Site Cleanup Action Report Update

Site No. 2840
12807 Des Moines Memorial Drive South
Burien, Washington

Prepared for

State of Washington Department of Ecology
Toxics Cleanup Program, NWRO
3190 160th Avenue, SE
Bellevue, WA

November 27, 2019

Prepared by

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1.0 Introduction

1.1 General Site Information

Site Name:	Site No. 2840
Site Address:	12807 Des Moines Memorial Drive South, Burien, Washington
Responsible Party:	Eagle Canyon Capital, LLC 3223 Crow Canyon Road, Suite 300 San Ramon, CA 94583
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Project Consultant:	Montrose Environmental 1631 E. Saint Andrew Place Santa Ana, CA 92705 714-919-6500
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Current Owner/Operator:	GTY-PACIFIC LEASING, LLC

On behalf of Eagle Canyon Capital, LLC (Eagle), ES Engineering Services, LLC, dba Montrose Environmental (Montrose) is pleased to provide this *Site Cleanup Action Report Update* for Site No. 2840 (Site) located at 12807 Des Moines Memorial Drive South in Burien, Washington (**Figure 1**). This report summarizes all remedial actions performed at the Site to date. The *Site Cleanup Action Report* has been updated and provides details on the additional site assessment activities completed at the Site in September 2019. Site assessment activities were conducted in general accordance with the *Additional Site Assessment Workplan*, dated July 25, 2019, and consisted of advancing six (6) borings to further characterize soil and groundwater beneath the Site and fill data gaps identified in the northern, eastern, and central portions of the Property. Soil samples were collected from each boring and analyzed for fuel hydrocarbon constituents. One boring was advanced to first groundwater and a groundwater sample was collected and analyzed for fuel hydrocarbons. The scope of work was based on the results of confirmation soil sampling completed in August 2017 and to address comments provided in the Washington State Department of Ecology (Ecology) Opinion Letter, dated May 28, 2019 (**Appendix A**).

As established in Washington Administrative Code (WAC) 173-340-200, the "Site" is defined by the full lateral and vertical extent of contamination resulting from the operation of a retail fuel station on the Property. Based on the information gathered to date, petroleum-impacted soil was detected in soil samples collected from the vicinity of the dispenser islands, the former underground storage tanks (USTs) and fuel dispensing system, a former heating oil UST and a former waste oil UST. Recent soil sampling (2017 and 2019) indicates that the Site, as defined by

petroleum-impacted soil, is limited to the area around Borings B-11 and B-14. Petroleum-impacted groundwater has not been encountered beneath the Property.

The Site is also associated with the following identification numbers:

UST ID - 4050
Leaking UST ID - 809
Cleanup Site ID – 9267
Cleanup Unit ID - 8959
Facility/Site ID – 45191292
VCP ID – NW3173

1.2 Site History

Based on historical documents and aerial photographs, the earliest known use of the Site appears to be a residence. An aerial photograph taken in 1936 appears to show a single-family dwelling, a yard and possibly a garage (**Appendix B**). The next available aerial photograph reviewed was taken in 1954 and indicates that the Property had been redeveloped since the previous aerial photograph and appears to show what resembles an automotive service station (**Appendix C**). Limited information could be found on the original service station, constructed sometime between 1936 and 1954. The 1954 aerial photograph appears to show a small fuel dispenser canopy attached to the northeast side of the building (**Appendix C**). The earliest records available from Ecology are UST Site/Tank Data Summary records that indicate the original USTs were installed in 1964 (**Appendix D**).

According to the Washington State Department of Ecology's (Ecology) tank inventory database, five USTs were installed at the Property in 1964. This record, however, is likely inaccurate because the 1954 aerial photographs appears to show an automotive service and gas station, indicating that USTs were probably installed prior to 1954. A previously completed report on the Site indicated that a Hudson Service Station operated at the Property which included at least one service bay. The UST record though included one 300-gallon used oil UST, one 550-gallon heating oil UST, two 8,000-gallons USTs each containing unleaded gasoline and one 10,000-gallon UST containing leaded gasoline (**Appendix D**). According to the Ecology database, all five USTs were reportedly in use until 1996 when they were reported as decommissioned. However, based on previous reporting it was discovered that the three original gasoline USTs were removed in December 1990 and the heating oil and waste oil USTs were removed In January 1991. Also in 1991, three new 10,000-gallon USTs, each containing unleaded gasoline, were installed at the Property. The Ecology database is supportive of this. These three USTs are currently in use. The five previous USTs have all been removed from the Property. Details regarding the decommissioned USTs can be found in Section 2.1 of this report.

The records reviewed for this report did not indicate any additional USTs or petroleum storage tanks, or that other chemical storage has ever taken place on the Site. The Ecology Cleanup Site Details database was reviewed and the record indicates that a potential leak from the UST system was identified in 1990 and was reported to Ecology (**Appendix E**). The volume of the leak was not determined. Please see Section 2.1.1 below for additional details regarding the discovery of the leak.

A review of the Phase I Environmental Site Assessment (ESA), completed in 2014, revealed two leaking underground storage tank (LUST) sites within ¼ mile of the Site; Gold Co. located at 12459 Des Moines Way S. (0.184 miles toward the north-northeast) and Gerald Richards located at 12666 Des Moines Way (0.231 miles toward the north-northeast).

Given their distances from the Site and their indicated lower elevation relative to the Site, it is highly unlikely that any contamination from these LUST sites has migrated onto the subject Property.

1.3 Site Use

The Site is currently configured for and used as a retail gasoline station and appears to have been in its current configuration since approximately 1966. The current Site configuration is shown on **Figure 2**.

1.4 Future Property Uses

There are no known plans for future re-development of the Property.

1.5 Surrounding Areas

The surrounding area appears to have been steadily developed over the years of record and is zoned by the City of Burien as "Residential Multi-Family" (City of Burien, Title 19 of the Municipal Code). Properties immediately adjacent to the Site include a city park to the east, a commercial property to the south and west and a fire station and single-family residences to the north across S. 128th Street.

Alternate names associated with the Property include: Convenience Retailers 2840, Food Mart 2840, Jackpot Station 284, Time Oil 01-284, Time Oil Jackpot Food Mart Des Moines and Hudson Service Station.

1.6 Utilities and Water Supply

Overhead power and subsurface water, communications and sewer/stormwater utilities are located on the Property.

Stormwater drain lines run north/south along the west side of the station building and roughly east/west along the south side of the building (**Figure 2**). Stormwater catch basins are located

adjacent to Boring B-11 and approximately adjacent to Boring B-14. Roof drains from the building are tied into these subsurface stormwater drains.

Power to the Property is supplied from the north through an overhead line that connects directly to the building. Subsurface electrical lines connect signage, a light pole, the fuel distribution system and a water/air dispenser to the building.

Municipal water is supplied to the Property through a subsurface water service main from the north. A larger water main likely exists in S. 128th Street. Water service is supplied by King County Water District 20 (**Appendix F**).

The Site is located within the Valley View Sewer District (**Appendix F**). The location of the sanitary sewer (SS) service line to the building is currently not known. Based on work conducted at similar properties in the vicinity of the subject Site, the SS line is likely located on the north side of the station building and connects to a larger SS main located in S. 128th Street.

2.0 Field Investigations

This section summarizes environmental work performed to date at the Site. This includes previous environmental investigations, site characterization and summary results.

2.1 Previous Environmental Investigations

Based on available documentation, it appears that four individual site assessments have been conducted at the Site to date. The following sections summarize the findings of each individual site assessment. The specific historical reports reviewed include:

- Underground Storage Tank Removal Letter to Ecology – Jackpot Food Mart, 12807 Des Moines Way, Seattle, Washington (Property No. 01-284) – Time Oil Company, dated May 20, 1990;
- Report of Geoenvironmental Services Subsurface Soil Explorations and Remediation – Jackpot Food Mark Property No. 01-284, Seattle, Washington – GeoEngineers Inc., dated April 28, 1993;
- Remedial Investigation Report – Time Oil Facility No. 01-284, 22807 Des Moines Way South, Seattle, Washington – Alisto Engineering Group, dated November 1997;
- Phase I Environmental Assessment – Convenience Retails, LLC Station No. 2702840, Site No: 2702840, 12807 Des Moines Memorial Drive, Seattle, King County, WA 98168 – Property Solutions, Inc., dated September 23, 2014;
- Site Cleanup Action Report – Site No. 2840, 12807 Des Moines Memorial Drive South, Burien, Washington – ES Engineering Services, LLC, dated October 3, 2017;

The results of the most recent site assessment activities, conducted in September 2019, are presented in Section 2.2 of this update to the Site Cleanup Action Report. Although several previous reports list the Site address as within the City of Seattle limits, the Site currently is within limits for the City of Burien.

2.1.1 1990 & 1991 Initial Discovery and Tank Pull

Details of the original discovery were made available in a report from Time Oil Company to Ecology. The three original gasoline USTs were removed from the Site. "On December 12, 1990, three gasoline tanks, two with volumes of 8,000 gallons and one with a volume of 10,000 gallons, were removed from the above referenced site as part of a facility upgrade. Although some areas of corrosion were present on the tank walls, it did not appear that any of them had leaked.

The tanks and lines were last precision tested on November 27, 1990 and proved tight." (Time Oil Company, 1991). Most of the excavated soil from the fuel UST removal were returned to the excavation along with an approximately 100-foot length of perforated piping, to be used for future remediation efforts. Approximately 5-tons of impacted soil was removed from the Property and disposed of. The following month (January 1991) one 300-gallon waste oil UST and one 550-gallon heating oil UST were also removed from the Property. During both tank removals, soil samples were collected from within the excavation and were analyzed for a variety of constituents.

The soil samples collected from the fuel UST excavation were analyzed for total petroleum hydrocarbons (TPH) by EPA Method 8015 and benzene, toluene, ethylbenzene and xylenes (BTEX collectively) by EPA Method 8020. Soil samples collected from the heating and waste oil excavation were analyzed to TPH by EPA Method 418.1, polychlorinated biphenyls (PCBs), toxicity characteristic leaching procedure (TCLP) metals (currently RCRA-8 Metals) and volatile organic compounds (VOCs) by EPA Method 8240.

Available analytical results from the initial 1991 sampling are presented in **Table 1**. A historic Site plan showing the approximate locations of the initial 1991 soil samples is included as **Appendix G**. TPH was detected at a concentration as high as 4,700 mg/kg in a sample collected from the heating and waste soil excavation (Sample No. 10). Benzene concentrations ranged from non-detect (<0.01 mg/kg) to 0.91 mg/kg. Concentrations of PCBs ranged from non-detect (<1 mg/kg) to 1 mg/kg.

2.1.2 1993 Subsurface Soil Explorations and Remediation

In late 1992 to mid-1993, site assessment activities were conducted at the Site by Geoengineers Inc. The scope of work was varied but included the excavation of previously placed backfill for the heating/waste oil USTs, the installation of an oil/water collection sump located in the heating/waste oil UST excavation and the installation of nine soil borings to further assess

offsite migration of contamination and to assess the current soil conditions around the former fuel UST excavation. A limited soil vapor extraction test was also conducted utilizing perforated pipe that was installed within the fuel UST excavation during the initial UST removal activities in December 1990.

Fourteen (14) soil samples were collected from the heating and waste oil UST excavation, which was re-opened to assess petroleum impacts to soil. The sample locations and select analytical results are shown on **Figure 4** and **Figure 5**. The samples were analyzed for Washington total petroleum hydrocarbons in the gasoline (WTPH-Gx) and diesel/oil (WTPH-Dx/Ox) ranges.

Concentrations of WTPH-Gx ranged from non-detect to 2,700 mg/kg in sample HW-12, collected from the south wall of the excavation at a depth of 16 feet below ground surface (bgs). Concentrations of WTPH-Dx ranged from non-detect (<27 mg/kg) to 1,200 in sample HW-4 collected from the east wall of the excavation at a depth of 10 feet bgs. Concentrations of WTPH-Ox ranged from non-detect (<110 mg/kg) to 6,600 mg/kg in sample HW 4 collected at a depth of 10 feet bgs. Three of the soil samples were also analyzed for BTEX. Soil sample HW-12 contained the highest concentrations of BTEX compounds; benzene (0.64 mg/kg), toluene (0.076 mg/kg) and total xylenes (3.1 mg/kg). All historic soil sample analytical results are contained in **Table 1**.

Soil samples were also collected during the installation of nine (9) soil borings; boring B-3 was located in the former waste/heating oil UST excavation, borings B-2 and B-7 were located in the former fuel UST excavation. The remaining borings were located to assess additional onsite and offsite locations.

The soil samples were analyzed for WTPH-Gx, WTPH-Dx/Ox, BTEX and total lead. Sample B-1-12, collected from boring B-1 located at the south end of the station building at a depth of 31.0 feet bgs, contained the highest concentrations of contaminants; WTPH-Gx (13,000 mg/kg), WTPH-Dx/Ox (1,100 mg/kg & 720 mg/kg), ethylbenzene (3.5 mg/kg), toluene (2.1 mg/kg) and total xylenes (30 mg/kg).

Two of the nine borings (B-1 and B-7) were completed as 2-inch diameter vapor extraction Wells VP-1 and VP-7, to be used in future remediation efforts at the Site. Groundwater was not encountered during field activities.

Select analytical results and boring locations from 1993 are shown on **Figure 4** and **Figure 5**.

2.1.3 1997 Remedial Investigation Report

In February 1997, additional site and remedial investigation activities were performed by Alisto Engineering Group. Two additional vapor extraction Wells, VP-101 and VP-102, were installed at the Site to depths of 56 feet bgs and 36 feet bgs, respectively. One additional soil boring (B-10)

was also installed. Both vapor extraction wells were 4-inch diameter wells. The oil-water collection sump was also abandoned at that time.

Soil samples were collected and analyzed during the installation of Wells VP-101 and VP-102 and Boring B-10. It should be noted that the analytical report lists results for samples designated as B-11 and does not list results for samples designated as B-10. The existence of a Boring B-11 is not clear at this point and it does not appear on site plans or figures reviewed as part of the current site assessment. It is likely that soil samples collected from Boring B-10 were mistakenly listed on the 1997 chain-of-custody as "B-11" (**Appendix H**).

All soil samples were analyzed by Washington Method Total Petroleum Hydrocarbon (WTPH)-Hydrocarbon Identification (HCID). Method WTPH-HCID is a petroleum screening method that yields results with higher reporting limits than other, more specific analytical methods such as Washington Total Petroleum Hydrocarbons as gasoline (WTPH-Gx). WTPH-HCID is typically used as a qualitative analytical method to check for the general presence of petroleum hydrocarbons. Petroleum constituents were not detected in any of the soil samples analyzed with the exception of sample VP-101-10, which was then further analyzed for gasoline by Method WTPH-Gx, BTEX by Method 8020 and lead by Method 6010. Gasoline was detected at 20 mg/kg and lead was detected at 1.8 mg/kg which were both below their respective CULs.

Analytical results for soil samples collected in 1997 are included in **Table 1**. The locations of wells installed in 1997 are included on **Figure 2**, **Figure 3**, **Figure 4 and Figure 5**.

Vapor extraction testing was conducted in March, 1997. Vapor extracting testing was performed utilizing Wells VP-1, VP-7, VP-101 and VP-102 and vapor was extracted at various rates and vacuum pressures and from various well configurations.

Vapor samples were collected during pilot testing and were analyzed for total non-methane organic compounds referenced to gasoline (TNMOC), benzene, toluene, ethylbenzene and total xylenes.

TNMOC was detected in samples collected from Wells VP-1, VP-7 and VP-101 at concentrations of 2,773 parts per million volume (ppmv) in VP-1, 180 ppmv in VP-7 and 610 ppmv in VP-101. Benzene was detected in the vapor samples collected from VP-1 (0.070 ppmv) and VP-7 (0.054 ppmv). Toluene, ethylbenzene and total xylenes were detected at various concentrations from the other samples collected.

Again, groundwater was not encountered during field activities.

2.1.4 2014 Phase I Environmental Site Assessment

In 2014, a phase I environmental site assessment (ESA) was conducted at the Site by Property Solutions, Inc. The assessment identified the historic LUST case with Ecology and summarized previous work conducted at the Property.

2.1.5 2017 Additional Site Assessment

In August 2017, ES Engineering Services, LLC advanced a series of five soil borings (identified as SB-11 through SB-15) at the Site to evaluate the subsurface conditions in the western and southern portions of the Site. The soil borings were advanced to depths between 35.0 feet and 55.0 feet bgs.

Twenty soil samples were submitted for laboratory analysis as part of this assessment. Samples were analyzed for various contaminants of concern (COCs) including total petroleum hydrocarbons quantified as gasoline (TPH-Gx) by Northwest Method NWTPH-Gx, diesel and lube range hydrocarbons by Northwest Method NWTPH-Dx Extended, benzene, toluene, ethylbenzene, and total xylenes (BTEX), dibromoethane (EDB), dichloroethane (EDC), and naphthalene by the Environmental Protection Agency (EPA) Method 8260B, and total lead by EPA Method 6020A. Note that not all samples were analyzed for all COCs.

Historical soil analytical results are summarized in **Tables 1 through 4**. Analytical results for soil samples collected during the 2017 site assessment are summarized in **Table 2** and are compared to their respective Model Toxics Control Act (MTCA) Method A Cleanup Levels (CULs).

TPH-Gx was not detected in any of the soil samples analyzed at a concentration at or above the laboratory method reporting limit (RL).

TPH-Dx was detected in two soil samples at concentrations of 380 mg/kg (sample B-11-10) and 1,200 mg/kg (SB-14-30). TPH-Ox was only detected in soil sample B-11-10 at a concentration of 1,800 mg/kg. The total concentration of TPH-Dx and TPH-Ox in soil sample B-11-10 exceeded the MTCA Method A CUL of 2,000 mg/kg.

No other COCs were detected in any of the soil samples analyzed at concentrations at or above the laboratory method RLs.

Results of the site assessment activities were presented in the *Site Cleanup Action Report*, dated October 3, 2017. The report was sent to the Ecology's Voluntary Cleanup Program (VCP) along with a request of opinion of no-further-action (NFA). On June 26, 2018, the Site was accepted into Ecology's VCP and was assigned the following **VCP Project Number: NW3173**. On May 28, 2019, Montrose received an opinion letter from Ecology indicating that further action was needed to fully characterize the Site (**Appendix A**).

2.2 2019 Additional Site Assessment

From September 9 through September 11, 2019, field activities consisted of drilling and sampling six soil borings, identified as SB-16 through SB-21. Groundwater was encountered during drilling at a depth of 89 feet bgs in boring SB-16. Before commencing field activities, a daily "tailgate" site health and safety meeting was held with Montrose personnel and subcontracted employees.

Site personnel were requested to read and acknowledge understanding of the health and safety plan (HASP) prior to initiating work. Signed HASP and daily tailgate forms are contained within **Appendix I**.

The locations of the borings were selected to further characterize soil and groundwater beneath the Site and fill data gaps identified in the northern, eastern, and central portions of the Property. Boring SB-16 served to assess current soil conditions in the central portion of the Property (east of the station building) and to collect a representative groundwater sample from the regional aquifer to assess groundwater quality. It should be noted that prior borings B-7, B-9, and B-13 were also installed east of the station building and confirmed that petroleum hydrocarbon concentrations are below Method A CULs (**Tables 1 and 2**). Boring SB-17 served to obtain soil data north of the station building. Borings SB-18 and SB-19 served to assess soil conditions in the vicinity of the new UST cavity and SB-20 and SB-21 served to assess soil conditions at the dispenser island area.

All soil borings and remediation well locations are shown on **Figure 2**.

2.2.1 Pre-marking, Permitting and Notifications

Before initiating field activities, the proposed boring locations were pre-marked in white spray paint. A *Notice of Intent to Construct* was submitted to Ecology by the drilling contractor to install the remediation wells. The State of Washington's mandatory underground utility locating system, One-Call, was notified 72 hours before initiating field activities and requested to mark and delineate underground utilities servicing the Site (One-Call Ticket No. 19378467; **Appendix I**).

2.2.2 Drilling and Soil Sampling

Holt Services, Inc. (Driller's License No. 3240) was retained to provide drilling and well installation services from September 9 to September 11, 2019. The soil borings were advanced using a Mobile B-28, hollow stem auger (HSA) drill rig. The borings were installed using 8.25-inch outside diameter HSAs. The initial 5 feet of each boring was cleared of underground utilities using a vacuum truck air knifing techniques.

Samples were collected using 18-inch long, 2-inch outside diameter Standard Penetration Test (SPT) split-barrel samplers driven with a 140 pound hammer.

Soil was logged in accordance with the Unified Soil Classification System (USCS) by a licensed Professional Geologist. Field screening for volatile organic hydrocarbons (VOCs) was performed by placing a disaggregated portion of each soil sample in a sealed container and monitoring the head-space for volatility using a photoionization detector (PID).

Soil descriptions, field PID readings and other pertinent geological data were recorded on boring logs included as **Appendix J**.

Soil samples selected for laboratory analysis were collected in accordance with EPA Method 5035 using laboratory-preserved 40-milliliter glass vials. Each sample was comprised of three 5-gram soil aliquots. Each aliquot was inserted into a separate vial. Additionally, one 4-ounce glass jar was filled with soil and included with each set of vials. The vials and jars were immediately capped, labeled and stored on ice in a cooler. All samples were delivered to an analytical laboratory under chain-of-custody procedures. Additional details regarding soil Montrose's soil sampling and general field protocols are presented as **Appendix K**.

Down-hole drilling and sampling equipment was cleaned using either a non-phosphate, laboratory-grade detergent and triple-rinse or high-pressure, high temperature water. Tools and augers were allowed to dry prior to use. Decontamination water was contained onsite in Department of Transportation (DOT) approved 55-gallon drums.

The following section summarizes the field observations and the subsurface soils encountered during drilling:

- Soil borings SB-17 through SB-21 were drilled to a total depth of 35 feet bgs. Boring B-16 was advanced to the first occurrence of groundwater and was drilled to a total depth of 90 feet bgs.
- Soil encountered during drilling consisted of silty-sand and well to poorly graded sand with varying amounts and sizes of gravels.
- No hydrocarbon odors or staining were noted in any of the soil samples collected. Field PID readings were non-detect (0 ppm) in the soil samples.
- Groundwater was encountered at a depth of approximately 89 feet bgs while drilling SB-16.

Table 2 and **Table 5** present a summary of the results for soil and groundwater samples analyzed during this assessment. Additional lithologic details are presented on boring logs included in **Appendix J**. Montrose's general field practices and procedures are included as **Appendix K**.

2.2.3 Boring Backfill

All soil borings were backfilled with 3/8 inch, hydrated sodium bentonite chips up to approximately 3 feet bgs and then filled with concrete up to the ground surface.

2.2.4 Analytical Results

The analytical results have been evaluated considering Ecology's *MTCA Chapter 70.105D RCW and Cleanup Regulation Chapter 173-340 WAC* (Publication No. 94-06, revised November 2007). The soil analytical results from this assessment are summarized in **Table 2** and are compared to the respective MTCA Method A CULs for Unrestricted Land Use (Table 740-1). The groundwater analytical results are summarized in **Table 5** and are compared to the Respective MTCA Method A CULs for Groundwater (Table 720-1). Laboratory analytical results in exceedance of MTCA Method A CULs are presented with bold type.

A total of twenty-four soil samples were submitted to Libby Environmental, Inc., a state-certified environmental laboratory for chemical analysis. Field PID screening results of the soil samples were non-detect (0 ppm) and no obvious contamination was observed based on visual inspection, therefore, soil samples were analyzed for petroleum hydrocarbons using Method WTPH-HCID (hydrocarbon identification) to identify the potential presence of hydrocarbons and determine if additional analysis was warranted. Generally, soil samples from contaminated intervals identified during prior investigations and below contaminated zones were selected for analysis. Shallow soil samples collected adjacent to the dispensers were analyzed for TPH-Gx by Method NWTPH-Gx, BTEX by EPA Method 8021, and total lead by EPA Method 7010. Additionally, one groundwater sample was submitted and analyzed for TPH-Dx and TPH-Ox by NWTPH-Dx Extended, TPH-Gx by NWTPH-Gx, full scan VOCs (including naphthalene, 2-methylnaphthalene, and 1-methylnaphthalene) by EPA Method 8260D, total lead by EPA Method 7010 and EDB by EPA Method 8011.

TPH-Dx, TPH-Ox, and TPH-Gx were not detected at or above the laboratory method reporting limits (RLs) in any of the soil samples analyzed by Method WTPH-HCID (hydrocarbon identification), therefore, further analysis was not warranted. Additionally, TPH-Gx, benzene, toluene, ethylbenzene, and total xylenes were not detected at or above the RLs in any of the soil samples submitted for analysis.

Total lead was detected in one soil sample (SB-20-5) at a concentration of 8.3 mg/kg, which is well below the Method A CUL for total lead in soil.

TPH-Dx, TPH-Ox, TPH-Gx, and VOCs were not detected at or above RLs in the groundwater sample analyzed. Total lead was detected in the groundwater sample at a concentration of 39 micrograms per liter (µg/L), which exceeds the CUL of 15 µg/L for lead in groundwater. It should be noted that the groundwater sample was collected using a clean stainless steel bailer,

lowered within the HSAs. Although an attempt was made to minimize the amount of suspended sediment in the sample, the sample collected was ultimately turbid. It is believed that lead is naturally occurring in the sediments beneath the Site. Further, analytical results for soil samples collected from the Site show lead concentrations are either non-detect or well below the MTCA Method A CUL, which is considered protective of groundwater.

Copies of the laboratory analytical reports are included as **Appendix L**.

2.2.5 Waste Management

Soil cuttings and decontamination fluid generated during drilling and well installation activities were placed into 55-gallon, DOT-approved drums, sealed and properly labeled. The Drums were removed and transported to a licensed waste disposal facility. Copies of the non-hazardous waste manifests are included as **Appendix M**.

2.3 Site Characterization

Prior to 2019, the most recent site characterization activities were completed in August 2017 and involved the advancement of five soil borings (B-11 through B-15). Soil samples were collected during drilling and analyzed for the petroleum constituents as well as other automotive service biproducts outlined below.

Petroleum constituents were chosen as the primary COCs because of the known history of the Site and the fact that the Site is listed as a LUST site with Ecology and petroleum constituents are known to exist in the subsurface. Automotive service biproducts were chosen as secondary COCs also based on the history of the Site and the historical presence of a waste oil UST on the Property.

Groundwater was not encountered during drilling activities while conducting any of the site assessments through 2017.

Subsurface water was encountered during the 1992 removal of the waste and heating oil USTs and approximately 3,700 gallons were removed during the excavation.

The 1993 report states "*A thin layer of perched ground water was encountered in the excavation at a depth of approximately 9 feet below grade. Water exhibiting a heavy, colorful sheen was observed seeping from the east wall of the excavation, adjacent to the Food Mart building at a depth of 9 feet below ground surface*" (Geoengineers, 1993). The report also states, "*It appears that the source of the perched water was surface water that percolated into the heating and waste oil tank excavation, which was not paved following the January 2991 tank removal activities*" (Genengineers, 1993).

An oil/water collection sump was installed in late 1992 and served to capture the perched water observed during the excavation. "*The sump was checked on January 12, 1993 for the presence of*

water and/or free (floating) product using an interface probe. Free product was not detected, but about 4 feet of water was present in the sump" (Geoengineers, 1993). It does not appear that water samples were collected or analyzed for petroleum constituents. Although the sump was subsequently abandoned in 1997 by filling it with crushed rock and concrete (Alisto, 1997), it appears that a very small amount of water in the sump was intercepted in 2017 with the drilling of Boring B-15, based on the wet condition of the soil and soil sampler when removed from the borehole. Pea gravel was also encountered but standing water was not encountered in the boring.

No sheen or hydrocarbon odors were noted in the soil encountered in Boring B-15 and PID headspace readings were non-detect.

Numerous well logs for wells completed in the area of the Site were reviewed on Ecology's Washington Well Log Viewer. Two wells, listed as owned by the Seattle Water Department, located approximately 1/8 mile southeast of the Site indicate depths to static water of 78.7 feet and 80.9 feet, respectively. Additional details regarding well logs reviewed for this report are found in Section 4.7.1 of this report. It is unlikely that groundwater has been impacted by the limited release associated with the Site, given the maximum depth of contamination detected in soil and the overall regional depth to groundwater. It should be noted that during the drilling of Boring B-14, after reaching the total depth of 55.0 feet bgs, the borehole was left in an open condition for approximately 40 hours, prior to being backfilled and abandoned.

Several minutes before backfilling the boring, a water level meter was lowered to the bottom of the borehole to check for standing water; no water was detected in boring B-14.

After backfilling Boring B-14, the nearby vapor well VP-1 was opened and checked water. Standing water was encountered at a depth of 54.85 feet below top of well casing (btoc) and the total depth of the well was measured to be 55.01 feet btoc. The 0.16 feet of standing water at the bottom of well VP-1 is likely a small amount of condensation that had accumulated in the well casing over the years. The well seal and well monument were noted to be in good overall condition.

As part of the 2019 assessment, soil sampling was conducted in the northern, central, and eastern portions of the Property and the regional aquifer was sampled to assess groundwater water quality. Soil samples were non-detect or below MTCA Method A CULs for the COCs analyzed. Groundwater was encountered at a depth of approximately 89 feet bgs at boring B-16. Analytical results show groundwater beneath the Site is not impacted with TPH or VOCs. Lead was detected in sample (SB-16-W) and is believed to be attributed to naturally occurring lead in soil. Current and historical lead concentrations detected in soil samples collected at the Site are below MTCA Method A CULs and are protective of groundwater (leaching).

The Property is an active retail fueling station located on the southwest corner of the intersection of Des Moines Memorial Drive South and S. 136th Street, Burien, King County, WA. The land to the east of the Property, across Des Moines Memorial Drive South, is located within the City of Seatac, Washington.

The Property is improved with a convenience store building, pump island canopy covering two product dispensers and three USTs (underground storage tanks).

The Property is branded as a 76 Station and is currently owned by GTY-PACIFIC LEASING, LLC; however, Eagle Canyon Capital, LLC is the responsible party for Site cleanup activities.

2.4 Sampling/Analytical Results

All available historic analytical results are included in **Table 1** and analytical results from the recent assessments (2017 and 2019) are summarized in **Table 2, Table 3** and **Table 4.**

Sample results from the recent assessments indicate that residual concentrations of petroleum hydrocarbons remain at the Site. TPH-Gx was not detected in any of the soil samples analyzed. TPH-Dx and TPH-Ox were detected in sample B-11-10 at concentrations of 380 mg/kg and 1,800 mg/kg, respectively, and TPH-Dx was detected in sample B-14-30 at a concentration of 1,200 mg/kg. The laboratory analytical report indicates that the TPH-Dx detection in sample B-14-30 appeared to be Stoddard type solvent. This was also noted in the 1993 site assessment report. The report reads "*Gasoline-range hydrocarbons detected in soil samples from B-1 and B-7 appear to be either degraded gasoline or a Stoddard-type solvent. The hydrocarbons appear to occur in a unit of dense, fine to medium sand at depths between 26 feet and 46 feet below ground surface*" (Geoengineers, 1993). The current findings are consistent with this interpretation of the laboratory data.

In general, the concentrations of COCs detected during the 2017 site assessment in Boring B-14 are less than the concentrations detected in Boring B-1 in 1993. The concentration of TPH-Dx detected in 2017 is slightly higher (1,200 mg/kg versus 1,100 mg/kg) but TPH-Gx and TPH-Ox were non-detect in 2017 versus present in 1993. It is difficult to say whether concentrations have decreased since 1997, as only one soil sample (VP-101-10) was analyzed for TPH-Gx and no samples from 1997 were analyzed for TPH-Dx or TPH-Ox. All samples were, however, analyzed using the WTPH-HCID Method, and all results were non-detect.

Boring B-11 was advanced near historical samples HW-12 and HW-14, which contained COCs exceeding CULs in 1992. As shown in the tables, soil samples collected from B-11 were non-detect for TPH-Gx and VOCs indicating concentrations in the area of HW-12 and HW-14 have been remediated or have degraded over time. The TPH-Dx concentration in the area has diminished somewhat and the TPH-Ox concentration is comparable to that detected in 1992; however, results from B-11 confirm residual concentrations are localized to approximately 10 feet bgs.

Analytical results for soil samples collected in 2019 from the northern, central, and eastern portions of the Property did not contain COC exceeding MTCA Method A CULs. Additionally, petroleum hydrocarbons (TPH-Dx, TPH-Ox, TPH-GX and VOCs) were not detected in groundwater collected at the Site.

Soil vapor extraction appears to have been effective at removing petroleum hydrocarbons from the subsurface, based on the results of pilot testing conducted in 1992 and 1997 and based on current soil concentrations versus historical concentrations.

COCs remain at the Site, particularly in the vicinity of Well VP-1 (B-1) and Boring B-14 and to a lesser extent in the vicinity of Boring B-11. Based on recent analytical results, only one soil sample (B-11-10) contained COC concentrations slightly exceeding MTCA Method A CULs in 2017. It is likely these concentrations have continued to naturally attenuate over the past two years.

All soil samples were analyzed by a state certified environmental laboratory and all samples were collected and transported under standard chain-of-custody procedures. There are no indicators that the laboratory data are not of high quality. The analytical laboratory report including chains-of-custody from the 2019 assessment is included as **Appendix L**.

To date, sub slab soil vapor samples have not been collected. Since the Site is developed as a retail gas station and is surrounded by a developed urban environment, samples of surface water were not collected or analyzed. Rain water that falls on the Site is directed towards established storm water catch basins and drains. Natural flowing streams or rivers do not exist within the immediate vicinity of the Site.

3.0 Natural Conditions

3.1 Topography

The Property is located approximately 380 feet above mean sea level (amsl). The Site topography is relatively flat with a slight slope toward the south-southeast toward Des Moines Memorial Drive. The local topography also exhibits a slight slope generally toward the south (**Figure 1**).

3.2 Geology/Hydrology

The City of Burien lies within the Puget Lowland, a basin distinguished by its elongated structure located between the Cascade Range and Olympic Mountains.

The near surface geology of the Puget Lowland, which is a subprovince of the Salish Lowland, primarily consists of Pleistocene aged glacial deposits. The youngest of the glacial deposits are primarily derived from the Vashon drift, a glacial drift sequence emerging from the north. The Vashon drift is regionally associated with three episodes of Late Pleistocene ice growth (stades), comprising the Fraser Glaciation. However, the central portion of the Puget Lowland is

specifically only represented by the deposits of the Vashon stade, dated approximately 14,550 and 13,600 years ^{14}C yr. B.P. (Haugerud, Ralph A, and Kathy Goetz Troost, 2008).

The Vashon drift has been divided into an upper part (Esperance Sand Member) and a lower part (Lawton Clay Member) consisting of "massive and plane-bedded sand, overlain by cross-bedded sand, locally with foreset bedding, silt and gravel and coarsening upwards; commonly overlain till" as well as "lacustrine silt and clay, commonly with varve-like layering, little or no organic debris" (Haugerud, Ralph A, and Kathy Goetz Troost, 2008), respectively.

As depicted in the 2002 "Geologic Map of Washington – Northwest Quadrant", the Site is located within the "Qgt" map unit identified as the Quaternary aged glacial till deposits (Dragovitch et. al., 2012). Glacial till is a general term referring to a very unsorted, heterogeneous mixture of clay, silt, sand, gravel and boulders that is of glacial origin. Till in the Puget Lowland is consistently very hard and presents notoriously difficult drilling conditions. Silt and sand lenses are common in till deposits.

The surface geology of the area generally consists of weathered glacial till from the surface down to approximately 30-50 feet bgs, or advance outwash. The glacial till is typically underlain by advance outwash consisting of fine to medium sand with gravel; the gravel content generally decreases with depth. Sediments encountered during the recent site assessments (August 2017 and September 2019) are more consistent with glacial advance outwash rather than glacial till. Silty-sand and well and poorly graded sands with gravels were encountered. Based on relatively smooth advancement of the hollow-stem auger drill, the material was likely advance or retreat outwash.

The Puget Lowland groundwater system is primarily recharged by infiltrating precipitation and percolation through the sandy till and outwash. Groundwater flow is predominantly influenced by topography within the Puget Lowland, moving laterally from topographically high areas towards the major stream valleys and small streams that drain the higher plains and plateaus of glacial drift. The deeper and more confined aquifers are not as topographically influenced.

4.0 Conceptual Site Model

This section presents a conceptual understanding of the Site and identifies suspected or potential sources of petroleum contamination, types and concentrations of petroleum contamination, potentially contaminated media and actual and potential exposure pathways and receptors.

4.1 Site Definition

Based on the findings of previous investigations and the August 2017 and September 2019 site assessments, the Site is defined by the full vertical and lateral extent of soil contamination. Groundwater was encountered at a depth of 89 feet at boring SB-16, and groundwater analytical results indicate TPH-Dx/Ox, TPH-Gx and VOCs were not detected in groundwater. Recent soil analytical data indicate that soil contamination is present in the area south of the former heating/waste oil UST (Boring B-11) and the area at the southwest corner of the station building (Boring B-1/VP-1 and Boring B-14, **Figure 2** and **Figure 5**). Soil analytical data is also presented in geologic cross-section form as **Figure 7** and **Figure 8**.

4.2 Confirmed and Suspected Source Areas

Results of previous site investigations suggest that petroleum impacts to soil are the result of a release from the former USTs associated with the automotive service and retail fuel operations located on the Property. Historical aerial photographs indicate that the Property was developed with structures indicative of a single-family home(s) by 1936 and re-developed into an automotive service and retail gas station by 1954. Property records from the King County Assessor's Office indicate that the current building located on the Property was constructed in 1966 (**Appendix N**). Historic aerial photographs support this timeline. It is known that automotive repair services were performed at the Site historically and it is surmised that an automotive service bay existed either in the southern or northern portion of the 1954 station building. The northern location seems more probable based on the location of the former waste and heating oil USTs. The former waste and heating oil USTs, along with the former fuel USTs, as well as former service bay appear to have been the source of contamination found at the Site. Since the Property was redeveloped and the former waste and heating oil and fuel USTs have been removed, the source of contamination is considered to have been eliminated.

4.3 Media of Concern

Based on current analytical data, soil is the affected medium at the Property. Due to the low concentrations of TPH-Dx and TPH-Ox in the soil and the depth of impacts, it is unlikely that soil vapor poses an unacceptable vapor intrusion risk. Soil vapor intrusion is discussed further in section 4.7.5 of this report. Groundwater was encountered at a depth of approximately 89 feet bgs beneath the Site. Analytical results indicate groundwater beneath the Site is not impacted with TPH-DX, TPH-OX, TPH-Gx or VOCs. Total lead was detected in the groundwater sample but is considered to be the result of the high turbidity of the sample and not representative of groundwater conditions.

4.4 Distribution of Contaminants in Soil

Soil analytical data from the investigations completed to date indicate that soil impacts are limited to low concentrations of TPH-Gx, TPH-Dx , TPH-Ox and other constituents, occurring from 10 feet bgs to as deep as 46 feet bgs. The extent of soil impacts have been defined to the extent practical. Remedial excavation and SVE have removed a significant amount of contamination and recent site assessment results and degradation calculations show current soil concentrations are below MTCA Method A CULs for unrestricted land use (**Table 2 and Appendix Q**). Analytical results from the 2019 assessment are also depicted on **Figure 5.**

A site plan showing well locations and cross-section profiles is presented as **Figure 6** and cross-section showing historical and current soil analytical results are presented in **Figure 7** and **Figure 8**.

4.5 Distribution of Contaminants in Groundwater

Groundwater was encountered at a depth of 89 feet beneath the Site and a groundwater sample was collected to assess groundwater quality. COCs were not detected in the groundwater sample, except for total lead. The lead concentration is believed to be associated with turbidity and not representative of Site groundwater conditions. Further, current concentrations of total lead in soil are below MTCA Method A CULs and are protective of groundwater. Therefore, additional groundwater assessment does not appear to be warranted.

4.6 Contaminant Fate and Transport

The following sections include a discussion of the transport mechanisms and environmental fate of petroleum hydrocarbons in the subsurface.

4.6.1 Transport Mechanisms – Petroleum Hydrocarbons in the Subsurface

The environmental transport mechanisms of petroleum hydrocarbons are related to the separate phases in the subsurface. The four phases of petroleum contamination in the subsurface are vapor (in soil gas), residual contamination (adsorbed contamination on soil particles), aqueous phase (contaminants dissolved in groundwater), and light non-aqueous phase liquids (LNAPL). Each phase is in equilibrium in the subsurface with the other phases and the relative ratio of total subsurface contamination by petroleum hydrocarbons between the four phases is controlled by dissolution, volatilization and sorption.

Petroleum hydrocarbons, if observed in groundwater beneath the Site can be transported from source areas and distributed throughout the Site primarily by dispersive transport mechanisms within the saturated zone. As with other chemicals, petroleum hydrocarbons tend to spread out as groundwater flows away from the source area. The extent of the hydrocarbon plume depends on the volume of the release, soil density, particle size and seepage velocity.

Volatilization of the contaminant plume can result in mass removal of hydrocarbons by releasing vapor into the vadose zone, where soil hydrocarbon vapor can be biodegraded to an extent not possible in LNAPL or dissolved phases, depending on environmental conditions. Sorption of contaminants onto soil particles or interstitial soil spaces can immobilize contaminants. Contaminants sorbed onto soil particles are not free to transport via aqueous transport or non-aqueous phase liquid advection. Residual contamination, although not necessarily broken down quickly over time, is generally immobile.

4.6.2 Environmental Fate in the Subsurface

The most significant fate process for petroleum hydrocarbons is biodegradation (i.e., natural attenuation). Biological degradation of contaminants in LNAPL, dissolved, residual and vapor phases is possible under a variety of environmental conditions, although it occurs predominately in the aqueous, residual and vapor phases.

Degradation products of gasoline constituents are generally less toxic than their parent species. Petroleum hydrocarbons that are the most mobile (having the least viscosity and the most solubility in water) are also the most easily biodegraded (e.g., aromatics). Because gasoline constituents contain thousands of carbon compounds, there is a vast array of biochemical transformations that occur in situ in the soil and groundwater media.

For example, hydroxylation can alter hydrocarbon compounds to ketone or alcohol products that are less toxic or more biologically available; aromatic reduction can convert aromatic groups to naphthalenes; ring cleavage can destroy aromatic functional group species; and reduction can alter olefin functionality. The alteration and destruction of gasoline constituents occurs both by microbial enzyme catalytic reactions on the contaminant substrate or by direct digestion of contaminants as an electron donor or acceptor. Any number of reactions can occur within the subsurface by microorganisms that change the chemical distribution and concentrations of the contaminants.

The time frames over which these reactions occur vary depending on any number of limiting factors, primarily the availability of oxygen. For example, BTEX constituents are rapidly degraded under aerobic conditions but tend to persist for several years and/or decades under the anoxic conditions typical of most subsurface environments.

4.7 Preliminary Exposure Assessment

The following is a discussion of the potential migration pathways identified for the Site and potential targets for COCs observed on the Property.

4.7.1 Soil-to-Groundwater and Soil-to-Drinking Water Pathways

Groundwater was encountered at a depth of 89 feet bgs during this assessment. Analytical results have confirmed COCs were not detected in groundwater, except for total lead. The lead is suspected to be naturally occurring and its concentration is considered to be related to turbidity of the sample collected, and not representative of Site groundwater conditions. Reported total lead concentrations in soil at the Site are either non-detect or well below MTCA Method A CULs and are protective of groundwater.

Based on information from Ecology's State Well Log website (reviewed September 11, 2017), the nearest water wells (Well IDs: 286637 & 286638, installed in 1985 and 1987, respectively) are located approximately 740 feet southeast of the Property. A review of the well logs revealed that Well 286637 is a 20-inch diameter water well used for unknown purposes and Well 286638 is an 8-inch diameter water well also used for unknown purposes. Both wells are owned by the Seattle Water Department and it is unclear if the wells are currently in use. Based on the distance between these wells and the subject Property (approximately 800 feet), the depth to static water reported in these wells (approximately 80 feet bgs) and the maximum depth of historically detected contamination (46 feet bgs), it is highly unlikely that these wells will be impacted with COCs migrating from the subject Property. Additionally, confirmation sampling results (August 2017) show that concentrations have either been remediated and/or have degraded, and are expected to continue to naturally degrade. There is no indication that COCs present at the Site now are mobile or will become mobile due to the presence of groundwater. Lastly, current results (September 2019) for all soil samples collected to 90 feet bgs are non-detect for COCs (TPH-Dx, TPH-Ox, TPH-GX and BTEX). Reviewed well logs are included as **Appendix O**.

The Site is located within the King County Water District #20 (**Appendix F**). The Property is serviced with water from the north side of the station building. The exact location of the water main is not known but is likely located in S. 128th Street, based on previous work completed at similar properties located in the vicinity of the Site. Given the overall age of the infrastructure in the area and the location of impacted soil (down gradient of the water service connection), it is unlikely that any petroleum contamination has infiltrated the water main and no evidence reviewed as part of this report supports that notion.

Based on the site assessment results, the soil-to-groundwater and soil-to-drinking water pathways are considered incomplete.

4.7.2 Soil-to-Surface Water Pathway

The soil-to-surface water pathway is incomplete considering the nearest surface water bodies (Tub Lake, located in Sunset Park) are approximately ¾ mile from the Site. All stormwater falling on the Site is directed to established catch basins and drains and the Site is nearly 100 percent

paved with concrete or asphalt. It is highly unlikely that any surface water will come into contact with impacted soil or that any impacted soil will leave the Site and impact surface waters.

4.7.3 Groundwater-to-Drinking Water Pathway and Groundwater-to-Surface Water Pathway

Groundwater was encountered at a depth of 89 feet bgs during the 2019 assessment. Analytical results have confirmed COCs were not detected in groundwater, except for total lead. The total lead concentration is considered to be related to turbidity, and not representative of Site groundwater conditions. Reported total lead concentrations in soil at the Site are either non-detect or well below MTCA Method A CULs and are protective of groundwater. Based on the site assessment results, the groundwater-to-drinking water and groundwater-to-surface water pathways are considered incomplete.

4.7.4 Direct-Contact Pathway – Soil and Groundwater

Direct contact with soil exhibiting concentrations of petroleum hydrocarbons in excess of the CULs is limited to human receptors via direct exposure, i.e. dermal absorption or ingestion of excavated soil or groundwater.

The standard point of compliance for soil contamination beneath the Site is 15 feet bgs, which represents a reasonable estimate of the depth that could be accessed during normal site redevelopment activities (WAC 173-340-740[6][d]).

The soil beneath the Site contains residual COCs at very low concentrations as shallow as 10 feet bgs (**Table 2, Figure 7** and **Figure 8**) in Boring SB-11, located on the west side of the station building.

The extent of hydrocarbon contamination has been defined by perimeter Borings B-2, B-4, B-5, B-6 and B-9 in prior assessments to the east, south and southwest and perimeter excavation samples to the north and west. Further, additional soil borings completed on the northern, central and eastern portions of the Property (SB-16 through SB-21) did not contain detectible levels of petroleum hydrocarbons and have adequately characterized the Site.

It is possible that direct exposure could occur on the west and south sides of the Site at a depth shallower than 15 feet bgs. However, in 2017, only one confirmation soil sample from location B-11 collected at a depth of 10 feet bgs (B-11-10) contained a combined TPH-Dx/TPH-Ox concentration (2,180 mg/kg) that slightly exceeded the MTCA Method A CUL of 2,000 mg/kg. All other samples were below CULs indicating concentrations were remediated or degraded over time. Given two years have passed since the prior assessment, concentrations have likely further degraded. To support this assertion, laboratory analytical results for soil samples collected in 1993 and confirmation sampling in 2017 were used to calculate degradation constants for TPH-Dx and TPH-Ox, and to calculate estimated COC depletion for location B-11-10. **Appendix Q** presents

the degradation calculations and results which indicate the concentrations of TPH-Dx and TPH-Ox at historical sample location B-11-10 are anticipated to have degraded to below the MTCA Method A CUL. As shown, TPH-Dx is estimated to have degraded from 380 mg/kg to 309 mg/kg. The TPH-Ox estimation shows degradation from 1,800 mg/kg to 1,412 mg/kg. Based on the calculated values, the estimated current TPH-Dx + TPH-Ox concentration at B-11-10 is 1,721 mg/kg and meets MTCA cleanup criteria for soil. Therefore, the direct soil contact pathway is considered incomplete.

Since groundwater was encountered at a depth of 89 feet bgs, the direct-exposure to groundwater at this depth is unlikely, therefore, the direct-contact pathway for groundwater is considered incomplete.

4.7.5 Vapor Pathway

The soil beneath the Site contains detectable concentrations of COCs (namely TPH-Dx and TPH-Ox) slightly exceeding the MTCA Method A CUL for TPH-DX + TPH-Ox. During the August 2017 assessment at the Site, the soil sample collected from 10 feet bgs from Boring B-11 contained TPH-Dx and TPH-Ox at concentrations of 380 mg/kg and 1,800 mg/kg, respectively. The soil sample collected from 30 feet bgs from Boring B-14 contained TPH-Dx at a concentration of 1,200 mg/kg.

In assessing the potential for vapor intrusion (VI) at the Site, the Ecology Implementation Memorandum No. 14 (Updated Process for Initially Assessing the Potential for Petroleum Vapor Intrusion) and applicable Washington Administrative Codes were reviewed. Based on the recent soil analytical data, only soil is currently impacted with petroleum hydrocarbons (below CULs). Additionally, multiple samples were analyzed for full-scan VOCs and none were detected (**Table 2** and **Table 3**).

According to the WAC for MTCA Method A soil cleanup levels for unrestricted land use, “The soil to vapor pathway shall be evaluated for volatile organic compounds whenever the following conditions exist: (II) For diesel range organics, whenever the total petroleum hydrocarbon (TPH) concentration is greater than 10,000 mg/kg;” (WAC Title 173, Chapter 340, Section 740, Subsection 3(C)). Based on the concentration of TPH-Dx + TPH-Ox in soil sample B-11-10 (2,180 mg/kg in 2017), the soil vapor pathway for VOCs does not need to be evaluated.

The vapor pathway is considered incomplete at this time and additional VI assessment for VOCs is not warranted. As the Site is currently an active retail gas station, exposure to harmful vapors is much more likely to occur during normal operations than by exposure to contaminated soil.

5.0 Proposed Cleanup Standards

5.1 General

The MTCA Method A CULs for unrestricted land use will be used to evaluate compliance for all media throughout the Site. The individual CULs for soil are listed in **Table 2**. The point of compliance for soil will be all soil contained within the Site.

The point of compliance for soil vapor will be all soil contained within the Site that meets or exceeded a concentration of 10,000 mg/kg for TPH-Dx (WAC Title 173, Chapter 340, Section 740, Subsection 3(C)).

5.2 Terrestrial Ecological Evaluation

A Terrestrial Ecological Evaluation (TEE) is required by WAC 173-340-7940 at locations where a release of a hazardous substance to soil has occurred. The regulation requires that one of the following actions be taken:

- Documenting a TEE exclusion using the criteria presented in WAC 173-340-7491;
- Conducting a simplified TEE in accordance with WAC 173-340-7492; or,
- Conducting a Site-specific TEE in accordance with WAS 173-340-7493.

An evaluation to perform a TEE was conducted and it was determined that the Site qualifies for a simplified evaluation for the following reasons;

- Area of contamination at the Site is not more than 350 square feet.

The Site is essentially a 0.30-acre lot that is nearly completely covered by concrete, asphalt and/or other impermeable surfaces. The Site is located approximately 160 feet west of the North Seatac Softball Fields, located within the city of Seatac, Washington. This park appears to be a rectangle of grass with paved walking trails, parking lots, softball fields and associated infrastructure.

The Site is surrounding by developed commercial and residential zones and the nearest designated critical area within the city of Burien is located approximately 1.8 miles to the west and is listed as a landslide zone. The nearest designated critical area listed in the city of Seatac is Tub Lake, located approximately 0.75 miles to the south of the Site. Given the distance from the Site to the nearest critical area, it is highly unlikely that any critical area will be impacted from contaminated soil from the Site.

The risk for contaminated soil exposure to people, animals or plants is considered extremely low and a simplified TEE was performed. During the simplified evaluation, it was determined that additional evaluation was not warranted. The completed TEE Form is included as **Appendix P**.

6.0 Summary, Conclusions and Recommendations

6.1 Summary and Conclusions

Five environmental assessments have been performed on the Property to date, four of which have included the laboratory analysis of soil samples and two of which included the laboratory analysis of soil vapor samples.

A total of 21 soil borings have been advanced at the Site, four of which were completed as soil vapor extraction wells. Remedial excavation and soil vapor extraction was performed at the Site and was effective at removing petroleum hydrocarbons from the subsurface.

Results of the August 2017 assessment activities indicate that isolated, residual soil impacts remain in the vicinity of Borings B-11 and B-14. Only one sample, B-11-10 (from B-11 at a depth of 10 feet) contained a combined TPH-Dx + TPH-Ox concentration that slightly exceeded the MTCA Method A CUL. TPH-Gx and VOCs were not detected in any of the soil samples analyzed in 2017. Based on the 2017 analytical results and the degradation calculations, COCs previously detected in soil samples collected from the former heating/waste oil excavation and prior borings appear to have been remediated and/or have degraded over time, and are expected to continue to naturally degrade. There is no indication that COCs present at the Site now are mobile or will become mobile due to the presence of groundwater.

In response to Ecology's May 28, 2019 opinion letter, additional characterization was completed in September 2019 and consisted of advancing six borings (SB-16 through SB-21) to a total depth of 90 feet bgs. Soil samples collected from the northern, central, and eastern portions of the Property did not contain detectible concentrations of COCs (TPH-Dx, TPH-Ox, TPH-GX and BTEX). Groundwater was encountered at a depth of approximately 89 feet bgs in boring SB-16. Analytical results show that groundwater collected from beneath the Site is not impacted with petroleum hydrocarbons (TPH-Dx, TPH-Ox, TPH-GX and VOCs). Lead was detected in groundwater but is attributed to turbidity and natural occurrence and is not representative of groundwater conditions. Lead concentrations in soil at the Site are confirmed to be well below the Method A CUL and are protective of groundwater.

An initial VI assessment was performed and determined that additional VI assessment is not warranted due to the low concentrations of TPH-Dx and TPH-Ox that may still exist in soil.

The groundwater to surface and drinking water, groundwater to groundwater, soil to groundwater, soil to surface sediment and soil to drinking water pathways are considered incomplete.

6.2 Recommendations

Based on the findings, Montrose formally requests Ecology's review and opinion on this report and the completed Site cleanup activities.

The results of this most recent site assessment show that COCs are not present in soil at concentrations exceeding MTCA Method A CULs. Additionally, analytical results indicate the petroleum hydrocarbons (TPH-Dx, TPH-Ox, TPH-GX and VOCs) were not detected in groundwater collected at the Site.

The nature and extent of hydrocarbon impacts beneath the Site are adequately characterized and additional assessment and remediation does not appear warranted. Based on these findings and the current and future intended land use for the Property as a commercial gas station, residual fuel concentrations in soil are not considered to pose a significant risk to human health or the environment. Consequently, Montrose requests that regulatory site closure with a no further action determination be granted for the Site.

7.0 Closure

Montrose is pleased to be of service to Eagle Canyon Capital, LLC. If there are questions regarding this report, please contact the undersigned at (714) 919-6500.

Respectfully submitted,
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8.0 References

Alisto Engineering Group. November 12, 1997. *Remedial Investigation Report, Time Oil Facility No. 01-284, 12806 Des Moines Way South, Seattle Washington*.

Dragovich, J.D., Logan, R.L., Schasse, H.W., Walsh, T.J., Lingley, W.S.Jr., Norman, D.K., Gerstel, W.J., Lapen, T.J., Schuster, J.E., Meyers, K.D., 2012, Geologic Map of Washington – Northwest Quadrant: Washington State Department of Natural Resources Division of Geology and Earth Resources, Geologic Map GM-50, scale 1:250,000.

ES Engineering Services, LLC. October 3, 2017. *Site Cleanup Action Report, Site No. 2840, 12807 Des Moines Memorial Drive South, Burien, Washington.*

Geoengineers, Inc. April 28, 1993. *Report of Geoenvironmental Services, Subsurface Soil Explorations and Remediation, Jackpot Food Mark Property No. 01-284*.

Haugerud, Ralph A, and Kathy Goetz Troost. "Geologic Map of the Suquamish 7.5' Quadrangle and Part of the Seattle North 7.5' x 15' Quadrangle, Kitsap County, Washington." 2011, pubs.usgs.gov/sim/3181/sim3181_pamphlet.pdf.

"Hydrogeologic Characteristics of Typical Small Basins in the Puget Sound Lowland." *Hydrogeologic Characteristics--USGS OFR 95-470*, US Geological Survey, wa.water.usgs.gov/pubs/ofr/ofr.95-470/hydrogeo.html.

Property Solutions, Inc. September 23, 2014. *Phase I Environmental Assessment.*

State of Washington Department of Ecology. *Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action.* Revised February, 2016. Publication No. 09-09-047.

State of Washington Department of Ecology. *Updated Process for Initially Assessing the Potential for Petroleum Vapor Intrusion, Implementation Memorandum No. 14*. March 31, 2016. Publication No. 16-09-046.

Tan, Siew L, and Jon C Rehkopf. *Geotechnical Engineering Report - West Seattle Junction, Seattle, Washington*. PanGeo Incorporated, 2012, *Geotechnical Engineering Report - West Seattle Junction, Seattle, Washington*.

Time Oil Company, May 20, 1991. *Letter and report of underground storage tank removal, Jackpot Food Mart, 12807 Des Moines Way, Seattle, Washington (Property No. 01-284).*

Troost, Kathy Goetz, and Derek B Booth. "Geology of Seattle and the Seattle Area, Washington." 2008, www.wou.edu/las/physci/taylor/g473/seismic_hazards/troost_booth_2008_geo_seattle.pdf.

Troost, Kathy Goetz, et al. "The Geologic Map of Seattle - a Progress Report." *NGMDB Image Preview Page*, US Geological Survey, 7 Sept. 2017, 13:59:16, ngmdb.usgs.gov/ngm-bin/pdp/zui_viewer.pl?id=10822.

https://www.kcwd20.com/boundaries. Viewed September 15, 2017.

http://www.valleyviewsewer.org/about-us/district-map/. Viewed September 15, 2017.

http://info.kingcounty.gov/transportation/kcdot/roads/mapandrecordscenter/mapvault/default.aspx. Viewed September 15, 2017.

https://fortress.wa.gov/ecy/gsp/SiteSearchPage.aspx. Viewed September 15, 2017.

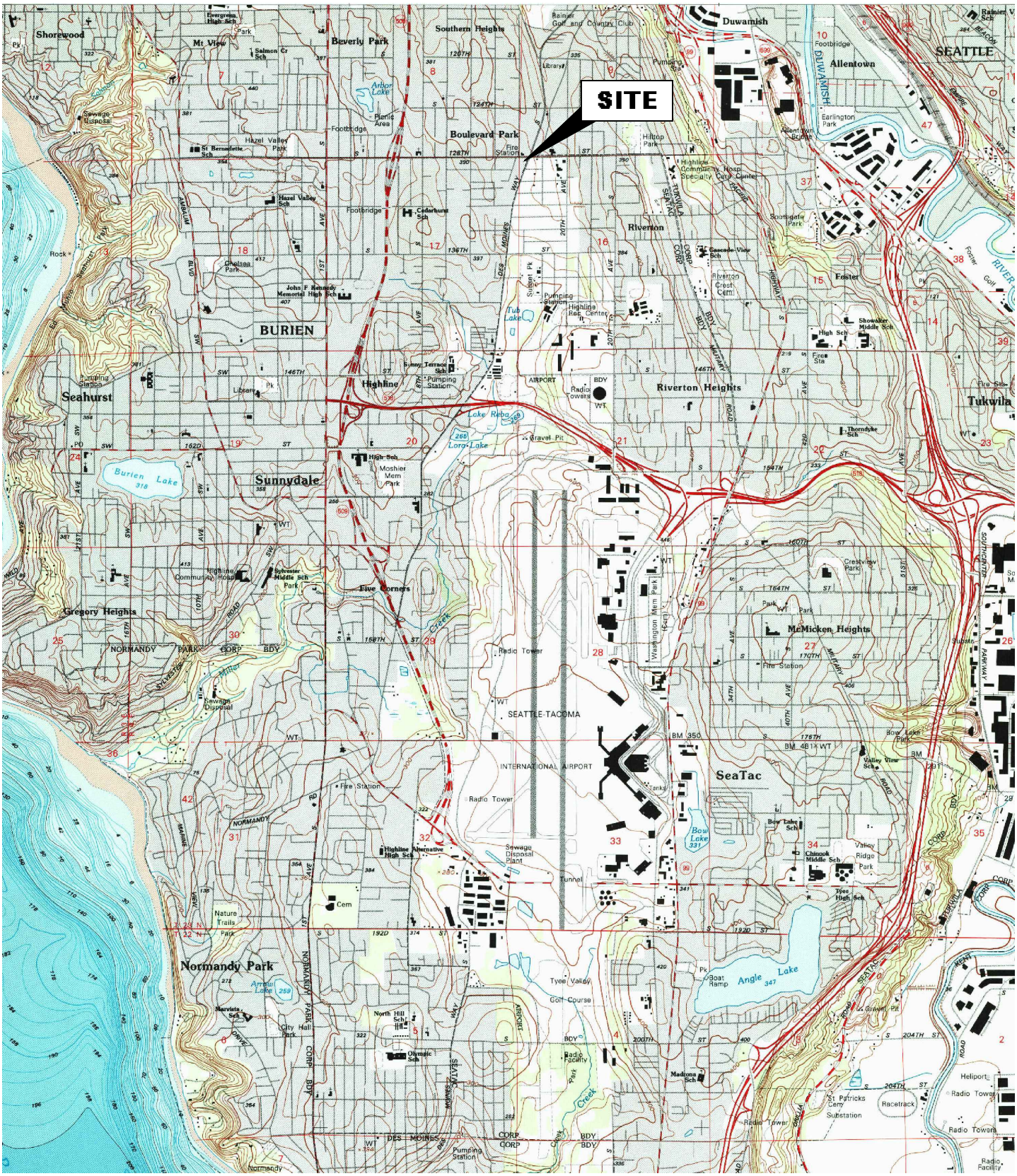
https://fortress.wa.gov/ecy/tcpwebreporting/report.aspx. Viewed September 15, 2017.

http://blue.kingcounty.com/Assessor/eRealProperty/default.aspx. Viewed September 15, 2017.

https://fortress.wa.gov/ecy/waterresources/map/WCLSWebMap/WellConstructionMapSearch.aspx. Viewed September 15, 2017.

WAC 173-340-740 3(C) (2017).

FIGURES



Map Information:
Topo Map Viewer
Des Moines (WA)
47°29'18"N 122°18'41"W

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N

0 2000

APPROX. SCALE: 1" = 2000'

FIGURE 1

SITE LOCATION MAP

Site #2840
12807 Des Moines Memorial Drive
Seattle, Washington

DATE DRAWN
10/21/2019

PROJECT NO.
123245

FILE NO.
123245F1-SLM

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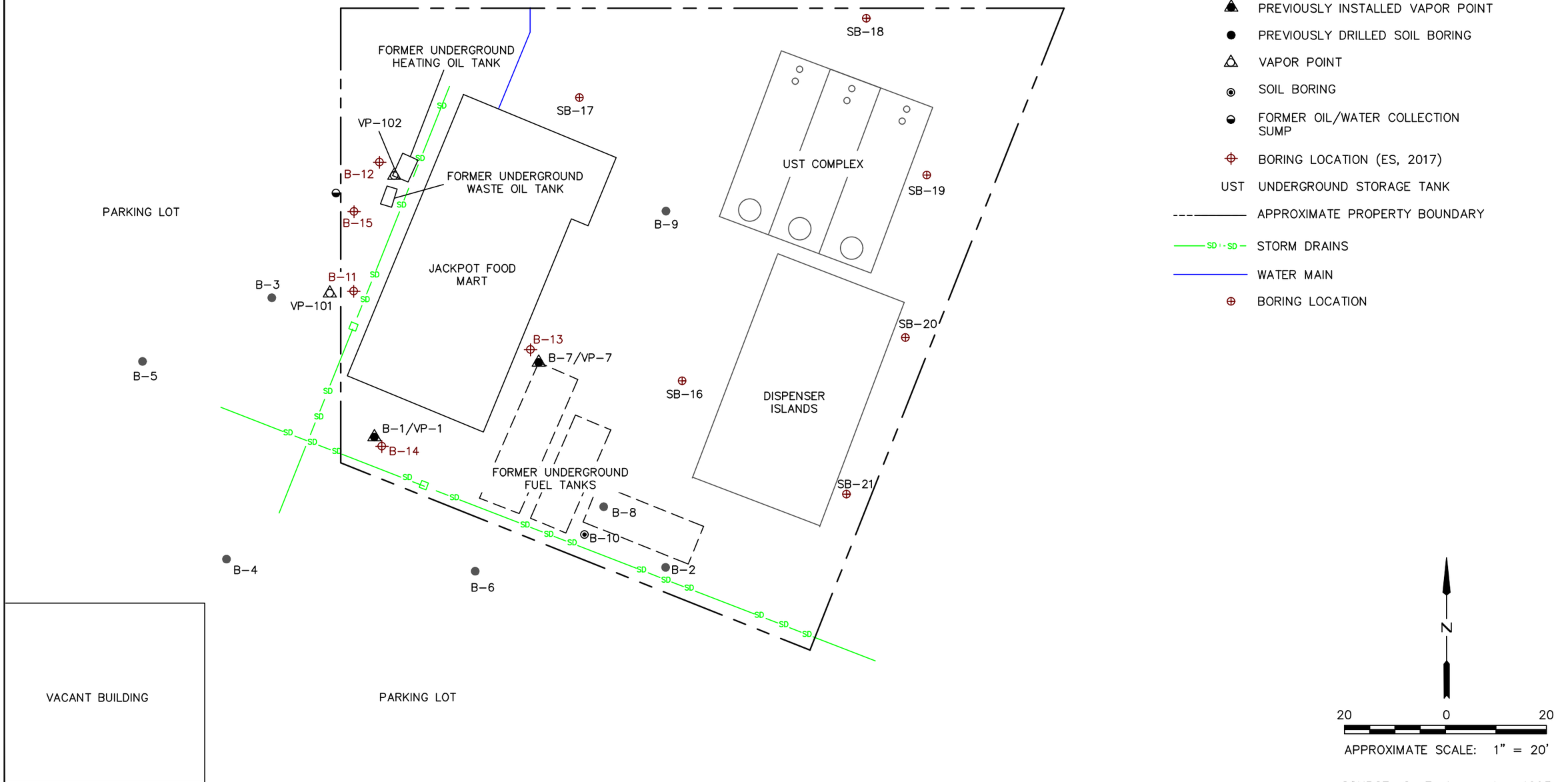

SOURCE: GeoEngineers, Inc. 1993

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FIGURE 2

SITE PLAN SHOWING
BORING/WELL LOCATIONS

Site #2840
12807 Des Moines Memorial Drive
Burien, Washington

DATE DRAWN
10/21/2019

PROJECT NO.
123245

FILE NO.
123245F2-SPS

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LEGEND

- PREVIOUSLY INSTALLED VAPOR POINT
- PREVIOUSLY DRILLED SOIL BORING
- VAPOR POINT
- SOIL BORING
- FORMER OIL/WATER COLLECTION SUMP
- BORING LOCATION (ES, 2017)
- UST UNDERGROUND STORAGE TANK
- BORING LOCATION (MONTROSE, 2019)

N

20 0 20

APPROXIMATE SCALE: 1" = 20'

SOURCE: GOOGLE

MONTROSE ENVIRONMENTAL
1631 E. Saint Andrew Place, Santa Ana, CA 92705 | t 714.919.6500

FIGURE 3

SITE PLAN SHOWING
BORING/WELL LOCATIONS – SATELLITE

Site #2840
12807 Des Moines Memorial Drive
Burien, Washington

DATE DRAWN
11/21/2019

PROJECT NO.
123245

FILE NO.
123245F3–SPS

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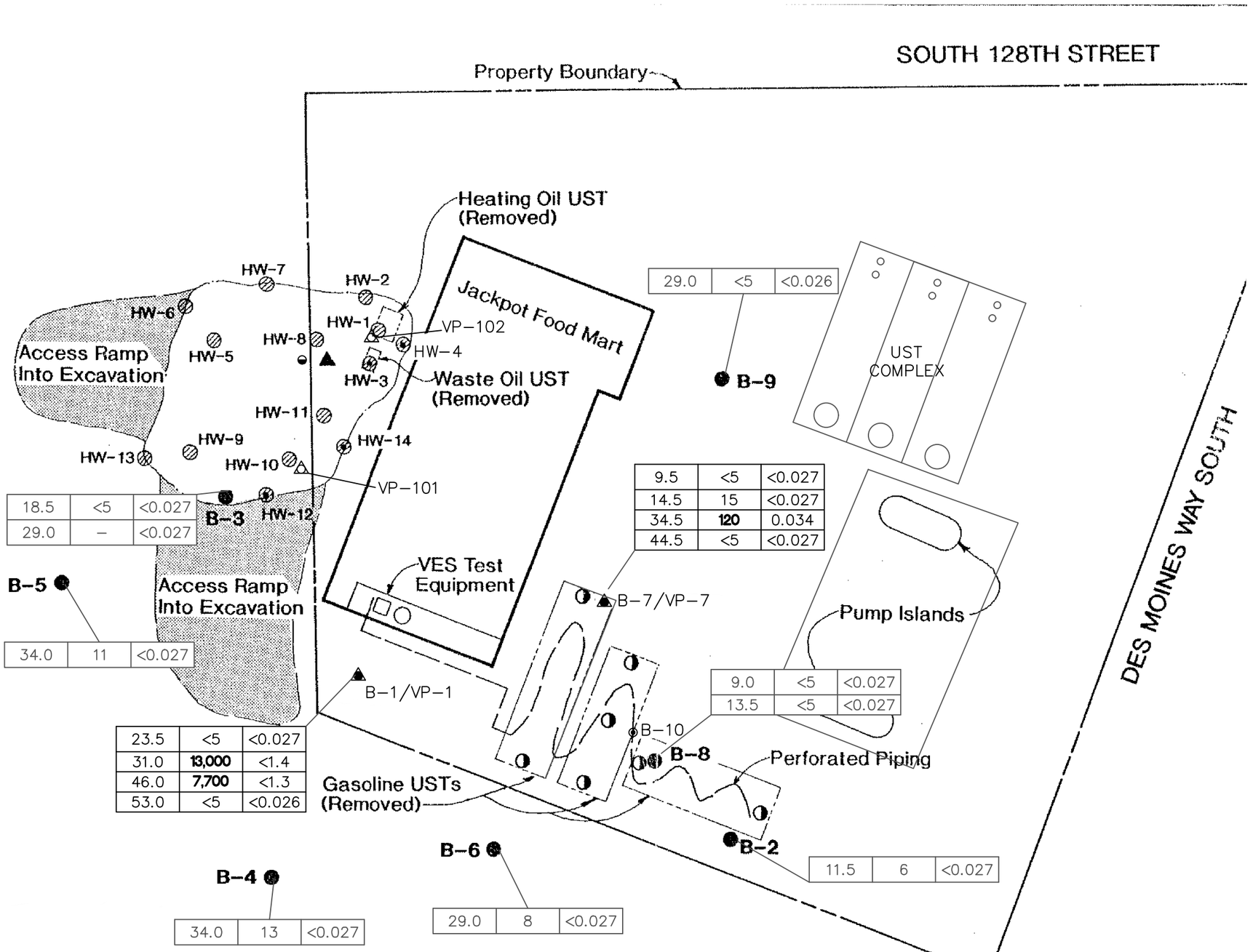

LEGEND

- PREVIOUSLY INSTALLED VAPOR POINT
- PREVIOUSLY DRILLED SOIL BORING
- VAPOR POINT
- SOIL BORING
- FORMER OIL/WATER COLLECTION SUMP
- UST UNDERGROUND STORAGE TANK
- APPROXIMATE PROPERTY BOUNDARY
- SOIL SAMPLE OBTAINED BY GEOENGINEERS, DECEMBER 1992, WITH CONCENTRATIONS OF PETROLEUM HYDROCARBONS LESS THAN MTCA METHOD A CLEANUP LEVEL
- SOIL SAMPLE OBTAINED BY GEOENGINEERS, DECEMBER 1992, WITH CONCENTRATIONS OF PETROLEUM HYDROCARBONS GREATER THAN MTCA METHOD A CLEANUP LEVEL
- SOIL SAMPLE OBTAINED BY TIME OIL CO. (DECEMBER 1990)

DEPTH (FT)	WTPH–G CONC. (mg/kg)	BENZENE CONC. (mg/kg)
9.5	<5	<0.027
14.5	15	<0.027
34.5	**120**	0.034
44.5	<5	<0.027

CONC. CONCENTRATION
WTPH–G WASHINGTON TOTAL PETROLEUM HYDROCARBONS QUANTIFIED AS GASOLINE
BOLD EXCEEDANCE THE MTCA METHOD A CLEANUP LEVELS
FT FEET
mg/kg MILLIGRAMS PER KILOGRAM
< NOT DETECTED AT LISTED REPORTING LIMIT
– NOT SAMPLED

N

20 0 20

APPROXIMATE SCALE: 1" = 20'
SOURCE: GeoEngineers, Inc. 1993

MONTROSE ENVIRONMENTAL
1631 E. Saint Andrew Place, Santa Ana, CA 92705 | t 714.919.6500

FIGURE 4
SITE PLAN SHOWING EXCAVATION LIMITS AND HISTORIC SOIL ANALYTICAL RESULTS
Site #2840
12807 Des Moines Memorial Drive
Burien, Washington

DATE DRAWN 11/21/2019
PROJECT NO. 123245
FILE NO. 123248F4–SPS

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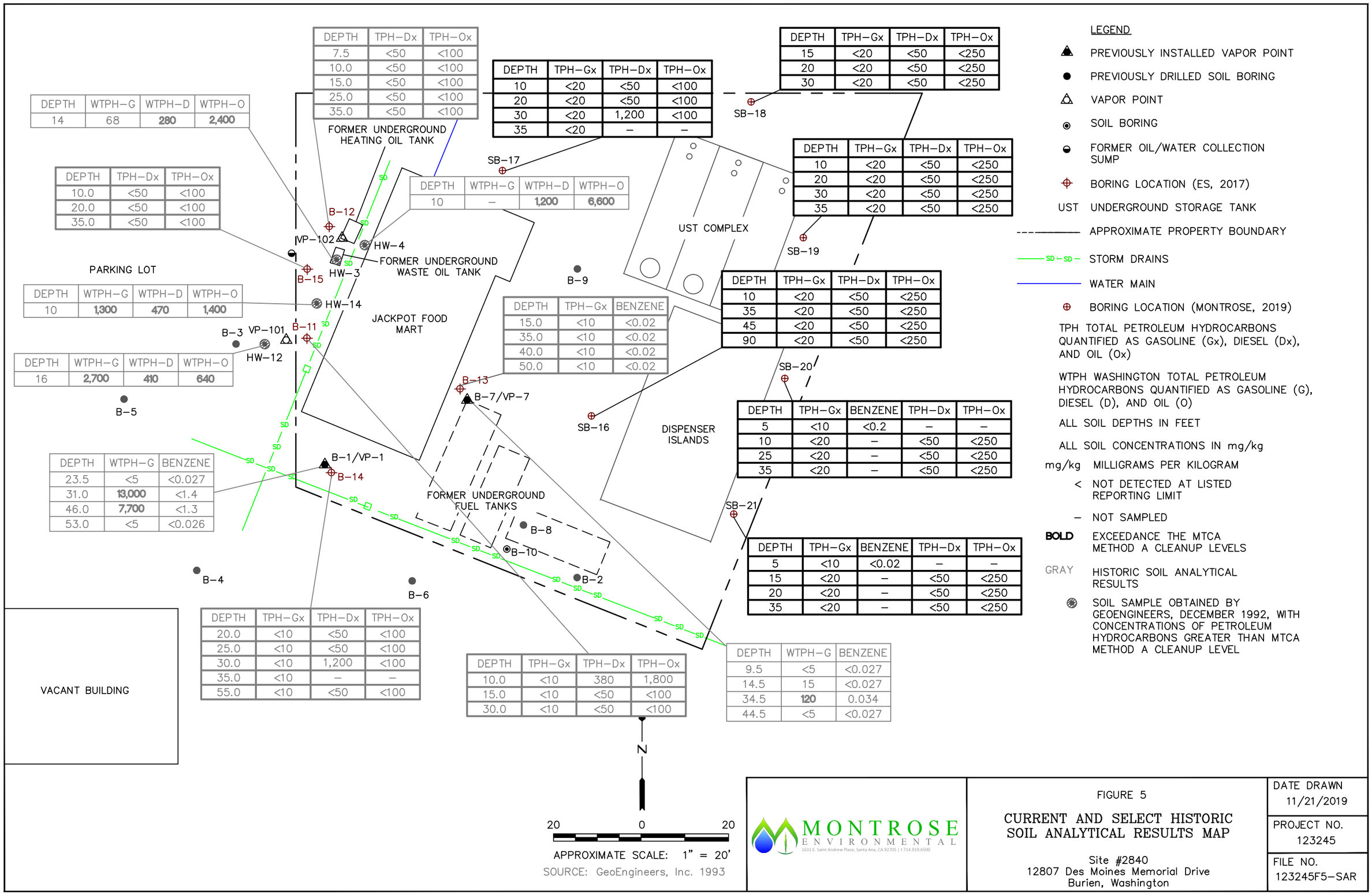

DEPTH	TPH-Dx	TPH-Ox
7.5	<50	<100
10.0	<50	<100
15.0	<50	<100
25.0	<50	<100
35.0	<50	<100

DEPTH	TPH-Gx	TPH-Dx	TPH-Ox
10	<20	<50	<100
20	<20	<50	<100
30	<20	1,200	<100
35	<20	–	–

DEPTH	TPH-Gx	TPH-Dx	TPH-Ox
15	<20	<50	<250
20	<20	<50	<250
30	<20	<50	<250

DEPTH	WTPH-G	WTPH-D	WTPH-O
14	68	**280**	**2,400**

DEPTH	TPH-Dx	TPH-Ox
10.0	<50	<100
20.0	<50	<100
35.0	<50	<100

DEPTH	WTPH-G	WTPH-D	WTPH-O
10	–	**1,200**	**6,600**

DEPTH	TPH-Gx	TPH-Dx	TPH-Ox
10	<20	<50	<250
20	<20	<50	<250
30	<20	<50	<250
35	<20	<50	<250

DEPTH	WTPH-G	WTPH-D	WTPH-O
10	**1,300**	**470**	**1,400**

DEPTH	TPH-Gx	TPH-Dx	TPH-Ox
10	<20	<50	<250
35	<20	<50	<250
45	<20	<50	<250
90	<20	<50	<250

DEPTH	TPH-Gx	BENZENE
15.0	<10	<0.02
35.0	<10	<0.02
40.0	<10	<0.02
50.0	<10	<0.02

DEPTH	WTPH-G	WTPH-D	WTPH-O
16	**2,700**	**410**	**640**

DEPTH	TPH-Gx	BENZENE	TPH-Dx	TPH-Ox
5	<10	<0.2	–	–
10	<20	–	<50	<250
25	<20	–	<50	<250
35	<20	–	<50	<250

DEPTH	WTPH-G	BENZENE
23.5	<5	<0.027
31.0	**13,000**	<1.4
46.0	**7,700**	<1.3
53.0	<5	<0.026

DEPTH	TPH-Gx	BENZENE	TPH-Dx	TPH-Ox
5	<10	<0.02	–	–
15	<20	–	<50	<250
20	<20	–	<50	<250
35	<20	–	<50	<250

DEPTH	TPH-Gx	TPH-Dx	TPH-Ox
20.0	<10	<50	<100
25.0	<10	<50	<100
30.0	<10	1,200	<100
35.0	<10	–	–
55.0	<10	<50	<100

DEPTH	TPH-Gx	TPH-Dx	TPH-Ox
10.0	<10	380	1,800
15.0	<10	<50	<100
30.0	<10	<50	<100

DEPTH	WTPH-G	BENZENE
9.5	<5	<0.027
14.5	15	<0.027
34.5	**120**	0.034
44.5	<5	<0.027

LEGEND

- PREVIOUSLY INSTALLED VAPOR POINT
- PREVIOUSLY DRILLED SOIL BORING
- VAPOR POINT
- SOIL BORING
- FORMER OIL/WATER COLLECTION SUMP
- BORING LOCATION (ES, 2017)
- UST UNDERGROUND STORAGE TANK
- APPROXIMATE PROPERTY BOUNDARY
- SD – SD – STORM DRAINS
- WATER MAIN
- BORING LOCATION (MONTROSE, 2019)

TPH TOTAL PETROLEUM HYDROCARBONS QUANTIFIED AS GASOLINE (Gx), DIESEL (Dx), AND OIL (Ox)

WTPH WASHINGTON TOTAL PETROLEUM HYDROCARBONS QUANTIFIED AS GASOLINE (G), DIESEL (D), AND OIL (O)

ALL SOIL DEPTHS IN FEET

ALL SOIL CONCENTRATIONS IN mg/kg

mg/kg MILLIGRAMS PER KILOGRAM

< NOT DETECTED AT LISTED REPORTING LIMIT

– NOT SAMPLED

BOLD EXCEEDANCE THE MTCA METHOD A CLEANUP LEVELS

GRAY HISTORIC SOIL ANALYTICAL RESULTS

SOIL SAMPLE OBTAINED BY GEOENGINEERS, DECEMBER 1992, WITH CONCENTRATIONS OF PETROLEUM HYDROCARBONS GREATER THAN MTCA METHOD A CLEANUP LEVEL

MONTROSE ENVIRONMENTAL
1631 E. Saint Andrew Place, Santa Ana, CA 92705 | t 714.919.6500

FIGURE 5

CURRENT AND SELECT HISTORIC SOIL ANALYTICAL RESULTS MAP

Site #2840
12807 Des Moines Memorial Drive
Burien, Washington

DATE DRAWN 11/21/2019

PROJECT NO. 123245

FILE NO. 123245F5-SAR

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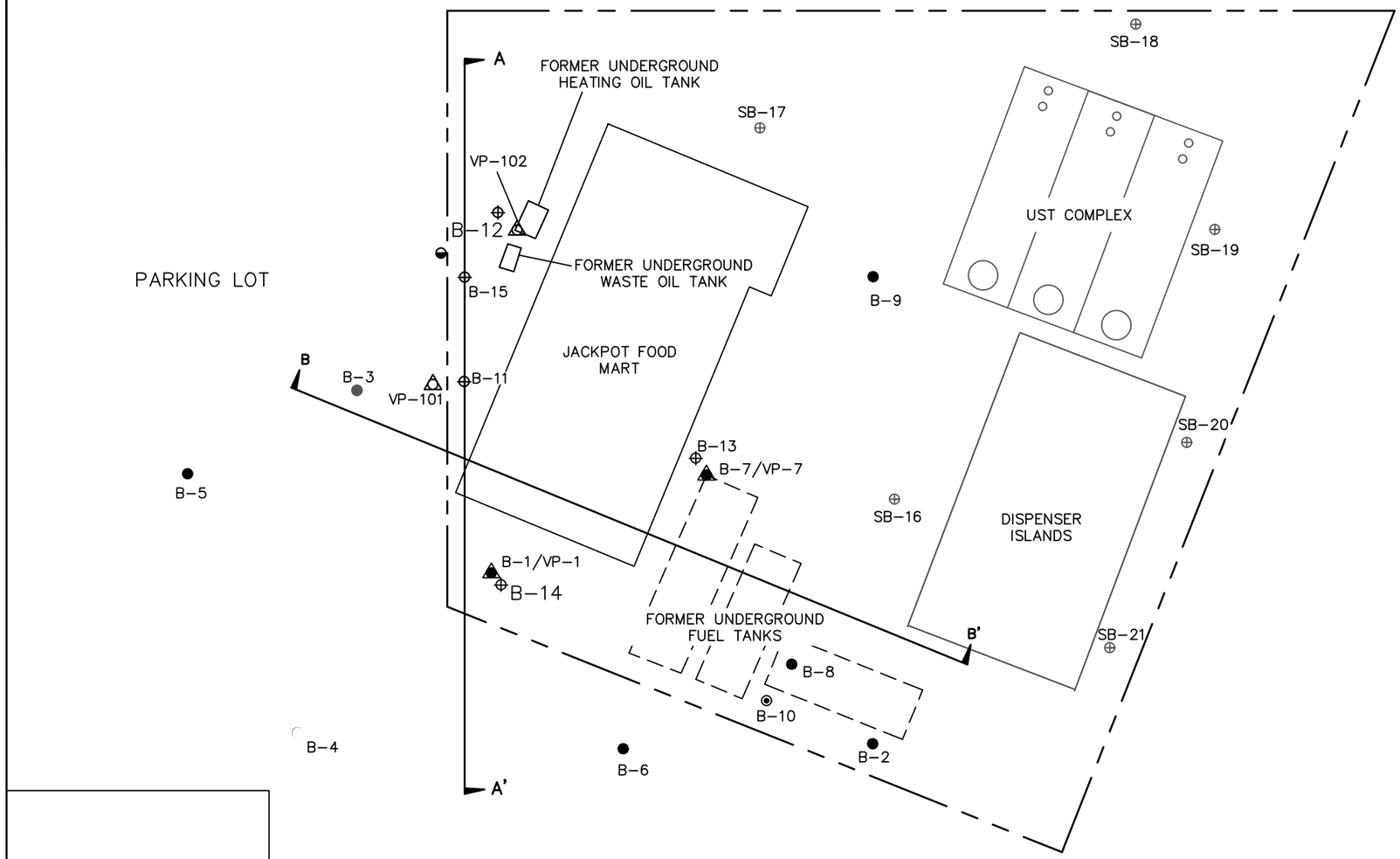

LEGEND

- PREVIOUSLY INSTALLED VAPOR POINT
- PREVIOUSLY DRILLED SOIL BORING
- VAPOR POINT LOCATION
- SOIL BORING LOCATION
- FORMER OIL/WATER COLLECTION SUMP
- BORING LOCATION (ES, 2017)
- BORING LOCATION (MONTROSE, 2019)
- UST UNDERGROUND STORAGE TANK
- APPROXIMATE PROPERTY BOUNDARY
- CROSS SECTION TRACE

N

20 0 20

APPROXIMATE SCALE: 1" = 20'

SOURCE: GeoEngineers, Inc. 1993

MONTROSE ENVIRONMENTAL
1631 E. Saint Andrew Place, Santa Ana, CA 92705 | t 714.919.6500

FIGURE 6

SITE PLAN SHOWING
CROSS SECTION TRACES

Site #2840
12807 Des Moines Memorial Drive
Burien, Washington

DATE DRAWN
11/21/2019

PROJECT NO.
123245

FILE NO.
123245F6-SPX

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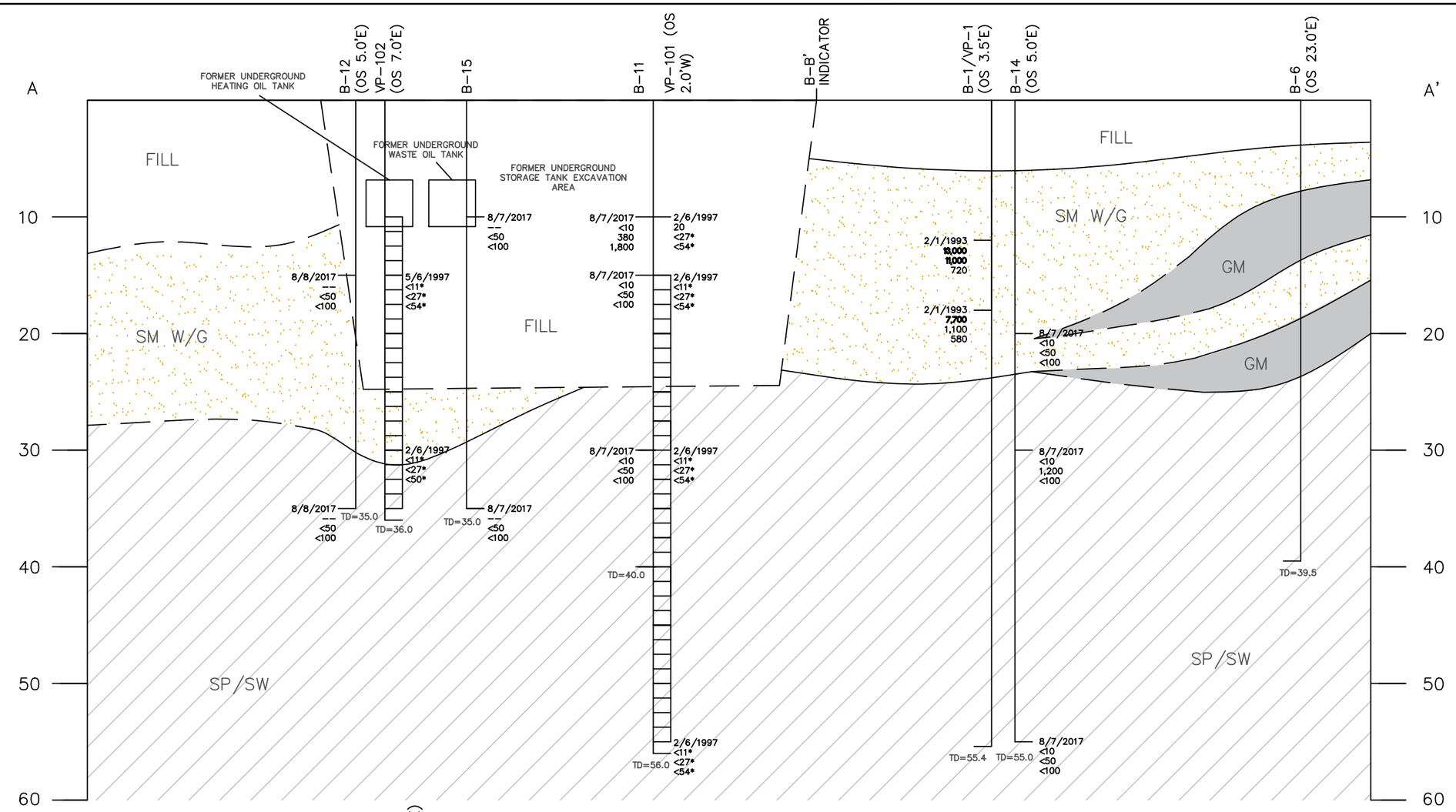

HORIZONTAL AND VERTICAL SCALE: 1" = 10'

SOURCE: GeoEngineers, Inc. 1993

LEGEND

	PREVIOUSLY PLACED FILL (FILL)
	SILTY SAND WITH GRAVEL (SM W/G)
	SILTY GRAVEL (GM)
	POORLY GRADED SAND/WELL GRADED SAND (SP/SW)
<10	NOT DETECTED AT OR ABOVE THE LISTED LABORATORY REPORTING LIMIT
--	NOT ANALYZED
*	SAMPLE ANALYZED USING HCID METHOD
HCID	HYDROCARBON IDENTIFICATION
OS	OFFSET DISTANCE FROM TRACE LINE
———	GEOLOGIC CONTACT
– – – – –	INFERRED GEOLOGIC CONTACT
BOLD	INDICATES CONCENTRATIONS THAT EXCEED THE MTCA METHOD A CLEANUP LEVELS

B-14 (OS 5.0'E) — WELL/BORING DESIGNATION (OFFSET DISTANCE TO TRACE LINE)

8/7/2017 — SAMPLE DATE
<10 — TPH-Gx
1,200 — TPH-Dx — TOTAL PETROLEUM HYDROCARBONS QUANTIFIED AS GASOLINE (Gx), DIESEL (Dx), AND OIL (Ox)
<100 — TPH-Ox
ALL CONCENTRATIONS IN MILLIGRAMS PER KILOGRAM (mg/kg)

WELL SCREEN INTERVAL

TD=55.0 — TOTAL DEPTH OF BORING IN FEET

MONTROSE ENVIRONMENTAL
1631 E. Saint Andrew Place, Santa Ana, CA 92705 | T 714.919.6500

FIGURE 7

GEOLOGIC CROSS SECTION A TO A'

Site #2840
12807 Des Moines Memorial Drive
Burien, Washington

DATE DRAWN 11/21/2019

PROJECT NO. 123245

FILE NO. 123245F7-AA

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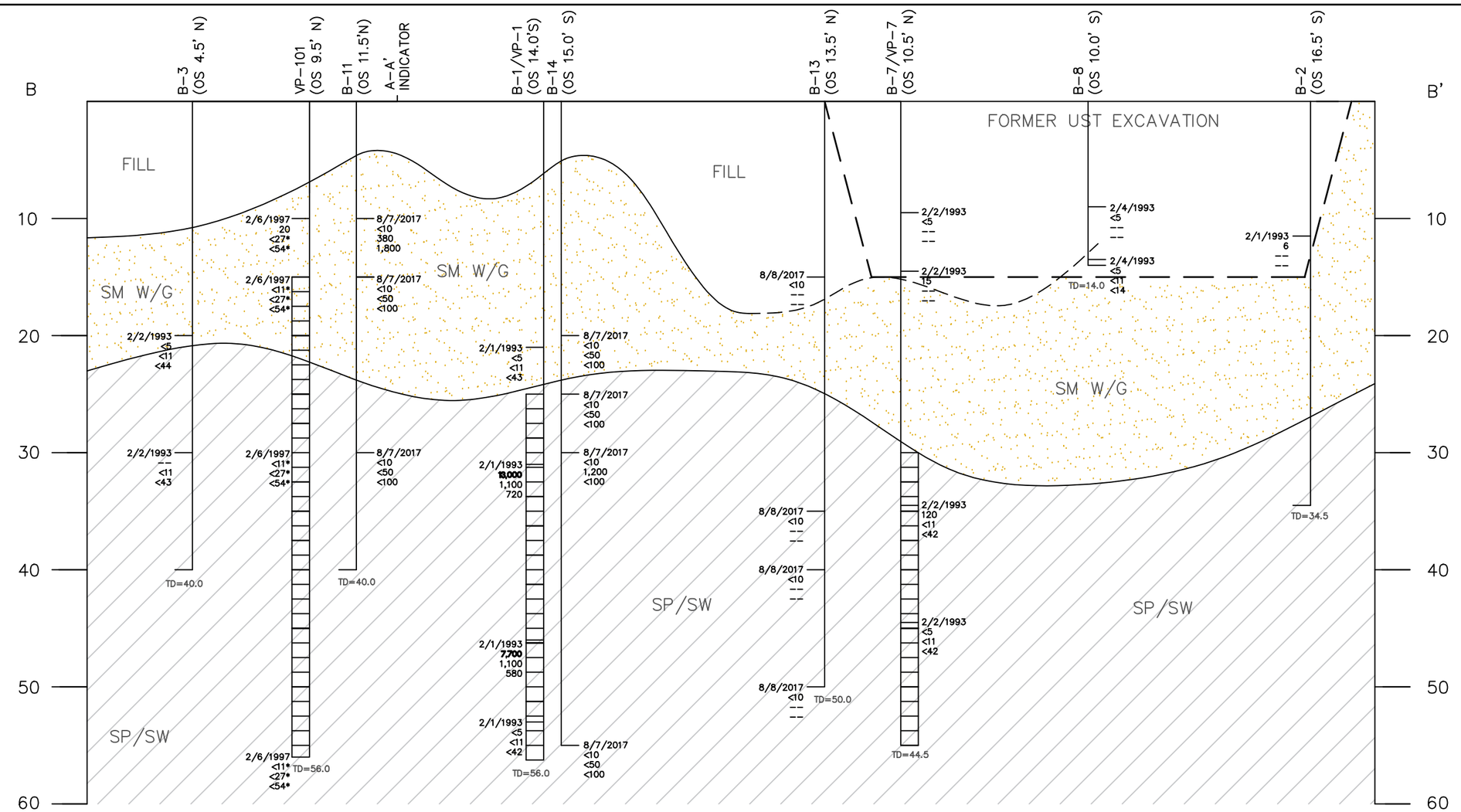
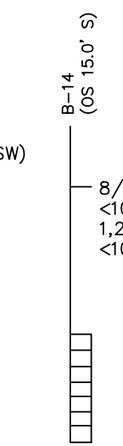


LEGEND

	PREVIOUSLY PLACED FILL (FILL)
	SILTY SAND WITH GRAVEL (SM W/G)
	POORLY GRADED SAND/WELL GRADED SAND (SP/SW)
<10	NOT DETECTED AT OR ABOVE THE LISTED LABORATORY REPORTING LIMIT
--	NOT ANALYZED
*	SAMPLE ANALYZED USING HCID METHOD
HCID	HYDROCARBON IDENTIFICATION
———	GEOLOGIC CONTACT
- - - - -	INFERRED GEOLOGIC CONTACT
BOLD	INDICATES CONCENTRATIONS THAT EXCEED THE MTCA METHOD A CLEANUP LEVELS



WELL/BORING DESIGNATION (OFFSET DISTANCE TO TRACE LINE)

SAMPLE DATE
TPH-Gx
TPH-Dx
TPH-Ox
TOTAL PETROLEUM HYDROCARBONS QUANTIFIED AS GASOLINE (Gx), DIESEL (Dx), AND OIL (Ox)
ALL CONCENTRATIONS IN MILLIGRAMS PER KILOGRAM (mg/kg)

WELL SCREEN INTERVAL

TOTAL DEPTH OF BORING IN FEET

N

10 0 10

HORIZONTAL AND VERTICAL SCALE: 1" = 10'

SOURCE: GeoEngineers, Inc. 1993

MONTROSE ENVIRONMENTAL
1631 E. Saint Andrew Place, Santa Ana, CA 92705 | t 714.919.6500

FIGURE 8

GEOLOGIC CROSS SECTION B TO B'

Site #2840
12807 Des Moines Memorial Drive
Burien, Washington

DATE DRAWN 11/21/2019

PROJECT NO. 123245

FILE NO. 123245F8-BB

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TABLES

TABLE 1
Summary of Historical Soil Analytical Results
Site No. 2840
Burien, Washington

Boring / Well ID	Sample ID	Date Sampled	Depth (ft bgs)	PID Readings (ppmv)	TPH (mg/kg)	Methylene Chloride (mg/kg)	PCBs (mg/kg)	B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)	Total Pb (mg/kg)
					--	--	--	--				--
1990/1991 Excavation Soil Analytical Data (Time Oil)												
--	1	Dec-90	12	--	6	--	--	0.91	2.0	0.13	2.38	--
--	2	Dec-90	12	--	ND	--	--	ND	1	2	3	--
--	3	Dec-90	13	--	8	--	--	0.13	0.26	0.034	3.1	--
--	4	Dec-90	13	--	ND	--	--	ND	0.001	0.012	0.012	--
--	5	Dec-90	15	--	ND	--	--	ND	ND	ND	ND	--
--	6	Dec-90	10	--	ND	--	--	0.001	ND	ND	ND	--
--	7	Dec-90	18	--	ND	--	--	ND	ND	ND	ND	--
--	8	Jan-91	7	--	**4,000**	0.16	ND	--	0.004	0.005	0.054	--
--	9	Jan-91	10	--	**590**	0.02	ND	--	ND	ND	ND	--
--	10	Jan-91	10	--	**4,700**	0.01	1	--	0.098	0.17	1.4	--
--	11	Jan-91	11	--	**1,300**	0.01	ND	--	ND	0.028	0.420	--
--	12	Jan-91	12	--	**900**	0.01	ND	--	0.008	0.036	0.410	--

Boring / Well ID	Sample ID	Date Sampled	Depth (ft bgs)	PID Readings (ppmv)	TPH-Dx (mg/kg)	TPH-Ox (mg/kg)	TPH-Gx (mg/kg)	B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)	Total Pb (mg/kg)
					WTPH-D[Ext]		WTPH-G	Method 8020				Method 6010
1992 Excavation Soil Analytical Data (Geoengineers)												
--	HW-1	12/08/92	12	<100	<28	150	--	--	--	--	--	--
--	HW-2	12/08/92	10	<100	<28	<110	--	--	--	--	--	--
--	HW-3	12/08/92	14	<100	**280**	**2,400**	68	<0.029	<0.029	0.11	1.6	--
--	HW-4	12/08/92	10	--	**1,200**	**6,600**	--	--	--	--	--	--
--	HW-5	12/14/92	16	--	<27	<110	--	--	--	--	--	--
--	HW-6	12/14/92	14	--	<27	<110	--	--	--	--	--	--
--	HW-7	12/16/92	14	<100	<27	<110	--	--	--	--	--	--
--	HW-8	12/17/92	19	<100	<27	<110	--	--	--	--	--	--
--	HW-9	12/17/92	23	<100	<27	<110	--	--	--	--	--	--
--	HW-10	12/18/92	28	<100	<50**	<100**	<20**	--	--	--	--	--
--	HW-11	12/18/92	16	<100	<28	<110	<6	--	--	--	--	--
--	HW-12	12/18/92	16	800	**410**	**640**	**2,700**	<0.027	0.076	0.64	3.1	--
--	HW-13	12/18/92	25	110	34	<110	32	--	--	--	--	--
--	HW-14	12/29/92	10	320	**470**	**1,400**	**1,300**	<0.027	<0.027	0.18	1.3	--

TABLE 1
Summary of Historical Soil Analytical Results
Site No. 2840
Burien, Washington
Page 2 of 3

Boring / Well ID	Sample ID	Date Sampled	Depth (ft bgs)	PID Readings (ppmv)	TPH-Dx (mg/kg)	TPH-Ox (mg/kg)	TPH-Gx (mg/kg)	B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)	Total Pb (mg/kg)
					WTPH-D[Ext]		WTPH-G	Method 8020				Method 6010
1993 Drilling Soil Analytical Data (Alisto)												
B-1	B-1-7	02/01/93	23.5	<100	<11	<43	<5	<0.027	<0.027	<0.027	<0.027	--
B-1	B-1-12	02/01/93	31	500	**1,100**	**720**	**13,000**	<1.4	2.1	3.5	30	--
B-1	B-1-18	02/01/93	46	900	**1,100**	**580**	**7,700**	<1.3	<1.3	1.5	23	--
B-1	B-1-21	02/01/93	53	<100	<11	<42	<5	<0.026	<0.026	<0.026	<0.026	--
B-2	B-2-3	02/01/93	11.5	<100	--	--	6	<0.027	0.072	<0.027	0.076	--
B-3	B-3-3	02/02/93	18.5	<100	<11	<44	<5	<0.027	0.052	<0.027	0.033	--
B-3	B-3-5	02/02/93	29	<100	<11	<43	<5	<0.027	0.037	<0.027	0.033	--
B-4	B-4-7	02/02/93	34	<100	<11	<43	13	<0.027	<0.027	<0.027	<0.027	--
B-5	B-5-7	02/02/93	34	<100	<11	<43	11	<0.027	<0.027	<0.027	<0.027	--
B-6	B-6-6	02/02/93	29	<100	<11	<43	8	<0.027	<0.027	<0.027	<0.027	--
B-7	B-7-2	02/03/93	9.5	<100	--	--	<5	<0.027	<0.027	<0.027	<0.027	2.0
B-7	B-7-3	02/03/93	14.5	<100	--	--	15	<0.027	0.032	<0.027	0.039	--
B-7	B-7-7	02/03/93	34.5	1000	<11	<42	120	0.034	1.1	0.69	5.1	--
B-7	B-7-9	02/03/93	44.5	<100	<11	<42	<5	<0.026	<0.026	<0.026	<0.026	--
B-8	B-8-2	02/04/93	9	<100	--	--	<5	<0.027	<0.027	<0.027	<0.027	14
B-8	B-8-4	02/04/93	13.5	<100	<11	<44	<5	<0.027	<0.027	<0.027	<0.027	3.5
B-9	B-9-6	02/04/93	29	<100	<11	<42	<5	<0.026	<0.026	<0.026	<0.026	

TABLE 1
Summary of Historical Soil Analytical Results
Site No. 2840
Burien, Washington
Page 3 of 3

Boring / Well ID	Sample ID	Date Sampled	Depth (ft bgs)	PID Readings (ppmv)	TPH-Dx (mg/kg)	TPH-Ox (mg/kg)	TPH-Gx (mg/kg)	B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)	Total Pb (mg/kg)
					WTPH-D[Ext]		WTPH-G	Method 8020				Method 6010
1997 Drilling Soil Analytical Data[2]												
VP-101	VP-101-10	02/06/97	10	--	<27	<54	20	<0.027	<0.027	<0.027	<0.027	1.8
VP-101	VP-101-15	02/06/97	15	--	<27	<54	<11	--	--	--	--	--
VP-101	VP-101-30	02/06/97	30	--	<27	<55	<11	--	--	--	--	--
VP-101	VP-101-55	02/06/97	55	--	<26	<52	<10	--	--	--	--	--
VP-102	VP-102-10	02/06/97	10	--	<26	<53	<11	--	--	--	--	--
VP-102	VP-102-15	02/06/97	15	--	<27	<54	<11	--	--	--	--	--
VP-102	VP-102-20	02/06/97	20	--	<28	<56	<11	--	--	--	--	--
VP-102	VP-102-30	02/06/97	30	--	<26	<53	<11	--	--	--	--	--
B-10*	B-10-20	02/06/97	20	--	<27	<54	<11	--	--	--	--	--
B-10*	B-10-30	02/06/97	30	--	<28	<57	<11	--	--	--	--	--
B-10*	B-10-40	02/06/97	40	--	<27	<54	<11	--	--	--	--	--
B-10*	B-10-55	02/06/97	55	--	<26	<53	<11	--	--	--	--	--
MTCA Method A Cleanup Levels[1]					2,000	2,000	100/30[3]	0.03	7	6	9	250

Notes:

BOLD = Results in BOLD indicate detections that exceed MTCA Method A Cleanup Levels for soil based on 1993 levels

***** = Analytical results erroneously reported as B-11 in analytical report

****** = Sample analyzed for hydrocarbon identification by Ecology Method WTPH-HCID

[1] = Current MTCA Method A Table 740-1 for unrestricted land use WAC 173-340-900 Tables, based on 1993 levels

[2] = All soil samples from 1997 assessment were analyzed by Washington Method Hydrocarbon Identification as a screening method for the presence of petroleum hydrocarbons

[3] = 100 mg/kg when benzene is absent and 30 mg/kg when benzene is present

< = not detected at or above stated reporting limit (RL)

-- = sample not analyzed for this constituent

Ext = extended

ft bgs = feet below ground surface

mg/kg = milligrams per kilogram

MTCA = Model Toxics Control Act

ND = Not detected, reporting limit unknown

Pb = lead

PID = photoionization detector

ppmv = parts per million by volume

RCRA = Resource Conservation and Reclamation Act

SB = soil boring

SVOCs = semi-volatile organic compounds

TPH-Dx = total diesel-range petroleum hydrocarbons

TPH-Gx = total gasoline-range petroleum hydrocarbons

TPH-Ox = total oil-range petroleum hydrocarbons

VOCs = volatile organic compounds

WTPH-Dx = Washington Total Petroleum Hydrocarbons as diesel

WTPH-Gx = Washington Total Petroleum Hydrocarbons as gasoline

WTPH-Ox = Washington Total Petroleum Hydrocarbons as oil

TABLE 2
Summary of Recent Soil Analytical Results
Site No. 2840
Burien, Washington
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Boring / Well ID	Sample ID	Date Sampled	Depth (ft bgs)	PID Readings (ppmv)	TPH-Dx (mg/kg)	TPH-Ox (mg/kg)	TPH-Gx (mg/kg)	B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)	EDB (mg/kg)	EDC (mg/kg)	Naph[2] (mg/kg)	Total Pb (mg/kg)
					NWTPH-Dx Ext		NWTPH-Gx	Method 8021B/Method 8260B[1]							Method 6020A/7010
B-11	B-11-5	08/07/17	5	0.0	--	--	--	--	--	--	--	--	--	--	--
B-11	B-11-10	08/07/17	10	700	**380**	**1,800**	<10	<0.02	<0.05	<0.05	<0.15	<0.05	<0.05	<0.05	--
B-11	B-11-15	08/07/17	15	56.2	<50	<100	<10	--	--	--	--	--	--	--	--
B-11	B-11-20	08/07/17	20	0.0	--	--	--	--	--	--	--	--	--	--	--
B-11	B-11-25	08/07/17	25	0.0	--	--	--	--	--	--	--	--	--	--	--
B-11	B-11-30	08/07/17	30	0.0	<50	<100	<10	--	--	--	--	--	--	--	<5.0
B-11	B-11-35	08/07/17	35	0.0	--	--	--	--	--	--	--	--	--	--	--
B-11	B-11-40	08/07/17	40	0.0	--	--	--	--	--	--	--	--	--	--	--
B-12	B-12-5	08/08/17	5	0.1	--	--	--	--	--	--	--	--	--	--	--
B-12	B-12-7.5	08/08/17	7.5	0.0	<50	<100	--	--	--	--	--	--	--	--	--
B-12	B-12-10	08/08/17	10	0.6	<50	<100	--	--	--	--	--	--	--	--	--
B-12	B-12-15	08/08/17	15	0.1	<50	<100	--	--	--	--	--	--	--	<1.0*	<5.0[†]
B-12	B-12-20	08/08/17	20	0.1	--	--	--	--	--	--	--	--	--	--	--
B-12	B-12-25	08/08/17	25	0.0	<50	<100	--	--	--	--	--	--	--	--	--
B-12	B-12-30	08/08/17	30	0.0	--	--	--	--	--	--	--	--	--	--	--
B-12	B-12-35	08/08/17	35	0.0	<50	<100	--	--	--	--	--	--	--	--	--
B-13	B-13-5	08/08/17	5	0.0	--	--	--	--	--	--	--	--	--	--	--
B-13	B-13-10	08/08/17	10	0.0	--	--	--	--	--	--	--	--	--	--	--
B-13	B-13-15	08/08/17	15	0.0	--	--	<10	<0.02	<0.05	<0.05	<0.15	<0.05	<0.05	<0.05	--
B-13	B-13-20	08/08/17	20	0.0	--	--	--	--	--	--	--	--	--	--	--
B-13	B-13-25	08/08/17	25	0.6			--	--	--	--	--	--	--	--	--
B-13	B-13-30	08/08/17	30	0.0	--	--	--	--	--	--	--	--	--	--	--
B-13	B-13-35	08/08/17	35	0.0	--	--	<10	<0.02	<0.05	<0.05	<0.15	<0.05	<0.05	<0.05	<5.0
B-13	B-13-40	08/08/17	40	0.0	--	--	<10	<0.02	<0.05	<0.05	<0.15	--	--	--	--
B-13	B-13-45	08/08/17	45	0.0	--	--	--	--	--	--	--	--	--	--	--
B-13	B-13-50	08/08/17	50	0.0	--	--	<10	<0.02	<0.05	<0.05	<0.15	--	--	--	<5.0
B-14	B-14-5	08/07/17	5	0.0	--	--	--	--	--	--	--	--	--	--	--
B-14	B-14-10	08/07/17	10	0.0	--	--	--	--	--	--	--	--	--	--	--
B-14	B-14-15	08/07/17	15	0.0	--	--	--	--	--	--	--	--	--	--	--
B-14	B-14-20	08/07/17	20	0.0	<50	<100	<10	<0.02	<0.05	<0.05	<0.15	<0.05	<0.05	<0.05	--
B-14	B-14-25	08/07/17	25	70.1	<50	<100	<10	<0.02	<0.05	<0.05	<0.15	--	--	--	--

TABLE 2
Summary of Recent Soil Analytical Results
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Boring / Well ID	Sample ID	Date Sampled	Depth (ft bgs)	PID Readings (ppmv)	TPH-Dx (mg/kg)	TPH-Ox (mg/kg)	TPH-Gx (mg/kg)	B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)	EDB (mg/kg)	EDC (mg/kg)	Naph[2] (mg/kg)	Total Pb (mg/kg)
					NWTPH-Dx Ext		NWTPH-Gx	Method 8021B/Method 8260B[1]							Method 6020A/7010
B-14	B-14-30	08/07/17	30	1,225	1,200[5]	<100	<10	<0.02	<0.05	<0.05	<0.15	<0.05	<0.05	<0.05	--
B-14	B-14-35	08/07/17	35	262	--	--	<10	<0.02	<0.05	<0.05	<0.15	<0.05	<0.05	<0.05	<5.0
B-14	B-14-40	08/07/17	40	27.0	--	--	--	--	--	--	--	--	--	--	--
B-14	B-14-45	08/07/17	45	126	--	--	--	--	--	--	--	--	--	--	--
B-14	B-14-50	08/07/17	50	24.9	--	--	--	--	--	--	--	--	--	--	--
B-14	B-14-55	08/07/17	55	7.5	<50	<100	<10	<0.02	<0.05	<0.05	<0.15	--	--	--	<5.0
B-15	B-15-5	08/07/17	5	0.0	--	--	--	--	--	--	--	--	--	--	--
B-15	B-15-10	08/07/17	10	0.0	<50	<100	--	--	--	--	--	--	--	--	--
B-15	B-15-15	08/07/17	15	0.0	--	--	--	--	--	--	--	--	--	--	--
B-15	B-15-20	08/07/17	20	0.0	<50	<100	--	--	--	--	--	--	--	<1.0*	<5.0[†]
B-15	B-15-25	08/07/17	25	--	--	--	--	--	--	--	--	--	--	--	--
B-15	B-15-30	08/07/17	30	0.0	--	--	--	--	--	--	--	--	--	--	--
B-15	B-15-35	08/07/17	35	0.0	<50	<100	--	--	--	--	--	--	--	--	--
SB-16	SB-16-2.5	09/05/19	2.5	0.0	--	--	--	--	--	--	--	--	--	--	--
SB-16	SB-16-5	09/05/19	5	0.0	--	--	--	--	--	--	--	--	--	--	--
SB-16	SB-16-10	09/09/19	10	0.0	<50**	<250**	<20**	--	--	--	--	--	--	--	--
SB-16	SB-16-15	09/09/19	15	0.0	<50**	<250**	<20**	--	--	--	--	--	--	--	--
SB-16	SB-16-20	09/09/19	20	0.0	--	--	--	--	--	--	--	--	--	--	--
SB-16	SB-16-25	09/09/19	25	0.0	--	--	--	--	--	--	--	--	--	--	--
SB-16	SB-16-30	09/09/19	30	0.0	--	--	--	--	--	--	--	--	--	--	--
SB-16	SB-16-35	09/09/19	35	0.0	<50**	<250**	<20**	--	--	--	--	--	--	--	--
SB-16	SB-16-40	09/09/19	40	0.0	--	--	--	--	--	--	--	--	--	--	--
SB-16	SB-16-45	09/09/19	45	0.0	<50**	<250**	<20**	--	--	--	--	--	--	--	--
SB-16	SB-16-50	09/09/19	50	0.0	--	--	--	--	--	--	--	--	--	--	--
SB-16	SB-16-55	09/09/19	55	0.0	--	--	--	--	--	--	--	--	--	--	--
SB-16	SB-16-60	09/09/19	60	0.0	--	--	--	--	--	--	--	--	--	--	--
SB-16	SB-16-65	09/09/19	65	0.0	--	--	--	--	--	--	--	--	--	--	--
SB-16	SB-16-70	09/09/19	70	0.0	--	--	--	--	--	--	--	--	--	--	--
SB-16	SB-16-75	09/09/19	75	0.0	--	--	--	--	--	--	--	--	--	--	--
SB-16	SB-16-80	09/09/19	80	0.0	--	--	--	--	--	--	--	--	--	--	--
SB-16	SB-16-85	09/09/19	85	0.0	--	--	--	--	--	--	--	--	--	--	--
SB-16	SB-16-90	09/09/19	90	0.0	<50**	<250**	<20**	--	--	--	--	--	--	--	--

TABLE 2
Summary of Recent Soil Analytical Results
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Boring / Well ID	Sample ID	Date Sampled	Depth (ft bgs)	PID Readings (ppmv)	TPH-Dx (mg/kg)	TPH-Ox (mg/kg)	TPH-Gx (mg/kg)	B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)	EDB (mg/kg)	EDC (mg/kg)	Naph[2] (mg/kg)	Total Pb (mg/kg)
					NWTPH-Dx Ext		NWTPH-Gx	Method 8021B/Method 8260B[1]							Method 6020A/7010
SB-17	SB-17-2.5	09/05/19	2.5	0.0	--	--	--	--	--	--	--	--	--	--	--
SB-17	SB-17-5	09/05/19	5	0.0	--	--	--	--	--	--	--	--	--	--	--
SB-17	SB-17-10	09/10/19	10	0.0	<50**	<250**	<20**	--	--	--	--	--	--	--	--
SB-17	SB-17-15	09/10/19	15	0.0	--	--	--	--	--	--	--	--	--	--	--
SB-17	SB-17-20	09/10/19	20	0.0	<50**	<250**	<20**	--	--	--	--	--	--	--	--
SB-17	SB-17-25	09/10/19	25	0.0	--	--	--	--	--	--	--	--	--	--	--
SB-17	SB-17-30	09/10/19	30	0.0	<50**	<250**	<20**	--	--	--	--	--	--	--	--
SB-17	SB-17-35	09/10/19	35	0.0	<50**	<250**	<20**	--	--	--	--	--	--	--	--
SB-18	SB-18-5	09/05/19	5	0.0	--	--	--	--	--	--	--	--	--	--	--
SB-18	SB-18-10	09/10/19	10	0.0	--	--	--	--	--	--	--	--	--	--	--
SB-18	SB-18-15	09/10/19	15	0.0	<50**	<250**	<20**	--	--	--	--	--	--	--	--
SB-18	SB-18-20	09/10/19	20	0.0	<50**	<250**	<20**	--	--	--	--	--	--	--	--
SB-18	SB-18-25	09/10/19	25	0.0	--	--	--	--	--	--	--	--	--	--	--
SB-18	SB-18-30	09/10/19	30	0.0	<50**	<250**	<20**	--	--	--	--	--	--	--	--
SB-18	SB-18-35	09/10/19	35	0.0	--	--	--	--	--	--	--	--	--	--	--
SB-19	SB-19-2.5	09/05/19	2.5	0.0	--	--	--	--	--	--	--	--	--	--	--
SB-19	SB-19-5	09/05/19	5	0.0	--	--	--	--	--	--	--	--	--	--	--
SB-19	SB-19-10	09/10/19	10	0.0	<50**	<250**	<20**	--	--	--	--	--	--	--	--
SB-19	SB-19-15	09/10/19	15	0.0	--	--	--	--	--	--	--	--	--	--	--
SB-19	SB-19-20	09/10/19	20	0.0	<50**	<250**	<20**	--	--	--	--	--	--	--	--
SB-19	SB-19-25	09/10/19	25	0.0	--	--	--	--	--	--	--	--	--	--	--
SB-19	SB-19-30	09/10/19	30	0.0	<50**	<250**	<20**	--	--	--	--	--	--	--	--
SB-19	SB-19-35	09/10/19	35	0.0	<50**	<250**	<20**	--	--	--	--	--	--	--	--
SB-20	SB-20-2.5	09/05/19	2.5	0.0	--	--	--	--	--	--	--	--	--	--	--
SB-20	SB-20-5	09/11/19	5	0.0	--	--	<10	<0.02	<0.10	<0.05	<0.15	--	--	--	8.3
SB-20	SB-20-10	09/11/19	10	0.0	<50**	<250**	<20**	--	--	--	--	--	--	--	--
SB-20	SB-20-15	09/11/19	15	0.0	--	--	--	--	--	--	--	--	--	--	--
SB-20	SB-20-20	09/11/19	20	0.0	--	--	--	--	--	--	--	--	--	--	--
SB-20	SB-20-25	09/11/19	25	0.0	<50**	<250**	<20**	--	--	--	--	--	--	--	--
SB-20	SB-20-30	09/11/19	30	0.0	--	--	--	--	--	--	--	--	--	--	--
SB-20	SB-20-35	09/11/19	35	0.0	<50**	<250**	<20**	--	--	--	--	--	--	--	--

TABLE 2
Summary of Recent Soil Analytical Results
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Boring / Well ID	Sample ID	Date Sampled	Depth (ft bgs)	PID Readings (ppmv)	TPH-Dx (mg/kg)	TPH-Ox (mg/kg)	TPH-Gx (mg/kg)	B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)	EDB (mg/kg)	EDC (mg/kg)	Naph[2] (mg/kg)	Total Pb (mg/kg)
					NWTPH-Dx Ext		NWTPH-Gx	Method 8021B/Method 8260B[1]							Method 6020A/7010
SB-21	SB-21-2.5	09/05/19	2.5	0.0	--	--	--	--	--	--	--	--	--	--	--
SB-21	SB-21-5	09/05/19	5	0.0	--	--	<10	<0.02	<0.10	<0.05	<0.15	--	--	--	<5.0
SB-21	SB-21-10	09/11/19	10	0.0	--	--	--	--	--	--	--	--	--	--	--
SB-21	SB-21-15	09/11/19	15	0.0	<50**	<250**	<20**	--	--	--	--	--	--	--	--
SB-21	SB-21-20	09/11/19	20	0.0	<50**	<250**	<20**	--	--	--	--	--	--	--	--
SB-21	SB-21-25	09/11/19	25	0.0	--	--	--	--	--	--	--	--	--	--	--
SB-21	SB-21-30	09/11/19	30	0.0	--	--	--	--	--	--	--	--	--	--	--
SB-21	SB-21-35	09/11/19	35	0.0	<50**	<250**	<20**	--	--	--	--	--	--	--	--
MTCA Method A Cleanup Levels[3]					2,000		100/30[4]	0.03	7	6	9	0.005	ne	5	250

Notes:

BOLD = Results in BOLD indicate detections that exceed MTCA Method A Cleanup Levels for soil

[1] = select samples analyzed for full scan VOCs (Method 8260B); See lab report for complete list of analytes

[2] = select soil samples were also analyzed for naphthalenes by EPA Method 8270 (RL = 1.0 mg/kg) and those results are reported in Table 3

[3] = MTCA Method A Table 740-1 for unrestricted land use, WAC 173-340-900 Tables

[4] = 100 mg/kg when benzene is absent and 30 mg/kg when benzene is present

[5] = analyte appears to be mineral spirits/Stoddard solvent

ŧ = sample analyzed for total metals (RCRA 8) by Method 6020

* = sample analyzed for SVOCs by Method 8270

** = Sample analyzed for hydrocarbon identification by Ecology Method WTPH-HCID, Gasoline-, Desiel- and Oil-range hydrocarbons were not detected

< = not detected at or above stated reporting limit (RL)

-- = sample not analyzed for this constituent

EDB = 1,2 dibromoethane

Ext = extended

ft bgs = feet below ground surface

J = estimated value between laboratory method detection limit and reporting limit

mg/kg = milligrams per kilogram

MTCA = Model Toxics Control Act

Naph = naphthalenes

ne = not established

Pb = lead

PID = photoionization detector

ppmv = parts per million by volume

RCRA = Resource Conservation and Reclamation Act

SB = soil boring

SVOCs = semi-volatile organic compounds

TPH-Dx = total diesel-range petroleum hydrocarbons

TPH-Gx = total gasoline-range petroleum hydrocarbons

TPH-Ox = total oil-range petroleum hydrocarbons

VOCs = volatile organic compounds

TABLE 3
Summary of Soil Analytical Results - Additonal VOCs/SVOCs
Site No. 2840
Burien, Washington

Boring / Well ID	Sample ID	Date Sampled	Depth (ft bgs)	BMM (mg/kg)	CHLM (mg/kg)	HX-1,3-BD (mg/kg)	IPB (mg/kg)	IPT (mg/kg)	n-PPB (mg/kg)	1,2,4-TMB (mg/kg)	1,3,5-TMB (mg/kg)	Naph[(1)] (mg/kg)
				Method 8260B/8270								
B-11	B-11-10	08/07/17	10	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
B-12	B-12-15*	08/08/17	15	--	--	--	--	--	--	--	--	<1.0[(1)]
B-13	B-13-15	08/08/17	15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
B-13	B-13-35	08/08/17	35	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
B-14	B-14-20	08/07/17	20	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
B-14	B-14-30	08/07/17	30	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
B-14	B-14-35*	08/07/17	35	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05/<1.0[(1)]
B-15	B-15-20*	08/07/17	20	--	--	--	--	--	--	--	--	<1.0[(1)]
MTCA Method A Cleanup Levels				ne	ne	ne	ne	ne	ne	ne	ne	5

Notes:

For the complete list of VOCs, see laboratory analytical report (Appendix H)

(1) = naphthalene analyzed for by EPA Method 8270

< = not detected at or above stated reporting limit (RL)

-- = sample not analyzed for this constituent

* = samples analyzed for semi-volative organic compounds by EPA Method 8270

BMM = bromomethane

CHLM = chloromethane

HX-1,3-BD = Hexachloro-1,3-butadiene

ft bgs = feet below ground surface

IPB = isopropylbenzene

IPT = isopropyltoluene

mg/kg = milligrams per kilogram

Naph = naphthalene

ne = cleanup level not established

n-PPB = n-propylbenzene

1,2,4-TMB = 1,2,4-trimethylbenzene

1,3,5-TMB = 1,3,5-trimethylbenzene

TABLE 4
Summary of Soil Analytical Results - Additional Metals
Site No. 2840
Burien, Washington

Boring / Well ID	Sample ID	Date Sampled	Depth (ft bgs)	Lead (mg/kg)	Cadmium (mg/kg)	Total Chromium (mg/kg)	Hexavalent Chromium (mg/kg)*	Arsenic (mg/kg)	Silver (mg/kg)	Barium (mg/kg)	Selenium (mg/kg)	Mercury (mg/kg)
				Method 6020								
B-12	B-12-15	08/08/17	15	<5.0	<1.0	23	<0.5	<5.0	<20	<50	<20	<0.5
B-15	B-15-20	08/07/17	20	<5.0	1.9	29	<0.5	<5.0	<20	<50	<20	<0.5
MTCA Method A Cleanup Levels				250	2	ne	19	20	ne	ne	ne	2

Notes:

Total metals analyzed by EPA Method 6020 Series
* = Hexavalent chromium analyzed by EPA Method 7196A/Modified EPA 3060A
< = not detected at or above stated method detection limit (MDL)
-- = sample not analyzed for this constituent
mg/kg = milligrams per kilogram
ne = cleanup level not established

TABLE 5
Groundwater Analytical Results
Site No. 2840
Burien, Washington

Boring / Well ID	Sample ID	Date Sampled	TPH-Dx (µg/L)	TPH-Ox (µg/L)	TPH-Gx (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	EDB (µg/L)	EDC (µg/L)	Naph (µg/L)	Other VOCs (µg/L)	Total Pb (µg/L)
			NWTPH-Dx/Dx Extended		NWTPH-Gx	EPA Method 8260D									EPA Method 7010
SB-16	SB-6-W	09/09/19	<200	<400	<100	<1.0	<1.0	<1.0	<2.0	<5.0	<0.01	<1.0	<5.0	(3)	**39**
MTCA Method A Cleanup Levels(1)			500	500	1,000/800(2)	5	1,000	700	1,000	20	0.01	5	160	†	15

Notes:

Results in **BOLD** indicate detections that exceed MTCA Method A Cleanup Levels for groundwater

(1): MTCA Method A Table 720-1 for groundwater, WAC 173-340-900 Tables

(2): 1,000 µg/L when benzene is absent and 800 µg/L when present

(3): No other VOCs detected; see laboratory report for the complete list of VOCs analyzed

†: Refer to MTCA Method A Table 720-1 for groundwater

--: not analyzed / not measured

<: less than the laboratory reporting limit

°C: degree celsius

µg/L: micrograms per Liter

BTEX: benzene, toluene, ethylbenzene, and total xylenes

EDB: 1,2-dibromoethane

EDC: 1,2-dichloroethane

EPA: Environmental Protection Agency

MTBE: methyl tert-butyl ether

MTCA: Model Toxics Control Act

Naph: Naphthalenes

Note: EDB analyzed by SIM (selective ion monitoring)

TPH-Gx: total gasoline-range petroleum hydrocarbons, analyzed by Northwest Method NWTPH-Gx

TPH-Dx: total desiel-range petroleum hydrocarbons, analyzed by Northwest Method NWTPH-Dx/DX Extended

VOCs: volatile organic compounds analyzed by EPA Method 8260D

TABLE 6
Boring/Well Construction Details
Site No. 2840
Burien, Washington

Boring/Well ID	Consultant	Date Installed	Total Boring Depth (feet)	Total Well Depth (feet)	Well Type - Casing Diameter (inches)	Screen Interval (feet)	Slot Size (inches)	Sealing/Backfill Material	Casing Elevation (feet amsl)
B-1/VP-1	Geo	Feb-93	56.5	55.4	2.0	25-55	0.020	bentonite	ns
B-2	Geo	Feb-93	34.5	--	--	--	--	--	--
B-3	Geo	Feb-93	39.5	--	--	--	--	--	--
B-4	Geo	Feb-93	34.5	--	--	--	--	--	--
B-5	Geo	Feb-93	34.5	--	--	--	--	--	--
B-6	Geo	Feb-93	39.5	--	--	--	--	--	--
B-7/VP-7	Geo	Feb-93	55.0	54.0	2.0	30-54	0.020	bentonite	ns
B-8	Geo	Feb-93	14.0	--	--	--	--	--	--
B-9	Geo	Feb-93	39.0	--	--	--	--	--	--
B-10	Alisto	Feb-97	56.0	--	--	--	--	--	--
VP-101	Alisto	Feb-97	56.0	55.0	4.0	15-55	0.020	bentonite	ns
VP-102	Alisto	Feb-97	36.0	30.0	2.0	5-30	0.020	bentonite	ns
B-11	ES	Aug-17	40.0	--	--	--	--	--	--
B-12	ES	Aug-17	35.0	--	--	--	--	--	--
B-13	ES	Aug-17	50.0	--	--	--	--	--	--
B-14	ES	Aug-17	55.0	--	--	--	--	--	--
B-15	ES	Aug-17	35.0	--	--	--	--	--	--
B-16	Montrose	Sep-19	90.0	--	--	--	--	--	--
B-17	Montrose	Sep-19	35.0	--	--	--	--	--	--
B-18	Montrose	Sep-19	35.0	--	--	--	--	--	--
B-19	Montrose	Sep-19	35.0	--	--	--	--	--	--
B-20	Montrose	Sep-19	35.0	--	--	--	--	--	--
B-21	Montrose	Sep-19	35.0	--	--	--	--	--	--

Notes:

-- = not applicable
Alisto = Alisto Engineering Group
amsl = above mean sea level
ES = ES Engineering Services, LLC
Montrose = Montrose Environmental
Geo = Geoengineers Inc.
VP = vapor well
ns = not surveyed

APPENDIX A

ECOLOGY OPINION LETTER

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Northwest Regional Office • 3190 160th Ave SE • Bellevue, WA 98008-5452 • 425-649-7000
711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

May 28, 2019

COPY

Laura Skow
Montrose Environmental
1 Park Plaza, Suite # 1000
Irvine, CA 92614

Re: Opinion pursuant to WAC 173-340-515(5) on Remedial Action for the following Hazardous Waste Site:

- **Name:** Time Oil 01-284
- **Address:** 12807 Des Moines Memorial Drive S, Seattle, WA
- **Facility/Site No.:** 45191292
- **VCP No.:** NW3173
- **Cleanup Site ID No.:** 9267

Dear Laura Skow:

Thank you for submitting documents regarding your remedial actions for the Time Oil 01-284 facility (Site) for review by the Washington State Department of Ecology (Ecology) under the Voluntary Cleanup Program (VCP). Ecology appreciates your initiative in pursuing this administrative option for cleaning up hazardous waste sites under the Model Toxics Control Act (MTCA), Chapter 70.105D RCW.

This letter constitutes an advisory opinion regarding a review of submitted documents/reports pursuant to requirements of MTCA and its implementing regulations, Chapter 70.105D RCW and Chapter 173-340 WAC, for characterizing and addressing the following releases at the Site:

- Gasoline-range petroleum hydrocarbons (TPHg), diesel-range petroleum hydrocarbons (TPHd), oil-range petroleum hydrocarbons (TPHo), benzene, toluene, ethylbenzene, and xylenes (BTEX) into the Soil.

Ecology is providing this advisory opinion under the specific authority of RCW 70.105D.030(1)(i) and WAC 173-340-515(5).

This opinion does not resolve a person's liability to the state under MTCA or protect a person from contribution claims by third parties for matters addressed by the opinion. The state does not have the authority to settle with any person potentially liable under MTCA except in accordance with RCW 70.105D.040(4). The opinion is advisory and not binding on Ecology.

Ecology's Toxics Cleanup Program has reviewed the following information regarding your remedial actions:

1. ES Engineering Services, LLC, *Site Boring Logs*, April 18, 2018.
2. ES Engineering Services, LLC, *Site Cleanup Action Report*, October 3, 2017.
3. Property Solutions Inc., *Phase I Environmental Site Assessment*, Sept. 23, 2014
4. Time Oil Co., *Status of Cleanup Activities at Jackpot Food Mart*, November 21, 2002.
5. Time Oil Co., *Submittal of "Remedial Investigation Report" for Jackpot Food Mart*, December 4, 1997.
6. Alisto Engineering Group, *Remedial Investigation Report Time Oil Facility No. 01-284*, November 12, 1997.
7. Time Oil Co., *Remediation of Former Used Motor Oil Tank Bed and Site Assessment Jackpot Food Mart*, October 25, 1993.
8. GeoEngineers, Inc., *Report of Geoenvironmental Services Subsurface Soil Explorations and Remediation Jackpot Food Mart Property No. 01-284*, April 28, 1993.
9. Time Oil Co., *Underground Storage Tank Removal Jackpot Food Mart*, May 20, 1991.

The reports listed above will be kept in the Central Files of the Northwest Regional Office of Ecology (NWRO) for review by appointment only. Appointments can be made by completing a Request for Public Records form (https://www.ecology.wa.gov/About-us/Accountability-transparency/Public-records-requests) and emailing it to PublicRecordsOfficer@ecy.wa.gov, or by calling the Public Records Officer at 360-407-6040. Some documents are accessible electronically at the Site web page (https://fortress.wa.gov/ecy/gsp/Sitepage.aspx?csid=9267).

The Site is defined by the extent of contamination caused by the following releases:

- TPHg, TPHd, TPHo, and BTEX into the Soil.

The Site is more particularly described in Enclosure A to this letter, which includes detailed Site diagrams. The description of the Site is based solely on the information contained in the documents listed above.

Based on a review of supporting documentation listed above, pursuant to **requirements contained in MTCA and its implementing regulations, Chapter 70.105D RCW and Chapter 173-340 WAC, for characterizing and addressing the release(s) at the Site, Ecology has determined:**

You requested a written opinion "for regulatory Site closure and no further action status" based on the investigations and remedial actions accomplished at the Site. The following comments comprise Ecology's assessment of those actions, and opinions.

During December 1990, two 8,000 gallon gasoline underground storage tanks (USTs) and one 10,000 gallon gasoline UST, were removed from a single excavation at the southern portion of the Property. Seven soil samples were acquired within the excavation, and analyzed for TPHg and BTEX. Low concentrations were found except in two samples, where the current Method A soil cleanup level for benzene (0.03 mg/kg) was exceeded. A 100-foot length of perforated pipe was laid in the excavation, and the excavated soil was returned without testing.

During January 1991, a 550 gallon heating-oil UST and a 350 gallon waste-oil UST were removed from a single excavation at the western edge of the Property. Five soil samples were acquired within the excavation, and analyzed for total petroleum hydrocarbons (TPH), eight metals (RCRA 8), polychlorinated biphenyls (PCBs), and volatile organic compounds (VOCs). Low concentrations of all compounds were found in the samples except three, where the current Method A soil cleanup level (2,000 mg/kg) for TPHd +TPHo was exceeded.

During December 1992, a remedial excavation was undertaken to clean up contaminated soil in the area of the heating-oil and waste-oil USTs to Method A cleanup levels. Excavation proceeded based on field screening methods: visual observation, sheen screening, and/or headspace vapor screening. At its completion, the excavation covered an area of approximately 1,050 square feet (2/3 of which extended off-property to the west), and ranged in depth from 19 to 23 feet below ground surface (bgs). The extent of the excavation was limited to the east by the building on the Property.

Fourteen confirmation soil samples (HW-1 through HW-14) were acquired at the bottom and sides of the excavation and analyzed for TPHg, TPHd, TPHo, and BTEX. There were elevated concentrations of TPH in three samples adjacent to the building, and in one sample at the southern end of the excavation. Approximately 920 cubic yards of contaminated soil were transferred from the Property to the Woodworth facility in Tacoma.

During December 1992, a soil-vapor extraction (SVE) system was connected to the perforated piping previously installed within the excavation of the three gasoline USTs. The system operated through mid-January 1993, at which time vapor recovery levels had attenuated.

During February 1993, nine borings (B-1 through B-9) were drilled to test for remaining soil contamination in the area of the former gasoline USTs, and also in other areas of the Property (see **Enclosure A, Figure 3**). The borings extended to depths ranging from 14.0 to 56.5 feet bgs. Eighty-seven soil samples (total) were acquired, and based on field screening as described above, seventeen samples were analyzed for TPHg, TPHd, TPHo, BTEX, and total lead. The data showed high levels of TPHg (maximum 13,000 mg/kg) and also elevated levels of benzene, xylenes, TPHd and TPHo in B-1 within a contaminated zone between 26 feet and 46 feet bgs south of the building.

The TPHg in this location appeared to be Stoddard solvent/mineral spirits. There was a detection of TPHg (120 mg/kg) above the Method A cleanup level for soil in one other boring (B-7) at a depth of 34.5 feet. Vapor-extraction wells were installed in two borings (VP-1 and VP-7). Ground water was not encountered in any of the borings.

During February 1997, three borings (B-10, VP-101, and VP-102) were drilled to test for remaining soil contamination and to be part of a SVE system. Boring B-10 was placed to augment information in the area of the gasoline USTs, and two vapor extraction wells were installed in the area of contaminated soil left in place west of the building. The borings extended to depths ranging from 38 to 58 feet bgs.

Twenty-eight soil samples (total) were acquired, and eleven samples were selected for analyses. One sample from VP-101 was analyzed for TPHg, TPHd, TPHo, BTEX, and lead with no results above Method A soil cleanup levels. All other samples were analyzed using method WTPH-HCID with no detections of hydrocarbons. Ground water was not encountered in any of the borings.

During March 1997, a pilot test was performed using the four vapor extraction wells to determine if SVE was feasible to complete remediation of the Site. Based on the pilot test, an SVE system utilizing three wells (VP-1, VP-7, and VP-101) was designed and proposed for implementation. The system was not implemented however, and there were no further remedial actions at the Site for the next 20 years.

During August 2017, five borings (B-11 through B-15) were drilled to test for any remaining soil contamination in areas where contaminated soil was suspected or known to remain in 1997 (see **Enclosure A, Figure 4**). The areas explored included the former gasoline USTs, the south end of the building, and west side of the building. The borings extended to depths ranging from 35 to 55 feet bgs. Forty-three soil samples (total) were acquired and, based on location and field screening, 19 samples were analyzed.

The August 2017 samples were mostly analyzed for TPHg, TPHd, TPHo, and BTEX. Approximately one-third of the samples included analyses for the gasoline additives ethylene dibromide (EDB) and ethylene dichloride (EDC), VOCs, and total lead.

Two samples included analyses for semi-volatile organic compounds (SVOCs) and a suit of eight additional metals. It was stated in each boring log that ground water was not encountered.

With the exception of three samples, the analytical results for the August 2017 samples were non-detectable for all compounds. The exceptions were: (1) a sample from B-11 at a depth of 10 feet bgs slightly exceeded the Method A cleanup level for TPHd+TPHo, (2) TPHd was detected at 1,200 mg/kg (below the Method A soil cleanup level) in a sample from B-14 at a depth of 30 feet bgs (where high levels of TPHg were detected in 1973), and (3) cadmium was detected in a sample from B-15 below its Method A cleanup level.

Given the assessment related above, Ecology offers the following opinions:

1. The contaminants of concern (TPHs and BTEX) and the cleanup standards established for the Site are acceptable. MTCA Method A soil cleanup levels were used to evaluate contamination in the soil, both to characterize the Site, and to perform a remedial excavation cleanup action. A terrestrial ecological evaluation (TEE) performed for the Site demonstrated that the Method A soil cleanup levels did not need to be adjusted for wildlife exposure considerations. The point of compliance for soil is all soil contained within the Site (standard point of compliance).

2. The cleanup actions at the Site included a remedial excavation of contaminated soil in the area of the heating-oil and waste-oil USTs and the operation of an SVE system for approximately 1 year in the immediate area of the former gasoline USTs. There was also apparent natural attenuation of petroleum hydrocarbons in soil over a period of approximately 25 years. With the exception of one sample from boring B-11 with a concentration of 2,180 mg/kg for TPHd+TPHo (exceeding the Method A cleanup level for of 2,000 mg/kg), cleanup levels in soil in the southern portion of the Property (the area of the former gasoline USTs), and the areas south and west of the building appear to have been attained.

Note: Ecology Implementation Memoranda #4 "Determining Compliance with Method A Cleanup level for Diesel and Heavy Oil" (publication 04-09-86 dated June 17, 2004), requires the summation of the diesel and oil components. See: https://fortress.wa.gov/ecy/publications/SummaryPages/0409086.html

3. The characterization of soil at the Site is not complete. **Figure 4** of **Enclosure A** depicts the areas of the Site where characterization is complete via borings and a remedial investigation. Given the long history of the Property as an automobile fueling and services facility, however, additional characterization is needed in northern, central, and eastern portions of the Property. The dispenser islands have been in the same location since the 1960s, and are typical sources of release from older UST systems. There are no data near, or in any direction from, the dispenser islands.

An auto service bay was likely located in the building, and additional data is needed north and east of the building. If significant contamination is detected, sampling would be needed near the current USTs installed in 1991. Furthermore, if elevated levels of TPHo indicative of waste oil are detected in any additional soil samples collected, those samples should include analyses for the chemical parameters listed in Table 830-1 of WAC 173-340, the MTCA cleanup regulation.

4. Additional assessment and sampling of ground water is necessary at this Site to determine if ground water is a medium of concern and if so, to establish appropriate cleanup standards for the ground water. High levels of Stoddard solvent (detected as TPHg) were found in 1993 at a depth of approximately 50 feet bgs in boring B-1 (those levels did attenuate as indicated by soil samples from boring B-14 in 2017). However, data from another site (Shell 129596) located 300 feet to the northeast indicates depth to the regional aquifer is approximately 76 feet.

Given the long history of the Property as an automobile fueling and services facility, and also the maximum depth reached historically by known contamination, the regional aquifer should be sampled to assess potential impacts. Additionally, the presence of, and potential contaminant impacts to any perched ground water should be evaluated during any future sampling.

This opinion does not represent a determination by Ecology that a proposed remedial action will be sufficient to characterize and address the specified contamination at the Site or that no further remedial action will be required at the Site upon completion of the proposed remedial action. To obtain either of these opinions, you must submit appropriate documentation to Ecology and request such an opinion under the VCP. **This letter also does not provide an opinion regarding the sufficiency of any other remedial action proposed for or conducted at the Site.**

Please note that this opinion is based solely on the information contained in the documents listed above. Therefore, if any of the information contained in those documents is materially false or misleading, then this opinion will automatically be rendered null and void.

The state, Ecology, and its officers and employees make no guarantees or assurances by providing this opinion, and no cause of action against the state, Ecology, its officers or employees may arise from any act or omission in providing this opinion.

Again, Ecology appreciates your initiative in conducting independent remedial action and requesting technical consultation under the VCP. As the cleanup of the Site progresses, you may request additional consultative services under the VCP, including assistance in identifying applicable regulatory requirements and opinions regarding whether remedial actions proposed for or conducted at the Site meet those requirements.

If you have any questions regarding this opinion, please contact me by phone at (425) 649-7251 or by email at roger.nye@ecy.wa.gov

Sincerely,

Roger K. Nye

Roger K. Nye
NWRO Toxics Cleanup Program

Enclosures: (1) A-Site Description and Diagrams of the Site

cc: Sonia Fernandez, VCP Coordinator, Ecology

Enclosure A

Description and Diagrams of the Site

Site Description

This section provides Ecology's understanding and interpretation of site conditions, and is the basis for the opinions expressed in the body of the letter.

Site: The Site is defined by the extent of TPHg, TPHd, TPHo, and BTEX released into the soil. The Site is contained within Property located at 12807 Des Moines Memorial Drive South, Burien, King County, WA. The Property is 0.30 acres in size and consists of King County Tax Parcel # 1623049066.

Property and Area Description: The Property is situated on the southwest corner of the intersection between South 128th Street and Des Moines Memorial Drive South. A single story - 1,512 square foot building constructed in 1966 occupies the western portion of the Property. The Property is paved and utilized as a service station facility with three 10,000 gallon USTs, associated product and ventilation pipelines, and two dispenser islands.

The area adjacent to the Property is mixed commercial and residential development. Single-family residential areas (and a fire station) are located north of the Property and residences also to the west. Commercial businesses are located to the south and southwest of the Property. A large city park (North SeaTac Park and Ball Fields) is located east of the Property (see Figure 2).

Site History and Current Use: The Property has been utilized as an auto service station facility since the 1950s. Before then the use of the Property was residential. During its earlier history, the facility included a possible service bay with auto-repair activity (a waste-oil UST was found on the Property). Currently the Property is used as 76-brand fueling station (Ecology UST Site ID 4050, Foodmart #2840) only, with a Food Mart and no auto repair services.

Sources of Contamination: The sources of contamination at the Site were: (1) the historical operations of UST systems, which included tanks, fuel lines, and dispensing equipment, and (2) historical auto service and repair activities.

Physiographic Setting: The Site is situated on a relatively level plateau that lies between the Duwamish River to the east and Puget Sound to the west, at an elevation of approximately 375 feet above mean sea level. The land at the Property slopes gently downward to the south.

Surface/Storm Water System: The surface water body nearest the Site is a tributary of Miller Creek, located approximately 1,900 feet southwest of the Site. Miller Creek flows south and joins Walker Creek, which discharges to Puget Sound. As shown in Figure 4, storm water enters drains along the west and south edges of the Property, and then flows to the municipal storm water system.

Ecological Setting: The large North SeaTac Park located to the east consists of athletic fields near the Site. The land in all other directions is covered with streets, parking lots, and buildings, with small residential yards at more distal locations. The environment near the Site offers little habitat attractive to wildlife.

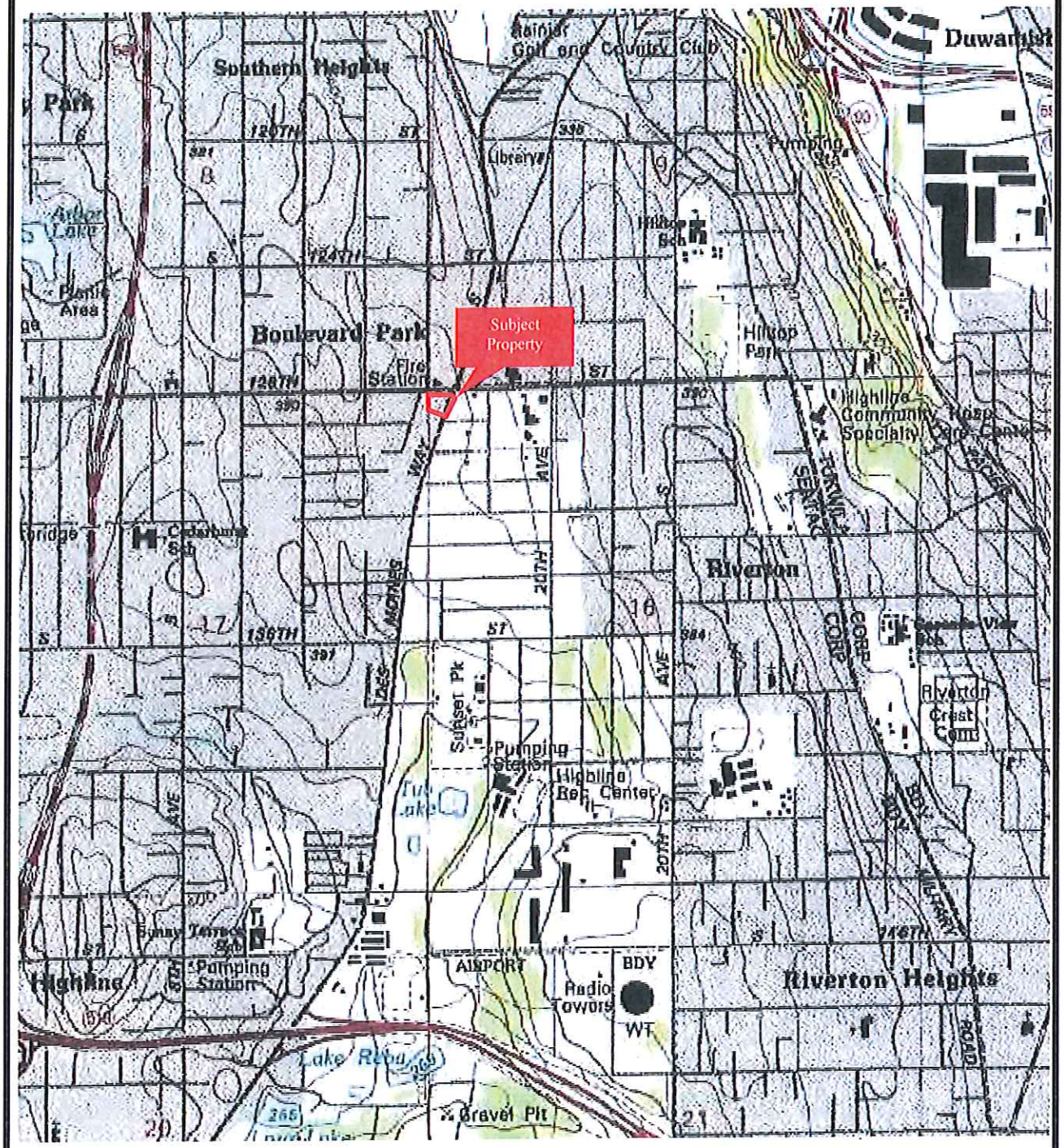
Geology: Fill material consisting of coarse sands and gravel with brick, concrete, and asphalt fragments extends across the Property at depths ranging from 2 to 10 feet bgs. The underlying native material consists of dense sands with varying compositions of silt and gravel (Vashon till) to the maximum depth of exploration (58.0 feet bgs).

Ground water: There was no significant zone of perched ground water encountered to the maximum depth of exploration (58.0 feet bgs), that extended throughout the known Site. There is potential for perched ground water at the Site however, which should be evaluated through any further sampling. Based on well logs and surface water elevations, the regional unconfined ground water was estimated to be 80 to 100 feet bgs beneath the Site. Data from another Site 300 feet to the northeast indicated regional ground water to be approximately 76 feet bgs.

The Site is located immediately adjacent to the well-head protection area for a City of Seattle municipal drinking water well (Boulevard Park Well), located 900 feet to the east (see Figure 2). The well draws water from the "intermediate aquifer" at a depth of approximately 210 to 300 feet bgs, and the Site is located just outside the 10-year capture zone.

Release and Extent of Contamination: The original extent of contamination associated with the gasoline USTs was not defined prior to the operation of the SVE system in that area, and is unknown. TPHg as Stoddard solvent at high levels was found at approximately 50 feet bgs south of the building. The remedial excavation in the area of the heating oil and waste oil USTs extended laterally 30 by 35 feet, and ranged in depths north to south from 9 feet bgs (north) to 23 feet bgs (south). Approximately 920 cubic yards, of contaminated soil from the excavation was removed from the Property. Method A cleanup levels for petroleum hydrocarbons were achieved during 1992 except laterally on the south and east sides of the excavation.

Site Diagrams



US DEPARTMENT OF THE INTERIOR GEOLOGICAL SURVEY 7.5' TOPOGRAPHIC QUADRANGLE

Property Solutions Inc.	PC&F Station 1-284 12807 Des Moines Way SW Seattle, Washington	Property Location Figure 1	N
Topo Quad Name:		Property Boundaries are Approximate	

Google Maps 12807 Des Moines Memorial Dr

Land Use Near the Property

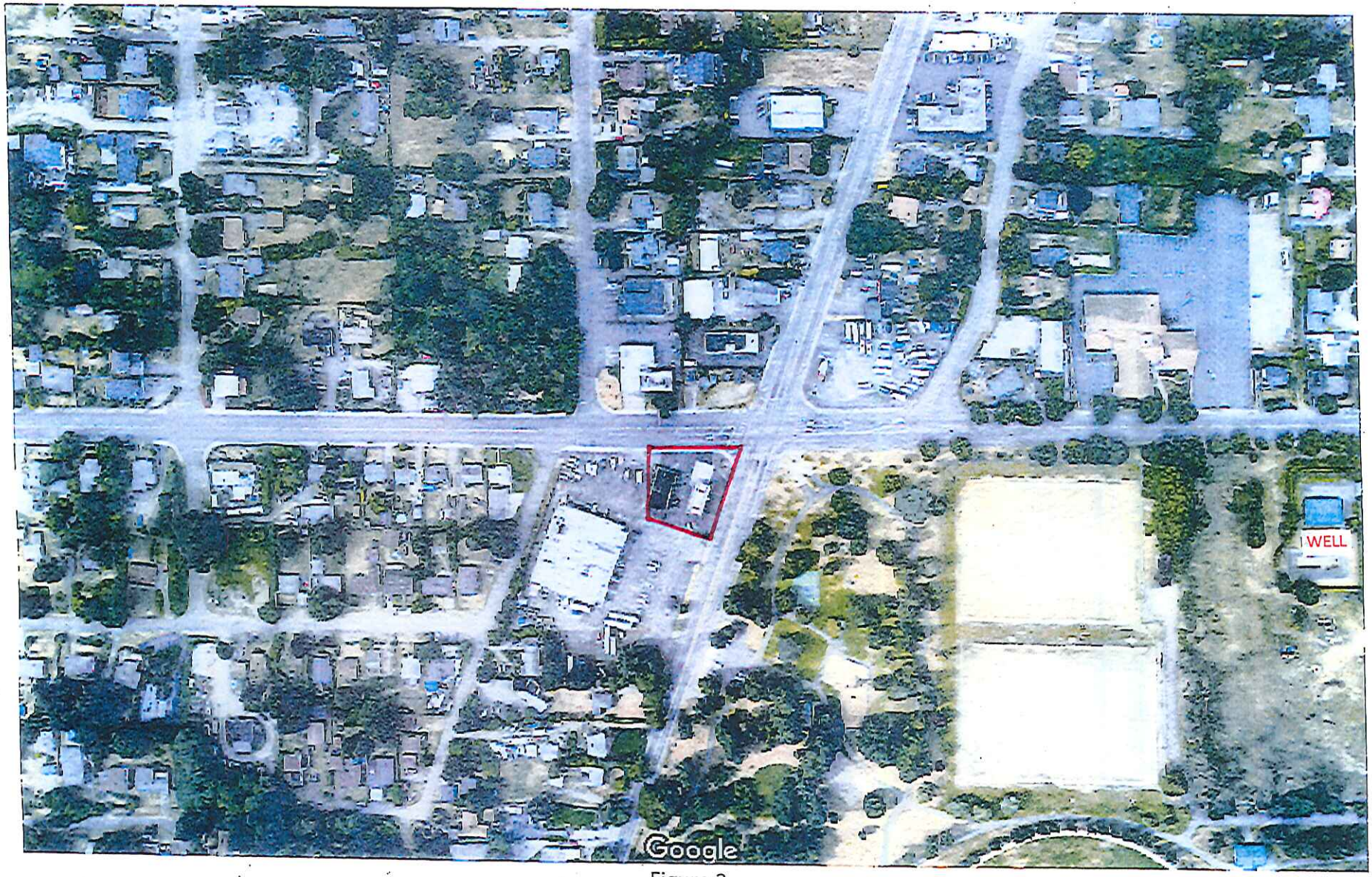
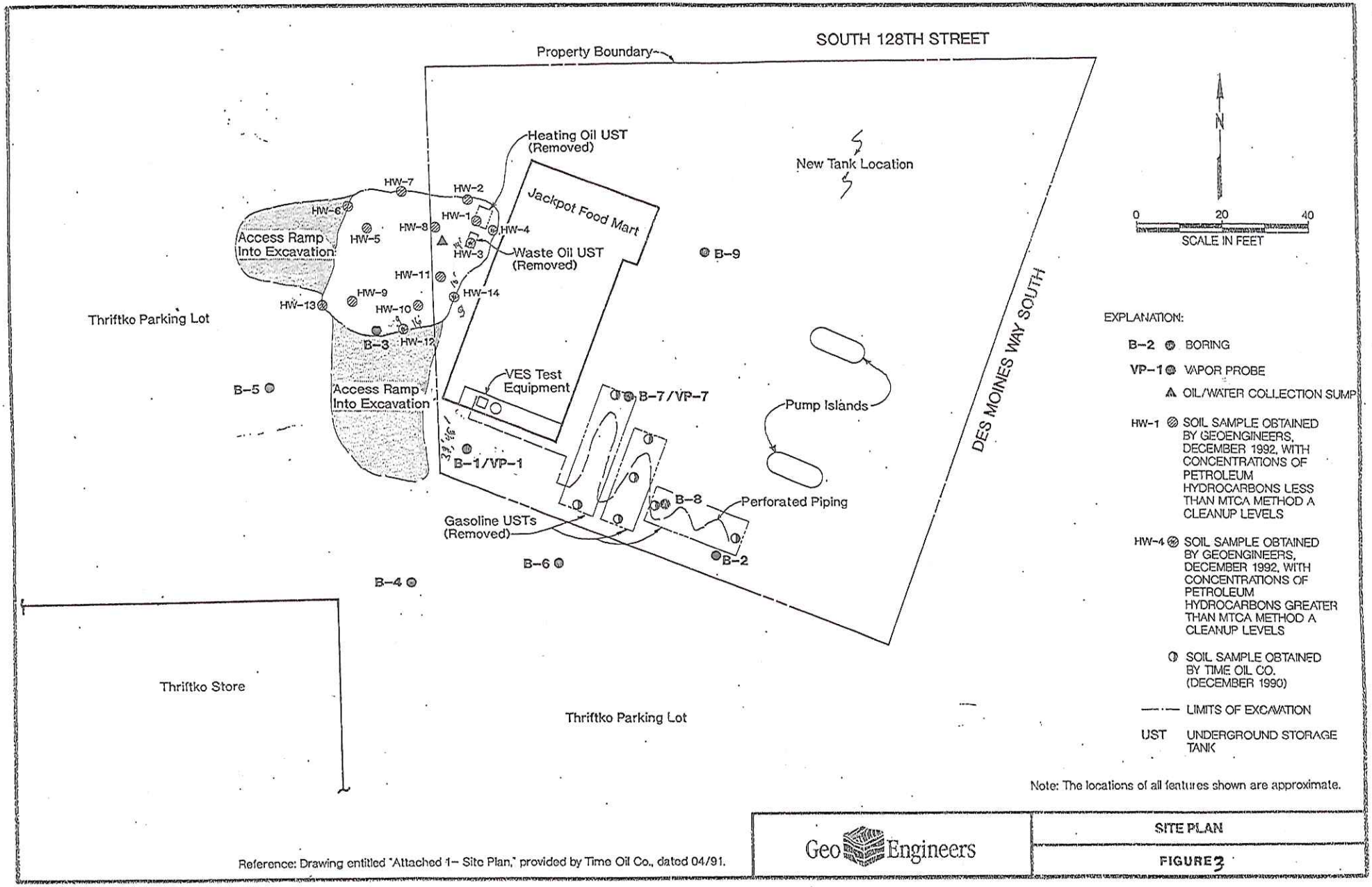


Figure 2

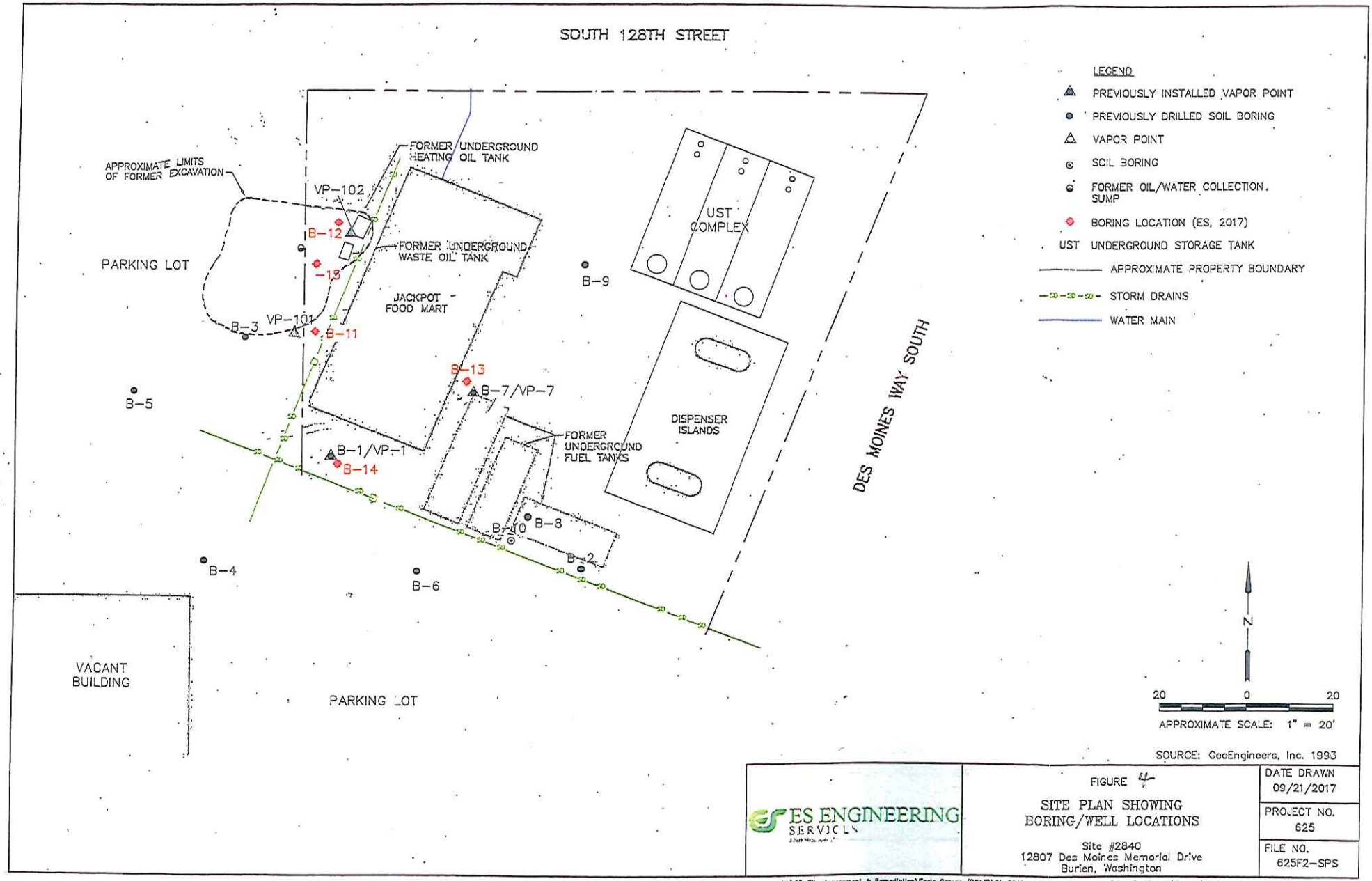


Reference: Drawing entitled "Attached 1– Site Plan," provided by Time Oil Co., dated 04/91.

Geo Engineers

SITE PLAN

FIGURE 3



SOURCE: GeoEngineers, Inc. 1993

ES ENGINEERING SERVICES

FIGURE 4

SITE PLAN SHOWING BORING/WELL LOCATIONS

Site #2840
12807 Des Moines Memorial Drive
Burien, Washington

DATE DRAWN	09/21/2017
PROJECT NO.	625
FILE NO.	625F2-SPS

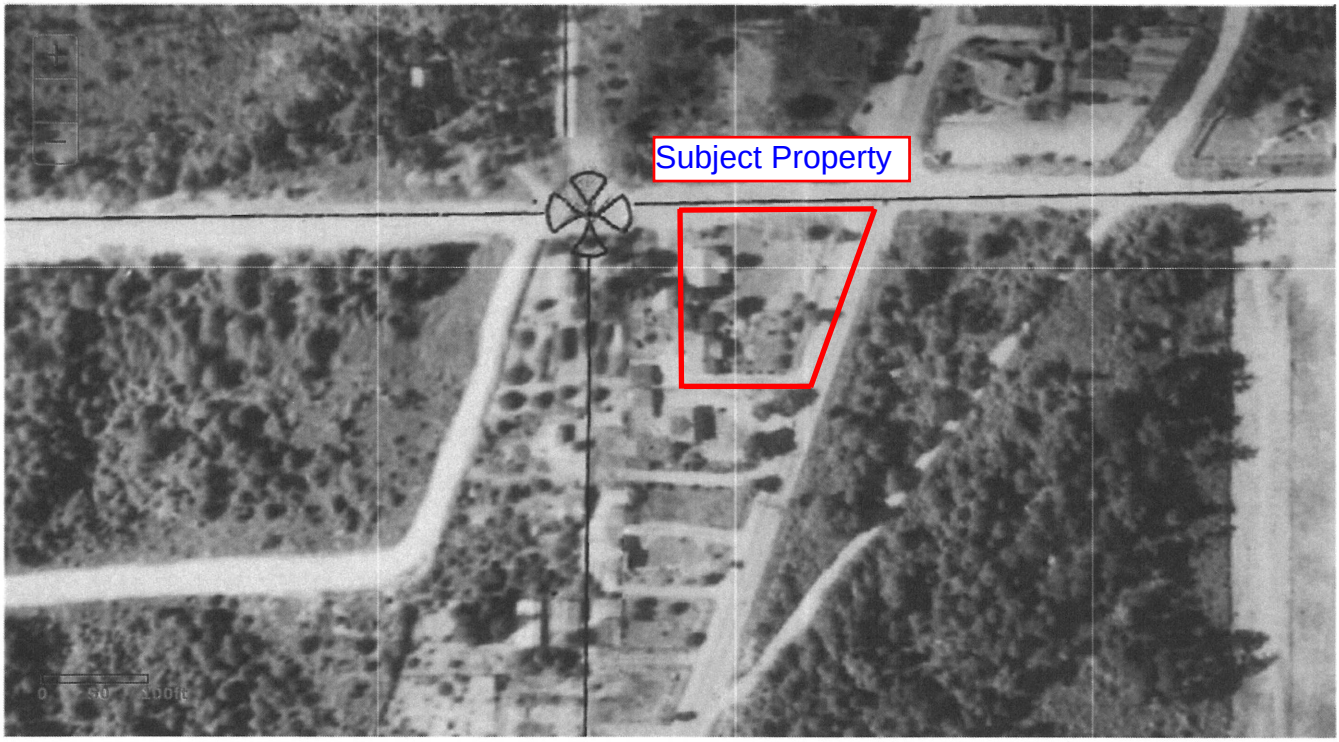
W:\03_Site Assessment & Remediation\Eagle Canyon (PC&F)\01-2840 - Des Moines Memorial Drive, Seattle, WA\Reports\2017 Cleanup Action Report\Figures\625.dwg

APPENDIX B

AERIAL PHOTOGRAPH, 1936

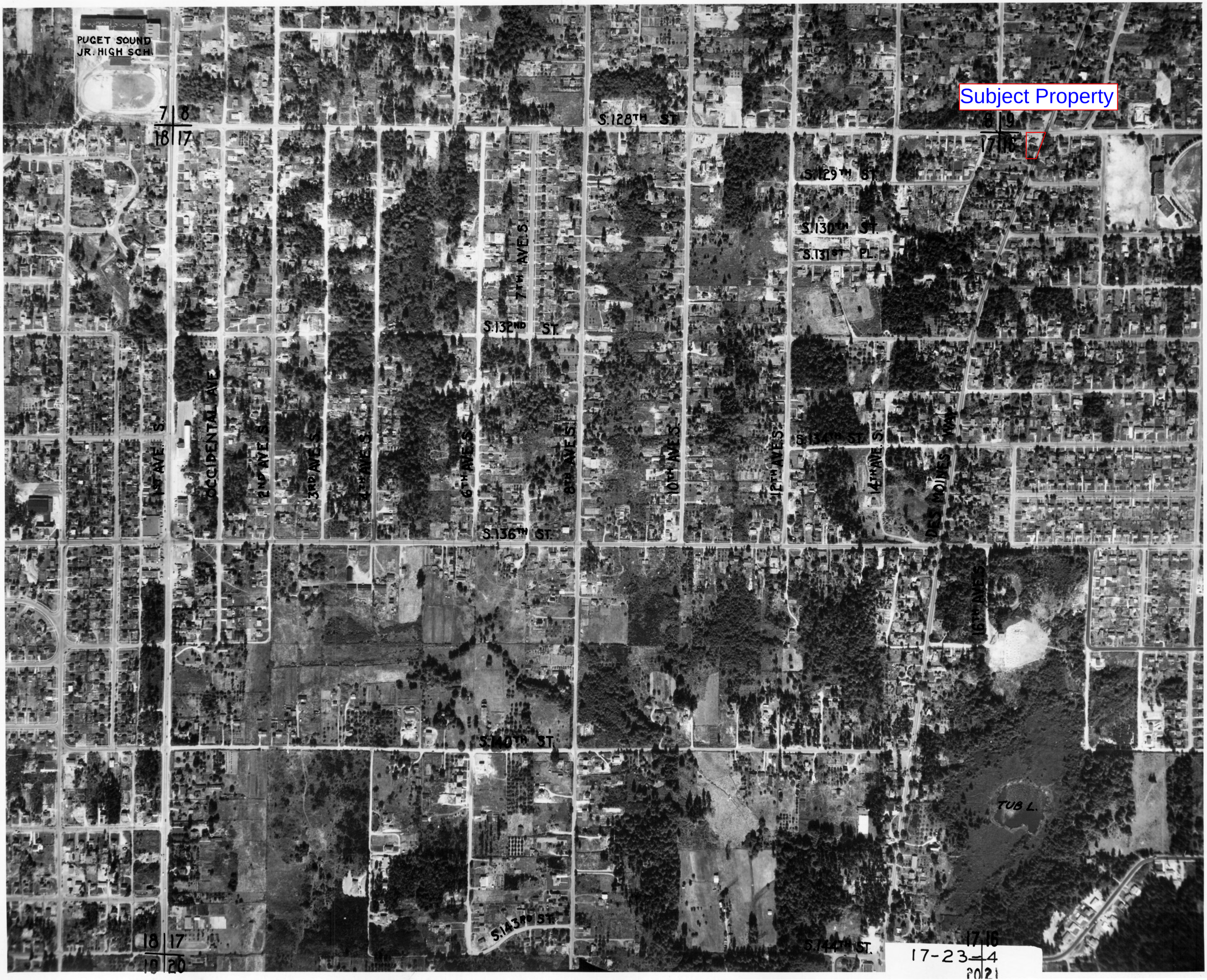
ArcGIS ▾ King County Aerial 1936

Details | Basemap | Share Print | M



APPENDIX C

AERIAL PHOTOGRAPHS, 1954


PUGET SOUND JR. HIGH SCH.
7 8
18 17
S.128TH ST
8 9
17 16
Subject Property
S.129TH ST
S.130TH ST.
S.131ST PL.
S.132ND ST.
7TH AVE S.
1ST AVE S.
OCCIDENTAL AVE
2ND AVE S.
3RD AVE S.
4TH AVE S.
6TH AVE S.
8TH AVE S.
10TH AVE S.
12TH AVE S.
14TH AVE S.
S.134TH ST.
S.136TH ST.
S.140TH ST.
S.143RD ST.
S.144TH ST.
16TH AVE S.
TUB L.
18 17
19 20
17 16
17-23-4
20 21


8
9
17
16
Subject Property

APPENDIX D

DEPARTMENT OF ECOLOGY UST DATABASE SUMMARY

Facility Name: FOODMART #2840 Tag(s): A0044

SITE INFORMATION

FOODMART #2840
12807 DES MOINES MEMORIAL
BURIEN, WA 98168

RESP UNIT: NORTHWEST
COUNTY: KING
LAT: 47.4884444444444
LONG: -122.312083333333

USTID: 4050
FSID: 45191292

TANK INFORMATION

TANK NAME: 425

STATUS: Operational	**STATUS DT:** 08/06/1996	**PERMANENTLY CLOSED DT:**
INSTALL DT: 01/04/1991	**UPGRADE DT:** 11/20/1990	**PERMIT EXPIRATION DT:** 04/30/2018

TANK	PIPING
MATERIAL: Steel Clad with Corrosion Resistant Composite	**MATERIAL:** Fiberglass
CONSTRUCTION: Double Wall Tank	**CONSTRUCTION:** Single Wall Pipe
CORROSION PROT: Corrosion Resistant	**CORROSION PROT:** Corrosion Resistant
MANIFOLDED TANK:	**SFC* at TANK:** Sump
RELEASE DETECT: Interstitial Monitoring	**SFC* at DISP/PUMP:** Sump
TIGHTNESS TEST:	**1ST REL DETECT:** Safe Suction (No Leak Detection)
SPILL PREVENTION: Spill Bucket/Spill Box	**2ND REL DETECT:**
OVERFILL PREVENT: Automatic Shutoff (fill pipe)	**PUMPING SYSTEM:** Safe Suction
ACTUAL CAPACITY: 10000	
CAPACITY RANGE: 10,000 to 19,999 Gallons	

** SFC = Steel Flex Connector*

COMPARTMENT #	SUBSTANCE STORED	SUBSTANCE USED	CAPACITY
1	B Unleaded Gasoline	A Motor Fuel for Vehicles	10000

TANK NAME: 429

STATUS: Operational	**STATUS DT:** 08/06/1996	**PERMANENTLY CLOSED DT:**
INSTALL DT: 01/04/1991	**UPGRADE DT:** 11/20/1990	**PERMIT EXPIRATION DT:** 04/30/2018

TANK	PIPING
MATERIAL: Steel Clad with Corrosion Resistant Composite	**MATERIAL:** Fiberglass
CONSTRUCTION: Double Wall Tank	**CONSTRUCTION:** Single Wall Pipe
CORROSION PROT: Corrosion Resistant	**CORROSION PROT:** Corrosion Resistant
MANIFOLDED TANK:	**SFC* at TANK:** Sump
RELEASE DETECT: Interstitial Monitoring	**SFC* at DISP/PUMP:** Sump
TIGHTNESS TEST:	**1ST REL DETECT:** Safe Suction (No Leak Detection)
SPILL PREVENTION: Spill Bucket/Spill Box	**2ND REL DETECT:**
OVERFILL PREVENT: Automatic Shutoff (fill pipe)	**PUMPING SYSTEM:** Safe Suction
ACTUAL CAPACITY: 10000	
CAPACITY RANGE: 10,000 to 19,999 Gallons	

** SFC = Steel Flex Connector*

COMPARTMENT #	SUBSTANCE STORED	SUBSTANCE USED	CAPACITY
1	B Unleaded Gasoline	A Motor Fuel for Vehicles	10000

TANK NAME: 430

STATUS: Operational	**STATUS DT:** 08/06/1996	**PERMANENTLY CLOSED DT:**
INSTALL DT: 01/04/1991	**UPGRADE DT:** 11/20/1990	**PERMIT EXPIRATION DT:** 04/30/2018

TANK	PIPING
MATERIAL: Steel Clad with Corrosion Resistant Composite	**MATERIAL:** Fiberglass
CONSTRUCTION: Double Wall Tank	**CONSTRUCTION:** Single Wall Pipe
CORROSION PROT: Corrosion Resistant	**CORROSION PROT:** Corrosion Resistant
MANIFOLDED TANK:	**SFC* at TANK:** Sump

RELEASE DETECT:	Interstitial Monitoring	**SFC* at DISP/PUMP:**	Sump
TIGHTNESS TEST:		**1ST REL DETECT:**	Safe Suction (No Leak Detection)
SPILL PREVENTION:	Spill Bucket/Spill Box	**2ND REL DETECT:**	
OVERFILL PREVENT:	Automatic Shutoff (fill pipe)	**PUMPING SYSTEM:**	Safe Suction
ACTUAL CAPACITY:	10000		
CAPACITY RANGE:	5,000 to 9,999 Gallons		

** SFC = Steel Flex Connector*

COMPARTMENT #	SUBSTANCE STORED	SUBSTANCE USED	CAPACITY
1	B Unleaded Gasoline	A Motor Fuel for Vehicles	10000

TANK NAME: 1

STATUS:	Removed	**STATUS DT:**	08/06/1996	**PERMANENTLY CLOSED DT:**	
INSTALL DT:	12/31/1964	**UPGRADE DT:**		**PERMIT EXPIRATION DT:**	

TANK		PIPING	
MATERIAL:		**MATERIAL:**	
CONSTRUCTION:		**CONSTRUCTION:**	
CORROSION PROT:		**CORROSION PROT:**	
MANIFOLDED TANK:		**SFC* at TANK:**	
RELEASE DETECT:		**SFC* at DISP/PUMP:**	
TIGHTNESS TEST:		**1ST REL DETECT:**	
SPILL PREVENTION:		**2ND REL DETECT:**	
OVERFILL PREVENT:		**PUMPING SYSTEM:**	
ACTUAL CAPACITY:	550		
CAPACITY RANGE:	111 TO 1,100 Gallons		

** SFC = Steel Flex Connector*

COMPARTMENT #	SUBSTANCE STORED	SUBSTANCE USED	CAPACITY
1	H Heating Fuel	B Space or Process Heating	550

TANK NAME: 2

STATUS:	Removed	**STATUS DT:**	08/06/1996	**PERMANENTLY CLOSED DT:**	
INSTALL DT:	12/31/1964	**UPGRADE DT:**		**PERMIT EXPIRATION DT:**	

TANK		PIPING	
MATERIAL:		**MATERIAL:**	
CONSTRUCTION:		**CONSTRUCTION:**	
CORROSION PROT:		**CORROSION PROT:**	
MANIFOLDED TANK:		**SFC* at TANK:**	
RELEASE DETECT:		**SFC* at DISP/PUMP:**	
TIGHTNESS TEST:		**1ST REL DETECT:**	
SPILL PREVENTION:		**2ND REL DETECT:**	
OVERFILL PREVENT:		**PUMPING SYSTEM:**	
ACTUAL CAPACITY:	300		
CAPACITY RANGE:	111 TO 1,100 Gallons		

** SFC = Steel Flex Connector*

COMPARTMENT #	SUBSTANCE STORED	SUBSTANCE USED	CAPACITY
1	G Used Oil/Waste Oil	E Recycled (Used Oil)	300

TANK NAME: 261

STATUS:	Removed	**STATUS DT:**	08/06/1996	**PERMANENTLY CLOSED DT:**	
INSTALL DT:	12/31/1964	**UPGRADE DT:**		**PERMIT EXPIRATION DT:**	

TANK		PIPING	
MATERIAL:	Steel	**MATERIAL:**	Steel

CONSTRUCTION:	Single Wall Tank	**CONSTRUCTION:**	
CORROSION PROT:		**CORROSION PROT:**	
MANIFOLDED TANK:		**SFC* at TANK:**	
RELEASE DETECT:		**SFC* at DISP/PUMP:**	
TIGHTNESS TEST:		**1ST REL DETECT:**	
SPILL PREVENTION:		**2ND REL DETECT:**	
OVERFILL PREVENT:		**PUMPING SYSTEM:**	
ACTUAL CAPACITY:	8000		
CAPACITY RANGE:			

** SFC = Steel Flex Connector*

COMPARTMENT #	SUBSTANCE STORED	SUBSTANCE USED	CAPACITY
1	B Unleaded Gasoline	A Motor Fuel for Vehicles	8000

TANK NAME: 364

STATUS:	Removed	**STATUS DT:**	08/06/1996	**PERMANENTLY CLOSED DT:**	
INSTALL DT:	12/31/1964	**UPGRADE DT:**		**PERMIT EXPIRATION DT:**	

TANK		PIPING	
MATERIAL:	Steel	**MATERIAL:**	Steel
CONSTRUCTION:	Single Wall Tank	**CONSTRUCTION:**	
CORROSION PROT:		**CORROSION PROT:**	
MANIFOLDED TANK:		**SFC* at TANK:**	
RELEASE DETECT:		**SFC* at DISP/PUMP:**	
TIGHTNESS TEST:		**1ST REL DETECT:**	
SPILL PREVENTION:		**2ND REL DETECT:**	
OVERFILL PREVENT:		**PUMPING SYSTEM:**	
ACTUAL CAPACITY:	8000		
CAPACITY RANGE:			

** SFC = Steel Flex Connector*

COMPARTMENT #	SUBSTANCE STORED	SUBSTANCE USED	CAPACITY
1	B Unleaded Gasoline	A Motor Fuel for Vehicles	8000

TANK NAME: 428

STATUS:	Removed	**STATUS DT:**	08/06/1996	**PERMANENTLY CLOSED DT:**	
INSTALL DT:	12/31/1964	**UPGRADE DT:**		**PERMIT EXPIRATION DT:**	

TANK		PIPING	
MATERIAL:		**MATERIAL:**	
CONSTRUCTION:		**CONSTRUCTION:**	
CORROSION PROT:		**CORROSION PROT:**	
MANIFOLDED TANK:		**SFC* at TANK:**	
RELEASE DETECT:		**SFC* at DISP/PUMP:**	
TIGHTNESS TEST:		**1ST REL DETECT:**	
SPILL PREVENTION:		**2ND REL DETECT:**	
OVERFILL PREVENT:		**PUMPING SYSTEM:**	
ACTUAL CAPACITY:	10000		
CAPACITY RANGE:			

** SFC = Steel Flex Connector*

COMPARTMENT #	SUBSTANCE STORED	SUBSTANCE USED	CAPACITY
1	A Leaded Gasoline	A Motor Fuel for Vehicles	10000

UST_SiteTankDataSmry2014

APPENDIX E

DEPARTMENT OF ECOLOGY SITE CLEANUP DETAILS

DEPARTMENT OF ECOLOGY State of Washington

Cleanup Site Details

Cleanup Site ID: 9267

Cleanup Site ID: 9267 **Facility/Site ID:** 45191292 **UST ID:** 4050 Site Page Site Documents View Map

Cleanup Site Name: Time Oil 01284 Glossary

Alternate Names: CONVENIENCE RETAILERS 2840, FOODMART #2840, Foodmart 2840, JACKPOT STATION 284, Time Oil 01284, TIME OIL CO JACKPOT FOOD MART DES MOINES

LOCATION

Address: 12807 DES MOINES MEMORIAL DR S **City:** SEATTLE **Zip Code:** 98168 **County:** King

Latitude: 47.48844 **Longitude:** -122.31208 **WRIA:** 9 **Legislative District:** 33 **Congressional District:** 7 **TRS:** 23N 4E 16

DETAIL

Status: Cleanup Started **NFA Received?** No **Is PSI site?** No

Statute: MTCA **NFA Date:** N/A **Current VCP?** Yes **Past VCP?** Yes

Site Rank: N/A **NFA Reason:** N/A **Brownfield?** No

Site Manager: Nye, Roger **Responsible Unit:** Northwest **Active Institutional Control?** No

CLEANUP UNITS

Cleanup Unit Name	Unit Type	Unit Status	Resp Unit	Unit Manager	Current Process
Time Oil 01284	Upland	Cleanup Started	NW	Nye, Roger	Voluntary Cleanup Program

ACTIVE INSTITUTIONAL CONTROLS

Instrument Type	Restriction Media	Restrictions/Requirements	Date	Recording Number	Recording County	Tax Parcel
There are no current Institutional Controls in effect for this site.						

AFFECTED MEDIA & CONTAMINANTS

	MEDIA					
Contaminant	**Soil**	**Groundwater**	**Surface Water**	**Sediment**	**Air**	**Bedrock**
Benzene	C					
Non-Halogenated Solvents	C					
Petroleum-Diesel	C					
Petroleum-Gasoline	C					
Petroleum-Other	C					

Key:
B - Below Cleanup Level C - Confirmed Above Cleanup Level RA - Remediated-Above
S - Suspected R - Remediated RB - Remediated-Below

SITE ACTIVITIES

Activity	Status	Start Date	End Date/ Completion Date
LUST - Notification	Completed		12/21/1990
LUST - Report Received	Completed		5/24/1991
LUST - Report Received	Completed		10/27/1993
LUST - Report Received	Completed		10/27/1993
LUST - Report Received	Completed		12/5/1997

Cleanup Site Details

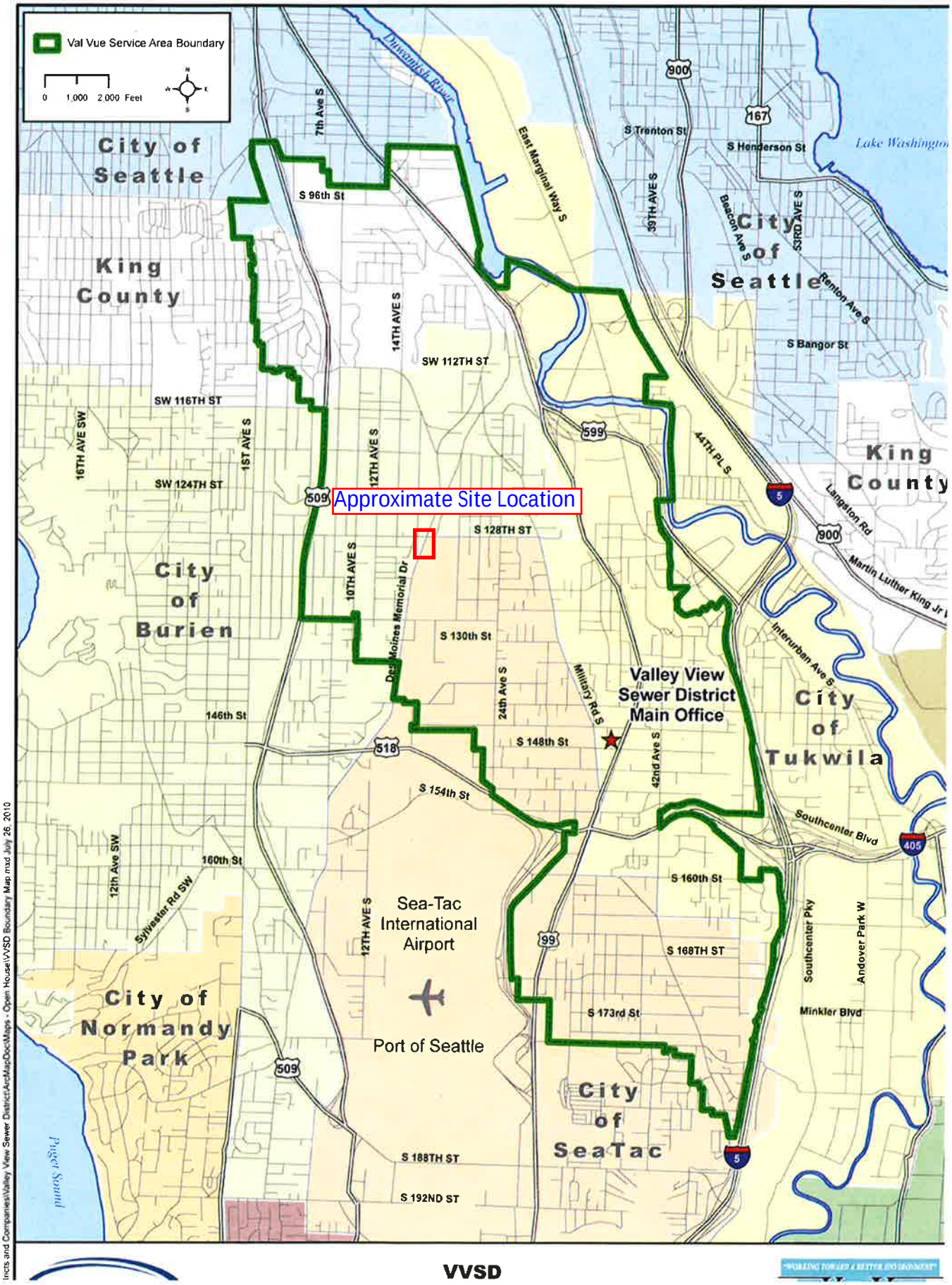
Cleanup Site ID: 9267

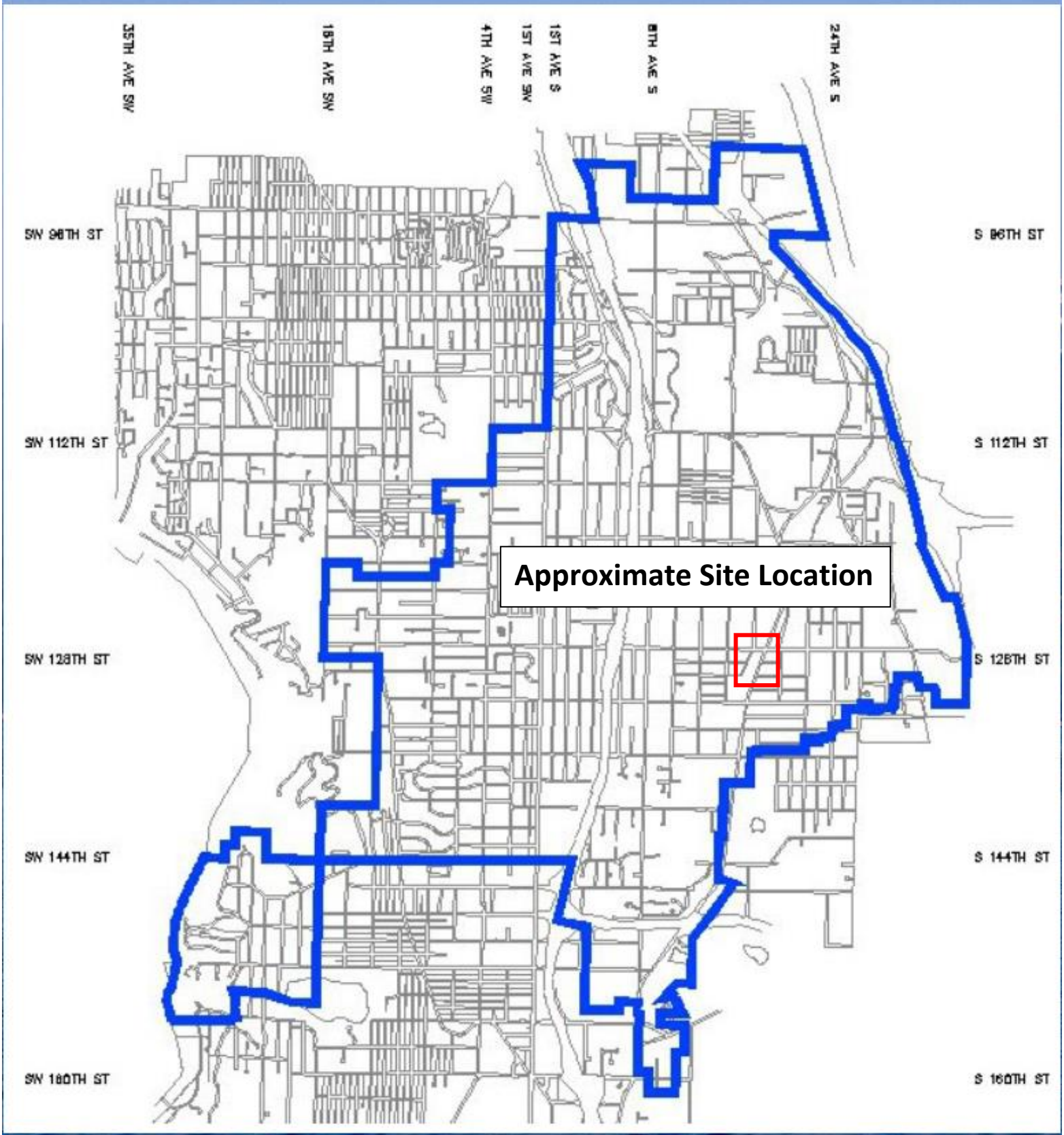
SITE ACTIVITIES

Activity	Status	Start Date	End Date/ Completion Date
LUST - Report Received	Completed		12/5/1997
LUST - Report Received	Completed		11/22/2002
LUST - Report Received	Completed		10/5/2017
VCP Opinion on Site Cleanup	Completed	10/15/2017	5/28/2019
LUST - Report Received	Completed		4/18/2018

APPENDIX F

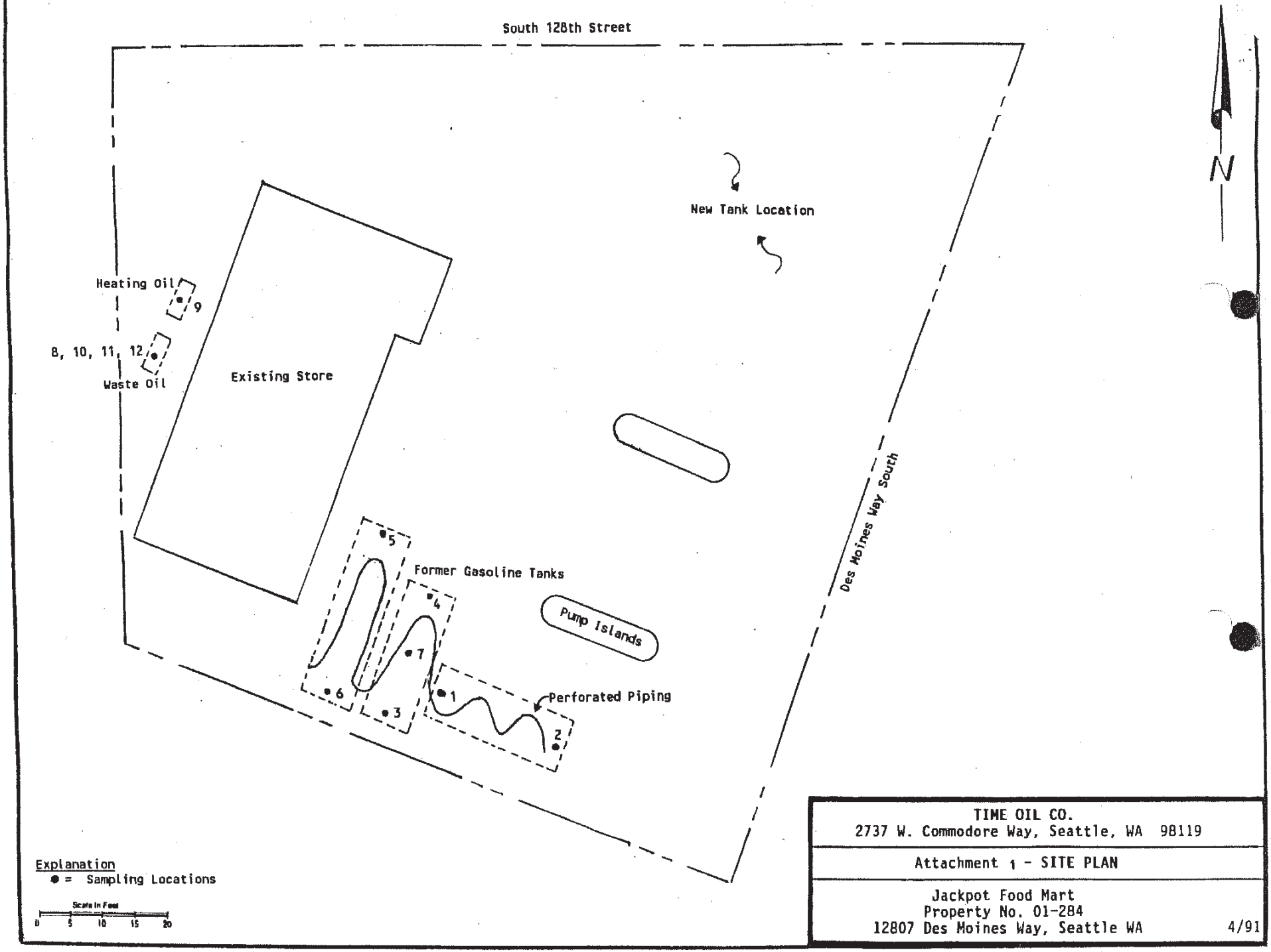
LOCAL UTILITY DISTRICT MAPS (WATER & SEWER)


Val Vue Service Area Boundary
0 1,000 2,000 Feet
City of Seattle
King County
City of Burien
City of Normandy Park
City of SeaTac
City of Tukwila
Valley View Sewer District Main Office
Approximate Site Location
Sea-Tac International Airport
Port of Seattle
Puget Sound
Lake Washington
Duwamish River
East Marginal Way S
S 96th St
SW 112TH ST
SW 116TH ST
SW 124TH ST
S 128TH ST
S 130th St
S 148th St
S 154th St
S 160th St
S 168TH ST
S 173rd St
S 188TH ST
S 192ND ST
146th St
160th St
S Trenton St
S Henderson St
S Bangor St
Renton Ave S
Langston Rd
Martin Luther King Jr
Interurban Ave S
Southcenter Blvd
Southcenter Pky
Andover Park W
Minkler Blvd
Military Rd S
Des Moines Memorial Dr
7th Ave S
14TH AVE S
12TH AVE S
10TH AVE S
1ST AVE S
16TH AVE SW
12th Ave SW
24th Ave S
42nd Ave S
39TH AVE S
53RD AVE S
44TH PL S
Beacon Ave S
Sylvester Rd SW
900
167
599
509
518
99
405
5
VVSD
"WORKING TOWARD A BETTER ENVIRONMENT"
Districts and Companies\Valley View Sewer District\ArcMapDocs\Maps - Open House\VVSD Boundary Map.mxd July 26, 2010



APPENDIX G

1990 INITIAL LEAK DETECTION SOIL SAMPLE LOCATIONS (TIME OIL)



TIME OIL CO.
2737 W. Commodore Way, Seattle, WA 98119

Attachment 1 - SITE PLAN

Jackpot Food Mart
Property No. 01-284
12807 Des Moines Way, Seattle WA

4/91

Attachment 2
ANALYTICAL RESULTS (ppm)

Gasoline Tanks:

Sample No.	Depth (ft.)	TPH	Benzene	Toluene	Ethylbenzene	Xylenes
1	12	6	0.91	2.0	0.13	2.38
2	12	ND	ND	1	2	3
3	13	8	0.13	0.26	0.034	3.1
4	13	ND	ND	0.001	0.012	0.012
5	15	ND	ND	ND	ND	ND
6	10	ND	0.001	ND	ND	ND
7	18	ND	ND	ND	ND	ND

Oil Tanks:

Sample No.	Depth (ft.)	TPH	TCLP Lead	Methylene Chloride	PCBs	Toluene	Ethyl benzene	Xylenes
8	7	4000	17	0.16	ND	0.004	0.005	0.054
9-HOT	10	590	0.12	0.02	ND	ND	ND	ND
10	10	4700	2	0.01	1	0.098	0.17	1.4
11	11	1300	0.05	0.01	ND	ND	0.028	0.420
12	12	900	0.04	0.01	ND	0.008	0.036	0.410

Soil Stockpile:

Sample No.	TCLP Lead
W01	4.5

aed\may91\1284.20d

APPENDIX H

CHAIN(S)-OF-CUSTORY, ALISTO 1997

WA METHODS

1112-262

AEN AMERICAN ENVIRONMENTAL NETWORK

PORTLAND DIVISION, 17400 SW UPPER BOONES FERRY RD., SUITE 260, PORTLAND, OR 97224
(503) 624-5449 PHONE (503) 639-6889 FAX

CHAIN OF CUSTODY RECORD 9702517

COMPANY Alisto
ADDRESS 9160 SW [illegible] RD # 700, PTLD 97223
PHONE 620-8420 FAX 620-1923
PROJECT NAME/LOCATION Time Oil - Des Moines WA
PROJECT NUMBER 20082
PROJECT MANAGER Blu Dray

SAMPLED BY TANYA R. TREAT (PRINT NAME) SIGNATURE [signature]
(PRINT NAME) SIGNATURE

TURNAROUND TIME ____ DAY (S)

ANALYSES: WTPH-HCID, WTPH-G/BTEX, TPb

DATE	TIME	SAMPLE ID/DESCRIPTION		GRAB	COMP	# OF CONTAINERS	MATRIX	PRESERVED Y/N	WTPH-HCID	WTPH-G/BTEX	TPb	COMMENTS
2/6/97	842	VP-3-10	VP-101-10			1	S	N	X	X	X	
	914	VP-3-15	VP-101-15			1						
	920	VP-3-30	VP-101-30			1						
	953	VP-3-55	VP-101-55			1						
	1145	VP-4-10	VP-102-10			1						
	1150	VP-4-15	VP-102-15			1						
	1155	VP-4-20	VP-102-20			1						
	1204	VP-4-30	VP-102-30			1						
	1400	B-11-20				1						
	1500	B-11-30				1						
	1513	B-11-40				1						
	1525	B-11-50				1	↓	↓	X			

RESULTS TO:

INVOICE TO:

RELINQUISHED BY	DATE/TIME	RECEIVED BY	RELINQUISHED BY	DATE/TIME	RECEIVED BY
[signature]	2/8/97 1200	[signature]	[signature]	2/12/97 1800	Cindy Day
RELINQUISHED BY	DATE/TIME	RECEIVED BY	RELINQUISHED BY	DATE/TIME	RECEIVED FOR LABORATORY BY
					Cindy Day

METHOD OF SHIPMENT

REMARKS: * Contact JMD/Alisto for all groups *

* WA METHODS *

AEN AMERICAN ENVIRONMENTAL NETWORK

PORTLAND DIVISION, 17400 SW UPPER BOONES FERRY RD , SUITE 260, PORTLAND, OR 97224
(503) 624-5449 PHONE (503) 639-6889 FAX

CHAIN OF CUSTODY RECORD 9702517

COMPANY Alisto
ADDRESS 9160 SW Hazelfern RD #700, PTLD 97224
PHONE 620-8420 FAX 620-1923
PROJECT NAME/LOCATION Time Oil - Des Moines Way
PROJECT NUMBER 20083
PROJECT MANAGER Brian Drury

SAMPLED BY
TANYA P. TREAT (PRINT NAME) [signature] SIGNATURE
PRINT NAME) SIGNATURE

TURNAROUND TIME ____ DAY (S)

ANALYSES: WTPH-HCID, WTPH-Gas/BTEX, T-Pb

DATE	TIME	SAMPLE ID/DESCRIPTION	GRAB	COMP	# OF CONTAINERS	MATRIX	PRESERVED Y/N	WTPH-HCID	WTPH-Gas/BTEX	T-Pb							COMMENTS
2/6/97	842	VP-3-10			1	S	N	X	X	X							
↓	846	VP-3-15			1	↓	↓	↓									
	920	VP-3-30			1												
	953	VP-3-55			1												
	1145	VP-4-10			1												
	1150	VP-4-15			1												
	1155	VP-4-20			1												
	1204	VP-4-30			1												
	1402	B-11-20			1												
	1500	B-11-30			1												
	1513	B-11-40			1												
	1525	B-11-55			1			X									

RESULTS TO:

INVOICE TO:

RELINQUISHED BY	DATE/TIME	RECEIVED BY	RELINQUISHED BY	DATE/TIME	RECEIVED BY
[signature]	2/8/97 1200	[signature]	[signature]	2/12/97 18:00	Cindy Day
RELINQUISHED BY	DATE/TIME	RECEIVED BY	RELINQUISHED BY	DATE/TIME	RECEIVED FOR LABORATORY BY: Cindy Day

METHOD OF SHIPMENT

REMARKS: * Contact JMD/Alisto for followups *

APPENDIX I

HASP, DAILY TAILGATE FORMS AND ONE CALL TICKET

14.0 ACKNOWLEDGMENT AND UNDERSTANDING OF PLAN

This health & safety plan was prepared by the undersigned, having successfully completed OSHA standard 29 CFR 1910.120 40-hour hazardous materials health & safety training.

Site Health & Safety Officer: _____
Nicholas J. Olivier

Project Manager: _____
Laura B. Skow

Program Manager: _____
Dane Nygaard

I UNDERSTAND AND AGREE TO THE ABOVE PLAN

	Name & Company	Date
Contractors:	Travis Weisenbeck	8-7-17
	Nick Stuats	8-7-17
	Wesley Kennedy	8-8-17
	Kody Brooks	8/8/17
	James Croble	8/8/17
Geologist/Field Technicians:	Mike Bapst	8/8/19
Other:	Tim Lee	9/5/19
	Michael Wetherhead	9/5/19
	Vuong Knight	9/9/19
	Rayan	9/9/19
	Dusty Smith	9/11/19

SITE SAFETY BRIEFING FORM

Site: 2840

Date: 9/11/19 Time: _____

Project No: 029RC1 - 123245

Task: soil borings / soil sampling Health/Safety Officer: Nick Oliver

Person Providing Briefing: Nick Oliver

Topics:

- [x] Site HASP
- [x] Chemical Hazards
- [x] Equipment Hazards
- [ ] Electrical Hazards
- [x] Heat Stress
- [x] Personal Decontamination
- [x] Personal Hygiene
- [x] Employee Rights/Responsibilities
- [x] Hazard Evaluations
- [x] Emergency Response Procedures

Persons in Attendance: (Name/Organization)

Dusty Smith Holt services

Michael Weatherford Holt

Persons in Attendance: (Name/Organization)

Notes/Comments:

SITE SAFETY BRIEFING FORM

Site: 2840

Date: 9/10/19 Time: 7:15

Project No:

Task: Soil borings/Soil Sampling Health/Safety Officer: Nick Olivier

Person Providing Briefing: Nick Olivier

Topics:

- ☐ Site HASP
- ☒ Chemical Hazards
- ☑ Equipment Hazards
- ☐ Electrical Hazards
- ☐ Heat Stress
- ☑ Personal Decontamination
- ☑ Personal Hygiene
- ☐ Employee Rights/Responsibilities
- ☒ Hazard Evaluations
- ☐ Emergency Response Procedures

Persons in Attendance: (Name/Organization)	Persons in Attendance: (Name/Organization)
Ryan Darling Holt	
Duane Kindle Holt	
Michael Weatherford Holt	

Notes/Comments:

SITE SAFETY BRIEFING FORM

Site: 2840

Date: 9/9/19 Time: 7:00

Project No:

Task: Soil borings Health/Safety Officer: Nick Olivier

Person Providing Briefing: Nick Olivier

Topics:

- [x] Site HASP
- [x] Chemical Hazards
- [x] Equipment Hazards
- [x] Electrical Hazards
- [x] Heat Stress
- [x] Personal Decontamination
- [x] Personal Hygiene
- [x] Employee Rights/Responsibilities
- [x] Hazard Evaluations
- [x] Emergency Response Procedures

Persons in Attendance: (Name/Organization)

Duane Kinzie Holt services
Ryan Dorn Holt
Michael Weatherford Holt

Persons in Attendance: (Name/Organization)

Notes/Comments:

SITE SAFETY BRIEFING FORM

Site: 2840

Date: 9/5/19 Time: 07:15

Project No: 123145

Task: Vac truck, bore hole clearing Health/Safety Officer: Nick Olivier

Person Providing Briefing: Nick Olivier

Topics:

- [x] Site HASP
- [x] Chemical Hazards
- [x] Equipment Hazards
- [ ] Electrical Hazards
- [x] Heat Stress
- [x] Personal Decontamination
- [x] Personal Hygiene
- [x] Employee Rights/Responsibilities
- [x] Hazard Evaluations
- [x] Emergency Response Procedures

Persons in Attendance: (Name/Organization)

Michael Weatherford Holt

Tim Lee Holt

Persons in Attendance: (Name/Organization)

Notes/Comments:

Reviewed HASP. discussed traffic, driving, and vehicles safety. Discussed site security and pedestrian issues.

Nicholas Olivier

From: wa@occinc.com
Sent: Wednesday, August 28, 2019 11:27 AM
To: NOLIVIER@MONTROSE-ENV.COM
Subject: Ticket: 19378467

WASHINGTON UTILITY NOTIFICATION CENTER

DO NOT REPLY TO THIS EMAIL

This ticket is valid for 45 days from the legal start date and time. The expiration date and time is 10/12/2019 11:30 AM .

Washington Ticket#:	19378467	2 FULL BUSINESS DAYS		
Transmit Date:	8/28/19	**Time:**	11:27 AM	
Original Call Date:	8/28/19	**Time:**	11:18 AM	**Type:** WEB
Work to Begin Date:	9/05/19	**Time:**	7:00 AM	

Caller Information

Company:	MONTROSE ENVIRONMENTAL	**Type:**	CONTRACTOR
Contact Name:	NICK OLIVIER	**Phone:**	(360) 305-9942
Alt. Contact:	NICK OLIVIER - CALL 2ND	**Phone:**	(360) 305-9942
Best Time:	ANY TIME	**Fax:**	
Address:	4150 'B' PLACE NORTHWEST; AUBURN, WA 98001		
Caller Email:	NOLIVIER@MONTROSE-ENV.COM		

Dig Site Information

Type of Work:	DRILLING/SOIL BORINGS
Work Being Done For:	ENVIRONMENTAL SITE ASSESSMENT

Dig Site Location

County:	KING	**State:**	WA
Place:	BURIEN		
Address / Street:	12807 DES MOINES MEMORIAL DR		
Nearest Intersection:	S 128TH ST		

Location of Work:

WORK IS TO TAKE PLACE ON GAS STATION PROPERTY. SIX DRILLING LOCATIONS THROUGHOUT GAS STATION PROPERTY. ALL LOCATIONS MARKED IN WHITE PAINT. PLEASE MARK ANY AND ALL UTILITIES LEADING UP TO THE PROPERTY BOUNDARY. SITE PLAN ATTACHED SHOWING DRILLING LOCATIONS.

Remarks:

AREA MARKED IN WHITE

Map Twp: 23N **Rng:** 4E **Sect-Qtr:** 8-SE,9-SW,17-NE,16-NW

Excavation Coordinates for # Polygons: 1

Poly 1: NW Lat: 47.4885690 **Lon:** -122.3130250 **SE Lat:** 47.4877590 **Lon:** -122.3105670

Members Notified

District	Company	Marking Concerns	Customer Service	Repair
KCDPW02	KING COUNTY ROADS	(206)477-2535	(206)296-8153	(206)296-8153
KCW2001	KING COUNTY WATER DIST #20	(206)243-3990	(206)243-3990	(206)243-3990

MCI01	MCI	(800)289-3427	(800)289-3427	(800)289-3427
POSTIA01	PORT OF SEATTLE	(206)708-5089	(206)708-5089	(206)787-7771
PUGG03	PUGET SOUND ENERGY GAS	(888)728-9343	(888)225-5773	(888)225-5773
QLNWA16	CTLQL-CENTURYLINK	(800)778-9140	(800)283-4237	(800)573-1311
SEACL01	SEATTLE CITY LIGHT	(206)684-4239	(206)684-4239	(206)684-3000
SEATAC01	CITY OF SEATAC	(206)973-4770	(206)973-4770	(206)973-4771
VALVUE01	VALLEY VIEW SEWER DISTRICT	(206)242-3236	(206)242-3236	(206)242-3236

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.

APPENDIX J

BORINGS LOGS, 2017 (ES) & 2019 (Montrose)

SOIL BORING LOG **Boring/Well Number: B-11** **Sheet 1 of 3**

Client/Site	Eagle Canyon Capital, LLC - Site No. 2840	Date:	8/7/2017	
Address:	12807 Des Moines Memorial Drive	Driller:	Cascade Drilling, LP	Rig type: CME 55
	Burien, Washington	Drilling Foreman:	James Gobel	
Project No.:	123245	Method:	Hollow Stem Auger	Hole diameter: 8"
Logged By:	N. Olivier			

Well Pack:	pellets: n/a	Well Construction:	Casing: n/a	Screen: n/a
	sand (#10/20): n/a		Casing diameter: n/a	Screen slot: n/a
	chips: 2-40 ft bgs	Depth to GW:	not encountered	
	concrete: 0-2 ft bgs	Total Depth of Boring:	40 ft bgs	

Sample Type	Sample No.	Blow Count	Analytical Sample Time	Analytical Sample Recovery	Well Construction	Depth Scale (ft)	Litho Column	Descriptions of Materials and Conditions	PID (PPM)
								8" asphalt surface	
hand auger	B-11-2.5	n/a		n/a		1 2 3 4	FILL	8"-4.5' - Medium brown, moist, moderately loose previously placed fill	0.0
SS	B-11-5	14 15 15				5 6 7 8 9	SM w/gravel	Medium brown, moist, medium dense silty sand with gravel. 55% sand, 30% silt, 10% gravel. No HCLO, no staining.	0.0
SS	B-11-10	27 50 for 6"	13:00			10 11 12 13 14	SM w/gravel	Medium grey, moist, very dense silty sand with gravel. 50% sand, 30% silt, 20% gravel (possibly previously placed rill. Moderate HCLO, no staining.	700
SS	B-11-15	50 for 6"	13:30			15	SM w/gravel	Same as above, moderate HCLO, no staining.	56.2

Concrete

Bentonite Chips

10/20 Sand

Water Table

n/a = Not applicable

NR = No recovery

SS = 3" diameter split spoon sampler

HCLO = hydrocarbon-like odor

Comments:
Boring backfilled with hydrated,3/8 inch sodium bentonite chips. Concrete seal at surface.
Groundwater not encountered during drilling.

SOIL BORING LOG **Boring/Well Number: B-11** **Sheet 2 of 3**

Client/Site	Eagle Canyon Capital, LLC - Site No. 2840	Date:	8/7/2017		
Address:	12807 Des Moines Memorial Drive	Driller:	Cascade Drilling, LP	Rig type: CME 55	
	Burien, Washington	Drilling Foreman:	James Gobel		
Project No.:	123245	Method:	Hollow Stem Auger	Hole diameter: 8"	
Logged By:	N. Olivier				

Well Pack:	pellets: n/a	Well Construction:	Casing: n/a	Screen: n/a	
	sand (#10/20): n/a		Casing diameter: n/a	Screen slot: n/a	
	chips: 2-40 ft bgs	Depth to GW:	not encountered		
	concrete: 0-2 ft bgs	Total Depth of Boring:	40 ft bgs		

Sample Type	Sample No.	Blow Count	Analytical Sample Time	Analytical Sample Recovery	Well Construction	Depth Scale (ft)	Litho Column	Descriptions of Materials and Conditions	PID (PPM)
SS	B-11-20	50 for 6"				16 17 18 19 20 21 22 23	SM w/gravel	Medium grey, moist, very dense silty sand with gravel. 50% sand, 20% silt, 20% gravel. No HCLO, no staining.	0.0
SS	B-11-25	21 25 25				24 25 26 27 28 29	SW	Medium grey, moist, medium dense well graded sand. 95% sand, 0% silt, 5% gravel. No HCLO, no staining.	0.0
SS	B-11-30	27 25	13:40			30 31	SW	Same as above. No HCLO, no staining.	0.0

Concrete

Bentonite Chips

10/20 Sand

Water Table

n/a = Not applicable

NR = No recovery

SS = 3" diameter split spoon sampler

Comments:
Boring backfilled with hydrated,3/8 inch sodium bentonite chips. Concrete seal at surface.
Groundwater not encountered during drilling.

SOIL BORING LOG **Boring/Well Number: B-11** **Sheet 3 of 3**

Client/Site	Eagle Canyon Capital, LLC - Site No. 2840	Date:	8/7/2017	
Address:	12807 Des Moines Memorial Drive	Driller:	Cascade Drilling, LP	Rig type: CME 55
	Burien, Washington	Drilling Foreman:	James Gobel	
Project No.:	123245	Method:	Hollow Stem Auger	Hole diameter: 8"
Logged By:	N. Olivier			

Well Pack:	pellets: n/a	Well Construction:	Casing: n/a	Screen: n/a
	sand (#10/20): n/a		Casing diameter: n/a	Screen slot: n/a
	chips: 2-40 ft bgs	Depth to GW:	not encountered	
	concrete: 0-2 ft bgs	Total Depth of Boring:	40 ft bgs	

Sample Type	Sample No.	Blow Count	Analytical Sample Time	Analytical Sample Recovery	Well Construction	Depth Scale (ft)	Litho Column	Descriptions of Materials and Conditions	PID (PPM)
SS	B-11-30	29				32			
						33			
						34			
SS	B-11-35	23 31 30				35 36	SW	Medium grey, moist, medium dense well graded sand. 95% sand, 0% silt, 5% gravel. No HCLO, no staining	0.0
						37			
						38			
						39			
SS	B-11-40	25 23 27				40 41	SW	Same as above. No HCLO, no staining. No evidense of hydrocarbon impacts.	0.0
						42			
						43			
						44			
						45			
						46			

Concrete

Bentonite Chips

10/20 Sand

Water Table

n/a = Not applicable

NR = No recovery

SS = 3" diameter split spoon sampler

Comments:
Boring backfilled with hydrated,3/8 inch sodium bentonite chips. Concrete seal at surface.
Groundwater not encountered during drilling.

SOIL BORING LOG **Boring/Well Number: B-12** **Sheet 1 of 3**

Client/Site	Eagle Canyon Capital, LLC - Site No. 2840	Date:	8/8/2017	
Address:	12807 Des Moines Memorial Drive	Driller:	Cascade Drilling, LP	Rig type: CME 55
	Burien, Washington	Drilling Foreman:	James Gobel	
Project No.:	123245	Method:	Hollow Stem Auger	Hole diameter: 8"
Logged By:	N. Olivier			

Well Pack:	pellets:	n/a	Well Construction:	Casing: n/a	Screen: n/a
	sand (#10/20):	n/a		Casing diameter: n/a	Screen slot: n/a
	chips:	2-35 ft bgs	Depth to GW:	not encountered	
	concrete:	0-2 ft bgs	Total Depth of Boring:	35 ft bgs	

Sample Type	Sample No.	Blow Count	Analytical Sample Time	Analytical Sample Recovery	Well Construction	Depth Scale (ft)	Litho Column	Descriptions of Materials and Conditions	PID (PPM)
								8" asphalt surface	
hand auger	B-12-2.5	n/a		n/a		1 2 3 4	FILL	8"-4.5' - Medium brown, moist, moderately loose previously placed fill. Asphalt and concrete debris. No hydrocarbon odor, no staining.	0.0
SS	B-12-5	12 11 13				5 6 7	FILL	Same as above. No hydrocarbon odor, no staining.	0.1
SS	B-12-7.5	7 9 9	8:40			8 9			0.0
SS	B-12-10	10 10 15	8:50			10 11 12 13 14	SM with gravel	Medium brown, moist, medium dense silty sand with gravel. 60% sand, 25% silt, 15% gravel. No HCLO, no staining.	0.6
SS	B-12-15	15	9:10			15	SM with gravel	Same as above, 45% sand, 30% silt, 25% gravel. No HCLO, no staining.	0.1

Concrete

Bentonite Chips

10/20 Sand

Water Table

n/a = Not applicable

NR = No recovery

SS = 3" diameter split spoon sampler

HCLO = hydrocarbon-like odor

Comments:
Boring backfilled with hydrated,3/8 inch sodium bentonite chips. Concrete seal at surface.
Groundwater not encountered during drilling.

SOIL BORING LOG **Boring/Well Number: B-12** **Sheet 2 of 3**

Client/Site	Eagle Canyon Capital, LLC - Site No. 2840	Date:	8/8/2017	
Address:	12807 Des Moines Memorial Drive	Driller:	Cascade Drilling, LP	Rig type: CME 55
	Burien, Washington	Drilling Foreman:	James Gobel	
Project No.:	123245	Method:	Hollow Stem Auger	Hole diameter: 8"
Logged By:	N. Olivier			

Well Pack:	pellets: n/a	Well Construction:	Casing: n/a	Screen: n/a
	sand (#10/20): n/a		Casing diameter: n/a	Screen slot: n/a
	chips: 2-35 ft bgs	Depth to GW:	not encountered	
	concrete: 0-2 ft bgs	Total Depth of Boring:	35 ft bgs	

Sample Type	Sample No.	Blow Count	Analytical Sample Time	Analytical Sample Recovery	Well Construction	Depth Scale (ft)	Litho Column	Descriptions of Materials and Conditions	PID (PPM)
		28 33				16 17 18 19		increasing rig chatter	
SS	B-12-20	50 for 6"				20 21 22 23	SM with gravel	Medium brown, moist, very dense silty sand with gravel. 30% sand, 35% silt, 35% gravel. No HCLO, no staining.	0.0
SS	B-12-25	23 27 30	8:55			24 25 26 27 28 29	SW	Medium brown, moist, medium dense well graded sand. 90% sand, 10% silt 0% gravel. No HCLO, no staining.	0.0
SS	B-12-30	15 18				30 31	SW	Same as above. 95% sand, 5% silt, 0% gravel. No HCLO, no staining.	0.0

Concrete

Bentonite Chips

10/20 Sand

Water Table

n/a = Not applicable

NR = No recovery

SS = 3" diameter split spoon sampler

Comments:
Boring backfilled with hydrated,3/8 inch sodium bentonite chips. Concrete seal at surface.
Groundwater not encountered during drilling.

SOIL BORING LOG **Boring/Well Number: B-12** **Sheet 3 of 3**

Client/Site	Eagle Canyon Capital, LLC - Site No. 2840	Date:	8/8/2017		
Address:	12807 Des Moines Memorial Drive	Driller:	Cascade Drilling, LP	Rig type: CME 55	
	Burien, Washington	Drilling Foreman:	James Gobel		
Project No.:	123245	Method:	Hollow Stem Auger	Hole diameter: 8"	
Logged By:	N. Olivier				

Well Pack:	pellets:	n/a	Well Construction:	Casing: n/a	Screen: n/a
	sand (#10/20):	n/a		Casing diameter: n/a	Screen slot: n/a
	chips:	2-35 ft bgs	Depth to GW:	not encountered	
	concrete:	0-2 ft bgs	Total Depth of Boring:	35 ft bgs	

Sample Type	Sample No.	Blow Count	Analytical Sample Time	Analytical Sample Recovery	Well Construction	Depth Scale (ft)	Litho Column	Descriptions of Materials and Conditions	PID (PPM)
		21				32			
						33			
						34			
SS	B-12-35	15 18 18	9:00			35 36	**SW**	Medium brown, moist, medium dense well graded sand. 95% sand, 5% silt, 0% gravel. No HCLO, no staining.	0.0
						37			
						38			
						39			
						40			
						41			
						42			
						43			
						44			
						45			
						46			

Concrete

Bentonite Chips

10/20 Sand

n/a = Not applicable

NR = No recovery

SS = 3" diameter split spoon sampler

Water Table

Comments:
Boring backfilled with hydrated,3/8 inch sodium bentonite chips. Concrete seal at surface.
Groundwater not encountered during drilling.

SOIL BORING LOG **Boring/Well Number: B-13** **Sheet 1 of 4**

Client/Site	Eagle Canyon Capital, LLC - Site No. 2840	Date:	8/8/2017	
Address:	12807 Des Moines Memorial Drive	Driller:	Cascade Drilling, LP	Rig type: CME 55
	Burien, Washington	Drilling Foreman:	James Gobel	
Project No.:	123245	Method:	Hollow Stem Auger	Hole diameter: 8"
Logged By:	N. Olivier			

Well Pack:	pellets:	n/a	Well Construction:	Casing: n/a	Screen: n/a
	sand (#10/20):	n/a		Casing diameter: n/a	Screen slot: n/a
	chips:	2-50 ft bgs	Depth to GW:	not encountered	
	concrete:	0-2 ft bgs	Total Depth of Boring:	50 ft bgs	

Sample Type	Sample No.	Blow Count	Analytical Sample Time	Analytical Sample Recovery	Well Construction	Depth Scale (ft)	Litho Column	Descriptions of Materials and Conditions	PID (PPM)
								6" asphalt surface	
hand auger	B-13-2.5	n/a		n/a		1 2 3 4	FILL	6"-7.0' - Medium brown, moist, moderately loose previously placed fill. Asphalt and concrete debris. No hydrocarbon odor, no staining.	0.0
SS	B-13-5	12 5 5				5 6 7 8 9	FILL	Same as above. No hydrocarbon odor, no staining.	0.0
SS	B-13-10	4 5 6				10 11 12 13 14	FILL	Same as above, few brick fragments. No HCLO, no staining.	0.0
SS	B-13-15	29	11:00			15	FILL	Same as above, few brick fragments. No HCLO, no staining.	0.0

Concrete

Bentonite Chips

10/20 Sand

Water Table

n/a = Not applicable

NR = No recovery

SS = 3" diameter split spoon sampler

HCLO = hydrocarbon-like odor

Comments:
Boring backfilled with hydrated,3/8 inch sodium bentonite chips. Concrete seal at surface.
Groundwater not encountered during drilling.

SOIL BORING LOG **Boring/Well Number: B-13** **Sheet 2 of 4**

Client/Site	Eagle Canyon Capital, LLC - Site No. 2840	Date:	8/8/2017	
Address:	12807 Des Moines Memorial Drive	Driller:	Cascade Drilling, LP	Rig type: CME 55
	Burien, Washington	Drilling Foreman:	James Gobel	
Project No.:	123245	Method:	Hollow Stem Auger	Hole diameter: 8"
Logged By:	N. Olivier			

Well Pack:	pellets: n/a	Well Construction:	Casing: n/a	Screen: n/a
	sand (#10/20): n/a		Casing diameter: n/a	Screen slot: n/a
	chips: 2-50 ft bgs	Depth to GW:	not encountered	
	concrete: 0-2 ft bgs	Total Depth of Boring:	50 ft bgs	

Sample Type	Sample No.	Blow Count	Analytical Sample Time	Analytical Sample Recovery	Well Construction	Depth Scale (ft)	Litho Column	Descriptions of Materials and Conditions	PID (PPM)
						16			
						17			
						18			
						19			
SS	B-13-20	36 36 50 for 6"				20	SM with gravel	Medium brown, moist, very dense silty sand with gravel. 60% sand, 10% silt, 30% gravel. No HCLO, no staining.	0.0
						21			
						22			
						23			
						24			
SS	B-13-25	41 50 for 6"				25	SW	Same as above. No HCLO, no staining.	0.6
						26			
						27			
						28			
						29			
SS	B-13-30	25 30	11:10			30	SW	Same as above, medium dense, 100% sand. No HCLO, no staining.	0.0
						31			

Concrete

Bentonite Chips

10/20 Sand

Water Table

n/a = Not applicable

NR = No recovery

SS = 3" diameter split spoon sampler

Comments:
Boring backfilled with hydrated,3/8 inch sodium bentonite chips. Concrete seal at surface.
Groundwater not encountered during drilling.

SOIL BORING LOG **Boring/Well Number: B-13** **Sheet 3 of 4**

Client/Site	Eagle Canyon Capital, LLC - Site No. 2840	Date:	8/7/2017	
Address:	12807 Des Moines Memorial Drive	Driller:	Cascade Drilling, LP	Rig type: CME 55
	Burien, Washington	Drilling Foreman:	James Gobel	
Project No.:	123245	Method:	Hollow Stem Auger	Hole diameter: 8"
Logged By:	N. Olivier			

Well Pack:	pellets: n/a	Well Construction:	Casing: n/a	Screen: n/a
	sand (#10/20): n/a		Casing diameter: n/a	Screen slot: n/a
	chips: 2-50 ft bgs	Depth to GW:	not encountered	
	concrete: 0-2 ft bgs	Total Depth of Boring:	50 ft bgs	

Sample Type	Sample No.	Blow Count	Analytical Sample Time	Analytical Sample Recovery	Well Construction	Depth Scale (ft)	Litho Column	Descriptions of Materials and Conditions	PID (PPM)
		32				32			
						33			
						34			
SS	B-13-35	21	11:10			35	SW	Medium brown, moist, medium dense well graded sand. 95% sand, 0% silt, 5% gravel. No HCLO, no staining.	0.0
		22				36			
		32				37			
						38			
						39			
SS	B-13-40	15	11:20			40	SW	Medium brown, moist, medium dense well graded sand with trace gravel. 95% sand, 0% silt, 5% gravel. No HCLO, no staining.	0.0
		19				41			
		21				42			
						43			
						44			
SS	B-13-45	19				45	SW	Same as above, coarsening sand. No HCLO, no staining.	0.0
		21				46			
		20							

Concrete

Bentonite Chips

10/20 Sand

Water Table

n/a = Not applicable

NR = No recovery

SS = 3" diameter split spoon sampler

Comments:
Boring backfilled with hydrated,3/8 inch sodium bentonite chips. Concrete seal at surface.
Groundwater not encountered during drilling.

SOIL BORING LOG **Boring/Well Number: B-13** **Sheet 4 of 4**

Client/Site	Eagle Canyon Capital, LLC - Site No. 2840	Date:	8/7/2017		
Address:	12807 Des Moines Memorial Drive	Driller:	Cascade Drilling, LP	Rig type: CME 55	
	Burien, Washington	Drilling Foreman:	James Gobel		
Project No.:	123245	Method:	Hollow Stem Auger	Hole diameter: 8"	
Logged By:	N. Olivier				

Well Pack:	pellets: n/a	Well Construction:	Casing: n/a	Screen: n/a	
	sand (#10/20): n/a		Casing diameter: n/a	Screen slot: n/a	
	chips: 2-50 ft bgs	Depth to GW:	not encountered		
	concrete: 0-2 ft bgs	Total Depth of Boring:	50 ft bgs		

Sample Type	Sample No.	Blow Count	Analytical Sample Time	Analytical Sample Recovery	Well Construction	Depth Scale (ft)	Litho Column	Descriptions of Materials and Conditions	PID (PPM)
SS	B-13-50	not recorded	11:30		Bentonite Chips	47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61	SW	Medium brown, moist, medium dense well graded sand. 95% sand, 5% silt, 0% gravel. No HCLO, no staining.	0.0

Concrete

Bentonite Chips

10/20 Sand

Water Table

n/a = Not applicable

NR = No recovery

SS = 3" diameter split spoon sampler

Comments:
Boring backfilled with hydrated,3/8 inch sodium bentonite chips. Concrete seal at surface.
Groundwater not encountered during drilling.

SOIL BORING LOG **Boring/Well Number: B-14** **Sheet 1 of 4**

Client/Site	Eagle Canyon Capital, LLC - Site No. 2840	Date:	8/7/2017	
Address:	12807 Des Moines Memorial Drive	Driller:	Cascade Drilling, LP	Rig type: CME 55
	Burien, Washington	Drilling Foreman:	James Gobel	
Project No.:	123245	Method:	Hollow Stem Auger	Hole diameter: 8"
Logged By:	N. Olivier			

Well Pack:	pellets:	n/a	Well Construction:	Casing: n/a	Screen: n/a
	sand (#10/20):	n/a		Casing diameter: n/a	Screen slot: n/a
	chips:	2-55 ft bgs	Depth to GW:	not encountered	
	concrete:	0-2 ft bgs	Total Depth of Boring:	55 ft bgs	

Sample Type	Sample No.	Blow Count	Analytical Sample Time	Analytical Sample Recovery	Well Construction	Depth Scale (ft)	Litho Column	Descriptions of Materials and Conditions	PID (PPM)
						1		8" asphalt surface	
hand auger	B-14-2.5	n/a		n/a		2 3 4	FILL	Medium brown, moist, modium loose previously placed fill. No HCLO, no staining.	0.0
SS	B-14-5	19 21 50				5 6 7 8 9	SM w/ gravel	Dark grey, moist, very dense, silty sand with gravel. 65% sand, 25% silt, 10% gravel. No HCLO, no staining.	0.0
SS	B-14-10	22 29 34				10 11 12 13 14	SM w/ gravel	Same as above, medium dense. No HCLO, no staining.	0.0
SS	B-14-15	41				15	SM w/ gravel	Same as above, very dense. No HCLO, no staining.	0.0

Concrete

Bentonite Chips

10/20 Sand

Water Table

n/a = Not applicable

NR = No recovery

SS = 3" diameter split spoon sampler

HCLO = hydrocarbon-like odor

Comments:
Boring backfilled with hydrated,3/8 inch sodium bentonite chips. Concrete seal at surface.
Groundwater not encountered during drilling.

SOIL BORING LOG **Boring/Well Number: B-14** **Sheet 2 of 4**

Client/Site	Eagle Canyon Capital, LLC - Site No. 2840	Date:	8/8/2017		
Address:	12807 Des Moines Memorial Drive	Driller:	Cascade Drilling, LP	Rig type: CME 55	
	Burien, Washington	Drilling Foreman:	James Gobel		
Project No.:	123245	Method:	Hollow Stem Auger	Hole diameter: 8"	
Logged By:	N. Olivier				

Well Pack:	pellets: n/a	Well Construction:	Casing: n/a	Screen: n/a	
	sand (#10/20): n/a		Casing diameter: n/a	Screen slot: n/a	
	chips: 2-55 ft bgs	Depth to GW:	not encountered		
	concrete: 0-2 ft bgs	Total Depth of Boring:	55 ft bgs		

Sample Type	Sample No.	Blow Count	Analytical Sample Time	Analytical Sample Recovery	Well Construction	Depth Scale (ft)	Litho Column	Descriptions of Materials and Conditions	PID (PPM)
SS	B-14-20	33 50 for 6'	11:40			16 17 18 19 20 21 22 23	SM w/ gravel	Medium grey, moist, very dense, silty sand with gravel. 80% sand, 5% silt, 15% gravel. No HCLO, no staining.	0.0
SS	B-14-25	23 24 27	11:00			24 25 26 27 28 29 30	SW	Medium grey, moist, medium dense, well graded sand. >95% sand, trace silt, 0% gravel. No HCLO, no staining.	70.1
SS	B-14-30	22 29	11:10			31	SW	Same as above. Very strong solvent odor, no HCLO, no staining.	1,225

Concrete

Bentonite Chips

10/20 Sand

Water Table

n/a = Not applicable

NR = No recovery

SS = 3" diameter split spoon sampler

Comments:
Boring backfilled with hydrated,3/8 inch sodium bentonite chips. Concrete seal at surface.
Groundwater not encountered during drilling.

SOIL BORING LOG **Boring/Well Number: B-14** **Sheet 3 of 4**

Client/Site	Eagle Canyon Capital, LLC - Site No. 2840	Date:	8/7/2017		
Address:	12807 Des Moines Memorial Drive	Driller:	Cascade Drilling, LP	Rig type: CME 55	
	Burien, Washington	Drilling Foreman:	James Gobel		
Project No.:	123245	Method:	Hollow Stem Auger	Hole diameter: 8"	
Logged By:	N. Olivier				

Well Pack:	pellets: n/a	Well Construction:	Casing: n/a	Screen: n/a	
	sand (#10/20): n/a		Casing diameter: n/a	Screen slot: n/a	
	chips: 2-55 ft bgs	Depth to GW:	not encountered		
	concrete: 0-2 ft bgs	Total Depth of Boring:	55 ft bgs		

Sample Type	Sample No.	Blow Count	Analytical Sample Time	Analytical Sample Recovery	Well Construction	Depth Scale (ft)	Litho Column	Descriptions of Materials and Conditions	PID (PPM)
		30				32			
						33			
						34			
SS	B-14-35	21 25 25	11:00			35 36	SW	Same as above. Very strong solvent odor, no HCLO, no staining.	262
						37			
						38			
						39			
SS	B-14-40	23 27 31				40 41	SW	Same as above. Strong musty/mildew/solvent odor. No HCLO, no staining.	27.0
						42			
						43			
						44			
SS	B-14-45	26 26 32				45 46	SW w/ gravel	Same as above, slight coarsening of sand. 90% sand, 10% gravel. Strong solvent odor, no HCLO, no staining.	126

Concrete

Bentonite Chips

10/20 Sand

Water Table

n/a = Not applicable

NR = No recovery

SS = 3" diameter split spoon sampler

Comments:
Boring backfilled with hydrated,3/8 inch sodium bentonite chips. Concrete seal at surface.
Groundwater not encountered during drilling.

SOIL BORING LOG **Boring/Well Number: B-14** **Sheet 4 of 4**

Client/Site	Eagle Canyon Capital, LLC - Site No. 2840	Date:	8/7/2017		
Address:	12807 Des Moines Memorial Drive	Driller:	Cascade Drilling, LP	Rig type: CME 55	
	Burien, Washington	Drilling Foreman:	James Gobel		
Project No.:	123245	Method:	Hollow Stem Auger	Hole diameter: 8"	
Logged By:	N. Olivier				

Well Pack:	pellets:	n/a	Well Construction:	Casing: n/a	Screen: n/a
	sand (#10/20):	n/a		Casing diameter: n/a	Screen slot: n/a
	chips:	2-55 ft bgs	Depth to GW:	not encountered	
	concrete:	0-2 ft bgs	Total Depth of Boring:	55 ft bgs	

Sample Type	Sample No.	Blow Count	Analytical Sample Time	Analytical Sample Recovery	Well Construction	Depth Scale (ft)	Litho Column	Descriptions of Materials and Conditions	PID (PPM)
SS	B-14-50	19 23 29			Bentonite Chips	47 48 49 50 51 52 53 54	SW w/gravel	Same as above. Moderate solvent odor, no HCLO, no staining.	24.9
SS	B-14-55	43 50 for 6"	11:30			55 56 57 58 59 60 61	SW w/gravel	Same as above. Very slight odors, no staining.	7.5

Concrete

Bentonite Chips

10/20 Sand

Water Table

n/a = Not applicable

NR = No recovery

SS = 3" diameter split spoon sampler

Comments:
Boring backfilled with hydrated,3/8 inch sodium bentonite chips. Concrete seal at surface.
Groundwater not encountered during drilling.

SOIL BORING LOG **Boring/Well Number: B-15** **Sheet 1 of 3**

Client/Site	Eagle Canyon Capital, LLC - Site No. 2840	Date:	8/7/2017	
Address:	12807 Des Moines Memorial Drive	Driller:	Cascade Drilling, LP	Rig type: CME 55
	Burien, Washington	Drilling Foreman:	James Gobel	
Project No.:	123245	Method:	Hollow Stem Auger	Hole diameter: 8"
Logged By:	N. Olivier			

Well Pack:	pellets:	n/a	Well Construction:	Casing: n/a	Screen: n/a
	sand (#10/20):	n/a		Casing diameter: n/a	Screen slot: n/a
	chips:	2-35 ft bgs	Depth to GW:	not encountered	
	concrete:	0-2 ft bgs	Total Depth of Boring:	35 ft bgs	

Sample Type	Sample No.	Blow Count	Analytical Sample Time	Analytical Sample Recovery	Well Construction	Depth Scale (ft)	Litho Column	Descriptions of Materials and Conditions	PID (PPM)
						1		6" asphalt surface	
hand auger						2			
						3	FILL	Medium brown, moist, silty sand with gravel, previously placed fill.	0.0
						4			
SS	B-15-5	50 for 6"		NR		5			
						6			
						7			
						8			
						9			
						10			0.0
SS	B-15-10	6 7 7	14:30			11		Medium grey, wet, loose pea gravel (old sump material). Limited sample recovery.	
						12			
						13			
						14			
						15	SM w/gravel		
SS	B-15-15	14						Medium grey, moist, very dense silty sand with gravel (possible old fill).	0.0

Concrete

Bentonite Chips

10/20 Sand

Water Table

n/a = Not applicable

NR = No recovery

SS = 3" diameter split spoon sampler

HCLO = hydrocarbon-like odor

Comments:
Boring backfilled with hydrated,3/8 inch sodium bentonite chips. Concrete seal at surface.
Groundwater not encountered during drilling.

SOIL BORING LOG **Boring/Well Number: B-15** **Sheet 2 of 3**

Client/Site	Eagle Canyon Capital, LLC - Site No. 2840	Date:	8/7/2017		
Address:	12807 Des Moines Memorial Drive	Driller:	Cascade Drilling, LP	Rig type: CME 55	
	Burien, Washington	Drilling Foreman:	James Gobel		
Project No.:	123245	Method:	Hollow Stem Auger	Hole diameter: 8"	
Logged By:	N. Olivier				

Well Pack:	pellets: n/a	Well Construction:	Casing: n/a	Screen: n/a	
	sand (#10/20): n/a		Casing diameter: n/a	Screen slot: n/a	
	chips: 2-35 ft bgs	Depth to GW:	not encountered		
	concrete: 0-2 ft bgs	Total Depth of Boring:	35 ft bgs		

Sample Type	Sample No.	Blow Count	Analytical Sample Time	Analytical Sample Recovery	Well Construction	Depth Scale (ft)	Litho Column	Descriptions of Materials and Conditions	PID (PPM)
		21 30				16 17 18 19			
SS	B-15-20	21 23 30	14:45			20 21 22 23 24	SM w/gravel	Medium grey, moist, very dense, silty sand with gravel. 45% sand, 30% silt, 25% gravel. No HCLO, no staining.	0.0
SS	B-15-25	30 50 for 6"		NR		25 26 27 28 29		No sample recovery.	
SS	B-15-30	46 50 for 6"				30 31		Medium grey, moist, very dense, well graded sand. 80% sand, 10% silt, 10% gravel. Wet (water from above). No HCLO, no staining.	

Concrete

Bentonite Chips

10/20 Sand

Water Table

n/a = Not applicable

NR = No recovery

SS = 3" diameter split spoon sampler

Comments:
Boring backfilled with hydrated,3/8 inch sodium bentonite chips. Concrete seal at surface.
Groundwater not encountered during drilling.

SOIL BORING LOG **Boring/Well Number: B-15** **Sheet 3 of 3**

Client/Site	Eagle Canyon Capital, LLC - Site No. 2840	Date:	8/7/2017		
Address:	12807 Des Moines Memorial Drive	Driller:	Cascade Drilling, LP	Rig type: CME 55	
	Burien, Washington	Drilling Foreman:	James Gobel		
Project No.:	123245	Method:	Hollow Stem Auger	Hole diameter: 8"	
Logged By:	N. Olivier				

Well Pack:	pellets: n/a	Well Construction:	Casing: n/a	Screen: n/a	
	sand (#10/20): n/a		Casing diameter: n/a	Screen slot: n/a	
	chips: 2-35 ft bgs	Depth to GW:	not encountered		
	concrete: 0-2 ft bgs	Total Depth of Boring:	35 ft bgs		

Sample Type	Sample No.	Blow Count	Analytical Sample Time	Analytical Sample Recovery	Well Construction	Depth Scale (ft)	Litho Column	Descriptions of Materials and Conditions	PID (PPM)
SS	B-15-35	41 50 for 6"	15:00			32 33 34 35 36 37 38 39 40 41 42 43 44 45 46	SW	Medium grey, moist, medium dense, well graded sand. 95% sand, 5% silt, 0% gravel. No HCLO, no staining.	0.0

Concrete

Bentonite Chips

10/20 Sand

n/a = Not applicable

NR = No recovery

SS = 3" diameter split spoon sampler

Water Table

Comments:
Boring backfilled with hydrated,3/8 inch sodium bentonite chips. Concrete seal at surface.
Groundwater not encountered during drilling.

APPENDIX K

GENERAL FIELD PRACTICES AND PROCEDURES

GENERAL FIELD PROCEDURES

General procedures used by Montrose Environmental (Montrose) in site assessments for drilling exploratory borings and collecting samples are described herein. The general procedures may be modified as appropriate based on site conditions. A Professional state-registered geologist supervises the following procedures.

PRE-FIELD WORK ACTIVITIES

Health and Safety Plan

Field work performed by Montrose at the site is conducted according to guidelines established in a Site Health and Safety Plan (HASP). The HASP is a document that describes the hazards that may be encountered in the field and specifies protective equipment, work procedures, and emergency information. A copy of the HASP is at the site and available for reference by appropriate parties during field work.

Locating Underground Utilities

Before commencement of subsurface work, the location of the excavation, boring, etc., is marked with white spray paint as required by law. An underground locating service such as One-Call is contacted 72-hours before initiating field work. The locating company contacts the owners of the various utilities in the vicinity of the site to mark the locations of their underground utilities. Invasive work is preceded by hand augering to a minimum depth of five feet below surface grade to avoid contacting potential underground utilities or structures.

FIELD METHODS AND PROCEDURES

Exploratory Soil Borings

Soil borings will be drilled using a truck-mounted, hollow stem auger (HSA) drill rig or using hydraulically actuated “direct-push” and percussion equipment, e.g. Geoprobe®. If HSA drilling techniques are utilized, soil samples for logging will be obtained from auger-return materials and by advancing a modified split-spoon sampler equipped with stainless steel liners or equivalent into undisturbed soil beyond the tip of the auger. Similarly, if direct-push technology (DPT) is used, soil samples will be retrieved from the borings using a 3-foot-long, 2-inch diameter continuous-core split-barrel sampler lined with six stainless steel/brass sleeves or a 4-foot-long acetate liner. Soils will be logged by a geologist according to the Unified Soil Classification System using standard geological techniques. Drill cuttings will be screened using a portable photoionization detector (PID) or a flame ionization detector (FID). Exploratory soil borings not used for monitoring well installation will be backfilled to the surface with bentonite-cement slurry and/or hydrated bentonite chips and capped at the surface to match surrounding conditions.

Soil Sample Collection

Auger Sampling: During drilling, soil samples will be collected in clean steel/brass, two by six inch tubes. The tubes will be set in an 18-inch-long split-barrel sampler. The sampler will be conveyed to the bottom of the borehole attached to a wire-line hammer device on the drill rig. When possible, the split-barrel sampler will be driven its entire length, either hydraulically or by repeatedly pounding a 140-pound hammer using a 30-inch drop. The number of drops (blows) used to drive the sampler will be recorded on the boring log. The sampler will be extracted from the borehole, and the tubes containing the soil samples will be removed. Upon removal, the ends of the lowermost tube will be sealed with Teflon sheets and plastic caps. Soil samples for chemical analysis will be labeled, placed on ice, and delivered to a state-certified analytical laboratory, along with the appropriate chain-of-custody documentation.

Geoprobe Sampling: The push-probe system is driven by a hydraulic hammer or vibrator. Each boring will be sampled at a minimum of 5-foot intervals. Shorter sampling intervals or continuous core sampling techniques may be employed to provide subsurface definition. As the core barrel is advanced, soil is driven into an inner 1¾-inch diameter core barrel, which is either lined with steel/brass or acetate sleeves. After being driven 5 feet, the rods are removed from the borehole. Upon removal, the ends of the lowermost sleeve will be sealed with Teflon sheets and plastic caps. Soil samples for chemical analysis will be labeled, placed on ice, and delivered to a state-certified analytical laboratory, along with the appropriate chain-of-custody documentation.

Soil Classification

As the samples are obtained in the field, they will be classified by the field geologist in accordance with the Unified Soil Classification System. Representative portions of the samples will be retained for further examination and for verification of the field classification. Logs of the borings indicating the depth and identification of the various strata and pertinent information regarding the method of maintaining and advancing the borehole will be prepared. Specifically, for each sampling interval, field estimates of soil type, density/consistency, plasticity, grading, moisture, color, and any other pertinent information will be recorded on the boring log.

Soil Sample Screening and Sampling

Soil samples selected for chemical analysis will be determined from a headspace analysis using a PID or an FID. The soil will be placed in a Ziploc® bag or equivalent, sealed, and allowed to reach ambient temperature, at which time the PID probe will be inserted into the Ziploc bag. The total volatile hydrocarbons present are detected in parts per million (ppm). The PID will be calibrated daily to an isobutylene standard. Additionally, a water trap will be fixed to the end of the PID sampling wand to minimize potential interference from entrained soil moisture.

Generally two soil samples from each soil boring will be submitted for chemical analysis unless otherwise specified in the scope of work (See applicable workplan or the client's specified scope of work). Soil samples selected for analysis typically represent the boring bottom sample or the sample just above the first-occurrence of groundwater and sample that exhibits the highest PID reading.

Important: Environmental Protection Agency 5035 sampling methodology will be followed for the collection of samples involving the analysis of volatile organic compounds.

HydroPunch® Sampling

A grab groundwater sample is collected using a Hydropunch® sampling device or equivalent. The hydropunch can be used with either a HSA drill or DPT rig. The hydropunch consists of a stainless steel probe, which is advanced in to the water-yielding zone then withdrawn to expose an internal screen. Once the probe is opened, groundwater enters while soil particles larger than silt are prevented from entering by a screen. A decontaminated stainless steel bailer or equivalent is inserted down the center of the well screen to obtain a "grab-type" groundwater sample for analysis. The samples are carefully transferred from the bailer to zero headspace, 40 milliliter glass vials fitted with Teflon-lined caps. The groundwater sample is labeled, placed on ice (i.e. chilled at approximately 4 degrees Celsius), and delivered to a state-certified analytical laboratory, along with the appropriate chain-of-custody documentation. The boring is backfilled with a cement/bentonite slurry and capped at the surface to match surface conditions.

Chain-of-Custody Protocol

Chain-of-Custody protocol is followed for all soil and groundwater samples selected for laboratory analysis. The Chain-of-Custody form(s) accompanies the samples to the laboratory and provides a continuous record of possession at all times.

Decontamination

Drill cuttings generated during the drilling procedure will be contained in labeled and marked, DOT-approved 55-gallon drums and placed in a secured onsite location. Drilling equipment is decontaminated by steam cleaning before being brought onsite. The augers are also steam cleaned before proceeding with each new boring/well. Before use, the sampler and sampling sleeves are brushed-scrubbed in a Liqui-nox and potable water solution and rinsed twice in clean potable water. Sampling equipment and sleeves are also decontaminated before each sample is collected to avoid cross-contamination between borings.

Waste Management

Soil cuttings, decontamination and/or development water will be contained in DOT-approved, 55-gallon drums. Each drum will be appropriately labeled, marked and temporarily stored in a

secured onsite location pending waste characterization. Upon receipt of analytical results, contained waste will be transported offsite to an appropriate disposal/recycling facility.

Exceptions

Additional tasks or non-standard practices/procedures, if any, that may be requested or required for a particular site will be documented in the field notes on the following pages.

APPENDIX L

LABORATORY ANALYTICAL REPORTS

Libby Environmental, Inc.

3322 South Bay Road NE • Olympia, WA 98506-2957

September 19, 2019

Laura Skow
Montrose Environmental
4150 B Place NW, Suite 106
Auburn, WA 98001

Dear Ms. Skow:

Please find enclosed the analytical data report for the Site No. 2840 Project located in Burien, Washington.

The results of the analyses are summarized in the attached tables. Applicable detection limits and QA/QC data are included. The sample(s) will be disposed of within 30 days unless we are contacted to arrange long term storage.

Libby Environmental, Inc. appreciates the opportunity to have provided analytical services for this project. If you have any further questions about the data report, please give me a call. It was a pleasure working with you on this project, and we are looking forward to the next opportunity to work together.

Sincerely,

Sherry L. Chilcutt
Senior Chemist
Libby Environmental, Inc.

Phone (360) 352-2110 • Fax (360) 352-4154 • libbyenv@gmail.com

Libby Environmental, Inc.

Chain of Custody Record

www.LibbyEnvironmental.com

3322 South Bay Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Date: 9/11/19 Page: 1 2 of 2

Client: Montrose Environmental
Project Manager: Laura Skow
Address: 4150 B Pl NW Suite 106
Project Name: Site NO. 2840
City: Auburn State: WA Zip: 98001
Location: 12807 Des Moines Mem. City, State: Burien, WA
Phone: 253656-4856 Fax:
Collector: Nick Olivier Date of Collection: 9/9-11/19
Client Project #
Email: LSkow@Montrose-env.com

	Sample Number	Depth	Time	Sample Type	Container Type	VOC 8260	NWTPH-Gx	BTEX 8021	NWTPH-HCID	NWTPH-Dx	NWTPH-Dx/Dx	c PAH 8270	PAH 8270	Semi Vol 8270	PCB 8082	MTCA 5 Metals	RCRA 8 Metals	Total Lead		Field Notes
1	SB-16-10	10	8:45	SOIL	VOA/Jar				X											9/9/19
2	SB-16-15	15	12:00						X											
3	SB-16-35	35	13:00						X											
4	SB-16-45	45	13:30						X											
5	SB-16-90	90	14:00						X											
6	SB-17-10	10	8:20						X											9/10/19
7	SB-17-20	20	8:40						X											
8	SB-17-30	30	9:00						X											
9	SB-17-35	35	9:10						X											
10	SB-18-15	15	12:00						X											
11	SB-18-20	20	12:15						X											
12	SB-18-30	30	12:30						X											
13	SB-19-10	10	10:10						X											
14	SB-19-20	20	10:20						X											
15	SB-19-30	30	10:30						X											
16	SB-19-35	35	10:40						X											
17	SB-16-W	N/A	14:20	Water	VOA/Poly	X	X	X			X						X			9/9/19

Relinquished by: Date / Time 9/13/19 15:00
Received by: Date / Time 9/13/19 1500

Relinquished by: Date / Time
Received by: Date / Time

Relinquished by: Date / Time
Received by: Date / Time

Sample Receipt

Good Condition?	Y	N
Cooler Temp.		°C
Sample Temp.		°C
Total Number of Containers		

Remarks:
* Hold Samples pending HCID results

TAT: 24HR 48HR (5-DAY)

Distribution: White - Lab, Yellow - File, Pink - Originator

Libby Environmental, Inc.

Chain of Custody Record

www.LibbyEnvironmental.com

3322 South Bay Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Date: 9/11/19 Page: 2 of 2

Client: Montrose Environmental
Project Manager: Laura Skow
Address: 4150 B Pl NW Ste 106
Project Name: Site No. 2840
City: Auburn State: WA Zip: 98001
Location: 12807 Des Moines Mem. Dr. City, State: Burien, WA
Phone: 253 656 4856 Fax:
Collector: Nick Olivier Date of Collection: 9/9-11/19
Client Project #
Email: LSKOW@Montrose-env.com

	Sample Number	Depth	Time	Sample Type	Container Type	VOC 8260	NWTPH-Gx	BTEX 8021	NWTPH-HCID	NWTPH-Dx	NWTPH-Dx/Dx	c PAH 8270	PAH 8270	Semi Vol 8270	PCB 8082	MTCA 5 Metals	RCRA 8 Metals	Total Lead		Field Notes
1	SB-20-10	10	10:30	SOIL	VOA/Jar				X											9/11/19
2	SB-20-25	25	10:45						X											
3	SB-20-35	35	11:00						X											
4	SB-20-5	5	14:00				X	X			X						X			9/5/19
5	SB-21-5	5	14:45				X	X			X						X			9/5/19
6	SB-21-15	15	14:10						X											9/11/19
7	SB-21-20	20	14:30						X											
8	SB-21-35	35	15:00						X											
9																				
10																				
11																				
12																				
13																				
14																				
15																				
16																				
17																				

Relinquished by:	Date / Time	Received by:	Date / Time
[signature]	9/13/19 15:00	[signature]	9/13/19 1500
Relinquished by:	Date / Time	Received by:	Date / Time
Relinquished by:	Date / Time	Received by:	Date / Time

Sample Receipt

Good Condition?	Y	N
Cooler Temp.		°C
Sample Temp.		°C
Total Number of Containers		

Remarks:
* Hold samples pending HCID results

TAT: 24HR 48HR (5-DAY)

Distribution: White - Lab, Yellow - File, Pink - Originator

Libby Environmental, Inc.

3322 South Bay Road NE
Olympia, WA 98506
Phone: (360) 352-2110
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Email: libbyenv@gmail.com

SITE NO. 2840 PROJECT
Montrose Environmental
Burien, Washington
Libby Project # L190913-5

Volatile Organic Compounds by EPA Method 8260D in Water

Sample Description		Method Blank	SB-16-W
Date Sampled	Reporting	N/A	9/9/19
Date Analyzed	Limits	9/13/19	9/13/19
	(µg/L)	(µg/L)	(µg/L)
Dichlorodifluoromethane	2.0	nd	nd
Chloromethane	2.0	nd	nd
Vinyl chloride	0.2	nd	nd
Bromomethane	2.0	nd	nd
Chloroethane	2.0	nd	nd
Trichlorofluoromethane	2.0	nd	nd
1,1-Dichloroethene	0.5	nd	nd
Methylene chloride	1.0	nd	nd
Methyl *tert*- Butyl Ether (MTBE)	5.0	nd	nd
trans -1,2-Dichloroethene	1.0	nd	nd
1,1-Dichloroethane	1.0	nd	nd
2,2-Dichloropropane	2.0	nd	nd
cis -1,2-Dichloroethene	1.0	nd	nd
Chloroform	1.0	nd	nd
1,1,1-Trichloroethane (TCA)	1.0	nd	nd
Carbon tetrachloride	1.0	nd	nd
1,1-Dichloropropene	1.0	nd	nd
Benzene	1.0	nd	nd
1,2-Dichloroethane (EDC)	1.0	nd	nd
Trichloroethene (TCE)	0.4	nd	nd
1,2-Dichloropropane	1.0	nd	nd
Dibromomethane	1.0	nd	nd
Bromodichloromethane	1.0	nd	nd
cis-1,3-Dichloropropene	1.0	nd	nd
Toluene	1.0	nd	nd
Trans-1,3-Dichloropropene	1.0	nd	nd
1,1,2-Trichloroethane	1.0	nd	nd
Tetrachloroethene (PCE)	1.0	nd	nd
1,3-Dichloropropane	1.0	nd	nd
Dibromochloromethane	1.0	nd	nd
1,2-Dibromoethane (EDB) *	0.01	nd	nd
Chlorobenzene	1.0	nd	nd
Ethylbenzene	1.0	nd	nd
1,1,1,2-Tetrachloroethane	1.0	nd	nd
Total Xylenes	2.0	nd	nd
Styrene	1.0	nd	nd

Libby Environmental, Inc.

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SITE NO. 2840 PROJECT
Montrose Environmental
Burien, Washington
Libby Project # L190913-5

Volatile Organic Compounds by EPA Method 8260D in Water

Sample Description		Method Blank	SB-16-W
Date Sampled	Reporting	N/A	9/9/19
Date Analyzed	Limits	9/13/19	9/13/19
	(µg/L)	(µg/L)	(µg/L)
Bromoform	1.0	nd	nd
Isopropylbenzene	4.0	nd	nd
1,1,2,2-Tetrachloroethane	1.0	nd	nd
Bromobenzene	1.0	nd	nd
n-Propylbenzene	1.0	nd	nd
1,2,3-Trichloropropane	1.0	nd	nd
2-Chlorotoluene	1.0	nd	nd
1,3,5-Trimethylbenzene	1.0	nd	nd
4-Chlorotoluene	1.0	nd	nd
tert-Butylbenzene	1.0	nd	nd
1,2,4-Trimethylbenzene	1.0	nd	nd
sec-Butylbenzene	1.0	nd	nd
p-Isopropyltoluene	1.0	nd	nd
1,3-Dichlorobenzene	1.0	nd	nd
1,4-Dichlorobenzene	1.0	nd	nd
n-Butylbenzene	1.0	nd	nd
1,2-Dichlorobenzene	1.0	nd	nd
1,2-Dibromo-3-Chloropropane	1.0	nd	nd
1,2,4-Trichlorolbenzene	2.0	nd	nd
Hexachloro-1,3-butadiene	5.0	nd	nd
Naphthalenes	5.0	nd	nd
1,2,3-Trichlorobenzene	5.0	nd	nd
Surrogate Recovery			
Dibromofluoromethane		97	100
1,2-Dichloroethane-d4		97	90
Toluene-d8		82	77
4-Bromofluorobenzene		97	89

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

* ANALYZED BY SIM
ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Paul Burke

Libby Environmental, Inc.

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SITE NO. 2840 PROJECT
Montrose Environmental
Burien, Washington
Libby Project # L190913-5

QA/QC for Volatile Organic Compounds by EPA Method 8260D in Water

Matrix Spike Sample Identification: L190912-2

	Spiked Conc. (µg/L)	MS Response (µg/L)	MSD Response (µg/L)	MS Recovery (%)	MSD Recovery (%)	RPD (%)	Limits Recovery (%)
Dichlorodifluoromethane	5.0	4.1	4.5	82	90	9.3	65-135
Chloromethane	5.0	5.7	5.8	114	116	1.7	65-135
Vinyl chloride	5.0	5.8	6.1	116	122	5.0	65-135
Bromomethane	5.0	4.5	5.9	90	118	26.9	65-135
Chloroethane	5.0	4.6	5.6	92	112	19.6	65-135
Trichlorofluoromethane	5.0	6.1	5.0	122	100	19.8	65-135
1,1-Dichloroethene	5.0	6.5	5.9	130	118	9.7	65-135
Methylene chloride	5.0	5.3	5.2	106	104	1.9	65-135
Methyl *tert*- Butyl Ether (MTBE)	5.0	4.2	4.2	84	84	0.0	65-135
trans -1,2-Dichloroethene	5.0	6.0	5.7	120	114	5.1	65-135
1,1-Dichloroethane	5.0	5.5	5.5	110	110	0.0	65-135
2,2-Dichloropropane	5.0	5.5	4.8	110	96	13.6	65-135
cis -1,2-Dichloroethene	5.0	5.8	5.7	116	114	1.7	65-135
Chloroform	5.0	6.0	6.0	120	120	0.0	65-135
1,1,1-Trichloroethane (TCA)	5.0	6.5	6.2	130	124	4.7	65-135
Carbon tetrachloride	5.0	6.1	6.0	122	120	1.7	65-135
1,1-Dichloropropene	5.0	5.8	5.4	116	108	7.1	65-135
Benzene	5.0	5.4	5.5	108	110	1.8	65-135
1,2-Dichloroethane (EDC)	5.0	5.1	5.2	102	104	1.9	65-135
Trichloroethene (TCE)	5.0	5.8	5.4	116	108	7.1	65-135
1,2-Dichloropropane	5.0	4.4	4.6	88	92	4.4	65-135
Dibromomethane	5.0	4.6	4.3	92	86	6.7	65-135
Bromodichloromethane	5.0	4.8	4.8	96	96	0.0	65-135
cis-1,3-Dichloropropene	5.0	4.0	3.8	80	76	5.1	65-135
Toluene	5.0	4.6	4.6	92	92	0.0	65-135
Trans-1,3-Dichloropropene	5.0	3.9	3.4	78	68	13.7	65-135
1,1,2-Trichloroethane	5.0	4.7	4.6	94	92	2.2	65-135
Tetrachloroethene (PCE)	5.0	5.2	5.0	104	100	3.9	65-135
1,3-Dichloropropane	5.0	4.1	4.0	82	80	2.5	65-135
Dibromochloromethane	5.0	4.7	4.5	94	90	4.3	65-135
1,2-Dibromoethane (EDB)	5.0	4.3	4.2	86	84	2.4	65-135
Chlorobenzene	5.0	5.4	5.4	108	108	0.0	65-135
1,1,1,2-Tetrachloroethane	5.0	5.3	5.8	106	116	9.0	65-135
Ethylbenzene	5.0	5.7	4.9	114	98	15.1	65-135
Total Xylenes	15.0	14.2	13.5	95	90	5.1	65-135
Styrene	5.0	4.4	4.4	88	88	0.0	65-135

Libby Environmental, Inc.

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SITE NO. 2840 PROJECT
Montrose Environmental
Burien, Washington
Libby Project # L190913-5

QA/QC for Volatile Organic Compounds by EPA Method 8260D in Water

Matrix Spike Sample Identification: L190912-2

	Spiked Conc. (µg/L)	MS Response (µg/L)	MSD Response (µg/L)	MS Recovery (%)	MSD Recovery (%)	RPD (%)	Limits Recovery (%)
Bromoform	5.0	4.5	4.3	90	86	4.5	65-135
Isopropylbenzene	5.0	4.7	4.3	94	86	8.9	65-135
1,2,3-Trichloropropane	5.0	4.5	4.2	90	84	6.9	65-135
Bromobenzene	5.0	4.3	4.2	86	84	2.4	65-135
1,1,2,2-Tetrachloroethane	5.0	4.0	3.8	80	76	5.1	65-135
n-Propylbenzene	5.0	4.7	4.3	94	86	8.9	65-135
2-Chlorotoluene	5.0	4.4	4.0	88	80	9.5	65-135
4-Chlorotoluene	5.0	4.4	4.2	88	84	4.7	65-135
1,3,5-Trimethylbenzene	5.0	4.3	4.1	86	82	4.8	65-135
tert-Butylbenzene	5.0	4.2	3.9	84	78	7.4	65-135
1,2,4-Trimethylbenzene	5.0	4.3	4.2	86	84	2.4	65-135
sec-Butylbenzene	5.0	4.6	4.3	92	86	6.7	65-135
1,3-Dichlorobenzene	5.0	4.6	4.8	92	96	4.3	65-135
Isopropyltoluene	5.0	4.0	3.9	80	78	2.5	65-135
1,4-Dichlorobenzene	5.0	4.6	5.0	92	100	8.3	65-135
1,2-Dichlorobenzene	5.0	4.0	4.5	80	90	11.8	65-135
n-Butylbenzene	5.0	4.3	4.0	86	80	7.2	65-135
1,2-Dibromo-3-Chloropropane	5.0	4.4	4.4	88	88	0.0	65-135
1,2,4-Trichlorolbenzene	5.0	3.9	4.0	78	80	2.5	65-135
Hexachloro-1,3-butadiene	5.0	3.8	5.2	76	104	31.1	65-135
Naphthalenes	5.0	3.5	3.5	70	70	0.0	65-135
1,2,3-Trichlorobenzene	5.0	3.5	4.3	70	86	20.5	65-135

Surrogate Recovery (%)	MS	MSD	
Dibromofluoromethane	110	112	65-135
1,2-Dichloroethane-d4	97	103	65-135
Toluene-d8	83	83	65-135
4-Bromofluorobenzene	101	100	65-135

ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Sherry Chilcutt

Libby Environmental, Inc.

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Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@gmail.com

SITE NO. 2840 PROJECT
Montrose Environmental
Burien, Washington
Libby Project # L190913-5

Laboratory Control Sample

	Spiked Conc. (µg/L)	LCS Response (µg/L)	LCS Recovery (%)	LCS Recovery Limits (%)	Data Flag
Dichlorodifluoromethane	5.0	5.3	106	80-120	
Chloromethane	5.0	5.9	118	80-120	
Vinyl chloride	5.0	5.9	118	80-120	
Bromomethane	5.0	4.8	96	80-120	
Chloroethane	5.0	5.6	112	80-120	
Trichlorofluoromethane	5.0	5.8	116	80-120	
1,1-Dichloroethene	5.0	5.9	118	80-120	
Methylene chloride	5.0	4.9	98	80-120	
Methyl *tert*- Butyl Ether (MTBE)	5.0	4.4	88	80-120	
trans -1,2-Dichloroethene	5.0	5.6	112	80-120	
1,1-Dichloroethane	5.0	4.9	98	80-120	
2,2-Dichloropropane	5.0	5.6	112	80-120	
cis -1,2-Dichloroethene	5.0	5.3	106	80-120	
Chloroform	5.0	5.3	106	80-120	
1,1,1-Trichloroethane (TCA)	5.0	5.6	112	80-120	
Carbon tetrachloride	5.0	6.0	120	80-120	
1,1-Dichloropropene	5.0	5.2	104	80-120	
Benzene	5.0	4.9	98	80-120	
1,2-Dichloroethane (EDC)	5.0	4.9	98	80-120	
Trichloroethene (TCE)	5.0	5.1	102	80-120	
1,2-Dichloropropane	5.0	4.0	80	80-120	
Dibromomethane	5.0	4.1	82	80-120	
Bromodichloromethane	5.0	4.2	84	80-120	
cis-1,3-Dichloropropene	5.0	4.2	84	80-120	
Toluene	5.0	4.0	80	80-120	
Trans-1,3-Dichloropropene	5.0	4.1	82	80-120	
1,1,2-Trichloroethane	5.0	4.8	96	80-120	
Tetrachloroethene (PCE)	5.0	4.8	96	80-120	
1,3-Dichloropropane	5.0	4.2	84	80-120	
Dibromochloromethane	5.0	4.3	86	80-120	
1,2-Dibromoethane (EDB)	5.0	4.4	88	80-120	
Chlorobenzene	5.0	5.1	102	80-120	
1,1,1,2-Tetrachloroethane	5.0	5.0	100	80-120	
Ethylbenzene	5.0	4.7	94	80-120	
Total Xylenes	15.0	13.4	89	80-120	
Styrene	5.0	4.1	82	80-120	

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SITE NO. 2840 PROJECT
Montrose Environmental
Burien, Washington
Libby Project # L190913-5

Laboratory Control Sample

	Spiked Conc. (µg/L)	LCS Response (µg/L)	LCS Recovery (%)	LCS Recovery Limits (%)	Data Flag
Bromoform	5.0	4.1	82	80-120	
Isopropylbenzene	5.0	4.3	86	80-120	
1,2,3-Trichloropropane	5.0	4.1	82	80-120	
Bromobenzene	5.0	4.6	92	80-120	
1,1,2,2-Tetrachloroethane	5.0	4.4	88	80-120	
n-Propylbenzene	5.0	5.5	110	80-120	
2-Chlorotoluene	5.0	4.0	80	80-120	
4-Chlorotoluene	5.0	4.1	82	80-120	
1,3,5-Trimethylbenzene	5.0	4.1	82	80-120	
tert-Butylbenzene	5.0	4.1	82	80-120	
1,2,4-Trimethylbenzene	5.0	4.1	82	80-120	
sec-Butylbenzene	5.0	4.5	90	80-120	
1,3-Dichlorobenzene	5.0	4.5	90	80-120	
Isopropyltoluene	5.0	5.1	102	80-120	
1,4-Dichlorobenzene	5.0	5.6	112	80-120	
1,2-Dichlorobenzene	5.0	4.6	92	80-120	
n-Butylbenzene	5.0	5.4	108	80-120	
1,2-Dibromo-3-Chloropropane	5.0	4.1	82	80-120	
1,2,4-Trichlorolbenzene	5.0	5.9	118	80-120	
Hexachloro-1,3-butadiene	5.0	5.8	116	80-120	
Naphthalenes	5.0	5.9	118	80-120	
1,2,3-Trichlorobenzene	5.0	5.9	118	80-120	

Surrogate Recovery			
Dibromofluoromethane	108	65-135	
1,2-Dichloroethane-d4	97	65-135	
Toluene-d8	84	65-135	
4-Bromofluorobenzene	102	65-135	

ANALYSES PERFORMED BY: Sherry Chilcutt

Libby Environmental, Inc.

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SITE NO. 2840 PROJECT
Montrose Environmental
Burien, Washington
Libby Project # L190913-5

Analyses of Gasoline (NWTPH-Gx) in Water

Sample Number	Date Analyzed	Surrogate Recovery (%)	Gasoline (µg/L)
Method Blank	9/16/19	82%	nd
SB-16-W	9/16/19	77%	nd
Practical Quantitation Limit			100

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (Toluene-d8): 65% TO 135%

ANALYSES PERFORMED BY: Paul Burke

Libby Environmental, Inc.

3322 South Bay Road NE
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SITE NO. 2840 PROJECT
Montrose Environmental
Burien, Washington
Libby Project # L190913-5

Analyses of Gasoline (NWTPH-Gx) & BTEX (EPA Method 8260D) in Soil

Sample Description		Method Blank	SB-20-5	SB-21-5	SB-21-5 Dup
Date Sampled		N/A	9/11/19	9/11/19	9/11/19
Date Analyzed	PQL (mg/kg)	9/16/19 (mg/kg)	9/16/19 (mg/kg)	9/16/19 (mg/kg)	9/16/19 (mg/kg)
Benzene	0.02	nd	nd	nd	nd
Toluene	0.10	nd	nd	nd	nd
Ethylbenzene	0.05	nd	nd	nd	nd
Total Xylenes	0.15	nd	nd	nd	nd
Gasoline	10	nd	nd	nd	nd
Surrogate Recovery					
Dibromofluoromethane		118	97	97	96
1,2-Dichloroethane-d4		102	106	108	117
Toluene-d8		116	122	97	98
4-Bromofluorobenzene		86	94	106	118

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 65% TO 135%

ANALYSES PERFORMED BY: Paul Burke

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SITE NO. 2840 PROJECT
Montrose Environmental
Burien, Washington
Libby Project # L190913-5

QA/QC for Gasoline (NWTPH-Gx) & BTEX (EPA Method 8260D) in Soil

Matrix Spike Sample Identification: SB-20-5

	Spiked Conc. (mg/kg)	MS Response (mg/kg)	MSD Response (mg/kg)	MS Recovery (%)	MSD Recovery (%)	RPD (%)	Limits Recovery (%)
Benzene	0.25	0.24	0.24	98	96	1.2	65-135
Toluene	0.25	0.25	0.22	101	88	13.9	65-135
Ethylbenzene	0.25	0.29	0.28	116	112	3.9	65-135
Total Xylenes	0.75	0.90	0.95	120	127	5.4	65-135

Surrogate Recovery (%)	MS	MSD	
Dibromofluoromethane	101	119	65-135
1,2-Dichloroethane-d4	108	124	65-135
Toluene-d8	98	87	65-135
4-Bromofluorobenzene	123	121	65-135

ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Paul Burke

Laboratory Control Sample

	Spiked Conc. (mg/kg)	LCS Response (mg/kg)	LCS Recovery (%)	LCS Recovery Limits (%)	Data Flag
Benzene	0.25	0.25	101	80-120	
Toluene	0.25	0.26	106	80-120	
Ethylbenzene	0.25	0.27	107	80-120	
Total Xylenes	0.75	0.78	104	80-120	

Surrogate Recovery		
Dibromofluoromethane	106	65-135
1,2-Dichloroethane-d4	110	65-135
Toluene-d8	96	65-135
4-Bromofluorobenzene	88	65-135

ANALYSES PERFORMED BY: Paul Burke

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SITE NO. 2840 PROJECT
Montrose Environmental
Burien, Washington
Libby Project # L190913-5

Hydrocarbon Identification by NWTPH-HCID for Soil

Sample Number	Date Analyzed	Surrogate Recovery (%)	Gasoline (mg/kg)	Diesel (mg/kg)	Oil (mg/kg)
Soil Blank 091719	9/17/19	132	nd	nd	nd
Soil Blank 091619	9/16/19	89	nd	nd	nd
SB-16-10	9/16/19	116	nd	nd	nd
SB-16-15	9/16/19	113	nd	nd	nd
SB-16-35	9/16/19	99	nd	nd	nd
SB-16-45	9/16/19	112	nd	nd	nd
SB-16-90	9/16/19	125	nd	nd	nd
SB-17-10	9/16/19	125	nd	nd	nd
SB-17-20	9/16/19	126	nd	nd	nd
SB-17-30	9/16/19	119	nd	nd	nd
SB-17-35	9/16/19	117	nd	nd	nd
SB-18-15	9/16/19	122	nd	nd	nd
SB-18-20	9/16/19	126	nd	nd	nd
SB-18-30	9/16/19	126	nd	nd	nd
SB-19-10	9/16/19	129	nd	nd	nd
SB-19-20	9/16/19	117	nd	nd	nd
SB-19-30	9/17/19	132	nd	nd	nd
SB-19-35	9/17/19	134	nd	nd	nd
Practical Quantitation Limit			20	50	250

"nd" Indicates not detected at listed detection limits.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (2-F Biphenyl): 65% TO 135%

ANALYSES PERFORMED BY: Evan Neims

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SITE NO. 2840 PROJECT
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Burien, Washington
Libby Project # L190913-5

Hydrocarbon Identification by NWTPH-HCID for Soil

Sample Number	Date Analyzed	Surrogate Recovery (%)	Gasoline (mg/kg)	Diesel (mg/kg)	Oil (mg/kg)
Soil Blank 091719	9/17/19	132	nd	nd	nd
Soil Blank 091619	9/16/19	89	nd	nd	nd
SB-20-10	9/17/19	117	nd	nd	nd
SB-20-25	9/17/19	120	nd	nd	nd
SB-20-25 Dup	9/17/19	121	nd	nd	nd
SB-20-35	9/16/19	122	nd	nd	nd
SB-20-35 Dup	9/16/19	119	nd	nd	nd
SB-21-15	9/17/19	119	nd	nd	nd
SB-21-15 Dup	9/17/19	114	nd	nd	nd
SB-21-20	9/17/19	119	nd	nd	nd
SB-21-35	9/17/19	131	nd	nd	nd
Practical Quantitation Limit			20	50	250

"nd" Indicates not detected at listed detection limits.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (2-F Biphenyl): 65% TO 135%

ANALYSES PERFORMED BY: Evan Neims

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SITE NO. 2840 PROJECT
Montrose Environmental
Burien, Washington
Libby Project # L190913-5

Analyses of Diesel & Oil (NWTPH-Dx/Dx Extended) in Soil

Sample Number	Date Analyzed	Surrogate Recovery (%)	Diesel (mg/kg)	Oil (mg/kg)
Method Blank	9/17/19	89	nd	nd
SB-20-5	9/17/19	118	nd	nd
SB-21-5	9/17/19	114	nd	nd
SB-21-5 Dup	9/17/19	112	nd	nd
Practical Quantitation Limit			50	250

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (2-F Biphenyl): 65% TO 135%

ANALYSES PERFORMED BY: Evan Neims

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SITE NO. 2840 PROJECT
Montrose Environmental
Burien, Washington
Libby Project # L190913-5

Analyses of Total Lead in Soil by EPA Method 7010 Series

Sample Number	Date Analyzed	Lead (mg/kg)
Method Blank	9/16/19	nd
SB-20-5	9/16/19	8.3
SB-21-5	9/16/19	nd
SB-21-5 Dup	9/16/19	nd
Practical Quantitation Limit		5.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Dirk Peterson

Libby Environmental, Inc.

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SITE NO. 2840 PROJECT
Montrose Environmental
Burien, Washington
Libby Project # L190913-5

QA/QC for Total Lead in Soil by EPA Method 7010 Series

Sample Number	Date Analyzed	Lead (% Recovery)
LCS	9/16/19	109%
SB-21-5 MS	9/16/19	90%
SB-21-5 MSD	9/16/19	85%
RPD	9/16/19	6%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Dirk Peterson

Libby Environmental, Inc.

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SITE NO. 2840 PROJECT
Montrose Environmental
Burien, Washington
Libby Project # L190913-5

Analyses of Diesel & Oil (NWTPH-Dx/Dx Extended) in Water

Sample Number	Date Analyzed	Surrogate Recovery (%)	Diesel (µg/L)	Oil (µg/L)
Method Blank	9/16/19	112	nd	nd
SB-16-W	9/16/19	89	nd	nd
Practical Quantitation Limit			200	400

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (2-F Biphenyl): 65% TO 135%

ANALYSES PERFORMED BY: Evan Neims

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SITE NO. 2840 PROJECT
Montrose Environmental
Burien, Washington
Libby Project # L190913-5

Analyses of Total Lead in Water by EPA 7010 Series

Sample Number	Date Analyzed	Lead (µg/L)
Method Blank	9/16/19	nd
SB-16-W	9/16/19	39
Practical Quantitation Limit		5.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Dirk Peterson

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SITE NO. 2840 PROJECT
Montrose Environmental
Burien, Washington
Libby Project # L190913-5

QA/QC for Total Lead in Water by EPA 7010 Series

Sample Number	Date Analyzed	Lead (% Recovery)
LCS	9/16/19	110%
L190913-1 MS	9/16/19	85%
L190913-1 MSD	9/16/19	94%
RPD	9/16/19	10%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Dirk Peterson

Libby Environmental, Inc.

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Email: libbyenv@gmail.com

SITE NO. 2840 PROJECT
Montrose Environmental
Libby Project # L190913-5
Date Received 9/13/2019
Time Received 3:00 PM

Received By KD

Sample Receipt Checklist

Chain of Custody

1. Is the Chain of Custody complete?	☑	Yes	☐	No		
2. How was the sample delivered?	☐	Hand Delivered	☑	Picked Up	☐	Shipped

Log In

3. Cooler or Shipping Container is present.	☑	Yes	☐	No	☐	N/A
4. Cooler or Shipping Container is in good condition.	☑	Yes	☐	No	☐	N/A
5. Cooler or Shipping Container has Custody Seals present.	☐	Yes	☑	No	☐	N/A
6. Was an attempt made to cool the samples?	☑	Yes	☐	No	☐	N/A
7. Temperature of cooler (0°C to 8°C recommended)	0.0 °C					
8. Temperature of sample(s) (0°C to 8°C recommended)	4.2 °C					
9. Did all containers arrive in good condition (unbroken)?	☑	Yes	☐	No		
10. Is it clear what analyses were requested?	☑	Yes	☐	No		
11. Did container labels match Chain of Custody?	☑	Yes	☐	No		
12. Are matrices correctly identified on Chain of Custody?	☑	Yes	☐	No		
13. Are correct containers used for the analysis indicated?	☑	Yes	☐	No		
14. Is there sufficient sample volume for indicated analysis?	☑	Yes	☐	No		
15. Were all containers properly preserved per each analysis?	☑	Yes	☐	No		
16. Were VOA vials collected correctly (no headspace)?	☑	Yes	☐	No	☐	N/A
17. Were all holding times able to be met?	☑	Yes	☐	No		

Discrepancies/ Notes

18. Was client notified of all discrepancies?	☐	Yes	☐	No	☑	N/A

Person Notified: _____ Date: _____

By Whom: _____ Via: _____

Regarding: _____

19. Comments. _____

APPENDIX M

NON-HAZARDOUS WASTE MANIFESTS

***24 HOUR EMERGENCY RESPONSE, CALL (877) 577-2669 ***

Stericycle®
Environmental Solutions

SHIPPING PAPER

Lading Manifest: 543512-19

DELIVERY DATE	JOB # 3748199
SHIPPER / CUSTOMER: Eagle Canyon Capital	POINT OF CONTACT: Nick Olivier
ADDRESS: 12807 Des Moines Memorial Driv	PHONE #: (360)365-9942
CITY, STATE, ZIP: BURIEN WA 98168	
CARRIER / TRANSPORTER: CASCADE DRILLING	PHONE #: (425)485-8908
CONSIGNEE / FACILITY: BURLINGTON ENVIRONMENTAL, LLC.	POINT OF CONTACT
ADDRESS: 20245 77th Avenue South	PHONE #: (253)872-8030
CITY, STATE, ZIP: KENT , WA 98032	

HM	US DOT Description *(Including Proper Shipping Name, Hazard Class, and ID Number)*	Containers No.	Containers Type	Total Quantity	UOM
A	MATERIAL NOT REGULATED BY DOT (NON-HAZARDOUS)	12	DM	7200	P
B	~~MATERIAL NOT REGULATED BY DOT (NON-HAZARDOUS)~~ KS		~~DM~~ KS		P
C					
D					

F442

Special Handling Instruction and Additional Information:

a) 153404-00 - NON-HAZARDOUS WASTE SOLID (SOIL) - LF01 (1) b) 153405-00 - NON-HAZARDOUS WASTE LIQUID (WATER) - WAT05 (2)

Placards Provided YES_____ NO_____

SHIPPER'S CERTIFICATION: "I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations." I also certify that all times listed above are true and correct.

		MONTH	DAY	YEAR
(SHIPPER) PRINT OR TYPE NAME: x Nicholas Olivier	SIGNATURE: x	10	11	19
(CARRIER/TRANSPORTER) PRINT OR TYPE NAME: x Nick Jachim	SIGNATURE: x	10	11	19
(CONSIGNEE/FACILITY) PRINT OR TYPE NAME: x Christine Santos	SIGNATURE: x '19 OCT 11 AM 10:34	10	11	19

CONSIGNEE

***24 HOUR EMERGENCY RESPONSE, CALL (877) 577-2669 ***

Stericycle®
Environmental Solutions

SHIPPING PAPER

Lading Manifest: 543513-19

DELIVERY DATE	JOB #748200
SHIPPER / CUSTOMER: Eagle Canyon Capital	POINT OF CONTACT: Nick Olivier
ADDRESS: 12807 Des Moines Memorial Driv	PHONE #: (360)365-9942
CITY, STATE, ZIP: BURIEN WA 98168	
CARRIER / TRANSPORTER: CASCADE DRILLING	PHONE #: (425)485-8908
CONSIGNEE / FACILITY: BURLINGTON ENVIRONMENTAL, LLC.	POINT OF CONTACT
ADDRESS: 20245 77th Avenue South	PHONE #: (253)872-8030
CITY, STATE, ZIP: KENT , WA 98032	

HM	US DOT Description *(Including Proper Shipping Name, Hazard Class, and ID Number)*	Containers No.	Containers Type	Total Quantity	UOM
A F4941	MATERIAL NOT REGULATED BY DOT (NON-HAZARDOUS)	8	DM	4800	P
B F4941	MATERIAL NOT REGULATED BY DOT (NON-HAZARDOUS)	1	DM	400	P
C					
D					

Special Handling Instruction and Additional Information:

a) 153404-00 - NON-HAZARDOUS WASTE SOLID (SOIL) - LF01 (1) b) 153405-00 - NON-HAZARDOUS WASTE LIQUID (WATER) - WAT05 (2)

Placards Provided YES_____ NO_____

SHIPPER'S CERTIFICATION: "I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations." I also certify that all times listed above are true and correct.

		MONTH	DAY	YEAR
(SHIPPER) PRINT OR TYPE NAME: X Nicholas Olivier	SIGNATURE: X	10	11	19
(CARRIER/TRANSPORTER) PRINT OR TYPE NAME: X Nikk Jachim	SIGNATURE: X	10	11	19
(CONSIGNEE/FACILITY) PRINT OR TYPE NAME: X Jerremmy Miller	SIGNATURE: X	10	11	19

CONSIGNEE

'19 OCT 11 PM 1:10

APPENDIX N

KING COUNTY ASSESSOR'S PROPERTY REPORT

Department of Assessments

500 Fourth Avenue, Suite ADM-AS-0708, Seattle, WA 98104

Office Hours: Mon - Fri 8:30 a.m. to 4:30 p.m.

TEL: 206-296-7300
FAX: 206-296-5107
TTY: 206-296-7888

Send us mail

New Search | Property Tax Bill | Map This Property | Glossary of Terms | Property Detail

PARCEL

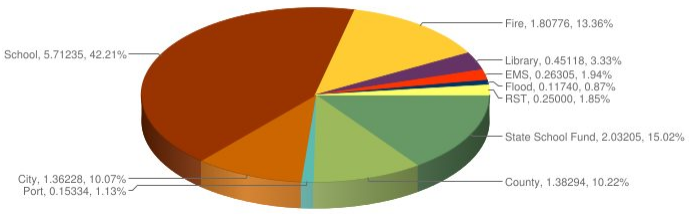
Parcel Number	162304-9066
Name	GTY-PACIFIC LEASING LLC
Site Address	12807 DES MOINES MEMORIAL DR S 98168
Legal	POR OF NW 1/4 LY S OF S 128TH ST & NWLY OF DES MOINES WAY S & ELY & NELY OF LN RNG S 00-00-23 W 89.98 FT FR PT ON S MGN OF SD S 128TH ST 135.17 FT E OF NXN WITH SELY MGN OF 15TH AVE S BOTH AS NOW LOCATED TH S 70-25-34 E 100.55 FT TO NWLY MGN OF SD DES MOINES WAY S

BUILDING 1

Year Built	1966
Building Net Square Footage	1512
Construction Class	MASONRY
Building Quality	AVERAGE
Lot Size	13066
Present Use	Conv Store with Gas
Views	No
Waterfront	

TOTAL LEVY RATE DISTRIBUTION

Tax Year: 2017 **Levy Code:** 0933 **Total Levy Rate:** $13.53235 **Total Senior Rate:** $7.42615



48.97% Voter Approved

Click here to see levy distribution comparison by year.

TAX ROLL HISTORY

Valued Year	Tax Year	Appraised Land Value ($)	Appraised Imps Value ($)	Appraised Total ($)	Taxable Land Value ($)	Taxable Imps Value ($)	Taxable Total ($)
2016	2017	169,800	225,900	395,700	169,800	225,900	395,700
2015	2016	169,800	231,600	401,400	169,800	231,600	401,400
2014	2015	169,800	242,000	411,800	169,800	242,000	411,800
2013	2014	169,800	250,300	420,100	169,800	250,300	420,100
2012	2013	169,800	257,600	427,400	169,800	257,600	427,400
2011	2012	169,800	264,600	434,400	169,800	264,600	434,400
2010	2011	195,900	190,700	386,600	195,900	190,700	386,600
2009	2010	195,900	198,200	394,100	195,900	198,200	394,100
2008	2009	195,900	211,000	406,900	195,900	211,000	406,900
2007	2008	195,800	187,100	382,900	195,800	187,100	382,900
2006	2007	195,900	184,500	380,400	195,900	184,500	380,400
2005	2006	130,600	185,800	316,400	130,600	185,800	316,400
2004	2005	130,600	184,600	315,200	130,600	184,600	315,200
2003	2004	130,600	186,400	317,000	130,600	186,400	317,000
2002	2003	130,600	186,500	317,100	130,600	186,500	317,100
2001	2002	130,600	165,400	296,000	130,600	165,400	296,000

Reference Links:

- King County Taxing Districts Codes and Levies (.PDF)
- King County Tax Links
- Property Tax Advisor
- Washington State Department of Revenue (External link)
- Washington State Board of Tax Appeals (External link)
- Board of Appeals/Equalization
- Districts Report
- iMap
- Recorder's Office

Scanned images of surveys and other map documents

2000	2001	104,500	165,600	270,100	104,500	165,600	270,100
1999	2000	104,500	116,200	220,700	104,500	116,200	220,700
1998	1999	104,500	77,000	181,500	104,500	77,000	181,500
1997	1998	0	0	0	104,500	77,000	181,500
1996	1997	0	0	0	65,300	116,200	181,500
1994	1995	0	0	0	65,300	116,200	181,500
1992	1993	0	0	0	65,300	111,000	176,300
1990	1991	0	0	0	45,700	98,100	143,800
1988	1989	0	0	0	54,000	89,800	143,800
1986	1987	0	0	0	48,600	65,500	114,100
1984	1985	0	0	0	48,600	65,500	114,100
1982	1983	0	0	0	48,600	65,400	114,000

Updated: March 17, 2016

Information for... **Do more online**
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APPENDIX O

DEPARTMENT OF ECOLOGY WELL LOGS

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

WATER WELL REPORT
STATE OF WASHINGTON

23/04-16 D
Application No.

Permit No.

(1) OWNER: Name Seattle Water Department Address Exchange Building, 2nd & Marion, Seattle 98104

(2) LOCATION OF WELL: County King NE¼NE¼ NW¼ NW¼ Sec. 16 T. 24 N. R. 4E W.M.
Bearing and distance from section or subdivision corner

(3) PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☒
Irrigation ☐ Test Well ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one) TW-2I
New well ☒ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☒ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 20 inches.
Drilled 297 ft. Depth of completed well 297 ft.

(6) CONSTRUCTION DETAILS:
Casing installed: 20" Diam. from 0 ft. to 297 ft.
Threaded ☐ " Diam. from ft. to ft.
Welded ☐ " Diam. from ft. to ft.

Perforations: Yes ☐ No ☒
Type of perforator used
SIZE of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: Yes ☒ No ☐
Manufacturer's Name Johnson
Type Stainless steel Model No Watermark
Diam. Slot size Varying from 216 ft. to 295 ft.
Diam. Slot size .080 & .125 from ft. to ft.

Gravel packed: Yes ☐ No ☒ Size of gravel:
Gravel placed from ft. to ft.

Surface seal: Yes ☒ No ☐ To what depth? 18 ft.
Material used in seal cement grout
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name —
Type: H.P.

(8) WATER LEVELS: Land-surface elevation above mean sea level 358 ft.
Static level 78.7 ft. below top of well Date 7-18-84
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☐ If yes, by whom?
Yield: 2190 gal./min. with 80 ft. drawdown after 96.0 hrs.
" " " "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test July 22-27, 1985
Bailer test gal./min. with ft. drawdown after hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes ☒ No ☐

(10) WELL LOG:
Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL	FROM	TO
See log of OW-2I for geology of upper portion of hole		
Brown, sandy, cobbly, GRAVEL		204
Brown, layered, fine sandy SILT & very hard laminated SILT	204	209
Brown, sandy, GRAVEL	209	271
Gray, sandy GRAVEL	271	295
Greenish-gray, sandy, gravelly SILT	295	297
Geology by RC Prior Hart Crowser & Assoc. Inc		

Work started June 14, 1985 Completed June 27, 1985

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Hokkaido Drilling & Developing Corp.
(Person, firm, or corporation) (Type or print)
Address 10416-244th St. E. P.O. Box 100 Graham, Wn 98338
[Signed] (Well Driller)
License No. 1146 Date 5-11, 19 87

(USE ADDITIONAL SHEETS IF NECESSARY)

ECY 050-1-20

23/04-16 D

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy -- Driller's Copy

WATER WELL REPORT

STATE OF WASHINGTON

Application No.

Permit No.

(1) OWNER: Name Seattle Water Dept. Address Exchange Building, 2nd & Marion, 98104

(2) LOCATION OF WELL: County King NE¼NE¼ — NW¼ NE¼ Sec. 16 T. 24 N. R. 4E W.M.

Bearing and distance from section or subdivision corner

(3) PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☐ Irrigation ☐ Test Well ☒ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one) OW-2I

New well ☒ Method: Dug ☐ Bored ☐ Deepened ☐ Cable ☒ Driven ☐ Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 8 inches. Drilled 300.5 ft. Depth of completed well 300 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: 8" Diam. from 0 ft. to 300 ft.
Threaded ☐ " Diam. from ft. to ft.
Welded ☒ " Diam. from ft. to ft.

Perforations: Yes ☒ No ☐ Type of perforator used Mills Knife
SIZE of perforations 2 in. by ½ in.
4 perfs/ft perforations from 180 ft. to 290 ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: Yes ☒ No ☐ PVC screen left inside steel casing, steel left in place
Manufacturer's Name Hydrophylics Type PVC Sch. 40 Model No. 290
Diam. 2" Slot size 20 from 160 ft. to 290 ft.
Diam Slot size from ft. to ft.

Gravel packed: Yes ☒ No ☐ Size of gravel: Pea
Gravel placed from 00 ft. to 300 ft.

Surface seal: Yes ☒ No ☐ To what depth? 18' ft.
Material used in seal Cement grout
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name —
Type: H.P.

(8) WATER LEVELS: Land-surface elevation above mean sea level 360 ft.
Static level 80.9 ft. below top of well Date 7-10-85
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☒ No ☐ If yes, by whom? Hokkaido
Yield: 300 gal./min. with 2.9 ft. drawdown after 2 hrs.
" 500 " 6.0 " 6 "
" " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test
Bailer test gal./min. with ft. drawdown after hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes ☒ No ☐

(10) WELL LOG:

Formation: *Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.*

MATERIAL	FROM	TO
Brown to grayish-brown, silty gravelly, SAND (TILL)	0	17
Brown fine to medium SAND occ. gravelly & silty zones	17	61
Blue-gray SILT & clayey SILT	61	128
Brown, silty to sli silty, f-m SAND w/ some gravelly zone	128	169
Brown, sandy GRAVEL w/ cobbles	169	299
Greenish-gray, sandy, clayey SILT w/ boulders (3)	299	300.5
Geology by DC Prior Hoff Crouser Inc		

Work started March 25, 1985 Completed April 4, 1985

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Hokkaido Drilling & Developing Corp.
(Person, firm, or corporation) (Type or print)

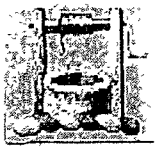
Address 10416-244th St. E. P.O. Box 100 Graham, Wn 98338

[Signed] (Well Driller)

License No. 1146 Date 5-11, 19 87

(USE ADDITIONAL SHEETS IF NECESSARY)

ECY 050-1-20



Well Report Change Form

IMPORTANT: GET AS MUCH INFORMATION AS POSSIBLE. THIS FORM WILL BE USED TO FIND THE WELL REPORT. ALL REQUIRED FIELDS MUST BE FILLED IN. USE INK PEN ONLY WHEN FILLING OUT THIS FORM.

(REQUIRED) This Well Report has been changed on (Date) _____/_____/_____

(Required) Person Requesting Change _____

(Required) Contact Phone No (_____) _____

(REQUIRED) ☐ Not in NITS ☐ NITS Log ID# _____

Regional Office: ☐ CRO ☐ ERO ☐ NWRO ☐ SWRO

Well Type: ☐ Water Well ☐ Resource Protection Well

Notice of Intent # _____ Unique Ecy Well ID Tag No: _____

(Required) Original Owner Name: _____

Well Street Address: _____

City: _____ County: _____ Zip Code: _____

Geographic Location:

(Required) _____ 1/4 of the _____ 1/4 Section _____ Township _____ Range _____ EWM or WWM *(circle one)*

(Optional) Lat Degrees _____ Lat Time _____

Long Degrees _____ Long Time _____ Horizontal collection method code _____

Tax Parcel No (include all zeros and dashes): _____

Type of Work: ☐ New Well ☐ Reconditioned ☐ Deepened

Well Report Recvd Date: ____/____/____ Well Completed Date: ____/____/____

Well Diameter (in): _____ Well Depth (ft): _____ Other: _____

Driller License No: _____ Trainee License No: _____

Other (Specify): _____

(Required) Reason for Change _____

(Required) Tracker Signature: _____

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APPENDIX P

COMPLETED TERRESTRIAL ECOLOGICAL EVALUATION

Voluntary Cleanup Program

Washington State Department of Ecology
Toxics Cleanup Program

TERRESTRIAL ECOLOGICAL EVALUATION FORM

Under the Model Toxics Control Act (MTCA), a terrestrial ecological evaluation is necessary if hazardous substances are released into the soils at a Site. In the event of such a release, you must take one of the following three actions as part of your investigation and cleanup of the Site:

1. Document an exclusion from further evaluation using the criteria in WAC 173-340-7491.
2. Conduct a simplified evaluation as set forth in WAC 173-340-7492.
3. Conduct a site-specific evaluation as set forth in WAC 173-340-7493.

When requesting a written opinion under the Voluntary Cleanup Program (VCP), you must complete this form and submit it to the Department of Ecology (Ecology). The form documents the type and results of your evaluation. You still need to submit your evaluation as part of your cleanup plan or report.

If you have questions about how to conduct a terrestrial ecological evaluation, please contact the Ecology site manager assigned to your Site. For additional guidance, please refer to www.ecy.wa.gov/programs/tcp/policies/terrestrial/TEEHome.htm.

Step 1: IDENTIFY HAZARDOUS WASTE SITE	
Please identify below the hazardous waste site for which you are documenting an evaluation.	
Facility/Site Name: Convenience Retails 2840/Jackpot Station 284/Time Oil 01-284	
Facility/Site Address: 12807 Des Moines Memorial Drive, Burien, Washington	
Facility/Site No: 45191292	VCP Project No.: n/a

Step 2: IDENTIFY EVALUATOR			
Please identify below the person who conducted the evaluation and their contact information.			
Name: Nicholas J. Olivier		Title: Project Geologist	
Organization: ES Engineering Services, LLC			
Mailing address: 4150 B Pl. NW, Suite 106			
City: Auburn		State: WA	Zip code: 98001
Phone: 253-656-4856	Fax:	E-mail: nolivier@es-online.com	

Step 3: DOCUMENT EVALUATION TYPE AND RESULTS

A. Exclusion from further evaluation.

1. Does the Site qualify for an exclusion from further evaluation?

☐ Yes *If you answered **"YES,"** then answer **Question 2**.*

■ No or Unknown *If you answered **"NO" or "UKNOWN,"** then skip to **Step 3B** of this form.*

2. What is the basis for the exclusion? *Check all that apply. Then skip to **Step 4** of this form.*

Point of Compliance: WAC 173-340-7491(1)(a)

☐ All soil contamination is, or will be,* at least 15 feet below the surface. ***NOTE: NO SOIL CONTAMINATION HAS BEEN DETECTED***

☐ All soil contamination is, or will be,* at least 6 feet below the surface (or alternative depth if approved by Ecology), and institutional controls are used to manage remaining contamination.

Barriers to Exposure: WAC 173-340-7491(1)(b)

☐ All contaminated soil, is or will be,* covered by physical barriers (such as buildings or paved roads) that prevent exposure to plants and wildlife, and institutional controls are used to manage remaining contamination.

Undeveloped Land: WAC 173-340-7491(1)(c)

☐ There is less than 0.25 acres of contiguous[#] undeveloped[±] land on or within 500 feet of any area of the Site and any of the following chemicals is present: chlorinated dioxins or furans, PCB mixtures, DDT, DDE, DDD, aldrin, chlordane, dieldrin, endosulfan, endrin, heptachlor, heptachlor epoxide, benzene hexachloride, toxaphene, hexachlorobenzene, pentachlorophenol, or pentachlorobenzene.

☐ For sites not containing any of the chemicals mentioned above, there is less than 1.5 acres of contiguous[#] undeveloped[±] land on or within 500 feet of any area of the Site.

Background Concentrations: WAC 173-340-7491(1)(d)

☐ Concentrations of hazardous substances in soil do not exceed natural background levels as described in WAC 173-340-200 and 173-340-709.

* An exclusion based on future land use must have a completion date for future development that is acceptable to Ecology.

[±] "Undeveloped land" is land that is not covered by building, roads, paved areas, or other barriers that would prevent wildlife from feeding on plants, earthworms, insects, or other food in or on the soil.

[#] "Contiguous" undeveloped land is an area of undeveloped land that is not divided into smaller areas of highways, extensive paving, or similar structures that are likely to reduce the potential use of the overall area

B. Simplified evaluation.

1. Does the Site qualify for a simplified evaluation?

■ Yes *If you answered **"YES,"** then answer **Question 2** below.*

☐ No or Unknown *If you answered **"NO"** or **"UNKNOWN,"** then skip to **Step 3C** of this form.*

2. Did you conduct a simplified evaluation?

■ Yes *If you answered **"YES,"** then answer **Question 3** below.*

☐ No *If you answered **"NO,"** then skip to **Step 3C** of this form.*

3. Was further evaluation necessary?

☐ Yes *If you answered **"YES,"** then answer **Question 4** below.*

■ No *If you answered **"NO,"** then answer **Question 5** below.*

4. If further evaluation was necessary, what did you do?

☐ Used the concentrations listed in Table 749-2 as cleanup levels. *If so, then skip to **Step 4** of this form.*

☐ Conducted a site-specific evaluation. *If so, then skip to **Step 3C** of this form.*

5. If no further evaluation was necessary, what was the reason? *Check all that apply. Then skip to **Step 4** of this form.*

Exposure Analysis: WAC 173-340-7492(2)(a)

■ Area of soil contamination at the Site is not more than 350 square feet.

☐ Current or planned land use makes wildlife exposure unlikely. Used Table 749-1.

Pathway Analysis: WAC 173-340-7492(2)(b)

☐ No potential exposure pathways from soil contamination to ecological receptors.

Contaminant Analysis: WAC 173-340-7492(2)(c)

☐ No contaminant listed in Table 749-2 is, or will be, present in the upper 15 feet at concentrations that exceed the values listed in Table 749-2.

☐ No contaminant listed in Table 749-2 is, or will be, present in the upper 6 feet (or alternative depth if approved by Ecology) at concentrations that exceed the values listed in Table 749-2, and institutional controls are used to manage remaining contamination.

☐ No contaminant listed in Table 749-2 is, or will be, present in the upper 15 feet at concentrations likely to be toxic or have the potential to bioaccumulate as determined using Ecology-approved bioassays.

☐ No contaminant listed in Table 749-2 is, or will be, present in the upper 6 feet (or alternative depth if approved by Ecology) at concentrations likely to be toxic or have the potential to bioaccumulate as determined using Ecology-approved bioassays, and institutional controls are used to manage remaining contamination.

C. Site-specific evaluation. A site-specific evaluation process consists of two parts: (1) formulating the problem, and (2) selecting the methods for addressing the identified problem. Both steps require consultation with and approval by Ecology. *See* WAC 173-340-7493(1)(c).

1. Was there a problem? *See* WAC 173-340-7493(2).

☐ Yes *If you answered **"YES,"** then answer **Question 2** below.*

☐ No *If you answered **"NO,"** then identify the reason here and then skip to **Question 5** below:*

- ☐ No issues were identified during the problem formulation step.
- ☐ While issues were identified, those issues were addressed by the cleanup actions for protecting human health.

2. What did you do to resolve the problem? *See* WAC 173-340-7493(3).

☐ Used the concentrations listed in Table 749-3 as cleanup levels. *If so, then skip to **Question 5** below.*

☐ Used one or more of the methods listed in WAC 173-340-7493(3) to evaluate and address the identified problem. *If so, then answer **Questions 3 and 4** below.*

3. If you conducted further site-specific evaluations, what methods did you use?
Check all that apply. See WAC 173-340-7493(3).

- ☐ Literature surveys.
- ☐ Soil bioassays.
- ☐ Wildlife exposure model.
- ☐ Biomarkers.
- ☐ Site-specific field studies.
- ☐ Weight of evidence.
- ☐ Other methods approved by Ecology. If so, please specify:

4. What was the result of those evaluations?

- ☐ Confirmed there was no problem.
- ☐ Confirmed there was a problem and established site-specific cleanup levels.

5. Have you already obtained Ecology's approval of both your problem formulation and problem resolution steps?

☐ Yes If so, please identify the Ecology staff who approved those steps:

☐ No

Step 4: SUBMITTAL

Please mail your completed form to the Ecology site manager assigned to your Site. If a site manager has not yet been assigned, please mail your completed form to the Ecology regional office for the County in which your Site is located.

Northwest Region: Attn: Sara Nied 3190 160th Ave. SE Bellevue, WA 98008-5452	**Central Region:** Attn: Mark Dunbar 15 W. Yakima Ave., Suite 200 Yakima, WA 98902
Southwest Region: Attn: Scott Rose P.O. Box 47775 Olympia, WA 98504-7775	**Eastern Region:** Attn: Patti Carter N. 4601 Monroe Spokane WA 99205-1295

If you need this publication in an alternate format, please call the Toxics Cleanup Program at 360-407-7170. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.

APPENDIX Q

DEGRADATION CALCULATIONS AND EVALUATION

DEGRADATION EVALUATION

UST removal was conducted at the Site in 1990 and 1991. Remedial excavation and soil vapor extraction was conducted at the Site in 1992, and environmental site assessment activities were conducted in 1993, 1997, 2017 and 2019. Soil sampling was conducted in the vicinity of the existing and former USTs, dispensers and the remedial excavation area, with samples collected at depths ranging from 2.5 feet to 90 feet bgs. **Figure 4** presents the 1993 excavation limits and soil sample locations, and **Figure 5** presents the locations of soil borings from the site assessment activities. Historical soil sample analytical results are summarized in **Tables 1 through 4**.

In 2017, five soil borings (B-11 through B-15) were advanced at the Site to evaluate soil conditions in follow-up to remedial efforts and in areas where contaminated soil was suspected or known to remain in 1997 (**Figure 5**). Analytical results indicate much of the soil impacts had been remediated or had naturally degraded over time (**Table 2**). Only one soil sample contained concentrations of petroleum hydrocarbons exceeding MTCA Method A CULs for soil: sample B-11-10 collected on the western portion of the Property at approximately 10 feet bgs in 2017. Sample B-11-10 contained a combined TPH-Dx + TPH-Gx concentration (2,180 mg/kg) slightly exceeding the Method A CUL of 2,000 mg/kg.

In 2019, six soil borings (SB-16 through SB-21) were installed to further evaluate soil conditions at the northern, central and eastern portions of the Property. Analytical results for soil sampling completed in September 2019 were non-detect of below Method A CULs for all compounds analyzed. Overall, recent soil analytical results show residual petroleum hydrocarbon concentrations are limited in extent and likely have continued to degrade in over the past 2 years. To further support this assertion, laboratory analytical results for soil samples collected during site assessment activities in 1992 and confirmation soil sampling in 2017 were used to calculate degradation constants for the detected constituents, and to calculate estimated depletion rates for location B-11.

The following equation was used:

$$N = N_0 * e^{k*t}$$

Where:

N = soil concentration after elapsed time, t, in mg/kg
N_0 = soil concentration at initial time, t_0, in mg/kg
t = elapsed time in years
e = base of the natural logarithm, unitless
k = first order degradation constant

The equation above can be rearranged to solve for the degradation constant k:

$k = (\ln(N/N_o))*(1/t)$

Analytical data for 2017 indicate that TPH-Dx, TPH-Dx, and total lead were detected in Site soil samples; other petroleum compounds were non-detect (**Tables 2, 3 and 4**). One soil sample collected from B-11 at a depth of 10 feet (B-11-10) slightly exceeded the MTCA Method A CUL for TPH-Dx + TPH-Ox of 2,000 mg/kg. Sample B-11-10 contained TPH-Dx at 380 mg/kg and TPH-Ox at 1,800 mg/kg.

The degradation constants for the detected petroleum compounds (TPH-Dx and TPH-Ox) were calculated based on analytical results for soil samples collected from HW-4 and HW-14 in 1992 and from B-12 and B-15 in 2017, using the sample pairs of HW-4 (10 feet) and B-12-10 and HW-14 (10 feet) and B-15-10. Based on the calculations, the more conservative degradation constant was then used to estimate the current residual petroleum compound concentrations.

The attached table presents the degradation calculation results which indicate the concentrations of TPH-Dx and TPH-Ox at sample location B-11-10 are anticipated to have degraded to below the MTCA Methods A CULs. As shown, TPH-Dx is estimated to have degraded from 380 mg/kg in 2017 to a current value of 309 mg/kg. TPH-Ox estimations show degradation from 1,800 mg/kg in 2017 to a current value of 1,412 mg/kg. The current combined TPH-Dx + TPH-Ox concentration at B-11-10 is estimated to be 1,712 mg/kg, which is below the MTCA Method A CUL.

The calculated values demonstrate that current soil concentrations in the area of B-11 are expected to have naturally attenuated over the past 2 years to below MTCA Method A CULs for soil. Based on current soil sample analytical results and the degradation calculations, COC concentrations meet MTCA cleanup criteria and are considered protective of public health and the environment.

Degradation Calculations

STEP 1 - TPH-Dx/Ox Degradation Constant Calculation: $k = \ln(N/N_0)*(1/t)$

TPH-Dx Degradation Constant

Sample (collected 12/08/92)	Sample (collected 8/8/17)	Final Concentration, N	Initial Concentration, N_0	Time Elapsed, t	Degradation Constant, k
12/8/1992	8/8/2017	(mg/kg)	(mg/kg)	(years)	
HW-4 (10 feet bgs)	B-12-10*	50	1,200	24.68219178	-0.129
HW-14 (10 feet bgs)	B-15-10*	50	470	24.68219178	-0.091

TPH-Ox Degradation Constant

Sample (collected 12/08/92)	Sample (collected 8/8/17)	Final Concentration, N	Initial Concentration, N_0	Time Elapsed, t	Degradation Constant, k
12/8/1992	8/8/2017	(mg/kg)	(mg/kg)	(years)	
HW-4 (10 feet bgs)	B-12-10*	100	6,600	24.68219178	-0.170
HW-14 (10 feet bgs)	B-15-10*	100	1,400	24.68219178	-0.107

* - Samples B-12-10 and B-15-10 were non-detect for TPH-Dx (<50 mg/kg) and TPH-Ox (<100 mg/kg); the detection limit value was used for the calculations.

STEP 2 - Calculation of Estimated Current Concentration at Historical Impacted Location: $N=N_0*e^{k*t}$

West of Station Building - Location B-11

Estimated TPH-Dx Concentration (based on the more conservative calculated constant k = -0.091)

B-11	Estimated Current 11/14/2019 Concentration, N (mg/kg)	Historical Measured 8/7/2017 Concentration, N_0 (mg/kg)	Time Elapsed, t (years)	Degradation Constant Used, k
B-11-10 (collected 8/7/17)	309	380	2.271	-0.091

Estimated TPH-Ox Concentration (based on the more conservative calculated constant k = -0.107)

B-11	Estimated Current 11/14/2019 Concentration, N (mg/kg)	Historical Measured 8/7/2017 Concentration, N_0 (mg/kg)	Time Elapsed, t (years)	Degradation Constant Used, k
B-11-10 (collected 8/7/17)	1,412	1,800	2.271	-0.107

Note:
mg/kg = milligram per kilogram
TPH-Dx = Total petroleum hydrocarbons as oil range organices analyzed by NWTPH-Dx
TPH-Ox = Total petroleum hydrocarbons as diesel range organices analyzed by NWTPH-Dx