC
4078 148 Avenue NE
Redmond, WA 98052
425.702.8571 (office)
aachemlab@yahoo.com

STATEMENT OF QUALITY ASSURANCE

I have performed this Phase II Subsurface Investigation in accordance with generally accepted environmental practices, procedures, and regulatory requirements, as of the date of this Report. I have employed the degree of care and skill ordinarily exercised under similar circumstances by reputable environmental professionals practicing in this area.

I declare that, to the best of my professional knowledge and belief, I meet the definition of Environmental Professional as defined in § 312.10 of this part. I have the specific qualifications based upon education, training, and experience necessary to plan and implement subsurface investigations.

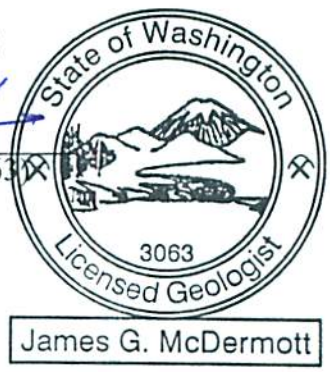
STATEMENT OF THE LICENSED GEOLOGIST

As stipulated in the Regulatory Code of the State of Washington Title 18, Chapter 18.220, the undersigned is a licensed Geologist in the State of Washington, and has met the statutory requirements of RCW § 18.220.060 for such licensing including, but not limited to, educational requirements, work and field experience, examination proficiency, and acceptance by the State Licensing Board.

The undersigned Licensed Geologist has supervised the geological work performed as described in attached Report – a majority of said work being performed by employees of the firm which employs undersigned Licensed Geologist – as delineated in RCW Title 18, Chapter 18.220, Paragraph 190.

Signature of Licensed Washington Geologist:

Signature – James McDermott (License No. 3063)



DEFINITIONS SPECIFIC TO LIMITED & TARGETED PHASE II ASSESSMENT

Background Concentration..... the concentration of a target analyte in groundwater, surface water, air, soil gas, sediment, or soil at a referenced location near a release or potential release area under investigation, which is not attributable to the release under investigation. Background samples may contain the target analyte, due to either naturally occurring or manade sources, but not due to the release(s) in question. (See, E 1903-97, § 3.1.3).

Phase II Environmental Site Assessment.... This practice (ASTM E 1903-97, Reapproved 2002) defines a commercially practical process for sound Phase II investigation that includes sampling and chemical testing. Such Phase II investigation is performed, at a minimum, to confirm the actual presence of contamination in environmental media at a property where prior assessment had indicated that contaminants may occur due to releases or potential releases of substances to the environment at the property, or to demonstrate prior to property acquisition that contamination by targeted analytes is absent. (See, E 1903-97, § 1.1.1).

Phase II Environmental Site Assessment Limitations..... "This practice [ASTM E1903-97, Reapproved 2002] recognizes that the *Phase II ESA* process can be applied either to an overall assessment of a property with respect to all releases and potential releases at the property, or to an evaluation targeted to a specific release or potential release. It a property-wide assessment is not necessary to meet the particular *User* objective, then the Phase II investigation process described herein should be applied to generate sound information regarding the specific question of problem to be resolved. If a Phase II investigation does not address all releases and potential releases identified at a property, the report of the assessment must be denoted as a *"Targeted Phase II" Environmental Site Assessment*. [E 1903-97, § 1.1.3]"

Phase II Targeted Environmental Site Assessment.... This Phase II Site Assessment is "targeted" as defined by the ASTM *Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process*, Designation E 1903-97 (Reapproved 2002); "an assessment performed in accordance with the process described in this [E 1903-97] practice, which addresses only certain *releases* or potential *releases*, or certain *target analytes*, at a property as selcted by the *User* but which does not address all *releases*, potential *releases*, and *target analytes*.[E 1903-97, § 3.1.43]"

Prior Knowledge.... "This Standard Practice [ASTM E 1903-97, Reapproved 2002] assumes ... that all reasonably ascertainable information, including but not limited to prior Phase I Environmental Site Assessment Reports, will be considered in conducting a Phase II ESA and interpreting its results. [E 1903-97, § 1.1.2]."

Targeted Analytes.... substances that have been released or potentially have been released to environmental media at the site, and which are of interest in the context of the particular Phase II ESA and its objectives, the presence of which will be sought and concentrations of which will be quantified through field screening or chemical testing. (See, E 1903-97, § 3.1.63).

REPORT ENDNOTES

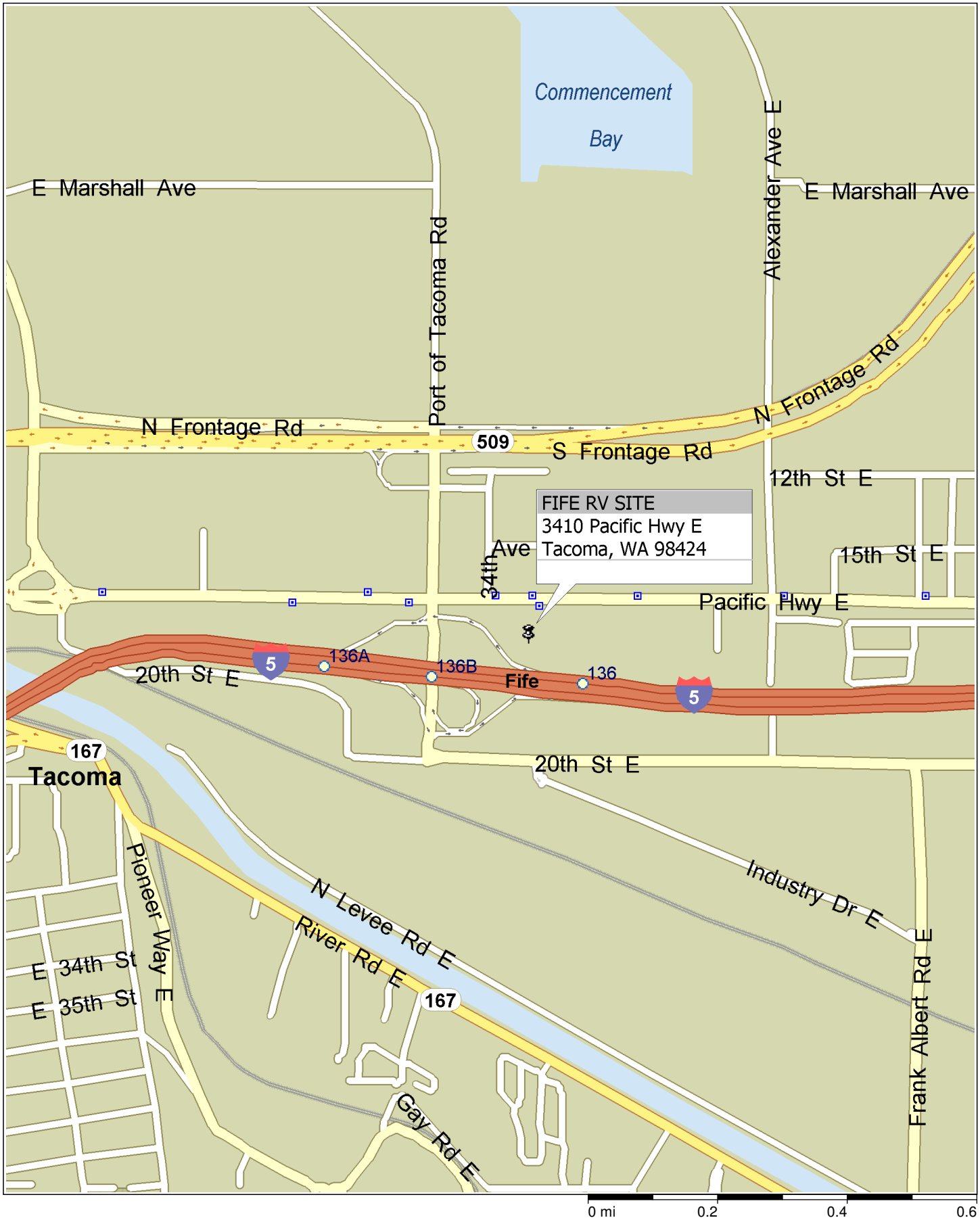
APPENDIX

- Site Location and Photographs
- Project Contract Documents
- Soil Boring Logs
- Laboratory Analytical Results and Chain of Custody
- Supporting Documentation

SITE LOCATION AND PHOTOGRAPHS

Tacoma, Washington, United States

Tacoma, Washington, United States



FIFE RV, 3410 Pacific Hwy East, Fife, Wa - Core samples - MW-7

Core samples - MW-8

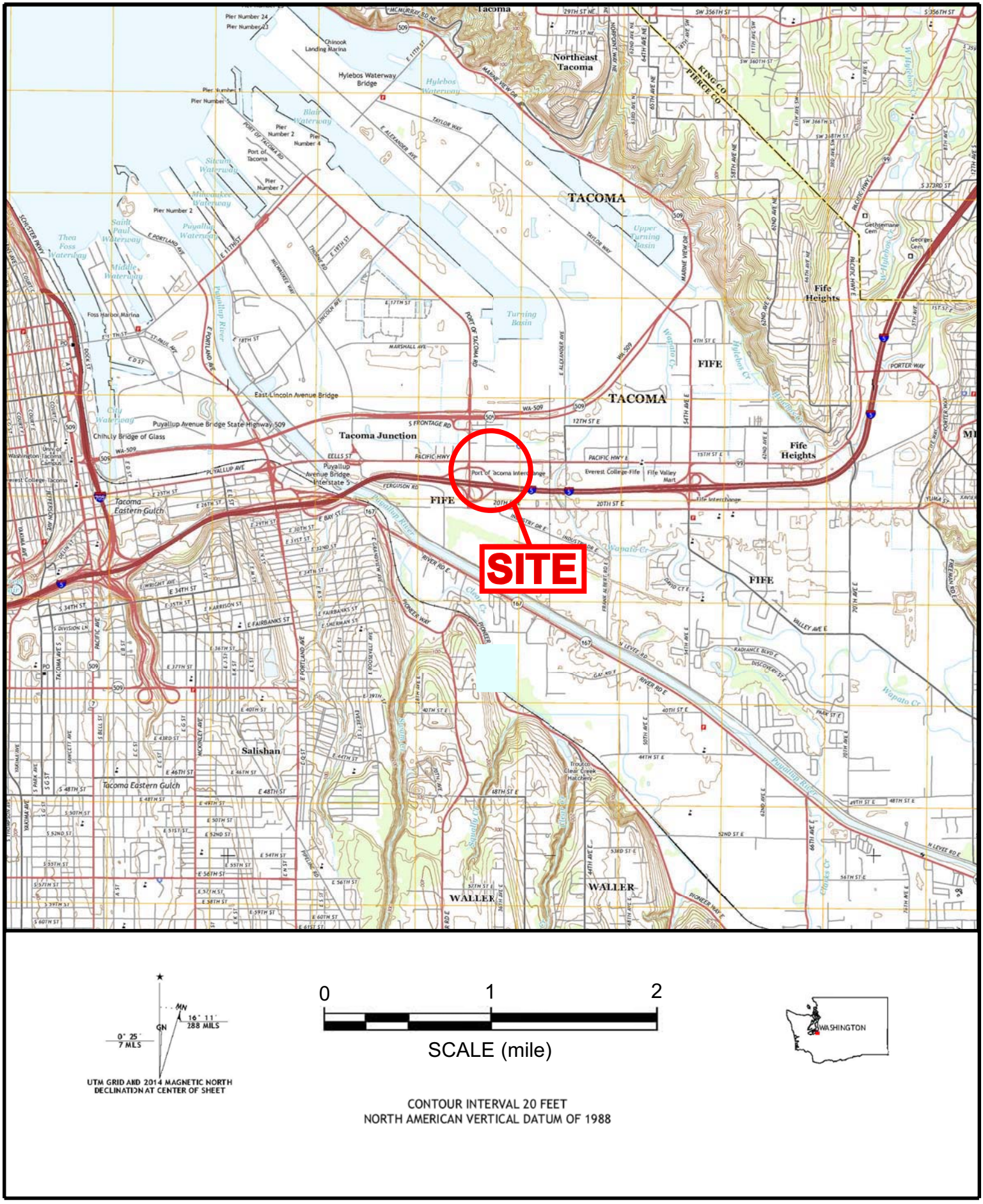
Core samples - MW-9

Core samples - B-1

Groundwater Monitoring Well Development

Bioswale Area (View west)

FIGURES



AEROTECH
ENVIRONMENTAL CONSULTING

USGS TOPOGRAPHIC MAP

Fife RV Center
3410 Pacific Highway East
Fife, Washington

Date: 10/30/16
By: Nick Gerkin
Figure: 1

EXPLANATION

Extents of Site Remedial Excavation Figures

Property Boundary

AEROTECH ENVIRONMENTAL CONSULTING

SITE VICINITY MAP

Fife RV Center
3410 Pacific Highway East
Fife, Washington

0 150 300
SCALE (feet)

Date: 10/30/16
By: Nick Gerkin
Figure: 2

N

Landscaping

JACK IN THE BOX
DRIVE-THRU

Landscaping

ACCESS EASEMENT
Pacific Highway East
100 Feet to the North

UST BASIN
(25 Feet to the North)

PUMP ISLANDS
(50 Feet to the North)

Catch Basin Rim
8.0 Feet

MW2	GW Monitoring Well ID
05/23/17	Date
10,000	TPHg
<200	TPHd
<500	TPHo
300	Benzene
18	Toluene
93	Ethylbenzene
400	Xylenes
<2.0	Dissolved Lead
<2.0	Total Lead

All Concentrations Reported in µg/L

TACOMA EXPRESS
(Former Unocal Service Station 7343)
Ecology Cleanup Site ID 5015

BIO-SWALE
POND

FORMER
PUMP
ISLANDS

POSSIBLE FORMER
UST BASIN

POSSIBLE FORMER
UST BASIN

Fire
Hydrant

MW1 MW2 MW3 MW4 MW5 MW6 MW7 MW8 MW9

P1 P2 P3 P4 P5 P6 P7 P8 P9 P10 P11 P12 P13 P14 P15 P16 P17 P18 P19 P20 P21 P22 P23 P24 P25 P26 P27 P28 P29 P30 P31 P32 P33 P34

TP1 TP2 TP3 TP4 TP5 TP6 TP7 TP8 TP9 TP10 TP11 TP12 TP13 TP14 TP15 TP16 TP17 TP18 TP19

B1

0 15 30
SCALE (feet)

Green numbers and symbols indicate concentrations below the MTCA Method A Cleanup Levels

Red numbers and symbols indicate concentrations above the MTCA Method A Cleanup Levels

AEROTECH
ENVIRONMENTAL CONSULTING

EXPLANATION

MW6 — Groundwater Monitoring Well

Property Boundary

Fencing

Cool Guard HRL36 Liner Installed to 10-Foot Depth

All other analytes were not detected at or above the Laboratory Minimum Reporting Llimits

SOIL ANALYTICAL RESULTS MAP - 07/14/17

Fife RV Center
3410 Pacific Highway East
Fife, Washington

Date: 08/07/17

By: Nick Gerkin

Figure: 5

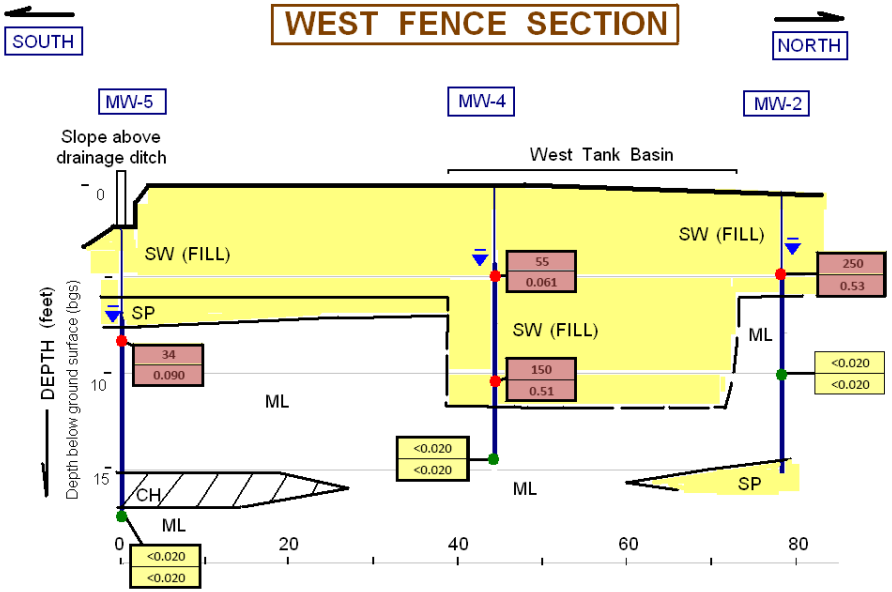
Aerotech Environmental Consulting, Inc
13925 Interurban Avenue South, Ste 210
Seattle, Washington
www.aerotechenvironmental.com

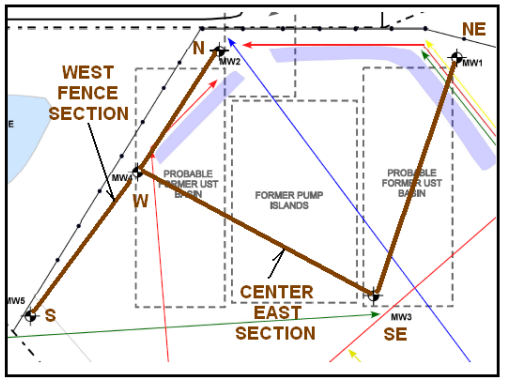
Drawing by McDermott
Nov 2016

FIGURE 3C
HYDROGEOLOGICAL CROSS-SECTIONS
WITH LAB RESULTS

Fife RV Center
3410 Pacific Highway East
Fife, Washington 98424

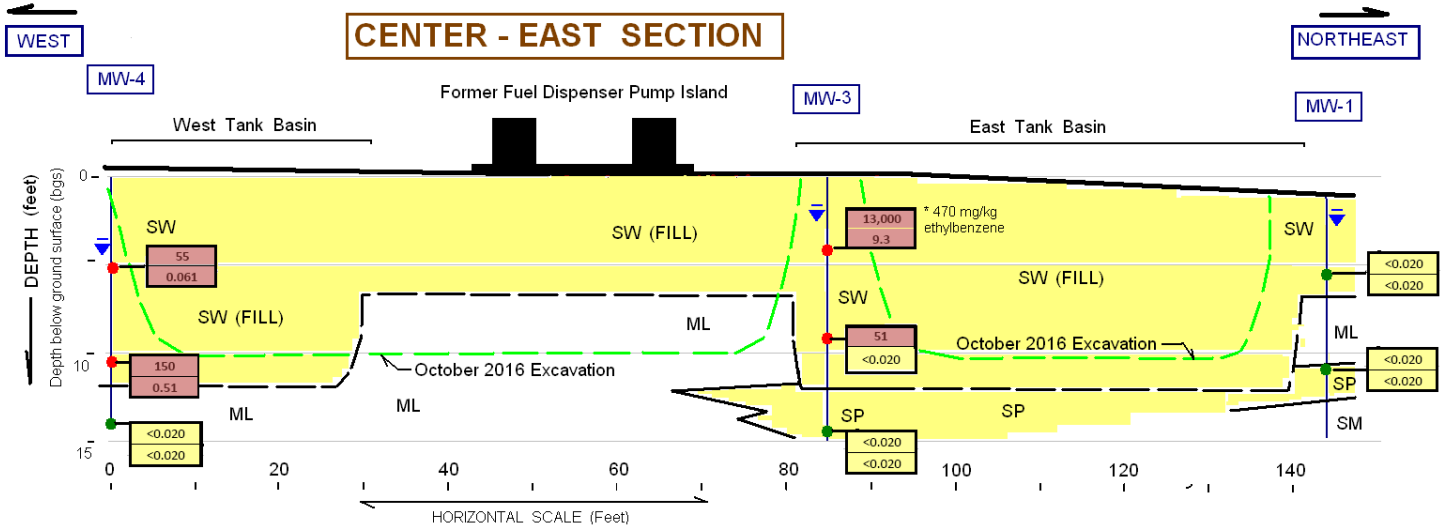
WEST FENCE SECTION





Geologic Cross-section Location Map
2 x Vertical Exageration

CENTER - EAST SECTION



Petroleum Constituents

E, X, D Ethylbenzene, xylenes, and diesel Present below MTCA Method A Levels

- Gasoline constituent exceedance
- No gasoline constituent exceedances
- Visual or olfactory indications of petroleum impacted soil (orange: minor)

GW	Gravel, well graded
SP	Sand, poorly graded
SW	Sand, well graded
SM	Silty Sand
ML	Silt
CL	Clay, inorganic, low - medium plasticity
CH	InorganicClay, high plasticity
	Asphalt pavement

- Groundwater Depth in open Borehole
- Potentiometric Surface
- Groundwater Monitoring Well - Screened interval
- Bottom of borehole
- B-10 Borehole ID
- 51 / <0.020 TPH - Gasoline / Benzene mg/kg

N

Landscaping

JACK IN THE BOX
DRIVE-THRU

Landscaping

ACCESS EASEMENT
Pacific Highway East
100 Feet to the North

UST BASIN
(25 Feet to the North)

PREDOMINANT
HISTORICAL FLOW
DIRECTION

TACOMA
EXPRESS

Catch Basin Rim
8.0 Feet[1]

Water surface presumed to be at or near groundwater table, and hydraulically connected by design to the adjoining Drainage Ditch to the south

BIO-SWALE
POND

MW1
7.18

MW2
7.15

GEO BARRIER

GEO BARRIER

7.4
7.3
7.2
7.1
7.0
6.9
6.8
6.7
6.6
6.5
6.4
6.3
6.2

MW4
7.04

MW3
7.41

MW5
6.11

MW6*
6.71

Storm Sewer
5-Foot Depth

DRAINAGE DITCH

Flows to Hylebos
Creek

1 - Aside from the adjoining Bio-Swale (west) & Drainage Ditch (southwest), a topographic minimum shared by the Site & the adjoining parcel to the north, is situated at the catch basin (north side of study area)

Fire
Hydrant

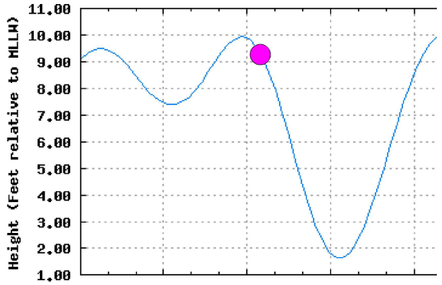
Storm Sewer
Approximate
2 to 3-Foot Depth
at Catch Basin to
the NW

Approximate
Groundwater
Flow Direction
Range[2]

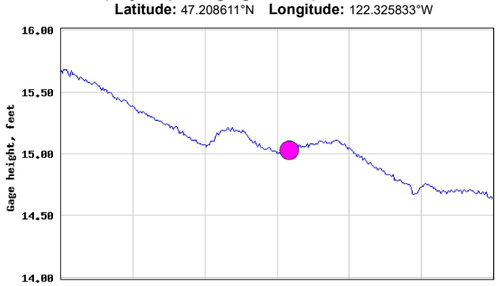
2 - based upon measurements on-site and historical measurements on the adjoining property to the North

Gradient Range
0.005 - 0.053 ft/ft

Commencement Bay Tide Chart for 02/20/17



Puyallup River Hydrograph
(Puyallup Gauging Station) 02/19 - 02/21/17
Latitude: 47.208611°N **Longitude:** 122.325833°W



Time at which water level data was obtained at the subject site

0 15 30
SCALE (feet)

EXPLANATION

MW-6 — Groundwater Monitoring Well
6.68 — Groundwater Elevation in Feet
Groundwater Elevation Contour Line (Isopotential Line)
Approximate Expected Location of Isopotential Line
Property Boundary
Fencing
Geo Membrane Barrier - Cool Guard HRL36 Liner Installed to 10-Foot Depth
Storm Sewer
Electrical Utility
Gas Utility
Water Utility

AEROTECH
ENVIRONMENTAL CONSULTING

POTENTIOMETRIC SURFACE MAP - 02/20/17

Fife RV Center
3410 Pacific Highway East
Fife, Washington

Date: 03/24/17
By: Nick Gerkin
Figure: 6

N

Landscaping

JACK IN THE BOX
DRIVE-THRU

Landscaping

ACCESS EASEMENT
Pacific Highway East
100 Feet to the North

UST BASIN
(25 Feet to the North)

PREDOMINANT
HISTORICAL FLOW
DIRECTION

TACOMA
EXPRESS

Catch Basin Rim
8.0 Feet[1]

Water surface presumed to be at or near groundwater table, and hydraulically connected by design to the adjoining Drainage Ditch to the south

BIO-SWALE
POND

MW1
6.65

MW2
6.38

GEO BARRIER

6.6

GEO BARRIER

6.4

6.2

6.0

MW4
6.24

5.8

5.6

5.4

5.2

5.0

MW5
4.93

MW3
6.78

Storm Sewer
5-Foot Depth

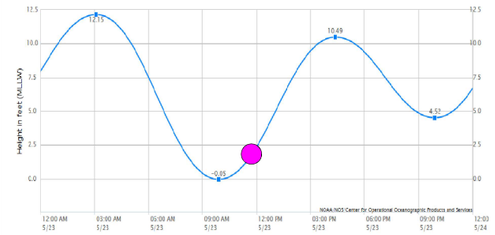
MW6
5.55

Approximate
Groundwater
Flow Direction
Range[2]

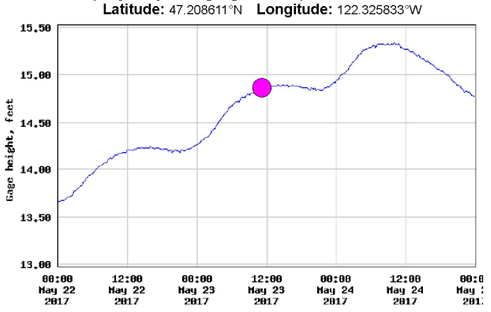
2 - based upon measurements on-site and historical measurements on the adjoining property to the North

Gradient Range
0.015 - 0.032 ft/ft

NOAA Commencement Bay Tide Chart for 05/23/17



USGS Puyallup River Hydrograph
(Puyallup Gauging Station) 05/22 - 05/24/17
Latitude: 47.208611°N Longitude: 122.325833°W



Time at which water level data was obtained at the subject site

Fire
Hydrant

Storm Sewer
Approximate
2 to 3-Foot Depth
at Catch Basin to
the NW

DRAINAGE DITCH

Flows to Hylebos
Creek

1 - Aside from the adjoining Bio-Swale (west) & Drainage Ditch (southwest), a topographic minimum shared by the Site & the adjoining parcel to the north, is situated at the catch basin (north side of study area)

0 15 30
SCALE (feet)

EXPLANATION

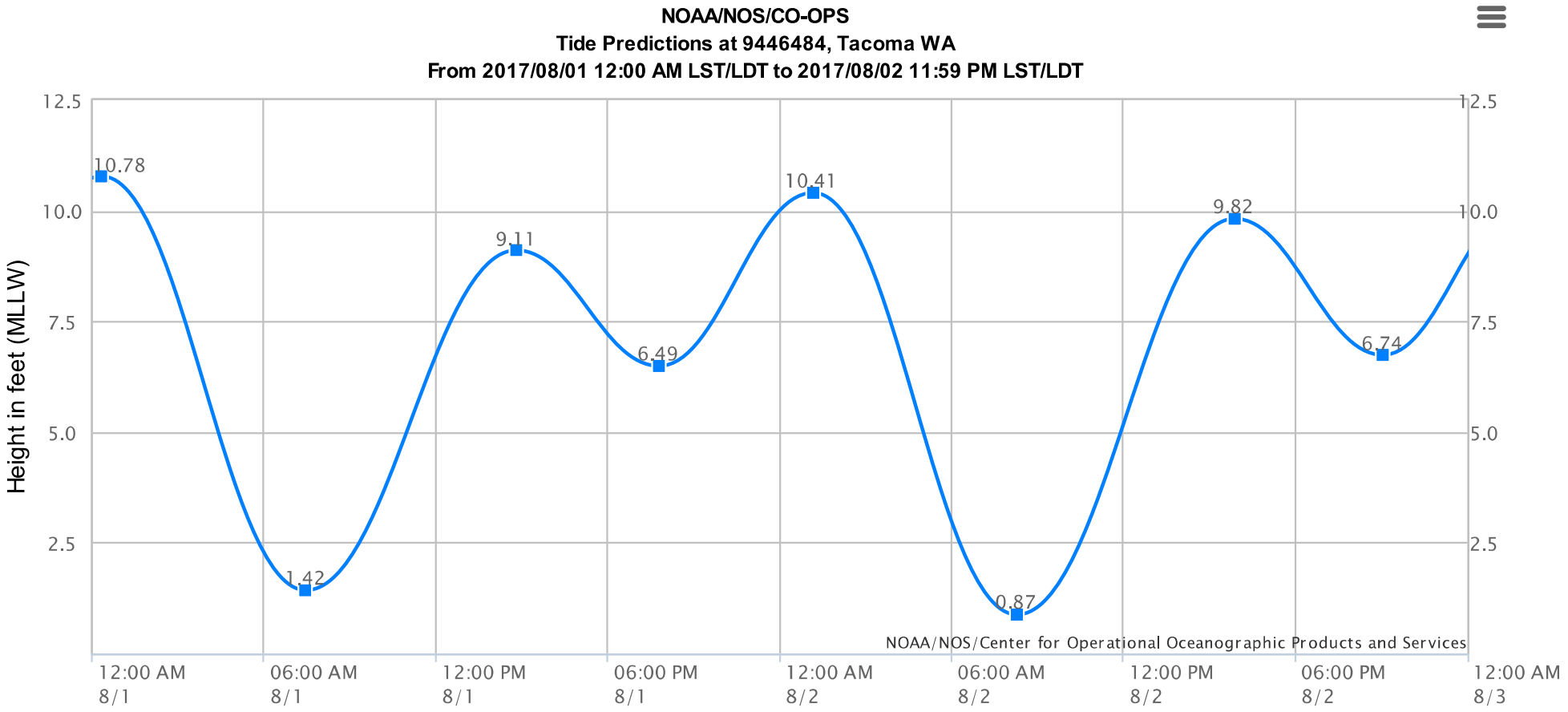
MW-6 — Groundwater Monitoring Well
6.68 — Groundwater Elevation in Feet
Groundwater Elevation Contour Line (Isopotential Line)
Approximate Expected Location of Isopotential Line
Property Boundary
Fencing
Geo Membrane Barrier - Cool Guard HRL36 Liner Installed to 10-Foot Depth
Storm Sewer
Electrical Utility
Gas Utility
Water Utility

AEROTECH
ENVIRONMENTAL CONSULTING

POTENTIOMETRIC SURFACE MAP - 05/23/17

Fife RV Center
3410 Pacific Highway East
Fife, Washington

Date: 06/30/17
By: Nick Gerkin
Figure: 6


NOAA/NOS/CO-OPS
Tide Predictions at 9446484, Tacoma WA
From 2017/08/01 12:00 AM LST/LDT to 2017/08/02 11:59 PM LST/LDT
Height in feet (MLLW)
12.5
10.0
7.5
5.0
2.5
10.78
1.42
9.11
6.49
10.41
0.87
9.82
6.74
NOAA/NOS/Center for Operational Oceanographic Products and Services
12:00 AM 8/1
06:00 AM 8/1
12:00 PM 8/1
06:00 PM 8/1
12:00 AM 8/2
06:00 AM 8/2
12:00 PM 8/2
06:00 PM 8/2
12:00 AM 8/3

TABLES

TABLE 1
SOIL ANALYTICAL RESULTS
Fife RV Center
3410 Pacific Highway East
Fife, Washington

Aerotech Environmental Consulting, Inc. - Site Remedial Excavation Report - November 1, 2016

Sample ID	Soil Boring/Point Well ID	Sampling Date	Sample Depth	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Total Xylenes	EDB	EDC	MTBE	Methylene Chloride	TCE	PCBs	Lead
			Feet BGS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
P1(10')	P1	10/03/16	10	9.0	<20	<50	**0.096**	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
P2(5')	P2	10/03/16	5	<5.0	<20	<50	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
P3(10')	P3	10/03/16	10	<5.0	<20	<50	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
P4(5')	P4	10/03/16	5	8.5	<20	<50	<0.020	<0.050	0.10	<0.050	--	--	--	--	--	--	--
P5(5')	P5	10/03/16	5	**53**	<20	<50	**0.16**	0.071	0.84	0.15	<0.005	<0.02	<0.1	<0.02	<0.02	--	7.8
P5(10')	P5	10/04/16	10	<5.0	<20	<50	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
P6(10')	P6	10/04/16	10	<5.0	<20	<50	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
P7(3')	P7	10/04/16	3	<5.0	<20	<50	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
P8(10')	P8	10/04/16	10	<5.0	<20	<50	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	
P9(5')	P9	10/04/16	5	**110**	<20	<50	**0.15**	<0.050	5.1	<0.050	--	--	--	--	--	--	5.2
P9(10')	P9	10/04/16	10	23	<20	<50	<0.020	<0.050	0.34	<0.050	--	--	--	--	--	--	--
P10(10')	P10	10/04/16	10	<5.0	<20	<50	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
P11(10')	P11	10/04/16	10	<5.0	<20	<50	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
P12(5')	P12	10/05/16	5	**100**	<20	<50	**0.42**	0.18	1.7	0.54	--	--	--	--	--	--	--
P12(10')	P12	10/05/16	10	<5.0	<20	<50	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
P13(5')	P13	10/05/16	5	6.7	<20	<50	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
P13(10')	P13	10/05/16	10	<5.0	<20	<50	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
P14(5')	P14	10/05/16	5	**60**	<20	<50	**0.15**	0.17	0.096	0.16	--	--	--	--	--	--	--
P14(10')	P14	10/05/16	10	<5.0	<20	<50	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
P15(10')	P15	10/06/16	10	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
P16(5')	P16	10/06/16	5	**1,100**	<20	<50	**0.72**	0.072	**7.5**	**32**	--	--	--	--	--	--	7.0
P16(10')	P16	10/06/16	10	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
P17(5')	P17	10/06/16	5	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
P17(10')	P17	10/06/16	10	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
P18(5')	P18	10/06/16	5	**130**	--	--	**0.29**	<0.050	1.5	2.4	--	--	--	--	--	--	--
P18(10')	P18	10/06/16	10	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
P19(5')	P19	10/06/16	5	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
P19(10')	P19	10/06/16	10	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
TP1(5')	TP1	10/06/16	5	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
TP2(5')	TP2	10/06/16	5	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
TP2(10')	TP2	10/06/16	10	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
TP3(3')	TP3	10/06/16	3	**2,500**	--	--	**0.34**	0.35	**15**	**10**	<0.005	<0.02	<0.1	<0.02	<0.02	--	--
TP3(5')	TP3	10/06/16	5	**650**	--	--	**0.53**	5.3	**7.5**	**7.3**	<0.005	<0.02	<0.1	<0.02	<0.02	--	--
TP3(10')	TP3	10/06/16	10	27	--	--	<0.020	<0.050	0.18	0.25	--	--	--	--	--	--	--
TP4(3')	TP4	10/06/16	3	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
TP4(5')	TP4	10/06/16	5	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
TP4(10')	TP4	10/06/16	10	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
MTCA Method A Cleanup Levels				30	2,000	2,000	0.03	7	6	6	0.005	0.0232*	0.1	0.02	0.03	1	250

TABLE 1
SOIL ANALYTICAL RESULTS
Fife RV Center
3410 Pacific Highway East
Fife, Washington

Aerotech Environmental Consulting, Inc. - Site Remedial Excavation Report - November 1, 2016 (continued)

Sample ID	Soil Boring/Point Well ID	Sampling Date	Sample Depth	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Total Xylenes	EDB	EDC	MTBE	Methylene Chloride	TCE	PCBs	Lead
			Feet BGS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TP5(5')	TP5	10/06/16	5	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
TP5(10')	TP5	10/06/16	10	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
TP6(5')	TP6	10/06/16	5	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
TP6(10')	TP6	10/06/16	10	12	--	--	**0.071**	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
TP7(5')	TP7	10/06/16	5	**690**	<20	<50	**0.90**	1.9	**32**	0.33	--	--	--	--	--	--	--
TP8(3')	TP8	10/06/16	3	**60**	--	--	<0.020	<0.050	1.2	<0.050	--	--	--	--	--	--	--
TP8(5')	TP8	10/06/16	5	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
TP9(5')[1]	TP9	10/06/16	5	**6,090**	<20	<50	**4.0**	4.0	**66**	**130**	<0.005	<0.02	<0.1	<0.02	<0.02	--	--
TP9(10')[1]	TP9	10/06/16	10	**240**	--	--	**0.59**	1.5	1.6	3.7	--	--	--	--	--	--	--
TP11(5')	TP11	10/06/16	5	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
TP12(5')	TP12	10/06/16	5	18	--	--	<0.020	<0.050	<0.050	0.082	--	--	--	--	--	--	--
TP13(5')	TP13	10/06/16	5	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
TP14(5')	TP14	10/06/16	5	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
TP14(10')	TP14	10/06/16	10	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
TP15(5')	TP15	10/07/16	5	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
TP15(10')	TP15	10/07/16	10	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
TP16(3')	TP16	10/07/16	3	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
TP16(5')	TP16	10/07/16	5	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
TP17(3')	TP17	10/07/16	3	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
TP17(5')	TP17	10/07/16	5	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
TP18(3')	TP18	10/07/16	3	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
TP19(3')	TP19	10/07/16	3	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
TP19(5')	TP19	10/07/16	5	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
P20(5')	P20	10/20/16	5	**57**	--	--	**0.065**	0.101	0.15	0.16	--	--	--	--	--	--	--
P20(10')	P20	10/20/16	10	20	--	--	**0.24**	<0.050	0.09	0.084	--	--	--	--	--	--	--
P21(5')	P21	10/20/16	5	**1,200**	--	--	**0.65**	0.59	**8.1**	**24**	--	--	--	--	--	--	--
P21(10')	P21	10/20/16	10	**66**	--	--	**0.11**	0.14	0.34	0.74	--	--	--	--	--	--	--
P22(5')	P22	10/20/16	5	**1,100**	--	--	**0.83**	1.9	**20**	**7.9**	--	--	--	--	--	--	--
P22(10')	P22	10/20/16	10	**34**	--	--	0.029	<0.050	0.43	0.19	--	--	--	--	--	--	--
P22(12')	P22	10/20/16	12	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
P23(5')	P23	10/20/16	5	**760**	--	--	**0.46**	0.74	4.8	2.4	--	--	--	--	--	--	--
P23(10')	P23	10/20/16	10	16	--	--	<0.020	<0.050	0.22	0.10	--	--	--	--	--	--	--
P24(5')	P24	10/20/16	5	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
P24(10')	P24	10/20/16	10	**50**	--	--	**0.26**	<0.050	1.5	0.86	--	--	--	--	--	--	--
P25(5')	P25	10/21/16	5	**5,200**	--	--	**4.6**	**25**	**35**	**230**	--	--	--	--	--	--	--
P25(10')	P25	10/21/16	10	**350**	--	--	**0.16**	3.4	1.6	**16**	--	--	--	--	--	--	--
P26(10')	P26	10/21/16	10	12	--	--	<0.020	<0.050	<0.050	0.41	--	--	--	--	--	--	--
P27(5')	P27	10/21/16	5	**58**	--	--	<0.020	<0.050	0.095	0.39	--	--	--	--	--	--	--
MTCA Method A Cleanup Levels				30	2,000	2,000	0.03	7	6	6	0.005	0.0232*	0.1	0.02	0.03	1	250

TABLE 1
SOIL ANALYTICAL RESULTS
Fife RV Center
3410 Pacific Highway East
Fife, Washington

Aerotech Environmental Consulting, Inc. - Site Remedial Excavation Report - November 1, 2016 (continued)

Sample ID	Soil Boring/Point Well ID	Sampling Date	Sample Depth	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Total Xylenes	EDB	EDC	MTBE	Methylene Chloride	TCE	PCBs	Lead
			Feet BGS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
P28(5')	P28	10/21/16	5	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
P28(10')	P28	10/21/16	10	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
P29(3')	P29	10/24/16	3	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
P30(5')	P30	10/24/16	5	**200**	--	--	**0.086**	0.19	0.28	0.40	--	--	--	--	--	--	--
P30(10')	P30	10/24/16	10	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
P31(10')	P31	10/24/16	10	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
P32(3')	P32	10/24/16	3	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
P33(3')	P33	10/24/16	3	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
P34(3')	P34	10/24/16	3	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
MTCA Method A Cleanup Levels				30	2,000	2,000	0.03	7	6	6	0.005	0.0232*	0.1	0.02	0.03	1	250

Aerotech Environmental Consulting, Inc. - Groundwater Monitoring Well Installation Report - November 17, 2016

Sample ID	Soil Boring/Point Well ID	Sampling Date	Sample Depth	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Total Xylenes	EDB	EDC	MTBE	Methylene Chloride	TCE	PCBs	Lead
			Feet BGS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
MW-1 (4.5')	MW-1	11/10/16	4.5	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
MW-1 (10')	MW-1	11/10/16	10	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
MW-2 (4')	MW-2	11/10/16	4	**250**	--	--	**0.53**	0.54	3.8	0.84	--	--	--	--	--	--	--
MW-2 (9')	MW-2	11/10/16	9	24	--	--	<0.020	0.065	0.6	0.16	--	--	--	--	--	--	--
MW-3 (4.5')	MW-3	11/10/16	4.5	**13,000**	--	--	**9.3**	2.6	**470**	5.4	--	--	--	--	--	--	--
MW-3 (9')	MW-3	11/10/16	9	**51**	--	--	<0.020	<0.050	0.27	0.096	--	--	--	--	--	--	--
MW-3 (14.5')	MW-3	11/10/16	14.5	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
MW-4 (5')	MW-4	11/10/16	5	**55**	--	--	**0.061**	0.27	0.22	0.2	--	--	--	--	--	--	--
MW-4 (10.5)	MW-4	11/10/16	10.5	**150**	--	--	**0.51**	1.2	1.1	1.7	--	--	--	--	--	--	--
MW-4 (14.5)	MW-4	11/10/16	14.5	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
MW-5 (6')	MW-5	11/10/16	6	**34**	--	--	**0.090**	0.66	0.25	0.31	--	--	--	--	--	--	--
MW-5 (10')	MW-5	11/10/16	10	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
MW-6 (9')	MW-6	11/11/16	9	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
MW-6 (10.5')	MW-6	11/11/16	10.5	<5.0	--	--	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
MTCA Method A Cleanup Levels				30	2,000	2,000	0.03	7	6	6	0.005	0.0232*	0.1	0.02	0.03	1	250

TABLE 1
SOIL ANALYTICAL RESULTS
Fife RV Center
3410 Pacific Highway East
Fife, Washington

Aerotech Environmental Consulting, Inc. - Upgradient Delineation Groundwater Monitoring Well Installation Report - DRAFT

Sample ID	Soil Boring/Point Well ID	Sampling Date	Sample Depth	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Total Xylenes	EDB	EDC	MTBE	Methylene Chloride	TCE	PCBs	Lead
			Feet BGS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
B1(5)	B1	07/13/17	5	**1,200**	350[2]	<50	**2.1**	2.4	**51**	**26**	<0.005	<0.02	<0.1	**0.22**	**0.29**	<0.20	14
B1(9)	B1	07/13/17	9	--	--	--	--	--	--	--	<0.005	<0.02	<0.1	<0.02	<0.02	--	--
MW7(11)	MW7	07/13/17	11	<5.0	<20	<50	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	--
MW8(5)	MW8	07/13/17	5	--	<20	<50	--	--	--	--	--	--	--	--	--	--	--
MW8(10)	MW8	07/13/17	10	<5.0	<20	<50	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	2.9
MW9(3)	MW9	07/13/17	3	<5.0	<20	<50	<0.020	<0.050	<0.050	<0.050	--	--	--	--	--	--	37
MTCA Method A Cleanup Levels				30	2,000	2,000	0.03	7	6	6	0.005	0.0232*	0.1	0.02	0.03	1	250

MTCA = Model Toxic Control Act Cleanup Level (WAC173-340-900)
BGS = Below Ground Surface mg/kg = milligram of analyte per kilogram of soil
< = not detected at indicated Laboratory Detection Limits -- = not analyzed
Benzen , Toluene, Ethylbenzene, Xylenes by EPA Method 8021B
TPHg - Total Petroleum Hydrocarbons - Gasoline by NWTPH-Gx
TPHd - Total Petroleum Hydrocarbons - Diesel by NWTPH-Dx
TPHo - Total Petroleum Hydrocarbons - Motor Oil by NWTPH-Dx extended
MTBE = Methyl-tert-butyl-ether EDC = 1,2-Dichloroethane EDB = 1,2-Dibromoethane TCE = Tricchloroethene Methylene Chloride; by EPA Method 8260B
Lead by EPA Method 7010
ND = Not Detected (minimum detection limit unknown)
Bolded numbers and red-shaded cells denote concentrations above the MTCA Method A Cleanup Levels for soil
* = Method B Cleanup Level, Ecology does not have a Method A Cleanup Level designated for EDC
1 = Soil from which this sample originated was removed during the Remedial Excavation
2 = Unidentifiable petroleum product in diesel range, possibly creosote (see lab report for further detail and chromatograph)

PAH ANALYTICALRESULTS

FIFE RV SITE, Fife, Washington

Analytical Results

PAH (8270 sim), mg/kg		B1 (5)	MTCA Method A CUL	MTCA Method B CUL
Matrix	Soil	Soil		
Date extracted	Reporting	07/19/17		
Date analyzed	Limits	07/19/17		
1-Methylnaphthalene	0.10	4.8		34
2-Methylnaphthalene	0.10	7.9		320
Naphthalene	0.10	0.97	5	
Acenaphthylene	0.10	nd		
Acenaphthene	0.10	nd		
Fluorene	0.10	nd		
Phenanthrene	0.10	1.5	n/a	
Anthracene	0.10	0.29	2400	
Fluoranthene	0.10	nd		
Pyrene	0.10	1.5	n/a	
Benzo(a)anthracene	0.10	nd		
Chrysene	0.10	0.68	0.1 benzon(a)pyrene equivalency *	
Benzo(b)fluoranthene	0.10	nd		
Benzo(k)fluoranthene	0.10	nd		
Benzo(a)pyrene	0.10	nd		
Indeno(1,2,3-cd)pyrene	0.10	nd		
Dibenzo(ah)anthracene	0.10	nd		
Benzo(ghi)perylene	0.10	nd		

* Chrysene's TEF (toxicity equivalency factor is 0.01; 0.68 x TEF = 0.0068)
MTCA Tables 708.2 and 708.3

GROUNDWATER ANALYTICAL RESULTS

Fife RV Center
3410 Pacific Highway East
Fife, Washington

MW1

Well Depth	Sampling Date	Ground Water Level	Elevation (TOC north)	Water Level Elevation	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Xylenes	EDB	EDC	MTBE	HVOCs	Naph-thalene	Dissolved Lead	Total Lead
Feet		Feet Below TOC	Feet Above MSL	Feet Above MSL	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
14.4	11/18/16	1.37	8.37	7.00	<100	<200	<500	<1.0	<1.0	<1.0	<1.0	<0.01	<1.0	<5.0	--	--	<2.0	<2.0
	02/20/17	1.19	8.37	7.18	<100	<200	<500	<1.0	<1.0	<1.0	<1.0	<0.01	<1.0	<5.0	--	--	<2.0	<2.0
	05/23/17	1.72	8.37	6.65	<100	<200	<500	<1.0	<1.0	<1.0	<1.0	<0.01	<1.0	<5.0	--	--	<2.0	<2.0
	08/01/17	2.92	8.37	5.45	<100	<200	<500	<1.0	<1.0	<1.0	<1.0	<0.01	<1.0	<5.0	ND		--	<2.0
		MTCA Method A Cleanup Levels			800	500	500	5	1,000	700	1,000	0.01	5	20	Variable	160*	15	15

MW2

Well Depth	Sampling Date	Ground Water Level	Elevation (TOC north)	Water Level Elevation	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Xylenes	EDB	EDC	MTBE	HVOCs	Naph-thalene	Dissolved Lead	Total Lead
Feet		Feet Below TOC	Feet Above MSL	Feet Above MSL	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
14.2	11/18/16	2.53	9.40	6.87	**18,000**	<200	<500	**470**	18	210	200	<0.01	<1.0	<5.0	--	--	<2.0	<2.0
	02/20/17	2.25	9.40	7.15	**29,000**	<200	<500	**720**	26	490	700	<0.01	<1.0	<5.0	--	--	<2.0	<2.0
	05/23/17	3.02	9.40	6.38	**10,000**	<200	<500	**300**	18	93	400	<0.01	<1.0	<5.0	--	--	<2.0	<2.0
	08/01/17	4.40	9.40	5.00	**25,000**	<200	<500	**980**	62	540	**1,300**	<0.01	<1.0	<5.0	ND	4.3	--	<2.0
		MTCA Method A Cleanup Levels			800	500	500	5	1,000	700	1,000	0.01	5	20	Variable	160*	15	15

MW3

Well Depth	Sampling Date	Ground Water Level	Elevation (TOC north)	Water Level Elevation	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Xylenes	EDB	EDC	MTBE	HVOCs	Naph-thalene	Dissolved Lead	Total Lead
Feet		Feet Below TOC	Feet Above MSL	Feet Above MSL	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
14.6	11/18/16	2.19	9.43	7.24	**42,000**	<200	<500	**130**	16	**2,800**	120	<0.01	<1.0	<5.0	--	--	<2.0	<2.0
	02/20/17	2.02	9.43	7.41	**10,000**	<200	<500	**28**	<1,000	620	92	<0.01	<1.0	<5.0	--	--	<2.0	<2.0
	05/23/17	2.65	9.43	6.78	**6,700**	<200	<500	**21**	1.4	210	57	<0.01	<1.0	<5.0	--	--	<2.0	<2.0
	08/01/17	4.05	9.43	5.38	620	<200	<500	<1.0	<1.0	2.4	1.3	<0.01	<1.0	<5.0	ND	0.60	--	<2.0
		MTCA Method A Cleanup Levels			800	500	500	5	1,000	700	1,000	0.01	5	20	Variable	160*	15	15

MW4

Well Depth	Sampling Date	Ground Water Level	Elevation (TOC north)	Water Level Elevation	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Xylenes	EDB	EDC	MTBE	HVOCs	Naph-thalene	Dissolved Lead	Total Lead
Feet		Feet Below TOC	Feet Above MSL	Feet Above MSL	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
14.5	11/18/16	3.31	10.12	6.81	**1,900**	<200	<500	**140**	<1.0	13	7.70	<0.01	<1.0	<5.0	--	--	<2.0	<2.0
	02/20/17	3.08	10.12	7.04	**6,800**	<200	<500	**220**	35	340	22	<0.01	<1.0	<5.0	--	--	<2.0	<2.0
	05/23/17	3.88	10.12	6.24	**1,600**	<200	<500	**120**	6.0	12	3.8	<0.01	<1.0	<5.0	--	--	<2.0	<2.0
	08/01/17	5.61	10.12	4.51	**2,100**	<200	<500	**94**	4.4	170	1.0	<0.01	<1.0	<5.0	ND	<0.1	--	<2.0
		MTCA Method A Cleanup Levels			800	500	500	5	1,000	700	1,000	0.01	5	20	Variable	160*	15	15

MW5

Well Depth	Sampling Date	Ground Water Level	Elevation (TOC north)	Water Level Elevation	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Xylenes	EDB	EDC	MTBE	HVOCs	Naph-thalene	Dissolved Lead	Total Lead
Feet		Feet Below TOC	Feet Above MSL	Feet Above MSL	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
17.5	11/18/16	5.17	11.27	6.10	**2,100**	<200	<500	**250**	1.6	5.6	2.1	<0.01	<1.0	<5.0	--	--	<2.0	<2.0
	02/20/17	5.16	11.27	6.11	700	<200	<500	**52**	<1.0	2.2	2.4	<0.01	<1.0	<5.0	--	--	<2.0	<2.0
	05/23/17	6.34	11.27	4.93	<100	<200	<500	<1.0	<1.0	<1.0	<1.0	<0.01	<1.0	<5.0	--	--	<2.0	<2.0
	08/01/17	8.31	11.27	2.96	<100	<200	<500	<1.0	<1.0	<1.0	<1.0	<0.01	<1.0	<5.0	ND	<0.1	--	<2.0
		MTCA Method A Cleanup Levels			800	500	500	5	1,000	700	1,000	0.01	5	20	Variable	160*	15	15

GROUNDWATER ANALYTICAL RESULTS

Fife RV Center

3410 Pacific Highway East

Fife, Washington

MW6

Well Depth	Sampling Date	Ground Water Level	Elevation (TOC north)	Water Level Elevation	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Xylenes	EDB	EDC	MTBE	HVOCs	Naph-thalene	Dissolved Lead	Total Lead
Feet		Feet Below TOC	Feet Above MSL	Feet Above MSL	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
17.5	11/18/16	4.72	11.40	6.68	<100	<200	<500	<1.0	<1.0	<1.0	<1.0	<0.01	<1.0	<5.0	--	--	<2.0	<2.0
	02/20/17	4.69	11.40	6.71	<100	<200	<500	<1.0	<1.0	<1.0	<1.0	<0.01	<1.0	<5.0	--	--	<2.0	<2.0
	05/23/17	5.85	11.40	5.55	<100	<200	<500	<1.0	<1.0	<1.0	<1.0	<0.01	<1.0	<5.0	--	--	<2.0	<2.0
	08/01/17	7.32	11.40	4.08	<100	<200	<500	<1.0	<1.0	<1.0	<1.0	<0.01	<1.0	<5.0	ND	<0.1	--	<2.0
		MTCA Method A Cleanup Levels			800	500	500	5	1,000	700	1,000	0.01	5	20	Variable	160*	15	15

MW7

Well Depth	Sampling Date	Ground Water Level	Elevation (TOC north)	Water Level Elevation	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Xylenes	EDB	EDC	MTBE	HVOCs	Naph-thalene	Dissolved Lead	Total Lead
Feet		Feet Below TOC	Feet Above MSL	Feet Above MSL	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
14.2	08/01/17	5.83	10.09	4.26	<100	<200	<500	<1.0	<1.0	<1.0	<1.0	<0.01	<1.0	<5.0	ND	<0.1	--	<2.0
		MTCA Method A Cleanup Levels			800	500	500	5	1,000	700	1,000	0.01	5	20	Variable	160*	15	15

MW8

Well Depth	Sampling Date	Ground Water Level	Elevation (TOC north)	Water Level Elevation	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Xylenes	EDB	EDC	MTBE	HVOCs	Naph-thalene	Dissolved Lead	Total Lead
Feet		Feet Below TOC	Feet Above MSL	Feet Above MSL	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
14.1	08/01/17	5.26	10.26	5.00	<100	<200	<500	<1.0	<1.0	<1.0	<1.0	<0.01	<1.0	<5.0	ND	<0.1	--	<2.0
		MTCA Method A Cleanup Levels			800	500	500	5	1,000	700	1,000	0.01	5	20	Variable	160*	15	15

MW9

Well Depth	Sampling Date	Ground Water Level	Elevation (TOC north)	Water Level Elevation	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Xylenes	EDB	EDC	MTBE	HVOCs	Naph-thalene	Dissolved Lead	Total Lead
Feet		Feet Below TOC	Feet Above MSL	Feet Above MSL	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
14.3	08/01/17	3.57	8.84	5.27	<100	<200	<500	<1.0	<1.0	<1.0	<1.0	<0.01	<1.0	<5.0	ND	<0.1	--	<2.0
		MTCA Method A Cleanup Levels			800	500	500	5	1,000	700	1,000	0.01	5	20	Variable	160*	15	15

MTCA = Model Toxic Control Act Cleanup Level (WAC173-340-900)

TOC = Top of Casing MSL = Mean Sea Level

< = not detected at indicated Laboratory Detection Limits -- not analyzed NM = Not Measured

TPHg - Total Petroleum Hydrocarbons - Gasoline by Method NWTPH-Gx

TPHd - Total Petroleum Hydrocarbons - Diesel by Method NWTPH-Dx TPHmo - Total Petroleum Hydrocarbons - Motor Oil by Method NWTPH-Dx extended

Benzene, Toluene, Ethylbenzene and Xylenes by EPA Method 8021B

MTBE = Methyl-tert-butyl-ether EDC = 1,2-Dichloroethane EDB = 1,2-Dibromoethane HVOCs = Halogenated Volatile Organic Compounds; by EPA Method 8260B

PAHs (including Naphthalene) by EPA Method 8270

Total and Dissolved Lead by EPA Method 7010

* = Method B Cleanup Level (Method A Cleanup Level does not apply to this particular constituent)

ND = Not Detected above Laboratory Minimum Reporting Limits or applicable cleanup levels (see laboratory report for further detail)

Bolded numbers and red-shaded cells denote concentrations above the MTCA Cleanup Levels for groundwater

PROJECT CONTRACT DOCUMENTS

ENVIRONMENTAL CONTRACTOR'S CERTIFICATION

Fife RV Center
3410 Pacific Highway East
Fife, Washington 98424

1. Contractor's Name: Aerotech Environmental Consulting, Inc.

2. Contractor's Address: 13925 Interurban Avenue South, Suite 210, Seattle, Washington 98168

3. Name and title of person completing this certification: Alan T. Blotch / President

4. Answer the following questions about each employee that contractor will have perform the assessment or prepare the report showing the results of the inspection:

   a. Name and Title of Employee: Alan T. Blotch – Environmental Professional
   b. Length of experience doing environmental assessments: 33 years
   c. Education degrees received: Masters of Business Administration
      Juris Doctor – Environmental Law
   d. Relevant training received: ASTM E50 Environmental Assessment Committee Meetings

5. Identify any certifications and approvals issued to contractor pursuant to an official Federal, State of local program or policy to conduct environmental assessments: Registered Environmental Assessor
   Issued by State of California

6. Describe the generally recognized standards which the contractor will use to perform the assessment.
   Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process (ASTM E 1903)

7. Disclose the nature of any previous environmental inspections contractor has ever performed for the Owner of the property: Phase I Environmental Site Assessment

8. Disclose the nature of any affiliation or association contractor now has, or ever had, with the above referenced seller of the property, of the above referenced buyer of the property: N/A

9. Describe the liability insurance carried by contractor to cover claims in the event that ir fails to discover adverse environmental conditions during an environmental inspection.
   Professional Errors & Omissions Coverage $1,000,000 / claim and $1,000,000 aggregate liability

THE UNDERSIGNED HEREBY CERTIFIES, UNDER PENALTY OF THE CRIMINAL AND/OR CIVIL PENALTIES IN 18 U.S.C. § 1001 FOR FALSE STATEMENTS TO THE UNITED STATES GOVERNMENT, THAT THE ABOVE INFORMATION IS TRUE AND CORRECT.

Signature

08·16·17

Date

CURRICULUM VITAE

James McDermott

State of Washington Licensed Professional Geologist No. 3063

Mr. McDermott has 15 years experience as a sole proprietor in small business, and 12 years experience in environmental consulting with increasing scope, responsibility, innovation and effective results involving commercial and industrial properties spanning the country from the upper Midwestern states within glacial, alluvial or coastal geologic/hydrogeologic settings to complex bedrock, volcanic and glacial/fluvial settings in the northern Rocky Mountain states, the Pacific Northwest and Alaska. He has conducted field work and mapping in mountainous terrain in northern Wyoming and in central Utah where he has published: Utah Geologic Survey Geologic Quadrangle (Chriss Canyon 7.5 min.). These projects included extensive sampling of soils, rock, surface waters, groundwater, limited submarine sampling, soil borings, monitoring well installations, soil vapor extraction wells and systems, and dual-phase extraction and incineration. He is proficient in the application of aerial photographs, ground penetrating radar imagery, satellite imagery and on-line tools. His work has included compliance activities involving Superfund Sites, and hazardous waste remediation sites, as well as Phase I Environmental Site Assessments, Phase II and III Subsurface Investigations, hydrogeologic studies, pump tests, remediation system design, and groundwater monitoring. His work has required a familiarity with ASTM Protocols as well as local, State, and Federal regulations. He is familiar with Washington State MTCA regulations (petroleum-impacted soils, and evolving programs such as Model Remedies Programs), as well as State of Oregon Risk Based Standards. His academic background has included work in organic chemistry and chemical engineering as well as an undergraduate engineering physics and calculus sequence.

Education	University of Illinois - Urbana, IL – BSci Geology – 1984 (Field Mapping: Sheridan, WY) Northern Illinois University - DeKalb, IL **–** Graduate research/Published USGS Map, Utah).
Publications	Chriss Canyon 7.5-Min. Geologic Quadrangle, Utah, Coauthor, UGS Map 185, 2003
Professional History	Aerotech Environmental Consulting, Inc. Hydrogeologist/Environmental Professional (2011-Present) James McDermott Consulting, Proprietor, Web Design-IT (1995-2010) (Including work with Bank One, Xerox, and IGO Cars) Earthscience Consulting, Proprietor, Hydrogeologist (1993-1994) ATEC Environmental Associates, Inc., Hydrogeologist (1991-1993) EIS Environmental, Inc., Staff Geoscientist (1989-1991)
Certifications and Seminars	OSHA 40-hr Hazwoper, 8hr Refresher (2017) Participation Certificate: Chlorinated Solvent Remediation - Sequential In-Situ Chemical Oxidation and Enhanced Anaerobic Biodegredation. Geotech Environmental Equipment and Remediation Workshop, Denver, 2016.
Organizations & Memberships	*Geological Society of America* – Cordilleran Section, Rocky Mountain Section, Environmental and Engineering Geology Division, Hydrogeology Division, Structural Geology and Tectonics Division.
Expertise	Mr. McDermott has performed over 60 Phase I Environmental Assessments, and nearly 200 *Phase II* and *Phase III Subsurface Investigation*s (commonly training or advising new staff), including LUST and VCP closures. He has conducted preliminary site reconnaissance and historical research, prepared associated *Phase I Site Assessment* reports, *Phase II* and *Phase III Targeted Subsurface Investigation* reports, *Remediation Investigation* reports, *Feasibility Studies, Disproportionate Cost*

Analysis reports, and *Corrective Action Plans* . Areas of expertise include guided PCS excavation, DNAPL and NAPL/dissolved plume definition for soil and groundwater; and review and planning related to choice of remediation methodologies. Mr. McDermott has performed analyses and recommendations related to questionable Phase I, Phase II, and other investigations and reports, researched and implemented the application of evolving State Regulatory Guidance such as Washington's Model Remedies Program, has worked extensively with ground penetrating radar (and occasionally GIS systems), and has created a geographically referenced database of digital publications and maps (Federal, State, and professional consultant's) generated as the product of both ongoing project research and professional development in the form of online and other geologic and hydrogeologic research.

He has participated in the design and monitoring of several remediation systems (including soil vapor extraction and pump and treat), participated in oxidant injection treatment, contributed to RCRA landfill compliance monitoring projects and often the associated subsurface investigation and planning. He managed and planned a number of these projects, implemented the investigations, created both preliminary and final reports, and defined and implemented supplemental investigation and long-term monitoring. He has also had the opportunity to assist clients in the preparation of legal cases, after analyzing deficiencies and errors in environmental investigations and reports..

USGS GEOLOGIC MAPPING PROGRAM (Utah Geological Survey): He has contributed to the study and mapping of geologic units as a part of the related US Geological Survey program to complete national coverage of geologic maps at the 1:24,000 scale. He has mapped intrusive and volcanic bodies, salt intrusions, faults, landslide hazards, mineral deposits, hydrothermal alteration, and springs. He has integrated data such as petroleum exploration well logs (gamma/SP), and aerial and satellite imagery.

SUPERFUND SITE INVESTIGATIONS : He has performed subsurface characterization and hydrogeological assessments, including the synthesis of analytical results acquired by multiple consultants with geologic and hydrogeologic data to generate hydrogeologic cross-sections, and occasionally addressing the risks associated with nearby public water supply wells..

RCRA COMPLIANCE : He has participated in the subsurface characterization, hydrogeological assessments, and compliance monitoring at RCRA sites.

UST SITE CHARACTERIZATION & REMEDIATION: He has performed Phase I, Phase II investigation, and planned and participated in successful remediation projects, including the management and on-site supervision of the removal of tanks at a 40-unit nest of 25,000 gallon tanks at a WWII aircraft engine assembly site. Contaminants have included fuels, solvents and lubricants, LNAPLs and DNAPLs. He has performed numerous subsurface characterization and hydrogeological assessments including planning and participation in direct push, hollow stem auger, air rotary, and sonic rig soil boring and well installation, remediation monitoring, and pump test analysis.

REAL ESTATE TRANSFERS: He has performed Phase I and Phase II Subsurface investigation / preliminary hydrogeological evaluations for the purpose of property transfers for lenders, property owners and prospective buyers.

GEOPHYSICAL SURVEYS: He has participated in the performance of a groundwater investigation for the Illinois Geological Survey designed to locate and define gravel channel

aquifers in buried bedrock valleys.

BIOREMEDIATION APPLICATIONS: He has participated in a seminar devoted to groundwater bioremediation with particular attention to chlorinated solvents and the use of in-situ chemical oxidation and enhanced anaerobic biodegradation. He has participated in the placement of pelletized oxidant in excavations at PCS contaminated sites and pressure injection via monitoring wells.

TERRESTRIAL ECOLOGICAL EVALUATION SCREENING: Completed for numerous sites.

SOIL VAPOR INTRUSION EVALUATION SCREENING: Completed for numerous sites.

Notable Projects and Innovations

His subsurface investigation experience has also included field studies and reports on projects such a Superfund property in an industrial park, several RCRA landfill compliance projects, a large underground tank farm (over 40 25,000-gal. tanks and a great variety of fuels, solvents and lubricants) at the location of a former WWII-era aircraft engine plant, a contaminant incineration remediation project at a major LUST site located within a sensitive urban area, the mapping and excavation of over 20,000 yards of contaminated fluvial and alluvial sands in an aging $19^{th} – 20^{th}$ century riverside industrial complex, landslide mapping, risk assessment and an aquifer mapping project for a State Geological Survey. He has initiated and advanced a project located near a sensitive estuary at which both perched and lower confined aquifers have been monitored, and vintage building demolition and excavation is planned.

Innovations and improvements he has introduced during his environmental consulting career have included the composition and refinement of numerous Standard Operating Procedures including those related to monitoring well design and encompassing equipment maintenance, calibration and operation. An innovation at the time and place, he initiated the routine incorporation of documentation and analysis of utility and transportation conduits (sewer, storm water and tunnel plans) in considering groundwater and contaminant flow dynamics, and their potential as primary or secondary conduits for the transport of contaminants in groundwater or in surface runoff for Phase I, Phase II and other investigations. For example, in one case in the central Chicago business district where flammable vapors were reported in the basement of a landmark building, he utilized both sewer design plans and subway depth measurements to trace probable vapor pathways and successfully divert the unproven assignment of primary responsibility from his client. In another case he devised and implemented a simple incinerator design change which greatly reduced time and cost associated with automated emergency systems shutdowns. In routinely evaluating previous studies prior to incorporation into his reports, he occasionally discovered and corrected errors in groundwater flow calculations or elevation data (data points are often contoured without consideration of the hydrogeologic context/boundary conditions, and such factors as nearby pumping wells, french drains, sewers, dams, engineered barriers, availability of recharge areas, tidal, river stage, and mounding effects). After once discovering forged soil boring logs at a multi-acre commercial site, he accepts no external data without some minimal scrutiny and verification where the economic and legal concerns of a client might be jeopardized.

Small Business Experience

He has fifteen years experience operating a web design and computer consulting business as a sole proprietor with several staff, meeting the unique needs and budgets of the small business and mid-sized business community, employing web design and marketing to increase the profits of one small business by over 1000 percent.

SOIL BORING LOGS

AEROTECH ENVIRONMENTAL CONSULTING

www.AerotechEnvironmental.com

MONITORING WELL ID: **BORING LOG #: MW-1** **Page 1 of 1**

Project Name: FIFE RV, Fife, Wa **BIS 683**

Project Number: 216-8246

Drilling Information

Drilling Contractor:	Boretech, Bellevue
Drilling Method:	H.S.A.
Borehole Diameter:	8"
Sampler Type:	Stainless Steel Split Spoon Sampler

Driller: Carlos Gardea (Wa Lic No 3143)

Site Location: 3410 Pacific Hwy E, Fife, Wa (Gravel lot S of Tahoma Gas and Jack-in-the-Box)

Borehole Location: 3.5 ft S of N Fence + 10 ft from bend in fence + 60 east of NWX fence

Borehole Area (AOC): N-NE of eastern terminus of upgradient fabric / Former UST-Pump areas

Logged by: J. McDermott: Boring Depth: 14.5 feet

GW Encountered: YES Static GW Level: 5 ft bgs

Low tide Commencement Bay at 0700 - high tide at 1300 - per NOAA Tables

Notes: 2 inch PVC GW Monitoring Well installed - No 10 screen at 4 to 14 ft bgs

Approx. Surface Elevation:

Start Date: 11-10-16 End Date: Same

Depth (ft)	Groundwater	PID	Visual or Olfactory Evidence	Blow Counts	Recovery		USCS Classification	Soil Classification/ Description	Well Construction
							GP	Gravel Pavement *Concrete pad atop bentonite seal -->*	
1									
								Air-knife 3.5 ft west of natural gas main / electrical / storm sewer	
2					Air		SW	Air knife to 5.5 ft bgs	
					Knife			FILL - SAND, very fine to coarse, well graded, with silt, little to trace clay, little small to large subround tosubangular gravel, gray to olive gray, slightly moist, wet below 5 ft. Very slight but indistinct odor.	
3									
			0824						
4		0.3	LAB				SW	Hand auger sample from beneath air knife hole	--
5									--
									--
6				2					--
				3			ML	SILT, trace very fine sand, wet. No foul odor.	--
7			LAB	3					--
		0.0	0905					*No. 10-20 Colorado Silica Sand in annular space -->*	--
8									--
									--
9				1					--
			0915	1				SILT, trace very fine sand, roots below 9 ft. very moist to wet. No foul	--
10		0.1	LAB	1					--
				3					--
				3			SP	SAND, very fine to fine, trace silt, gray, wet.	--
11		0.0		3					--
									--
12									--
									--
13				3					--
		0.1	0935	3			SM	SILT AND SAND, very fine to fine,gray, wet.	--
14			LAB	4				No foul odor.	
15								Note 11-12 ft deep tank basin to NE most likely penetrates silt	
								Also, former Gasamet Station UST basin to south.	
16									
								WELL CONSTRUCTION DETAIL:	
17								2 inch Sched 40 PVC - 10 ft No 10 slot PVC screen at 4-14ft bgs	
								5 x 50 lbs bags of No. 10-20 Silica Sand + 1bag grout (3ft thick)	
18								Finished with 4 sq ft concrete pad and flush-mount monument	
								Bottom of borehole at 14.5 feet	
19								Groundwater encountered at 5 feet. Well installed at 4 - 14 ft.	
								Borehole completed with bentonite chips.	
20									

AEROTECH ENVIRONMENTAL CONSULTING

www.AerotechEnvironmental.com

MONITORING WELL ID: **I31** **Page 2 of**

Project Name:

Project Number:

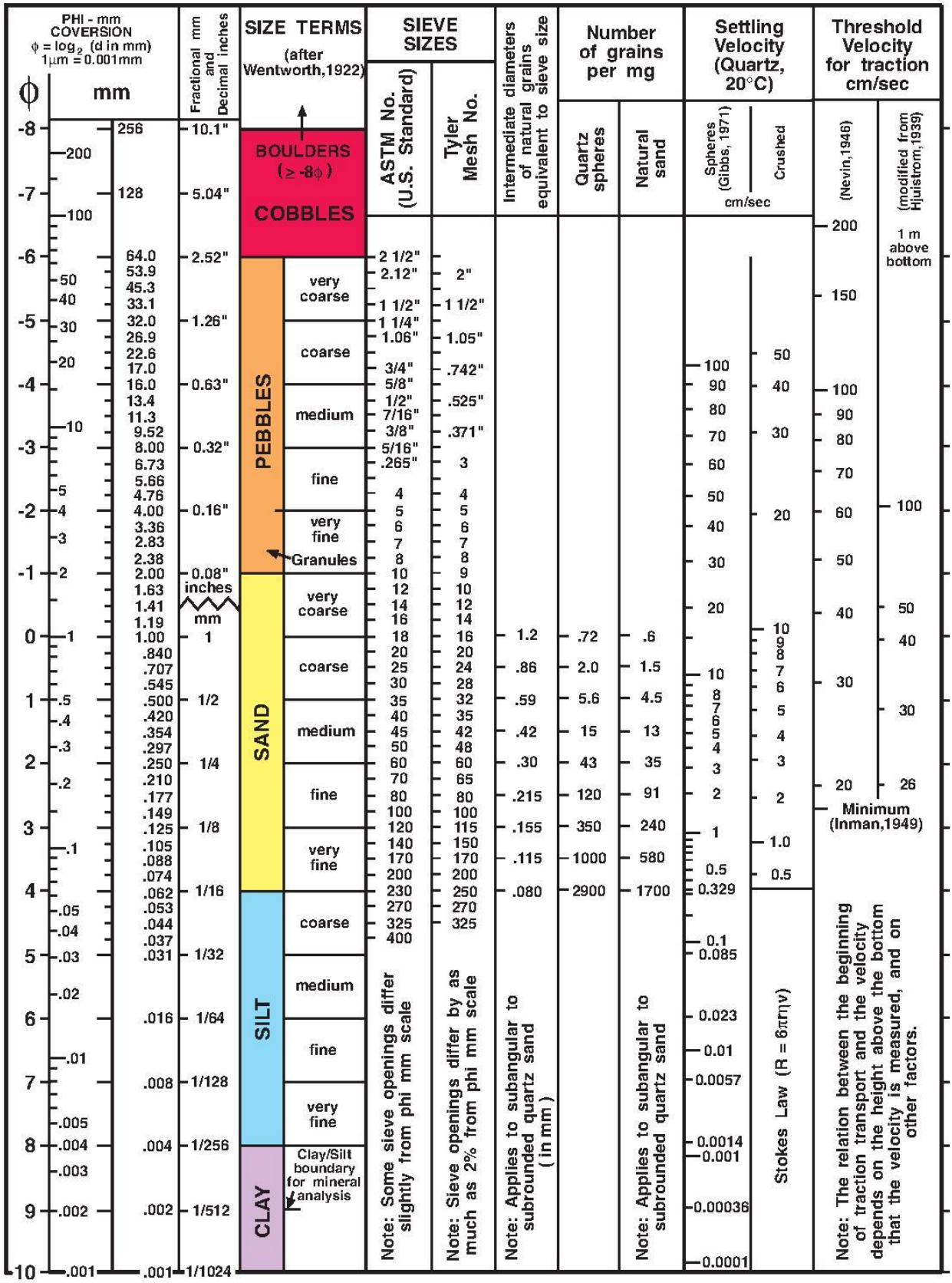
Drilling Information

Drilling Contractor:

Logged by:

Start Date: End Date:

Depth (ft)	Groundwater		Visual or Olfactory Evidence	Blow Counts	Recovery		**USCS** Classification	Soil Classification/ Description **UNIFIED SOIL CLASSIFICATION SYSTEM EXPLANATION**	Well Construction		
							GW	**GRAVELS**, well-graded* OR Gravel+Sand mix, little-no fines			
							GP	**GRAVELS**, poorly-graded* OR Gravel+Sand mix, little-no fines			
							GM	**GRAVELS**, silty OR Gravel-sand-silt mix			
							GC	**GRAVELS**, clayey OR Gravel-sand-clay mix			
							SW	**SAND**, well-graded OR **Gravelly Sands**, little-no fines			
							SP	**SAND**, poorly-graded OR **Gravelly Sands**, little-no fines			
							SM	**SAND**, silty OR Sand-silt mix			
							SC	**SAND**, clayey OR Sand-clay mix			
							ML	**SILT**, inorganic (very fine sands, rock flour, silty or clayey fine			
								sands) OR Clayey silts with slight plasticity			
							CL	**CLAY**, inorganic, low-med plasticity (gravelly, sandy, silty, lean)			
							OL	**SILT**, organic, AND **SILT-CLAY**, organic, low plasticity			
							MH	**SILT**, inorganic (micaceous or diatomaceous fn sndy/silty soils)			
								OR SILTY SOILS, elastic SILTS			
							CH	**CLAY**, inorganic, high plasticity, fat clays			
							OH	**CLAY**, organic, med-high plasticity OR Organic SILTS			
							PT	**PEAT** and other highly organic SOILS			
								Glacial Till - High density, USCS/color indicates grain size			
								* **Terminology clarification**: The term "**Well graded**" is a synonym for "**Poorly sorted**," both meaning that a wide range of particle sizes are present. The former term is employed in geotechnical descriptions, while the latter is preferred by the USDA in characterizing topsoils and subsoils.			



US Geological Survey

CALIFORNIA DEPARTMENT OF TRANSPORTATION (CALTRANS)

UNIFIED SOIL CLASSIFICATION SYSTEM

UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART

COARSE-GRAINED SOILS (more than 50% of material is larger than No. 200 sieve size.)			
GRAVELS More than 50% of coarse fraction larger than No. 4 sieve size	Clean Gravels (Less than 5% fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines
		GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines
	Gravels with fines (More than 12% fines)	GM	Silty gravels, gravel-sand-silt mixtures
		GC	Clayey gravels, gravel-sand-clay mixtures
SANDS 50% or more of coarse fraction smaller than No. 4 sieve size	Clean Sands (Less than 5% fines)	SW	Well-graded sands, gravelly sands, little or no fines
		SP	Poorly graded sands, gravelly sands, little or no fines
	Sands with fines (More than 12% fines)	SM	Silty sands, sand-silt mixtures
		SC	Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS (50% or more of material is smaller than No. 200 sieve size.)			
SILTS AND CLAYS Liquid limit less than 50%		ML	Inorganic silts and very fine sands, rock flour, silty of clayey fine sands or clayey silts with slight plasticity
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
		OL	Organic silts and organic silty clays of low plasticity
SILTS AND CLAYS Liquid limit 50% or greater		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
		CH	Inorganic clays of high plasticity, fat clays
		OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS		PT	Peat and other highly organic soils

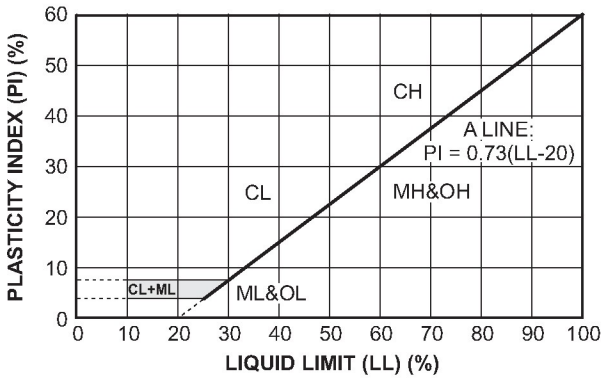
LABORATORY CLASSIFICATION CRITERIA

GW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{D_{30}}{D_{10} \times D_{60}}$ between 1 and 3	
GP	Not meeting all gradation requirements for GW	
GM	Atterberg limits below "A" line or P.I. less than 4	Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols
GC	Atterberg limits above "A" line with P.I. greater than 7	
SW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{D_{30}}{D_{10} \times D_{60}}$ between 1 and 3	
SP	Not meeting all gradation requirements for GW	
SM	Atterberg limits below "A" line or P.I. less than 4	Limits plotting in shaded zone with P.I. between 4 and 7 are borderline cases requiring use of dual symbols.
SC	Atterberg limits above "A" line with P.I. greater than 7	

Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:

Less than 5 percent ..... GW, GP, SW, SP
More than 12 percent ..... GM, GC, SM, SC
5 to 12 percent ..... Borderline cases requiring dual symbols

PLASTICITY CHART



AEROTECH ENVIRONMENTAL CONSULTING

www.AerotechEnvironmental.com

MONITORING WELL ID: **BORING LOG #: MW-2** **Page 1 of 1**

Project Name: FIFE RV, Fife, Wa **BIS 684**

Project Number: 216-8246

Drilling Information

Drilling Contractor:	Boretech, Bellevue
Drilling Method:	H.S.A.
Borehole Diameter:	8"
Sampler Type:	Stainless Steel Split Spoon Sampler

Driller: Carlos Gardea (Wa Lic No 3143)

Site Location: 3410 Pacific Hwy E, Fife, Wa (Gravel lot S of Tahoma Gas and Jack-in-the-Box)

Borehole Location: 5 ft east of west fence + 7 ft from NE lot corner post - Near NE corner of bioswale

Borehole Area (AOC): NW corner of tank and pump island area (NW corner of fenced lot)

Logged by: J. McDermott: Boring Depth: 14.5 feet

GW Encountered: YES Static GW Level: 3 ft bgs

Notes: 2 inch PVC GW Monitoring Well installed - No 10 screen at 4 to 14 ft bgs

Notes: Low tide Commencement Bay at 0700 - high tide at 1300 - per NOAA Tables

Approx. Surface Elevation:

Start Date: 11-10-16 End Date: Same

Depth (ft)	Groundwater	PID	Visual or Olfactory Evidence	Blow Counts	Recovery		USCS Classification	Soil Classification/ Description	Well Construction
							GP	Gravel Pavement	
1									
								Air knife to 5.5 ft bgs - Concrete fragment (8 in +) at 2 ft	
2					Air		SW		
					Knife			FILL - SAND, very fine to coarse, well graded, with silt, little to trace clay, little small to large subround tosubangular gravel, gray to olive gray, slightly moist, wet below 5 ft. Moderate gasoline odor.	
3			0948						
		82		LAB					
4							SW	Hand auger sample from beneath air knife hole at 4-4.3 ft	--
									--
5			1037						--
		38	LAB	2					--
6				2			ML	SILT, some very fine sand, trace clay, wet. Strong gasoline odor at 5.5 ft.	--
				1					--
7									--
									--
8			1045						--
		16.9	LAB	1					--
9				1			ML	Same as above. Very moist to wet. Very slight gasoline odor above 9 ft. No foul odor below 9 ft	--
				1					--
10									--
								Silt is generally wet in upper portions; very moist to moist below.	--
11									--
									--
12								*Note 11-12 ft deep tank basin to NE very likely penetrates this generally thinner silt unit. Sand lenses may be present between intervals sampled by split spoon tool. Note: former Gasamet UST basin was situated to SE*	--
									--
13				1					--
			1050	2					--
14		1.1	LAB	3			SP	SAND, very fine to fine, poorly graded trace silt, gray, wet. No foul odor.	
15									
								WELL CONSTRUCTION DETAIL:	
16								2 inch Sched 40 PVC - 10 ft No 10 slot PVC screen at 4-14ft bgs	
								6.5 x 50 lbs bags of No. 10-20 Silica Sand + 1bag grout (3ft thick)	
17								Finished with 4 sq ft concrete pad and flush-mount monument	
18									
								Bottom of borehole at 14.5 feet	
19								Groundwater encountered at 5 ft, rises to 3 ft. Well installed at 14 ft	
								Borehole completed with bentonite chips.	
20									

AEROTECH ENVIRONMENTAL CONSULTING
www.AerotechEnvironmental.com

MONITORING WELL ID: **BORING LOG #: MW-3** **Page 1 of 1**

Project Name: FIFE RV, Fife, Wa **BIS 685**

Project Number: 216-8246

Drilling Information

Drilling Contractor:	Boretech, Bellevue
Drilling Method:	H.S.A.
Borehole Diameter:	8"
Sampler Type:	Stainless Steel Split Spoon Sampler

Driller: Carlos Gardea (Wa Lic No 3143)

Site Location: 3410 Pacific Hwy E, Fife, Wa (Gravel lot S of Tahoma Gas and Jack-in-the-Box)

Borehole Location: 71ft south and 10 ft west of SW corner Tahoma Bldg (73 ft to Power Pole)

Borehole Area (AOC): UST Basin area

Logged by: J. McDermott: Boring Depth: 14.5 feet

GW Encountered: YES Static GW Level: 5ft bgs

Notes: 2 inch PVC GW Monitoring Well installed - No 10 screen at 4 to 14 ft bgs

Notes: Low tide Commencement Bay at 0700 - high tide at 1300 - per NOAA Tables

Approx. Surface Elevation:

Start Date: 11-10-16 End Date: Same

Depth (ft)	Groundwater	PID	Visual or Olfactory Evidence	Blow Counts	Recovery		USCS Classification	Soil Classification/ Description	Well Construction
							GP	Gravel Pavement	
1									
								Air knife to 5.5 ft bgs - Concrete fragment (8 in +) at 2 ft	
2					Air		SW		
					Knife			FILL - SAND, fine to coarse, well graded, trace silt, little small to large subround to subangular gravel, gray to olive gray, slightly moist, wet below 5 ft. Moderately strong gasoline odor.	
3									
		VPH	1118						
4		662		LAB			SW	Hand auger sample from beneath air knife hole at 4-4.3 ft	--
									--
5			1135						--
		1		3					--
6		870		1			SW	FILL- SAND, fine to coarse, well graded, trace silt, little small to large subround to subangular gravel, gray 6.9-7.0 ft, wet, strong to very strong gasoline odor.	--
				2					--
7									--
									--
8			1205						--
		LAB	LAB	1					--
9		203		1			SW	Same as above. Very moist to wet. No foul odor.	--
				2					--
10									--
								PRESUMED FORMER GASAMET UST BASIN AREA- SILT UNIT ABSENT	--
11									--
									--
12									--
									--
13				4				SAND, very fine to medium, few coarse, poorly graded, medium brown, bottom six inches dark brown, very moist to wet. No foul odor.	--
			1221	3			SP		--
14		9.5	LAB	3					
15									
								WELL CONSTRUCTION DETAIL:	
16								2 inch Sched 40 PVC - 10 ft No 10 slot PVC screen at 4-14ft bgs	
								5 x 50 lbs bags of No. 10-20 Silica Sand + 1bag grout (3ft thick)	
17								Finished with 4 sq ft concrete pad and flush-mount monument	
18									
								Bottom of borehole at 14.5 feet	
19								Groundwater encountered at 5 ft. Well installed at 14 ft	
								Borehole completed with bentonite chips.	
20									

AEROTECH ENVIRONMENTAL CONSULTING

www.AerotechEnvironmental.com

MONITORING WELL ID: **BORING LOG #: MW-4** **Page 1 of 1**

Project Name: FIFE RV, Fife, Wa **BIS 686**

Project Number: 216-8246

Drilling Information

Drilling Contractor:	Boretech, Bellevue
Drilling Method:	H.S.A.
Borehole Diameter:	8"
Sampler Type:	Stainless Steel Split Spoon Sampler

Driller: Carlos Gardea (Wa Lic No 3143)

Site Location: 3410 Pacific Hwy E, Fife, Wa (Gravel lot S of Tahoma Gas and Jack-in-the-Box)

Borehole Location: 38 ft south of NW corner of fenced portion of lot; 4 ft east of west fence

Borehole Area (AOC):

Logged by: J. McDermott: Boring Depth: 14.5 feet

GW Encountered: YES Static GW Level: 5 ft

Notes:

Approx. Surface Elevation:

Start Date: 11-10-16 End Date: Same

Depth (ft)	Groundwater	PID	Visual or Olfactory Evidence	Blow Counts	Recovery		USCS Classification	Soil Classification/ Description	Well Construction
								Gravel Pavement	
1									
2								FILL - SAND, very fine to coarse, well graded, with silt, little to trace clay, little small to large subround tosubangular gravel, gray to olive gray, moist. Slight gasoline odor.	
3									
4				49					
			1310	6					
5		16	LAB	8					
6								*This well adjoins the bio-swale area to the west and in which standing water is present (perhaps bottom of basin at 8 approx. ft bgs) - pre-development (post demo of Gasamet Station) test pits in this area indicated strong petrol odors - suspect extensive excavation of impacted soils prior to bio-swale construction, and extending to the vicinity of MW-4*	
7									
8									
9				2				Possible FILL - SAND, very fine to very coarse, well graded, some clay, trace subrounded gravel, heterogeneous mix of colors: dark brown, gray, and light brown,slight odor, very moist.	
10			1335	1					
		19	LAB	1					
11								(Possible sluff- no silt present)	
12									
13				2				SILT, some 1/2" fine sand lenses, and a few clay lenses, few plant fragments, light brown, very moist. No foul odor. .[Bottom 1.5" brown fine sand, poorly graded.]	
			1400	2					
14		0.2	LAB	4					
15								**WELL CONSTRUCTION DETAIL:**	
16								2 inch Sched 40 PVC - 10 ft No 10 slot PVC screen at 4-14ft bgs	
								5 x 50 lbs bags of No. 10-20 Silica Sand + 1bag grout (3ft thick)	
17								Finished with 4 sq ft concrete pad and flush-mount monument	
18									
								Bottom of borehole at 14.5 feet	
19								Groundwater encountered at 5 feet. well screened at 4-14 ft bgs.	
								Borehole completed with bentonite chips.	
20									

AEROTECH ENVIRONMENTAL CONSULTING
www.AerotechEnvironmental.com

MONITORING WELL ID: **BORING LOG #: MW-5** **Page 1 of 1**

Project Name: FIFE RV, Fife, Wa **BIT 785**

Project Number: 216-8246

Drilling Information

Drilling Contractor:	Boretech, Bellevue
Drilling Method:	H.S.A.
Borehole Diameter:	8"
Sampler Type:	Stainless Steel Split Spoon Sampler

Driller: Carlos Gardea (Wa Lic No 3143)

Site Location: 3410 Pacific Hwy E, Fife, Wa (Gravel lot S of Tahoma Gas and Jack-in-the-Box)

Borehole Location: 5 ft north of south fence and 5 ft east of west fence - on slope below lot

Borehole Area (AOC): SW corner of Fenced area - SE of bioswale

Logged by: J. McDermott: Boring Depth: 14.5 feet

GW Encountered: YES Static GW Level: 4.5 ft bgs (approx 2 ft below lot level)

Notes: Gravel surface slopes down to north toward Catch Basins west of MW-3 at fence

Approx. Surface Elevation:

Start Date: 11-10-16 End Date: Same

Depth (ft)	Groundwater	PID	Visual or Olfactory Evidence	Blow Counts	Recovery		USCS Classification	Soil Classification/ Description	Well Construction
				2					
1		0.1		3				FILL - SAND, fine to coarse, well graded, trace to little organic silt, trace small subrounded gravel, light brown, dry. No foul odor.	
				3			SW		
2									
	Near low tide - 8am								
3	11-11-16 water from TOC: 5.46							No foul odor in cutting 1.5 to 5 ft	
	= approx 4 ft bgs terrace								
4									
									--
5							SP	SAND, very fine, poorly graded, gray, wet	--
			1514	2				SILT, little very fine sand, gray, trace wood and plant fragments, wet. No foul odor / possible VER faint gasoline odor.	--
6		4.1	LAB	1					--
				1			ML		--
7									--
									--
8								Silt is wet in upper portions; very moist to moist below.	--
									--
9									--
									--
10			1522	1			ML	SILT, little very fine sand, common wood and plant fragments and rare peat layers less than 1/4 - 1/2 inch, very moist to wet.Organic odor near peat layers - approx 10 - 10.5 ft	--
		0.6	LAB	1			PT		--
11				1			ML		--
									--
12									--
									--
13									--
			1535	2			CH	CLAY and SILT, trace very fine sand, gray, moist. No foul odor. Clay is highly plastic,	--
14		0.2	LAB	2					--
				2			ML	SILT, little very fine sand, gray, moist. No foul odor.	
15								**WELL CONSTRUCTION DETAIL:**	
								Excavated a limited terrace on the slope SW of gravel lot	
16								2 inch Sched 40 PVC - 10 ft No 10 slot PVC screen at 4-14ft bgs	
								5 x 50 lbs bags of No. 10-20 Silica Sand + 1bag grout (3ft thick)	
17								Finished with 2 sq ft concrete 'base' and above-ground steel	
								monument protected by four bollards	
18									
								Bottom of borehole at 4.5 feet	
19								Groundwater encountered at 4.5 feet. Well screen at 4 - 14 ft bgs	
								Borehole completed with bentonite chips.	
20									

AEROTECH ENVIRONMENTAL CONSULTING

www.AerotechEnvironmental.com

MONITORING WELL ID: **BORING LOG #: MW-6** **Page 1 of 1**

Project Name: FIFE RV, Fife, Wa **BIT 786**

Project Number: 216-8246

Drilling Information

Drilling Contractor:	Boretech, Bellevue
Drilling Method:	H.S.A.
Borehole Diameter:	8"
Sampler Type:	Stainless Steel Split Spoon Sampler

Driller: Carlos Gardea (Wa Lic No 3143)

Site Location: 3410 Pacific Hwy E, Fife, Wa (Gravel lot S of Tahoma Gas and Jack-in-the-Box)

Borehole Location: 5 ft NE of SW perimeter fence and 32 feet north of west fence along prop line

Borehole Area (AOC): 24 feet east of MW-5 - downgradient perimeter of Property.

Logged by: J. McDermott: Boring Depth: 14.5 feet

GW Encountered: YES Static GW Level:

Notes:

Approx. Surface Elevation:

Start Date: 11-11-16 End Date: Same

Depth (ft)	Groundwater	PID	Visual or Olfactory Evidence	Blow Counts	Recovery		USCS Classification	Soil Classification/ Description	Well Construction
1									
2									
3							SW	No foul odor in cutting 1.5 to 4 ft	
4			0859					FILL - SAND, fine-coarse, well graded, brown, moist. No foul odor.	
5		0.1	LAB	2			SC	FILL - SAND, SILT, little clay, brown. Moist to dry. No foul odor	--
				2			SP	FILL - SAND, fine-coarse, poorly graded, brown, moist. No foul odor.	--
6				1				SILT, with very fine sand, gray, wet. No foul odor.	--
									--
7									--
							ML	*Note base of ditch approx 30 ft south estimated near 5-7 ft bgs*	--
8								*as recorded at location of MW-6 (7 - 9 ft bgs relative to gravel lot)*	--
									--
9								Same as above to 8.7 ft bgs	--
			0910						--
10		0.2	LAB	1			PT	PEAT, with silt and clay, gray. Very moist to wet. No foul odor.	--
				1				SILT, with very fine sand, very moist to wet. No foul odor.	--
		0.1	LAB	1					--
11			0915				ML		--
									--
12									--
									--
13									--
			0925	4			SP	SAND, very fine, poorly graded, gray, wet. No foul odor.	--
14		0.1	LAB	5					--
				6					
15								**WELL CONSTRUCTION DETAIL:**	
								Excavated a limited terrace on the slope SW of gravel lot	
16								2 inch Sched 40 PVC - 10 ft No 10 slot PVC screen at 4-14ft bgs	
								5 x 50 lbs bags of No. 10-20 Silica Sand + 1bag grout (3ft thick)	
17								Finished with 2 sq ft concrete 'base' and above-ground steel	
								monument protected by four bollards	
18								All wellheads were sealed with twist-lock compression caps	
								Bottom of borehole at 14.5 feet	
19								Groundwater encountered at 5 feet. Well installed at14.5 ft bgs.	
								Borehole completed with bentonite chips.	
20									

AEROTECH ENVIRONMENTAL CONSULTING
www.AerotechEnvironmental.com

BORING LOG #: MW7

Site Name: Fife RV Center
Project Number: 217-4025

Site Location: 3410 Pacific Highway East, Fife, WA
AOC: South of Former UST Basin
Borehole Location: 52' Southwest of MW3

Logged by: N. Gerkin **Boring Depth:** 16 feet **GW Encountered:** YES

Drilling Information

Drilling Contractor:	SEP, Tumwater, WA
Drilling Method:	2-inch Direct Push
Sampler Type:	Core sampler + virgin poly-sleeve
ECY Well Tag:	BJP689

Approx. Surface Elev.: 10.5' above MSL
Work Date: 07/14/17

Depth (ft)	Groundwater	PID (ppm)	Sample	Blow Counts	Recovery		USCS Classification	Soil Classification/ Description	Well Construction
								Gravel Parking Surface	
1							GW	FILL - GRAVEL and SAND, light brown to gray, damp, fine to coarse sand and gravel, subangular to subrounded gravel, Well graded, trace silt. No petrol odor.	
2									
3									
4		0.0							
5									
6							ML	SILT with some very fine Sand, maroon to brown, wet, no petrol odor.	
7									
8		0.0							
9									
10								Same as above	
11		0.0	Lab				SP	SAND, very fine to fine, marooon to brown, wet, poorly graded, trace silt, no petrol odor.	
12									
13									
14		0.0							
15									
16									
17									
18									
19									
20									
21								1" Diameter Schedule 80 PVC, 0.010" Screen from 4 to 14 ft bgs Well completed with Colorado Silica Sand from 3 to 14 ft bgs Bentonite from 1 to 3 ft bgs and Concrete from 0.5 to 1 ft bgs	
22									
23									
24									
25									

AEROTECH ENVIRONMENTAL CONSULTING
www.AerotechEnvironmental.com

BORING LOG #: MW8

Site Name: Fife RV Center
Project Number: 217-4025

Site Location: 3410 Pacific Highway East, Fife, WA
AOC: South of Former UST Basin
Borehole Location: 50' South of MW3

Logged by: N. Gerkin **Boring Depth:** 16 feet **GW Encountered:** YES

Drilling Information

Drilling Contractor:	SEP, Tumwater, WA
Drilling Method:	2-inch Direct Push
Sampler Type:	Core sampler + virgin poly-sleeve
ECY Well Tag:	BJP688

Approx. Surface Elev.: 10.5' above MSL
Work Date: 07/14/17

Depth (ft)	Groundwater	PID (ppm)	Sample	Blow Counts	Recovery	USCS Classification	Soil Classification/ Description	Well Construction
							Gravel Parking Surface	
1						GW	FILL - GRAVEL and SAND, light brown to gray, damp, fine to coarse sand and gravel, subangular to subrounded gravel, Well graded, trace silt. No petrol odor.	
2		0.0						
3								
4							Same as above, increased silt. No petrol odor.	
5		0.0	Lab				Wet at 5'	
6						ML	SILT with some very fine Sand, maroon to brown, wet, no petrol odor.	
7								
8								
9						ML	SILT, dark brown, satuerated, plastic, some clay. No petrol odor.	
10		0.0	Lab					
11								
12								
13								
14		0.0				SP	SAND, very fine to fine, marooon to brown, wet, poorly graded, trace silt, no petrol odor.	
15								
16								
17								
18								
19								
20								
21							1" Diameter Schedule 80 PVC, 0.010" Screen from 4 to 14 ft bgs Well completed with Colorado Silica Sand from 3 to 14 ft bgs Bentonite from 1 to 3 ft bgs and Concrete from 0.5 to 1 ft bgs	
22								
23								
24								
25								

AEROTECH ENVIRONMENTAL CONSULTING
www.AerotechEnvironmental.com

BORING LOG #: MW9

Site Name: Fife RV Center
Project Number: 217-4025

Site Location: 3410 Pacific Highway East, Fife, WA
AOC: East (upgradient) of Former UST Basin
Borehole Location: 45' East of MW3

Logged by: N. Gerkin **Boring Depth:** 16 feet **GW Encountered:** YES

Drilling Information

Drilling Contractor:	SEP, Tumwater, WA
Drilling Method:	2-inch Direct Push
Sampler Type:	Core sampler + virgin poly-sleeve
ECY Well Tag:	BJP687

Approx. Surface Elev.: 9' above MSL
Work Date: 07/14/17

Depth (ft)	Groundwater	PID (ppm)	Sample	Blow Counts	Recovery	USCS Classification	Soil Classification/ Description	Well Construction
							Gravel Parking Surface	
1–5		0.0	Lab			GW	FILL - GRAVEL and SAND, light brown to gray, damp, fine to coarse sand and gravel, subangular to subrounded gravel, Well graded, trace silt. No petrol odor. Same as above, increased silt. No petrol odor. Wet at 4.5'	
6–9		0.0				GP	FILL - GRAVEL, medium subangular to subrounded, brown to gray, saturated. No petrol odor. Appears to be associated with trench fill for the 12" sewer nearby.	
10–11		0.0				ML	SILT with some very fine Sand, maroon to brown, wet, no petrol odor.	
12–16		0.0				SP	SAND, very fine to fine, marooon to brown, wet, poorly graded, trace silt, no petrol odor.	
17–24							1" Diameter Schedule 80 PVC, 0.010" Screen from 4 to 14 ft bgs Well completed with Colorado Silica Sand from 3 to 14 ft bgs Bentonite from 1 to 3 ft bgs and Concrete from 0.5 to 1 ft bgs	
25								

AEROTECH ENVIRONMENTAL CONSULTING
www.AerotechEnvironmental.com

BORING LOG #: B1

Site Name: Fife RV Center
Project Number: 217-4025

Site Location: 3410 Pacific Highway East, Fife, WA
AOC: Former UST Basin
Borehole Location: 15' NW of MW3 (nearest to P25)

Logged by: N. Gerkin **Boring Depth:** 16 feet **GW Encountered:** YES

Drilling Information

Drilling Contractor:	SEP, Tumwater, WA
Drilling Method:	2-inch Direct Push
Sampler Type:	Core sampler + virgin poly-sleeve
ECY Well Tag:	N/A

Approx. Surface Elev.: 10' above MSL
Work Date: 07/14/17

Depth (ft)	Groundwater	PID (ppm)	Sample	Blow Counts	Recovery		USCS Classification	Soil Classification/ Description	Well Construction
								Gravel Parking Surface	
1								FILL - GRAVEL and SAND, light brown to gray, damp, fine to coarse sand and gravel, subangular to subrounded gravel, Well graded. No petrol odor.	
2		0.0							
3							SW	FILL - SAND, fine to coarse, gray to blue-gray, wet below 5', fine to large subrounded to subangular gravel, very well graded. Strong gasoline odor.	
4									
5		462	LAB						
6									
7									
8								Same as Above	
9		123	LAB				SM	Sandy SILT, reddish dark gray, saturated, fine-grained sand. Moderate petrol odor.	
10									
11									
12		0.2					ML	SILT with some very fine Sand, maroon to brown, wet, no petrol odor.	
13									
14									
15		0.0					SP	SAND, very fine to fine, marooon to brown, wet, poorly graded, trace silt, no petrol odor.	
16									
17									
18									
19									
20								Bottom of borehole at 16 feet.	
21								No well installed.	
22								Borehole completed with bentonite chips.	
23									
24									
25									

LABORATORY ANALYTICAL RESULTS
AND CHAIN OF CUSTODY DOCUMENTS

ADVANCED ANALYTICAL

Environmental Testing Laboratory

July 20, 2017

Nick Gerkin
Aerotech Environmental, Inc.
13925 Interurban Avenue South, Suite 210
Seattle, WA 98168

Dear Mr. Gerkin:

Please find enclosed the analytical data report for the *Fife RV Center* ***(C70714-2)*** Project.

Samples were received on *July 14, 2017*. The results of the analyses are presented in the attached tables. Applicable reporting limits, QA/QC data and data qualifiers are included. A copy of the chain-of-custody and an invoice for the work is also enclosed.

ADVANCED ANALYTICAL LABORATORY appreciates the opportunity to provide analytical services for this project. Should there be any questions regarding this report, please contact me at (425) 702-8571.

It was a pleasure working with you, and we are looking forward to the next opportunity to work together.

Sincerely,

V. Ivanov

Val G. Ivanov, Ph.D.
Laboratory Manager

4078 148 Ave NE■ Redmond, WA 98052
425.702-8571
E-mail: aachemlab@yahoo.com

Advanced Analytical Laboratory
(425) 702-8571

AAL Job Number:	C70714-2
Client:	Aerotech Environmental
Project Manager:	Nick Gerkin
Client Project Name:	Fife RV Center
Client Project Number:	na
Date received:	07/14/17

AAL Job Number: C70714-2
Client: Aerotech Environmental
Project Manager: Nick Gerkin
Client Project Name: Fife RV Center
Client Project Number: na
Date received: 07/14/17

Analytical Results

8260B, µg/kg		MTH BLK	LCS	B1 (5)	MS	MSD	RPD
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Date extracted	Reporting	07/14/17	07/14/17	07/14/17	07/14/17	07/14/17	07/14/17
Date analyzed	Limits	07/14/17	07/14/17	07/14/17	07/14/17	07/14/17	07/14/17
MTBE	100	nd		nd			
Chloromethane	50	nd		nd			
Vinyl chloride	50	nd		nd			
Bromomethane	50	nd		nd			
Chloroethane	50	nd		nd			
Trichlorofluoromethane	50	nd		nd			
1,1-Dichloroethene	50	nd		nd			
Methylene chloride	20	nd		220			
trans-1,2-Dichloroethene	50	nd		nd			
2,2-Dichloropropane	50	nd		nd			
Chloroform	50	nd		nd			
1,1,1-Trichloroethane	50	nd		nd			
Carbontetrachloride	50	nd		nd			
1,1-Dichloropropene	50	nd		nd			
1,2-Dichloroethane(EDC)	20	nd		nd			
Trichloroethene	20	nd	77%	290	91%	98%	8%
1,2-Dichloropropane	50	nd		nd			
Dibromomethane	50	nd		nd			
Bromodichloromethane	50	nd		nd			
cis-1,3-Dichloropropene	50	nd		nd			
trans-1,3-Dichloropropene	50	nd		nd			
1,1,2-Trichloroethane	50	nd		nd			
Tetrachloroethene	50	nd		nd			
1,3-Dichloropropane	50	nd		nd			
Dibromochloromethane	20	nd		nd			
1,2-Dibromoethane (EDB)*	5	nd		nd			
Chlorobenzene	50	nd	95%	nd	111%	104%	7%
1,1,1,2-Tetrachloroethane	50	nd		nd			
1,2,3-Trichloropropane	50	nd		nd			
1,1,2,2-Tetrachloroethane	50	nd		nd			
2-Chlorotoluene	50	nd		nd			
4-Chlorotoluene	50	nd		nd			
1,3-Dichlorobenzene	50	nd		nd			
1,4-Dichlorobenzene	50	nd		nd			
1,2-Dichlorobenzene	50	nd		nd			
1,2-Dibromo-3-Chloropropane	50	nd		nd			
1,2,4-Trichlorobenzene	50	nd		nd			
1,2,3-Trichlorobenzene	50	nd		nd			

*-instrument detection limits

AAL Job Number: C70714-2
Client: Aerotech Environmental
Project Manager: Nick Gerkin
Client Project Name: Fife RV Center
Client Project Number: na
Date received: 07/14/17

Analytical Results

8260B, µg/kg		MTH BLK	LCS	B1 (5)	MS	MSD	RPD
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Date extracted	Reporting	07/14/17	07/14/17	07/14/17	07/14/17	07/14/17	07/14/17
Date analyzed	Limits	07/14/17	07/14/17	07/14/17	07/14/17	07/14/17	07/14/17
Surrogate recoveries							
Dibromofluoromethane		99%	94%	98%	95%	100%	
1,2-Dichloroethane-d4		96%	98%	126%	103%	95%	

Data Qualifiers and Analytical Comments
nd - not detected at listed reporting limits
M-matrix interference
C - coelution with sample peaks
Acceptable Recovery limits: 70% TO 130%
Acceptable RPD limit: 30%

AAL Job Number: C70714-2
Client: Aerotech Environmental
Project Manager: Nick Gerkin
Client Project Name: Fife RV Center
Client Project Number: na
Date received: 07/14/17

Analytical Results

8260B, µg/kg		MTH BLK	LCS	B1 (9)
Matrix	Soil	Soil	Soil	Soil
Date extracted	Reporting	07/20/17	07/20/17	07/20/17
Date analyzed	Limits	07/20/17	07/20/17	07/20/17
MTBE	100	nd		nd
Chloromethane	50	nd		nd
Vinyl chloride	50	nd		nd
Bromomethane	50	nd		nd
Chloroethane	50	nd		nd
Trichlorofluoromethane	50	nd		nd
1,1-Dichloroethene	50	nd		nd
Methylene chloride	20	nd		nd
trans-1,2-Dichloroethene	50	nd		nd
2,2-Dichloropropane	50	nd		nd
Chloroform	50	nd		nd
1,1,1-Trichloroethane	50	nd		nd
Carbontetrachloride	50	nd		nd
1,1-Dichloropropene	50	nd		nd
1,2-Dichloroethane(EDC)	20	nd		nd
Trichloroethene	20	nd	79%	nd
1,2-Dichloropropane	50	nd		nd
Dibromomethane	50	nd		nd
Bromodichloromethane	50	nd		nd
cis-1,3-Dichloropropene	50	nd		nd
trans-1,3-Dichloropropene	50	nd		nd
1,1,2-Trichloroethane	50	nd		nd
Tetrachloroethene	50	nd		nd
1,3-Dichloropropane	50	nd		nd
Dibromochloromethane	20	nd		nd
1,2-Dibromoethane (EDB)*	5	nd		nd
Chlorobenzene	50	nd	90%	nd
1,1,1,2-Tetrachloroethane	50	nd		nd
1,2,3-Trichloropropane	50	nd		nd
1,1,2,2-Tetrachloroethane	50	nd		nd
2-Chlorotoluene	50	nd		nd
4-Chlorotoluene	50	nd		nd
1,3-Dichlorobenzene	50	nd		nd
1,4-Dichlorobenzene	50	nd		nd
1,2-Dichlorobenzene	50	nd		nd
1,2-Dibromo-3-Chloropropane	50	nd		nd
1,2,4-Trichlorobenzene	50	nd		nd
1,2,3-Trichlorobenzene	50	nd		nd

*-instrument detection limits

AAL Job Number: C70714-2
Client: Aerotech Environmental
Project Manager: Nick Gerkin
Client Project Name: Fife RV Center
Client Project Number: na
Date received: 07/14/17

Analytical Results

8260B, µg/kg		MTH BLK	LCS	B1 (9)
Matrix	Soil	Soil	Soil	Soil
Date extracted	Reporting	07/20/17	07/20/17	07/20/17
Date analyzed	Limits	07/20/17	07/20/17	07/20/17
Surrogate recoveries				
Dibromofluoromethane		101%	99%	101%
1,2-Dichloroethane-d4		92%	100%	101%

Data Qualifiers and Analytical Comments
nd - not detected at listed reporting limits
M-matrix interference
C - coelution with sample peaks
Acceptable Recovery limits: 70% TO 130%
Acceptable RPD limit: 30%

AAL Job Number: C70714-2
Client: Aerotech Environmental
Project Manager: Nick Gerkin
Client Project Name: Fife RV Center
Client Project Number: na
Date received: 07/14/17

Analytical Results

NWTPH-Gx / BTEX		MTH BLK	LCS	B1 (5)	MW7 (11)	MW8 (10)	MW9 (3)
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Date extracted	Reporting	07/15/17	07/15/17	07/15/17	07/15/17	07/15/17	07/15/17
Date analyzed	Limits	07/15/17	07/15/17	07/15/17	07/15/17	07/15/17	07/15/17
NWTPH-Gx, mg/kg							
Mineral spirits/Stoddard	5.0	nd		nd	nd	nd	nd
Gasoline	5.0	nd		1,200	nd	nd	nd
BTEX 8021B, µg/kg							
Benzene	20	nd	98%	2,100	nd	nd	nd
Toluene	50	nd	108%	2,400	nd	nd	nd
Ethylbenzene	50	nd		51,000	nd	nd	nd
Xylenes	50	nd		26,000	nd	nd	nd
Surrogate recoveries:							
Trifluorotoluene		111%	105%	M	88%	87%	87%
Bromofluorobenzene		109%	102%	129%	106%	94%	108%

Data Qualifiers and Analytical Comments
nd - not detected at listed reporting limits
na - not analyzed
M - matrix interference
Results reported on dry-weight basis
Acceptable Recovery limits: 70% TO 130%
Acceptable RPD limit: 30%

AAL Job Number: C70714-2
Client: Aerotech Environmental
Project Manager: Nick Gerkin
Client Project Name: Fife RV Center
Client Project Number: na
Date received: 07/14/17

Analytical Results

NWTPH-Gx / BTEX		BLANK	MS	MSD	RPD
Matrix	Soil	Soil	Soil	Soil	Soil
Date extracted	Reporting	07/15/17	07/15/17	07/15/17	07/15/17
Date analyzed	Limits	07/15/17	07/15/17	07/15/17	07/15/17
NWTPH-Gx, mg/kg					
Mineral spirits/Stoddard	5.0	nd			
Gasoline	5.0	nd			
BTEX 8021B, µg/kg					
Benzene	20	nd	115%	94%	20%
Toluene	50	nd	118%	108%	9%
Ethylbenzene	50	nd			
Xylenes	50	nd			
Surrogate recoveries:					
Trifluorotoluene		96%	116%	110%	
Bromofluorobenzene		114%	103%	105%	

Data Qualifiers and Analytical Comments
nd - not detected at listed reporting limits
na - not analyzed
M - matrix interference
Results reported on dry-weight basis
Acceptable Recovery limits: 70% TO 130%
Acceptable RPD limit: 30%

AAL Job Number: C70714-2
Client: Aerotech Environmental
Project Manager: Nick Gerkin
Client Project Name: Fife RV Center
Client Project Number: na
Date received: 07/14/17

Analytical Results

NWTPH-Dx, mg/kg		MTH BLK	B1 (5)	MW7 (11)	MW8 (5)	MW8 (10)	MW9 (3)	MW9 (3) Dupl
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Date extracted	Reporting	07/15/17	07/15/17	07/15/17	07/15/17	07/15/17	07/15/17	07/15/17
Date analyzed	Limits	07/15/17	07/15/17	07/15/17	07/15/17	07/15/17	07/15/17	07/15/17
Kerosene/Jet fuel	20	nd	nd	nd	nd	nd	nd	nd
Diesel/Fuel oil/Creosote	20	nd	350 *	nd	nd	nd	nd	nd
Heavy oil	50	nd	nd	nd	nd	nd	nd	nd
Surrogate recoveries:								
Fluorobiphenyl		127%	115%	115%	118%	114%	111%	109%
o-Terphenyl		129%	102%	106%	109%	105%	104%	106%

* Unidentifiable petroleum product in diesel range, possibly creosote

Data Qualifiers and Analytical Comments
na - not analyzed
Results reported on dry-weight basis
M - matrix interference
Acceptable Recovery limits: 70% TO 130%
Acceptable RPD limit: 30%

AAL Job Number: C70714-2
Client: Aerotech Environmental
Project Manager: Nick Gerkin
Client Project Name: Fife RV Center
Client Project Number: na
Date received: 07/14/17

Analytical Results

PAH (8270 sim), mg/kg		MTH BLK	LCS	B1 (5)	MS	MSD	RPD
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Date extracted	Reporting	07/19/17	07/19/17	07/19/17	07/19/17	07/19/17	07/19/17
Date analyzed	Limits	07/19/17	07/19/17	07/19/17	07/19/17	07/19/17	07/19/17
1-Methylnaphthalene	0.10	nd		4.8			
2-Methylnaphthalene	0.10	nd		7.9			
Naphthalene	0.10	nd		0.97			
Acenaphthylene	0.10	nd		nd			
Acenaphthene	0.10	nd	110%	nd	110%	108%	2%
Fluorene	0.10	nd		nd			
Phenanthrene	0.10	nd		1.5			
Anthracene	0.10	nd		0.29			
Fluoranthene	0.10	nd		nd			
Pyrene	0.10	nd	108%	1.5	110%	103%	7%
Benzo(a)anthracene	0.10	nd		nd			
Chrysene	0.10	nd		0.68			
Benzo(b)fluoranthene	0.10	nd		nd			
Benzo(k)fluoranthene	0.10	nd		nd			
Benzo(a)pyrene	0.10	nd		nd			
Indeno(1,2,3-cd)pyrene	0.10	nd		nd			
Dibenzo(ah)anthracene	0.10	nd		nd			
Benzo(ghi)perylene	0.10	nd		nd			
Surrogate recoveries:							
2-Fluorobyphenyl		90%	124%	125%	116%	119%	
o-Terphenyl		99%	99%	100%	99%	100%	

Data Qualifiers and Analytical Comments
nd - not detected at listed reporting limits
na - not analyzed
M - matrix interference
Results reported on dry-weight basis
Acceptable Recovery limits: 50% TO 150%
Acceptable RPD limit: 50%

AAL Job Number: C70714-2
Client: Aerotech Environmental
Project Manager: Nick Gerkin
Client Project Name: Fife RV Center
Client Project Number: na
Date received: 07/14/17

Analytical Results

Metals (7010), mg/kg		MTH BLK	LCS	B1 (5)	MW8 (10)	MW9 (3)	MS	MSD	RPD
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Date extracted	Reporting	07/16/17	07/16/17	07/16/17	07/16/17	07/16/17	07/16/17	07/16/17	07/16/17
Date analyzed	Limits	07/16/17	07/16/17	07/16/17	07/16/17	07/16/17	07/16/17	07/16/17	07/16/17
Lead (Pb)	1.0	nd	106%	14	2.9	37	M	M	

Data Qualifiers and Analytical Comments
nd - not detected at listed reporting limits
M- matrix interference
Acceptable Recovery limits: 70% TO 130%
Acceptable RPD limit: 30%

AAL Job Number: C70714-2
Client: Aerotech Environmental
Project Manager: Nick Gerkin
Client Project Name: Fife RV Center
Client Project Number: na
Date received: 07/14/17

Analytical Results

8082 (PCBs), mg/kg		MTH BLK	LCS	B1 (5)	MS	MSD	RPD
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Date extracted	Reporting	07/14/17	07/14/17	07/14/17	07/14/17	07/14/17	07/14/17
Date analyzed	Limits	07/14/17	07/14/17	07/14/17	07/14/17	07/14/17	07/14/17
A1221	0.20	nd		nd			
A1232	0.20	nd		nd			
A1242 (A1016)	0.20	nd		nd			
A1248	0.20	nd		nd			
A1254	0.20	nd		nd			
A1260	0.20	nd	121%	nd	96%	99%	3%
Surrogate recoveries:							
Tetrachloro-m-xylene		104%	99%	98%	106%	107%	
Decachlorobiphenyl		106%	122%	70%	124%	123%	

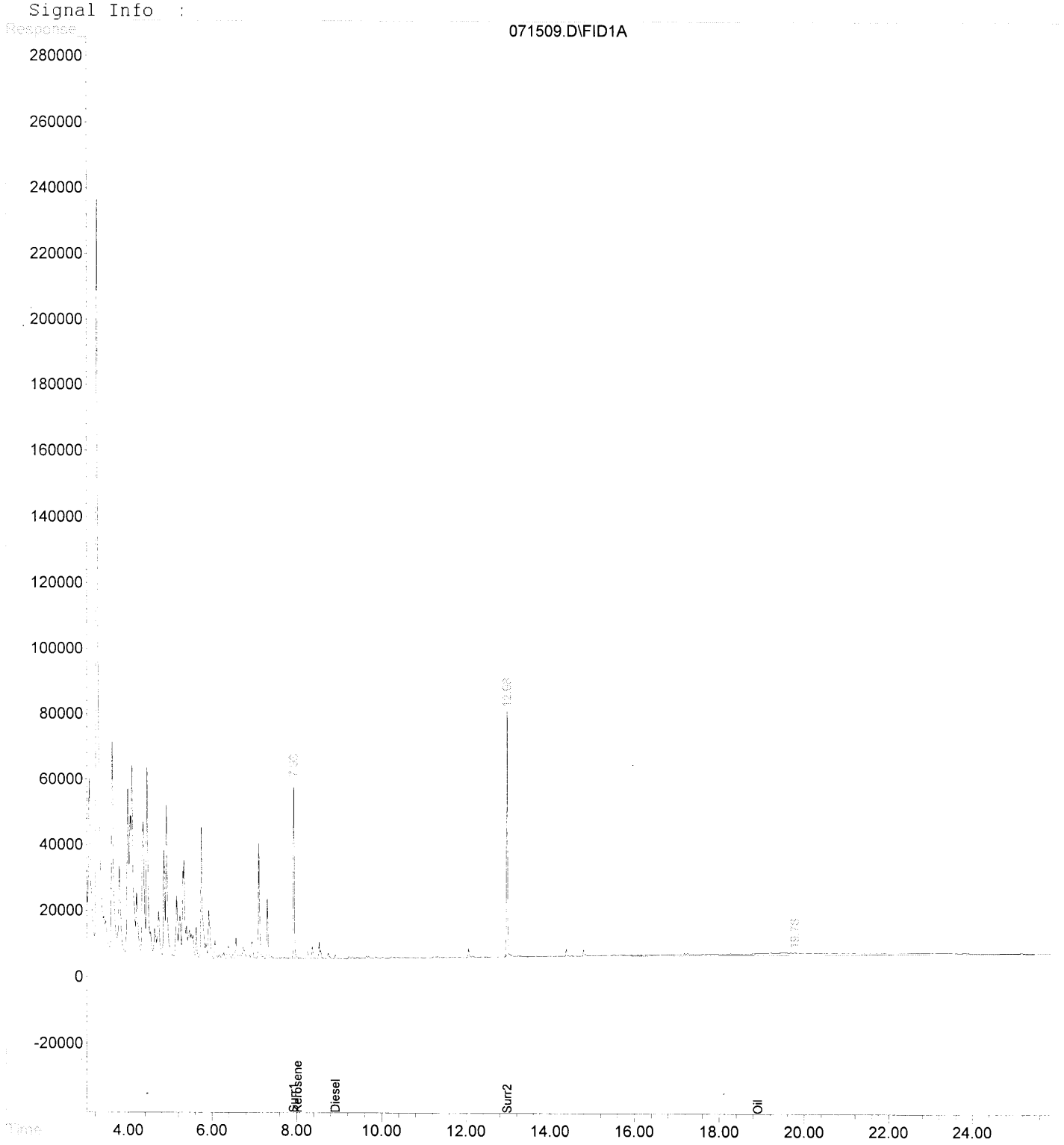
Data Qualifiers and Analytical Comments
nd - not detected at listed reporting limits
na - not analyzed
M - matrix interference
Acceptable Recovery limits: 70% TO 130%
Acceptable RPD limit: 30%

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\071517\071509.D Vial: 9
Acq On : 15 Jul 2017 4:44 pm Operator:
Sample : aero b1-5 soil 0715 Inst : GC/MS Ins
Misc : Multiplr: 1.00
IntFile : EVENTS.E
Quant Time: Jul 15 17:10 2017 Quant Results File: DX.RES

Quant Method : C:\HPCHEM\1\METHODS\DX.M (Chemstation Integrator)
Title :
Last Update : Thu Jul 06 12:18:40 2017
Response via : Multiple Level Calibration
DataAcq Meth : DX.M

Volume Inj. :
Signal Phase :
Signal Info :



ADVANCED ANALYTICAL

Chain of Custody Record

Page of

Laboratory Job #: C7071 4-2

4078 148 Avenue NE
Redmond, WA 98052
(425) 702-8571
aachemlab@yahoo.com

Client: Aerotech

Project Name: Fife RV Center

Project Manager: Nick Gerkin

Project Number: —

Address: 13925 Interurban Ave S

Collector: Nick Gerkin

Phone: 206 482 2287 Fax:

Date of collection: 7/13/17

	Sample ID	Time	Matrix	Container type	8260 Volatiles	HVOC 8260	BTEX	BTEX/NWTPH-Gx	NWTPH-Gx	NWTPH-Dx ext	NWTPH-HCID	8270 Semivolatiles	8270 PAH	8082 PCBs	8081 Pesticides	RCRA 8 Metals	Lead	MTC5 Metals	Notes, comments	# of containers
1	B1 (5)	0845	S	1VOA 1JAR		X		X		X			X	X			X			2
2	B1 (9)	0855				⊗													⊗ Added by N Gerkin 07/20/17	
3	MW7 (7)	1300																		
4	MW7 (11)	1310						X		X										
5	MW8 (5)	1045								X										
6	MW8 (10)	1055						X		X						X				
7	~~B1~~ MW9 (3)	0915						X		X						X				
8	MW9 (5)	0925	↓	↓																↓
9	BLANK	—	—	1VOA				X												1
10																				
11																				
12																				

Relinquished by:	Date/Time	Received by:	Date/Time
[signature]	7/14/17 0830	[signature]	7/14/17 8:30
Relinquished by:	Date/Time	Received by:	Date/Time
[signature]	7/14/17 1600	[signature]	7/14/17 1600

[signature] 07/14/17 1600

Sample receipt info:

Total # of containers:

Condition (temp, °C)

Seals (intact?, Y/N)

Comments:

Turnaround time:

Same day O

24 hr O

48 hr O

Standard X

ADVANCED ANALYTICAL

Environmental Testing Laboratory

August 08, 2017

Nick Gerkin
Aerotech Environmental, Inc.
13925 Interurban Avenue South, Suite 210
Seattle, WA 98168

Dear Mr. Gerkin:

Please find enclosed the analytical data report for the *Fife RV Center* ***(C70802-1)*** Project.

Samples were received on *August 02, 2017*. The results of the analyses are presented in the attached tables. Applicable reporting limits, QA/QC data and data qualifiers are included. A copy of the chain-of-custody and an invoice for the work is also enclosed.

ADVANCED ANALYTICAL LABORATORY appreciates the opportunity to provide analytical services for this project. Should there be any questions regarding this report, please contact me at (425) 702-8571.

It was a pleasure working with you, and we are looking forward to the next opportunity to work together.

Sincerely,

V. Ivanov

Val G. Ivanov, Ph.D.
Laboratory Manager

4078 148 Ave NE■ Redmond, WA 98052
425.702-8571
E-mail: aachemlab@yahoo.com

Advanced Analytical Laboratory
(425) 702-8571

AAL Job Number:	C70802-1
Client:	Aerotech Environmental
Project Manager:	Nick Gerkin
Client Project Name:	Fife RV Center
Client Project Number:	na
Date received:	08/02/17

AAL Job Number: C70802-1
Client: Aerotech Environmental
Project Manager: Nick Gerkin
Client Project Name: Fife RV Center
Client Project Number: na
Date received: 08/02/17

Analytical Results

8260B, µg/L		MTH BLK	LCS	W-MW1	W-MW2	W-MW3	W-MW4
Matrix	Water	Water	Water	Water	Water	Water	Water
Date analyzed	Reporting Limits	08/04/17	08/04/17	08/04/17	08/04/17	08/04/17	08/04/17
MTBE	5.0	nd		nd	nd	nd	nd
Chloromethane	1.0	nd		nd	nd	nd	nd
Vinyl chloride(*)	0.2	nd		nd	nd	nd	nd
Bromomethane	1.0	nd		nd	nd	nd	nd
Chloroethane	1.0	nd		nd	nd	nd	nd
Trichlorofluoromethane	1.0	nd		nd	nd	nd	nd
1,1-Dichloroethene	1.0	nd		nd	nd	nd	nd
Methylene chloride	1.0	nd		nd	nd	nd	nd
trans-1,2-Dichloroethene	1.0	nd		nd	nd	nd	nd
1,1-Dichloroethane	1.0	nd		nd	nd	nd	nd
2,2-Dichloropropane	1.0	nd		nd	nd	nd	nd
cis-1,2-Dichloroethene	1.0	nd		nd	nd	nd	nd
Chloroform	1.0	nd		nd	nd	nd	nd
1,1,1-Trichloroethane	1.0	nd		nd	nd	nd	nd
Carbontetrachloride	1.0	nd		nd	nd	nd	nd
1,1-Dichloropropene	1.0	nd		nd	nd	nd	nd
1,2-Dichloroethane (EDC)	1.0	nd		nd	nd	nd	nd
Trichloroethene	1.0	nd	80%	nd	nd	nd	nd
1,2-Dichloropropane	1.0	nd		nd	nd	nd	nd
Dibromomethane	1.0	nd		nd	nd	nd	nd
Bromodichloromethane	1.0	nd		nd	nd	nd	nd
cis-1,3-Dichloropropene	1.0	nd		nd	nd	nd	nd
trans-1,3-Dichloropropene	1.0	nd		nd	nd	nd	nd
1,1,2-Trichloroethane	1.0	nd		nd	nd	nd	nd
Tetrachloroethene	1.0	nd		nd	nd	nd	nd
1,3-Dichloropropane	1.0	nd		nd	nd	nd	nd
Dibromochloromethane	1.0	nd		nd	nd	nd	nd
1,2-Dibromoethane (EDB)*	0.01	nd		nd	nd	nd	nd
Chlorobenzene	1.0	nd	96%	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	1.0	nd		nd	nd	nd	nd
Bromoform	1.0	nd		nd	nd	nd	nd
1,2,3-Trichloropropane	1.0	nd		nd	nd	nd	nd
Bromobenzene	1.0	nd		nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	1.0	nd		nd	nd	nd	nd
2-Chlorotoluene	1.0	nd		nd	nd	nd	nd
4-Chlorotoluene	1.0	nd		nd	nd	nd	nd
1,3,5-Trimethylbenzene	1.0	nd		nd	nd	nd	nd
1,2,4-Trimethylbenzene	1.0	nd		nd	nd	nd	nd
1,3-Dichlorobenzene	1.0	nd		nd	nd	nd	nd
1,4-Dichlorobenzene	1.0	nd		nd	nd	nd	nd
1,2-Dichlorobenzene	1.0	nd		nd	nd	nd	nd
1,2-Dibromo-3-Chloropropane	1.0	nd		nd	nd	nd	nd

AAL Job Number: C70802-1
Client: Aerotech Environmental
Project Manager: Nick Gerkin
Client Project Name: Fife RV Center
Client Project Number: na
Date received: 08/02/17

Analytical Results

8260B, µg/L		MTH BLK	LCS	W-MW1	W-MW2	W-MW3	W-MW4
Matrix	Water	Water	Water	Water	Water	Water	Water
Date analyzed	Reporting Limits	08/04/17	08/04/17	08/04/17	08/04/17	08/04/17	08/04/17
1,2,4-Trichlorobenzene	1.0	nd		nd	nd	nd	nd
1,2,3-Trichlorobenzene	1.0	nd		nd	nd	nd	nd
*-instrument detection limits							
Surrogate recoveries							
Dibromofluoromethane		101%	97%	116%	99%	96%	107%
1,2-Dichloroethane-d4		98%	87%	108%	89%	99%	107%

Data Qualifiers and Analytical Comments
nd - not detected at listed reporting limits
Acceptable Recovery limits: 70% TO 130%
Acceptable RPD limit: 30%

AAL Job Number: C70802-1
Client: Aerotech Environmental
Project Manager: Nick Gerkin
Client Project Name: Fife RV Center
Client Project Number: na
Date received: 08/02/17

Analytical Results

8260B, µg/L		W-MW5	W-MW6	W-MW7	W-MW8	W-MW9	MS
Matrix	Water	Water	Water	Water	Water	Water	Water
Date analyzed	Reporting Limits	08/04/17	08/04/17	08/04/17	08/04/17	08/04/17	08/04/17
MTBE	5.0	nd	nd	nd	nd	nd	
Chloromethane	1.0	nd	nd	nd	nd	nd	
Vinyl chloride(*)	0.2	nd	nd	nd	nd	nd	
Bromomethane	1.0	nd	nd	nd	nd	nd	
Chloroethane	1.0	nd	nd	nd	nd	nd	
Trichlorofluoromethane	1.0	nd	nd	nd	nd	nd	
1,1-Dichloroethene	1.0	nd	nd	nd	nd	nd	
Methylene chloride	1.0	nd	nd	nd	nd	nd	
trans-1,2-Dichloroethene	1.0	nd	nd	nd	nd	nd	
1,1-Dichloroethane	1.0	nd	nd	nd	nd	nd	
2,2-Dichloropropane	1.0	nd	nd	nd	nd	nd	
cis-1,2-Dichloroethene	1.0	nd	nd	nd	nd	nd	
Chloroform	1.0	nd	nd	nd	nd	nd	
1,1,1-Trichloroethane	1.0	nd	nd	nd	nd	nd	
Carbontetrachloride	1.0	nd	nd	nd	nd	nd	
1,1-Dichloropropene	1.0	nd	nd	nd	nd	nd	
1,2-Dichloroethane (EDC)	1.0	nd	nd	nd	nd	nd	
Trichloroethene	1.0	nd	nd	nd	nd	nd	92%
1,2-Dichloropropane	1.0	nd	nd	nd	nd	nd	
Dibromomethane	1.0	nd	nd	nd	nd	nd	
Bromodichloromethane	1.0	nd	nd	nd	nd	nd	
cis-1,3-Dichloropropene	1.0	nd	nd	nd	nd	nd	
trans-1,3-Dichloropropene	1.0	nd	nd	nd	nd	nd	
1,1,2-Trichloroethane	1.0	nd	nd	nd	nd	nd	
Tetrachloroethene	1.0	nd	nd	nd	nd	nd	
1,3-Dichloropropane	1.0	nd	nd	nd	nd	nd	
Dibromochloromethane	1.0	nd	nd	nd	nd	nd	
1,2-Dibromoethane (EDB)*	0.01	nd	nd	nd	nd	nd	
Chlorobenzene	1.0	nd	nd	nd	nd	nd	96%
1,1,1,2-Tetrachloroethane	1.0	nd	nd	nd	nd	nd	
Bromoform	1.0	nd	nd	nd	nd	nd	
1,2,3-Trichloropropane	1.0	nd	nd	nd	nd	nd	
Bromobenzene	1.0	nd	nd	nd	nd	nd	
1,1,2,2-Tetrachloroethane	1.0	nd	nd	nd	nd	nd	
2-Chlorotoluene	1.0	nd	nd	nd	nd	nd	
4-Chlorotoluene	1.0	nd	nd	nd	nd	nd	
1,3,5-Trimethylbenzene	1.0	nd	nd	nd	nd	nd	
1,2,4-Trimethylbenzene	1.0	nd	nd	nd	nd	nd	
1,3-Dichlorobenzene	1.0	nd	nd	nd	nd	nd	
1,4-Dichlorobenzene	1.0	nd	nd	nd	nd	nd	
1,2-Dichlorobenzene	1.0	nd	nd	nd	nd	nd	
1,2-Dibromo-3-Chloropropane	1.0	nd	nd	nd	nd	nd	

AAL Job Number: C70802-1
Client: Aerotech Environmental
Project Manager: Nick Gerkin
Client Project Name: Fife RV Center
Client Project Number: na
Date received: 08/02/17

Analytical Results

8260B, µg/L		W-MW5	W-MW6	W-MW7	W-MW8	W-MW9	MS
Matrix	Water	Water	Water	Water	Water	Water	Water
Date analyzed	Reporting Limits	08/04/17	08/04/17	08/04/17	08/04/17	08/04/17	08/04/17
1,2,4-Trichlorobenzene	1.0	nd	nd	nd	nd	nd	
1,2,3-Trichlorobenzene	1.0	nd	nd	nd	nd	nd	
*-instrument detection limits							
Surrogate recoveries							
Dibromofluoromethane		98%	109%	100%	102%	105%	96%
1,2-Dichloroethane-d4		94%	104%	101%	103%	103%	90%

Data Qualifiers and Analytical Comments
nd - not detected at listed reporting limits
Acceptable Recovery limits: 70% TO 130%
Acceptable RPD limit: 30%

AAL Job Number:	C70802-1
Client:	Aerotech Environmental
Project Manager:	Nick Gerkin
Client Project Name:	Fife RV Center
Client Project Number:	na
Date received:	08/02/17

Analytical Results

8260B, µg/L		MSD	RPD
Matrix	Water	Water	Water
Date analyzed	Reporting Limits	08/04/17	08/04/17
MTBE	5.0		
Chloromethane	1.0		
Vinyl chloride(*)	0.2		
Bromomethane	1.0		
Chloroethane	1.0		
Trichlorofluoromethane	1.0		
1,1-Dichloroethene	1.0		
Methylene chloride	1.0		
trans-1,2-Dichloroethene	1.0		
1,1-Dichloroethane	1.0		
2,2-Dichloropropane	1.0		
cis-1,2-Dichloroethene	1.0		
Chloroform	1.0		
1,1,1-Trichloroethane	1.0		
Carbontetrachloride	1.0		
1,1-Dichloropropene	1.0		
1,2-Dichloroethane (EDC)	1.0		
Trichloroethene	1.0	91%	2%
1,2-Dichloropropane	1.0		
Dibromomethane	1.0		
Bromodichloromethane	1.0		
cis-1,3-Dichloropropene	1.0		
trans-1,3-Dichloropropene	1.0		
1,1,2-Trichloroethane	1.0		
Tetrachloroethene	1.0		
1,3-Dichloropropane	1.0		
Dibromochloromethane	1.0		
1,2-Dibromoethane (EDB)*	0.01		
Chlorobenzene	1.0	101%	5%
1,1,1,2-Tetrachloroethane	1.0		
Bromoform	1.0		
1,2,3-Trichloropropane	1.0		
Bromobenzene	1.0		
1,1,2,2-Tetrachloroethane	1.0		
2-Chlorotoluene	1.0		
4-Chlorotoluene	1.0		
1,3,5-Trimethylbenzene	1.0		
1,2,4-Trimethylbenzene	1.0		
1,3-Dichlorobenzene	1.0		
1,4-Dichlorobenzene	1.0		
1,2-Dichlorobenzene	1.0		
1,2-Dibromo-3-Chloropropane	1.0		

AAL Job Number:	C70802-1
Client:	Aerotech Environmental
Project Manager:	Nick Gerkin
Client Project Name:	Fife RV Center
Client Project Number:	na
Date received:	08/02/17

Analytical Results

8260B, µg/L		MSD	RPD
Matrix	Water	Water	Water
Date analyzed	Reporting Limits	08/04/17	08/04/17
1,2,4-Trichlorobenzene	1.0		
1,2,3-Trichlorobenzene	1.0		

*-instrument detection limits

Surrogate recoveries	
Dibromofluoromethane	98%
1,2-Dichloroethane-d4	87%

Data Qualifiers and Analytical Comments
nd - not detected at listed reporting limits
Acceptable Recovery limits: 70% TO 130%
Acceptable RPD limit: 30%

AAL Job Number: C70802-1
Client: Aerotech Environmental
Project Manager: Nick Gerkin
Client Project Name: Fife RV Center
Client Project Number: na
Date received: 08/02/17

Analytical Results

NWTPH-Gx/BTEX		MTH BLK	LCS	W-MW1	W-MW2	W-MW3	W-MW4
Matrix	Water	Water	Water	Water	Water	Water	Water
Date analyzed	Reporting Limits	08/03/17	08/03/17	08/03/17	08/03/17	08/03/17	08/03/17
NWTPH-Gx, ug/L							
Mineral spirits/Stoddard	100	nd		nd	nd	nd	nd
Gasoline	100	nd		nd	25,000	620	2,100
BTEX 8021B, µg/L							
Benzene	1.0	nd	96%	nd	980	nd	94
Toluene	1.0	nd	102%	nd	62	nd	4.4
Ethylbenzene	1.0	nd		nd	540	2.4	170
Xylenes	1.0	nd		nd	1,300	1.3	1.0
Surrogate recoveries:							
Trifluorotoluene		97%	113%	92%	92%	84%	106%
Bromofluorobenzene		107%	109%	108%	100%	103%	112%

Data Qualifiers and Analytical Comments
nd - not detected at listed reporting limits
na - not analyzed
C - coelution with sample peaks
Acceptable Recovery limits: 70% TO 130%
Acceptable RPD limit: 30%

AAL Job Number: C70802-1
Client: Aerotech Environmental
Project Manager: Nick Gerkin
Client Project Name: Fife RV Center
Client Project Number: na
Date received: 08/02/17

Analytical Results

NWTPH-Gx/BTEX		W-MW5	W-MW6	W-MW7	W-MW8	W-MW9	W-MW9 Dupl	MS
Matrix	Water	Water	Water	Water	Water	Water	Water	Water
Date analyzed	Reporting Limits	08/03/17	08/03/17	08/03/17	08/03/17	08/03/17	08/03/17	08/03/17
NWTPH-Gx, ug/L								
Mineral spirits/Stoddard	100	nd	nd	nd	nd	nd	nd	
Gasoline	100	nd	nd	nd	nd	nd	nd	
BTEX 8021B, µg/L								
Benzene	1.0	nd	nd	nd	nd	nd	nd	97%
Toluene	1.0	nd	nd	nd	nd	nd	nd	108%
Ethylbenzene	1.0	nd	nd	nd	nd	nd	nd	
Xylenes	1.0	nd	nd	nd	nd	nd	nd	
Surrogate recoveries:								
Trifluorotoluene		88%	114%	85%	91%	81%	90%	112%
Bromofluorobenzene		107%	124%	108%	106%	103%	113%	108%

Data Qualifiers and Analytical Comments
nd - not detected at listed reporting limits
na - not analyzed
C - coelution with sample peaks
Acceptable Recovery limits: 70% TO 130%
Acceptable RPD limit: 30%

AAL Job Number: C70802-1
Client: Aerotech Environmental
Project Manager: Nick Gerkin
Client Project Name: Fife RV Center
Client Project Number: na
Date received: 08/02/17

Analytical Results

NWTPH-Gx/BTEX		MSD	RPD
Matrix	Water	Water	Water
Date analyzed	Reporting Limits	08/03/17	08/03/17
NWTPH-Gx, ug/L			
Mineral spirits/Stoddard	100		
Gasoline	100		
BTEX 8021B, µg/L			
Benzene	1.0	88%	10%
Toluene	1.0	96%	12%
Ethylbenzene	1.0		
Xylenes	1.0		
Surrogate recoveries:			
Trifluorotoluene		105%	
Bromofluorobenzene		105%	

Data Qualifiers and Analytical Comments
nd - not detected at listed reporting limits
na - not analyzed
C - coelution with sample peaks
Acceptable Recovery limits: 70% TO 130%
Acceptable RPD limit: 30%

AAL Job Number: C70802-1
Client: Aerotech Environmental
Project Manager: Nick Gerkin
Client Project Name: Fife RV Center
Client Project Number: na
Date received: 08/02/17

Analytical Results

NWTPH-Dx, mg/L		MTH BLK	W-MW1	W-MW2	W-MW3	W-MW4	W-MW5
Matrix	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting	08/03/17	08/03/17	08/03/17	08/03/17	08/03/17	08/03/17
Date analyzed	Limits	08/03/17	08/03/17	08/03/17	08/03/17	08/03/17	08/03/17
Kerosene/Jet fuel	0.20	nd	nd	nd	nd	nd	nd
Diesel/Fuel oil	0.20	nd	nd	nd	nd	nd	nd
Heavy oil	0.50	nd	nd	nd	nd	nd	nd
Surrogate recoveries:							
Fluorobiphenyl		97%	94%	95%	97%	96%	94%
o-Terphenyl		99%	95%	95%	97%	96%	94%

Data Qualifiers and Analytical Comments
nd - not detected at listed reporting limits
na - not analyzed
C - coelution with sample peaks
Acceptable Recovery limits: 70% TO 130%
Acceptable RPD limit: 30%

AAL Job Number: C70802-1
Client: Aerotech Environmental
Project Manager: Nick Gerkin
Client Project Name: Fife RV Center
Client Project Number: na
Date received: 08/02/17

Analytical Results

NWTPH-Dx, mg/L		W-MW6	W-MW7	W-MW8	W-MW9
Matrix	Water	Water	Water	Water	Water
Date extracted	Reporting	08/03/17	08/03/17	08/03/17	08/03/17
Date analyzed	Limits	08/03/17	08/03/17	08/03/17	08/03/17
Kerosene/Jet fuel	0.20	nd	nd	nd	nd
Diesel/Fuel oil	0.20	nd	nd	nd	nd
Heavy oil	0.50	nd	nd	nd	nd
Surrogate recoveries:					
Fluorobiphenyl		95%	98%	95%	93%
o-Terphenyl		95%	99%	96%	93%

Data Qualifiers and Analytical Comments
nd - not detected at listed reporting limits
na - not analyzed
C - coelution with sample peaks
Acceptable Recovery limits: 70% TO 130%
Acceptable RPD limit: 30%

AAL Job Number: C70802-1
Client: Aerotech Environmental
Project Manager: Nick Gerkin
Client Project Name: Fife RV Center
Client Project Number: na
Date received: 08/02/17

Analytical Results

PAH(8270), ug/L		MTH BLK	LCS	W-MW1	W-MW2	W-MW3	W-MW4
Matrix	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting	08/07/17	08/07/17	08/07/17	08/07/17	08/07/17	08/07/17
Date analyzed	Limits	08/07/17	08/07/17	08/07/17	08/07/17	08/07/17	08/07/17
Naphthalene	0.1	nd		nd	4.3	0.60	nd
1-MethylNaphthalene	0.1	nd		nd	1.3	0.22	nd
2-MethylNaphthalene	0.1	nd		nd	0.92	0.14	nd
Acenaphthylene	0.1	nd		nd	nd	nd	nd
Acenaphthene	0.1	nd	109%	nd	nd	nd	nd
Fluorene	0.1	nd		nd	nd	nd	nd
Phenanthrene	0.1	nd		nd	1.0	0.82	0.36
Anthracene	0.1	nd		nd	nd	nd	nd
Fluoranthene	0.1	nd		nd	0.48	0.34	0.18
Pyrene	0.1	nd	108%	nd	0.50	0.36	0.18
Benzo(a)anthracene	0.1	nd		nd	nd	nd	nd
Chrysene	0.1	nd		nd	nd	nd	nd
Benzo(b)fluoranthene	0.1	nd		nd	nd	nd	nd
Benzo(k)fluoranthene	0.1	nd		nd	nd	nd	nd
Benzo(a)pyrene	0.1	nd		nd	nd	nd	nd
Indeno(1,2,3-cd)pyrene	0.1	nd		nd	nd	nd	nd
Dibenzo(ah)anthracene	0.1	nd		nd	nd	nd	nd
Benzo(ghi)perylene	0.1	nd		nd	nd	nd	nd

Surrogate recoveries:

Fluorobiphenyl	109%	128%	99%	106%	115%	100%
o-Terphenyl	102%	97%	103%	98%	103%	103%

Data Qualifiers and Analytical Comments
nd - not detected at listed reporting limits
na - not analyzed
Acceptable Recovery limits: 50% TO 150%
Acceptable RPD limit: 50%

AAL Job Number: C70802-1
Client: Aerotech Environmental
Project Manager: Nick Gerkin
Client Project Name: Fife RV Center
Client Project Number: na
Date received: 08/02/17

Analytical Results

PAH(8270), ug/L		W-MW5	W-MW6	W-MW8	W-MW9	MS	MSD	RPD
Matrix	Water	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting	08/07/17	08/07/17	08/07/17	08/07/17	08/07/17	08/07/17	08/07/17
Date analyzed	Limits	08/07/17	08/07/17	08/07/17	08/07/17	08/07/17	08/07/17	08/07/17
Naphthalene	0.1	nd	nd	nd	nd			
1-MethylNaphthalene	0.1	nd	nd	nd	nd			
2-MethylNaphthalene	0.1	nd	nd	nd	nd			
Acenaphthylene	0.1	nd	nd	nd	nd			
Acenaphthene	0.1	nd	nd	nd	nd	104%	110%	5%
Fluorene	0.1	nd	nd	nd	nd			
Phenanthrene	0.1	nd	nd	nd	nd			
Anthracene	0.1	nd	nd	nd	nd			
Fluoranthene	0.1	nd	nd	nd	nd			
Pyrene	0.1	nd	nd	nd	nd	103%	108%	4%
Benzo(a)anthracene	0.1	nd	nd	nd	nd			
Chrysene	0.1	nd	nd	nd	nd			
Benzo(b)fluoranthene	0.1	nd	nd	nd	nd			
Benzo(k)fluoranthene	0.1	nd	nd	nd	nd			
Benzo(a)pyrene	0.1	nd	nd	nd	nd			
Indeno(1,2,3-cd)pyrene	0.1	nd	nd	nd	nd			
Dibenzo(ah)anthracene	0.1	nd	nd	nd	nd			
Benzo(ghi)perylene	0.1	nd	nd	nd	nd			

Surrogate recoveries:

Fluorobiphenyl	94%	105%	97%	110%	125%	128%	
o-Terphenyl	98%	99%	97%	101%	99%	102%	

Data Qualifiers and Analytical Comments
nd - not detected at listed reporting limits
na - not analyzed
Acceptable Recovery limits: 50% TO 150%
Acceptable RPD limit: 50%

AAL Job Number: C70802-1
Client: Aerotech Environmental
Project Manager: Nick Gerkin
Client Project Name: Fife RV Center
Client Project Number: na
Date received: 08/02/17

Analytical Results

Metals Total (7010), mg/L		MTH BLK	LCS	W-MW1	W-MW2	W-MW3	W-MW4
Matrix	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting	08/02/17	08/02/17	08/02/17	08/02/17	08/02/17	08/02/17
Date analyzed	Limits	08/02/17	08/02/17	08/02/17	08/02/17	08/02/17	08/02/17
Lead Total (Pb)	0.002	nd	116%	nd	nd	nd	nd

Data Qualifiers and Analytical Comments
nd - not detected at listed reporting limits
na - not analyzed
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 30%

AAL Job Number: C70802-1
Client: Aerotech Environmental
Project Manager: Nick Gerkin
Client Project Name: Fife RV Center
Client Project Number: na
Date received: 08/02/17

Analytical Results

Metals Total (7010), mg/L		W-MW5	W-MW6	W-MW7	W-MW8	W-MW9	MS	MSD
Matrix	Water	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting	08/02/17	08/02/17	08/02/17	08/02/17	08/02/17	08/02/17	08/02/17
Date analyzed	Limits	08/02/17	08/02/17	08/02/17	08/02/17	08/02/17	08/02/17	08/02/17
Lead Total (Pb)	0.002	nd	nd	nd	nd	nd	96%	97%

Data Qualifiers and Analytical Comments
nd - not detected at listed reporting limits
na - not analyzed
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 30%

AAL Job Number:	C70802-1
Client:	Aerotech Environmental
Project Manager:	Nick Gerkin
Client Project Name:	Fife RV Center
Client Project Number:	na
Date received:	08/02/17

Analytical Results

Metals Total (7010), mg/L		RPD
Matrix	Water	Water
Date extracted	Reporting	08/02/17
Date analyzed	Limits	08/02/17
Lead Total (Pb)	0.002	1%

Data Qualifiers and Analytical Comments
nd - not detected at listed reporting limits
na - not analyzed
Acceptable Recovery limits: 65% TO 135%
Acceptable RPD limit: 30%

ADVANCED ANALYTICAL

Chain of Custody Record

Page of

Laboratory Job #: C70802-1

4078 148 Avenue NE
Redmond, WA 98052
(425) 702-8571
aachemlab@yahoo.com

Client: Aerotech

Project Name: Fife RV Center

Project Manager: Nick Gerkin

Project Number: —

Address: 13925 Interurban Ave S, Tukwila, WA

Collector: Nick Gerkin

Phone: 206 482 2287 Fax:

Date of collection: 8/1/17

	Sample ID	Time	Matrix	Container type	8260 Volatiles	HVOC 8260	BTEX	BTEX/NWTPH-Gx	NWTPH-Gx	NWTPH-Dx ext	NWTPH-HCID	8270 Semivolatiles	8270 PAH	8082 PCBs	8081 Pesticides	RCRA 8 Metals	Lead TOTAL	MTCA5 Metals	Filtered	Notes, comments	# of containers
1	W-MW1	1205	W	2 VOA HCl, 3 Amb		X		X		X			X				X		X		6
2	W-MW2	1430				X		X		X			X				X		X		
3	W-MW3	1315				X		X		X			X				X		X		
4	W-MW4	1340				X		X		X			X				X		X		
5	W-MW5	1130				X		X		X			X				X		X		
6	W-MW6	1105				X		X		X			X				X		X		
7	W-MW7	1418		2 VOA HCl, 1 Amb		X		X		X			X				X		X		4
8	W-MW8	1000		2 VOA HCl, 2 Amb		X		X		X			X				X		X		6
9	W-MW9	0925	↓	↓		X		X		X			X				X		X		↓
10																					
11																					
12																					

Relinquished by:	Date/Time	Received by:	Date/Time
	8/2/17 1015		8/2/17 1015
Relinquished by:	Date/Time	Received by:	Date/Time
	8/2/17 11:05		08/02/17 11:05

Sample receipt info:

Total # of containers:

Condition (temp, °C)

Seals (intact?, Y/N)

Comments:

Turnaround time:

Same day O

24 hr O

48 hr O

Standard ~~O~~ Q

SUPPORTING DOCUMENTATION

Nick Gerkin

From: wa@occinc.com
Sent: Thursday, July 6, 2017 18:06
To: NICK@DIRTYDIRT.US
Subject: Ticket: 17252517

WASHINGTON UTILITY NOTIFICATION CENTER

DO NOT REPLY TO THIS EMAIL

Washington Ticket#:	17252517	**2 FULL BUSINESS DAYS**			
Transmit Date:	7/06/17	**Time:**	6:06 PM		
Original Call Date:	7/06/17	**Time:**	5:59 PM	**Type:**	CALL
Work to Begin Date:	7/11/17	**Time:**	12:00 AM		

Caller Information

Company:	AEROTECH	**Type:**	NON-MEMBER
Contact Name:	NICHOLAS GERKIN	**Phone:**	(206) 482-2287
Alt. Contact:	NICHOLAS - CELL	**Phone:**	(253) 282-0306
Best Time:		**Fax:**	(206) 402-3872
Address:	13925 INTERURBAN AVE S. NO.210; SEATTLE, WA 98168		
Caller Email:	NICK@DIRTYDIRT.US		

Dig Site Information

Type of Work:	INSTALL MONITOR WELLS
Work Being Done For:	PROP OWNER

Dig Site Location

County:	PIERCE	**State:**	WA
Place:	FIFE		
Address / Street:	3410 PACIFIC HWY E		
Nearest Intersection:	TIDEHAVEN RD		

Location of Work:

EXCAVATION SITE IS ON THE S SIDE OF THE ROAD. ADD IS APX 400 FT E FROM ABV INTER
MARK AREA MARKED IN WHITE AT ABV ADD

WORK IS GRAVEL RV PARKING LOT

CALLER GAVE GPS

Remarks:

BEST INFORMATION AVAILABLE CALLER GAVE TOWNSHIP, RANGE, SECTION INFO

Caller Twp:	20N	**Rng:**	3E	**Sect-Qtr:**	2		
Map Twp:	20N	**Rng:**	3E	**Sect-Qtr:**	12-NW,11-NE,2-SE,1-SW		
Caller Lat:	47.243	**Lon:**	-122.385	**Zone:**		**Caller Nad:**	83

Excavation Coordinates for # Polygons: 1

Poly 1: NW Lat:	47.2433643	**Lon:**	-122.3836330	**SE Lat:**	47.2414478	**Lon:**	-122.3743288

Members Notified

District	Company	Marking Concerns	Customer Service	Repair

ADTEL04	INTEGRA TELECOM	(800)762-0592	(866)468-3472	(866)468-3472
CC7711	COMCAST CABLE	(800)762-0592	(800)266-2278	(888)824-8289
ELCLT01	INTEGRA TELECOM	(800)762-0592	(866)468-3472	(866)468-3472
FIFE01	CITY OF FIFE	(253)922-9315	(253)922-9315	(253)922-9315
MCCHRD01	MC CHORD PIPELINE COMPANY	(253)383-1651	(253)383-1651	(253)383-1651
MTRMED01	ZAYO FNA ABOVENET	(888)267-1063	(443)403-2023	(888)267-1063
OLYPE01	BP/OLYMPIC PIPE LINE COMPANY	(425)981-2517	(425)981-2517	(888)271-8880
PUGE07	PUGET SOUND ENERGY ELECTRIC	(888)728-9343	(888)225-5773	(888)225-5773
PUGG07	PUGET SOUND ENERGY GAS	(888)728-9343	(888)225-5773	(888)225-5773
QLNWA24	CTLQL-CENTURYLINK	(800)778-9140	(800)283-4237	(800)573-1311
TACPWR01	TACOMA PWR & CLICK NETWORK	(253)502-8263	(253)502-8600	(253)383-0982
WSDOT10	WA DOT - OLYMPIC REGION	(360)357-2647	(360)357-2647	(360)357-2647

Excavator Responsibilities

* Please click on the following link to verify and confirm that the area covered represents the correct and complete work site area.
  Link To Map for C_EMAIL

* If the area covered is incomplete or inaccurate, it is your responsibility to notify the center immediately to update and correct the locate. Failure to do so could result in a delay or an incomplete utility locate.

* Any other utilities or notification centers not listed, you will need to contact separately.

* Did you know that you can submit your tickets online?
  - Eliminate hold times.
  - Immediately receive a ticket number.
  - View, Search, Update, Duplicate, and Print tickets.
  Click the link below to Register for ITIC and start submitting your tickets on line today!
  Washington ITIC