



REMEDIATION INVESTIGATION REPORT

**SHELL-BRANDED WHOLESALE FACILITY
11700 NORTHEAST 160TH STREET
BOTHELL, WASHINGTON**

SAP CODE	120531
INCIDENT NO.	92995017
ECOLOGY F/S NO.	63265631
VCP NO.	NW2053

Prepared For:
Shell Oil Products US
20945 S. Wilmington Ave
Carson, CA 90810

MARCH 2, 2011
REF. NO. 241809 (6)

This report is printed on recycled paper.

Prepared by:
Conestoga-Rovers
& Associates

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Christina McClelland

Brian Peters, LG



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1.0 INTRODUCTION

1.1 SITE INFORMATION

<i>Site Name:</i>	Shell-Branded Wholesale Facility
<i>Site Address:</i>	11700 Northeast 160 th Street, Bothell, WA
<i>Voluntary Cleanup Program Number:</i>	NW2053
<i>Project Consultant:</i>	Conestoga-Rovers & Associates
<i>Project Consultant Contact Information:</i>	Christina McClelland 20818 44 th Avenue West, Suite 190 Lynnwood, Washington, 98036 Office – 425.563.6500 Direct – 425.563.6514
<i>Current Owner/Operator:</i>	PacWest Energy, LLC

1.2 PURPOSE

Conestoga-Rovers & Associates (CRA) prepared this Remedial Investigation (RI) report on behalf of Equilon Enterprises LLC (Equilon) dba Shell Oil Products US (SOPUS) for the Shell-branded wholesale facility located at 11700 Northeast 160th Street, Bothell, King County, Washington, at the northeast corner of Northeast 160th Street and Brickyard Road/Juanita Woodinville Way Northeast (Property; Figure 1).

This RI report was prepared to satisfy the items required by Washington Administrative Code (WAC) 173-340-350 and summarizes remedial investigation findings for the Site. The Site background and summary of previous investigations and remediation activities presented in this report are a summary of historical Site investigations, the 2009 and 2010 Site investigations completed by CRA, and documents prepared by CRA and previous consultants. A list of all documents reviewed in preparation of this RI report is included in Appendix A.

2.0 SITE IDENTIFICATION AND DESCRIPTION

2.1 SITE DISCOVERY AND REGULATORY STATUS

In December 1991, the removal and replacement of underground storage tanks (USTs) at the Property facilitated soil sampling to assess subsurface conditions in the vicinity of

five USTs, product dispensers, and product piping at the Property (Figure 2). Soil samples were collected from the sidewalls and bottoms of the excavations for the former gasoline, waste oil, and heating oil USTs, dispenser islands, and product piping trenches. Laboratory analysis of the soil samples collected in the vicinity of the dispenser islands and former gasoline UST pit indicated concentrations of petroleum hydrocarbons at concentrations above the Washington State Department of Ecology (Ecology) Model Toxics Control Act (MTCA) Method A cleanup levels. No specific equipment failure was identified at the time of discovery.

A petroleum release impacting soil and groundwater was reported to Ecology on December 30, 1991, and the Site was listed with Ecology's leaking underground storage tank (LUST) program (ID #2849). The Site was entered into Ecology's Voluntary Cleanup Program (VCP) in 2009 and issued site number NW2053. The current status of the Site with Ecology is "Cleanup Started" for soil and groundwater as of May 1992.

MTCA Method A cleanup levels for soil and groundwater will be used as screening levels for purposes of discussion of investigation results. Cleanup standards are more fully developed and discussed in Section 8.

2.2 SITE AND PROPERTY LOCATION/DEFINITION

The Property is an active Shell-branded wholesale facility located at the northeast corner of Brickyard Road (also known as Juanita Woodinville Way Northeast) and Northeast 160th Street in Bothell, Washington (Figure 1). In July 1998, the Property was transferred from Texaco Refining & Marketing, Inc. (TRMI) to Equilon and then sold to PacWest Energy, LLC. in December 2009. A legal description of the Property, including past and present Property owners and operators, is included in Appendix B.

The MTCA site (Site) is defined as all affected areas from the petroleum release associated with the Property and potentially impacted adjacent parcels. The Site is confined to the Property boundary (Figure 2).

2.3 NEIGHBORHOOD SETTING

The Property is in an area zoned for neighborhood commercial use. The nearest single family and multi-family residential areas are located approximately 200 feet to the southeast and approximately 350 feet to the northwest. The Property is bounded by Brickyard Road to the west with the Interchange Building Plaza beyond, multi-family residences to the northwest, the Evergreen Academy school campus to the north and east, Northeast 160th Street to the south with a Chevron-branded service station and

commercial businesses beyond (Figure 3). Interstate 405 is located approximately 500 feet west of the Property. The nearest surface water is Juanita Creek located approximately ½ mile southwest of the Site. The Sammamish River is also located within ¾ mile east of the Property and flows to the north and then west, eventually emptying into Lake Washington approximately 3.5 miles northwest of the Property.

2.4 PHYSIOGRAPHIC SETTING/TOPOGRAPHY

The Property is located at approximately 300 feet above mean sea level (msl) in the east-west trending Sammamish River drainage basin northwest of Lake Washington. The local topography is relatively flat with gentle hills located between the foothills of the Cascade Mountain range to the east and Puget Sound to the west. The Sammamish River originates in the northern end of Lake Sammamish and travels north and then west to Lake Washington. The Sammamish River is fed by various creeks in the vicinity of the Property, including Juanita Creek.

Surface cover at the Property is primarily asphalt and concrete pavement with areas of landscaping in the northern and southwestern portions of the Property. A drainage swale is located in the southwestern portion of the Property, indicating runoff generated on the Property flows to the southwest, and outfalls into the city storm water culvert, located beneath Brickyard Road. The topography in the vicinity of the Property has a slight slope to the west. According to Snohomish County Public Utility District (PUD), runoff entering the storm drain culvert flows west beneath Brickyard Road, and then along the right-of-way for Interstate 405 and outfalls into a deep bioswale that runs along the east side of Interstate 405 (Figure 3).

3.0 PROPERTY DEVELOPMENT AND HISTORY

3.1 PAST PROPERTY USES AND FACILITIES

According to King County parcel records, the Property was developed in 1972 when the station building was constructed. However, according to Ecology UST records, the heating oil UST at the Property was installed in 1964. Based on historical aerial photographs, the Property appears to have been undeveloped in 1968; therefore, the Property likely remained undeveloped until 1972 as indicated by King County records. The Property operated as a Texaco-branded service station since the time of development until July 1998 when Equilon assumed ownership of the Property and the Property began operation as a Shell-branded service station. According to a 1971 as-built drawing original facilities on the Property included three 8,000-gallon gasoline USTs, one 550-gallon waste oil UST, a 1,000-gallon heating oil UST, two dispenser islands and an automotive repair shop with two hydraulic hoists located within the current station

building (Figure 2). UST upgrades were completed in 1991 when the current Site facilities were installed. In 2004, the second generation waste oil UST was removed from the Property. The Table below summarizes historical facilities at the Property associated with service station activities.

<i>UST Volume</i>	<i>Content</i>	<i>Date Installed</i>	<i>Date Decommissioned</i>
8,000-gallon	Regular Leaded Gasoline	1972	1991
8,000-gallon	Unleaded Gasoline	1972	1991
8,000-gallon	Super Unleaded Gasoline	1972	1991
550-gallon	Waste Oil	1972	1991
1,000-gallon	Heating Oil	1972	1991
550-gallon	Waste Oil	1991	2004

3.2 CURRENT PROPERTY USE AND FACILITIES

The Property currently operates as a Shell-branded wholesale facility. Current facilities on the Property include a station building, two dispenser islands, two 10,000-gallon gasoline USTs, one 12,000-gallon gasoline UST, one 10,000-gallon diesel UST, and one 1,000-gallon heating oil UST. The gasoline and diesel USTs are situated within a common excavation in the eastern portion of the Property and the heating oil UST is situated in an excavation just north of the station building (Figure 2). Ecology's Tank Summary report does not indicate the presence of a diesel UST on the Property; however the service station currently dispenses diesel fuel.

<i>Tank Type & Volume</i>	<i>Content</i>	<i>Date Installed</i>	<i>Tank Status</i>
10,000-gallon UST	Gasoline	1991	Active
10,000-gallon UST	Gasoline	1991	Active
10,000-gallon UST	Diesel	1991	Active
12,000-gallon UST	Gasoline	1991	Active
1,000-gallon	Heating Oil	1991	Active

3.3 PROPOSED OR POTENTIAL FUTURE SITE USES

Planned use for the Property is uncertain; however, due to its location, it will likely continue as a commercial-use property.

3.4 ZONING

The Property is zoned for neighborhood commercial use according to the King County Zoning Atlas (2007).

3.5 TRANSPORTATION/ROADS

The Property is located on the northeastern corner of the intersection of Northeast 160th Street and Brickyard Road. Northeast 160th Street is an east-west arterial that extends approximately ½ mile between Interstate 405 to the west and a residential neighborhood to the east. Beyond Interstate 405 to the west, Northeast 160th Street turns to the southwest and becomes Juanita Woodinville Way Northeast. Juanita Woodinville Way Northeast originates near the junction of Interstate 405 and Route 522, continuing southwest approximately 3 miles until it intersects with 100th Avenue Northeast. The section of Juanita Woodinville Way Northeast to the west of the Property is also known as Brickyard Road. Brickyard Road becomes 116th Avenue Northeast immediately south of the intersection with Northeast 160th Street, while Juanita Woodinville Road continues to the southeast.

3.6 UTILITIES AND WATER SUPPLY

Utilities at the Property are primarily concentrated along the northern, eastern and southern Property boundaries. Subsurface electrical lines run north of the station building and from the station building south across the Property to the station sign. Sanitary sewer lines run north-south and turn west just south of the Property boundary and connect into the city sewer system in Northeast 160th Street. Surface runoff entering storm drains within Northeast 160th Street and adjacent properties is directed into the on-Property drainage swale via a subsurface storm water pipeline beneath Northeast 160th Street. Surface runoff is collected in the drainage swale in the southwest corner of the Property, then enters a storm drain culvert that runs underneath Brickyard Road; the culvert runs along the south side of the Interchange Building property, then turns north and runs along the right-of-way for Interstate 405. The storm water outflows into a deep bioswale located on the west side of the Interstate 405 on-ramp. Water lines are located in Northeast 160th Street, south of the Property. Drinking water for the City of Bothell is provided by Seattle Public Utilities and is sourced primarily from the South Fork Tolt River Watershed. The Watershed is fed mostly by snow melt and rainfall that flows downstream and is treated by filtration and ozonation (City of Bothell, 2009).

There is potentially one water well located within approximately ½ mile of the Property. The water well was installed in 1965 and is reportedly owned by Fred English. The well is reportedly located approximately 2,300 feet southwest of the Property, beyond

Interstate 405. The well was drilled to a total depth of 43 feet bgs with the screen interval set from 37 to 43 feet bgs. The presence of this water well could not be field confirmed.

3.7 POTENTIAL SOURCES OF SITE CONTAMINATION

Potential on-Property sources of contamination include the current and former gasoline USTs, the current diesel UST, the current heating oil UST, the former waste oil USTs, and the dispenser islands and conveyance piping, located in the central and eastern portions of the Property. The likely source of the original release of hydrocarbons was identified as the former gasoline USTs and/or the dispenser islands.

3.8 POTENTIAL SOURCES OF CONTAMINATION FROM NEIGHBORING PROPERTIES

Three properties were identified as LUST sites within ½ mile of the Property. Chevron-branded service station #9-3299, located at 15900 116th Avenue Northeast, is approximately 700 feet southwest of the Property (Figure 3). E-Data Resources, Inc. (EDR) identified two additional LUST sites within ½ mile of the Property, including Washington Department of Transportation Totem Lake Remediation, located within a ¼ mile southwest of the Property and Vibert Nursery, Inc., located within a ½ mile southeast of the Property. Based on the proximity to the Property, the Chevron-branded service station is considered a potential source of contamination to the Property. The remaining identified LUST sites are not considered potential off-Site sources of contamination based on their distance from the Site.

4.0 ENVIRONMENTAL INVESTIGATION SUMMARY

A total of ten soil borings and twelve groundwater monitoring wells have been completed at the Site to date. Approximately 1,740 cubic yards of petroleum-impacted soil were excavated and removed from the UST excavations during facility upgrades in 1991. During excavation of the product line trenches in 1991, vapor extraction system (VES) piping was installed. A dual phase extraction feasibility test was completed at the Site in June 1995; however, historical reports do not indicate any remediation systems were ever operational at the Site. Soil borings SB-6 through SB-11 and monitoring wells MW-8 through MW-12 were installed at the Site by CRA between 2009 and 2010. A total of eleven investigations were completed at the Site, and are summarized in the following reports:

- 1992 *Preliminary Site Assessment*, SEACOR

- 1992 *Report on the Soil Stockpile Sampling Program*, SEACOR
- 1995 *Report of Preliminary Environmental Site Assessment*, Groundwater Technology, Inc.
- 1995 *Report of Dual-Phase Extraction Feasibility Test*, Groundwater Technology, Inc.
- 1996 *Limited Subsurface Investigation*, SECOR International, Inc.
- 1996 *Compliance Soil Sampling Results*, SECOR International, Inc.
- 1998 *Report of Environmental Services Drilling and Groundwater Monitoring*, GeoEngineers, Inc.
- 2008 *Phase II Environmental Site Assessment*, CRA
- 2009 Site Investigation, CRA
- 2010 Site Investigation (January and October), CRA

A chronological summary of work completed at the Site during the investigations listed above is included as Appendix C. Reports summarized in Appendix C represent all available investigation reports obtained by or provided to CRA for the Site. A summary of historical soil analytical data is presented in Table 1. Table 2 summarizes historical groundwater monitoring results at the Site. All available historical boring logs are included in Appendix D. Boring logs for work completed during CRA's 2009 and 2010 site assessments are included in Appendix E. Laboratory analytical reports for soil samples collected in association with the 2009 and 2010 investigations are included as Appendix F. All historical monitoring well locations are presented on Figure 2 and all soil boring locations are presented on Figure 4.

4.1 POTENTIAL CONSTITUENTS OF CONCERN

Potential constituents of concern (COCs), based on current and past use of the Property, include the compounds listed in MTCA 173-340-900 Table 830-1 Required Testing for Petroleum Releases. The following is the list of potential constituents of concern for the Site:

<i>Potential Source</i>	<i>Potential COCs</i>
Historical and current gasoline USTs and distribution system	• Total petroleum hydrocarbons (TPH) as gasoline (TPHg) • Benzene, toluene, ethylbenzene, xylenes (BTEX) • Methyl tertiary butyl ether (MTBE) • Total lead • 1,2-dichloroethane (EDC) • 1,2-dibromoethane (EDB)
Current diesel UST and distribution system	• TPH as diesel (TPHd) and TPH as oil (TPHo) • BTEX
Historical waste oil system	• TPHg • TPHd and TPHo • BTEX • EDB • EDC • MTBE • Halogenated volatile organic compounds (HVOCs) • Polycyclic aromatic hydrocarbons (PAHs) • Polychlorinated biphenyls (PCBs) • Total lead

The two 1,000-gallon heating oil USTs were not included on this list because heating oil USTs under 1,100 gallons are not regulated under WAC 173-360-110(2)(h). Based on the results of environmental activities conducted at the Site, the COCs for the Site requiring further evaluation in soil and groundwater are TPHg, TPHd, BTEX, naphthalene, and carcinogenic PAHs (cPAHs) sourced from the on-Property facilities. These analytes were detected above MTCA Method A screening levels in soil or groundwater. In accordance with MTCA 173-340-900 Table 830-1, soil samples in the vicinity of the UST systems collected by CRA in 2008 through 2010 were additionally analyzed for cPAHs, EDB, EDC, and total lead. TPHo, EDB, EDC, MTBE, HVOCs, PCBs, and total lead, have not been detected at concentrations above the MTCA Method A screening levels in soil or groundwater and, therefore, are not considered COCs at the Site, and require no further evaluation.

4.2 SOIL

Multiple investigations of soil were conducted at the Site between 1991 and 2010. Figure 4 presents the locations of all soil samples collected during the investigation activities at the Site. A summary of all soil sample locations submitted for analyses, including the date of the sample, depth, consultant performing sampling, and analytical

results are presented in Table 1. The majority of soil sampling has been conducted in the vicinity of the former and current gasoline and USTs, the current diesel UST, the former waste oil UST, and the current and former heating oil USTs, the dispenser islands, and product conveyance piping. Additional soil sampling has been conducted along the eastern, southern, and western Property boundaries. The depths of soil samples collected ranged from 1 to 50 feet bgs.

4.3 SURFACE WATER

No surface water sampling has been conducted at the Site.

4.4 GROUNDWATER

A total of twelve groundwater monitoring wells have been installed on-Property and one monitoring well has been installed off-Property within Northeast 160th Street. Monitoring wells MW-1 through MW-4 were installed in 1995, monitoring wells MW-5 and MW-6 were installed in 1996, monitoring well MW-7 was installed in 1997, monitoring wells MW-8 and MW-9 were installed in 2009, and monitoring wells MW-10, MW-11, and MW-12 were installed in 2010. Monitoring wells MW-2 and MW-6 were destroyed during road widening construction on Northeast 160th Street in 1996. Monitoring well MW-2 was replaced with monitoring well MW-8 in 2009. The locations of all monitoring wells installed at the Site are presented in Figure 2. Sampling has been conducted at Site monitoring wells since 1994. Table 2 presents sampling dates, groundwater elevations, and the analytical results for each sampling event.

4.5 SEDIMENT

No sediment sampling has been conducted at the Site.

4.6 AIR/SOIL VAPOR

No investigations of soil vapor have been conducted at the Site. One vapor sample was collected and analyzed for TPHg and BTEX from the effluent air stream during a dual phase extraction (DPE) system feasibility test conducted on monitoring well MW-1 in January 1995 at the Site.

4.7 NATURAL RESOURCES/WILDLIFE

A Terrestrial Ecological Evaluation (TEE) Exclusion Form is included in this report (see Section 5.4).

4.8 CULTURAL HISTORY/ARCHAEOLOGY

No prior information or results of historical investigations have indicated a need for additional investigation of Site history or archaeology.

4.9 INTERIM ACTIONS

Approximately 1,740 cubic yards of petroleum-impacted soil were removed from the Property in 1991 during Site upgrades, including removal and replacement of five USTs, dispenser islands, and product piping. During trenching for dispenser island piping, VES piping was installed for use in conjunction with a future remediation system. In 1995, DPE feasibility tests were conducted at the Site to determine the feasibility of a remediation system at the Site. The tests included high vacuum extraction of groundwater from monitoring well MW-1 and analysis of a vapor sample from the DPE vapor effluent. Results of the subsurface testing indicated that DPE was feasible at the Site with a system consisting of two existing Site monitoring wells (MW-1 and MW-2) and three additional monitoring wells. However, historical documents do not report that any remediation system was ever operational at the Site. No additional interim actions have been conducted at the Site.

5.0 NATURAL CONDITIONS

5.1 GEOLOGY

The regional geological setting and property geological conditions are summarized below:

Regional Geological Setting: The Site is located in the Puget Lowland Physiographic province of Washington and is characterized by a broad low lying region situated between the Cascade Range to the east and the Olympic Range to the west. Generally, unconsolidated sediments including gravels, cobbles, and silts deposited during the Quaternary era, overlay sedimentary and volcanic bedrock (Lasmanis, 1991).

Property Geological Conditions: The Site is underlain by 1 to 2 feet of weathered glacial till, consisting of loose sand, silt, and gravel, which is underlain by glacial till to the total

explored depth of 60 feet bgs. Glacial till consists of dense, cement-like well-sorted sands, gravels, and silts with varying amounts of fine-grained clays and silts across the Site. Observed soils at the Site are consistent with regional geology. Previous consultants identified a clay layer at approximately 32 to 35 feet bgs; CRA did not encounter any clay layer during drilling, however, dense silt was encountered from between approximately 20 to 30 feet bgs.

Cross sections describing subsurface soil and groundwater conditions are included as Figures 5 and 6.

5.2 SURFACE WATER

The nearest surface water is Juanita Creek located approximately ½ mile southwest of the Site. The Sammamish River is also located within ¾ mile east of the Property and flows to the north and then west, eventually emptying into Lake Washington approximately 3.5 miles northwest of the Property.

5.3 GROUNDWATER

Regional groundwater conditions, surface water, and local groundwater conditions are summarized below:

Regional Groundwater Conditions: Bothell, Washington is located in the Puget-Willamette Trough lowland regional aquifer between the Cascade and Olympic Mountain ranges in Washington. Groundwater exists as the uppermost aquifer in unconsolidated glacial deposits and till material. Unconsolidated glacial deposits consist of particles that range in size from clay to boulders.

Site Groundwater Conditions: Groundwater depth has varied between 9.95 to 39.8 feet bgs in Site monitoring wells. The wide range of historical depth to water measurements are likely due to the presence of discontinuous perched water layers with the glacial till at the Site. Monitoring wells have been constructed with screen intervals positioned at varying depths at the Site based on the observations that were made in the field at the time of installation. Seasonal fluctuations at the Site are typical for the region, with slightly higher groundwater elevations in the winter and spring and slightly lower groundwater elevations in summer and fall. Based on the water level elevations present in monitoring wells across the Site, a general hydraulic gradient ranges from 0.06 to 0.10 feet per foot, however, this may not be representative of the gradient within the localized perched water zones in different areas of the Site that are likely not in communication. Furthermore, since the water level elevations at the Site

are so variable, an accurate depiction of the direction of groundwater flow cannot be calculated (Figure 7). A high-vacuum extraction of groundwater in monitoring well MW-1 was completed in 1995 during DPE feasibility testing. Results of the testing indicated that the hydraulic conductivity in the saturated zone beneath the Site was approximately 4.7×10^{-5} centimeters per second and the average discharge rate from monitoring well MW-1 during a 9-hour DPE test was approximately 0.16 gallons per minute with drawdown of approximately 16 feet below the static water level. Table 2 presents historical groundwater elevations and groundwater monitoring results for all wells associated with the Site.

5.4 NATURAL RESOURCES AND ECOLOGICAL RECEPTORS

A Sensitive Receptor Survey (SRS) and a TEE Exclusion Form were completed for the Site. Details of the evaluations are summarized below:

Sensitive Receptor Survey Analysis: The Sammamish River is located approximately $\frac{3}{4}$ mile to the east of the Property and Juanita Creek is located approximately $\frac{1}{2}$ mile to the southwest of the Property. Four educational centers are located within $\frac{1}{2}$ mile of the Property. Evergreen Academy is located approximately 700 feet north of the Property, Kinder Care Learning Center is located approximately 700 feet southwest of the Property, Cedar Park Christian School is located approximately 1,000 feet northwest of the Property, and Northshore Junior High School is located approximately 1,500 feet east of the Property. One drinking water well is reportedly located approximately 2,300 feet southwest of the Property along Juanita Woodinville Way Northeast. Based on the distance and relative location of the Site to surface waters, wells, and other receptors, it is unlikely that any potentially impacted groundwater or soil beneath the Site poses any future risk or impact to these surface waters or sensitive receptors. There are no wetlands located within $\frac{1}{4}$ mile of the Property. A SRS for the Site completed by BBL Environmental is included in Appendix G.

Terrestrial Ecological Evaluation: A TEE Exclusion Form was completed for the Site excluding the Site from further evaluation and is included as Appendix H, in addition to an aerial map depicting a 500-foot radius around the Site.

6.0 CONTAMINANT OCCURRENCE AND MOVEMENT

6.1 WASTE MATERIAL

No waste material is present on the surface or in the subsurface of this Site. Investigative-derived waste is transported from the Site and disposed of properly.

6.2 SOIL

Table 1 summarizes soil analytical data for the Site. Figure 4 depicts the horizontal extent of petroleum hydrocarbons in soil and Figures 5 and 6 depict the vertical extent of petroleum hydrocarbons in soil. Based on CRA's 2009 and 2010 Site investigations and previous investigation reports, the extent of petroleum hydrocarbon-impacted soil has not been fully defined at the Site based on comparison to MTCA Method A screening levels in the western portion of the Site, in the vicinity of the southwestern dispenser islands and the former gasoline USTs to a depth of at least 25 feet bgs. In 1991, approximately 1,740 cubic yards of petroleum-impacted soil was removed from the former UST excavation; it appears the majority of soil impacts near the former USTs were removed at that time. However, not all impacted soil was excavated at the time of the 1991 UST upgrades. Remaining soil impacts at the Site are likely limited to the Property boundary.

All soil samples collected during the 2009 and 2010 Site assessments were analyzed for one or more of the following analytes: TPHg, TPHd, TPHo, BTEX, EDB, EDC, total lead, PAHs, HVOCs, and oxygenates, including MTBE. Petroleum hydrocarbon compounds were detected above MTCA Method A screening levels in boring SB-6 beneath the bottom of the former UST excavation, and in soil boring SB-8 and the boring for well MW-9, both of which were located within the drainage swale. Minor TPHg concentrations were detected in soil samples from borings SB-10 and SB-11 located north of the drainage swale within the paved driveway. No analytes were detected above the MTCA Method A screening levels in boring SB-9, MW-8, MW-10 or MW-11.

Based on the results of soil samples collected from the western sidewall of the former UST excavation pit, the soil samples collected from boring SB-10 and the boring for well MW-9, the source of the elevated TPHg and TPHd concentrations in the sample collected at 6 feet bgs in boring SB-8 does not appear to have originated from the former or current UST system.

6.3 SURFACE WATER

No surface water has been sampled at the Site.

6.4 GROUNDWATER

Table 2 summarizes historical groundwater analytical results for monitoring wells MW-1 through MW-11 at the Site from 1994 through 2010. A groundwater contour and chemical concentration map for the most current analytical data is presented in Figure 7.

There are currently ten active groundwater monitoring wells (MW-1, MW-3 through MW-5, MW-7 through MW-9, MW-11 and MW-12) remaining on-Property and one monitoring well (MW-10) located off-Property. Historically, monitoring wells MW-1 through MW-3 and MW-8, MW-9, and MW-11 have contained hydrocarbons at concentrations above the MTCA Method A screening levels. Monitoring well MW-1 has consistently contained hydrocarbon concentrations above the MTCA Method A screening levels. Monitoring well MW-2 was destroyed in 1996 with concentrations above the MTCA Method A screening levels. However, monitoring well MW-8 was installed in 2009 in the immediate vicinity of former monitoring well MW-2 and did not contain any analyte above the laboratory reporting limit during the August 2009 sampling event. TPHg, TPHd, naphthalenes, and BTEX constituents exceeded the MTCA Method A screening levels during the second groundwater sampling event in February 2010. This event is likely anomalous as the groundwater samples for monitoring wells MW-8 and MW-9 were likely mislabeled following the February 2010 groundwater sampling event based on the confirmation sampling completed in March 2010. Analytical results from March and August 2010 were non-detect for groundwater from well MW-8. Monitoring well MW-9, located near the swale to the west of the former UST pit, has consistently contained petroleum hydrocarbon concentrations above the MTCA Method A screening levels.

No analytes have been detected at concentrations above the MTCA Method A screening levels in monitoring wells MW-3 through MW-5 over the past seven sampling events. Monitoring well MW-6 was dry upon installation in 1996 and destroyed three months later during street construction. Perched water is present in monitoring well MW-12 at a depth of approximately 50 feet bgs. No shallow perched water is present in well MW-12 and the groundwater sample collected during the initial sampling event was below laboratory reporting limits for all analytes. MW-7 has been dry or has contained insufficient groundwater for sampling during the two attempted sampling events in 1997 and 2009. Monitoring well MW-10, located southeast of former monitoring well MW-6 has been dry or has contained insufficient groundwater for sampling since installation. Monitoring well MW-11, located northwest of monitoring well MW-9, contained a TPHg concentration slightly above the MTCA Method A screening level during the February 2010 sampling event and was dry during the August 2010 sampling event. Based on the results of groundwater sampling to date, petroleum hydrocarbons appear to have impacted a shallow layer of perched water west and southwest of the former USTs. This shallow layer is limited in extent and therefore the extent of impacted perched water is also limited. Deeper zones of perched water are not impacted by the petroleum hydrocarbon compounds.

6.5 SEDIMENT

No discussion of the occurrence or movement of contaminants in this media is necessary.

6.6 AIR/SOIL VAPOR

Based on the low petroleum hydrocarbon concentrations present in soil and groundwater in the vicinity of the station building and current and future Site and neighboring property usage, it is unlikely that soil vapor poses a risk to air quality.

7.0 CONCEPTUAL MODEL

Petroleum hydrocarbons were released into soil and perched groundwater at the facility sometime prior to 1991. It is not certain when or how the release occurred, but based on environmental investigations the release likely occurred from the former gasoline USTs and/or the dispenser islands and product conveyance system. Impacted soil remains at the Site to the south, southwest, and west of the former UST pit and in the immediate area of the southwestern dispenser island.

The southwest corner of the Property contains soil at the surface, and therefore has been exposed to infiltrating surface water. It is possible that impacted shallow perched groundwater has reached the drainage swale; however storm water runoff containing Site COCs (from on- and off-Property sources) also enters the drainage swale. Subsurface soils at the Site consist of glacial till and groundwater exists within discontinuous perched layers within the glacial till at depths ranging from approximately 10 to 50 feet bgs.

A total of approximately 1,740 cubic yards of petroleum-impacted soil were removed from the Site in 1991. Historically, petroleum-impacted soil in the vicinity of the former gasoline USTs and the dispenser islands was exposed to shallow groundwater that likely flows topographically downgradient to the west-southwest, as indicated by the historically high concentrations of petroleum hydrocarbon in groundwater in the southwestern Site monitoring wells MW-1, MW-2, and MW-9. Groundwater flow direction at the Site is variable, but the predominant groundwater flow direction is likely towards the southwest; the variation in groundwater flow direction is likely due to the perched and discontinuous nature of Site groundwater. Currently, Site groundwater monitoring wells, with the exception MW-1, have been below the MTCA Method A screening level for all analytes for at least the past four groundwater monitoring events. Monitoring wells MW-10 through MW-12 were installed in 2010 and have not yet been sampled four quarters. Monitoring wells MW-10 and MW-11 have not contained

sufficient groundwater for analysis. All analytes were below MTCA Method A screening levels (and below laboratory reporting limits) during the first sampling event for monitoring well MW-12. Monitoring well MW-7 installed to a total depth of 40 feet bgs has been dry or containing insufficient water to sample since 1997. Monitoring well MW-10, installed to a total depth of 25 feet bgs near the southwest corner of the Site south of the drainage swale, has not contained sufficient water to allow for sampling. The depth to groundwater in monitoring well MW-12 was measured at approximately 50 feet bgs during the initial sampling event in October 2010. Monitoring wells installed within or immediately adjacent to the drainage swale in the southwestern portion of the Site have consistently had depth to water measurements ranging from approximately 10 to 19 feet bgs. Monitoring wells located within or immediately adjacent to the former UST excavation have consistently had depth to water measurements ranging from approximately 20 to 24 feet bgs. Depth to water in monitoring well MW-4, located on the east portion of the Property, has ranged from 30 to 33 feet bgs.

A high-vacuum groundwater extraction test in monitoring well MW-1 was completed in 1995 during DPE feasibility testing. Results of the testing indicated that the hydraulic conductivity in the saturated zone beneath the Site was approximately 4.7×10^{-5} centimeters per second and the average discharge rate from monitoring well MW-1 during a 9-hour DPE test was approximately 0.16 gallons per minute with drawdown of approximately 16 feet below the static water level. The perched, discontinuous nature of groundwater at the Site and the results of the DPE testing adequately demonstrates that the perched water layer is present in insufficient quantity to yield greater than 0.5 gallons per minute on a sustainable basis per WAC 173-340-720(2)(b)(i), and therefore, does not meet the criteria for potential future use as drinking water.

Current groundwater data indicates residual soil impacts may be affecting groundwater quality in the southwestern portion of the Site. Groundwater may migrate to the storm water drainage swale. The swale is connected to a culvert which flows west beneath Brickyard Road, and then along the right-of-way for Interstate 405 and outfalls into a deep bioswale that runs along the east side of Interstate 405 and ultimately infiltrates back into the subsurface. Although Site groundwater may potentially enter the drainage swale, storm water runoff from on-Property, surrounding properties, and streets adjacent to the Property also enters the drainage swale. Storm water runoff potentially contains Site COCs from on-Property and off-Property sources, including the adjacent Chevron-branded service station. There are no sensitive receptors requiring protection between the on-Property drainage swale and the storm drain outfall adjacent to Interstate 405. Based on the distance from the on-Property drainage swale to the storm drain outfall, any impacted water within the drainage system will likely attenuate, volatilize, and/or infiltrate before reaching the outfall bioswale.

Based on current soil and groundwater quality at the Site and current use of the Property, soil vapor concentrations of petroleum hydrocarbon compounds are not likely to be a potential risk to human health. It is anticipated that the commercial use of the Property will continue in the future.

8.0 CLEANUP STANDARDS - SOIL AND GROUNDWATER

In accordance with MTCA, development of cleanup levels includes identifying potential exposure pathways for humans and environmental impacts based on the planned land use. The Property is currently zoned for retail use, and future zoning is not anticipated to change. As noted previously, the Property is currently used as a gasoline wholesale facility.

8.1 GROUNDWATER

The shallow perched groundwater beneath the Site is located within thin weathered till on top of less weathered, low permeable glacial till. The perched water is discontinuous across the Site, not a current drinking water source and does not meet the criteria for potential future use of drinking water due to insufficient yield. Based on observations made during drilling activities historically at the Site, well MW-1 is appropriately constructed through the perched zone and the results of a high-vacuum extraction testing in well MW-1 indicate that a sustainable yield of 0.5 gallons per minute for a period of 24 hours cannot be achieved (WAC 173-340-720(2)(b)(i)). Based on the presence of perched water in the southwestern portion of the Site at depths ranging from 9 to 19 feet bgs, the appropriate cleanup level for groundwater at the Site is protection of the direct contact pathway with a point of compliance throughout the Site from the first encountered groundwater to a depth of 15 feet bgs.

Site-specific cleanup levels for BTEX were calculated based on protection of human health via direct contact. The Site-specific cleanup levels were calculated using the following equation¹:

¹ State of Oregon, Department of Environmental Quality, *Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites*, 2003: p. B-65, eq. B-161.

$$RBC_{we} \text{ (}\mu\text{g/L)} = \frac{ARL_c * AT_c * 365 \text{ d/yr} * BW_a}{ED_e * EF_e * [(IRA_a * VF_{we} * SF_i) + (DA_w * EvF_w * SA_w * SF_o)]} * 10^3 \mu\text{g/mg}$$

Where:

RBC_{we}	=	Risk-Based Concentration for Excavation or Construction Worker Exposure to Groundwater (in $\mu\text{g/L}$)
ARL_c	=	Acceptable risk level – carcinogens (unitless)
AT_c	=	Averaging time – carcinogens (yr)
BW_a	=	Body weight (kilograms)
ED_e	=	Exposure duration (yr)
EF_e	=	Exposure frequency (d/yr)
IRA_a	=	Inhalation rate (m^3/d)
VF_{we}	=	Volatilization factor for water in an excavation (L/m^3)
SF_i	=	Cancer slope factor – inhaled ($\text{mg}/\text{kg}\cdot\text{d}$) ⁻¹
DA_w	=	Dermal absorption factor for groundwater ($\text{L}/\text{cm}^2\cdot\text{event}$)
EvF_w	=	Event frequency for groundwater contact (event/d)
SA_w	=	Skin surface contact area to groundwater (cm^2)
SF_o	=	Cancer slope factor – oral ($\text{mg}/\text{kg}\cdot\text{d}$) ⁻¹

An excerpt from the State of Oregon Department of Environmental Quality *Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites*, including the cleanup levels for Site COCs and reference tables with data used in the calculation is included as Appendix I. Since there is no Site-specific hydrocarbon EPH/VPH data from Site groundwater for development of Site-specific TPH cleanup levels for protection of the human direct contact pathway, MTCA Method A cleanup levels will be used for TPHg and TPHd in groundwater.

8.2 SOIL

Based on the determination that perched water at the Site is not a current or potential future drinking water source, soil cleanup levels will not be driven by the leaching to groundwater pathway, and therefore, the potential receptor pathway for soil at the Site in its current usage is limited to potential direct contact of impacted soil by construction or service workers who could be exposed subsurface soils in the impacted areas during future construction or excavation activities. Soil cleanup levels are based on the protection of human health via direct contact with soil. The point of compliance for soil is from the ground surface to a depth of 15 feet bgs. Concentrations indicating possible separate phase hydrocarbons have never been observed at this Site and, therefore, cleanup levels for soil are not driven by residual saturation concentrations.

The Site-specific cleanup levels for soil for Site COCs are presented in Table 2. The MTCA Method B cleanup levels were developed for soil protective of the direct contact pathway using standard Cleanup Level and Risk Calculations (CLARC) values. The MTCA Method B cleanup level for TPHg in soil was calculated using the MTCATPH

workbook and EPH/VPH analytical results from soil sample CS-1-6.5 in April 2010. The cleanup level calculation tables are included as Appendix J.

9.0 AREAS REQUIRING FUTURE MANAGEMENT

9.1 CONSTITUENTS OF CONCERN

Based on the MTCA Method A cleanup levels, COCs remaining at the Site include petroleum hydrocarbons sourced from the USTs and dispenser islands, including TPHg in soil and TPHg, and TPHd in groundwater.

9.2 SOIL - VERTICAL AND LATERAL

Figure 4 identifies soil sample locations containing petroleum hydrocarbon concentrations above the Site-specific cleanup levels. The areas requiring future management of petroleum hydrocarbons are limited to beneath the southern dispenser island and southwest of the former gasoline USTs within the drainage swale. Results of Site investigation activities have confirmed that soil impacts are limited vertically by dense layers of glacial till; however, additional sampling is required to complete delineation near the drainage swale.

9.3 GROUNDWATER - VERTICAL AND LATERAL

Groundwater at the Site currently contains concentrations above the Site-specific cleanup levels in monitoring wells MW-1 and MW-9 for TPHg and TPHd; however, there has been a steady decrease in the concentration of petroleum hydrocarbon compounds in monitoring well MW-1. The vertical extent of groundwater impact is defined by well MW-12. The lateral extent of groundwater impact is defined to the north, east, and south; however, the lateral extent of groundwater impact to the east is unknown.

9.4 SEDIMENT

There is no indication that sediment has been impacted by the release originating from this Site; therefore, no additional action is necessary.

9.5 SURFACE WATER

There is no indication that surface water has been impacted by the release originating from this Site; therefore, no additional action is necessary.

9.6 SOIL VAPOR/AIR

Based on the low petroleum hydrocarbon concentrations present in soil and groundwater in the vicinity of the station building and current and future Site and neighboring property usage, future management of soil vapor impact is not required.

10.0 REFERENCES

City of Bothell, *Water Quality Report*, Revised 2009.

CRA, *Phase II Environmental Site Assessment*, dated August 18, 2008.

CRA, *Groundwater Monitoring Report – First Quarter 2009*, dated April 23, 2009.

E-Data Resources, Inc., *The EDR-Radius Map with GeoCheck*, dated August 24, 1997.

GeoEngineers, Inc., *Report of Environmental Drilling and Groundwater Monitoring*, dated September 30, 1998.

Groundwater Technology, Inc., *Report of Preliminary Environmental Site Assessment*, dated March 27, 1995.

Groundwater Technology, Inc., *Report of Dual-Phase Extraction Feasibility Test*, dated June 14, 1995.

Lasmanis, Raymond (1991). *The Geology of Washington: Rocks and Minerals*, v. 66, no. 4, p. 262-277.

Noll Environmental, Inc. *Compliance Sampling Results – Waste Oil UST Removal*, dated March 22, 2004.

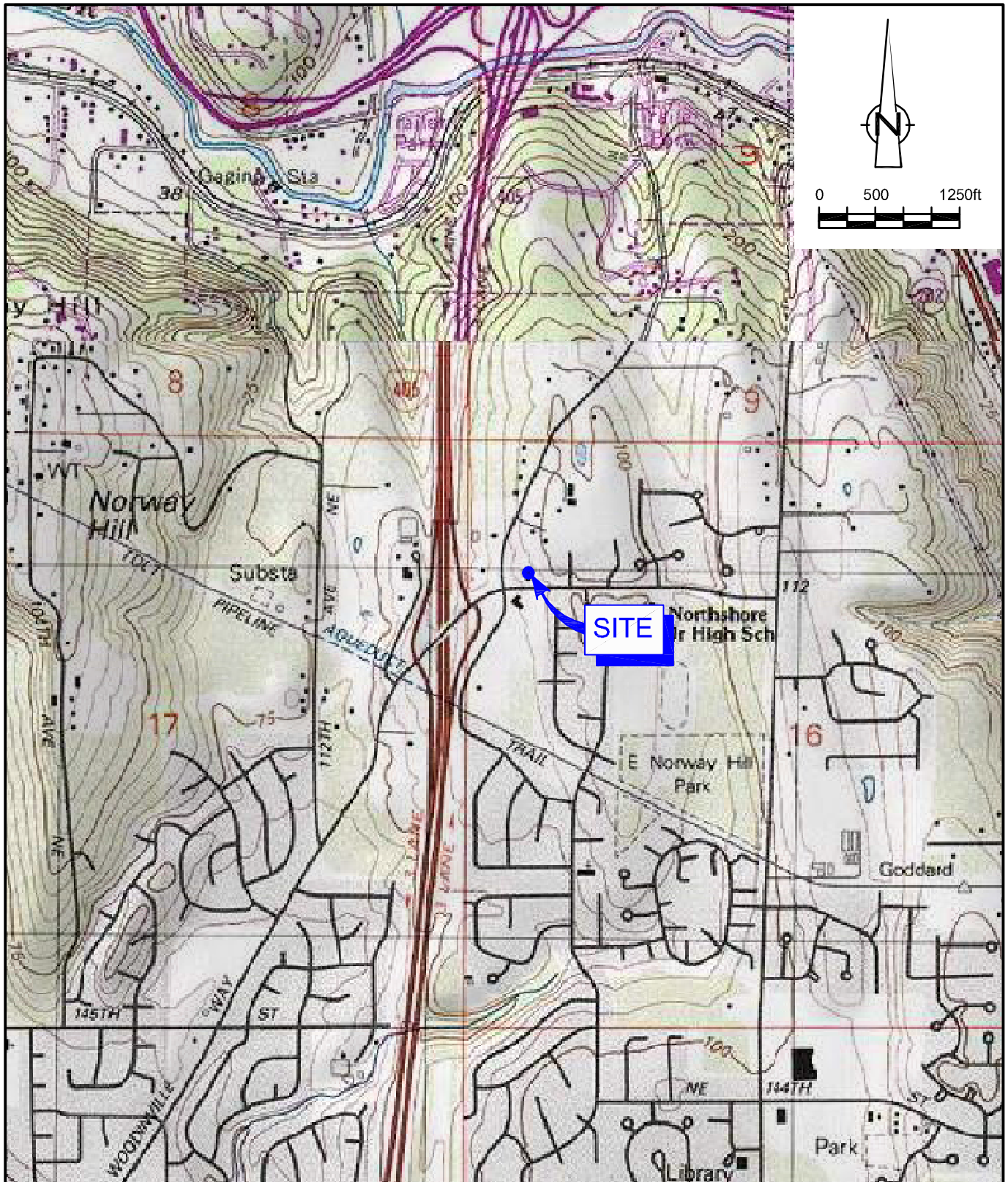
SEACOR, *Preliminary Site Assessment*, dated May 29, 1992.

SEACOR, *Report on the Soil Stockpile Sampling Program*, dated December 15, 1992.

SECOR International, Inc., *Limited Subsurface Investigation*, dated April 17, 1996.

SECOR International, Inc., *Compliance Soil Sampling Results*, dated August 5, 1996.

FIGURES



SOURCE: TOPO! MAPS.

figure 1

VICINITY MAP
SHELL-BRANDED SERVICE STATION
11700 NORTHEAST 160TH STREET
Bothell, Washington



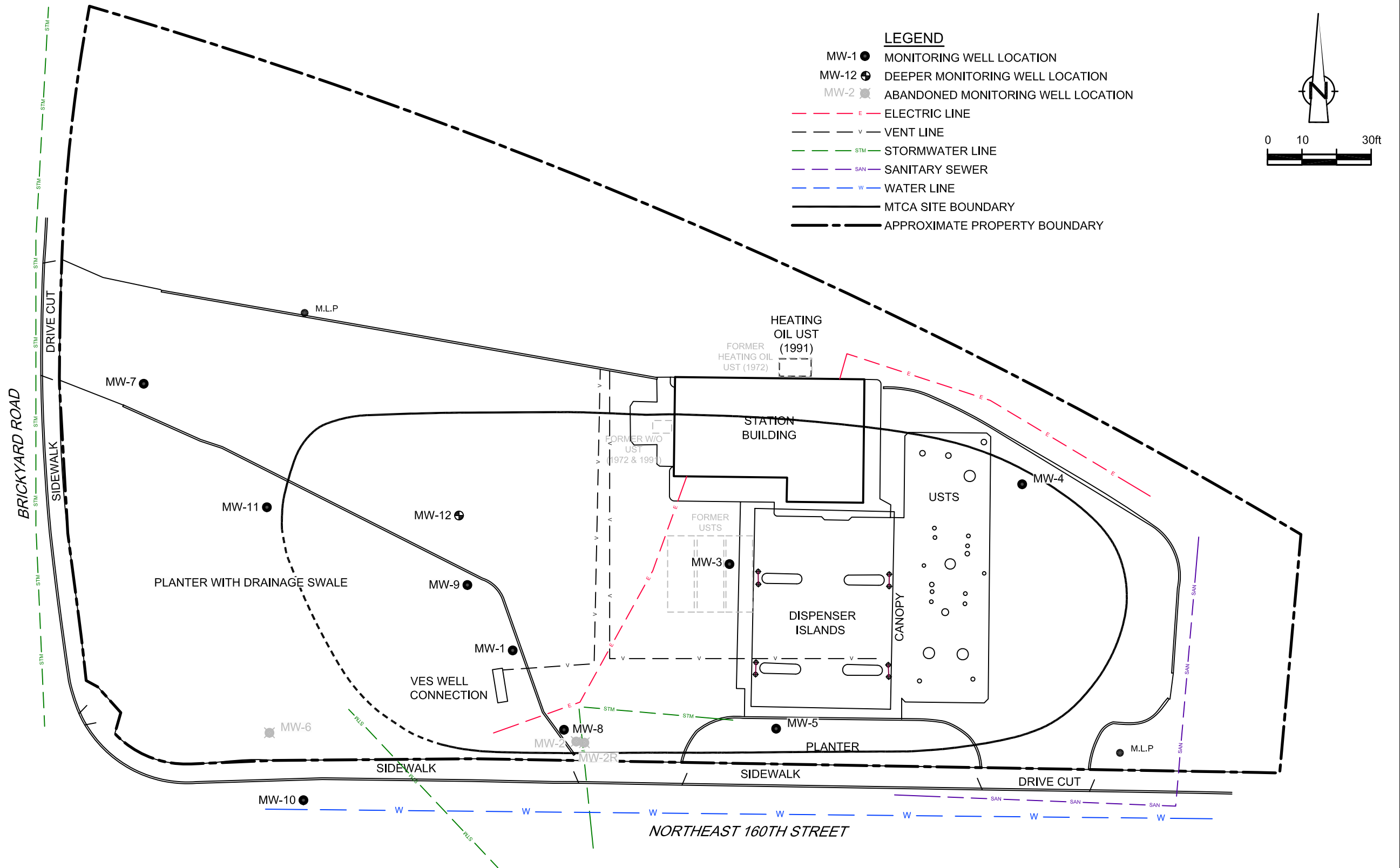


figure 2

SITE PLAN
SHELL-BRANDED WHOLESALE FACILITY
11700 NORTHEAST 160TH STREET
Bothell, Washington



BASEMAP MODIFIED FROM DRAWING PROVIDED BY STATEWIDE LAND SURVEYING INC.

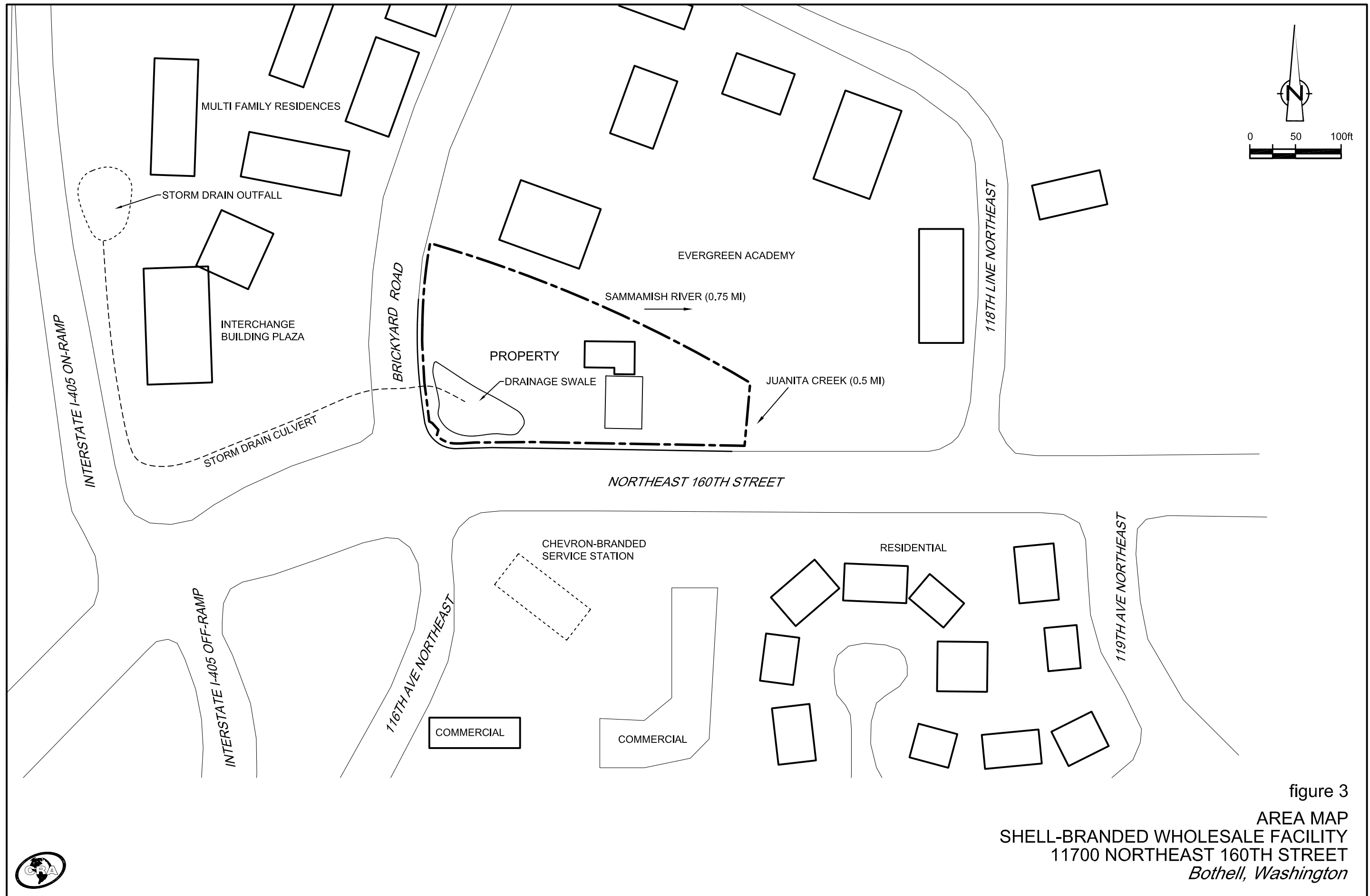
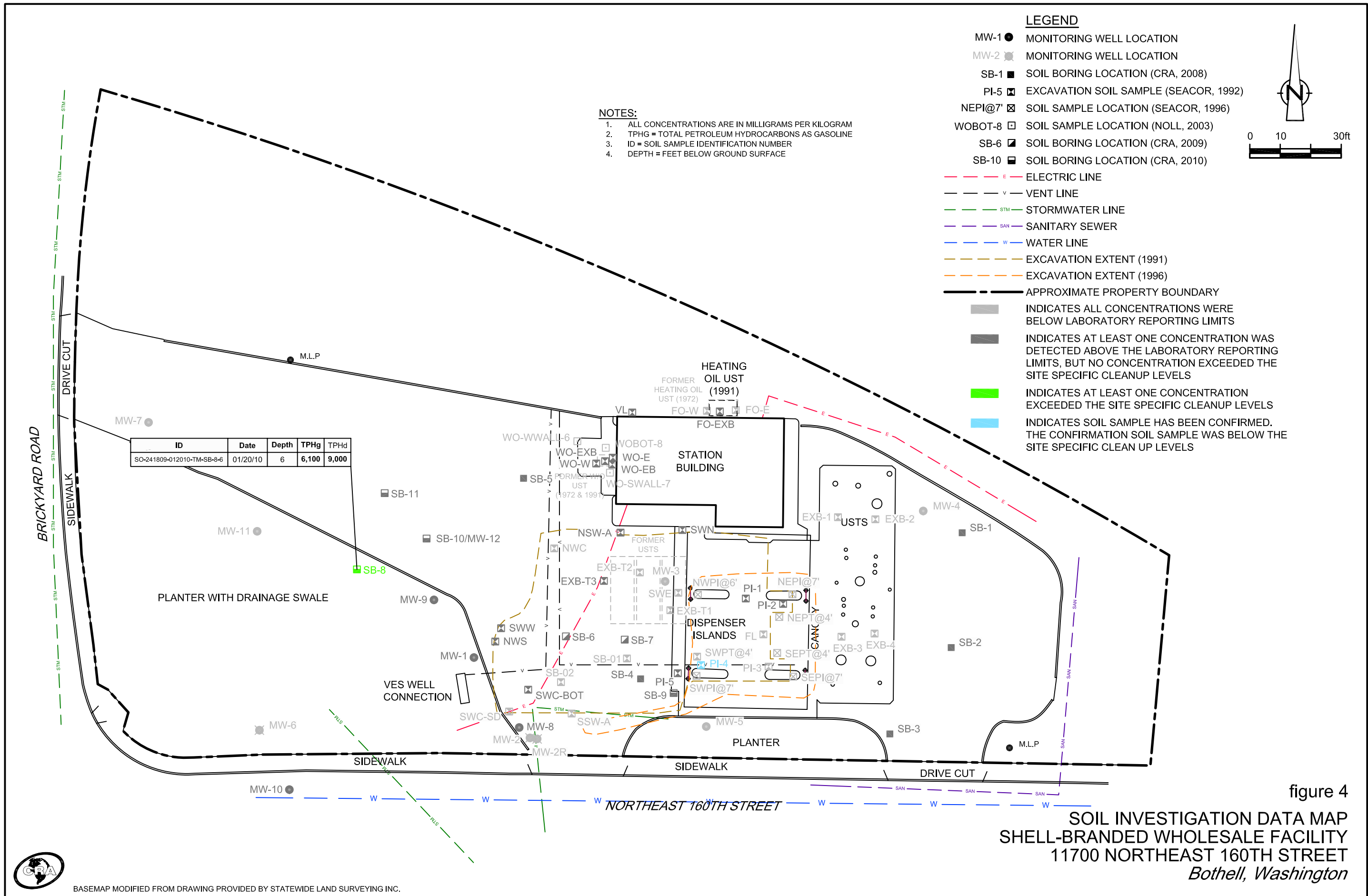


figure 3
 AREA MAP
 SHELL-BRANDED WHOLESALE FACILITY
 11700 NORTHEAST 160TH STREET
Bothell, Washington





BASEMAP MODIFIED FROM DRAWING PROVIDED BY STATEWIDE LAND SURVEYING INC.

figure 4

SOIL INVESTIGATION DATA MAP
SHELL-BRANDED WHOLESALE FACILITY
11700 NORTHEAST 160TH STREET
Bothell, Washington

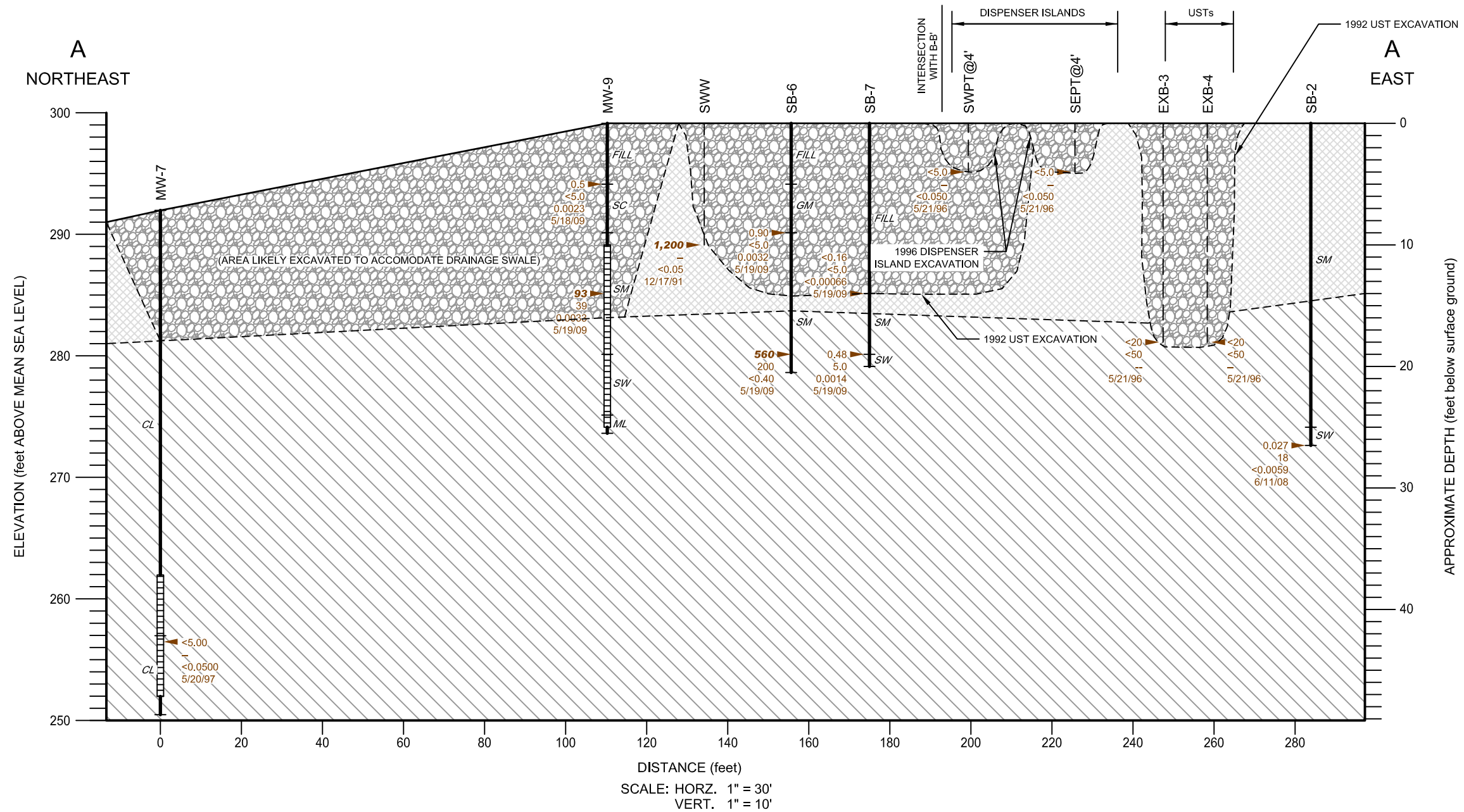
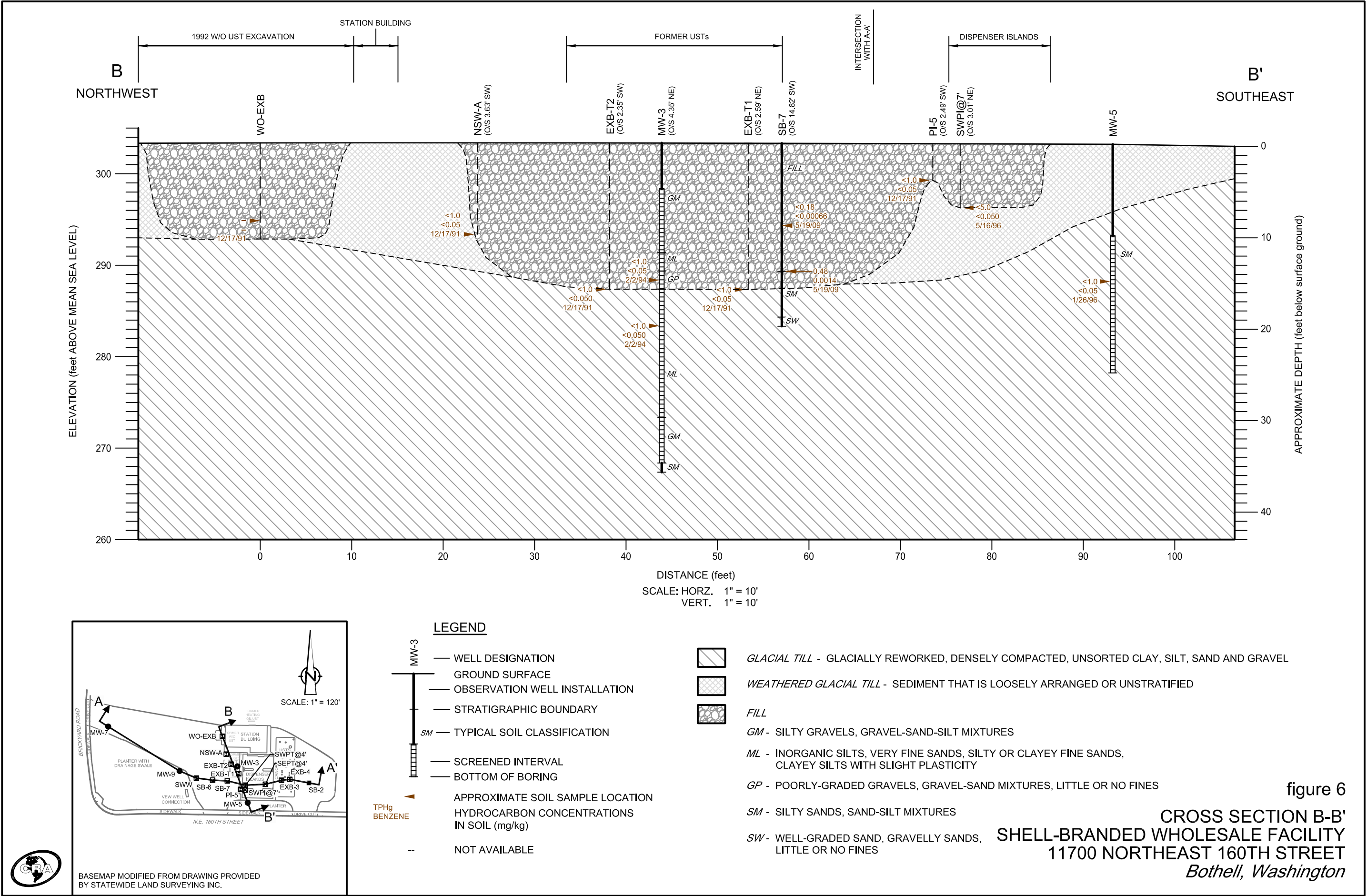


figure 5
CROSS SECTION A-A'
SHELL-BRANDED WHOLESALE FACILITY
11700 NORTHEAST 160TH STREET
Bothell, Washington



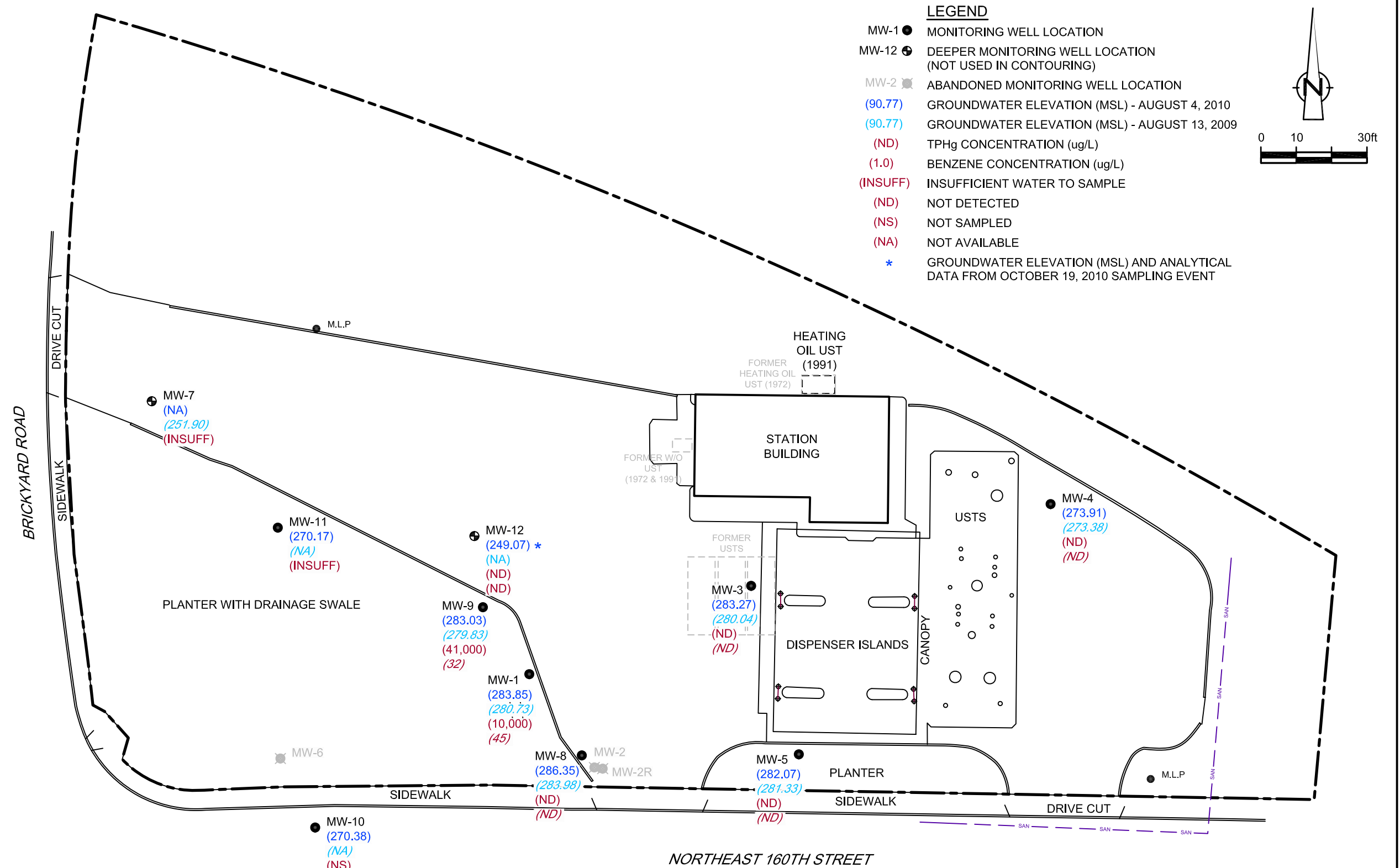


figure 7
 GROUNDWATER ELEVATION AND CHEMICAL CONCENTRATION MAP - AUGUST 4, 2010
 SHELL-BRANDED WHOLESALE FACILITY
 11700 NORTHEAST 160TH STREET
 Bothell, Washington



BASEMAP MODIFIED FROM DRAWING PROVIDED BY STATEWIDE LAND SURVEYING INC.

TABLES

TABLE 1

SUMMARY OF HISTORICAL ANALYTICAL DATA
SHELL-BRANDED WHOLESALE FACILITY
11700 NORHTEAST 160TH STREET
BOTHELL, WASHINGTON

Sample ID	Consultant	Sample Date	Depth	HYDROCARBONS			PRIMARY VOCs						LEAD	OXYGENATES	PAHs	
				TPHg	TPHd	TPHo	B	T	E	X	EDB	EDC	Total	MTBE	Naphthalene	Total cPAHs ¹
				30/100	2,000	2,000	0.03	7	6	9	0.005	NE	250	0.1	5	0.1
				MTCA Method A Cleanup Levels	4,956	4,956	18	6,400	8,000	16,000	NE	NE	NE	NE	1,600	0.14
			feet bgs	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Product Dispensers																
PI-1	SECOR (1992)	12/17/1991	5	<1.0	--	--	<0.05	<0.10	<0.10	<0.10	--	--	8.7	--	--	--
PI-2	SECOR (1992)	12/17/1991	5.5	<1.0	--	--	<0.05	<0.10	<0.10	<0.10	--	--	8.5	--	--	--
PI-3	SECOR (1992)	12/17/1991	5	<1.0	--	--	<0.05	<0.10	<0.10	<0.10	--	--	<7.5	--	--	--
PI-4	SECOR (1992)	12/17/1991	8	4,600	--	--	25**	140	62	340	--	--	<7.5	--	--	--
PI-5	SECOR (1992)	12/17/1991	8	<1.0	--	--	<0.05	<0.10	<0.10	<0.10	--	--	<7.5	--	--	--
Product Piping																
FL	SECOR (1992)	12/17/1991	8	<1.0	--	--	<0.05	<0.10	<0.10	<0.10	--	--	<7.5	--	--	--
VL	SECOR (1992)	12/17/1991	2	<1.0	--	--	<0.05	<0.10	<0.10	<0.10	--	--	9.1	--	--	--
Gasoline UST Excavation																
EXB-T1	SECOR (1992)	12/17/1991	16	<1.0	--	--	<0.05	<0.10	<0.10	<0.10	--	--	<7.5	--	--	--
EXB-T2	SECOR (1992)	12/17/1991	16	<1.0	--	--	<0.05	<0.10	<0.10	<0.10	--	--	<7.5	--	--	--
EXB-T3	SECOR (1992)	12/17/1991	16	1.5	--	--	<0.05	<0.10	<0.10	<0.20	--	--	<7.5	--	--	--
SWN	SECOR (1992)	12/17/1991	10	1.4	--	--	<0.05	<0.10	<0.10	<0.10	--	--	<7.5	--	--	--
SWE	SECOR (1992)	12/17/1991	10	<1.0	--	--	<0.05	<0.10	<0.10	<0.10	--	--	<7.5	--	--	--
SWW	SECOR (1992)	12/17/1991	10	1,200	--	--	<0.05	1.9	14	99	--	--	<7.5	--	--	--
NWC	SECOR (1992)	12/17/1991	6.5	<1.0	--	--	<0.05	<0.10	<0.10	<0.10	--	--	<7.5	--	--	--
SB-01	SECOR (1992)	12/17/1991	15	<1.0	--	--	<0.05	<0.10	<0.10	<0.10	--	--	<7.5	--	--	--
SB-02	SECOR (1992)	12/17/1991	12	<1.0	--	--	<0.05	<0.10	<0.10	<0.10	--	--	<7.5	--	--	--
SWC-BOT	SECOR (1992)	12/17/1991	15	17	--	--	0.16	1.1	0.28	1.8	--	--	<7.5	--	--	--
SSW-A	SECOR (1992)	12/17/1991	5	<1.0	--	--	<0.05	<0.10	<0.10	<0.10	--	--	<7.5	--	--	--
SWC-SD	SECOR (1992)	12/17/1991	10	<1.0	--	--	<0.05	<0.10	<0.10	<0.10	--	--	<7.5	--	--	--
NSW-A	SECOR (1992)	12/17/1991	10	<1.0	--	--	<0.05	<0.10	<0.10	<0.10	--	--	8.2	--	--	--
NWS	SECOR (1992)	12/17/1991	8	1,000	--	--	<0.05	3.5	12	83	--	--	9.8	--	--	--
Product Dispensers & Vent Lines																
PI5-4	SECOR (1992)	12/17/1991	4	<1.0	--	--	<0.05	<0.10	<0.10	<0.10	--	--	7.8	--	--	--
PI6-4	SECOR (1992)	12/17/1991	4	8,400 c	--	--	<0.05	30	17	500	--	--	10	--	--	--
VT-1	SECOR (1992)	12/17/1991	1	82	--	--	<0.05	<0.10	0.09	2.4	--	--	21	--	--	--
Waste Oil UST Excavation																
WO-E	SECOR (1992)	12/23/1991	7	--	--	940	--	--	--	--	--	--	--	--	--	--
WO-W	SECOR (1992)	12/23/1991	7	--	--	<10	--	--	--	--	--	--	--	--	--	--
WO-EXB	SECOR (1992)	12/23/1991	8.5	--	--	1,300	--	--	--	--	--	--	--	--	--	--
WO-EB	SECOR (1992)	12/23/1991	9.5	--	--	13	--	--	--	--	--	--	--	--	--	--
WO-EXB	SECOR (1992)	12/23/1991	10.5	--	--	15	--	--	--	--	--	--	--	--	--	--
Heating Oil UST Excavation																
FO-E	SECOR (1992)	12/24/1991	3	--	ND	--	--	--	--	--	--	--	--	--	--	--
FO-W	SECOR (1992)	12/24/1991	6	--	ND	--	--	--	--	--	--	--	--	--	--	--
FO-EXB	SECOR (1992)	12/24/1991	10	--	14	--	--	--	--	--	--	--	--	--	--	--
New Gasoline UST Excavation																
EXB-1	SECOR (1992)	12/17/1991	18	<20	<50	--	--	--	--	--	--	--	--	--	--	--
EXB-2	SECOR (1992)	12/17/1991	18	<20	<50	--	--	--	--	--	--	--	--	--	--	--
EXB-3	SECOR (1992)	12/17/1991	18	<20	<50	--	--	--	--	--	--	--	--	--	--	--
EXB-4	SECOR (1992)	12/17/1991	18	<20	<50	--	--	--	--	--	--	--	--	--	--	--
MW-1-B	GTI (1995)	2/1/1994	9.5	1,400	--	--	1.5	<0.050	11	45	--	--	--	--	--	--
MW-1-D	GTI (1995)	2/1/1994	19	8.3	--	--	<0.050	0.88	0.24	1.5	--	--	--	--	--	--
MW-1-E	GTI (1995)	2/1/1994	25	<1.0	--	--	0.22	0.28	0.065	<0.10	--	--	--	--	--	--
MW-2-D	GTI (1995)	2/1/1994	18	<1.0	--	--	<0.050	<0.050	<0.050	<0.10	--	--	--	--	--	--
MW-2-E	GTI (1995)	2/1/1994	23	<1.0	--	--	<0.050	<0.050	<0.050	<0.10	--	--	--	--	--	--

TABLE 1

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SHELL-BRANDED WHOLESALE FACILITY
11700 NORHTEAST 160TH STREET
BOTHELL, WASHINGTON

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				TPHg	TPHd	TPHo	B	T	E	X	EDB	EDC	Total	MTBE	Naphthalene	Total cPAHs ¹
				30/100	2,000	2,000	0.03	7	6	9	0.005	NE	250	0.1	5	0.1
				Site Specific Cleanup Levels	4,956	4,956	18	6,400	8,000	16,000	NE	NE	NE	NE	1,600	0.14
			feet bgs	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
MW-3-B	GTI (1995)	2/2/1994	15	<1.0	--	--	<0.050	<0.050	<0.050	<0.10	--	--	--	--	--	--
MW-3-C	GTI (1995)	2/2/1994	20	<1.0	--	--	<0.050	<0.050	<0.050	<0.10	--	--	--	--	--	--
MW-4-D	GTI (1995)	2/3/1994	17.5	<1.0	--	--	<0.050	<0.050	<0.050	<0.10	--	--	--	--	--	--
MW-4-E	GTI (1995)	2/3/1994	22.5	<1.0	--	--	<0.050	<0.050	<0.050	<0.10	--	--	--	--	--	--
MW-5-15'	SECOR (4/1996)	1/26/1996	15	<1.0	--	--	<0.050	<0.050	<0.050	<0.10	--	--	--	--	--	--
MW-6-27.5'	SECOR (4/1996)	1/30/1996	27.5	<1.0	--	--	<0.050	<0.050	<0.050	<0.10	--	--	--	--	--	--
SWPI @ 7'	SECOR (8/1996)	5/16/1996	7	<5.0	--	--	<0.050	<0.050	<0.050	<0.10	--	--	--	--	--	--
SEPI @ 7'	SECOR (8/1996)	5/16/1996	7	<5.0	--	--	<0.050	<0.050	<0.050	<0.10	--	--	--	--	--	--
NWPI @ 6'	SECOR (8/1996)	5/16/1996	6	<5.0	--	--	<0.050	<0.050	<0.050	<0.10	--	--	--	--	--	--
NEPI @ 7'	SECOR (8/1996)	5/16/1996	7	<5.0	--	--	<0.050	<0.050	<0.050	<0.10	--	--	--	--	--	--
SWPT @ 4'	SECOR (8/1996)	5/21/1996	4	<5.0	--	--	<0.050	<0.050	<0.050	<0.10	--	--	--	--	--	--
SEPT @ 4'	SECOR (8/1996)	5/21/1996	4	<5.0	--	--	<0.050	<0.050	<0.050	<0.10	--	--	--	--	--	--
NEPT @ 4'	SECOR (8/1996)	5/21/1996	4	<5.0	--	--	<0.050	<0.050	<0.050	<0.10	--	--	--	--	--	--
MW-7-35.5	GeoEngineers (1998)	5/20/1997	35.5	<5.00	--	--	<0.050	<0.0500	<0.0500	<0.100	--	--	<10.0	--	--	--
WOBOT-8	Noll (2004)	11/21/2003	8	ND	ND	ND	--	--	--	--	--	--	--	--	--	--
WO-SWALL-7	Noll (2004)	11/21/2003	7	ND	ND	ND	--	--	--	--	--	--	--	--	--	--
WO-WWALL-6	Noll (2004)	11/21/2003	6	ND	ND	ND	--	--	--	--	--	--	--	--	--	--
SB1-25	CRA (2008)	6/11/2008	25	<0.016	11	8.5	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	2.22	<0.0049	<0.036	<0.036
SB2-25	CRA (2008)	6/11/2008	25	0.027	18	15	<0.0059	<0.0059	<0.0059	<0.0059	<0.0014 a	<0.0059	1.67	<0.0059	<0.036	<0.036
SB3-25	CRA (2008)	6/11/2008	25	<0.018	17	10	<0.006	<0.006	<0.006	<0.006	<0.0014 a	<0.006	2.8	<0.006	<0.035	<0.035
SB4-25	CRA (2008)	6/11/2008	25	8.7	12	7.5	0.011	0.073	0.029	0.211	<0.0014 a	<0.0059	2.46	<0.0059	<0.041	<0.041
SB5-25	CRA (2008)	6/11/2008	25	0.23	9.7	7.8	<0.0044	<0.0044	<0.0044	<0.0044	<0.0044	<0.0044	2.1	<0.0044	<0.036	<0.036
SO-241809-051909-HB-SB-6-9	CRA (2009)	5/19/2009	9	0.90 ^b	<5.0	25	0.0032	0.021	0.024	0.13	<0.00076	<0.00076	2.81	<0.0015	<0.020	0.06
SO-241809-051909-HB-SB-6-19	CRA (2009)	5/19/2009	19	560 ^b	200*	<5.0	<0.40 ^c	5.8	10	65	<0.40 ^c	<0.40	2.24	<0.79	2.3	<0.020
SO-241809-051909-HB-SB-7-9	CRA (2009)	5/19/2009	9	<0.18 ^b	<5.0	<5.0	<0.00066	0.0025	0.0011	0.0050	<0.00066	<0.00066	2.88	<0.0013	<0.020	0.11
SO-241809-051909-HB-SB-7-14	CRA (2009)	5/19/2009	14	0.48 ^b	5.0	14	0.0014	0.0042	0.0036	0.022	<0.00085	<0.00085	2.63	<0.0017	<0.020	<0.020
SO-241809-051909-HB-MW-8-5	CRA (2009)	5/18/2009	5	<0.22 ^b	<5.0	<5.0	0.00091	<0.00080	<0.00080	<0.0016	<0.00080	<0.00080	3.19	<0.0016	<0.020	<0.020
SO-241809-051909-HB-MW-8-14	CRA (2009)	5/19/2009	14	<0.21 ^b	<5.0	<5.0	<0.00079	<0.00079	<0.00079	<0.0016	<0.00079	<0.00079	3.72	<0.0016	<0.020	<0.020
SO-241809-051909-HB-MW-9-5	CRA (2009)	5/18/2009	5	0.5 ^b	<5.0	<5.0	0.0023	0.00048	<0.00048	0.0052	<0.00048	<0.00048	3.42	<0.00095	<0.020	<0.020
SO-241809-051909-HB-MW-9-14	CRA (2009)	5/19/2009	14	93 ^b	39*	<5.0	0.0033	0.035	0.49	2.9	<0.00066	<0.00066	2.40	<0.0013	0.33	<0.020
SO-241809-012010-TM-SB-8-6	CRA (2010)	1/20/2010	6	6,100	9,000*	65*	<3.1	<3.1	230	920	--	--	--	--	65	--
SO-241809-012110-TM-SB-9-8	CRA (2010)	1/21/2010	8	<0.21	32	93	<0.00071	<0.00071	<0.00071	<0.0014	--	--	--	--	--	--
SO-241809-012210-TM-SB-9-20	CRA (2010)	1/22/2010	20	<0.14	<5.0	<5.0	<0.00065	<0.00065	<0.00065	<0.0013	--	--	--	--	--	--
SO-241809-012010-TM-MW-10-9.5	CRA (2010)	1/20/2010	9.5	<0.18	<5.0	<5.0	<0.00084	<0.00084	<0.00084	<0.0017	--	--	--	--	--	--
SO-241809-012010-TM-MW-10-14.5	CRA (2010)	1/20/2010	14.5	<0.18	5.8*	<5.0	<0.00068	<0.00068	<0.00068	<0.0014	--	--	--	--	--	--
SO-241809-012110-TM-MW-11-4	CRA (2010)	1/21/2010	4	<0.17	<5.0	<5.0	<0.00076	<0.00076	<0.00076	<0.0015	--	--	--	--	--	--
SO-241809-100110-SR-SB-10-6	CRA (2010)	10/1/2010	6	2.5	<5.0	<5.0	<0.046	<0.046	0.098	0.25	--	--	--	--	--	--
SO-241809-100110-SR-SB-10-10	CRA (2010)	10/1/2010	10	2.8	<5.0	<5.0	0.0011	0.0022	0.01	0.038	--	--	--	--	--	--
SO-241809-100110-SR-SB-10-15	CRA (2010)	10/1/2010	15	1.0	<5.0	<5.0	<0.042	<0.042	0.046	0.26	--	--	--	--	--	--
SO-241809-100110-SR-SB-10-25	CRA (2010)	10/1/2010	25	150	12*	<5.0	<0.049	0.19	0.57	3.9	--	--	--	--	--	--
SO-241809-100110-SR-SB-10-35	CRA (2010)	10/1/2010	35	9.2	<5.0	<5.0	0.0033	0.10	0.29	1.7	--	--	--	--	--	--

TABLE 1

SUMARY OF HISTORICAL ANALYTICAL DATA
SHELL-BRANDED WHOLESALE FACILITY
11700 NORHTEAST 160TH STREET
BOTHELL, WASHINGTON

Sample ID	Consultant	Sample Date	Depth	HYDROCARBONS			PRIMARY VOCs						LEAD	OXYGENATES	PAHs	
				TPHg	TPHd	TPHo	B	T	E	X	EDB	EDC	Total	MTBE	Naphthalene	Total cPAHs ¹
				30/100	2,000	2,000	0.03	7	6	9	0.005	NE	250	0.1	5	0.1
				Site Specific Cleanup Levels	4,956	4,956	18	6,400	8,000	16,000	NE	NE	NE	NE	1,600	0.14
			feet bgs	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
SO-241809-100110-SR-SB-10-45	CRA (2010)	10/1/2010	45	<0.25	<5.0	<5.0	0.001	0.0049	0.0069	0.035	--	--	--	--	--	--
SO-241809-100110-SR-SB-10-50	CRA (2010)	10/1/2010	50	<0.25	<5.0	<5.0	<0.00096	<0.00096	<0.00096	0.0019	--	--	--	--	--	--
SO-241809-100110-SR-SB-11-6	CRA (2010)	10/1/2010	6	10	11*	8.1*	0.055	0.088	0.37	1.4	--	--	--	--	--	--
SO-241809-100110-SR-SB-11-10	CRA (2010)	10/1/2010	10	140	45*	<5.0	0.0018	0.0053	3.2	16	--	--	--	--	--	--
SO-241809-100110-SR-SB-11-15	CRA (2010)	10/1/2010	15	410	19*	<5.0	0.0042	0.26	5.1	24	--	--	--	--	--	--
SO-241809-100110-SR-SB-11-20	CRA (2010)	10/1/2010	20	18	<5.0	<5.0	0.0013	0.0056	0.063	0.30	--	--	--	--	--	--
SO-241809-100110-SR-SB-11-25	CRA (2010)	10/1/2010	25	4.2	20*	<5.0	0.0013	0.0051	0.087	0.85	--	--	--	--	--	--
SO-241809-100110-SR-SB-11-30	CRA (2010)	10/1/2010	30	1.7	<5.0	<5.0	0.0069	0.0078	0.12	0.35	--	--	--	--	--	--

Notes/ Abbreviations

MTCA = Model Toxics Control Act

TPHg = Total petroleum hydrocarbons as gasoline range organics

TPHd = Total petroleum hydrocarbons as diesel range organics

TPHo = Total petroleum hydrocarbons as heavy oil range organics

BTEX = Benzene, toluene, ethylbenzene, xylenes

VOCs = Volatile organic compounds

PAHs = Polycyclic aromatic hydrocarbons

cPAHs = Carcinogenic PAHs

EDB = 1,2-Dibromoethane

EDC = 1,2-Dichloroethane

MTBE = Methyl-tertiary butyl ether

PCBs = Polychlorinated biphenyls

mg/kg = milligrams per kilogram

-- = Not analyzed

Bolded concentrations indicate the concentration value exceeded the Site-specific cleanup level

ND = Not detected above laboratory detection limits

NE = Not established

N/A = Not available

feet bgs = feet below ground surface

¹ Total cPAHs were calculated using the Toxic Equivalency Factor (TEF) per Table 708-3 under WAC-173-340-708(8)(e)(v)

* indicates the sample chromatographic pattern for TPH does not match the chromatographic pattern of the specified standard. Quantization of the unknown hydrocarbon(s) in the sample was based upon the specific standard.

** concentration was confirmed non-detect by sample SWPI@7 collected in 1996.

a = Method detection limit used instead of reporting limit in order to meet MTCA Method A cleanup levels

b = Sample was analyzed outside recommended holding time

c = location of the sample was likely near the northwest dispenser island based on the other samples from this event and the generic dispenser island reference in Table 1 of SEACOR's 1992 Preliminary Site Assessment. SECOR did not reference

the sample in the report text or the figure. This soil sample was likely excavated during the 1996 Stage II Vapor Recovery installation.

Total cPAHs were calculated using the Toxic Equivalency Factor (TEF) per Table 708-3 under WAC-173-340-708(8)(e)(v)

TABLE 2

SUMMARY OF GROUNDWATER MONITORING DATA
SHELL-BRANDED WHOLESALE FACILITY
11700 NORTHEAST 160TH STREET, BOTHELL, WASHINGTON

Sample ID	Date	TOC	DTW	GWE	HYDROCARBONS			PRIMARY VOCs						OXYGENATES					LEAD		PAHs																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
					TPHg	TPHd	TPHo	B	T	E	X	EDB	EDC	MTBE	TBA	DIPE	ETBE	TAME	Total	Dissolved	Naphthalene	cPAHs																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
					800/1,000	500	500	5	1,000	700	1,000	0.01	5	20	NE	NE	NE	NE	15	15	160	0.1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
					Model Toxics Control Act Method A Screening Levels				800/1,000	500	500	1,700	78,000	110,000	22,000	0.01	5	31,000	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE

TABLE 2

SUMMARY OF GROUNDWATER MONITORING DATA
SHELL-BRANDED WHOLESALE FACILITY
11700 NORTHEAST 160TH STREET, BOTHELL, WASHINGTON

Sample ID	Date	TOC	DTW	GWE	HYDROCARBONS			PRIMARY VOCs						OXYGENATES					LEAD		PAHs																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
					TPHg	TPHd	TPHo	B	T	E	X	EDB	EDC	MTBE	TBA	DIPE	ETBE	TAME	Total	Dissolved	Naphthalene	cPAHs																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					800/1,000	500	500	5	1,000	700	1,000	0.01	5	20	NE	NE	NE	NE	15	15	160	0.1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					Site-specific Cleanup Levels			800/1,000	500	500	1,700	78,000	110,000	22,000	0.01	5	31,000	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE

TABLE 2

SUMMARY OF GROUNDWATER MONITORING DATA
SHELL-BRANDED WHOLESALE FACILITY
11700 NORTHEAST 160TH STREET, BOTHELL, WASHINGTON

Sample ID	Date	TOC	DTW	GWE	HYDROCARBONS			PRIMARY VOCs						OXYGENATES					LEAD		PAHs																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
					TPHg	TPHd	TPHo	B	T	E	X	EDB	EDC	MTBE	TBA	DIPE	ETBE	TAME	Total	Dissolved	Naphthalene	cPAHs																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
					800/1,000	500	500	5	1,000	700	1,000	0.01	5	20	NE	NE	NE	NE	15	15	160	0.1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
					Model Toxics Control Act Method A Screening Levels				800/1,000	500	500	1,700	78,000	110,000	22,000	0.01	5	31,000	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE

TABLE 2

**SUMMARY OF GROUNDWATER MONITORING DATA
SHELL-BRANDED WHOLESALE FACILITY
11700 NORTHEAST 160TH STREET, BOTHELL, WASHINGTON**

Sample ID	Date	TOC	DTW	GWE	HYDROCARBONS			PRIMARY VOCs						OXYGENATES					LEAD		PAHs					
					TPH _g	TPH _d	TPH _o	B	T	E	X	EDB	EDC	MTBE	TBA	DIPE	ETBE	TAME	Total	Dissolved	Naphthalene	cPAHs				
					800/1,000	500	500	5	1,000	700	1,000	0.01	5	20	NE	NE	NE	NE	15	15	160	0.1				
					Model Toxics Control Act Method A Screening Levels				800/1,000	500	500	1,700	78,000	110,000	22,000	0.01	5	31,000	NE	NE	NE	NE	NE	NE	680	0.53
					Site-specific Cleanup Levels				800/1,000	500	500	1,700	78,000	110,000	22,000	0.01	5	31,000	NE	NE	NE	NE	NE	NE	680	0.53
					(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
MW-4	02/03/01	102.75	33.60	69.15	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-4	07/10/01	102.75	32.83	69.92	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-4	02/25/02	102.75	32.41	70.34	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-4	07/11/02	102.75	32.45	70.30	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-4	01/02/03	102.75	34.33	68.42	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-4	07/14/03	102.75	33.37	69.38	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-4	01/23/04	102.75	33.68	69.07	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-4	07/23/04	102.75	33.87	68.88	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-4	01/10/05	102.75	33.94	68.81	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-4	07/15/05	102.75	32.85	69.90	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-4	01/11/06	102.75	33.62	69.13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-4	02/15/07	102.75	33.16	69.59	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-4	09/11/07	102.75	34.77	67.98	<50.0	---	---	<0.500	<0.500	<0.500	<3.00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-4	02/20/08	102.75	32.90	69.85	<50.0	---	---	<0.500	<0.500	<0.500	<3.00	---	---	<5.00	---	---	---	---	---	---	---	---	---	---	---	---
MW-4	08/12/08	102.75	33.03	69.72	<100.0	---	---	<0.5	<1	<1	<1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-4	02/04/09	102.75	33.13	69.62	<100	---	---	<0.50	<1.0	<1.0	<1.0	---	---	<1.0	<10	<2.0	<2.0	<2.0	---	---	---	---	---	---	---	---
MW-4	08/13/09	306.58	33.20	273.38	---	<100	<100	---	---	---	---	---	---	---	---	---	---	---	---	4.91	---	---	---	---	---	---
MW-4	02/05/10	306.58	32.76	273.82	<100	<100	<100	<0.50	<1.0	<1.0	<1.0	---	---	<1.0	<10	<2.0	<2.0	<2.0	---	---	---	---	---	---	---	---
MW-4	08/04/10	306.58	32.67	273.91	<100	<100	<100	<0.50	<1.0	<1.0	<1.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-5	03/21/96	94.76	20.79	73.97	ND	---	---	ND	ND	ND	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-5	06/17/96	94.76	20.69	74.07	ND	---	---	ND	0.647	ND	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-5	09/23/96	94.76	22.87	71.89	ND	---	---	ND	ND	ND	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-5 ^c	09/23/96	94.76	22.87	71.89	ND	---	---	ND	0.633	ND	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-5	12/16/96	94.76	21.90	72.86	ND	---	---	ND	ND	ND	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-5	06/27/97	94.76	20.87	73.89	ND	---	---	ND	ND	ND	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-5	09/16/97	94.76	21.84	72.92	ND	---	---	ND	ND	ND	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-5 ^c	09/16/97	94.76	21.84	72.92	ND	---	---	ND	ND	ND	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-5	01/06/98	94.76	21.65	73.11	ND	---	---	ND	ND	ND	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-5	03/23/98	94.76	20.90	73.86	ND	---	---	ND	ND	ND	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-5	06/20/98	94.76	21.53	73.23	ND	---	---	ND	ND	ND	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-5	09/21/98	94.76	23.46	71.30	ND	---	---	ND	ND	ND	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-5	12/16/98	94.76	22.96	71.80	ND	---	---	ND	ND	ND	ND	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-5	04/08/99	94.76	21.63	73.13	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-5	10/07/99	94.76	24.21	70.55	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-5	03/21/00	94.76	22.69	72.07	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-5	09/30/00	94.76	24.12	70.64	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-5	02/03/01	94.76	23.58	71.18	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-5	07/10/01	94.76	22.56	72.20	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-5	02/25/02	94.76	21.54	73.22	<50	---	---	<0.500	<0.500	<0.500	<1.00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-5	07/11/02	94.76	22.14	72.62	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-5	01/02/03	94.76	24.68	70.08	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-5	07/14/03	94.76	23.15	71.61	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-5	01/23/04	94.76	21.73	73.03	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

TABLE 2

SUMMARY OF GROUNDWATER MONITORING DATA
SHELL-BRANDED WHOLESALE FACILITY
11700 NORTHEAST 160TH STREET, BOTHELL, WASHINGTON

Sample ID	Date	TOC	DTW	GWE	HYDROCARBONS			PRIMARY VOCs						OXYGENATES					LEAD		PAHs	
					TPHg	TPHd	TPHo	B	T	E	X	EDB	EDC	MTBE	TBA	DIPE	ETBE	TAME	Total	Dissolved	Naphthalene	cPAHs
					800/1,000	500	500	5	1,000	700	1,000	0.01	5	20	NE	NE	NE	NE	15	15	160	0.1
					Site-specific Cleanup Levels	800/1,000	500	500	1,700	78,000	110,000	22,000	0.01	5	31,000	NE	NE	NE	NE	NE	NE	680
					(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	
MW-5	07/23/04	94.76	21.87	72.89	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-5	01/10/05	94.76	22.95	71.81	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-5	07/15/05	94.76	22.04	72.72	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-5	01/11/06	94.76	19.80	74.96	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-5	02/15/07	94.76	21.54	73.22	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-5	09/11/07	94.76	23.03	71.73	<50.0	---	---	<0.500	<0.500	<0.500	<3.00	---	---	---	---	---	---	---	---	---	---	---
MW-5	02/20/08	94.76	20.70	74.06	<50.0	---	---	<0.500	<0.500	<0.500	<3.00	---	---	<5.00	---	---	---	---	---	---	---	---
MW-5	08/12/08	94.76	22.18	72.58	<100	---	---	<0.5	<1	<1	<1	---	---	---	---	---	---	---	---	---	---	---
MW-5	02/04/09	94.76	20.68	74.08	<100	---	---	<0.50	<1.0	<1.0	<1.0	---	---	<1.0	<10	<2.0	<2.0	<2.0	---	---	---	---
MW-5 *	08/13/09	303.22	21.89	281.33	<100	<100	<100	<0.50	<0.50	<0.50	<0.50	<0.010	<0.50	<0.50	<10	<0.50	<0.50	<0.50	3.93	---	<0.1	<0.1
MW-5	02/05/10	303.22	20.36	282.86	<100	<100	<100	<0.50	<1.0	<1.0	<1.0	---	---	<1.0	<10	<2.0	<2.0	<2.0	---	---	---	---
MW-5	08/04/10	303.22	21.15	282.07	<100	<100	<100	<0.50	<1.0	<1.0	<1.0	---	---	---	---	---	---	---	---	---	---	---
MW-6	03/21/96	Not surveyed	Dry	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-6	06/17/96	Well Destroyed During Widening of Northeast 160th Street																				
																					---	---
MW-7	05/21/97	Not surveyed	Dry	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-7	08/13/09	291.70	39.80	251.90	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-8 *	08/13/09	299.31	15.33	283.98	<100	<100	<100	<0.50	<0.50	<0.50	<0.50	<0.010	<0.50	<0.50	<10	<0.50	<0.50	<0.50	<1.00	---	<0.1	<0.1
MW-8 h	02/05/10	299.13	12.50	286.63	<100	<100	<100	<0.50	<0.50	<0.50	<0.50	<0.010	<0.50	<1.0	<10	<2.0	<10	<10	---	---	<10	---
MW-8 g	03/11/10	299.31	13.30	286.01	<100	<100	<100	<0.50	<1.0	<1.0	<1.0	---	---	<1.0	<10	<2.0	<2.0	<2.0	---	---	---	---
MW-8	08/04/10	299.31	12.96	286.35	<100	<100	<100	<0.50	<1.0	<1.0	<1.0	---	---	---	---	---	---	---	---	---	---	---
MW-9 *	08/13/09	299.13	19.30	279.83	37,000	21,000 d	<500	34	530	1,600	10,000	<0.010	<2.0	<12	<250	<12	<12	<12	1.64	---	570	<0.1
MW-9 f	02/05/10	299.31	9.95	289.36	13,000	6,000 d	<100	40	46	580	1,500	---	---	<2.0	<20	<4.0	<4.0	<4.0	---	---	---	---
MW-9 f, g, h	03/11/10	299.13	10.73	288.40	14,000	6,300	<100	22	28	380	890	---	---	<1.0	<10	<2.0	<2.0	<2.0	---	---	79	---
MW-9 h	08/04/10	299.13	16.10	283.03	41,000	22,000 d	<500	32	290	1,700	7,000	---	---	---	---	---	---	---	---	---	380	---
MW-10	01/29/10	294.78	Dry	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-10	02/05/10	294.78	24.30	270.48	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-10	08/04/10	294.78	24.40	270.38	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-11	01/29/10	293.07	14.04	279.03	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-11 h	02/05/10	293.07	12.32	280.75	810	420d	<100	1.0	2.3	<1.0	4.5	---	---	<1.0	<10	<2.0	<10	<10	---	---	12	---
MW-11	08/04/10	293.07	19.90	273.17	Insufficient Water - No Sample			---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

TABLE 2

**SUMMARY OF GROUNDWATER MONITORING DATA
SHELL-BRANDED WHOLESALE FACILITY
11700 NORTHEAST 160TH STREET, BOTHELL, WASHINGTON**

Sample ID	Date	TOC	DTW	GWE	HYDROCARBONS			PRIMARY VOCs						OXYGENATES					LEAD		PAHs	
					TPH _g	TPH _d	TPH _o	B	T	E	X	EDB	EDC	MTBE	TBA	DIPE	ETBE	TAME	Total	Dissolved	Naphthalene	cPAHs
		Model Toxics Control Act Method A Screening Levels			800/1,000	500	500	5	1,000	700	1,000	0.01	5	20	NE	NE	NE	NE	15	15	160	0.1
		Site-specific Cleanup Levels			800/1,000	500	500	1,700	78,000	110,000	22,000	0.01	5	31,000	NE	NE	NE	NE	NE	NE	680	0.53
					(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
MW-12	10/12/10	299.16	50.20	248.96	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-12	10/19/10	299.16	50.09	249.07	<100	<100	<100	<0.50	<1.0	<1.0	<1.0	---	---	---	---	---	---	---	---	---	<10	---

Notes:

DTW = Depth to Water in feet

GWE = Groundwater Elevation in feet above mean sea level; before August 13, 2009, relative to arbitrary benchmarks

TOC = Top of Casing in feet above mean sea level; before August 13, 2009, relative to arbitrary benchmarks

µg/L = micrograms per liter

TPHg = Total petroleum hydrocarbons as gasoline analyzed by NWTPH-Gx unless otherwise noted. The higher value is based on the assumption that

no benzene is present in the groundwater sample. If any detectable amount of benzene is present in the groundwater sample, then the lower TPHg cleanup level is applicable.

TPHd = Total petroleum hydrocarbons as diesel, analyzed by NWTPH-Dx with silica gel cleanup unless otherwise noted.

TPHo = Total petroleum hydrocarbons as oil, analyzed by NWTPH-Dx with silica gel cleanup unless otherwise noted.

VOCs = Volatile organic compounds

BTEX = Benzene, toluene, ethylbenzene, and xylenes analyzed by EPA Method 8260B unless otherwise noted.

Total Xylenes = o-xylene + m,p-xylene

EDB = 1,2-Dibromoethane analyzed by EPA Method 8011

EDC = 1,2-Dichloroethane analyzed by EPA Method 8260B

MTBE = Methyl tertiary-butyl ether analyzed by EPA Method 8260B

TBA = Tertiary-butanol analyzed by EPA Method 8260B

DIPE = Di-isopropyl ether analyzed by EPA Method 8260B

ETBE = Ethyl tertiary-butyl ether analyzed by EPA Method 8260B

TAME = Tertiary-amyl methyl ether analyzed by EPA Method 8260B

Total Lead analyzed by EPA Method 6020 unless otherwise noted.

PAH = polycyclic aromatic hydrocarbons analyzed by EPA Method 8270C-SIM

cPAHs = carcinogenic polycyclic aromatic hydrocarbons analyzed by EPA Method 8270C-SIM

NE = Not established

<x = Not detected at laboratory reporting limit x

--- = Not analyzed

Concentrations in bold type indicate the analyte was detected above the Site Specific cleanup level

a = Initial analysis within holding time. Re-analysis for the required dilution was past holding time.

b = Sample container contained headspace

c = duplicate sample

d = The sample chromatographic pattern for TPH does not match the specified standard. Quantitation of the unknown hydrocarbon was based upon the specified standard.

e = Laboratory reporting limit (RL) in excess of the MTCA Method A cleanup level.

f = The samples for MW-8 and MW-9 were inadvertently mislabeled; data has been corrected herein.

g = Monitoring well was re-sampled to confirm the suspected field error

h = Naphthalene analyzed by EPA Method 8260B

* = Sample also analyzed for one or more of the following: carcinogenic polycyclic aromatic hydrocarbons (cPAHs) by 8270C-SIM, polychlorinated biphenyls (PCBs) by EPA Method 8082, and halogenated volatile organic compounds (HVOCs) by EPA Method 8260B. For those constituents analyzed, no concentrations exceeded the laboratory method detection limits. Please see applicable laboratory report(s) for more information.

APPENDIX A

ENVIRONMENTAL DOCUMENT LIST

Environmental Document List: 11700 NE 160th Street, Bothell, WA				
Title	Author	Date	Submitted to Ecology	
			Y/N	Date
Preliminary Site Assessment	Science & Engineering Analysis Corp.	5/29/1992	Y	8/7/1992
Report on the Soil Stockpile Sampling Program	Science & Engineering Analysis Corp.	12/15/1992	N	N/A
Quarterly Groundwater Monitoring Report - June 1994	EMCON Northwest, Inc.	7/1/1994	N	N/A
Quarterly Groundwater Monitoring Report - September 1994	EMCON Northwest, Inc.	9/1/1994	N	N/A
Groundwater Sampling Report	EMCON Northwest, Inc.	2/27/1995	Y	4/21/1995
Report of Preliminary Environmental Site Assessment	Groundwater Technology, Inc.	3/27/1995	N	N/A
Report of Dual-Phase Extraction Feasibility Test	Groundwater Technology, Inc.	6/14/1995	N	N/A
Groundwater Sampling Report	EMCON Northwest, Inc.	7/25/1995	Y	8/18/1995
Groundwater Sampling Report - September 1995	EMCON Northwest, Inc.	11/13/1995	Y	11/16/1995
Groundwater Sampling Report - December 1995	EMCON Northwest, Inc.	1/25/1996	Y	1/30/1996
Limited Subsurface Investigation	SECOR International, Inc.	4/17/1996	Y	5/16/1996
Groundwater Sampling Activities - June 1996	Pacific Environmental Group, Inc.	6/25/1996	N	N/A
Compliance Soil Sampling Results	SECOR International, Inc.	8/5/1996	N	N/A
Groundwater Sampling Activities - 1996	Pacific Environmental Group, Inc.	4/30/1997	Y	5/2/1997
The EDR-Radius Map with GeoCheck	E-Data Resources, Inc.	8/24/1997	N	N/A
Groundwater Sampling Activities - September 1997	Pacific Environmental Group, Inc.	12/4/1997	Y	12/11/1997
Groundwater Sampling Activities - January 1998	Pacific Environmental Group, Inc.	3/23/1998	Y	6/29/1998
Groundwater Sampling Activities - March 1998	Pacific Environmental Group, Inc.	7/24/1998	Y	7/27/1998
Groundwater Sampling Activities - June 1998	Pacific Environmental Group, Inc.	9/29/1998	Y	9/30/1998
Report of Environmental Services Drilling and Groundwater Monitoring	GeoEngineers, Inc.	9/30/1998	N	N/A
Groundwater Sampling Activities - September 1998	Pacific Environmental Group, Inc.	11/18/1998	Y	11/20/1998
Groundwater Sampling Activities - December 1998	Pacific Environmental Group, Inc.	1/20/1999	Y	1/27/1999
Semi-Annual Groundwater Monitoring - Second Quarter 1999	SECOR International, Inc.	7/21/1999	Y	8/5/1999
Semi-Annual Groundwater Monitoring - Fourth Quarter 1999	SECOR International, Inc.	11/11/1999	Y	11/17/1999
Semi-Annual Groundwater Monitoring - First Quarter 2000	SECOR International, Inc.	5/15/2000	Y	5/26/2000
Semi-Annual Groundwater Monitoring - Third Quarter 2000	SECOR International, Inc.	10/11/2000	Y	12/7/2000
Semi-Annual Groundwater Monitoring - First Quarter 2001	SECOR International, Inc.	2/21/2001	Y	5/11/2001
Semi-Annual Groundwater Monitoring - Third Quarter 2001	SECOR International, Inc.	8/16/2001	Y	12/4/2001
Semi-Annual Groundwater Monitoring - First Quarter 2002	SECOR International, Inc.	5/10/2002	Y	6/21/2002
Compliance Sampling Results - Waste Oil UST Removal	Noll Environmental, Inc.	3/22/2004	N	N/A
Groundwater Monitoring Report First Quarter 2006	GeoEngineers, Inc.	2/17/2006	N	N/A
Groundwater Monitoring Report - First Quarter 2007	Conestoga-Rovers & Associates	6/27/2007	Y	6/28/2007
Groundwater Monitoring Report - Third Quarter 2007	Conestoga-Rovers & Associates	11/13/2007	Y	11/19/2007
Groundwater Monitoring Report - First Quarter 2008	Conestoga-Rovers & Associates	4/30/2008	Y	5/5/2008
Phase II Environmental Site Assessment	Conestoga-Rovers & Associates	8/18/2008	Y	8/21/2008
Groundwater Monitoring Report - Third Quarter 2008	Conestoga-Rovers & Associates	10/31/2008	Y	11/3/2008

Groundwater Monitoring Report - First Quarter 2009	Conestoga-Rovers & Associates	4/23/2009	Y	4/23/2009
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APPENDIX B

LEGAL DESCRIPTION OF PROPERTY, PRESENT OWNER AND OPERATOR, KNOWN PAST OWNERS AND OPERATORS

Known Listing of Owners and Operators at 11700 Northeast 160 th Street, Bothell, WA		
<i>Owner</i>	<i>Business Operator</i>	<i>Approximate Years of Site Occupation</i>
PacWest Energy, LLC	Shell Service Station	2009 - Present
Equilon Enterprises, LLC	Shell Service Station	2009 - 1998
Texaco Refining and Marketing, Inc.	Texaco Service Station	1998 - 1972

Assessor information for parcel number 1626059114

Taxpayer name	EQUIVA SERVICES LLC PROPERTY TAX DEPT PO BOX 4369 HOUSTON TX 77210	Parcel number	1626059114
Mailing address		Tax Account number	162605911401
		Levy code	7545
		Jurisdiction	KING COUNTY
		Present use	Conv Store with Gas
		Appraised value	\$1,823,800
Address(es) at this parcel	11700 NE 160TH ST 98011		

Legal description

LOT A OF KC SHORT PLAT NO 175023 REORDING NO 7504140596 SD PLAT DAF POR OF NW 1/4 OF NW 1/4 DAF BEG AT NXN OF E LN OF SD SUBD WITH N MGN OF NE 160TH ST TH N 03-23-10 E ALG E LN 547.9 FT TO ELY EXT OF A FENCE DESC UND AUD # 2864886 TH N 88-16-30 W ALG SD EXT & FENCE LN 596.1 FT TO IRON PIPE IN FENCE COR TH S 25-06-20 W ALG FENCE LN 120.5 FT TO IRON PIPE TH CONTG S 25-06-20 W 269.5 FT TAP WCH IS 242 FT NLY AS MEAS AT R/A TO C/L OF NE 160TH ST TH N 64-57-55 W 305.33 FT TO ELY MGN OF CO RD TH S 23-53-09 W ALG ELY MGN 53.86 FT TO NXN OF ELY MGN OF FR LN OF ST HWY #1 TH S 03-26-39 W ALG ELY MGN OF CO RD 47.28 FT TAP 40 FT ELY & OPPOSITE HWY ENG STA FR 27+00 SD PT BEING ON 510 FT RAD CRV CONCAVE TO E A RAD AT SD PT BEARING S 77-06-40 E TH S ALG SD ELY MGN 162.27 FT TAP 40 FT ELY & OPPOSITE HWY ENG STA FR 25+25 TH S 61-11-34 E 125.66 FT TAP 50 FT NLY & OPPOSITE HWY ENG STA BKVD LINE 28+30 TH S 00-55-26 W 7.74 FT TO N MGN OF NE 160TH ST TH S 89-04-34 E ALG N MGN 930.96 FT TO BEG

Sales/Quit Claims/Transfers

Sale date	Sale price	Buyer	Seller	Excise tax number	Recording number	Instrument type	Sale reason
12-08-2009	\$426,462	JACKSON FOOD STORES INC	EQUILON ENTERPRISES LLC	2422380	20091221000368	Statutory Warranty Deed	None
12-08-2009	\$426,462	PACWEST ENERGY LLC	JACKSON FOOD STORES INC	2422384	20091221000371	Statutory Warranty Deed	None
07-01-1998	\$0	EQUILON ENTERPRISES LLC	TEXACO REFINING & MARKET INC	0761306	20000627001738	Special Warranty Deed	Other

Parcel description

Property name	SHELL	Plat name		Water system	WATER DISTRICT
Property type	C - COMMERCIAL	Plat block		Sewer system	PUBLIC
Present use	Conv Store with Gas	Plat lot		Access	PUBLIC
Lot area	53,578 sq. ft. (1.23 acres)	Q-S-T-R	NW-16-26-5	Street surface	NONE OR UNKNOWN

Commercial building description

Building	1 of 1	Building description	C-Store W/Gas
Year built	1972	Predominant use	CONVENIENCE MARKET (419)
Stories	1	Gross sq. ft.	1,595
Building quality	GOOD	Net sq. ft.	1,595
Construction class	PREFAB STEEL	Heating system	FORCED AIR UNIT
Building shape	Rect or Slight Irreg	Sprinklers	N
		Elevators	

Taxable value history

Tax year	Tax status	Taxable value reason	Appraised value	Taxable value
2010	TAXABLE	NONE OR UNKNOWN	\$1,500,100 (land) + \$323,700 (improvements) \$1,823,800 (total)	\$1,500,100 (land) + \$323,700 (improvements) \$1,823,800 (total)
2009	TAXABLE	NONE OR UNKNOWN	\$1,500,100 (land) + \$320,700 (improvements) \$1,820,800 (total)	\$1,500,100 (land) + \$320,700 (improvements) \$1,820,800 (total)
2008	TAXABLE	NONE OR UNKNOWN	\$1,285,800 (land) + \$322,700 (improvements) \$1,608,500 (total)	\$1,285,800 (land) + \$322,700 (improvements) \$1,608,500 (total)

Related resources

King County Assessor: [Submit a request to correct information in this report](#)

King County Assessor: [eReal Property Report](#)

King County Assessor: [Quarter Section Map](#) (PDF format requires Acrobat)

King County GIS: [Property information FAQ](#)

King County GIS: [Districts and Development Conditions Report](#) (a detailed report about the location of this property)

King County DDES: [Permit Applications Report](#) (for unincorporated areas only)

King County Treasury Operations: [Property Tax Information for this property](#)

King County Recorders Office: [Excise Tax Affidavits Report](#)

King County Recorders Office: Scanned images of plats.

King County Recorders Office: [Scanned images of surveys and other map documents](#)

[Open iMAP to this property](#) (requires a high speed internet connection)

[Open Parcel Viewer to this property](#) (any connection speed, but less features than iMAP)

APPENDIX C

SUMMARY OF PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIVITIES

SUMMARY OF PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIVITIES

1991 Preliminary Site Assessment: In December 1991 through January 1992, Science & Engineering Analysis Corporation (SEACOR) removed three 8,000-gallon gasoline underground storage tanks (UST[s]), one 550-gallon waste oil UST, one 1,000-gallon heating oil UST, dispenser islands, and all associated product piping for Texaco Refining and Marketing, Inc (TRMI). SEACOR collected 14 soil samples following the gasoline UST removal activities. Soil samples were collected from beneath each former UST (EXB-T1, EXB-T2, EXB-T3) and along sidewalls (SWN, SWE, SWW, NWC, SSW-A, SWC-SD, NSW-A, NWS). Additional excavation floor samples were collected in the western and southern extents of the excavation (SB-01, SB-02, and SWC-BOT). The soil sample results indicated that total petroleum hydrocarbons (TPH) as gasoline and benzene, toluene, ethylbenzene, and xylenes (BTEX) constituents were present at concentrations above the Washington State Department of Ecology (Ecology) Model Toxics Control Act (MTCA) cleanup levels in two soil samples (SWW and NSW) located along the west sidewall. The final excavation was completed at a depth of approximately 20 feet below ground surface (bgs). Groundwater was encountered at 17 feet bgs following the UST removals. SEACOR removed approximately 600 gallons of groundwater from gasoline UST excavation. Groundwater did not return to the excavation until a saturated sandy lens was encountered at 20 feet bgs.

In December 1991, SEACOR removed one 1,000-gallon heating oil UST and one 550-gallon waste oil UST. SEACOR collected three soil samples (FO-E, FO-W, and FO-EXB) from the heating oil UST excavation and five soil samples (WO-E, WO-W, WO-EXB, WO-EB, and WO-EXB) from the waste oil UST excavation. No analytes were detected at concentrations above the MTCA Method A cleanup levels. The final excavation depths were approximately 10 feet bgs.

In December 1991, SEACOR removed the gasoline dispenser islands, product lines, and vent lines. SEACOR collected ten soil samples (PI-1 through PI-5, FL, VL, PI5-4, PI6-4¹, and VT-1). The soil sample results indicated that TPHg and BTEX constituents were present at concentrations above MTCA Method A cleanup levels in two soil samples (PI-4 and PI6-4) located beneath the south dispenser island. During excavation of the product line trenches, piping for a proposed vapor extraction system (VES) was installed at a depth of 4 feet bgs.

¹ The exact location of PI6-4 is unknown; this soil sample was not depicted on the Site Plan included with the report. However, this soil sample was likely excavated during the 1996 Stage II Vapor Recovery installation.

The final excavation was completed to a depth of approximately 8 feet bgs. Approximately 1,740 cubic yards of petroleum-impacted soil was excavated and removed from the UST and dispenser island excavations. The soil was stockpiled in the northwest corner of the Property atop plastic sheeting surrounded by ecology blocks. Slotted PVC piping was placed in two separate 4-foot lifts within the stockpile for potential VES remediation of the stockpiled soil.

In December 1991, SEACOR collected four soil samples (EXB-1 through EXB-4) from the new UST excavation, located in the eastern portion of the Property. No analytes were detected at concentrations above the MTCA Method A cleanup levels for samples collected from the new UST excavation. The final excavation was completed to a depth of approximately 18 feet bgs. More information is available in SECOR's *Preliminary Site Assessment* report, dated May 29, 1992.

1994 Monitoring Well Installation and Pumping Test: In February 1994, Groundwater Technology, Inc. (GTI) installed four groundwater monitoring wells (MW-1 through MW-4) at the Site as part of additional characterization activities. Soil samples were collected and analyzed for TPHg and BTEX. TPHg and BTEX constituents were detected at concentrations above the MTCA Method A cleanup levels in a soil sample collected from monitoring well MW-1 at 9.5 feet bgs. Groundwater samples were collected from monitoring wells MW-1 through MW-4 and analyzed for TPHg, BTEX and total lead. TPHg, BTEX, and/or total lead were detected at concentrations above the MTCA Method A cleanup levels in groundwater samples collected from monitoring wells MW-1 through MW-3.

In April 1994, a constant-rate pumping test and rising-head slug test were conducted using monitoring well MW-1. The pumping rate varied from 0.16 gallons per minute (gpm) to 1.1 gpm. After 1.5 hours, groundwater had been drawn down approximately 12 feet below the static groundwater levels. GTI concluded that MW-1 would dewater if pumping sustained for another 1.5 hours, so pumping was discontinued. Groundwater recovered approximately 20 percent after a period of 4.5 hours. Based on aquifer testing in monitoring well MW-1 and empirical analysis of grain-size distribution of soil samples collected during drilling activities, the estimated hydraulic conductivity at the Site ranges between 1 and 10 gallons per day per square foot. GTI determined that confined aquifer conditions may exist at the Site based on the presence of a thin clay aquitard at approximately 32 to 35 feet bgs. GTI further concluded that the piezometric surface of the potential aquifer may influence observed water

levels producing conditions that indicate groundwater flow is opposite the expected groundwater flow direction based on topography. More information is available in GTI's *Report of Preliminary Environmental Site Assessment*, dated March 27, 1995.

1994 Dual Phase Extraction Feasibility Test: In December 1994 and January 1995, GTI completed feasibility tests for the use of a dual phase extraction (DPE) system at the Site. Each test ran for 9 to 10 hours, and utilized well MW-1 for extraction, and wells MW-2, MW-3 and MW-4 as observation points. GTI concluded a radius of influence of approximately 37 feet, a calculated TPHg emission rate of 3.3 pounds per day, and a hydraulic conductivity of the saturated zone of 1 gallon per day per square foot. Based on results of vacuum testing and effluent vapor sampling from Site wells, GTI determined that a DPE remedial system with five monitoring wells (two existing wells (MW-1 and MW-2) and three new wells) would produce sufficient groundwater drawdown and air extraction rates to effectively reduce the contaminant concentrations in soil and groundwater; however, further Site characterization of the lateral extent of dissolved hydrocarbons prior to design of the remedial system would be necessary. More information is available in GTI's *Report of Dual Phase Extraction Feasibility Test*, dated June 14, 1995.

1996 Monitoring Well Installation: In January 1996, SECOR International, Inc. (SECOR) installed two monitoring wells (MW-5 and MW-6). Monitoring well MW-5 was installed along the southern Property boundary in the planter south of the dispenser island, and monitoring well MW-6 was installed in the city right-of-way in the drainage swale just beyond the southern Property boundary. Soil samples were collected and analyzed for TPHg and BTEX. No analytes were detected at concentrations above the MTCA Method A cleanup levels. More information is available in SECOR's *Limited Subsurface Investigation* report, dated April 17, 1996.

1996 Stage II Vapor Recovery Installation: In May 1996, SECOR collected soil samples during the installation of a canopy, dispenser islands, and Stage II Vapor Recovery piping. The area surrounding the dispenser islands was excavated to approximately 4 feet bgs; each corner of the excavation was extended to 7 feet bgs to accommodate concrete canopy footings. SECOR collected seven soil samples (SWPI, SEPI, NWPI, NEPI, SWPT, SEPT, and NEPT) from beneath each dispenser island and adjacent to the southwestern, southeastern, and northeastern dispenser islands. Soil samples were collected and analyzed for TPHg and BTEX. No analytes were detected at concentrations

above the MTCA Method A cleanup levels. More information is available in SECOR's *Compliance Soil Sampling Results* report, dated August 5, 1996.

1996 Monitoring Well Destruction: In June 1996, monitoring wells MW-2 and MW-6 were destroyed during road widening construction on Northeast 160th Street. Groundwater sampling of the remaining Site wells was completed on June 6, 1996. More information is available in Pacific Environmental Group's *Groundwater Sampling Activities* report, dated July 25, 1996.

1997 Monitoring Well Installation: In May 1997, GeoEngineers, Inc. (GeoEngineers) installed monitoring well MW-7. Soil samples were collected and analyzed for TPHg, BTEX, and total lead. No analytes were detected at concentrations above the MTCA Method A cleanup levels. More information is available in GeoEngineers's *Report of Environmental Services Drilling and Groundwater Monitoring*, dated September 30, 1998.

2003 Waste Oil UST Removal: In November 2003, Noll Environmental, Inc. (Noll) removed one 550-gallon waste oil UST. Noll collected three soil samples (WO-SWALL-7, WO-WWALL-6, and WOBOT-8) from the waste oil UST excavation and analyzed them for TPHg, TPH as diesel (TPHd), and TPH as heavy oil (TPHo). No analytes were detected at concentrations above the MTCA Method A cleanup levels for samples collected from the waste oil UST excavation. The waste oil UST excavation was completed to a depth of approximately 8 feet bgs. More information is available in Noll's *Compliance Sampling Results – Waste Oil UST Removal* report, dated March 22, 2004.

2008 Phase II Environmental Site Assessment: In June 2008, Conestoga-Rovers & Associates (CRA) completed five soil borings (SB-1 through SB-5) at the Site. Soil samples were collected and analyzed for TPHg, TPHd, TPHo, BTEX, 1,2-dichloroethane (EDC), 1,2-dibromoethane (EDB), methyl tertiary-butyl ether (MTBE), carcinogenic polycyclic aromatic hydrocarbons (cPAHs), and total lead. No analytes were detected at concentrations above the MTCA Method A cleanup levels. CRA's *Phase II Environmental Site Assessment Report* erroneously reported BTEX concentrations in SB4-25 as mg/kg, when they were in fact micrograms per kilogram. The corrected concentrations are included in Table 1 of this report. More information is available in CRA's *Phase II Environmental Site Assessment Report*, dated August 2008.

2009 Monitoring Well Installation: In April 2009, CRA completed two soil borings (SB-6 and SB-7) and installed two monitoring wells (MW-8 and MW-9) at

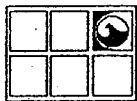
the Site to evaluate potential petroleum hydrocarbon impacts to soil and groundwater down- and cross-gradient of the former gasoline USTs. Soil samples were collected and analyzed for TPHg, TPHd, TPHo, BTEX, EDC, EDB, MTBE, cPAHs, and total lead. TPHg and BTEX constituents were detected at concentrations above the MTCA Method A cleanup levels in a soil sample collected from soil boring SB-6 at 19 feet bgs. Total cPAHs were detected at concentrations above the MTCA Method A cleanup levels in a soil sample collected from soil boring SB-7 at 9 feet. No other analytes were detected at concentrations above the MTCA Method A cleanup levels.

2010 Monitoring Well Installations: In January 2010, CRA completed two soil borings (SB-8 and SB-9) and installed two monitoring wells (MW-10 and MW-11) at the Site to define the vertical and horizontal extent of soil and groundwater impacts west and southwest of former gasoline USTs and southwest of the former dispenser islands. Soil samples were collected and analyzed for TPHg, TPHd, TPHo, and BTEX. TPHg, TPHd, and BTEX constituents were detected at concentrations above the MTCA Method A cleanup levels in a soil sample collected from soil boring SB-8 at 6 feet bgs. No other analytes were detected at concentrations above the MTCA Method A cleanup levels.

In October 2010, CRA completed one soil borings SB-11, and installed one groundwater monitoring well MW-12 to define the vertical and horizontal extent of soil impacts surrounding SB-8 and determine whether deeper water bearing zones have been impacted by the historical release. Monitoring well MW-12 was installed to a total depth of 60 feet bgs. Soil samples were collected every 5 feet and analyzed for TPHg, TPHd, TPHo, and BTEX. Concentrations exceeding the MTCA Method A cleanup levels were detected in SB-10/MW-12 at 25 feet bgs, and SB-11 at 6, 10, and 15 feet bgs. A minimum of 15 feet of contiguous soil with no detections above the MTCA Method A cleanup levels was obtained in each boring to define the vertical extent.

APPENDIX D

AVAILABLE HISTORICAL SOIL BORING LOGS



GROUNDWATER
TECHNOLOGY

Drilling Log

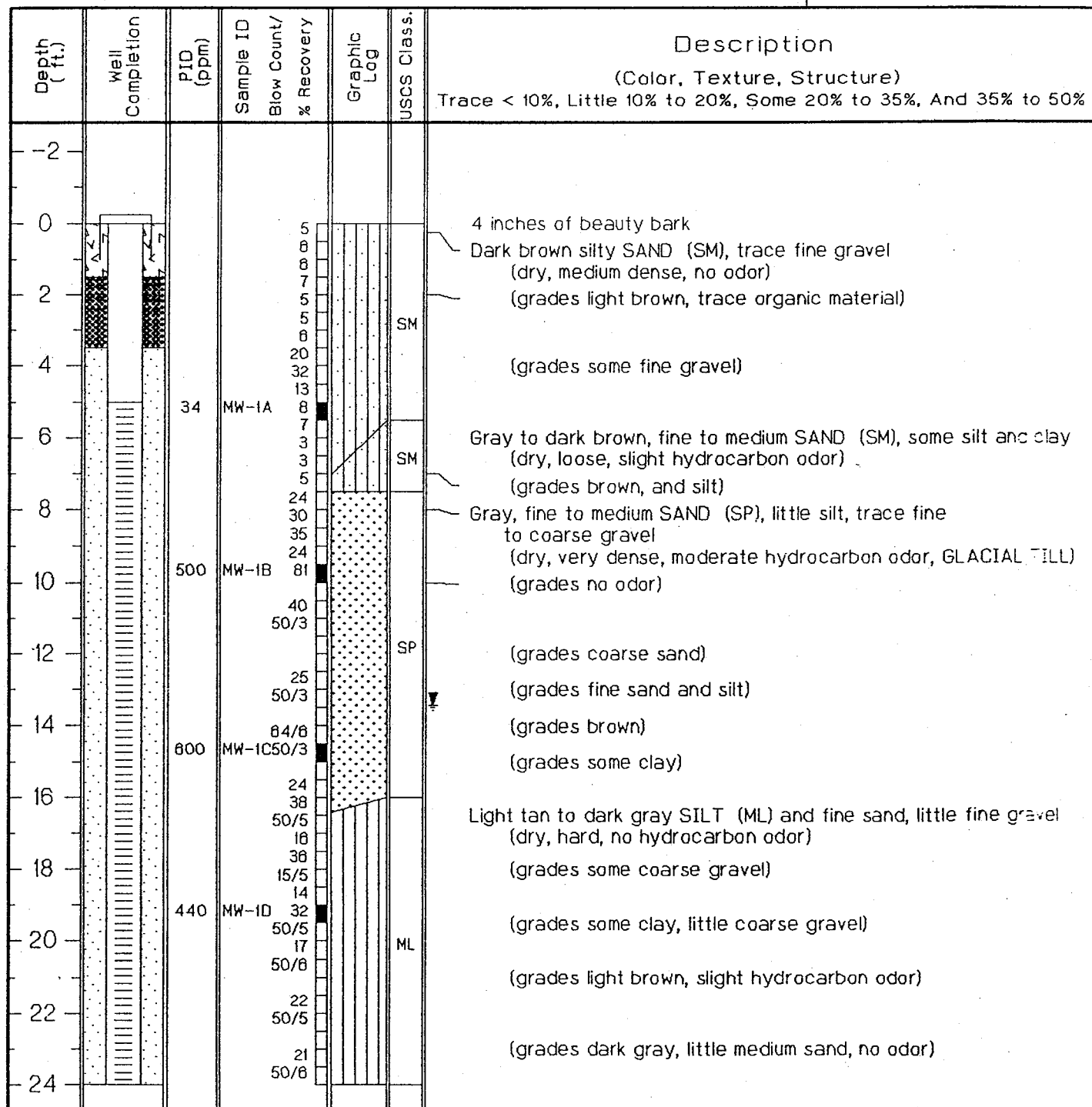
Monitoring Well MW-1

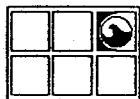
Project Site #63-232-1469 Owner Texaco Refining and Marketing Inc.
Location 11700 160th Avenue NE, Bothell, WA Proj. No. 020605286
Surface Elev. _____ Total Hole Depth 38 ft. Diameter 13 in.
Top of Casing 94.91 ft. Water Level Initial 27.5 ft. Static 13.45 ft.
Screen: Dia 4 in. Length 30 ft. Type/Size 0.020 in.
Casing: Dia 4 in. Length 5 ft. Type Schedule 40 PVC
Fill Material Colorado Silica Sand Rig/Core Mobile B-51
Drill Co. Geoboring, Inc. Method Hollow Stem Auger
Driller John Rorish Log By Steve Hartman Date 2/1/94 Permit # _____
Checked By Stan Haskins License No. _____

See Site Map
For Boring Location

COMMENTS:

140-pound hammer, 30-inch drop to 14 feet below grade 300-pound hammer, 30-inch drop below 14 feet below grade





GROUNDWATER
TECHNOLOGY

Drilling Log

Monitoring Well MW-1

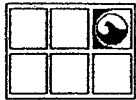
Project Site #63-232-1469

Owner Texaco Refining and Marketing Inc.

Location 11700 160th Avenue NE, Bothell, WA

Proj. No. 020605286

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description
							(Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
24							(grades light gray, some fine sand)
26		120	MW-1E 20	50/8		ML	(grades dark gray, little fine sand) (localized lenses of medium sand)
28				15			
30				50/8			
32		30	MW-1F 23	40		SP	Encountered water 11:25 hours 2/1/94 Dark gray, fine to medium SAND (SP), some clay (wet, very dense, no odor)
34				13			(grades no clay)
36				16			(grades little silt and clay)
38				23			
40				4			
42				18			(grades some clay)
44				19			
46		8	MW-1G 8	10		CL	Dark gray to dark brown CLAY (CL), some silt (moist, hard, no odor, occasional sand lenses)
48				14			
50				4			
52				18			
54				28		SP	Medium brown to medium gray, fine to coarse SAND, little gravel (wet, no odor)
56							End of boring 12:25 hours 2/1/94



GROUNDWATER
TECHNOLOGY

Drilling Log

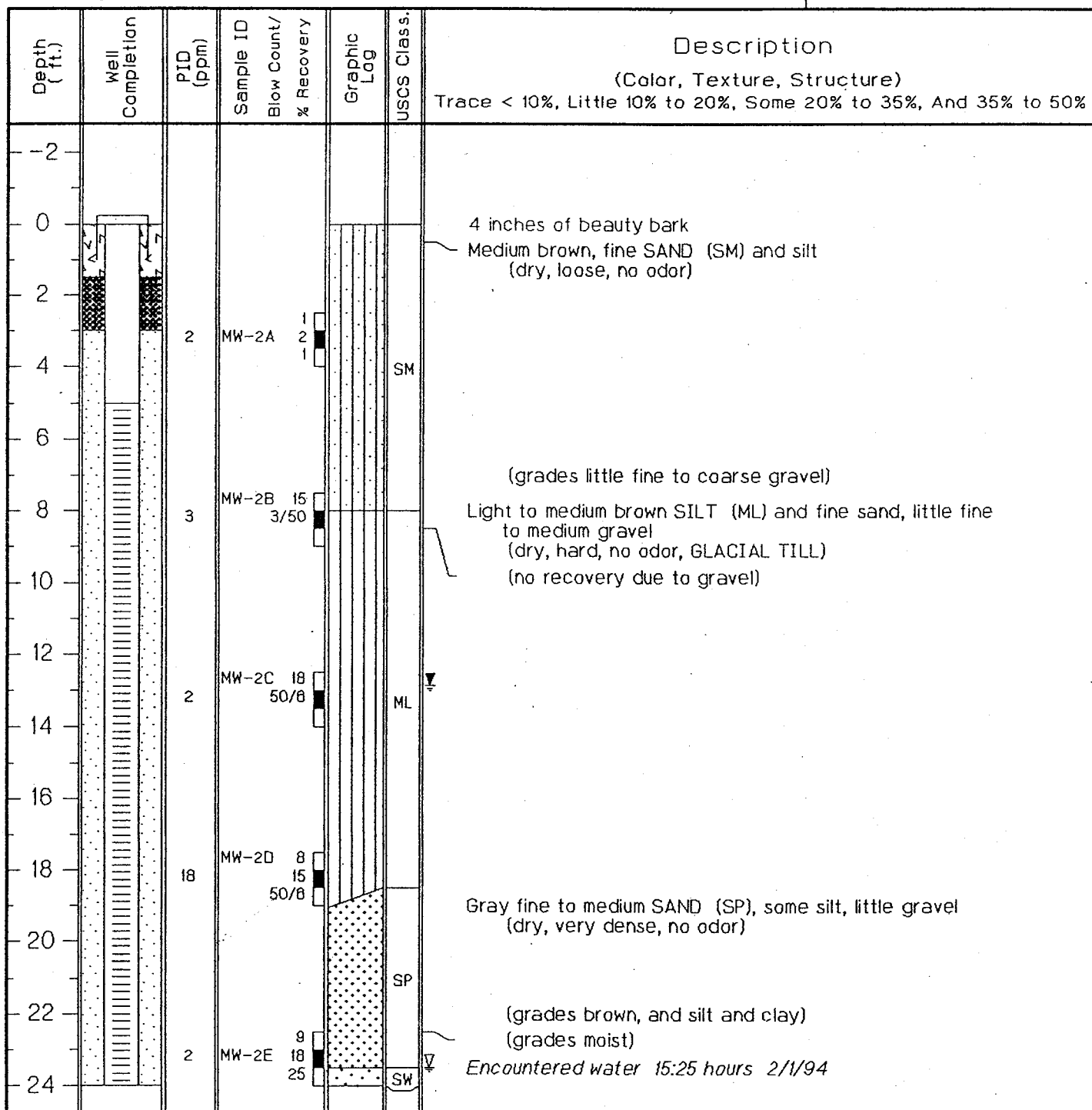
Monitoring Well **MW-2**

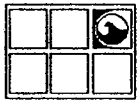
Project Site #63-232-1469 Owner Texaco Refining and Marketing Inc.
Location 11700 160th Avenue NE, Bothell, WA Proj. No. 020605286
Surface Elev. _____ Total Hole Depth 32.5 ft. Diameter 13 in.
Top of Casing 94.63 ft. Water Level Initial 23.5 ft. Static 12.87 ft.
Screen: Dia 4 in. Length 25 ft. Type/Size 0.020 in.
Casing: Dia 4 in. Length 5 ft. Type Schedule 40 PVC
Fill Material Colorado Silica Sand Rig/Core Mobile B-51
Drill Co. Geoboring, Inc. Method Hollow Stem Auger
Driller John Ronish Log By Steve Hartman Date 2/1/94 Permit # _____
Checked By Stan Haskins License No. _____

See Site Map
For Boring Location

COMMENTS:

300-pound hammer, 30-inch drop





GROUNDWATER
TECHNOLOGY

Drilling Log

Monitoring Well MW-2

Project Site #63-232-1469

Owner Texaco Refining and Marketing Inc.

Location 11700 160th Avenue NE, Bothell, WA

Proj. No. 020605286

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
24		2	MW-2F	10		SW	Dark gray, fine to medium SAND (SW) (wet, dense, no odor)
22							
41							
19							
50/5							
28				12		SP	Dark gray fine SAND (SP) and silt and clay (moist, dense, no odor) (grades fine to medium sand, very dense)
25							
33							
25							
50/8							
30		2	MW-2G	20		CL	Dark gray to brown CLAY (CL), little silt (moist, very stiff, no odor)
32				19			
				12			
34							End of boring 16:30 hours 2/1/94
36							
38							
40							
42							
44							
46							
48							
50							
52							
54							
56							



Project Site #63-232-1469 Owner Texaco Refining and Marketing Inc.
 Location 11700 160th Avenue NE, Bothell, WA Proj. No. 020605286
 Surface Elev. _____ Total Hole Depth 35 ft. Diameter 13 in.
 Top of Casing 99.57 ft. Water Level Initial 21 ft. Static 21.68 ft.
 Screen: Dia 4 in. Length 30 ft. Type/Size 0.020 in.
 Casing: Dia 4 in. Length 5 ft. Type Schedule 40 PVC
 Fill Material Colorado Silica Sand Rig/Core Mobile B-51
 Drill Co. Geoboring, Inc. Method Hollow Stem Auger
 Driller John Ronish Log By Steve Hartman Date 2/2-2/3/94 Permit # _____
 Checked By Stan Haskins License No. _____

See Site Map
For Boring Location

COMMENTS:

300-pound hammer, 30-inch drop

Depth (ft.)	Well Completion	PID (ppm)	Sample ID Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2						
0						4 inches of beauty bark
2						Light brown fine to coarse GRAVEL (GM) and silt, trace cobbles (dry, no odor, IMPORTED BACKFILL)
4			50/0 MW-3A			(cobbles broke split spoon sampler) (switch to 300 pound hammer)
6					GM	(grades little silt and cobbles)
8						
10						
12					ML	Light brown SILT (ML) and fine sand, some gravel (dry, slight hydrocarbon odor)
14					GP	Light brown to gray fine GRAVEL (GP) (dry, moderate hydrocarbon odor, PEA GRAVEL)
16		2	50/4 MW-3B			Light brown SILT (ML) and fine sand, trace gravel (dry, hard, no odor)
18					ML	
20		2	50/5 MW-3C			
22					ML	Encountered water 12:00 hours 2/2/94 Gray SILT (ML) some clay, little fine sand (moist, hard, no odor)
24						



GROUNDWATER
TECHNOLOGY

Drilling Log

Monitoring Well **MW-3**

Project Site #63-232-1469

Owner Texaco Refining and Marketing Inc.

Location 11700 160th Avenue NE, Bothell, WA

Proj. No. 020605286

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
24							
26			MW-3D 8	50/5			(drill rig broke, end drilling 13:50 hours 2/2/94) (start drilling 8:30 hours 2/3/94) (grades silt and sand, wet)
28						ML	(grades some fine to coarse gravel)
30		1	MW-3E 100/6				
32			50/6				Gray to brown fine to coarse GRAVEL (GM) and silt (wet, very dense, no odor)
34			50/6			GM	
36		1	MW-3F 21 31	50/5		SM	Gray to brown fine to medium SAND (SM) some silt (wet, very dense, no odor) End of boring 9:15 hours 2/3/94
38							
40							
42							
44							
46							
48							
50							
52							
54							
56							



GROUNDWATER
TECHNOLOGY

Drilling Log

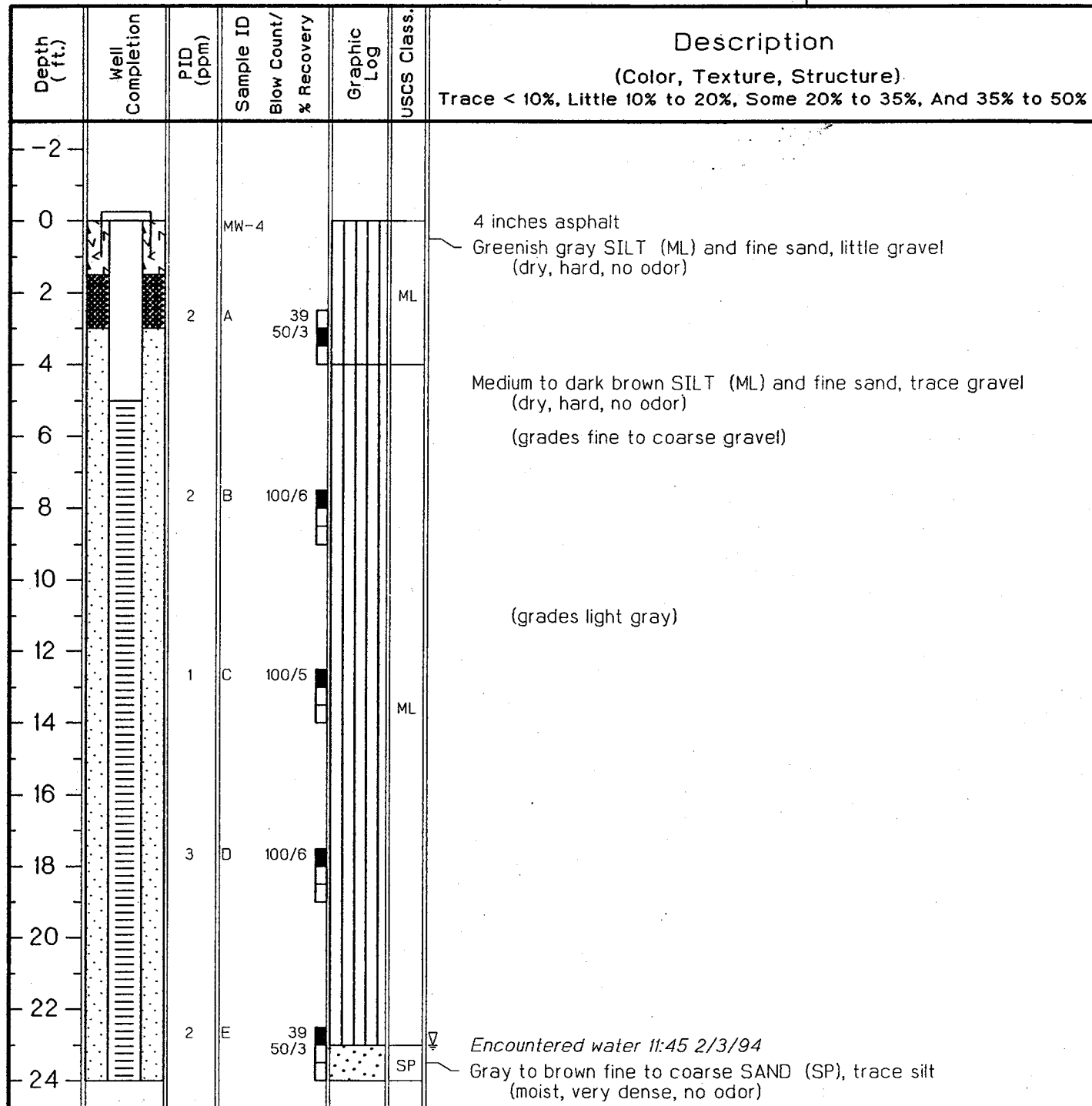
Monitoring Well **MW-4**

Project Site #63-232-1469 Owner Texaco Refining and Marketing Inc.
 Location 11700 160th Avenue NE, Bothell, WA Proj. No. 020605286
 Surface Elev. _____ Total Hole Depth 40 ft. Diameter 13 in.
 Top of Casing 102.75 ft. Water Level Initial 23 ft. Static 31.42 ft.
 Screen: Dia 4 in. Length 30 ft. Type/Size 0.020 in.
 Casing: Dia 4 in. Length 5 ft. Type Schedule 40 PVC
 Fill Material Colorado Silica Sand Rig/Core Mobile B-51
 Drill Co. Geoboring, Inc. Method Hollow Stem Auger
 Driller John Ronish Log By Steve Hartman Date 2/3/94 Permit # _____
 Checked By Stan Haskins License No. _____

See Site Map
For Boring Location

COMMENTS:

140-pound hammer, 30-inch drop





GROUNDWATER
TECHNOLOGY

Drilling Log

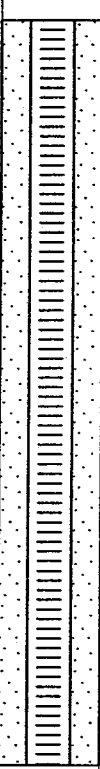
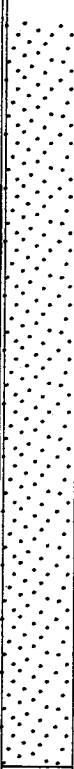
Monitoring Well **MW-4**

Project Site #63-232-1469

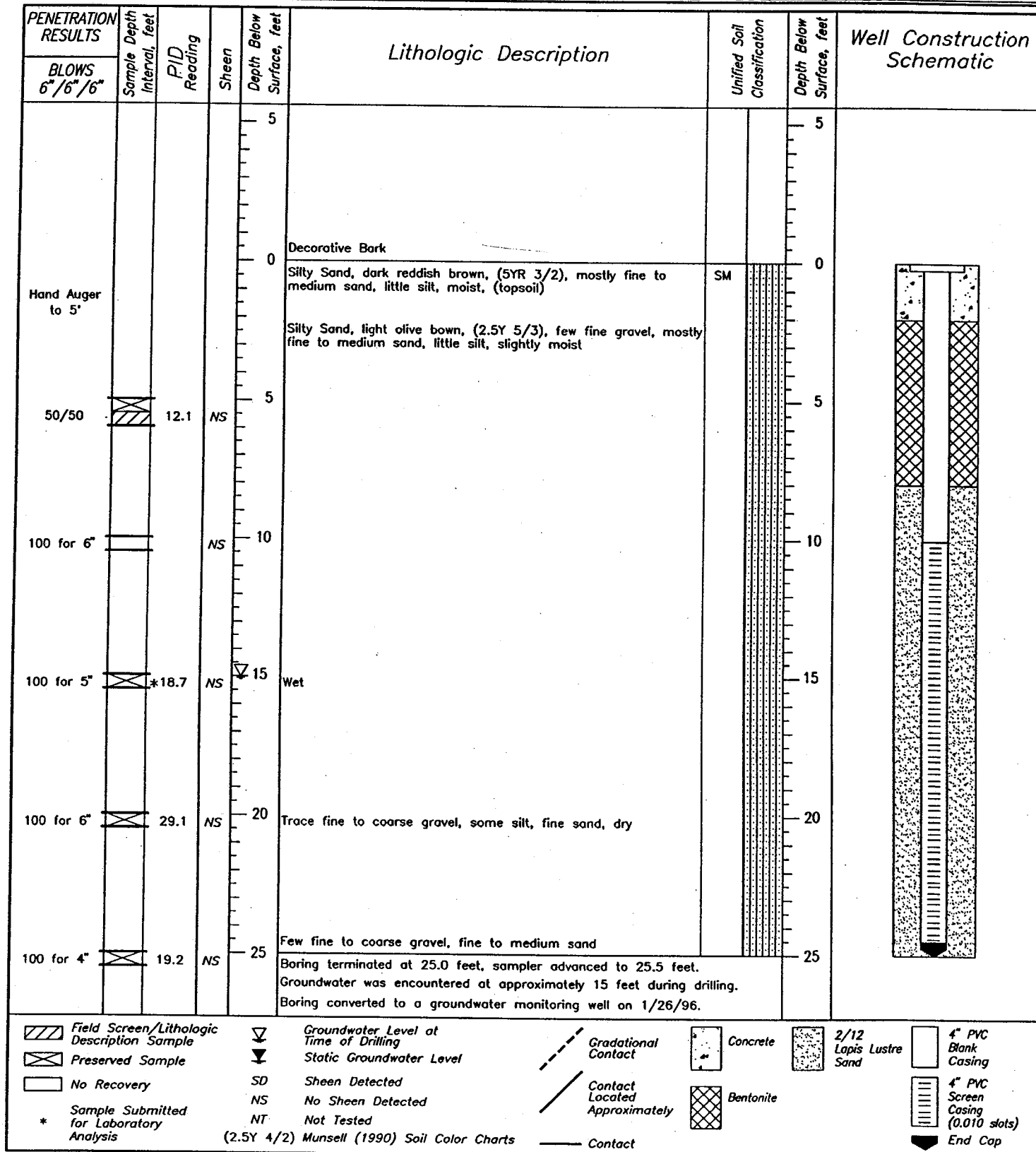
Owner Texaco Refining and Marketing Inc.

Location 11700 160th Avenue NE, Bothell, WA

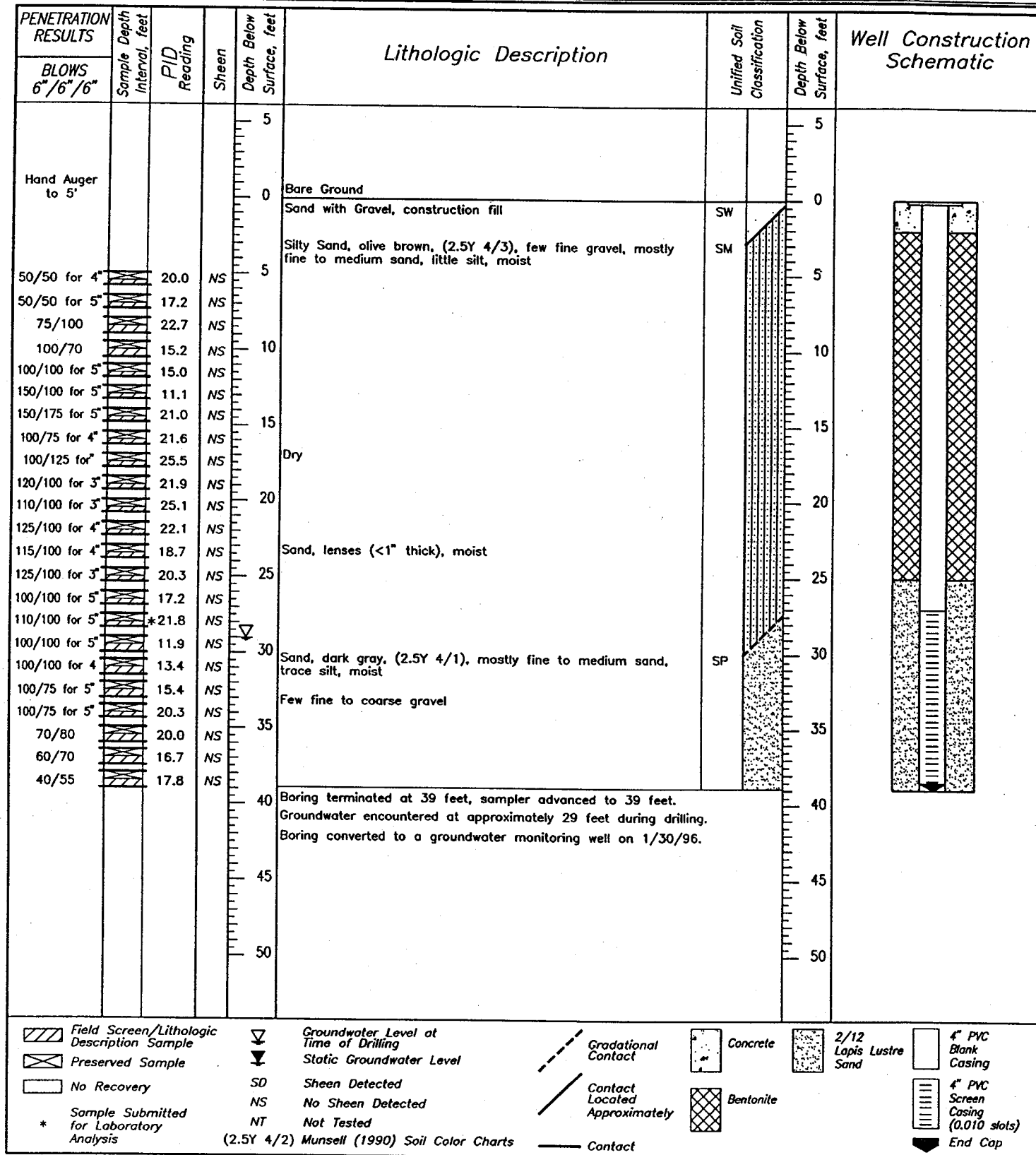
Proj. No. 020605286

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
24		2	F	40 50/4		SP	(grades little gravel, wet)
26							
28							
30							
32			G	23 50/5			
34							(grades very wet)
36							
38		2	H	8 50/6			(minor heaving)
40							End of boring 12:20 2/3/94
42							
44							
46							
48							
50							
52							
54							
56							

FACILITY TEXACO #63-232-1469 JOB # 00111-131-01 BORING/WELL MW-5
LOCATION 11700 NE 160TH STREET, BOTHELL, WASHINGTON SURFACE ELEVATION -
START 1/26/96 0855 FINISH 1/26/96 1250 CASING TOP ELEVATION -
LOGGED BY A. STOLLAR MONITORING DEVICE PHOTOVAC PID MICROTIP MP-1000
SUBCONTRACTOR AND EQUIPMENT CASCADE DRILLING INC; CME 55 10.5" O.D. HSA
COMMENTS SAMPLED EVERY FIVE FEET USING A 2.5" I.D. X 18" LONG SPLIT SPOON SAMPLER DRIVEN BY
A 140 POUND HAMMER WITH A 30" STROKE WSDOE WELL #ACG204



FACILITY TEXACO #63-232-1469 JOB # 00111-131-01 BORING/WELL MW-6
 LOCATION 11700 NE 160TH STREET, BOTHELL, WASHINGTON SURFACE ELEVATION -
 START 1/26/96 0905 FINISH 1/26/96 1340 CASING TOP ELEVATION -
 LOGGED BY A. STOLLAR MONITORING DEVICE PHOTOVAC PID MICROTIP MP-1000
 SUBCONTRACTOR AND EQUIPMENT CASCADE DRILLING INC; CME 55 10.5" O.D. HSA
 COMMENTS SAMPLED USING A 2.5" I.D. X 18" LONG SPLIT SPOON SAMPLER DRIVEN BY
A 140 POUND HAMMER WITH A 30" STROKE WSDOE WELL #ACG 205



MONITORING WELL MW-7

WELL SCHEMATIC

Casing Elevation (ft.): 87.86

Casing Stickup (ft.): -0.44

Vapor

Conc.(ppm)
Sheen

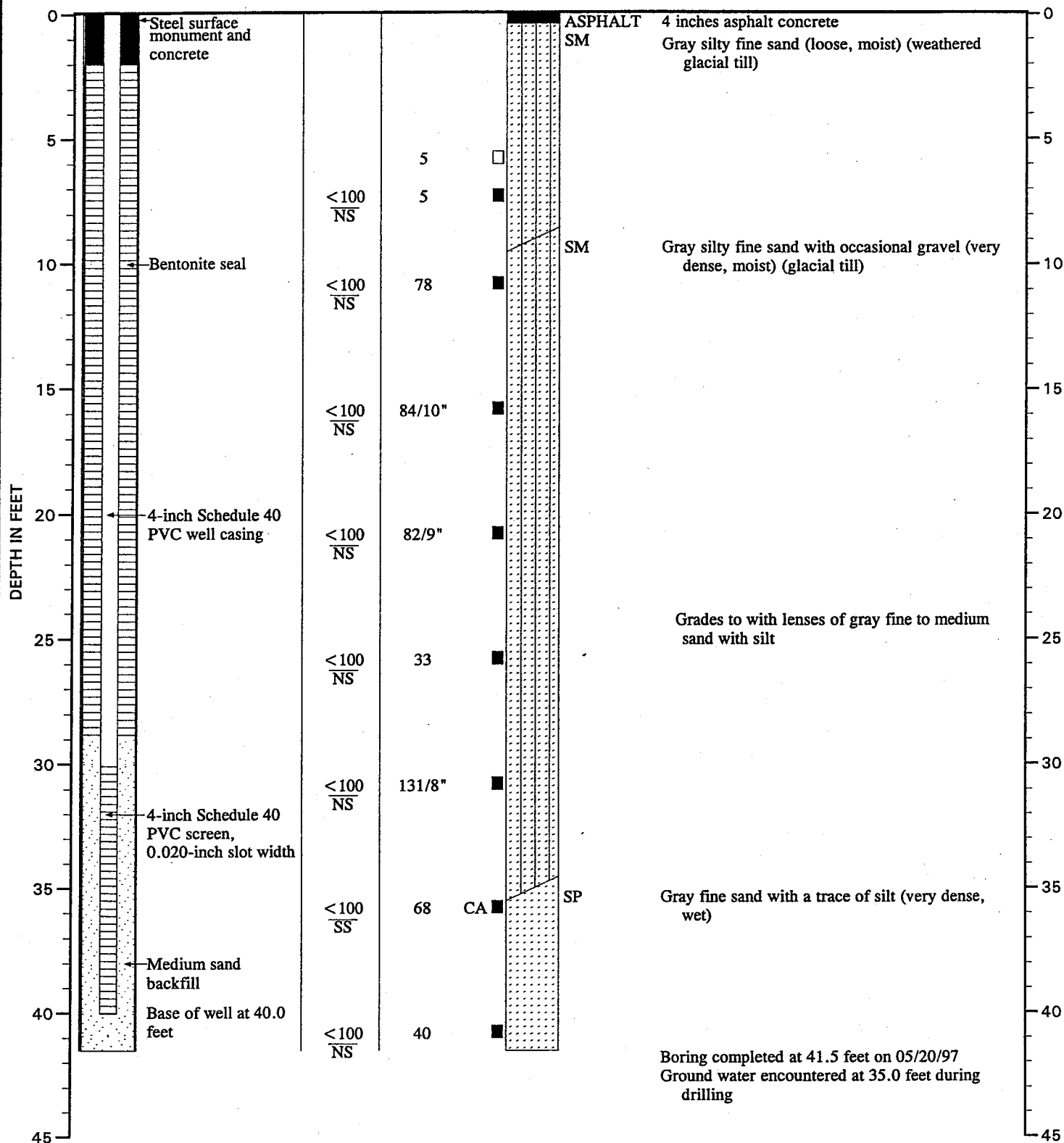
Blow
Count

Samples

Group
Symbol

DESCRIPTION

Surface Elevation (ft.): 88.30



Note: See Figure A- 2 for explanation of symbols



LOG OF MONITORING WELL

FIGURE A-3

0401-071-64-1150

0401-071-64-1150



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: BOTH 11700

HOLE DESIGNATION: MW2R

PROJECT NUMBER: 241809

DATE COMPLETED: June 9, 2008

CLIENT: Shell Oil Products US

DRILLING METHOD: Air Knife

LOCATION: 11700 160th Street

FIELD PERSONNEL: B. Palmer

Bothell, Washington

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	BOREHOLE	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	BLOW COUNTS	
2	ASPHALT	0.75	CONCRETE					
4	FILL sand, with gravel, medium to coarse grained, high porosity, reddish-brown, dry, no odor		BENTONITE					
6			8" BOREHOLE					
8	END OF BOREHOLE @ 7.5ft BGS	7.50						
10								
12								
14								
16								
18								
20								
22								
24								
26								
28								
30								
32								
34								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 241809.GPJ CRA CORP.GDT 7/31/08



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: BOTH 11700

PROJECT NUMBER: 241809

CLIENT: Shell Oil Products US

LOCATION: 11700 160th Street

Bothell, Washington

HOLE DESIGNATION: SB-1

DATE COMPLETED: June 11, 2008

DRILLING METHOD: Hollow Stem Auger

FIELD PERSONNEL: B. Palmer

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	BOREHOLE	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	BLOW COUNTS	PID [ppm]
	ASPHALT							
0.75	SM-CLAYEY, SILTY SAND, with gravel, trace cobbles, compact, fine grained, medium porosity, grayish-brown, dry, no odor		CONCRETE					
2								
4								
6			BENTONITE	SB-1@6			46 >50	0
8			8" BOREHOLE					
10	- trace clay, trace gravel below 10 ft BGS			SB-1@10			44 >50	0
12								
14								
16	- with gravel, fine to medium grained below 15 ft BGS			SB-1@15			36 >50	0
18								
20	- medium grained, high porosity, moist below 20 ft BGS			SB-1@20			30 >50	0
22								
24								
25.00	SW-SAND, trace gravel, medium to coarse grained, high porosity, moist, no odor			SB-1@25			50 >50	0
26.00	- wet below 26 ft BGS END OF BOREHOLE @ 26.0ft BGS							
28								
30								
32								
34								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

WATER FOUND ∇

CHEMICAL ANALYSIS ○

OVERBURDEN LOG 241809.GPJ CRA CORP.GDT 7/31/08



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: BOTH 11700

HOLE DESIGNATION: SB-2

PROJECT NUMBER: 241809

DATE COMPLETED: June 11, 2008

CLIENT: Shell Oil Products US

DRILLING METHOD: Hollow Stem Auger

LOCATION: 11700 160th Street

FIELD PERSONNEL: B. Palmer

Bothell, Washington

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	BOREHOLE	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	BLOW COUNTS	PID (ppm)
	ASPHALT							
2	SM-CLAYEY, SILTY SAND, with gravel, trace cobbles, very dense, fine grained, medium porosity, grayish-brown, dry, no odor	0.75	CONCRETE					
4			BENTONITE					
6			8" BOREHOLE					
8								
10	- medium grained below 10 ft BGS			SB-2@10			29 50	0
12								
14	- grayish tan below 15 ft BGS			SB-2@15			50 50	0
16								
18								
20	- high porosity below 20 ft BGS			SB-2@20			50 50	0
22								
24								
26	SW-SAND, medium grained, high porosity, grayish tan, moist, no odor	25.00		SB-2@25			24 34	0
26	- wet below 26 ft BGS	26.50						
28	END OF BOREHOLE @ 26.5ft BGS							
30								
32								
34								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

WATER FOUND ∇

CHEMICAL ANALYSIS ○

OVERBURDEN LOG 241809.GPJ CRA_CORP.GDT 7/31/08



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: BOTH 11700

PROJECT NUMBER: 241809

CLIENT: Shell Oil Products US

LOCATION: 11700 160th Street

Bothell, Washington

HOLE DESIGNATION: SB-3

DATE COMPLETED: June 11, 2008

DRILLING METHOD: Hollow Stem Auger

FIELD PERSONNEL: B. Palmer

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	BOREHOLE	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	BLOW COUNTS	PID [ppm]
0	ASPHALT	0.75	CONCRETE					
2	SM-CLAYEY, SILTY SAND, with gravel, trace cobbles, compact to dense, fine to medium grained, medium to high porosity, dry, no odor							
4								
6			BENTONITE	SB-3@5			38 50	0
8			8" BOREHOLE					
10	- with silt, medium porosity, tan below 10 ft BGS			SB-3@10			34 50	0
12								
14								
16	SW-SAND, medium grained, high porosity, tan-gray, moist	15.00		SB-3@15			50 50	0
18								
20	GW-GRAVELLY SAND, medium grained, high porosity, tan-gray, dry	20.00		SB-3@20			50 50	0
22								
24								
26	SW-SAND, medium grained, high porosity, tan-gray, moist, no odor - wet below 26 ft BGS	25.00		SB-3@25			16 23	0
28	END OF BOREHOLE @ 26.5ft BGS	26.50						
30								
32								
34								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

WATER FOUND ∇

CHEMICAL ANALYSIS

OVERBURDEN LOG 241809.GPJ CRA CORP.GDT 7/31/08



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: BOTH 11700

HOLE DESIGNATION: SB-4

PROJECT NUMBER: 241809

DATE COMPLETED: June 11, 2008

CLIENT: Shell Oil Products US

DRILLING METHOD: Hollow Stem Auger

LOCATION: 11700 160th Street

FIELD PERSONNEL: B. Palmer

Bothell, Washington

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	BOREHOLE	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	BLOW COUNTS	PID [ppm]
	ASPHALT	0.33						
	FILL, gravelly sand, with cobbles	1.00						
	ASPHALT	1.33						
2			CONCRETE					
4								
6			BENTONITE	SB-4@5			3 5 8	0
8			8" BOREHOLE					
10		10.00		SB-4@10			24 50	0
12	SM-SILTY SAND, fine to medium grained, high porosity, gray, moist, no odor							
14								
16				SB-4@15			35 50	0
18								
20				SB-4@20			39 50	0
22								
24				SB-4@25			24 37	295
26	SW-SAND, medium to coarse grained, high porosity, gray, moist, no odor	25.00						
26	- wet below 26 ft BGS	26.50						
28	END OF BOREHOLE @ 26.5ft BGS							
30								
32								
34								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

WATER FOUND ∇

CHEMICAL ANALYSIS ○

OVERBURDEN LOG 241809.GPJ CRA CORP.GDT 7/31/08



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: BOTH 11700

HOLE DESIGNATION: SB-5

PROJECT NUMBER: 241809

DATE COMPLETED: June 11, 2008

CLIENT: Shell Oil Products US

DRILLING METHOD: Hollow Stem Auger

LOCATION: 11700 160th Street

FIELD PERSONNEL: B. Palmer

Bothell, Washington

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	BOREHOLE	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	BLOW COUNTS	PID [ppm]
	ASPHALT	0.33						
	FILL, sand, medium grained, high porosity, red-brown, dry, no odor		CONCRETE					
2		2.00						
	SM-CLAYEY, SILTY SAND, fine to medium grained, medium porosity, tan, dry, no odor		BENTONITE	SB-5@5			39 50	0
4								
6								
8			8" BOREHOLE					
10	- with gravel, trace clay, dry to moist below 10 ft BGS			SB-5@10			29 37	0
12								
14								
16	- with cobbles, trace gravel below 15 ft BGS			SB-5@15			27 40 48	0
18								
20	- no water return @ 20 ft BGS			SB-5@20			50 >50	0
22								
24								
26	- trace cobbles, high porosity, wet below 25 ft BGS			SB-5@25			50 >50	0
26.50	END OF BOREHOLE @ 26.5ft BGS	26.50						
28								
30								
32								
34								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

WATER FOUND ∇

CHEMICAL ANALYSIS ○

OVERBURDEN LOG 241809.GPJ CRA CORP GDT 7/31/08

APPENDIX E

BORING LOGS FOR MW-9 THROUGH MW-12 AND SB-6 THROUGH SB-10



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: BOTH 11700

HOLE DESIGNATION: MW-8

PROJECT NUMBER: 241809

DATE COMPLETED: May 19, 2009

CLIENT: Shell Oil Products US

DRILLING METHOD: Air Knife/Hollow Stem Auger

LOCATION: 11700 NE 160th Street

FIELD PERSONNEL: H. Bays

Bothell, Washington

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	MONITORING WELL	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	BLOW COUNTS	PID [ppm]
0	ASPHALT	0.75	CONCRETE					
2	GM-SILTY GRAVEL, with sand, loose, fine to medium, poorly sorted, olive gray, moist, slight odor		2"Ø PVC WELL CASING					0.4
4	- Air Knife was used from 0 to 5.1 ft BGS		BENTONITE	MW85				2.1
6	SM-SILTY SAND, with gravel, loose, fine to medium grained, poorly sorted, olive gray, moist, slight odor	5.10						
8								
10	- dense, no odor below 9 ft BGS			SS1	X	66.7	30 >50	0.7
12			WELL SCREEN					
14	- no gravel, well sorted, light brown, slight odor below 14 ft BGS		SAND PACK	SS2/MW-8-14	X	100.0	22 >50	1.4
16			12"Ø BOREHOLE					
18								
20	- trace pebbles, medium gray, dry below 19 ft BGS			SS3	X	66.7	28 >50	1.7
22								
24	- little pebbles, poorly sorted, light brown, wet below 24 ft BGS			SS4	X	33.3	>50	1.4
26	END OF BOREHOLE @ 25.5ft BGS	25.50						

WELL DETAILS

Screened interval:

10.00 to 25.00ft BGS

Length: 15ft

Diameter: 2in

Slot Size: 10

Material: PVC

Seal:

2.00 to 8.00ft BGS

Material: BENTONITE

Sand Pack:

8.00 to 25.50ft BGS

Material: 10-20 SILICA SAND

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

WATER FOUND ▼

CHEMICAL ANALYSIS ○

OVERBURDEN LOG 241809.GPJ CRA CORP.GDT 5/29/09



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: BOTH 11700

PROJECT NUMBER: 241809

CLIENT: Shell Oil Products US

LOCATION: 11700 NE 160th Street

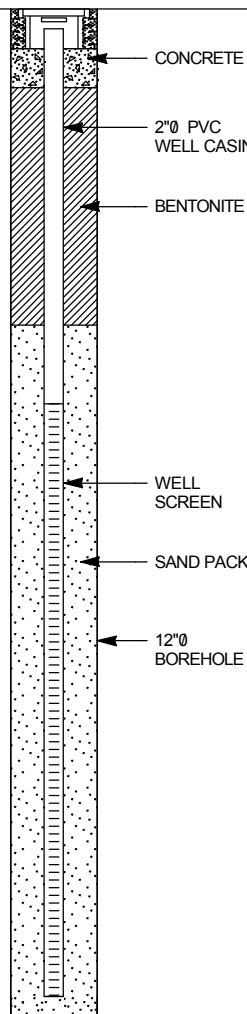
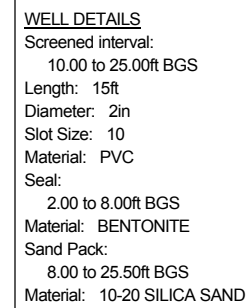
Bothell, Washington

HOLE DESIGNATION: MW-9

DATE COMPLETED: May 19, 2009

DRILLING METHOD: Air Knife/Hollow Stem Auger

FIELD PERSONNEL: H. Bays

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	MONITORING WELL	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	BLOW COUNTS	PID [ppm]
2	GP-GRAVEL and SAND (FILL), tan (observed from air knife cuttings-not sampled)	0.50	 CONCRETE 2"Ø PVC WELL CASING BENTONITE WELL SCREEN SAND PACK 12"Ø BOREHOLE					
4	SM-SILTY SAND (FILL), some plant debris, with gravel, with cobbles, piece of board, light gray to gray (observed from air knife cuttings-not sampled)							
	- Air Knife was used from 0 to 5.1 ft BGS							
6	SC-CLAYEY SAND, with gravel, loose, fine to medium grained, poorly sorted, medium gray, strong odor	5.10		MW95				11.9
8								
10	SM-SILTY SAND, with gravel, loose, fine to medium grained, light brown, wet (due to driller water), strong odor	9.00		SS1	X	33.3	1 1 2	960
12								
14	- increase in gravel, denser, poorly sorted, light brown-gray, moist below 14 ft BGS			SS2/MW-9-14	X	100.0	8 8 19	1625
16								
18								
20	SW-SAND, with gravel, loose, medium to coarse grained, well sorted, dark gray, dry, strong odor	19.00	 WELL DETAILS Screened interval: 10.00 to 25.00ft BGS Length: 15ft Diameter: 2in Slot Size: 10 Material: PVC Seal: 2.00 to 8.00ft BGS Material: BENTONITE Sand Pack: 8.00 to 25.50ft BGS Material: 10-20 SILICA SAND	SS3	X	100.0	18 >50	60.2
22								
24	ML-CLAYEY SILT, dense, fine grained, well sorted, medium gray to light gray, dry	24.00		SS4	X	100.0	12 18 26	37.5
26	END OF BOREHOLE @ 25.5ft BGS	25.50						
28								
30								
32								
34								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND 
CHEMICAL ANALYSIS 

OVERBURDEN LOG 241809.GPJ CRA CORP.GDT 5/29/09



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: BOTH 11700

PROJECT NUMBER: 241809

CLIENT: Shell Oil Products US

LOCATION: 11700 NE 160th Street

Bothell, Washington

HOLE DESIGNATION: SB-6

DATE COMPLETED: May 19, 2009

DRILLING METHOD: Air Knife/Hollow Stem Auger

FIELD PERSONNEL: H. Bays

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	BOREHOLE	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	BLOW COUNTS	PID [ppm]
0	ASPHALT	0.70	CONCRETE					
2	FILL, angular gravel (3" to 4" in diameter), sand, silt, (observed from air knife cuttings-not sampled)							
4	- cobbles, 3" to 6" diameter gravel below 2.5 ft BGS							
	- Air Knife was used from 0 to 5 ft BGS							
6	GM-GRAVEL and SAND, dense, medium grained, poorly sorted, light olive brown, moist, slight odor	5.00	BENTONITE					0.5
8			12"Ø BOREHOLE					
10	SM-SILTY SAND, some gravel, loose, fine to medium grained, medium olive gray, moist, strong odor	9.00		SS1/SB-6-9	X	100.0	2 4 6	19.5
12								
14	- stronger odor below 14 ft BGS			SS2	X	100.0	22 >50	1391
16								
18								
20	- stronger odor below 19 ft BGS			SS3/SB-6-19	X	100.0	28 >50	1311
20.50	END OF BOREHOLE @ 20.5ft BGS	20.50						
22								
24								
26								
28								
30								
32								
34								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

WATER FOUND ∇

CHEMICAL ANALYSIS ○

OVERBURDEN LOG 241809.GPJ CRA_CORP.GDT 5/29/09



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: BOTH 11700
PROJECT NUMBER: 241809
CLIENT: Shell Oil Products US
LOCATION: 11700 NE 160th Street
Bothell, Washington

HOLE DESIGNATION: SB-7
DATE COMPLETED: May 19, 2009
DRILLING METHOD: Air Knife/Hollow Stem Auger
FIELD PERSONNEL: H. Bays

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	BOREHOLE	SAMPLE				
				NUMBER	INTERVAL	REC (ft)	BLOW COUNTS	PID [ppm]
0.20	ASPHALT	0.20						
0.70	FILL	0.70						
1.00	ASPHALT	1.00						
2	FILL, angular gravel, sand (observed from air knife cuttings-not sampled)		CONCRETE					
4	- large angular rocks @ 2 ft BGS							
6	- large angular rocks and concrete, no sand @ 5 ft BGS		BENTONITE					
8	- Air Knife was used from 0 to 5.1 ft BGS		12"Ø BOREHOLE					
9.00		9.00		SS1/SB-7-9	X	100.0	5 5 5	4.5
10	FILL, gravelly sand, loose, medium grained, subangular, poorly sorted, moist, strong odor							
12								
14		14.00		SS2/SB-7-14	X	33.3	8 11 23	22.5
16	SM-SILTY SAND, with gravel, dense, fine to medium grained, poorly sorted, gray, moist, strong odor							
18								
19.00		19.00						
20	SW-SAND, with gravel, loose, medium to coarse grained, well sorted, dark gray, wet, strong odor	20.00		SS3	X	50.0	8 18 16	1522
20.00	END OF BOREHOLE @ 20.0ft BGS							
22								
24								
26								
28								
30								
32								
34								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇
CHEMICAL ANALYSIS ○

OVERBURDEN LOG 241809.GPJ CRA CORP.GDT 5/29/09



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: BOTH 11700

PROJECT NUMBER: 241809

CLIENT: Shell Oil Products US

LOCATION: 11700 NE 160th Street

Bothwell, Washington

HOLE DESIGNATION: MW-10

DATE COMPLETED: January 20, 2010

DRILLING METHOD: Air Knife/Hollow Stem Auger

FIELD PERSONNEL: T. Mullin

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	MONITORING WELL	SAMPLE				
				NUMBER	INTERVAL	REC (%)	BLOW COUNTS	PID [ppm]
2	ASPHALT	1.50	CONCRETE					
4	SM-SILTY SAND, trace subangular gravel, brown (observed from air-knife cuttings)		2"Ø PVC WELL CASING					
6	- perched water @ 5.5 ft BGS - Air Knife was used from 0 to 6 ft BGS	6.00	HYDRATED BENTONITE	SS1/SB-10-6		10	100	0.6
8	SM-SILTY SAND, trace gravel, very fine to medium grained sand, fine grained, angular to subangular gravel, brown-olive-gray, dry, no staining, no odor			SS2/SB-10-9		50	39 74	0.3
10	- gravel layer between 8 and 8.5 ft BGS ML-SILT, trace very fine sand, brown, dry, no staining, no odor	9.00						
12			WELL SCREEN					
14	- trace medium, subangular gravel below 14 ft BGS		SAND PACK	SS3/SB-10-14		50	30 100/5.5	0.7
16								
18			8"Ø BOREHOLE					
20	SW-SAND with silt, very fine to medium grained, olive gray, dry, no staining, no odor	19.50		SS4/SB-10-19.5		67	25 42 48	0.1
22								
24	ML-SILT, trace very fine sand, brown, dry, no staining, no odor	24.50		SS5/SB-10-24.5		100	40 58	0.3
26	END OF BOREHOLE @ 25.5ft BGS	25.50						
28								
30								
32								
34								

WELL DETAILS

Screened interval:

10.00 to 25.00ft BGS

Length: 15ft

Diameter: 2in

Slot Size: 10

Material: PVC

Sand Pack:

8.00 to 25.50ft BGS

Material: 2/12 SAND

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS



OVERBURDEN LOG 241809.GPJ CRA CORP.GDT 3/17/10



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: BOTH 11700

PROJECT NUMBER: 241809

CLIENT: Shell Oil Products US

LOCATION: 11700 NE 160th Street

Bothwell, Washington

HOLE DESIGNATION: MW-11

DATE COMPLETED: January 22, 2010

DRILLING METHOD: Air Knife/Hollow Stem Auger

FIELD PERSONNEL: T. Mullin

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	MONITORING WELL	SAMPLE				
				NUMBER	INTERVAL	REC (%)	BLOW COUNTS	PID [ppm]
	BEAUTY BARK FILL, angular cobbles, plant roots	0.30						
2	ML-SILT, trace clay, trace sand, trace gravel, very fine grained sand, fine grained, subrounded gravel, brown, dry, no staining, no odor - coarse grained, rounded gravel below 4 ft BGS - Air Knife was used from 0 to 6 ft BGS - wet to saturated, slight hydrocarbon odor @ 6 ft BGS	2.00	CONCRETE	SS1/SB-11-2				0
4			HYDRATED BENTONITE	SS2/SB-11-4				0.1
6			2"Ø PVC WELL CASING	SS3/SB-11-6		100		9.9
8								
10	SM-SILTY SAND, very fine to fine grained sand, brown-gray, dry, no staining, no odor	10.00		SS4/SB-11-10		100	50	0.2
12			WELL SCREEN					
14			SAND PACK	SS5/SB-11-15		33	504	0.5
16								
18	END OF BOREHOLE @ 20.5ft BGS		8"Ø BOREHOLE	SS6/SB-11-19		37	505	0.6
20		20.50						
22								
24								
26								
28								
30								
32								
34								

WELL DETAILS
Screened interval:
5.00 to 20.00ft BGS
Length: 15ft
Diameter: 2in
Slot Size: 10
Material: PVC
Sand Pack:
3.50 to 20.50ft BGS
Material: 2/12 SAND

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND
CHEMICAL ANALYSIS

OVERBURDEN LOG 241809.GPJ CRA_CORP.GDT 3/17/10



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: BOTH 11700
PROJECT NUMBER: 241809
CLIENT: Shell Oil Products US
LOCATION: 11700 NE 160th Street
Bothwell, Washington

HOLE DESIGNATION: SB-8
DATE COMPLETED: January 20, 2010
DRILLING METHOD: Air Knife/Hollow Stem Auger
FIELD PERSONNEL: T. Mullin

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	BOREHOLE	SAMPLE				
				NUMBER	INTERVAL	REC (%)	BLOW COUNTS	PID [ppm]
0.25	BEAUTY BARK SC-CLAYEY SAND, gray (observed from air-knife cuttings)	0.25	TOPSOIL					
2			CONCRETE					
4	- large boulder in west sidewall @ 4 ft BGS - Air Knife was used from 0 to 5 ft BGS							
6	ML-CLAYEY SILT, trace organics, dry, gray stain, strong hydrocarbon odor - wet @ 7 ft BGS	6.00	HYDRATED BENTONITE	SS1/SB-8-6	X	50	1 1 1	1236
8			8"Ø BOREHOLE					
10	- trace sand, trace gravel, trace clay, very fine to medium grained sand, fine to medium grained, subangular gravel, brown below 9.5 ft BGS			SS2/SB-8-9.5	X	10	14 13 5	113
12								
14	- very fine grained sand, wet to saturated below 14.5 ft BGS			SS3/SB-8-14.5	X	50	40 78	226
16								
18								
20	- light gray stain between 19.5 and 20 ft BGS - dry between 20 and 20.5 ft BGS END OF BOREHOLE @ 20.5ft BGS	20.50		SS4/SB-8-19.5	X	33	25 50/4	81.8
22								
24								
26								
28								
30								
32								
34								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇
CHEMICAL ANALYSIS ○

OVERBURDEN LOG 241809.GPJ CRA_CORP.GDT 3/17/10



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: BOTH 11700

HOLE DESIGNATION: SB-9

PROJECT NUMBER: 241809

DATE COMPLETED: January 22, 2010

CLIENT: Shell Oil Products US

DRILLING METHOD: Air Knife/Hollow Stem Auger

LOCATION: 11700 NE 160th Street

FIELD PERSONNEL: T. Mullin

Bothwell, Washington

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	BOREHOLE	SAMPLE				
				NUMBER	INTERVAL	REC (%)	BLOW COUNTS	PID [ppm]
	ASPHALT with gravel base	0.75	TOPSOIL					
2	GW-GRAVEL, trace sand, medium to coarse grained, angular to subrounded gravel, very fine to medium grained sand, olive-gray, dry, no staining, no odor (FILL)		CONCRETE	SS1/SB-9-25		25		0.2
4								
6	ML-SILT, trace gravel, trace sand, medium to coarse grained, subangular gravel, very fine sand, brown, dry, no staining, no odor	5.00	HYDRATED BENTONITE	SS2/SB-9-5		100		0.2
8	- subrounded, medium grained gravel below 8 ft BGS		8"Ø BOREHOLE	SS3/SB-9-8		50		0.4
10	- Air Knife was used from 0 to 10 ft BGS							
12	SM-SILTY SAND, very fine to fine grained, olive gray, dry, no staining, no odor	10.00		SS4/SB-9-10		25	50\3	1
14								
16	- brown-gray below 15 ft BGS			SS5/SB-9-15			50\5	0.5
18								
20				SS6/SB-9-20			50\4	1
22	END OF BOREHOLE @ 20.5ft BGS	20.50						
24								
26								
28								
30								
32								
34								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS



OVERBURDEN LOG 241809.GPJ CRA_CORP.GDT 3/17/10



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 3

PROJECT NAME: BOTH 11700

PROJECT NUMBER: 241809

CLIENT: SHELL OIL PRODUCTS US

LOCATION: 11700 NE 160TH ST, BOTHELL, WA

HOLE DESIGNATION: SB-10/MW-12

DATE COMPLETED: October 1, 2010

DRILLING METHOD: HSA

FIELD PERSONNEL: S. RASMUSSEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	MONITORING WELL	SAMPLE				
				NUMBER	INTERVAL	REC (%)	BLOW COUNTS	PID (ppm)
0.25	ASPHALT	0.25	CONCRETE					
2	AIRKNIFE TO 5ft BGS		BENTONITE					
4	SM-SILTY SAND, with fine to medium grained sand, trace gravel, dense, poorly graded, slight plasticity, dark gray, dry, no odor		2" PVC WELL CASING	1HA	X	100		1045
6	- no plasticity, olive gray, slight odor at 6.0ft BGS		8" BOREHOLE	2HSA SB10-6	X	100	12 16 18	1030
10	SP-SAND, with silt, trace gravel, fine to medium grained, dense, poorly graded, light gray, dry, odor	10.00	BENTONITE CHIPS	3HSA SB10-10	X	67	31 50	350
15	SM-SILTY SAND with fine grained sand, trace gravel, dense, poorly graded, olive gray, dry, strong odor	15.00		4HSA SB10-15	X	67	38 50	1045
20				5HSA	X	83	41 50	350
25	SP-SAND, fine to medium grained, poorly graded, loose, slightly dense, light gray, moist, strong odor	25.00		6HSA SB10-25	X	33	50/ 5"	1500
30	SM-SILTY SAND fine grained sand, dense, poorly graded, olive gray, dry, slight odor	30.00		7HSA	X	67	50/ 6"	86

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND
CHEMICAL ANALYSIS

OVERBURDEN LOG 241809WIN.GPJ CRA CORP.GDT 10/19/10



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 2 of 3

PROJECT NAME: BOTH 11700

HOLE DESIGNATION: SB-10/MW-12

PROJECT NUMBER: 241809

DATE COMPLETED: October 1, 2010

CLIENT: SHELL OIL PRODUCTS US

DRILLING METHOD: HSA

LOCATION: 11700 NE 160TH ST, BOTHELL, WA

FIELD PERSONNEL: S. RASMUSSEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	MONITORING WELL	SAMPLE				
				NUMBER	INTERVAL	REC (%)	BLOW COUNTS	PID (ppm)
34								
36	SP-SAND, with silt, fine to medium grained sand, poorly graded, olive gray, wet, slight odor	35.00		9HSA SB10-35	X	50	50/ 6"	185
38								
40	SP-SAND, trace silt and gravel, fine to medium grained, poorly graded, loose, slightly dense, light gray, wet, slight odor	40.00		9HSA	X	50	50/ 5"	45
42								
44								
46	SP-SAND, fine, medium and coarse grained, poorly graded, loose, slightly dense, light gray, wet to moist, no odor	45.00		10HSA SB10-45	X	50	50/ 6"	28
48								
50	SP-SAND, trace silt, fine, medium and coarse grained, loose, poorly graded, olive gray, no odor	50.00		11HSA SB10-50	X	75	45 50/ 6"	0.5
52	- saturated at 53.0ft BGS							
54								
56	SP-SAND, trace silt, fine, medium and coarse grained, loose, poorly graded, olive gray, saturated, no odor	55.00		12HSA	X	100	45 50	0.0
58								
60				13HSA	X	100	42 50/ 5"	0.0
62	END OF BOREHOLE @ 60.5ft BGS	60.50						
64								

2" PVC WELL SCREEN

SAND PACK

WELL DETAILS

Screens interval:
40.00 to 60.00ft BGS

Length: 20ft

Diameter: 2in

Slot Size: 0.010

Material: PVC

Seal:

5.00 to 37.00ft BGS

Material: BENTONITE CHIPS

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

WATER FOUND ∇

CHEMICAL ANALYSIS ○

OVERBURDEN LOG 241809WIN.GPJ CRA CORP.GDT 10/19/10



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 3 of 3

PROJECT NAME: BOTH 11700

HOLE DESIGNATION: SB-10/MW-12

PROJECT NUMBER: 241809

DATE COMPLETED: October 1, 2010

CLIENT: SHELL OIL PRODUCTS US

DRILLING METHOD: HSA

LOCATION: 11700 NE 160TH ST, BOTHELL, WA

FIELD PERSONNEL: S. RASMUSSEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	MONITORING WELL	SAMPLE				
				NUMBER	INTERVAL	REC (%)	BLOW COUNTS	PID (ppm)
68			Sand Pack: 37.00 to 60.00ft BGS Material: #2 SAND					
70								
72								
74								
76								
78								
80								
82								
84								
86								
88								
90								
92								
94								
96								
98								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☐
CHEMICAL ANALYSIS ☐

OVERBURDEN LOG 241809WIN.GPJ CRA CORP GDT 10/19/10



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: BOTH 11700

PROJECT NUMBER: 241809

CLIENT: SHELL OIL PRODUCTS US

LOCATION: 11700 NE 160TH ST, BOTHELL, WA

HOLE DESIGNATION: SB-11

DATE COMPLETED: October 1, 2010

DRILLING METHOD: HSA

FIELD PERSONNEL: S. RASMUSSEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	BOREHOLE	SAMPLE				
				NUMBER	INTERVAL	REC (%)	BLOW COUNTS	PID (ppm)
0.25	ASPHALT	0.25	CONCRETE					
2	AIRKNIFE TO 5ft BGS SM-SILTY SAND, with gravel, fine to medium grained, dense, poorly graded, low plasticity, olive gray, dry, no odor			1HA				0.0
4				2HSA SB11-6		100	14 20 25	100
6	SM-SILTY SAND, with fine grained sand, dense, poorly graded, low plasticity, olive gray, damp, slight odor	6.00	8" BOREHOLE					
8				3HSA SB11-10		83	41 50/ 6"	1928
10	SP-SAND, trace silt, fine to medium grained, dense, no plasticity, light gray, dry, strong odor	10.00	BENTONITE CHIPS					
12				4HSA SB11-15		83	4 5 50	1650
14	- fine to coarse grained sand, damp at 15.0ft BGS			5HSA SB11-20		67	46 50/ 5"	1742
16				6HSA SB11-25		67	50/ 5"	1945
18				7HSA SB11-30		67	31/ 5"	65
20	SM-SILTY SAND, fine grained sand, trace gravel, dense, poorly graded, olive gray, dry, strong odor	20.00						
22								
24	- no gravel, medium to coarse grained sand, very dense at 25.0ft BGS							
26								
28								
30	- fine grained sand, dense, slight odor at 30.0ft BGS	30.50						
32	END OF BOREHOLE @ 30.5ft BGS							
34								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

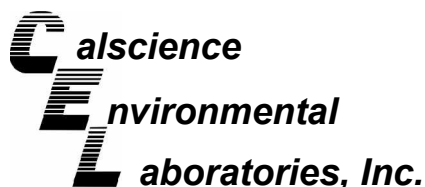
CHEMICAL ANALYSIS



OVERBURDEN LOG 241809WIN.GPJ CRA CORP.GDT 10/19/10

APPENDIX F

LABORATORY ANALYTICAL REPORTS



June 08, 2009

Justin Foslien
Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

Subject: **Calscience Work Order No.: 09-05-1995**
Client Reference: **11700 NE 160th St., Bothell, WA**

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 5/22/2009 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Systems Manual, applicable standard operating procedures, and other related documentation. The original report of subcontracted analysis, if any, is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

A handwritten signature in cursive script that reads 'Jessie Lee'.

Calscience Environmental
Laboratories, Inc.
Jessie Lee
Project Manager

Analytical Report



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

Date Received: 05/22/09
Work Order No: 09-05-1995
Preparation: EPA 3050B
Method: EPA 6020

Project: 11700 NE 160th St., Bothell, WA

Page 1 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-051909-HB-MW-8-14	09-05-1995-1-A	05/19/09 09:39	Solid	ICP/MS 03	05/22/09	05/22/09 17:10	090522L02

Parameter	Result	RL	DF	Qual	Units
Lead	3.72	0.100	1		mg/kg

SO-241809-051809-HB-MW-9-5	09-05-1995-2-A	05/18/09 16:00	Solid	ICP/MS 03	05/22/09	05/22/09 17:13	090522L02
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Parameter	Result	RL	DF	Qual	Units
Lead	3.42	0.100	1		mg/kg

SO-241809-051809-HB-MW-8-5	09-05-1995-3-A	05/18/09 10:28	Solid	ICP/MS 03	05/22/09	05/22/09 17:16	090522L02
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Parameter	Result	RL	DF	Qual	Units
Lead	3.19	0.100	1		mg/kg

SO-241809-051909-HB-DUP	09-05-1995-4-A	05/19/09 00:00	Solid	ICP/MS 03	05/22/09	05/22/09 17:19	090522L02
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Parameter	Result	RL	DF	Qual	Units
Lead	2.22	0.100	1		mg/kg

SO-241809-051909-HB-SB-6-9	09-05-1995-5-A	05/19/09 12:28	Solid	ICP/MS 03	05/22/09	05/22/09 17:22	090522L02
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Parameter	Result	RL	DF	Qual	Units
Lead	2.81	0.100	1		mg/kg

SO-241809-051909-HB-SB-6-19	09-05-1995-6-A	05/19/09 12:44	Solid	ICP/MS 03	05/22/09	05/22/09 17:25	090522L02
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Parameter	Result	RL	DF	Qual	Units
Lead	2.24	0.100	1		mg/kg

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Conestoga-Rovers & Associates
 1420 80th St. SW, Suite A
 Everett, WA 98203-6248

Date Received: 05/22/09
 Work Order No: 09-05-1995
 Preparation: EPA 3050B
 Method: EPA 6020

Project: 11700 NE 160th St., Bothell, WA

Page 2 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-051909-HB-SB-7-9	09-05-1995-7-A	05/19/09 11:30	Solid	ICP/MS 03	05/22/09	05/22/09 17:28	090522L02

Parameter	Result	RL	DF	Qual	Units
Lead	2.88	0.100	1		mg/kg

SO-241809-051909-HB-SB-7-14	09-05-1995-8-A	05/19/09 11:37	Solid	ICP/MS 03	05/22/09	05/22/09 17:40	090522L02
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Parameter	Result	RL	DF	Qual	Units
Lead	2.63	0.100	1		mg/kg

SO-241809-051909-HB-MW-9-14	09-05-1995-9-A	05/19/09 14:35	Solid	ICP/MS 03	05/22/09	05/22/09 17:43	090522L02
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Parameter	Result	RL	DF	Qual	Units
Lead	2.40	0.100	1		mg/kg

Method Blank	096-10-002-1,513	N/A	Solid	ICP/MS 03	05/22/09	05/22/09 13:15	090522L02
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Parameter	Result	RL	DF	Qual	Units
Lead	ND	0.100	1		mg/kg

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Conestoga-Rovers & Associates
 1420 80th St. SW, Suite A
 Everett, WA 98203-6248

Date Received: 05/22/09
 Work Order No: 09-05-1995
 Preparation: EPA 3550B
 Method: NWTPH-Dx
 Units: mg/kg

Project: 11700 NE 160th St., Bothell, WA

Page 1 of 3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-051909-HB-MW-8-14	09-05-1995-1-A	05/19/09 09:39	Solid	GC 43	05/24/09	05/24/09 21:00	090524B01

Comment(s): -The sample extract was subjected to Silica Gel treatment prior to analysis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
TPH as Diesel Range	ND	5.0	1		TPH as Motor Oil Range	ND	5.0	1	
Surrogates:	REC (%)	Control Limits		Qual					
Decachlorobiphenyl	99	61-145							

SO-241809-051809-HB-MW-9-5	09-05-1995-2-A	05/18/09 16:00	Solid	GC 43	05/24/09	05/24/09 21:21	090524B01
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Comment(s): -The sample extract was subjected to Silica Gel treatment prior to analysis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
TPH as Diesel Range	ND	5.0	1		TPH as Motor Oil Range	ND	5.0	1	
Surrogates:	REC (%)	Control Limits		Qual					
Decachlorobiphenyl	97	61-145							

SO-241809-051809-HB-MW-8-5	09-05-1995-3-A	05/18/09 10:28	Solid	GC 43	05/24/09	05/24/09 21:41	090524B01
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Comment(s): -The sample extract was subjected to Silica Gel treatment prior to analysis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
TPH as Diesel Range	ND	5.0	1		TPH as Motor Oil Range	ND	5.0	1	
Surrogates:	REC (%)	Control Limits		Qual					
Decachlorobiphenyl	97	61-145							

SO-241809-051909-HB-DUP	09-05-1995-4-A	05/19/09 00:00	Solid	GC 43	05/24/09	05/24/09 10:01	090524B01
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Comment(s): -The sample chromatographic pattern for TPH does not match the chromatographic pattern of the specified standard.

Quantitation of the unknown hydrocarbon(s) in the sample was based upon the specified standard.

-The sample extract was subjected to Silica Gel treatment prior to analysis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
TPH as Diesel Range	160	5.0	1		TPH as Motor Oil Range	ND	5.0	1	
Surrogates:	REC (%)	Control Limits		Qual					
Decachlorobiphenyl	99	61-145							

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

Date Received: 05/22/09
Work Order No: 09-05-1995
Preparation: EPA 3550B
Method: NWTPH-Dx
Units: mg/kg

Project: 11700 NE 160th St., Bothell, WA

Page 2 of 3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-051909-HB-SB-6-9	09-05-1995-5-A	05/19/09 12:28	Solid	GC 43	05/24/09	05/24/09 10:22	090524B01

Comment(s): -The sample extract was subjected to Silica Gel treatment prior to analysis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
TPH as Diesel Range	ND	5.0	1		TPH as Motor Oil Range	25	5.0	1	
Surrogates:	REC (%)	Control Limits		Qual					
Decachlorobiphenyl	94	61-145							

SO-241809-051909-HB-SB-6-19	09-05-1995-6-A	05/19/09 12:44	Solid	GC 43	05/24/09	05/24/09 10:42	090524B01
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Comment(s): -The sample chromatographic pattern for TPH does not match the chromatographic pattern of the specified standard.
Quantitation of the unknown hydrocarbon(s) in the sample was based upon the specified standard.

-The sample extract was subjected to Silica Gel treatment prior to analysis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
TPH as Diesel Range	200	5.0	1		TPH as Motor Oil Range	ND	5.0	1	
Surrogates:	REC (%)	Control Limits		Qual					
Decachlorobiphenyl	99	61-145							

SO-241809-051909-HB-SB-7-9	09-05-1995-7-A	05/19/09 11:30	Solid	GC 43	05/24/09	05/24/09 11:03	090524B01
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Comment(s): -The sample extract was subjected to Silica Gel treatment prior to analysis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
TPH as Diesel Range	ND	5.0	1		TPH as Motor Oil Range	ND	5.0	1	
Surrogates:	REC (%)	Control Limits		Qual					
Decachlorobiphenyl	91	61-145							

SO-241809-051909-HB-SB-7-14	09-05-1995-8-A	05/19/09 11:37	Solid	GC 43	05/24/09	05/24/09 11:23	090524B01
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Comment(s): -The sample extract was subjected to Silica Gel treatment prior to analysis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
TPH as Diesel Range	5.0	5.0	1		TPH as Motor Oil Range	14	5.0	1	
Surrogates:	REC (%)	Control Limits		Qual					
Decachlorobiphenyl	101	61-145							

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Conestoga-Rovers & Associates
 1420 80th St. SW, Suite A
 Everett, WA 98203-6248

Date Received: 05/22/09
 Work Order No: 09-05-1995
 Preparation: EPA 3550B
 Method: NWTPH-Dx
 Units: mg/kg

Project: 11700 NE 160th St., Bothell, WA

Page 3 of 3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-051909-HB-MW-9-14	09-05-1995-9-A	05/19/09 14:35	Solid	GC 43	05/24/09	05/24/09 11:43	090524B01

Comment(s): -The sample chromatographic pattern for TPH does not match the chromatographic pattern of the specified standard.
 Quantitation of the unknown hydrocarbon(s) in the sample was based upon the specified standard.

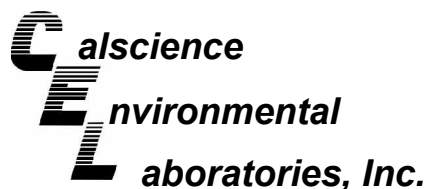
-The sample extract was subjected to Silica Gel treatment prior to analysis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
TPH as Diesel Range	39	5.0	1		TPH as Motor Oil Range	ND	5.0	1	
Surrogates:	REC (%)	Control Limits		Qual					
Decachlorobiphenyl	107	61-145							

Method Blank	099-12-838-21	N/A	Solid	GC 43	05/24/09	05/24/09 17:57	090524B01
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Parameter	Result	RL	DF	Qual
TPH as Diesel Range	ND	5.0	1	
Surrogates:	REC (%)	Control Limits		Qual
Decachlorobiphenyl	97	61-145		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

Date Received: 05/22/09
Work Order No: 09-05-1995
Preparation: EPA 5035
Method: NWTPH-Gx

Project: 11700 NE 160th St., Bothell, WA

Page 1 of 3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-051909-HB-MW-8-14	09-05-1995-1-F	05/19/09 09:39	Solid	GC 11	05/19/09	06/04/09 14:44	090603B01

Comment(s): -Sample analyzed outside recommended holding time.

Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.21	0.855		mg/kg
Surrogates:	REC (%)	Control Limits		Qual	
1,4-Bromofluorobenzene	73	60-126			

SO-241809-051809-HB-MW-9-5	09-05-1995-2-F	05/18/09 16:00	Solid	GC 11	05/18/09	06/04/09 15:17	090603B01
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Comment(s): -Sample analyzed outside recommended holding time.

Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	0.50	0.20	0.791		mg/kg
Surrogates:	REC (%)	Control Limits		Qual	
1,4-Bromofluorobenzene	79	60-126			

SO-241809-051809-HB-MW-8-5	09-05-1995-3-F	05/18/09 10:28	Solid	GC 11	05/18/09	06/04/09 15:51	090603B01
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Comment(s): -Sample analyzed outside recommended holding time.

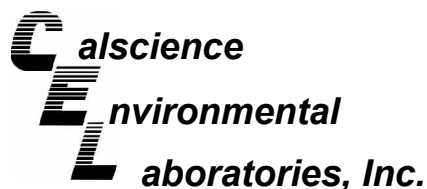
Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.22	0.861		mg/kg
Surrogates:	REC (%)	Control Limits		Qual	
1,4-Bromofluorobenzene	78	60-126			

SO-241809-051909-HB-DUP	09-05-1995-4-H	05/19/09 00:00	Solid	GC 11	05/19/09	06/04/09 18:37	090603B02
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Comment(s): -Sample analyzed outside recommended holding time.

Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	480	22	89.8		mg/kg
Surrogates:	REC (%)	Control Limits		Qual	
1,4-Bromofluorobenzene	113	60-126			

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

Date Received: 05/22/09
Work Order No: 09-05-1995
Preparation: EPA 5035
Method: NWTPH-Gx

Project: 11700 NE 160th St., Bothell, WA

Page 2 of 3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-051909-HB-SB-6-9	09-05-1995-5-F	05/19/09 12:28	Solid	GC 11	05/19/09	06/04/09 16:24	090603B01

Comment(s): -Sample analyzed outside recommended holding time.

Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	0.90	0.18	0.71		mg/kg
Surrogates:	REC (%)	Control Limits		Qual	
1,4-Bromofluorobenzene	89	60-126			

SO-241809-051909-HB-SB-6-19	09-05-1995-6-H	05/19/09 12:44	Solid	GC 11	05/19/09	06/04/09 19:10	090603B02
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Comment(s): -Sample analyzed outside recommended holding time.

Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	560	21	83.9		mg/kg
Surrogates:	REC (%)	Control Limits		Qual	
1,4-Bromofluorobenzene	124	60-126			

SO-241809-051909-HB-SB-7-9	09-05-1995-7-F	05/19/09 11:30	Solid	GC 11	05/19/09	06/04/09 16:57	090603B01
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Comment(s): -Sample analyzed outside recommended holding time.

Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.18	0.731		mg/kg
Surrogates:	REC (%)	Control Limits		Qual	
1,4-Bromofluorobenzene	80	60-126			

SO-241809-051909-HB-SB-7-14	09-05-1995-8-F	05/19/09 11:37	Solid	GC 11	05/19/09	06/04/09 17:30	090603B01
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Comment(s): -Sample analyzed outside recommended holding time.

Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	0.48	0.18	0.734		mg/kg
Surrogates:	REC (%)	Control Limits		Qual	
1,4-Bromofluorobenzene	82	60-126			

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

Date Received: 05/22/09
Work Order No: 09-05-1995
Preparation: EPA 5035
Method: NWTPH-Gx

Project: 11700 NE 160th St., Bothell, WA

Page 3 of 3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-051909-HB-MW-9-14	09-05-1995-9-H	05/19/09 14:35	Solid	GC 11	05/19/09	06/05/09 09:36	090604B02

Comment(s): -Sample analyzed outside recommended holding time.

Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	93	46	182		mg/kg
Surrogates:	REC (%)	Control Limits		Qual	
1,4-Bromofluorobenzene	78	60-126			

Method Blank	099-12-848-25	N/A	Solid	GC 11	06/03/09	06/04/09 08:34	090603B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.25	1		mg/kg
Surrogates:	REC (%)	Control Limits		Qual	
1,4-Bromofluorobenzene	76	60-126			

Method Blank	099-12-848-26	N/A	Solid	GC 11	06/03/09	06/04/09 09:08	090603B02
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	10	40		mg/kg
Surrogates:	REC (%)	Control Limits		Qual	
1,4-Bromofluorobenzene	73	60-126			

Method Blank	099-12-848-27	N/A	Solid	GC 11	06/04/09	06/04/09 23:03	090604B02
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	10	40		mg/kg
Surrogates:	REC (%)	Control Limits		Qual	
1,4-Bromofluorobenzene	76	60-126			

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Conestoga-Rovers & Associates
 1420 80th St. SW, Suite A
 Everett, WA 98203-6248

Date Received: 05/22/09
 Work Order No: 09-05-1995
 Preparation: EPA 3545
 Method: EPA 8270C SIM PAHs
 Units: mg/kg

Project: 11700 NE 160th St., Bothell, WA

Page 1 of 5

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-051909-HB-MW-8-14	09-05-1995-1-A	05/19/09 09:39	Solid	GC/MS GG	05/22/09	05/27/09 23:44	090522L06

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Naphthalene	ND	0.020	1		Benzo (a) Anthracene	ND	0.020	1	
2-Methylnaphthalene	ND	0.020	1		Chrysene	ND	0.020	1	
Acenaphthylene	ND	0.020	1		Benzo (k) Fluoranthene	ND	0.020	1	
Acenaphthene	ND	0.020	1		Benzo (b) Fluoranthene	ND	0.020	1	
Fluorene	ND	0.020	1		Benzo (a) Pyrene	ND	0.020	1	
Phenanthrene	ND	0.020	1		Benzo (g,h,i) Perylene	ND	0.020	1	
Anthracene	ND	0.020	1		Indeno (1,2,3-c,d) Pyrene	ND	0.020	1	
Fluoranthene	ND	0.020	1		Dibenz (a,h) Anthracene	ND	0.020	1	
Pyrene	ND	0.020	1		1-Methylnaphthalene	ND	0.020	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
Nitrobenzene-d5	92	18-162			2-Fluorobiphenyl	71	14-146		
p-Terphenyl-d14	76	34-148							

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-051809-HB-MW-9-5	09-05-1995-2-A	05/18/09 16:00	Solid	GC/MS GG	05/22/09	05/27/09 22:12	090522L06

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Naphthalene	ND	0.020	1		Benzo (a) Anthracene	ND	0.020	1	
2-Methylnaphthalene	ND	0.020	1		Chrysene	ND	0.020	1	
Acenaphthylene	ND	0.020	1		Benzo (k) Fluoranthene	ND	0.020	1	
Acenaphthene	ND	0.020	1		Benzo (b) Fluoranthene	ND	0.020	1	
Fluorene	ND	0.020	1		Benzo (a) Pyrene	ND	0.020	1	
Phenanthrene	ND	0.020	1		Benzo (g,h,i) Perylene	ND	0.020	1	
Anthracene	ND	0.020	1		Indeno (1,2,3-c,d) Pyrene	ND	0.020	1	
Fluoranthene	ND	0.020	1		Dibenz (a,h) Anthracene	ND	0.020	1	
Pyrene	ND	0.020	1		1-Methylnaphthalene	ND	0.020	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
Nitrobenzene-d5	91	18-162			2-Fluorobiphenyl	87	14-146		
p-Terphenyl-d14	82	34-148							

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Conestoga-Rovers & Associates
 1420 80th St. SW, Suite A
 Everett, WA 98203-6248

Date Received: 05/22/09
 Work Order No: 09-05-1995
 Preparation: EPA 3545
 Method: EPA 8270C SIM PAHs
 Units: mg/kg

Project: 11700 NE 160th St., Bothell, WA

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-051809-HB-MW-8-5	09-05-1995-3-A	05/18/09 10:28	Solid	GC/MS GG	05/22/09	05/28/09 00:30	090522L06

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Naphthalene	ND	0.020	1		Benzo (a) Anthracene	ND	0.020	1	
2-Methylnaphthalene	ND	0.020	1		Chrysene	ND	0.020	1	
Acenaphthylene	ND	0.020	1		Benzo (k) Fluoranthene	ND	0.020	1	
Acenaphthene	ND	0.020	1		Benzo (b) Fluoranthene	ND	0.020	1	
Fluorene	ND	0.020	1		Benzo (a) Pyrene	ND	0.020	1	
Phenanthrene	ND	0.020	1		Benzo (g,h,i) Perylene	ND	0.020	1	
Anthracene	ND	0.020	1		Indeno (1,2,3-c,d) Pyrene	ND	0.020	1	
Fluoranthene	ND	0.020	1		Dibenz (a,h) Anthracene	ND	0.020	1	
Pyrene	ND	0.020	1		1-Methylnaphthalene	ND	0.020	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
Nitrobenzene-d5	78	18-162			2-Fluorobiphenyl	62	14-146		
p-Terphenyl-d14	71	34-148							

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-051909-HB-DUP	09-05-1995-4-A	05/19/09 00:00	Solid	GC/MS GG	05/22/09	05/27/09 18:24	090522L06

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Naphthalene	1.8	0.10	5		Benzo (a) Anthracene	ND	0.020	1	
2-Methylnaphthalene	2.0	0.10	5		Chrysene	ND	0.020	1	
Acenaphthylene	ND	0.020	1		Benzo (k) Fluoranthene	ND	0.020	1	
Acenaphthene	ND	0.020	1		Benzo (b) Fluoranthene	ND	0.020	1	
Fluorene	ND	0.020	1		Benzo (a) Pyrene	ND	0.020	1	
Phenanthrene	ND	0.020	1		Benzo (g,h,i) Perylene	ND	0.020	1	
Anthracene	ND	0.020	1		Indeno (1,2,3-c,d) Pyrene	ND	0.020	1	
Fluoranthene	ND	0.020	1		Dibenz (a,h) Anthracene	ND	0.020	1	
Pyrene	ND	0.020	1		1-Methylnaphthalene	0.90	0.020	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
Nitrobenzene-d5	113	18-162			2-Fluorobiphenyl	78	14-146		
p-Terphenyl-d14	83	34-148							

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Conestoga-Rovers & Associates
 1420 80th St. SW, Suite A
 Everett, WA 98203-6248

Date Received: 05/22/09
 Work Order No: 09-05-1995
 Preparation: EPA 3545
 Method: EPA 8270C SIM PAHs
 Units: mg/kg

Project: 11700 NE 160th St., Bothell, WA

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-051909-HB-SB-6-9	09-05-1995-5-A	05/19/09 12:28	Solid	GC/MS GG	05/22/09	05/28/09 01:15	090522L06

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Naphthalene	ND	0.020	1		Benzo (a) Anthracene	0.038	0.020	1	
2-Methylnaphthalene	ND	0.020	1		Chrysene	0.052	0.020	1	
Acenaphthylene	ND	0.020	1		Benzo (k) Fluoranthene	0.049	0.020	1	
Acenaphthene	ND	0.020	1		Benzo (b) Fluoranthene	0.061	0.020	1	
Fluorene	ND	0.020	1		Benzo (a) Pyrene	0.041	0.020	1	
Phenanthrene	ND	0.020	1		Benzo (g,h,i) Perylene	ND	0.020	1	
Anthracene	ND	0.020	1		Indeno (1,2,3-c,d) Pyrene	0.023	0.020	1	
Fluoranthene	0.096	0.020	1		Dibenz (a,h) Anthracene	ND	0.020	1	
Pyrene	0.090	0.020	1		1-Methylnaphthalene	ND	0.020	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
Nitrobenzene-d5	87	18-162			2-Fluorobiphenyl	67	14-146		
p-Terphenyl-d14	74	34-148							

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-051909-HB-SB-6-19	09-05-1995-6-A	05/19/09 12:44	Solid	GC/MS GG	05/22/09	05/27/09 19:10	090522L06

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Naphthalene	2.3	0.10	5		Benzo (a) Anthracene	ND	0.020	1	
2-Methylnaphthalene	2.2	0.10	5		Chrysene	ND	0.020	1	
Acenaphthylene	ND	0.020	1		Benzo (k) Fluoranthene	ND	0.020	1	
Acenaphthene	ND	0.020	1		Benzo (b) Fluoranthene	ND	0.020	1	
Fluorene	ND	0.020	1		Benzo (a) Pyrene	ND	0.020	1	
Phenanthrene	ND	0.020	1		Benzo (g,h,i) Perylene	ND	0.020	1	
Anthracene	ND	0.020	1		Indeno (1,2,3-c,d) Pyrene	ND	0.020	1	
Fluoranthene	ND	0.020	1		Dibenz (a,h) Anthracene	ND	0.020	1	
Pyrene	ND	0.020	1		1-Methylnaphthalene	0.98	0.020	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
Nitrobenzene-d5	108	18-162			2-Fluorobiphenyl	61	14-146		
p-Terphenyl-d14	65	34-148							

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Conestoga-Rovers & Associates
 1420 80th St. SW, Suite A
 Everett, WA 98203-6248

Date Received: 05/22/09
 Work Order No: 09-05-1995
 Preparation: EPA 3545
 Method: EPA 8270C SIM PAHs
 Units: mg/kg

Project: 11700 NE 160th St., Bothell, WA

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-051909-HB-SB-7-9	09-05-1995-7-A	05/19/09 11:30	Solid	GC/MS GG	05/22/09	05/28/09 02:00	090522L06

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Naphthalene	ND	0.020	1		Benzo (a) Anthracene	0.079	0.020	1	
2-Methylnaphthalene	ND	0.020	1		Chrysene	0.095	0.020	1	
Acenaphthylene	ND	0.020	1		Benzo (k) Fluoranthene	0.078	0.020	1	
Acenaphthene	ND	0.020	1		Benzo (b) Fluoranthene	0.11	0.020	1	
Fluorene	ND	0.020	1		Benzo (a) Pyrene	0.079	0.020	1	
Phenanthrene	0.051	0.020	1		Benzo (g,h,i) Perylene	0.032	0.020	1	
Anthracene	ND	0.020	1		Indeno (1,2,3-c,d) Pyrene	0.042	0.020	1	
Fluoranthene	0.20	0.020	1		Dibenz (a,h) Anthracene	ND	0.020	1	
Pyrene	0.19	0.020	1		1-Methylnaphthalene	ND	0.020	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
Nitrobenzene-d5	84	18-162			2-Fluorobiphenyl	62	14-146		
p-Terphenyl-d14	72	34-148							

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-051909-HB-SB-7-14	09-05-1995-8-A	05/19/09 11:37	Solid	GC/MS GG	05/22/09	05/27/09 22:58	090522L06

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Naphthalene	ND	0.020	1		Benzo (a) Anthracene	ND	0.020	1	
2-Methylnaphthalene	ND	0.020	1		Chrysene	ND	0.020	1	
Acenaphthylene	ND	0.020	1		Benzo (k) Fluoranthene	ND	0.020	1	
Acenaphthene	ND	0.020	1		Benzo (b) Fluoranthene	ND	0.020	1	
Fluorene	ND	0.020	1		Benzo (a) Pyrene	ND	0.020	1	
Phenanthrene	ND	0.020	1		Benzo (g,h,i) Perylene	ND	0.020	1	
Anthracene	ND	0.020	1		Indeno (1,2,3-c,d) Pyrene	ND	0.020	1	
Fluoranthene	0.040	0.020	1		Dibenz (a,h) Anthracene	ND	0.020	1	
Pyrene	0.039	0.020	1		1-Methylnaphthalene	ND	0.020	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
Nitrobenzene-d5	82	18-162			2-Fluorobiphenyl	59	14-146		
p-Terphenyl-d14	65	34-148							

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Conestoga-Rovers & Associates
 1420 80th St. SW, Suite A
 Everett, WA 98203-6248

Date Received: 05/22/09
 Work Order No: 09-05-1995
 Preparation: EPA 3545
 Method: EPA 8270C SIM PAHs
 Units: mg/kg

Project: 11700 NE 160th St., Bothell, WA

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-051909-HB-MW-9-14	09-05-1995-9-A	05/19/09 14:35	Solid	GC/MS GG	05/22/09	05/27/09 19:56	090522L06

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Naphthalene	0.33	0.020	1		Benzo (a) Anthracene	ND	0.020	1	
2-Methylnaphthalene	0.39	0.020	1		Chrysene	ND	0.020	1	
Acenaphthylene	ND	0.020	1		Benzo (k) Fluoranthene	ND	0.020	1	
Acenaphthene	ND	0.020	1		Benzo (b) Fluoranthene	ND	0.020	1	
Fluorene	ND	0.020	1		Benzo (a) Pyrene	ND	0.020	1	
Phenanthrene	ND	0.020	1		Benzo (g,h,i) Perylene	ND	0.020	1	
Anthracene	ND	0.020	1		Indeno (1,2,3-c,d) Pyrene	ND	0.020	1	
Fluoranthene	ND	0.020	1		Dibenz (a,h) Anthracene	ND	0.020	1	
Pyrene	ND	0.020	1		1-Methylnaphthalene	0.20	0.020	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
Nitrobenzene-d5	86	18-162			2-Fluorobiphenyl	60	14-146		
p-Terphenyl-d14	63	34-148							

Method Blank	099-06-010-313	N/A	Solid	GC/MS GG	05/22/09	05/27/09 10:02	090522L06
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Naphthalene	ND	0.020	1		Benzo (a) Anthracene	ND	0.020	1	
2-Methylnaphthalene	ND	0.020	1		Chrysene	ND	0.020	1	
Acenaphthylene	ND	0.020	1		Benzo (k) Fluoranthene	ND	0.020	1	
Acenaphthene	ND	0.020	1		Benzo (b) Fluoranthene	ND	0.020	1	
Fluorene	ND	0.020	1		Benzo (a) Pyrene	ND	0.020	1	
Phenanthrene	ND	0.020	1		Benzo (g,h,i) Perylene	ND	0.020	1	
Anthracene	ND	0.020	1		Indeno (1,2,3-c,d) Pyrene	ND	0.020	1	
Fluoranthene	ND	0.020	1		Dibenz (a,h) Anthracene	ND	0.020	1	
Pyrene	ND	0.020	1		1-Methylnaphthalene	ND	0.020	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
Nitrobenzene-d5	59	18-162			2-Fluorobiphenyl	76	14-146		
p-Terphenyl-d14	75	34-148							

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Conestoga-Rovers & Associates
 1420 80th St. SW, Suite A
 Everett, WA 98203-6248

Date Received: 05/22/09
 Work Order No: 09-05-1995
 Preparation: EPA 5035
 Method: EPA 8260B
 Units: mg/kg

Project: 11700 NE 160th St., Bothell, WA

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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-051909-HB-MW-8-14	09-05-1995-1-I	05/19/09 09:39	Solid	GC/MS VV	05/19/09	05/31/09 03:52	090530L03

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.00079	0.789		Methyl-t-Butyl Ether (MTBE)	ND	0.0016	0.789	
1,2-Dibromoethane	ND	0.00079	0.789		Tert-Butyl Alcohol (TBA)	ND	0.016	0.789	
1,2-Dichloroethane	ND	0.00079	0.789		Diisopropyl Ether (DIPE)	ND	0.00079	0.789	
Ethylbenzene	ND	0.00079	0.789		Ethyl-t-Butyl Ether (ETBE)	ND	0.00079	0.789	
Toluene	ND	0.00079	0.789		Tert-Amyl-Methyl Ether (TAME)	ND	0.00079	0.789	
Xylenes (total)	ND	0.0016	0.789						
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
Dibromofluoromethane	111	71-137			1,2-Dichloroethane-d4	116	58-160		
1,4-Bromofluorobenzene	91	66-126			Toluene-d8	99	87-111		

SO-241809-051809-HB-MW-9-5	09-05-1995-2-I	05/18/09 16:00	Solid	GC/MS VV	05/18/09	05/31/09 04:19	090530L03
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	0.0023	0.00048	0.476		Methyl-t-Butyl Ether (MTBE)	ND	0.00095	0.476	
1,2-Dibromoethane	ND	0.00048	0.476		Tert-Butyl Alcohol (TBA)	ND	0.0095	0.476	
1,2-Dichloroethane	ND	0.00048	0.476		Diisopropyl Ether (DIPE)	ND	0.00048	0.476	
Ethylbenzene	ND	0.00048	0.476		Ethyl-t-Butyl Ether (ETBE)	ND	0.00048	0.476	
Toluene	0.00048	0.00048	0.476		Tert-Amyl-Methyl Ether (TAME)	ND	0.00048	0.476	
Xylenes (total)	0.0052	0.00095	0.476						
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
Dibromofluoromethane	102	71-137			1,2-Dichloroethane-d4	104	58-160		
1,4-Bromofluorobenzene	95	66-126			Toluene-d8	101	87-111		

SO-241809-051809-HB-MW-8-5	09-05-1995-3-I	05/18/09 10:28	Solid	GC/MS VV	05/18/09	05/31/09 04:46	090530L03
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	0.00091	0.00080	0.805		Methyl-t-Butyl Ether (MTBE)	ND	0.0016	0.805	
1,2-Dibromoethane	ND	0.00080	0.805		Tert-Butyl Alcohol (TBA)	ND	0.016	0.805	
1,2-Dichloroethane	ND	0.00080	0.805		Diisopropyl Ether (DIPE)	ND	0.00080	0.805	
Ethylbenzene	ND	0.00080	0.805		Ethyl-t-Butyl Ether (ETBE)	ND	0.00080	0.805	
Toluene	ND	0.00080	0.805		Tert-Amyl-Methyl Ether (TAME)	ND	0.00080	0.805	
Xylenes (total)	ND	0.0016	0.805						
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
Dibromofluoromethane	111	71-137			1,2-Dichloroethane-d4	113	58-160		
1,4-Bromofluorobenzene	86	66-126			Toluene-d8	100	87-111		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Conestoga-Rovers & Associates
 1420 80th St. SW, Suite A
 Everett, WA 98203-6248

Date Received: 05/22/09
 Work Order No: 09-05-1995
 Preparation: EPA 5035
 Method: EPA 8260B
 Units: mg/kg

Project: 11700 NE 160th St., Bothell, WA

Page 2 of 4

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-051909-HB-DUP	09-05-1995-4-K	05/19/09 00:00	Solid	GC/MS VV	05/19/09	05/31/09 05:13	090530L04

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.41	412		Methyl-t-Butyl Ether (MTBE)	ND	0.82	412	
1,2-Dibromoethane	ND	0.41	412		Tert-Butyl Alcohol (TBA)	ND	8.2	412	
1,2-Dichloroethane	ND	0.41	412		Diisopropyl Ether (DIPE)	ND	0.41	412	
Ethylbenzene	10	0.41	412		Ethyl-t-Butyl Ether (ETBE)	ND	0.41	412	
Toluene	8.3	0.41	412		Tert-Amyl-Methyl Ether (TAME)	ND	0.41	412	
Xylenes (total)	66	0.82	412						
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
Dibromofluoromethane	102	71-137			1,2-Dichloroethane-d4	100	58-160		
1,4-Bromofluorobenzene	97	66-126			Toluene-d8	102	87-111		

SO-241809-051909-HB-SB-6-9	09-05-1995-5-I	05/19/09 12:28	Solid	GC/MS VV	05/19/09	05/31/09 05:40	090530L03
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	0.0032	0.00076	0.756		Methyl-t-Butyl Ether (MTBE)	ND	0.0015	0.756	
1,2-Dibromoethane	ND	0.00076	0.756		Tert-Butyl Alcohol (TBA)	ND	0.015	0.756	
1,2-Dichloroethane	ND	0.00076	0.756		Diisopropyl Ether (DIPE)	ND	0.00076	0.756	
Ethylbenzene	0.024	0.00076	0.756		Ethyl-t-Butyl Ether (ETBE)	ND	0.00076	0.756	
Toluene	0.021	0.00076	0.756		Tert-Amyl-Methyl Ether (TAME)	ND	0.00076	0.756	
Xylenes (total)	0.13	0.0015	0.756						
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
Dibromofluoromethane	102	71-137			1,2-Dichloroethane-d4	104	58-160		
1,4-Bromofluorobenzene	98	66-126			Toluene-d8	103	87-111		

SO-241809-051909-HB-SB-6-19	09-05-1995-6-K	05/19/09 12:44	Solid	GC/MS VV	05/19/09	05/31/09 06:06	090530L04
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.40	396		Methyl-t-Butyl Ether (MTBE)	ND	0.79	396	
1,2-Dibromoethane	ND	0.40	396		Tert-Butyl Alcohol (TBA)	ND	7.9	396	
1,2-Dichloroethane	ND	0.40	396		Diisopropyl Ether (DIPE)	ND	0.40	396	
Ethylbenzene	10	0.40	396		Ethyl-t-Butyl Ether (ETBE)	ND	0.40	396	
Toluene	5.8	0.40	396		Tert-Amyl-Methyl Ether (TAME)	ND	0.40	396	
Xylenes (total)	65	0.79	396						
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
Dibromofluoromethane	98	71-137			1,2-Dichloroethane-d4	94	58-160		
1,4-Bromofluorobenzene	100	66-126			Toluene-d8	100	87-111		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Conestoga-Rovers & Associates
 1420 80th St. SW, Suite A
 Everett, WA 98203-6248

Date Received: 05/22/09
 Work Order No: 09-05-1995
 Preparation: EPA 5035
 Method: EPA 8260B
 Units: mg/kg

Project: 11700 NE 160th St., Bothell, WA

Page 3 of 4

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-051909-HB-SB-7-9	09-05-1995-7-I	05/19/09 11:30	Solid	GC/MS VV	05/19/09	05/31/09 06:33	090530L03

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.00066	0.655		Methyl-t-Butyl Ether (MTBE)	ND	0.0013	0.655	
1,2-Dibromoethane	ND	0.00066	0.655		Tert-Butyl Alcohol (TBA)	ND	0.013	0.655	
1,2-Dichloroethane	ND	0.00066	0.655		Diisopropyl Ether (DIPE)	ND	0.00066	0.655	
Ethylbenzene	0.0011	0.00066	0.655		Ethyl-t-Butyl Ether (ETBE)	ND	0.00066	0.655	
Toluene	0.0025	0.00066	0.655		Tert-Amyl-Methyl Ether (TAME)	ND	0.00066	0.655	
Xylenes (total)	0.0050	0.0013	0.655						
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
Dibromofluoromethane	108	71-137			1,2-Dichloroethane-d4	108	58-160		
1,4-Bromofluorobenzene	96	66-126			Toluene-d8	99	87-111		

SO-241809-051909-HB-SB-7-14	09-05-1995-8-I	05/19/09 11:37	Solid	GC/MS VV	05/19/09	05/31/09 07:00	090530L03
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	0.0014	0.00085	0.849		Methyl-t-Butyl Ether (MTBE)	ND	0.0017	0.849	
1,2-Dibromoethane	ND	0.00085	0.849		Tert-Butyl Alcohol (TBA)	ND	0.017	0.849	
1,2-Dichloroethane	ND	0.00085	0.849		Diisopropyl Ether (DIPE)	ND	0.00085	0.849	
Ethylbenzene	0.0036	0.00085	0.849		Ethyl-t-Butyl Ether (ETBE)	ND	0.00085	0.849	
Toluene	0.0042	0.00085	0.849		Tert-Amyl-Methyl Ether (TAME)	ND	0.00085	0.849	
Xylenes (total)	0.022	0.0017	0.849						
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
Dibromofluoromethane	100	71-137			1,2-Dichloroethane-d4	101	58-160		
1,4-Bromofluorobenzene	96	66-126			Toluene-d8	102	87-111		

SO-241809-051909-HB-MW-9-14	09-05-1995-9-I	05/19/09 14:35	Solid	GC/MS VV	05/19/09	05/31/09 07:27	090530L03
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	0.0033	0.00066	0.663		Methyl-t-Butyl Ether (MTBE)	ND	0.0013	0.663	
1,2-Dibromoethane	ND	0.00066	0.663		Tert-Butyl Alcohol (TBA)	ND	0.013	0.663	
1,2-Dichloroethane	ND	0.00066	0.663		Diisopropyl Ether (DIPE)	ND	0.00066	0.663	
Ethylbenzene	0.49	0.046	46		Ethyl-t-Butyl Ether (ETBE)	ND	0.00066	0.663	
Toluene	0.035	0.00066	0.663		Tert-Amyl-Methyl Ether (TAME)	ND	0.00066	0.663	
Xylenes (total)	2.9	0.092	46						
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
Dibromofluoromethane	99	71-137			1,2-Dichloroethane-d4	102	58-160		
1,4-Bromofluorobenzene	99	66-126			Toluene-d8	102	87-111		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Conestoga-Rovers & Associates
 1420 80th St. SW, Suite A
 Everett, WA 98203-6248

Date Received: 05/22/09
 Work Order No: 09-05-1995
 Preparation: EPA 5035
 Method: EPA 8260B
 Units: mg/kg

Project: 11700 NE 160th St., Bothell, WA

Page 4 of 4

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	095-01-025-17,833	N/A	Solid	GC/MS VV	05/30/09	05/30/09 23:51	090530L03

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.0010	1		Methyl-t-Butyl Ether (MTBE)	ND	0.0020	1	
1,2-Dibromoethane	ND	0.0010	1		Tert-Butyl Alcohol (TBA)	ND	0.020	1	
1,2-Dichloroethane	ND	0.0010	1		Diisopropyl Ether (DIPE)	ND	0.0010	1	
Ethylbenzene	ND	0.0010	1		Ethyl-t-Butyl Ether (ETBE)	ND	0.0010	1	
Toluene	ND	0.0010	1		Tert-Amyl-Methyl Ether (TAME)	ND	0.0010	1	
Xylenes (total)	ND	0.0020	1						
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
Dibromofluoromethane	105	71-137			1,2-Dichloroethane-d4	103	58-160		
1,4-Bromofluorobenzene	92	66-126			Toluene-d8	100	87-111		

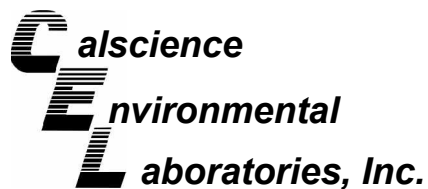
Method Blank	095-01-025-17,834	N/A	Solid	GC/MS VV	05/30/09	05/30/09 23:24	090530L04
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.10	100		Methyl-t-Butyl Ether (MTBE)	ND	0.20	100	
1,2-Dibromoethane	ND	0.10	100		Tert-Butyl Alcohol (TBA)	ND	2.0	100	
1,2-Dichloroethane	ND	0.10	100		Diisopropyl Ether (DIPE)	ND	0.10	100	
Ethylbenzene	ND	0.10	100		Ethyl-t-Butyl Ether (ETBE)	ND	0.10	100	
Toluene	ND	0.10	100		Tert-Amyl-Methyl Ether (TAME)	ND	0.10	100	
Xylenes (total)	ND	0.20	100						
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
Dibromofluoromethane	101	71-137			1,2-Dichloroethane-d4	94	58-160		
1,4-Bromofluorobenzene	94	66-126			Toluene-d8	98	87-111		

Method Blank	095-01-025-17,839	N/A	Solid	GC/MS VV	06/01/09	06/01/09 11:40	090601L02
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.10	100		Methyl-t-Butyl Ether (MTBE)	ND	0.20	100	
1,2-Dibromoethane	ND	0.10	100		Tert-Butyl Alcohol (TBA)	ND	2.0	100	
1,2-Dichloroethane	ND	0.10	100		Diisopropyl Ether (DIPE)	ND	0.10	100	
Ethylbenzene	ND	0.10	100		Ethyl-t-Butyl Ether (ETBE)	ND	0.10	100	
Toluene	ND	0.10	100		Tert-Amyl-Methyl Ether (TAME)	ND	0.10	100	
Xylenes (total)	ND	0.20	100						
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
Dibromofluoromethane	104	71-137			1,2-Dichloroethane-d4	102	58-160		
1,4-Bromofluorobenzene	96	66-126			Toluene-d8	99	87-111		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Quality Control - Spike/Spike Duplicate



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

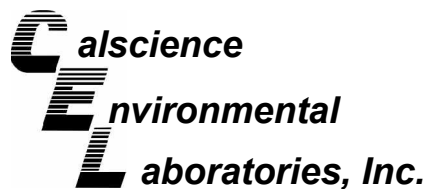
Date Received: 05/22/09
Work Order No: 09-05-1995
Preparation: EPA 3050B
Method: EPA 6020

Project 11700 NE 160th St., Bothell, WA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
09-05-1983-22	Solid	ICP/MS 03	05/22/09	05/22/09	090522S02

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Lead	102	102	62-134	0	0-23	

RPD - Relative Percent Difference , CL - Control Limit



Quality Control - Spike/Spike Duplicate



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

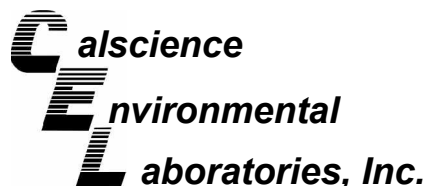
Date Received: 05/22/09
Work Order No: 09-05-1995
Preparation: EPA 3550B
Method: NWTPH-Dx

Project 11700 NE 160th St., Bothell, WA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
SO-241809-051909-HB-MW-8-14	Solid	GC 43	05/24/09	05/24/09	090524S01

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TPH as Diesel Range	91	90	64-130	2	0-15	

RPD - Relative Percent Difference , CL - Control Limit



Quality Control - Spike/Spike Duplicate



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

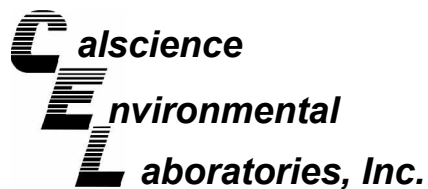
Date Received: 05/22/09
Work Order No: 09-05-1995
Preparation: EPA 3545
Method: EPA 8270C SIM
PAHs

Project 11700 NE 160th St., Bothell, WA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
SO-241809-051909-HB-MW-9-14	Solid	GC/MS GG	05/22/09	05/27/09	090522S06

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Naphthalene	0	9	21-133	29	0-25	3,4
2-Methylnaphthalene	0	10	21-140	24	0-25	3
Acenaphthylene	46	65	33-145	34	0-25	4
Acenaphthene	51	71	40-106	32	0-25	4
Fluorene	49	68	59-121	32	0-25	3,4
Phenanthrene	43	59	54-120	30	0-25	3,4
Anthracene	41	56	27-133	30	0-25	4
Fluoranthene	40	54	26-137	31	0-25	4
Pyrene	49	66	6-156	31	0-25	4
Benzo (a) Anthracene	38	52	33-143	32	0-25	4
Chrysene	47	64	17-168	32	0-25	4
Benzo (k) Fluoranthene	51	69	24-159	30	0-25	4
Benzo (b) Fluoranthene	40	60	24-159	41	0-25	4
Benzo (a) Pyrene	35	51	17-163	38	0-25	4
Benzo (g,h,i) Perylene	25	34	0-219	29	0-25	4
Indeno (1,2,3-c,d) Pyrene	36	49	0-171	31	0-25	4
Dibenz (a,h) Anthracene	28	38	0-227	32	0-25	4
1-Methylnaphthalene	12	45	40-160	25	0-25	3

RPD - Relative Percent Difference , CL - Control Limit



Quality Control - LCS/LCS Duplicate



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

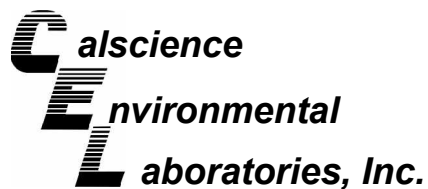
Date Received: N/A
Work Order No: 09-05-1995
Preparation: EPA 3050B
Method: EPA 6020

Project: 11700 NE 160th St., Bothell, WA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
096-10-002-1,513	Solid	ICP/MS 03	05/22/09	05/22/09	090522L02

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Lead	100	101	80-120	1	0-20	

RPD - Relative Percent Difference , CL - Control Limit



Quality Control - LCS/LCS Duplicate



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

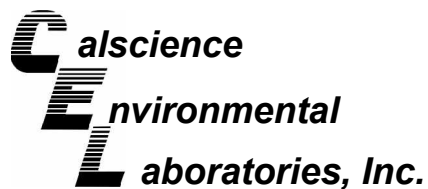
Date Received: N/A
Work Order No: 09-05-1995
Preparation: EPA 3550B
Method: NWTPH-Dx

Project: 11700 NE 160th St., Bothell, WA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-838-21	Solid	GC 43	05/24/09	05/24/09	090524B01

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TPH as Diesel Range	91	90	75-123	2	0-12	

RPD - Relative Percent Difference , CL - Control Limit



Quality Control - LCS/LCS Duplicate



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

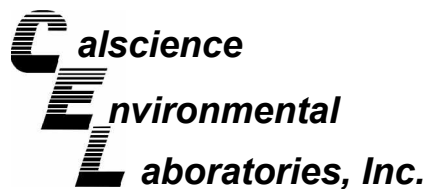
Date Received: N/A
Work Order No: 09-05-1995
Preparation: EPA 5035
Method: NWTPH-Gx

Project: 11700 NE 160th St., Bothell, WA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-848-25	Solid	GC 11	06/03/09	06/04/09	090603B01

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TPH as Gasoline	85	83	55-139	3	0-18	

RPD - Relative Percent Difference , CL - Control Limit



Quality Control - LCS/LCS Duplicate



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

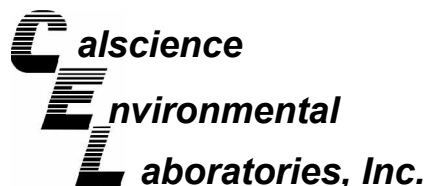
Date Received: N/A
Work Order No: 09-05-1995
Preparation: EPA 5035
Method: NWTTPH-Gx

Project: 11700 NE 160th St., Bothell, WA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-848-26	Solid	GC 11	06/03/09	06/04/09	090603B02

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TPH as Gasoline	85	83	55-139	3	0-18	

RPD - Relative Percent Difference , CL - Control Limit



Quality Control - LCS/LCS Duplicate



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

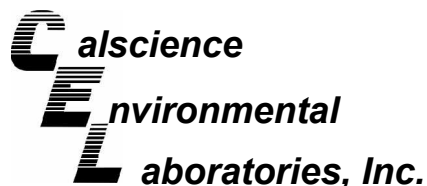
Date Received: N/A
Work Order No: 09-05-1995
Preparation: EPA 5035
Method: NWTPH-Gx

Project: 11700 NE 160th St., Bothell, WA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-848-27	Solid	GC 11	06/04/09	06/04/09	090604B02

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TPH as Gasoline	85	85	55-139	1	0-18	

RPD - Relative Percent Difference , CL - Control Limit



Quality Control - LCS/LCS Duplicate



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

Date Received: N/A
Work Order No: 09-05-1995
Preparation: EPA 3545
Method: EPA 8270C SIM PAHs

Project: 11700 NE 160th St., Bothell, WA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number		
099-06-010-313	Solid	GC/MS GG	05/22/09	05/27/09	090522L06		
Parameter	LCS %REC	LCSD %REC	%REC CL	ME CL	RPD	RPD CL	Qualifiers
Naphthalene	98	98	21-133	2-152	0	0-25	ME
2-Methylnaphthalene	97	95	21-140	1-160	2	0-25	
Acenaphthylene	98	93	33-145	14-164	5	0-25	
Acenaphthene	99	99	48-108	38-118	0	0-11	
Fluorene	100	98	59-121	49-131	3	0-25	
Phenanthrene	88	88	54-120	43-131	0	0-25	
Anthracene	73	69	27-133	9-151	6	0-25	
Fluoranthene	92	88	26-137	8-156	5	0-25	
Pyrene	107	104	28-106	15-119	3	0-16	
Benzo (a) Anthracene	88	83	33-143	15-161	6	0-25	
Chrysene	98	97	17-168	0-193	0	0-25	
Benzo (k) Fluoranthene	120	125	24-159	2-182	4	0-25	
Benzo (b) Fluoranthene	113	107	24-159	2-182	5	0-25	
Benzo (a) Pyrene	88	83	17-163	0-187	5	0-25	
Benzo (g,h,i) Perylene	92	88	0-227	0-265	4	0-25	
Indeno (1,2,3-c,d) Pyrene	132	126	0-171	0-200	5	0-25	
Dibenz (a,h) Anthracene	85	81	0-219	0-256	5	0-25	
1-Methylnaphthalene	104	104	40-160	20-180	0	0-25	

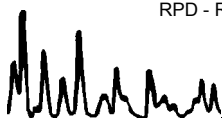
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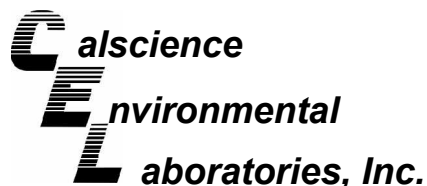
Total number of ME compounds : 1

Total number of ME compounds allowed : 1

LCS ME CL validation result : Pass

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

Date Received: N/A
Work Order No: 09-05-1995
Preparation: EPA 5035
Method: EPA 8260B

Project: 11700 NE 160th St., Bothell, WA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number		
095-01-025-17,833	Solid	GC/MS VV	05/30/09	05/30/09	090530L03		
Parameter	LCS %REC	LCSD %REC	%REC CL	ME CL	RPD	RPD CL	Qualifiers
Benzene	100	99	85-115	80-120	0	0-11	
Carbon Tetrachloride	98	98	68-134	57-145	1	0-14	
Chlorobenzene	96	95	83-119	77-125	1	0-9	
1,2-Dibromoethane	98	98	80-120	73-127	0	0-20	
1,2-Dichlorobenzene	95	94	57-135	44-148	1	0-10	
1,1-Dichloroethene	98	96	72-120	64-128	2	0-10	
Ethylbenzene	101	98	80-120	73-127	3	0-20	
Toluene	99	98	67-127	57-137	1	0-10	
Trichloroethene	102	97	88-112	84-116	5	0-9	
Vinyl Chloride	93	91	57-129	45-141	2	0-16	
Methyl-t-Butyl Ether (MTBE)	105	107	76-124	68-132	2	0-12	
Tert-Butyl Alcohol (TBA)	96	93	31-145	12-164	2	0-23	
Diisopropyl Ether (DIPE)	105	106	74-128	65-137	0	0-10	
Ethyl-t-Butyl Ether (ETBE)	108	109	77-125	69-133	1	0-9	
Tert-Amyl-Methyl Ether (TAME)	107	109	81-123	74-130	2	0-10	
Ethanol	105	96	44-152	26-170	9	0-24	

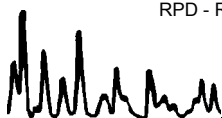
Total number of LCS compounds : 16

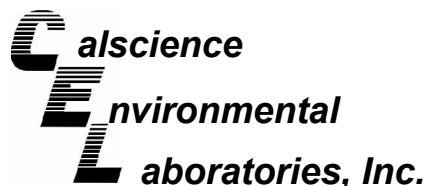
Total number of ME compounds : 0

Total number of ME compounds allowed : 1

LCS ME CL validation result : Pass

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

Date Received: N/A
Work Order No: 09-05-1995
Preparation: EPA 5035
Method: EPA 8260B

Project: 11700 NE 160th St., Bothell, WA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number		
095-01-025-17,834	Solid	GC/MS VV	05/30/09	05/30/09	090530L04		
Parameter	LCS %REC	LCSD %REC	%REC CL	ME CL	RPD	RPD CL	Qualifiers
Benzene	100	99	85-115	80-120	0	0-11	
Carbon Tetrachloride	98	98	68-134	57-145	1	0-14	
Chlorobenzene	96	95	83-119	77-125	1	0-9	
1,2-Dibromoethane	98	98	80-120	73-127	0	0-20	
1,2-Dichlorobenzene	95	94	57-135	44-148	1	0-10	
1,1-Dichloroethene	98	96	72-120	64-128	2	0-10	
Ethylbenzene	101	98	80-120	73-127	3	0-20	
Toluene	99	98	67-127	57-137	1	0-10	
Trichloroethene	102	97	88-112	84-116	5	0-9	
Vinyl Chloride	93	91	57-129	45-141	2	0-16	
Methyl-t-Butyl Ether (MTBE)	105	107	76-124	68-132	2	0-12	
Tert-Butyl Alcohol (TBA)	96	93	31-145	12-164	2	0-23	
Diisopropyl Ether (DIPE)	105	106	74-128	65-137	0	0-10	
Ethyl-t-Butyl Ether (ETBE)	108	109	77-125	69-133	1	0-9	
Tert-Amyl-Methyl Ether (TAME)	107	109	81-123	74-130	2	0-10	
Ethanol	105	96	44-152	26-170	9	0-24	

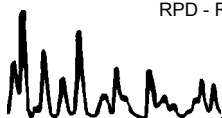
Total number of LCS compounds : 16

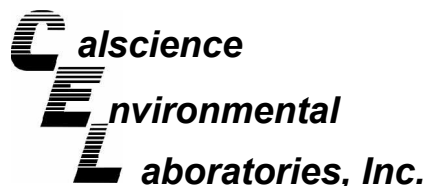
Total number of ME compounds : 0

Total number of ME compounds allowed : 1

LCS ME CL validation result : Pass

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

Date Received: N/A
Work Order No: 09-05-1995
Preparation: EPA 5035
Method: EPA 8260B

Project: 11700 NE 160th St., Bothell, WA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number		
095-01-025-17,839	Solid	GC/MS VV	06/01/09	06/01/09	090601L02		
Parameter	LCS %REC	LCSD %REC	%REC CL	ME CL	RPD	RPD CL	Qualifiers
Benzene	103	102	85-115	80-120	1	0-11	
Carbon Tetrachloride	106	103	68-134	57-145	3	0-14	
Chlorobenzene	98	97	83-119	77-125	0	0-9	
1,2-Dibromoethane	100	99	80-120	73-127	1	0-20	
1,2-Dichlorobenzene	99	100	57-135	44-148	1	0-10	
1,1-Dichloroethene	103	100	72-120	64-128	3	0-10	
Ethylbenzene	105	103	80-120	73-127	1	0-20	
Toluene	103	103	67-127	57-137	0	0-10	
Trichloroethene	100	97	88-112	84-116	3	0-9	
Vinyl Chloride	98	96	57-129	45-141	2	0-16	
Methyl-t-Butyl Ether (MTBE)	110	107	76-124	68-132	3	0-12	
Tert-Butyl Alcohol (TBA)	94	96	31-145	12-164	2	0-23	
Diisopropyl Ether (DIPE)	109	106	74-128	65-137	3	0-10	
Ethyl-t-Butyl Ether (ETBE)	114	111	77-125	69-133	3	0-9	
Tert-Amyl-Methyl Ether (TAME)	113	113	81-123	74-130	0	0-10	
Ethanol	90	94	44-152	26-170	4	0-24	

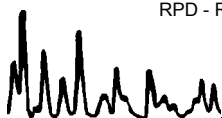
Total number of LCS compounds : 16

Total number of ME compounds : 0

Total number of ME compounds allowed : 1

LCS ME CL validation result : Pass

RPD - Relative Percent Difference , CL - Control Limit

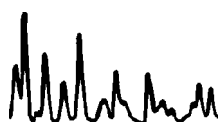


Glossary of Terms and Qualifiers



Work Order Number: 09-05-1995

<u>Qualifier</u>	<u>Definition</u>
*	See applicable analysis comment.
1	Surrogate compound recovery was out of control due to a required sample dilution, therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported with no further corrective action required.
A	Result is the average of all dilutions, as defined by the method.
B	Analyte was present in the associated method blank.
C	Analyte presence was not confirmed on primary column.
E	Concentration exceeds the calibration range.
H	Sample received and/or analyzed past the recommended holding time.
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
ME	LCS Recovery Percentage is within LCS ME Control Limit range.
N	Nontarget Analyte.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
U	Undetected at the laboratory method detection limit.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.
	Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture.



SAMPLE RECEIPT FORM

Cooler 1 of 2

CLIENT: CRA

DATE: 5/22/09

TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen)

Temperature 2.3 °C - 0.2°C (CF) = 2.1 °C ☐ Blank ☒ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____).

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.

☐ Received at ambient temperature, placed on ice for transport by Courier.

Ambient Temperature: ☐ Air ☐ Filter ☐ Metals Only ☐ PCBs Only

Initial: WB

CUSTODY SEALS INTACT:

☒ Cooler ☐ _____ ☐ No (Not Intact) ☐ Not Present ☐ N/A

Initial: WB

☐ Sample ☐ _____ ☐ No (Not Intact) ☒ Not Present

Initial: WB

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples.....	☒	☐	☐
COC document(s) received complete.....	☒	☐	☐
☐ Collection date/time, matrix, and/or # of containers logged in based on sample labels.			
☐ COC not relinquished. ☐ No date relinquished. ☐ No time relinquished.			
Sampler's name indicated on COC.....	☒	☐	☐
Sample container label(s) consistent with COC.....	☒	☐	☐
Sample container(s) intact and good condition.....	☒	☐	☐
Correct containers and volume for analyses requested.....	☒	☐	☐
Analyses received within holding time.....	☒	☐	☐
Proper preservation noted on COC or sample container.....	☒	☐	☐
☐ Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace.....	☐	☐	☒
Tedlar bag(s) free of condensation.....	☐	☐	☒

CONTAINER TYPE:

Solid: ☐ 4ozCGJ ☒ 8ozCGJ ☐ 16ozCGJ ☐ Sleeve ☐ EnCores® ☒ TerraCores® ☒ 2ozPT

Water: ☐ VOA ☐ VOA_h ☐ VOA_{na2} ☐ 125AGB ☐ 125AGB_h ☐ 125AGB_p ☐ 1AGB ☐ 1AGB_{na2} ☐ 1AGB_s
☐ 500AGB ☐ 500AGJ ☐ 500AGJ_s ☐ 250AGB ☐ 250CGB ☐ 250CGB_s ☐ 1PB ☐ 500PB ☐ 500PB_{na}
☐ 250PB ☐ 250PB_n ☐ 125PB ☐ 125PB_{znna} ☐ 100PB ☐ 100PB_{na2} ☐ _____ ☐ _____ ☐ _____

Air: ☐ Tedlar® ☐ Summa® ☐ _____ **Other:** ☐ _____ **Checked/Labeled by:** WB

Container: C: Clear A: Amber P: Plastic G: Glass J: Jar (Wide-mouth) B: Bottle (Narrow-mouth) **Reviewed by:** WJC

Preservative: h: HCL n: HNO3 na₂: Na₂S₂O₃ Na: NaOH p: H₃PO₄ s: H₂SO₄ znna: ZnAc₂+NaOH f: Field-filtered **Scanned by:** WB

SAMPLE RECEIPT FORM

Cooler 2 of 2

CLIENT: CVA

DATE: 5/22/09

TEMPERATURE: (Criteria: 0.0 °C – 6.0 °C, not frozen)

Temperature 2.7 °C - 0.2 °C (CF) = 2.5 °C ☐ Blank ☒ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____).

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.

☐ Received at ambient temperature, placed on ice for transport by Courier.

Ambient Temperature: ☐ Air ☐ Filter ☐ Metals Only ☐ PCBs Only

Initial: WS

CUSTODY SEALS INTACT:

☒ Cooler ☐ _____ ☐ No (Not Intact) ☐ Not Present ☐ N/A

Initial: WS

☐ Sample ☐ _____ ☐ No (Not Intact) ☒ Not Present

Initial: WS

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples.....	☒	☐	☐
COC document(s) received complete.....	☒	☐	☐

☐ Collection date/time, matrix, and/or # of containers logged in based on sample labels.

☐ COC not relinquished. ☐ No date relinquished. ☐ No time relinquished.

Sampler's name indicated on COC..... ☒ ☐ ☐

Sample container label(s) consistent with COC..... ☒ ☐ ☐

Sample container(s) intact and good condition..... ☒ ☐ ☐

Correct containers and volume for analyses requested..... ☒ ☐ ☐

Analyses received within holding time..... ☒ ☐ ☐

Proper preservation noted on COC or sample container..... ☒ ☐ ☐

☐ Unpreserved vials received for Volatiles analysis

Volatile analysis container(s) free of headspace..... ☐ ☐ ☒

Tedlar bag(s) free of condensation..... ☐ ☐ ☒

CONTAINER TYPE:

Solid: ☐ 4ozCGJ ☒ 8ozCGJ ☐ 16ozCGJ ☐ Sleeve ☐ EnCores® ☒ TerraCores® ☒ 202PS

Water: ☐ VOA ☐ VOA_h ☐ VOA_{na2} ☐ 125AGB ☐ 125AGB_h ☐ 125AGB_p ☐ 1AGB ☐ 1AGB_{na2} ☐ 1AGB_s

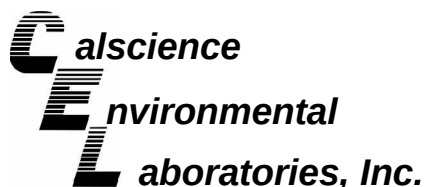
☐ 500AGB ☐ 500AGJ ☐ 500AGJ_s ☐ 250AGB ☐ 250CGB ☐ 250CGB_s ☐ 1PB ☐ 500PB ☐ 500PB_{na}

☐ 250PB ☐ 250PB_n ☐ 125PB ☐ 125PB_{znna} ☐ 100PB ☐ 100PB_{na2} ☐ _____ ☐ _____ ☐ _____

Air: ☐ Tedlar® ☐ Summa® ☐ _____ Other: ☐ _____ Checked/Labeled by: WS

Container: C: Clear A: Amber P: Plastic G: Glass J: Jar (Wide-mouth) B: Bottle (Narrow-mouth) Reviewed by: _____

Preservative: h: HCL n: HNO3 na₂: Na₂S₂O₃ Na: NaOH p: H₃PO₄ s: H₂SO₄ znna: ZnAc₂+NaOH f: Field-filtered Scanned by: WS



February 02, 2010

Justin Foslien
Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

Subject: **CalScience Work Order No.: 10-01-1634**
Client Reference: 11700 NE 160th St., Bothell, WA

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 1/22/2010 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Systems Manual, applicable standard operating procedures, and other related documentation. The original report of subcontracted analysis, if any, is provided herein, and follows the standard CalScience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

A handwritten signature in black ink that reads 'Philip Samelle for'.

CalScience Environmental
Laboratories, Inc.
Xuan H. Dang
Project Manager

Analytical Report



Conestoga-Rovers & Associates
 1420 80th St. SW, Suite A
 Everett, WA 98203-6248

Date Received: 01/22/10
 Work Order No: 10-01-1634
 Preparation: EPA 3550B
 Method: NWTPH-Dx
 Units: mg/kg

Project: 11700 NE 160th St., Bothell, WA

Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-012010-TM-MW-10-9.5	10-01-1634-1-A	01/20/10 10:10	Solid	GC 49	01/25/10	01/26/10 16:18	100125B01S

Comment(s): -The sample extract was subjected to Silica Gel treatment prior to analysis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
TPH as Diesel Range	ND	5.0	1		TPH as Motor Oil Range	ND	5.0	1	
Surrogates:	REC (%)	Control Limits	Qual						
Decachlorobiphenyl	108	61-145							

SO-241809-012010-TM-MW-10-14.5	10-01-1634-2-A	01/20/10 10:20	Solid	GC 49	01/25/10	01/26/10 16:34	100125B01S
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Comment(s): -The sample chromatographic pattern for TPH does not match the chromatographic pattern of the specified standard.

Quantitation of the unknown hydrocarbon(s) in the sample was based upon the specified standard.

-The sample extract was subjected to Silica Gel treatment prior to analysis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
TPH as Diesel Range	5.8	5.0	1		TPH as Motor Oil Range	ND	5.0	1	
Surrogates:	REC (%)	Control Limits	Qual						
Decachlorobiphenyl	114	61-145							

SO-241809-012010-TM-SB-8-6	10-01-1634-3-A	01/20/10 13:10	Solid	GC 49	01/25/10	01/26/10 17:25	100125B01S
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Comment(s): -The sample chromatographic pattern for TPH does not match the chromatographic pattern of the specified standard.

Quantitation of the unknown hydrocarbon(s) in the sample was based upon the specified standard.

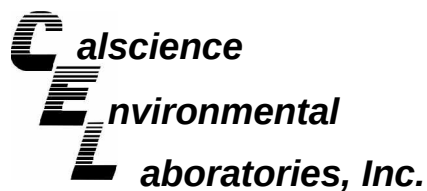
-The sample extract was subjected to Silica Gel treatment prior to analysis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
TPH as Diesel Range	9000	50	10		TPH as Motor Oil Range	65	5.0	1	
Surrogates:	REC (%)	Control Limits	Qual						
Decachlorobiphenyl	119	61-145							

Method Blank	099-12-838-60	N/A	Solid	GC 49	01/25/10	01/25/10 18:55	100125B01S
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Parameter	Result	RL	DF	Qual
TPH as Diesel Range	ND	5.0	1	
Surrogates:	REC (%)	Control Limits	Qual	
Decachlorobiphenyl	104	61-145		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

Date Received: 01/22/10
Work Order No: 10-01-1634
Preparation: EPA 5035
Method: NWTPH-Gx

Project: 11700 NE 160th St., Bothell, WA

Page 1 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-012010-TM-MW-10-9.5	10-01-1634-1-I	01/20/10 10:10	Solid	GC 1	01/20/10	01/24/10 16:36	100120B08

Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.18	0.71		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	85	60-126	

SO-241809-012010-TM-MW-10-14.5	10-01-1634-2-I	01/20/10 10:20	Solid	GC 1	01/20/10	01/24/10 17:08	100120B08
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.18	0.714		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	86	60-126	

SO-241809-012010-TM-SB-8-6	10-01-1634-3-K	01/20/10 13:10	Solid	GC 1	01/20/10	01/25/10 17:39	100125B02
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	6100	620	2500		mg/kg

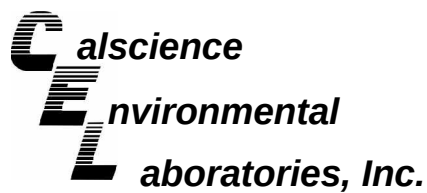
Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	98	60-126	

Method Blank	099-12-848-77	N/A	Solid	GC 1	01/23/10	01/24/10 12:20	100120B08
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.25	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	84	60-126	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

Date Received: 01/22/10
Work Order No: 10-01-1634
Preparation: EPA 5035
Method: NWTPH-Gx

Project: 11700 NE 160th St., Bothell, WA

Page 2 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-12-848-78	N/A	Solid	GC 1	01/25/10	01/25/10 14:58	100125B02

Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	10	40		mg/kg
Surrogates:	REC (%)	Control Limits		Qual	
1,4-Bromofluorobenzene	82	60-126			

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Conestoga-Rovers & Associates
 1420 80th St. SW, Suite A
 Everett, WA 98203-6248

Date Received: 01/22/10
 Work Order No: 10-01-1634
 Preparation: EPA 5035
 Method: EPA 8260B
 Units: mg/kg

Project: 11700 NE 160th St., Bothell, WA

Page 1 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-012010-TM-MW-10-9.5	10-01-1634-1-F	01/20/10 10:10	Solid	GC/MS Z	01/20/10	01/24/10 03:16	100123L02

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.00084	0.842		Toluene	ND	0.00084	0.842	
Ethylbenzene	ND	0.00084	0.842		Xylenes (total)	ND	0.0017	0.842	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
Dibromofluoromethane	102	71-137			1,2-Dichloroethane-d4	109	58-160		
1,4-Bromofluorobenzene	102	66-126			Toluene-d8	100	87-111		

SO-241809-012010-TM-MW-10-14.5	10-01-1634-2-G	01/20/10 10:20	Solid	GC/MS Z	01/20/10	01/25/10 20:08	100125L01
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.00068	0.68		Toluene	ND	0.00068	0.68	
Ethylbenzene	ND	0.00068	0.68		Xylenes (total)	ND	0.0014	0.68	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
Dibromofluoromethane	103	71-137			1,2-Dichloroethane-d4	106	58-160		
1,4-Bromofluorobenzene	101	66-126			Toluene-d8	100	87-111		

SO-241809-012010-TM-SB-8-6	10-01-1634-3-H	01/20/10 13:10	Solid	GC/MS Z	01/20/10	01/25/10 20:37	100125L02
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	3.1	3110		Toluene	ND	3.1	3110	
Ethylbenzene	230	3.1	3110		Xylenes (total)	920	6.2	3110	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
Dibromofluoromethane	103	71-137			1,2-Dichloroethane-d4	104	58-160		
1,4-Bromofluorobenzene	104	66-126			Toluene-d8	101	87-111		

Method Blank	095-01-025-18,831	N/A	Solid	GC/MS Z	01/25/10	01/25/10 15:49	100125L01
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.0010	1		Toluene	ND	0.0010	1	
Ethylbenzene	ND	0.0010	1		Xylenes (total)	ND	0.0020	1	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
Dibromofluoromethane	102	71-137			1,2-Dichloroethane-d4	97	58-160		
1,4-Bromofluorobenzene	102	66-126			Toluene-d8	101	87-111		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Conestoga-Rovers & Associates
 1420 80th St. SW, Suite A
 Everett, WA 98203-6248

Date Received: 01/22/10
 Work Order No: 10-01-1634
 Preparation: EPA 5035
 Method: EPA 8260B
 Units: mg/kg

Project: 11700 NE 160th St., Bothell, WA

Page 2 of 2

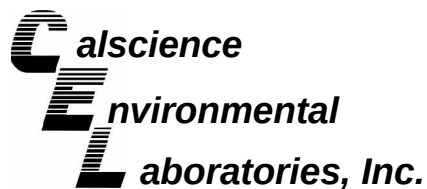
Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	095-01-025-18,832	N/A	Solid	GC/MS Z	01/23/10	01/24/10 01:20	100123L02

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.0010	1		Toluene	ND	0.0010	1	
Ethylbenzene	ND	0.0010	1		Xylenes (total)	ND	0.0020	1	
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
Dibromofluoromethane	99	71-137			1,2-Dichloroethane-d4	99	58-160		
1,4-Bromofluorobenzene	98	66-126			Toluene-d8	101	87-111		

Method Blank	095-01-025-18,833	N/A	Solid	GC/MS Z	01/25/10	01/25/10 15:20	100125L02
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.10	100		Toluene	ND	0.10	100	
Ethylbenzene	ND	0.10	100		Xylenes (total)	ND	0.20	100	
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>		<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>	<u>Qual</u>	
Dibromofluoromethane	102	71-137			1,2-Dichloroethane-d4	101	58-160		
1,4-Bromofluorobenzene	105	66-126			Toluene-d8	101	87-111		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Quality Control - Spike/Spike Duplicate



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

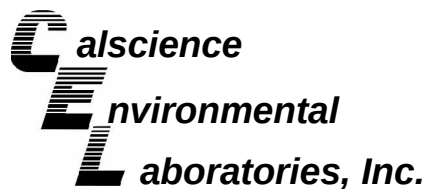
Date Received: 01/22/10
Work Order No: 10-01-1634
Preparation: EPA 3550B
Method: EPA 8015B (M)

Project 11700 NE 160th St., Bothell, WA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
10-01-1587-1	Solid	GC 49	01/25/10	01/26/10	100125S01

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TPH as Diesel	92	93	64-130	0	0-15	

RPD - Relative Percent Difference , CL - Control Limit



Quality Control - LCS/LCS Duplicate



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

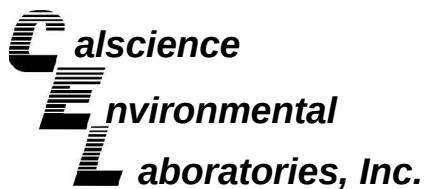
Date Received: N/A
Work Order No: 10-01-1634
Preparation: EPA 3550B
Method: NWTPH-Dx

Project: 11700 NE 160th St., Bothell, WA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-838-60	Solid	GC 49	01/25/10	01/25/10	100125B01S

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TPH as Diesel Range	94	93	75-123	1	0-12	

RPD - Relative Percent Difference , CL - Control Limit



Quality Control - LCS/LCS Duplicate



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

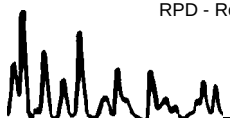
Date Received: N/A
Work Order No: 10-01-1634
Preparation: EPA 5035
Method: NWTTPH-Gx

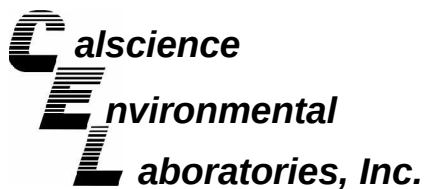
Project: 11700 NE 160th St., Bothell, WA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-848-77	Solid	GC 1	01/23/10	01/24/10	100120B08

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TPH as Gasoline	89	90	55-139	1	0-18	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

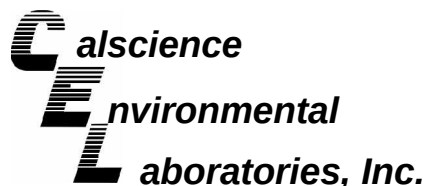
Date Received: N/A
Work Order No: 10-01-1634
Preparation: EPA 5035
Method: NWTTPH-Gx

Project: 11700 NE 160th St., Bothell, WA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-848-78	Solid	GC 1	01/25/10	01/25/10	100125B02

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TPH as Gasoline	98	100	55-139	2	0-18	

RPD - Relative Percent Difference , CL - Control Limit



Quality Control - LCS/LCS Duplicate



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

Date Received: N/A
Work Order No: 10-01-1634
Preparation: EPA 5035
Method: EPA 8260B

Project: 11700 NE 160th St., Bothell, WA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number		
095-01-025-18,832	Solid	GC/MS Z	01/23/10	01/23/10	100123L02		
Parameter	LCS %REC	LCSD %REC	%REC CL	ME CL	RPD	RPD CL	Qualifiers
Benzene	98	99	85-115	80-120	1	0-11	
Carbon Tetrachloride	103	105	68-134	57-145	2	0-14	
Chlorobenzene	96	98	83-119	77-125	2	0-9	
1,2-Dibromoethane	102	105	80-120	73-127	3	0-20	
1,2-Dichlorobenzene	95	98	57-135	44-148	2	0-10	
1,1-Dichloroethene	99	99	72-120	64-128	0	0-10	
Ethylbenzene	96	97	80-120	73-127	1	0-20	
Toluene	96	97	67-127	57-137	1	0-10	
Trichloroethene	102	105	88-112	84-116	3	0-9	
Vinyl Chloride	102	103	57-129	45-141	0	0-16	
Methyl-t-Butyl Ether (MTBE)	102	103	76-124	68-132	2	0-12	
Tert-Butyl Alcohol (TBA)	111	112	31-145	12-164	1	0-23	
Diisopropyl Ether (DIPE)	100	101	74-128	65-137	1	0-10	
Ethyl-t-Butyl Ether (ETBE)	97	100	77-125	69-133	2	0-9	
Tert-Amyl-Methyl Ether (TAME)	100	101	81-123	74-130	1	0-10	
Ethanol	103	96	44-152	26-170	7	0-24	

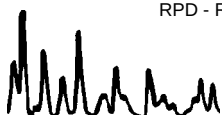
Total number of LCS compounds : 16

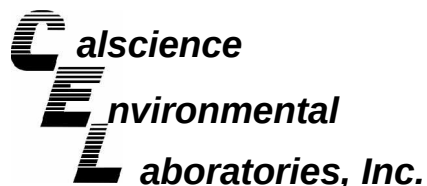
Total number of ME compounds : 0

Total number of ME compounds allowed : 1

LCS ME CL validation result : Pass

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

Date Received: N/A
Work Order No: 10-01-1634
Preparation: EPA 5035
Method: EPA 8260B

Project: 11700 NE 160th St., Bothell, WA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number		
095-01-025-18,831	Solid	GC/MS Z	01/25/10	01/25/10	100125L01		
Parameter	LCS %REC	LCSD %REC	%REC CL	ME CL	RPD	RPD CL	Qualifiers
Benzene	88	83	85-115	80-120	5	0-11	ME
Carbon Tetrachloride	106	100	68-134	57-145	5	0-14	
Chlorobenzene	87	83	83-119	77-125	4	0-9	
1,2-Dibromoethane	95	92	80-120	73-127	3	0-20	
1,2-Dichlorobenzene	87	83	57-135	44-148	6	0-10	
1,1-Dichloroethene	86	82	72-120	64-128	5	0-10	
Ethylbenzene	86	83	80-120	73-127	3	0-20	
Toluene	88	83	67-127	57-137	5	0-10	
Trichloroethene	95	90	88-112	84-116	6	0-9	
Vinyl Chloride	94	90	57-129	45-141	4	0-16	
Methyl-t-Butyl Ether (MTBE)	98	93	76-124	68-132	6	0-12	
Tert-Butyl Alcohol (TBA)	92	98	31-145	12-164	6	0-23	
Diisopropyl Ether (DIPE)	89	83	74-128	65-137	7	0-10	
Ethyl-t-Butyl Ether (ETBE)	96	91	77-125	69-133	5	0-9	
Tert-Amyl-Methyl Ether (TAME)	98	93	81-123	74-130	5	0-10	
Ethanol	58	68	44-152	26-170	14	0-24	

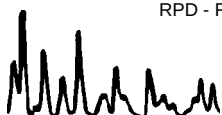
Total number of LCS compounds : 16

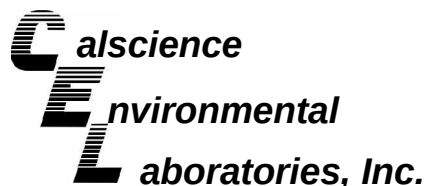
Total number of ME compounds : 1

Total number of ME compounds allowed : 1

LCS ME CL validation result : Pass

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

Date Received: N/A
Work Order No: 10-01-1634
Preparation: EPA 5035
Method: EPA 8260B

Project: 11700 NE 160th St., Bothell, WA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number		
095-01-025-18,833	Solid	GC/MS Z	01/25/10	01/25/10	100125L02		
Parameter	LCS %REC	LCSD %REC	%REC CL	ME CL	RPD	RPD CL	Qualifiers
Benzene	88	83	85-115	80-120	5	0-11	ME
Carbon Tetrachloride	106	100	68-134	57-145	5	0-14	
Chlorobenzene	87	83	83-119	77-125	4	0-9	
1,2-Dibromoethane	95	92	80-120	73-127	3	0-20	
1,2-Dichlorobenzene	87	83	57-135	44-148	6	0-10	
1,1-Dichloroethene	86	82	72-120	64-128	5	0-10	
Ethylbenzene	86	83	80-120	73-127	3	0-20	
Toluene	88	83	67-127	57-137	5	0-10	
Trichloroethene	95	90	88-112	84-116	6	0-9	
Vinyl Chloride	94	90	57-129	45-141	4	0-16	
Methyl-t-Butyl Ether (MTBE)	98	93	76-124	68-132	6	0-12	
Tert-Butyl Alcohol (TBA)	92	98	31-145	12-164	6	0-23	
Diisopropyl Ether (DIPE)	89	83	74-128	65-137	7	0-10	
Ethyl-t-Butyl Ether (ETBE)	96	91	77-125	69-133	5	0-9	
Tert-Amyl-Methyl Ether (TAME)	98	93	81-123	74-130	5	0-10	
Ethanol	58	68	44-152	26-170	14	0-24	

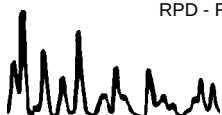
Total number of LCS compounds : 16

Total number of ME compounds : 1

Total number of ME compounds allowed : 1

LCS ME CL validation result : Pass

RPD - Relative Percent Difference , CL - Control Limit

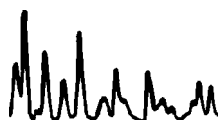


Glossary of Terms and Qualifiers



Work Order Number: 10-01-1634

<u>Qualifier</u>	<u>Definition</u>
*	See applicable analysis comment.
1	Surrogate compound recovery was out of control due to a required sample dilution, therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported with no further corrective action required.
A	Result is the average of all dilutions, as defined by the method.
B	Analyte was present in the associated method blank.
C	Analyte presence was not confirmed on primary column.
E	Concentration exceeds the calibration range.
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
ME	LCS Recovery Percentage is within LCS ME Control Limit range.
N	Nontarget Analyte.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
U	Undetected at the laboratory method detection limit.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis. Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture.



LAB (LOCATION)

☒ VALSLENCE (Baden Cray, CA)

☐ SPL Houston ()
☐ XENCO ()
☐ TEST AMERICA ()
☐ OTHER ()


Shell Oil Products Chain Of Custody Record

Please Check Appropriate Box:

☐ ENV. SERVICES
☐ MOTIVA RETAIL
☐ MOTIVA SO&M
☐ SHELL PIPELINE
☐ MOTIVA CONSULTANT
☐ OTHER

☐ SHELL RETAIL
☐ LUBES

SAMPLING COMPANY:

Conestoga-Rovers & Associates

1420 80th St SW, Suite 1, Everett, WA 98203

PROJECT CONTACT (Name, Title, Phone, Fax, Email)

Justin Foslien

425-212-5100

425-212-5199

TURNAROUND TIME (CALENDAR DAYS)

☐ STANDARD (14 DAY)

☐ 5 DAYS

☐ 3 DAYS

☐ 2 DAYS

☐ 24 HOURS

☐ LA - RWQCB REPORT FORMAT

☐ UST AGENCY

☐ RESULTS NEEDED ON WEEKEND

☐ SPECIAL INSTRUCTIONS OR NOTES:

☒ SHELL CONTRACT RATE APPLIES

☐ STATE REIMBURSEMENT RATE APPLIES

☐ EDD NOT NEEDED

☒ RECEIPT VERIFICATION REQUESTED

See Laboratory PM for WA Dept. of Ecology MTCA Method A

cleanup levels for minimum detection limits

FIELD SAMPLE IDENTIFICATION

DATE

TIME

MATRIX

PRESERVATIVE

NO. OF CONT.

HCL

HNO3

H2SO4

NONE

OTHER

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

Print Bill To Contact Name:

Jeff Ciard, 241809-2009-89

2995017

PO #

40-4021318

SAP #

120531

GLOBAL ID NO.

WA

STATE

11700 NE 160th St B3-9cell

PHONE NO.

425-212-5100

E-MAIL

cdxel@crayworld.com

CONSULTANT PROJECT NO.

241809

LAB USE ONLY

01-1634

TEMPERATURE ON RECEIPT

Yes

Container PID Readings or Laboratory Notes

SD-241809-012010-

TM-SB-8-6

VPH/EPH Sub-Hel

to ALS, Everett, WA

TPAH do include

TPAH

cc: bnulling@

crayworld.com

Date:

01/20/10

Time:

1700

Date:

1/22/10

Time:

1020

Date:

1/22/10

Time:

1020

Date:

1/22/10

Time:

1020

Date:

1/22/10

Time:

1020

Date:

1/22/10

Time:

1020

Date:

1/22/10

Time:

FedEx® US Airbill
Express

8712 9764 8368

1 From
 Date 1/21/10 Sender's FedEx Account Number 113769807
 Sender's Name L. Shannon Phone 805 964-6010
 Company URS Corp.
 Address 130 Robin Hill Rd.
 City Santa Barbara State CA ZIP 93110

2 Your Internal Billing Reference

3 To
 Recipient's Name Sample Receiving Phone 714 895-5494
 Company Cal Science Env. Labs **HOLD Weekday**
 Address 7440 Lincoln Way **HOLD Saturday**
 We cannot deliver to P.O. boxes or P.O. ZIP codes.

Address Garden Grove State CA ZIP 92841
 City Garden Grove State CA ZIP 92841



8712 9764 8368

23.16.16

 0200 Form ID No. **FedEx Retrieval Copy**
4a Express Package Service *To most locations.

1 ☐ FedEx Priority Overnight ☒ FedEx Standard Overnight ☐ FedEx First Overnight
 Next business morning • Friday Next business afternoon Saturday Delivery NOT available.

3 ☐ FedEx 2Day ☐ FedEx Express Saver
 Second business day • Thursday Third business day • Saturday Delivery NOT available.

4b Express Freight Service **To most locations.

7 ☐ FedEx 1Day Freight
 Next business day • Monday through Thursday Delivery NOT available.

8 ☐ FedEx 2Day Freight
 Second business day • Monday through Thursday Delivery NOT available.

5 Packaging *Declared value limit \$500
 2 ☐ FedEx Pak* 3 ☐ FedEx Box 4 ☐ FedEx Tube 5 ☒ Other

6 Special Handling and Delivery Signature Options

3 ☐ SATURDAY DELIVERY

10 ☐ No Signature Required 10 ☐ Direct Signature 34 ☐ Indirect Signature
 No signature required for delivery. Signature required for delivery. Signature required for delivery.

Does this shipment contain dangerous goods?
 One box must be checked.

4 ☐ No 4 ☐ Yes
 Shipper's Declaration Shipper's Declaration Shipper's Declaration

6 ☐ Dry Ice 6 ☐ Dry Ice
 Dry Ice, 3 UN 1845 Dry Ice, 3 UN 1845

7 Payment Bill to:

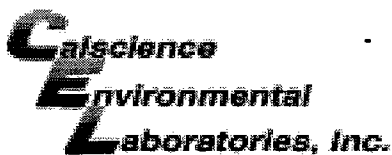
Sender's Account No. or Credit Card No. below. Obtain Recip. Acct. No.

2 ☐ Recipient 3 ☐ Third Party 4 ☐ Credit Card 5 ☐ Cash/Check

Total Packages 1 Total Weight 30 lbs. Credit Card Auth.

554

Rev. Date 2/08/07 FedEx® © 1994-2008 FedEx® PRINTED IN U.S.A. SRY



WORK ORDER #: 10-01-1634

SAMPLE RECEIPT FORMCooler 1 of 1CLIENT: CRADATE: 01/22/10**TEMPERATURE:** Thermometer ID: SC1 (Criteria: 0.0°C – 6.0°C, not frozen)Temperature 2.1 °C + 0.5°C (CF) = 2.6 °C ☒ Blank ☐ Sample☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____).☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.☐ Received at ambient temperature, placed on ice for transport by Courier.Ambient Temperature: ☐ Air ☐ Filter ☐ Metals Only ☐ PCBs OnlyInitial: JP**CUSTODY SEALS INTACT:**☒ Cooler ☐ _____ ☐ No (Not Intact) ☐ Not Present ☐ N/AInitial: JP☐ Sample ☐ _____ ☐ No (Not Intact) ☒ Not PresentInitial: JP**SAMPLE CONDITION:**

Yes

No

N/A

Chain-Of-Custody (COC) document(s) received with samples..... ☒☐☐COC document(s) received complete..... ☒☐☐☐ Collection date/time, matrix, and/or # of containers logged in based on sample labels.☐ No analysis requested. ☐ Not relinquished. ☐ No date/time relinquished.Sampler's name indicated on COC..... ☒☐☐Sample container label(s) consistent with COC..... ☒☐☐Sample container(s) intact and good condition..... ☒☐☐Correct containers and volume for analyses requested..... ☒☐☐Analyses received within holding time..... ☒☐☐Proper preservation noted on COC or sample container..... ☒☐☐☐ Unpreserved vials received for Volatiles analysisVolatile analysis container(s) free of headspace..... ☐☐☒Tedlar bag(s) free of condensation..... ☐☐☒**CONTAINER TYPE:**Solid: ☐ 4ozCGJ ☒ 8ozCGJ ☐ 16ozCGJ ☐ Sleeve ☐ EnCores® ☒ TerraCores® ☒ 60mL PJWater: ☐ VOA ☐ VOA_h ☐ VOA_{na2} ☐ 125AGB ☐ 125AGB_h ☐ 125AGB_p ☐ 1AGB ☐ 1AGB_{na2} ☐ 1AGB_s☐ 500AGB ☐ 500AGJ ☐ 500AGJ_s ☐ 250AGB ☐ 250CGB ☐ 250CGB_s ☐ 1PB ☐ 500PB ☐ 500PB_{na}☐ 250PB ☐ 250PB_n ☐ 125PB ☐ 125PB_{znna} ☐ 100PJ ☐ 100PJ_{na2} ☐ _____ ☐ _____ ☐ _____Air: ☐ Tedlar® ☐ Summa® Other: ☐ _____ Trip Blank Lot#: _____ Checked by: JP

Container: C: Clear A: Amber P: Plastic G: Glass J: Jar B: Bottle Z: Ziploc/Resealable Bag E: Envelope

Reviewed by: _____

Preservative: h: HCL n: HNO₃ na₂: Na₂S₂O₃ Na: NaOH p: H₃PO₄ s: H₂SO₄ znna: ZnAc₂+NaOH f: Field-filteredScanned by: JP



ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

CLIENT: Calscience Environmental Laboratories, Inc.
7440 Lincoln Way
Garden Grove, CA 92841-1427

DATE: 2/1/2010
ALS JOB#: 1001087
DATE RECEIVED: 1/20/2010
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Xuan Dang
CLIENT PROJECT ID: 11700 NE 160th St., Bothell, WA
CLIENT SAMPLE ID: 1/20/2010 SO-241809-012010-TM-SB-8-6
ALS SAMPLE #: -01

DATA RESULTS

ANALYTE	METHOD	RESULTS*	REPORTING LIMITS	DILUTION FACTOR	UNITS**	ANALYSIS DATE	ANALYSIS BY
C5-C6 Aliphatics	NWVPH	620	120	25	MG/KG	1/28/2010	DLC
>C6-C8 Aliphatics	NWVPH	5,100	120	25	MG/KG	1/28/2010	DLC
>C8-C10 Aliphatics	NWVPH	ND	120	25	MG/KG	1/28/2010	DLC
>C8-C10 Aromatics	NWVPH	5,400	120	25	MG/KG	1/28/2010	DLC
Total Aliphatics	NWVPH	5,800	120	25	MG/KG	1/28/2010	DLC
Total Aromatics	NWVPH	5,400	120	25	MG/KG	1/28/2010	DLC
Hexane	NWVPH	110	5.1	25	MG/KG	1/28/2010	DLC
>C10-C12 Aliphatics	NWEPH	1,100	5.0	1	MG/KG	1/25/2010	EBS
>C12-C16 Aliphatics	NWEPH	240	5.0	1	MG/KG	1/25/2010	EBS
>C16-C21 Aliphatics	NWEPH	78	5.0	1	MG/KG	1/25/2010	EBS
>C21-C34 Aliphatics	NWEPH	25	5.0	1	MG/KG	1/25/2010	EBS
>C10-C12 Aromatics	NWEPH	1,800	5.0	1	MG/KG	1/22/2010	EBS
>C12-C16 Aromatics	NWEPH	200	5.0	1	MG/KG	1/22/2010	EBS
>C16-C21 Aromatics	NWEPH	590	5.0	1	MG/KG	1/22/2010	EBS
>C21-C34 Aromatics	NWEPH	26	5.0	1	MG/KG	1/22/2010	EBS
Total Aliphatics	NWEPH	1,400	10	1	MG/KG	1/25/2010	EBS
Total Aromatics	NWEPH	2,600	10	1	MG/KG	1/22/2010	EBS
Naphthalene	EPA-8260	65,000	17,000	100	UG/KG	1/25/2010	CCN

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT.

** UNITS FOR ALL NON-LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS.

APPROVED BY:



ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

CLIENT: Calscience Environmental Laboratories, Inc.
7440 Lincoln Way
Garden Grove, CA 92841-1427

DATE: 2/1/2010
ALS JOB#: 1001087
DATE RECEIVED: 1/20/2010
WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Xuan Dang
CLIENT PROJECT ID: 11700 NE 160th St., Bothell, WA

QUALITY CONTROL RESULTS

SURROGATE RECOVERY

ALS SAMPLE ID	METHOD	SUR ID	% RECV
1001087-01 25X Dilution	NWVPH	TFT - Aliphatic	S2
1001087-01 25X Dilution	NWVPH	TFT - Aromatic	S2
1001087-01 25X Dilution	NWVPH	TFT - Hexane	S2
1001087-01	NWEPH	C25	63%
1001087-01	NWEPH	p-Terphenyl	99%

S2- Surrogate outside of control limits due to dilution.

APPROVED BY:


CERTIFICATE OF ANALYSIS

CLIENT: Calscience Environmental Laboratories, Inc.
 7440 Lincoln Way
 Garden Grove, CA 92841-1427

DATE: 2/1/2010
 ALS JOB#: 1001087
 DATE RECEIVED: 1/20/2010
 WDOE ACCREDITATION #: C1336

CLIENT CONTACT: Xuan Dang
 CLIENT PROJECT ID: 11700 NE 160th St., Bothell, WA

QUALITY CONTROL RESULTS
BLANK RESULTS

QC SAMPLE ID	MATRIX	METHOD	ANALYTE	RESULT	UNITS
MBLK-1282010	Soil	NWVPH	C5-C6 Aliphatics	ND(<5.0)	MG/KG
MBLK-1282010	Soil	NWVPH	>C6-C8 Aliphatics	ND(<5.0)	MG/KG
MBLK-1282010	Soil	NWVPH	>C8-C10 Aliphatics	ND(<5.0)	MG/KG
MBLK-1282010	Soil	NWVPH	>C8-C10 Aromatics	ND(<5.0)	MG/KG
MBLK-1282010	Soil	NWVPH	Total Aliphatics	ND(<5.0)	MG/KG
MBLK-1282010	Soil	NWVPH	Total Aromatics	ND(<5.0)	MG/KG
MBLK-1282010	Soil	NWVPH	Hexane	ND(<0.20)	MG/KG
MBLK-1222010	Soil	NWEPH	>C10-C12 Aromatics	ND(<5.0)	MG/KG
MBLK-1222010	Soil	NWEPH	>C12-C16 Aromatics	ND(<5.0)	MG/KG
MBLK-1222010	Soil	NWEPH	>C16-C21 Aromatics	ND(<5.0)	MG/KG
MBLK-1222010	Soil	NWEPH	>C21-C34 Aromatics	ND(<5.0)	MG/KG
MBLK-1222010	Soil	NWEPH	Total Aromatics	ND(<10)	MG/KG
MBLK-1252010	Soil	NWEPH	>C10-C12 Aliphatics	ND(<5.0)	MG/KG
MBLK-1252010	Soil	NWEPH	>C12-C16 Aliphatics	ND(<5.0)	MG/KG
MBLK-1252010	Soil	NWEPH	>C16-C21 Aliphatics	ND(<5.0)	MG/KG
MBLK-1252010	Soil	NWEPH	>C21-C34 Aliphatics	ND(<5.0)	MG/KG
MBLK-1252010	Soil	NWEPH	Total Aliphatics	ND(<10)	MG/KG
MB-012510S	Soil	EPA-8260	1,1-Dichloroethene	ND(<10)	UG/KG
MB-012510S	Soil	EPA-8260	Toluene	ND(<10)	UG/KG
MB-012510S	Soil	EPA-8260	Naphthalene	ND(<10)	UG/KG

APPROVED BY:



ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

CLIENT: Calscience Environmental Laboratories, Inc.
7440 Lincoln Way
Garden Grove, CA 92841-1427

DATE: 2/1/2010
ALS JOB#: 1001087
DATE RECEIVED: 1/20/2010
WDOE ACCREDITATION #: C1336

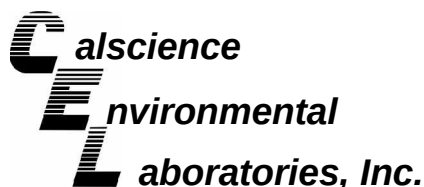
CLIENT CONTACT: Xuan Dang
CLIENT PROJECT ID: 11700 NE 160th St., Bothell, WA

QUALITY CONTROL RESULTS

BLANK SPIKE/BLANK SPIKE DUPLICATE RESULTS

QC BATCH ID	MATRIX	METHOD	ANALYTE	SPIKE AMOUNT	BLANK SPIKE RECOVERY	BLANK SPIKE DUPLICATE RECOVERY	RPD
R67647	Soil	NWVPH	C5-C6 Aliphatics	100	91%	92%	1
R67647	Soil	NWVPH	>C6-C8 Aliphatics	100	100%	102%	2
R67647	Soil	NWVPH	>C8-C10 Aliphatics	100	101%	103%	2
R67647	Soil	NWVPH	>C8-C10 Aromatics	100	97%	97%	0
R67647	Soil	NWVPH	Hexane	100	94%	94%	0
R67598	Soil	NWEPH	>C10-C12 Aliphatics	100	89%	81%	9
R67598	Soil	NWEPH	>C12-C16 Aliphatics	100	89%	81%	9
R67598	Soil	NWEPH	>C16-C21 Aliphatics	100	89%	82%	8
R67598	Soil	NWEPH	>C21-C34 Aliphatics	100	85%	79%	7
R67600	Soil	NWEPH	>C10-C12 Aromatics	100	99%	101%	2
R67600	Soil	NWEPH	>C12-C16 Aromatics	100	99%	102%	3
R67600	Soil	NWEPH	>C16-C21 Aromatics	100	103%	106%	3
R67600	Soil	NWEPH	>C21-C34 Aromatics	100	93%	95%	2
498	Soil	EPA-8260	1,1-Dichloroethene	2.5	95%	94%	1
498	Soil	EPA-8260	Toluene	2.5	90%	92%	1

APPROVED BY:



February 03, 2010

Justin Foslien
Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

Subject: **CalScience Work Order No.: 10-01-1716**
Client Reference: 11700 NE 160th St., Bothell, WA

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 1/23/2010 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Systems Manual, applicable standard operating procedures, and other related documentation. The original report of subcontracted analysis, if any, is provided herein, and follows the standard CalScience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

A handwritten signature in cursive script that reads 'Philip Samelle for'.

CalScience Environmental
Laboratories, Inc.
Xuan H. Dang
Project Manager

Analytical Report



Conestoga-Rovers & Associates
 1420 80th St. SW, Suite A
 Everett, WA 98203-6248

Date Received: 01/23/10
 Work Order No: 10-01-1716
 Preparation: EPA 3550B
 Method: NWTPH-Dx
 Units: mg/kg

Project: 11700 NE 160th St., Bothell, WA

Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-012110-TM-SB-9-8	10-01-1716-1-A	01/21/10 10:30	Solid	GC 46	01/26/10	01/27/10 04:10	100126B03S

Comment(s): -The sample extract was subjected to Silica Gel treatment prior to analysis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
TPH as Diesel Range	32	5.0	1		TPH as Motor Oil Range	93	5.0	1	
Surrogates:	REC (%)	Control Limits	Qual						
Decachlorobiphenyl	129	61-145							

SO-241809-012110-TM-MW-11-4	10-01-1716-2-A	01/21/10 13:00	Solid	GC 46	01/26/10	01/27/10 04:26	100126B03S
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Comment(s): -The sample extract was subjected to Silica Gel treatment prior to analysis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
TPH as Diesel Range	ND	5.0	1		TPH as Motor Oil Range	ND	5.0	1	
Surrogates:	REC (%)	Control Limits	Qual						
Decachlorobiphenyl	129	61-145							

SO-241809-012210-TM-SB-9-20	10-01-1716-3-A	01/22/10 09:30	Solid	GC 46	01/26/10	01/27/10 04:42	100126B03S
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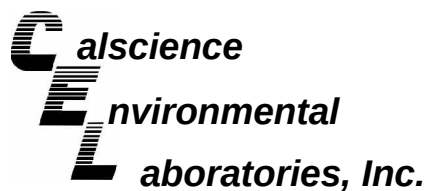
Comment(s): -The sample extract was subjected to Silica Gel treatment prior to analysis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
TPH as Diesel Range	ND	5.0	1		TPH as Motor Oil Range	ND	5.0	1	
Surrogates:	REC (%)	Control Limits	Qual						
Decachlorobiphenyl	126	61-145							

Method Blank	099-12-838-59	N/A	Solid	GC 46	01/26/10	01/26/10 22:06	100126B03S
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Parameter	Result	RL	DF	Qual
TPH as Diesel Range	ND	5.0	1	
Surrogates:	REC (%)	Control Limits	Qual	
Decachlorobiphenyl	109	61-145		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

Date Received: 01/23/10
Work Order No: 10-01-1716
Preparation: EPA 5035
Method: NWTPH-Gx

Project: 11700 NE 160th St., Bothell, WA

Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-012110-TM-SB-9-8	10-01-1716-1-I	01/21/10 10:30	Solid	GC 1	01/21/10	01/25/10 19:15	100125B01

Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.21	0.828		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	83	60-126	

SO-241809-012110-TM-MW-11-4	10-01-1716-2-I	01/21/10 13:00	Solid	GC 1	01/21/10	01/25/10 19:47	100125B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.17	0.677		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	83	60-126	

SO-241809-012210-TM-SB-9-20	10-01-1716-3-I	01/22/10 09:30	Solid	GC 1	01/22/10	01/25/10 20:19	100125B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.14	0.559		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	82	60-126	

Method Blank	099-12-848-79	N/A	Solid	GC 1	01/25/10	01/25/10 13:22	100125B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.25	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	81	60-126	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Conestoga-Rovers & Associates
 1420 80th St. SW, Suite A
 Everett, WA 98203-6248

Date Received: 01/23/10
 Work Order No: 10-01-1716
 Preparation: EPA 5035
 Method: EPA 8260B
 Units: mg/kg

Project: 11700 NE 160th St., Bothell, WA

Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-012110-TM-SB-9-8	10-01-1716-1-F	01/21/10 10:30	Solid	GC/MS Z	01/21/10	01/25/10 21:06	100125L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.00071	0.711		Toluene	ND	0.00071	0.711	
Ethylbenzene	ND	0.00071	0.711		Xylenes (total)	ND	0.0014	0.711	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
Dibromofluoromethane	101	71-137			1,2-Dichloroethane-d4	108	58-160		
1,4-Bromofluorobenzene	103	66-126			Toluene-d8	101	87-111		

SO-241809-012110-TM-MW-11-4	10-01-1716-2-F	01/21/10 13:00	Solid	GC/MS Z	01/21/10	01/25/10 21:35	100125L01
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.00076	0.758		Toluene	ND	0.00076	0.758	
Ethylbenzene	ND	0.00076	0.758		Xylenes (total)	ND	0.0015	0.758	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
Dibromofluoromethane	101	71-137			1,2-Dichloroethane-d4	107	58-160		
1,4-Bromofluorobenzene	102	66-126			Toluene-d8	99	87-111		

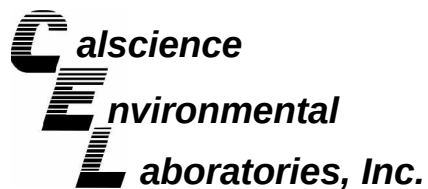
SO-241809-012210-TM-SB-9-20	10-01-1716-3-F	01/22/10 09:30	Solid	GC/MS Z	01/22/10	01/25/10 22:04	100125L01
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.00065	0.647		Toluene	ND	0.00065	0.647	
Ethylbenzene	ND	0.00065	0.647		Xylenes (total)	ND	0.0013	0.647	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
Dibromofluoromethane	100	71-137			1,2-Dichloroethane-d4	107	58-160		
1,4-Bromofluorobenzene	104	66-126			Toluene-d8	100	87-111		

Method Blank	095-01-025-18,831	N/A	Solid	GC/MS Z	01/25/10	01/25/10 15:49	100125L01
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.0010	1		Toluene	ND	0.0010	1	
Ethylbenzene	ND	0.0010	1		Xylenes (total)	ND	0.0020	1	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
Dibromofluoromethane	102	71-137			1,2-Dichloroethane-d4	97	58-160		
1,4-Bromofluorobenzene	102	66-126			Toluene-d8	101	87-111		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Quality Control - Spike/Spike Duplicate



Conestoga-Rovers & Associates
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Everett, WA 98203-6248

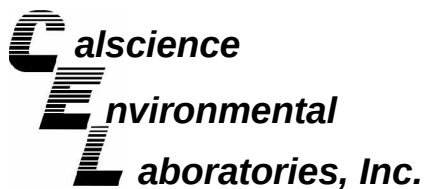
Date Received: 01/23/10
Work Order No: 10-01-1716
Preparation: EPA 3550B
Method: EPA 8015B (M)

Project 11700 NE 160th St., Bothell, WA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
10-01-1708-1	Solid	GC 46	01/26/10	01/26/10	100126S03

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TPH as Diesel	102	86	64-130	17	0-15	4

RPD - Relative Percent Difference , CL - Control Limit



Quality Control - LCS/LCS Duplicate



Conestoga-Rovers & Associates
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Everett, WA 98203-6248

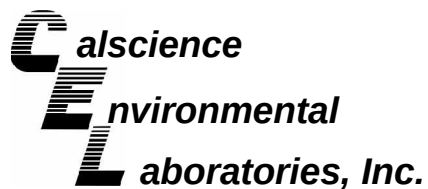
Date Received: N/A
Work Order No: 10-01-1716
Preparation: EPA 3550B
Method: NWTPH-Dx

Project: 11700 NE 160th St., Bothell, WA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-838-59	Solid	GC 46	01/26/10	01/26/10	100126B03S

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TPH as Diesel Range	98	96	75-123	2	0-12	

RPD - Relative Percent Difference , CL - Control Limit



Quality Control - LCS/LCS Duplicate



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

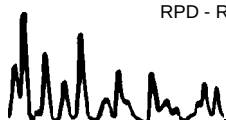
Date Received: N/A
Work Order No: 10-01-1716
Preparation: EPA 5035
Method: NWTTPH-Gx

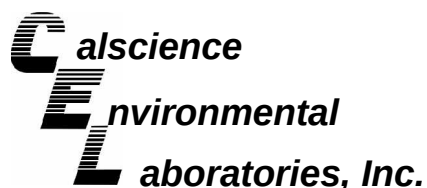
Project: 11700 NE 160th St., Bothell, WA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-848-79	Solid	GC 1	01/25/10	01/25/10	100125B01

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TPH as Gasoline	98	100	55-139	2	0-18	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

Date Received: N/A
Work Order No: 10-01-1716
Preparation: EPA 5035
Method: EPA 8260B

Project: 11700 NE 160th St., Bothell, WA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number		
095-01-025-18,831	Solid	GC/MS Z	01/25/10	01/25/10	100125L01		
Parameter	LCS %REC	LCSD %REC	%REC CL	ME CL	RPD	RPD CL	Qualifiers
Benzene	88	83	85-115	80-120	5	0-11	ME
Carbon Tetrachloride	106	100	68-134	57-145	5	0-14	
Chlorobenzene	87	83	83-119	77-125	4	0-9	
1,2-Dibromoethane	95	92	80-120	73-127	3	0-20	
1,2-Dichlorobenzene	87	83	57-135	44-148	6	0-10	
1,1-Dichloroethene	86	82	72-120	64-128	5	0-10	
Ethylbenzene	86	83	80-120	73-127	3	0-20	
Toluene	88	83	67-127	57-137	5	0-10	
Trichloroethene	95	90	88-112	84-116	6	0-9	
Vinyl Chloride	94	90	57-129	45-141	4	0-16	
Methyl-t-Butyl Ether (MTBE)	98	93	76-124	68-132	6	0-12	
Tert-Butyl Alcohol (TBA)	92	98	31-145	12-164	6	0-23	
Diisopropyl Ether (DIPE)	89	83	74-128	65-137	7	0-10	
Ethyl-t-Butyl Ether (ETBE)	96	91	77-125	69-133	5	0-9	
Tert-Amyl-Methyl Ether (TAME)	98	93	81-123	74-130	5	0-10	
Ethanol	58	68	44-152	26-170	14	0-24	

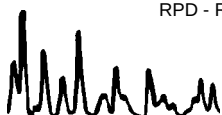
Total number of LCS compounds : 16

Total number of ME compounds : 1

Total number of ME compounds allowed : 1

LCS ME CL validation result : Pass

RPD - Relative Percent Difference , CL - Control Limit

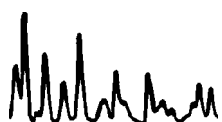


Glossary of Terms and Qualifiers



Work Order Number: 10-01-1716

<u>Qualifier</u>	<u>Definition</u>
*	See applicable analysis comment.
1	Surrogate compound recovery was out of control due to a required sample dilution, therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported with no further corrective action required.
A	Result is the average of all dilutions, as defined by the method.
B	Analyte was present in the associated method blank.
C	Analyte presence was not confirmed on primary column.
E	Concentration exceeds the calibration range.
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
ME	LCS Recovery Percentage is within LCS ME Control Limit range.
N	Nontarget Analyte.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
U	Undetected at the laboratory method detection limit.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis. Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture.





Shell Oil Products Chain Of Custody Record

[illegible]

1716

RECIPIENT: PEEL HERE

1 From This portion can be removed for Recipient's records.

Date 1/27/10 FedEx Tracking Number 869701551016

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2 Your Internal Billing Reference

3 To

Recipient's Name 4/1 Xuan Deng Phone 206 212-2109

Company EXPERIENCE ENVIRONMENTAL LAB

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Address GARDEN GROVE State CA ZIP 92611-4127

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4a Express Package Service

☒ FedEx Priority Overnight
Next business morning* Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

☐ FedEx 2Day
Second business day* Tuesday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

☐ FedEx 1Day Freight*
Next business day** Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

☐ FedEx 2Day Freight*
Second business day shipments will be delivered on Monday unless SATURDAY Delivery is selected.

☐ FedEx 3Day Freight*
Third business day** Saturday Delivery NOT available.

☐ FedEx First Overnight
Earliest next business morning delivery to select locations.* Saturday Delivery NOT available.

☐ FedEx Sirmight
Next business, Saturday Deliverable.

☐ FedEx Eyer
Third business, Saturday Deliverable.

* To most locations

4b Express Freight Service

☐ FedEx 1Day Freight*
Next business day** Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

☐ FedEx 2Day Freight*
Second business day shipments will be delivered on Monday unless SATURDAY Delivery is selected.

☐ FedEx 3Day Freight*
Third business day** Saturday Delivery NOT available.

* Call for Confirmation.

** To most locations

5 Packaging

☐ FedEx Envelope*
☐ FedEx Pak*
☐ FedEx Tube

Includes FedEx Small Pak, FedEx Large Pak, and FedEx Sturdy Pak.

☒ Other
Declared value limit \$500.

6 Special Handling

☒ SATURDAY Delivery
Not available for FedEx Standard Overnight, FedEx First Overnight, FedEx Express Saver, or FedEx 3Day Freight.

☐ HOLD Weekday at FedEx Location
Not available for FedEx First Overnight.

☐ HOLD Saturday at FedEx Location
Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.

Does this shipment contain dangerous goods?
One box must be checked.

☒ No
☐ Yes
As per attached Shipper's Declaration.

☐ Yes
Shipper's Declaration not required.

☐ Ice
See 9, UN 1845

☐ Cargo Aircraft Only

Dangerous goods (including dry ice) cannot be shipped in FedEx packaging.

7 Payment Bill to:

☐ Sender
Acct. No. in Section 1 will be billed.

☒ Recipient
Enter FedEx Acct. No. or Credit Card No. below.

☐ Third Party
Credit Card

☐ Cash/Check

Obtain Recip. Acct. No.

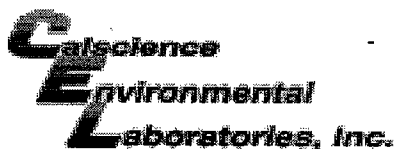
Total Packages 1065 Total Weight 1065

8 Residential

☐ No Signature Required
Package may be without obtaining signature for delivery.

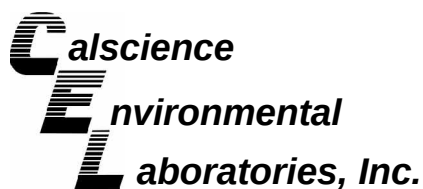
Rev. Date 10/08-Print #12

fedex.com 1.800.GoFedEx 1.800.453.3339

WORK ORDER #: 10-01-☒ ☒ ☒ ☒**SAMPLE RECEIPT FORM**Cooler 1 of 1CLIENT: CRADATE: 01/23/10**TEMPERATURE:** Thermometer ID: SC1 (Criteria: 0.0 °C – 6.0 °C, not frozen)Temperature 1.8 °C + 0.5 °C (CF) = 2.3 °C ☒ Blank ☐ Sample☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____).☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.☐ Received at ambient temperature, placed on ice for transport by Courier.Ambient Temperature: ☐ Air ☐ Filter ☐ Metals Only ☐ PCBs OnlyInitial: YL**CUSTODY SEALS INTACT:**☐ Cooler ☐ _____ ☐ No (Not Intact) ☒ Not Present ☐ N/AInitial: YL☐ Sample ☐ _____ ☐ No (Not Intact) ☒ Not PresentInitial: YL**SAMPLE CONDITION:**

Yes No N/A

Chain-Of-Custody (COC) document(s) received with samples..... ☒ ☐ ☐COC document(s) received complete..... ☒ ☐ ☐☐ Collection date/time, matrix, and/or # of containers logged in based on sample labels.☐ No analysis requested. ☐ Not relinquished. ☐ No date/time relinquished.Sampler's name indicated on COC..... ☒ ☐ ☐Sample container label(s) consistent with COC..... ☒ ☐ ☐Sample container(s) intact and good condition..... ☒ ☐ ☐Correct containers and volume for analyses requested..... ☒ ☐ ☐Analyses received within holding time..... ☒ ☐ ☐Proper preservation noted on COC or sample container..... ☒ ☐ ☐☐ Unpreserved vials received for Volatiles analysisVolatile analysis container(s) free of headspace..... ☐ ☐ ☒Tedlar bag(s) free of condensation..... ☐ ☐ ☒**CONTAINER TYPE:**Solid: ☐ 4ozCGJ ☒ 8ozCGJ ☐ 16ozCGJ ☐ Sleeve ☐ EnCores® ☒ TerraCores® ☒ 60ml PJWater: ☐ VOA ☐ VOA_h ☐ VOA_{na2} ☐ 125AGB ☐ 125AGB_h ☐ 125AGB_p ☐ 1AGB ☐ 1AGB_{na2} ☐ 1AGB_s☐ 500AGB ☐ 500AGJ ☐ 500AGJ_s ☐ 250AGB ☐ 250CGB ☐ 250CGB_s ☐ 1PB ☐ 500PB ☐ 500PB_{na}☐ 250PB ☐ 250PB_n ☐ 125PB ☐ 125PB_{znna} ☐ 100PJ ☐ 100PJ_{na2} ☐ _____ ☐ _____ ☐ _____Air: ☐ Tedlar® ☐ Summa® Other: ☐ _____ Trip Blank Lot#: _____ Checked by: YLContainer: C: Clear A: Amber P: Plastic G: Glass J: Jar B: Bottle Z: Ziploc/Resealable Bag E: Envelope Reviewed by: YLPreservative: h: HCL n: HNO₃ na₂: Na₂S₂O₃ Na: NaOH p: H₃PO₄ s: H₂SO₄ znna: ZnAc₂+NaOH f: Field-filtered Scanned by: YL



October 14, 2010

Christina McClelland
Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

Subject: **CalScience Work Order No.: 10-10-0130**
Client Reference: **11700 NE 160th St., Bothell, WA**

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 10/2/2010 and analyzed in accordance with the attached chain-of-custody.

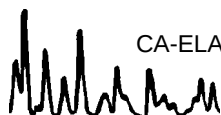
CalScience Environmental Laboratories certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analysis, if any, is provided herein, and follows the standard CalScience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

A handwritten signature in black ink, appearing to read 'Xuan H. Dang'.

CalScience Environmental
Laboratories, Inc.
Xuan H. Dang
Project Manager



Analytical Report



Conestoga-Rovers & Associates
 1420 80th St. SW, Suite A
 Everett, WA 98203-6248

Date Received: 10/02/10
 Work Order No: 10-10-0130
 Preparation: EPA 3550B
 Method: NWTPH-Dx
 Units: mg/kg

Project: 11700 NE 160th St., Bothell, WA

Page 1 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-100110-SR-SB-10-6	10-10-0130-1-A	10/01/10 10:30	Solid	GC 27	10/07/10	10/11/10 04:05	101007B06

Comment(s): -The sample extract was subjected to Silica Gel treatment prior to analysis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
TPH as Diesel Range	ND	5.0	1		TPH as Motor Oil Range	ND	5.0	1	
Surrogates:	REC (%)	Control Limits	Qual						
Decachlorobiphenyl	92	61-145							

SO-241809-100110-SR-SB-10-10	10-10-0130-2-A	10/01/10 10:40	Solid	GC 27	10/07/10	10/11/10 04:22	101007B06
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Comment(s): -The sample extract was subjected to Silica Gel treatment prior to analysis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
TPH as Diesel Range	ND	5.0	1		TPH as Motor Oil Range	ND	5.0	1	
Surrogates:	REC (%)	Control Limits	Qual						
Decachlorobiphenyl	92	61-145							

SO-241809-100110-SR-SB-10-15	10-10-0130-3-A	10/01/10 10:45	Solid	GC 27	10/07/10	10/11/10 04:41	101007B06
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Comment(s): -The sample extract was subjected to Silica Gel treatment prior to analysis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
TPH as Diesel Range	ND	5.0	1		TPH as Motor Oil Range	ND	5.0	1	
Surrogates:	REC (%)	Control Limits	Qual						
Decachlorobiphenyl	89	61-145							

SO-241809-100110-SR-SB-10-25	10-10-0130-4-A	10/01/10 11:00	Solid	GC 27	10/07/10	10/11/10 04:58	101007B06
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Comment(s): -The sample chromatographic pattern for TPH does not match the chromatographic pattern of the specified standard.
 Quantitation of the unknown hydrocarbon(s) in the sample was based upon the specified standard.

-The sample extract was subjected to Silica Gel treatment prior to analysis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
TPH as Diesel Range	12	5.0	1		TPH as Motor Oil Range	ND	5.0	1	
Surrogates:	REC (%)	Control Limits	Qual						
Decachlorobiphenyl	91	61-145							

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Conestoga-Rovers & Associates
 1420 80th St. SW, Suite A
 Everett, WA 98203-6248

Date Received: 10/02/10
 Work Order No: 10-10-0130
 Preparation: EPA 3550B
 Method: NWTPH-Dx
 Units: mg/kg

Project: 11700 NE 160th St., Bothell, WA

Page 2 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-100110-SR-SB-10-35	10-10-0130-5-A	10/01/10 11:32	Solid	GC 27	10/07/10	10/11/10 05:16	101007B06

Comment(s): -The sample extract was subjected to Silica Gel treatment prior to analysis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
TPH as Diesel Range	ND	5.0	1		TPH as Motor Oil Range	ND	5.0	1	
Surrogates:	REC (%)	Control Limits	Qual						
Decachlorobiphenyl	100	61-145							

SO-241809-100110-SR-SB-10-45	10-10-0130-6-A	10/01/10 13:05	Solid	GC 27	10/07/10	10/11/10 05:34	101007B06
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Comment(s): -The sample extract was subjected to Silica Gel treatment prior to analysis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
TPH as Diesel Range	ND	5.0	1		TPH as Motor Oil Range	ND	5.0	1	
Surrogates:	REC (%)	Control Limits	Qual						
Decachlorobiphenyl	97	61-145							

SO-241809-100110-SR-SB-10-50	10-10-0130-7-A	10/01/10 13:25	Solid	GC 27	10/07/10	10/11/10 05:52	101007B06
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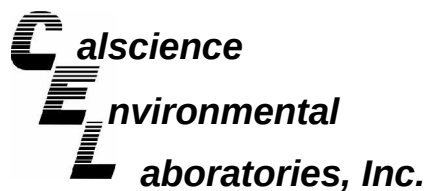
Comment(s): -The sample extract was subjected to Silica Gel treatment prior to analysis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
TPH as Diesel Range	ND	5.0	1		TPH as Motor Oil Range	ND	5.0	1	
Surrogates:	REC (%)	Control Limits	Qual						
Decachlorobiphenyl	99	61-145							

Method Blank	099-12-838-104	N/A	Solid	GC 27	10/07/10	10/10/10 22:26	101007B06
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Parameter	Result	RL	DF	Qual
TPH as Diesel Range	ND	5.0	1	
Surrogates:	REC (%)	Control Limits	Qual	
Decachlorobiphenyl	92	61-145		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

Date Received: 10/02/10
Work Order No: 10-10-0130
Preparation: EPA 5035
Method: NWTPH-Gx

Project: 11700 NE 160th St., Bothell, WA

Page 1 of 3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-100110-SR-SB-10-6	10-10-0130-1-I	10/01/10 10:30	Solid	GC 18	10/01/10	10/07/10 03:10	101006B01

Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	2.5	0.24	0.965		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	126	60-126	

SO-241809-100110-SR-SB-10-10	10-10-0130-2-I	10/01/10 10:40	Solid	GC 18	10/01/10	10/07/10 03:47	101006B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	2.8	0.20	0.817		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	119	60-126	

SO-241809-100110-SR-SB-10-15	10-10-0130-3-I	10/01/10 10:45	Solid	GC 18	10/01/10	10/07/10 04:25	101006B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	1.0	0.20	0.818		mg/kg

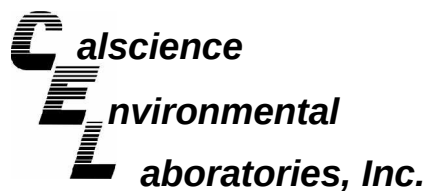
Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	99	60-126	

SO-241809-100110-SR-SB-10-25	10-10-0130-4-J	10/01/10 11:00	Solid	GC 29	10/01/10	10/06/10 00:42	101005B02
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	150	20	79		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	88	60-126	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

Date Received: 10/02/10
Work Order No: 10-10-0130
Preparation: EPA 5035
Method: NWTPH-Gx

Project: 11700 NE 160th St., Bothell, WA

Page 2 of 3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-100110-SR-SB-10-35	10-10-0130-5-J	10/01/10 11:32	Solid	GC 18	10/01/10	10/08/10 16:22	101007B01

Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	9.2	3.8	15		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	99	60-126	

SO-241809-100110-SR-SB-10-45	10-10-0130-6-I	10/01/10 13:05	Solid	GC 18	10/01/10	10/07/10 05:02	101006B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.25	0.99		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	93	60-126	

SO-241809-100110-SR-SB-10-50	10-10-0130-7-G	10/01/10 13:25	Solid	GC 18	10/01/10	10/07/10 05:39	101006B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.25	0.996		mg/kg

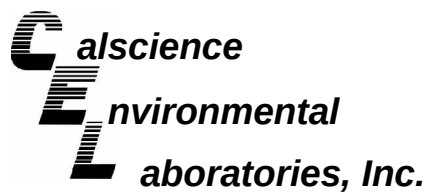
Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	93	60-126	

Method Blank	099-12-848-159	N/A	Solid	GC 18	10/06/10	10/06/10 19:04	101006B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.25	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	91	60-126	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

Date Received: 10/02/10
Work Order No: 10-10-0130
Preparation: EPA 5035
Method: NWTPH-Gx

Project: 11700 NE 160th St., Bothell, WA

Page 3 of 3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-12-848-160	N/A	Solid	GC 29	10/05/10	10/05/10 12:28	101005B02

Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	10	40		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	78	60-126	

Method Blank	099-12-848-161	N/A	Solid	GC 18	10/07/10	10/08/10 06:03	101007B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	10	40		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	91	60-126	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Conestoga-Rovers & Associates
 1420 80th St. SW, Suite A
 Everett, WA 98203-6248

Date Received: 10/02/10
 Work Order No: 10-10-0130
 Preparation: EPA 5035
 Method: EPA 8260B
 Units: mg/kg

Project: 11700 NE 160th St., Bothell, WA

Page 1 of 3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-100110-SR-SB-10-6	10-10-0130-1-G	10/01/10 10:30	Solid	GC/MS Q	10/01/10	10/04/10 21:12	101004L02

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.046	46.2		Toluene	ND	0.046	46.2	
Ethylbenzene	0.098	0.046	46.2		Xylenes (total)	0.25	0.092	46.2	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
Dibromofluoromethane	111	79-133			1,2-Dichloroethane-d4	107	71-155		
1,4-Bromofluorobenzene	93	80-120			Toluene-d8	104	80-120		

SO-241809-100110-SR-SB-10-10	10-10-0130-2-E	10/01/10 10:40	Solid	GC/MS Q	10/01/10	10/05/10 15:12	101005L01
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	0.0011	0.00091	0.914		Toluene	0.0022	0.00091	0.914	
Ethylbenzene	0.010	0.00091	0.914		Xylenes (total)	0.038	0.0018	0.914	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
Dibromofluoromethane	112	79-133			1,2-Dichloroethane-d4	117	71-155		
1,4-Bromofluorobenzene	99	80-120			Toluene-d8	105	80-120		

SO-241809-100110-SR-SB-10-15	10-10-0130-3-G	10/01/10 10:45	Solid	GC/MS Q	10/01/10	10/04/10 22:12	101004L02
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.042	41.6		Toluene	ND	0.042	41.6	
Ethylbenzene	0.046	0.042	41.6		Xylenes (total)	0.26	0.083	41.6	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
Dibromofluoromethane	116	79-133			1,2-Dichloroethane-d4	114	71-155		
1,4-Bromofluorobenzene	93	80-120			Toluene-d8	103	80-120		

SO-241809-100110-SR-SB-10-25	10-10-0130-4-E	10/01/10 11:00	Solid	GC/MS Q	10/01/10	10/04/10 22:43	101004L02
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.049	49.1		Toluene	0.19	0.049	49.1	
Ethylbenzene	0.57	0.049	49.1		Xylenes (total)	3.9	0.098	49.1	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
Dibromofluoromethane	95	79-133			1,2-Dichloroethane-d4	91	71-155		
1,4-Bromofluorobenzene	94	80-120			Toluene-d8	104	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Conestoga-Rovers & Associates
 1420 80th St. SW, Suite A
 Everett, WA 98203-6248

Date Received: 10/02/10
 Work Order No: 10-10-0130
 Preparation: EPA 5035
 Method: EPA 8260B
 Units: mg/kg

Project: 11700 NE 160th St., Bothell, WA

Page 2 of 3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-100110-SR-SB-10-35	10-10-0130-5-E	10/01/10 11:32	Solid	GC/MS V V	10/01/10	10/05/10 12:58	101005L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	0.0033	0.00077	0.766		Toluene	0.10	0.00077	0.766	
Ethylbenzene	0.29	0.042	42		Xylenes (total)	1.7	0.084	42	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
Dibromofluoromethane	101	79-133			1,2-Dichloroethane-d4	102	71-155		
1,4-Bromofluorobenzene	103	80-120			Toluene-d8	102	80-120		

SO-241809-100110-SR-SB-10-45	10-10-0130-6-E	10/01/10 13:05	Solid	GC/MS V V	10/01/10	10/05/10 13:23	101005L01
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	0.0010	0.00093	0.929		Toluene	0.0049	0.00093	0.929	
Ethylbenzene	0.0069	0.00093	0.929		Xylenes (total)	0.035	0.0019	0.929	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
Dibromofluoromethane	102	79-133			1,2-Dichloroethane-d4	100	71-155		
1,4-Bromofluorobenzene	97	80-120			Toluene-d8	100	80-120		

SO-241809-100110-SR-SB-10-50	10-10-0130-7-C	10/01/10 13:25	Solid	GC/MS V V	10/01/10	10/04/10 18:00	101004L01
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.00096	0.965		Toluene	ND	0.00096	0.965	
Ethylbenzene	ND	0.00096	0.965		Xylenes (total)	ND	0.0019	0.965	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
Dibromofluoromethane	100	79-133			1,2-Dichloroethane-d4	102	71-155		
1,4-Bromofluorobenzene	95	80-120			Toluene-d8	99	80-120		

Method Blank	095-01-025-20,505	N/A	Solid	GC/MS Q	10/04/10	10/04/10 14:42	101004L02
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.10	100		Toluene	ND	0.10	100	
Ethylbenzene	ND	0.10	100		Xylenes (total)	ND	0.20	100	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
Dibromofluoromethane	112	79-133			1,2-Dichloroethane-d4	107	71-155		
1,4-Bromofluorobenzene	92	80-120			Toluene-d8	98	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Conestoga-Rovers & Associates
 1420 80th St. SW, Suite A
 Everett, WA 98203-6248

Date Received: 10/02/10
 Work Order No: 10-10-0130
 Preparation: EPA 5035
 Method: EPA 8260B
 Units: mg/kg

Project: 11700 NE 160th St., Bothell, WA

Page 3 of 3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	095-01-025-20,507	N/A	Solid	GC/MS V V	10/04/10	10/04/10 12:50	101004L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.0010	1		Toluene	ND	0.0010	1	
Ethylbenzene	ND	0.0010	1		Xylenes (total)	ND	0.0020	1	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
Dibromofluoromethane	100	79-133			1,2-Dichloroethane-d4	95	71-155		
1,4-Bromofluorobenzene	93	80-120			Toluene-d8	98	80-120		

Method Blank	095-01-025-20,508	N/A	Solid	GC/MS Q	10/05/10	10/05/10 14:40	101005L01
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.0010	1		Toluene	ND	0.0010	1	
Ethylbenzene	ND	0.0010	1		Xylenes (total)	ND	0.0020	1	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
Dibromofluoromethane	113	79-133			1,2-Dichloroethane-d4	102	71-155		
1,4-Bromofluorobenzene	92	80-120			Toluene-d8	98	80-120		

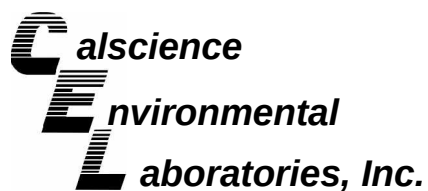
Method Blank	095-01-025-20,509	N/A	Solid	GC/MS V V	10/05/10	10/05/10 12:10	101005L01
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.0010	1		Toluene	ND	0.0010	1	
Ethylbenzene	ND	0.0010	1		Xylenes (total)	ND	0.0020	1	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
Dibromofluoromethane	98	79-133			1,2-Dichloroethane-d4	94	71-155		
1,4-Bromofluorobenzene	93	80-120			Toluene-d8	98	80-120		

Method Blank	095-01-025-20,510	N/A	Solid	GC/MS V V	10/05/10	10/05/10 11:44	101005L02
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.10	100		Toluene	ND	0.10	100	
Ethylbenzene	ND	0.10	100		Xylenes (total)	ND	0.20	100	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
Dibromofluoromethane	96	79-133			1,2-Dichloroethane-d4	95	71-155		
1,4-Bromofluorobenzene	98	80-120			Toluene-d8	100	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Quality Control - Spike/Spike Duplicate



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

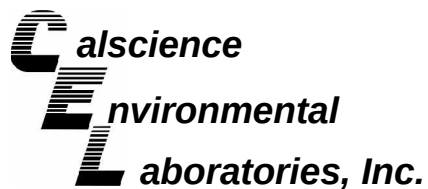
Date Received: 10/02/10
Work Order No: 10-10-0130
Preparation: EPA 3550B
Method: NWTPH-Dx

Project 11700 NE 160th St., Bothell, WA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
10-10-0132-6	Solid	GC 27	10/07/10	10/10/10	101007S06

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TPH as Diesel Range	98	100	64-130	1	0-15	

RPD - Relative Percent Difference , CL - Control Limit



Quality Control - LCS/LCS Duplicate



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Everett, WA 98203-6248

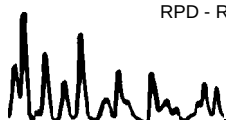
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Work Order No: 10-10-0130
Preparation: EPA 3550B
Method: NWTPH-Dx

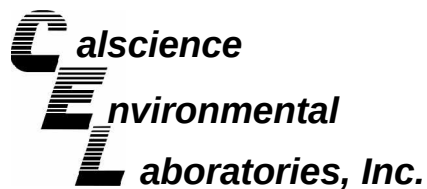
Project: 11700 NE 160th St., Bothell, WA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-838-104	Solid	GC 27	10/07/10	10/10/10	101007B06

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TPH as Diesel Range	97	105	75-123	9	0-12	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

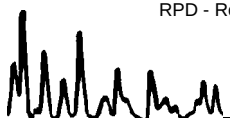
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Work Order No: 10-10-0130
Preparation: EPA 5035
Method: NWTPH-Gx

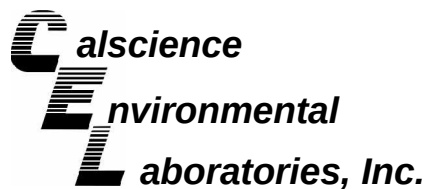
Project: 11700 NE 160th St., Bothell, WA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-848-160	Solid	GC 29	10/05/10	10/05/10	101005B02

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TPH as Gasoline	114	113	55-139	0	0-18	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Conestoga-Rovers & Associates
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Everett, WA 98203-6248

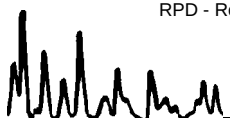
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Work Order No: 10-10-0130
Preparation: EPA 5035
Method: NWTPH-Gx

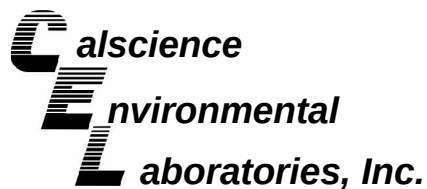
Project: 11700 NE 160th St., Bothell, WA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-848-159	Solid	GC 18	10/06/10	10/06/10	101006B01

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TPH as Gasoline	90	89	55-139	1	0-18	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



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Everett, WA 98203-6248

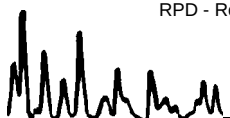
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Work Order No: 10-10-0130
Preparation: EPA 5035
Method: NWTPH-Gx

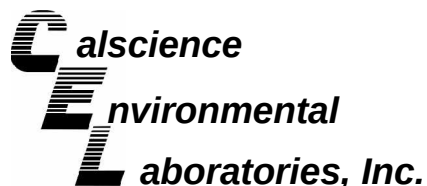
Project: 11700 NE 160th St., Bothell, WA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-848-161	Solid	GC 18	10/07/10	10/08/10	101007B01

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TPH as Gasoline	90	91	55-139	1	0-18	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Conestoga-Rovers & Associates
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Everett, WA 98203-6248

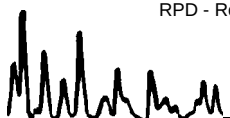
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Work Order No: 10-10-0130
Preparation: EPA 5035
Method: EPA 8260B

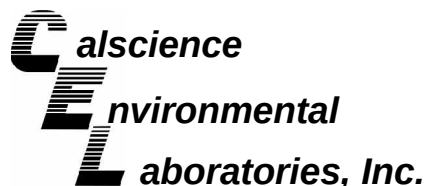
Project: 11700 NE 160th St., Bothell, WA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
095-01-025-20,507	Solid	GC/MS V V	10/04/10	10/04/10	101004L01

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	94	92	80-120	2	0-20	
Ethylbenzene	96	96	80-120	0	0-20	
Toluene	96	95	80-120	2	0-20	
Methyl-t-Butyl Ether (MTBE)	93	90	70-124	3	0-20	
Tert-Butyl Alcohol (TBA)	99	98	73-121	2	0-20	
Diisopropyl Ether (DIPE)	92	89	69-129	3	0-20	
Ethyl-t-Butyl Ether (ETBE)	90	87	70-124	3	0-20	
Tert-Amyl-Methyl Ether (TAME)	90	89	74-122	1	0-20	
Ethanol	92	87	51-135	5	0-27	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



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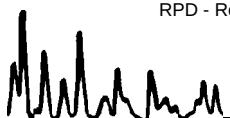
Date Received: N/A
Work Order No: 10-10-0130
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Method: EPA 8260B

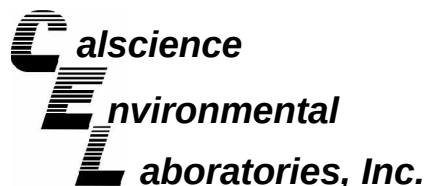
Project: 11700 NE 160th St., Bothell, WA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
095-01-025-20,505	Solid	GC/MS Q	10/04/10	10/04/10	101004L02

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	108	108	80-120	1	0-20	
Ethylbenzene	108	106	80-120	2	0-20	
Toluene	110	110	80-120	1	0-20	
Methyl-t-Butyl Ether (MTBE)	109	109	70-124	0	0-20	
Tert-Butyl Alcohol (TBA)	103	92	73-121	11	0-20	
Diisopropyl Ether (DIPE)	115	114	69-129	1	0-20	
Ethyl-t-Butyl Ether (ETBE)	113	115	70-124	2	0-20	
Tert-Amyl-Methyl Ether (TAME)	111	112	74-122	1	0-20	
Ethanol	96	82	51-135	16	0-27	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



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1420 80th St. SW, Suite A
Everett, WA 98203-6248

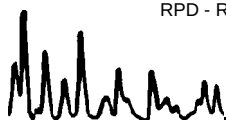
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Work Order No: 10-10-0130
Preparation: EPA 5035
Method: EPA 8260B

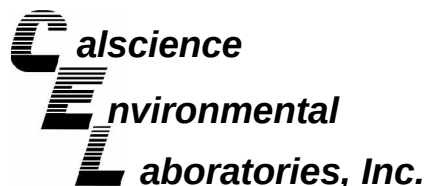
Project: 11700 NE 160th St., Bothell, WA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
095-01-025-20,508	Solid	GC/MS Q	10/05/10	10/05/10	101005L01

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	105	106	80-120	1	0-20	
Ethylbenzene	106	107	80-120	1	0-20	
Toluene	108	108	80-120	0	0-20	
Methyl-t-Butyl Ether (MTBE)	105	107	70-124	2	0-20	
Tert-Butyl Alcohol (TBA)	92	91	73-121	1	0-20	
Diisopropyl Ether (DIPE)	108	108	69-129	0	0-20	
Ethyl-t-Butyl Ether (ETBE)	108	111	70-124	3	0-20	
Tert-Amyl-Methyl Ether (TAME)	106	107	74-122	1	0-20	
Ethanol	82	90	51-135	10	0-27	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



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Everett, WA 98203-6248

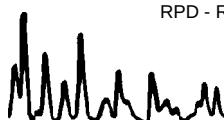
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Work Order No: 10-10-0130
Preparation: EPA 5035
Method: EPA 8260B

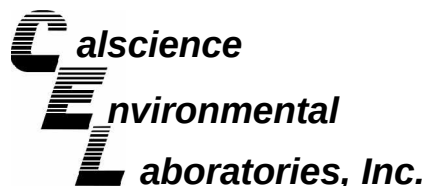
Project: 11700 NE 160th St., Bothell, WA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
095-01-025-20,509	Solid	GC/MS V V	10/05/10	10/05/10	101005L01

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	91	91	80-120	1	0-20	
Ethylbenzene	99	96	80-120	3	0-20	
Toluene	97	95	80-120	2	0-20	
Methyl-t-Butyl Ether (MTBE)	91	92	70-124	1	0-20	
Tert-Butyl Alcohol (TBA)	99	98	73-121	1	0-20	
Diisopropyl Ether (DIPE)	87	86	69-129	1	0-20	
Ethyl-t-Butyl Ether (ETBE)	87	87	70-124	0	0-20	
Tert-Amyl-Methyl Ether (TAME)	88	88	74-122	0	0-20	
Ethanol	88	92	51-135	4	0-27	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

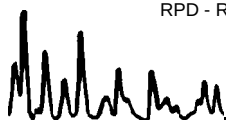
Date Received: N/A
Work Order No: 10-10-0130
Preparation: EPA 5035
Method: EPA 8260B

Project: 11700 NE 160th St., Bothell, WA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
095-01-025-20,510	Solid	GC/MS V V	10/05/10	10/05/10	101005L02

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	91	91	80-120	1	0-20	
Ethylbenzene	99	96	80-120	3	0-20	
Toluene	97	95	80-120	2	0-20	
Methyl-t-Butyl Ether (MTBE)	91	92	70-124	1	0-20	
Tert-Butyl Alcohol (TBA)	99	98	73-121	1	0-20	
Diisopropyl Ether (DIPE)	87	86	69-129	1	0-20	
Ethyl-t-Butyl Ether (ETBE)	87	87	70-124	0	0-20	
Tert-Amyl-Methyl Ether (TAME)	88	88	74-122	0	0-20	
Ethanol	88	92	51-135	4	0-27	

RPD - Relative Percent Difference , CL - Control Limit



Glossary of Terms and Qualifiers



Work Order Number: 10-10-0130

<u>Qualifier</u>	<u>Definition</u>
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution, therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported without further clarification.
B	Analyte was present in the associated method blank.
E	Concentration exceeds the calibration range.
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
ME	LCS Recovery Percentage is within LCS ME Control Limit range.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.
	Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture.





Shell Oil Products Chain Of Custody Record

LAB (LOCATION)

- ☒ CALSCE (CA)
☐ SPL Houston ()
☐ XENCO ()
☐ TEST AMERICA ()
☐ OTHER ()

Please Check Appropriate Box:

- ☐ ENV. SERVICES ☐ MOTIVA RETAIL ☐ SHELL RETAIL
☐ MOTIVA SDCOM ☒ CONSULTANT ☐ LUBES
☐ SHELL PIPELINE ☐ OTHER

Print Bill To Contact Name:

INCIDENT # (ENV SERVICES) 92995017
DATE: 10/1
PAGE: 1 of 1

PO # 120531

SAMPLING COMPANY:

Conestoga-Rovers & Associates

ADDRESS: 1420 80th St SW, Suite Everett, WA 98203

PROJECT CONTACT (Hardcopy or PDF Report 10):

TELEPHONE: 425-212-5100 FAX: 425-212-5199

TURNAROUND TIME (CALENDAR DAYS):

☒ STANDARD (14 DAY) ☐ 5 DAYS ☐ 2 DAYS ☐ 24 HOURS

☐ LA - RWQOC REPORT FORMAT ☐ UST AGENCY:

SPECIAL INSTRUCTIONS OR NOTES:

Copy final report to Shell.Lab.Billing@craworld.com

See SPL PM for WA Dept. of Ecology MTCA Method A

cleanup levels for minimum detection limits

LOG CODE: CRAW

RESULTS NEEDED ON WEEKEND

☐ SHELL CONTRACT RATE APPLIES

☐ STATE REIMBURSEMENT RATE APPLIES

☐ EDD NOT NEEDED

☒ RECEIPT VERIFICATION REQUESTED

NO. OF CONT.

PRESERVATIVE

HCL HNO3 H2SO4 NONE OTHER

MATRIX

SAMPLING

DATE

TIME

Field Sample Identification

LAB USE ONLY

1 SO-241807-100110-SR-SB-10-6 10/1

2 So-241809-100110-SR-SB-10-10 10/10

3 So-241807-100110-SR-SB-10-15 10/15

4 So-241807-100110-SR-SB-10-25 11/00

5 So-241809-100110-SR-SB-10-35 11/32

6 So-241809-100110-SR-SB-10-45 1305

TEMP 131000

7 So-241809-100110-SR-SB-10-50 10/1 1325

Received by: (Signature) John Ren 10/1 500-

Relinquished by: (Signature) C. McCallum 10/11/10 500pm Fed Ex

Relinquished by: (Signature) C. McCallum 10/11/10 500pm Fed Ex

Relinquished by: (Signature) C. McCallum 10/11/10 500pm Fed Ex

Relinquished by: (Signature) C. McCallum 10/11/10 500pm Fed Ex

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Relinquished by: (Signature) C. McCallum 10/11/10 500pm Fed Ex

Relinquished by: (Signature) C. McCallum 10/11/10 500pm Fed Ex

SITE ADDRESS: Street and City 11700 NE 160th St Bothell WA

EDP DELIVERABLE TO (Name, Company, Office Location):

Christine Schweigert, CRA, Everett

PHONE NO.: 425-212-5100

SAMPLER NAME(S) (Print): Stephen Rasmussen

CONSULTANT PROJECT NO.: 241807

LAB USE ONLY: 10-10-0130

GLOBAL ID NO.: 10-10-0130

REQUESTED ANALYSIS

TEMPERATURE ON RECEIPT C°

Container PID Readings or Laboratory Notes

n-Hexane (9071B)

NWTPH-EPH

NWTPH-VPH

Pest (8080)

VOCs Full list (8260B)

PAHs (8070 SIM)

PCBs (8082)

Total Lead (6020)

EDC (8011)

EDC (8260B)

TAME, ETBE (8260B)

5 Oxygenates, MTBE, TBA, DIBE

BTEX (8260B)

NWTPH-DX w/Silica Gel Cleanup

NWTPH-GX

NO. OF CONT.

PRESERVATIVE

HCL HNO3 H2SO4 NONE OTHER

MATRIX

SAMPLING

DATE

TIME

Field Sample Identification

LAB USE ONLY

1 SO-241807-100110-SR-SB-10-6 10/1

2 So-241809-100110-SR-SB-10-10 10/10

3 So-241807-100110-SR-SB-10-15 10/15

4 So-241807-100110-SR-SB-10-25 11/00

5 So-241809-100110-SR-SB-10-35 11/32

6 So-241809-100110-SR-SB-10-45 1305

TEMP 131000

7 So-241809-100110-SR-SB-10-50 10/1 1325

Received by: (Signature) John Ren 10/1 500-

Relinquished by: (Signature) C. McCallum 10/11/10 500pm Fed Ex

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Relinquished by: (Signature) C. McCallum 10/11/10 500pm Fed Ex

1 From

Date 10/1/10 Sender's FedEx Account Number

Sender's Name Christina McClelland Phone 425 563-6514

Company Firestoga-Rovers & Assoc.

Address 20818 44th Ave W, Suite 170

City Lynnwood State WA ZIP 98036

2 Your Internal Billing Reference

241809

3 To

Recipient's Name Sample Control Phone 714 895-5494

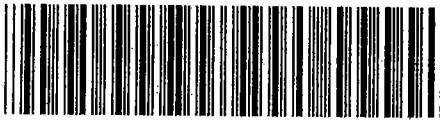
Company Calscience Environ

Address 7440 Lincoln Way

We cannot deliver to P.O. boxes or P.O. ZIP codes.

Address Use this line for the HOLD location address or for continuation of your shipping address.

City Garden Grove State CA ZIP 92841-1421



8737 7655 6453

4a Express Package Service

- ☒ **01** FedEx Priority Overnight Next business morning. * Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- ☐ **05** FedEx Standard Overnight Next business afternoon. * Saturday Delivery NOT available.
- ☐ **06** FedEx First Overnight Next business morning. * Saturday Delivery NOT available.
- ☐ **03** FedEx 2Day Second business day. * Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- ☐ **20** FedEx Express Saver Third business day. * Saturday Delivery NOT available.

4b Express Freight Service

- ☐ **70** FedEx 1Day Freight Next business day. * Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- ☐ **80** FedEx 2Day Freight Second business day. * Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- ☐ **83** FedEx 3Day Freight Third business day. * Saturday Delivery NOT available.

5 Packaging

- ☐ **06** FedEx Envelope* ☐ **02** FedEx Pak* Includes FedEx Small Pak and FedEx Large Pak. ☐ **03** FedEx Box ☐ **04** FedEx Tube

6 Special Handling and Delivery Signature Options

- ☒ **03** SATURDAY DELIVERY
- ☐ No Signature Required Package may be left without obtaining a signature for delivery.
- ☐ **10** Direct Signature Someone at recipient's address may sign for delivery. Fee applies.
- ☐ **34** Indirect Sign If no one is available, someone address may sign residential delivery.
- Does this shipment contain dangerous goods?
One box must be checked.
☒ **04** Yes As per attached Shipper's Declaration. ☐ Yes Shipper's Declaration not required. ☐ **06** Dry Ice Dry Ice, 9, UN 1845 ☐ Cargo Aircraft

7 Payment Bill to:

- ☐ **1** Sender Acct. No. in Section 1 I will be billed. ☒ **2** Recipient ☐ **3** Third Party ☐ **4** Credit Card ☐ **5** Other
- Total Packages 1 Total Weight 35 lbs. Credit Card Auth.

*Our liability is limited to \$100 unless you declare a higher value. See the current FedEx Service Guide for details.

0130

WORK ORDER #: 10-10-0130

SAMPLE RECEIPT FORMCooler 1 of 1CLIENT: CRADATE: 10/02/10**TEMPERATURE:** Thermometer ID: SC1 (Criteria: 0.0 °C – 6.0 °C, not frozen)Temperature 3.6 °C + 0.5 °C (CF) = 4.1 °C ☐ Blank ☒ Sample☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____).☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.☐ Received at ambient temperature, placed on ice for transport by Courier.Ambient Temperature: ☐ Air ☐ FilterInitial: TN**CUSTODY SEALS INTACT:**☐ Cooler ☐ _____ ☐ No (Not Intact) ☒ Not Present ☐ N/AInitial: TN☐ Sample ☐ _____ ☐ No (Not Intact) ☒ Not PresentInitial: TN**SAMPLE CONDITION:**

	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples.....	☒	☐	☐
COC document(s) received complete.....	☐	☒	☐

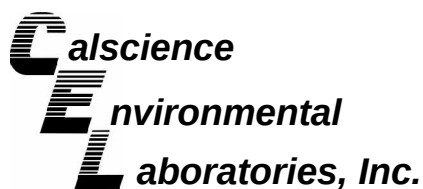
☒ Collection date/⁽⁻¹⁾time, matrix, and/or # of containers logged in based on sample labels.☐ No analysis requested. ☐ Not relinquished. ☐ No date/time relinquished.Sampler's name indicated on COC..... ☒ Yes ☐ No ☐ N/ASample container label(s) consistent with COC..... ☒ Yes ☐ No ☐ N/ASample container(s) intact and good condition..... ☒ Yes ☐ No ☐ N/AProper containers and sufficient volume for analyses requested..... ☒ Yes ☐ No ☐ N/AAnalyses received within holding time..... ☒ Yes ☐ No ☐ N/ApH / Residual Chlorine / Dissolved Sulfide received within 24 hours..... ☐ Yes ☐ No ☒ N/AProper preservation noted on COC or sample container..... ☒ Yes ☐ No ☐ N/A☐ Unpreserved vials received for Volatiles analysisVolatile analysis container(s) free of headspace..... ☐ Yes ☐ No ☒ N/ATedlar bag(s) free of condensation..... ☐ Yes ☐ No ☒ N/A**CONTAINER TYPE:**Solid: ☐ 4ozCGJ ☒ 8ozCGJ ☐ 16ozCGJ ☐ Sleeve (____) ☐ EnCores® ☒ TerraCores® ☒ 202 PJWater: ☐ VOA ☐ VOA_h ☐ VOA_{na2} ☐ 125AGB ☐ 125AGB_h ☐ 125AGB_p ☐ 1AGB ☐ 1AGB_{na2} ☐ 1AGB_s☐ 500AGB ☐ 500AGJ ☐ 500AGJ_s ☐ 250AGB ☐ 250CGB ☐ 250CGB_s ☐ 1PB ☐ 500PB ☐ 500PB_{na}☐ 250PB ☐ 250PB_n ☐ 125PB ☐ 125PB_{znna} ☐ 100PJ ☐ 100PJ_{na2} ☐ _____ ☐ _____ ☐ _____Air: ☐ Tedlar® ☐ Summa® Other: ☐ _____ Trip Blank Lot#: _____ Labeled/Checked by: TNContainer: C: Clear A: Amber P: Plastic G: Glass J: Jar B: Bottle Z: Ziploc/Resealable Bag E: Envelope Reviewed by: WSSPreservative: h: HCL n: HNO₃ na₂: Na₂S₂O₃ na: NaOH p: H₃PO₄ s: H₂SO₄ znna: ZnAc₂+NaOH f: Field-filtered Scanned by: WSS

LAB (LOCATION) CA
SCIENCE ()



Shell Oil Products Chain Of Custody Record

[illegible]



October 14, 2010

Christina McClelland
Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

Subject: **CalScience Work Order No.: 10-10-0131**
Client Reference: **11700 NE 160th St., Bothell, WA**

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 10/2/2010 and analyzed in accordance with the attached chain-of-custody.

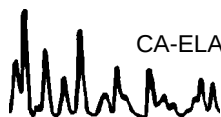
CalScience Environmental Laboratories certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analysis, if any, is provided herein, and follows the standard CalScience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

A handwritten signature in black ink, appearing to read 'Xuan H. Dang'.

CalScience Environmental
Laboratories, Inc.
Xuan H. Dang
Project Manager



Analytical Report



Conestoga-Rovers & Associates
 1420 80th St. SW, Suite A
 Everett, WA 98203-6248

Date Received: 10/02/10
 Work Order No: 10-10-0131
 Preparation: EPA 3550B
 Method: NWTPH-Dx
 Units: mg/kg

Project: 11700 NE 160th St., Bothell, WA

Page 1 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-100110-SR-SB-11-6	10-10-0131-1-A	10/01/10 08:50	Solid	GC 27	10/07/10	10/11/10 02:00	101007B06

Comment(s): -The sample chromatographic pattern for TPH does not match the chromatographic pattern of the specified standard.
 Quantitation of the unknown hydrocarbon(s) in the sample was based upon the specified standard.
 -The sample extract was subjected to Silica Gel treatment prior to analysis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
TPH as Diesel Range	11	5.0	1		TPH as Motor Oil Range	8.1	5.0	1	
Surrogates:	REC (%)	Control Limits		Qual					
Decachlorobiphenyl	92	61-145							

SO-241809-100110-SR-SB-11-10	10-10-0131-2-A	10/01/10 09:04	Solid	GC 27	10/07/10	10/11/10 02:17	101007B06
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Comment(s): -The sample chromatographic pattern for TPH does not match the chromatographic pattern of the specified standard.
 Quantitation of the unknown hydrocarbon(s) in the sample was based upon the specified standard.
 -The sample extract was subjected to Silica Gel treatment prior to analysis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
TPH as Diesel Range	45	5.0	1		TPH as Motor Oil Range	ND	5.0	1	
Surrogates:	REC (%)	Control Limits		Qual					
Decachlorobiphenyl	92	61-145							

SO-241809-100110-SR-SB-11-15	10-10-0131-3-A	10/01/10 09:07	Solid	GC 27	10/07/10	10/11/10 02:35	101007B06
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Comment(s): -The sample chromatographic pattern for TPH does not match the chromatographic pattern of the specified standard.
 Quantitation of the unknown hydrocarbon(s) in the sample was based upon the specified standard.
 -The sample extract was subjected to Silica Gel treatment prior to analysis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
TPH as Diesel Range	19	5.0	1		TPH as Motor Oil Range	ND	5.0	1	
Surrogates:	REC (%)	Control Limits		Qual					
Decachlorobiphenyl	91	61-145							

SO-241809-100110-SR-SB-11-25	10-10-0131-4-A	10/01/10 09:20	Solid	GC 27	10/07/10	10/11/10 03:11	101007B06
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Comment(s): -The sample chromatographic pattern for TPH does not match the chromatographic pattern of the specified standard.
 Quantitation of the unknown hydrocarbon(s) in the sample was based upon the specified standard.
 -The sample extract was subjected to Silica Gel treatment prior to analysis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
TPH as Diesel Range	20	5.0	1		TPH as Motor Oil Range	ND	5.0	1	
Surrogates:	REC (%)	Control Limits		Qual					
Decachlorobiphenyl	91	61-145							

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Conestoga-Rovers & Associates
 1420 80th St. SW, Suite A
 Everett, WA 98203-6248

Date Received: 10/02/10
 Work Order No: 10-10-0131
 Preparation: EPA 3550B
 Method: NWTPH-Dx
 Units: mg/kg

Project: 11700 NE 160th St., Bothell, WA

Page 2 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-100110-SR-SB-11-30	10-10-0131-5-A	10/01/10 09:40	Solid	GC 27	10/07/10	10/11/10 03:29	101007B06

Comment(s): -The sample extract was subjected to Silica Gel treatment prior to analysis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
TPH as Diesel Range	ND	5.0	1		TPH as Motor Oil Range	ND	5.0	1	

Surrogates:	REC (%)	Control Limits	Qual
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Decachlorobiphenyl	90	61-145	
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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-100110-SR-SB-11-20	10-10-0131-6-A	10/01/10 09:13	Solid	GC 27	10/07/10	10/11/10 03:47	101007B06

Comment(s): -The sample extract was subjected to Silica Gel treatment prior to analysis.

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
TPH as Diesel Range	ND	5.0	1		TPH as Motor Oil Range	ND	5.0	1	

Surrogates:	REC (%)	Control Limits	Qual
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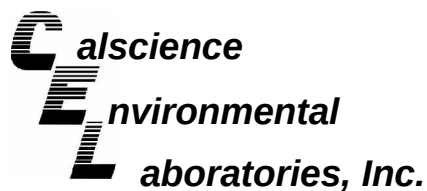
Decachlorobiphenyl	97	61-145	
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Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-12-838-104	N/A	Solid	GC 27	10/07/10	10/10/10 22:26	101007B06

Parameter	Result	RL	DF	Qual
TPH as Diesel Range	ND	5.0	1	

Surrogates:	REC (%)	Control Limits	Qual
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Decachlorobiphenyl	92	61-145	
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Analytical Report



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

Date Received: 10/02/10
Work Order No: 10-10-0131
Preparation: EPA 5035
Method: NWTPH-Gx

Project: 11700 NE 160th St., Bothell, WA

Page 1 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-100110-SR-SB-11-6	10-10-0131-1-J	10/01/10 08:50	Solid	GC 22	10/01/10	10/07/10 12:42	101007B01

Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	10	3.2	13		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	88	60-126	

SO-241809-100110-SR-SB-11-10	10-10-0131-2-J	10/01/10 09:04	Solid	GC 22	10/01/10	10/07/10 13:15	101007B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	140	11	44		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	99	60-126	

SO-241809-100110-SR-SB-11-15	10-10-0131-3-J	10/01/10 09:07	Solid	GC 22	10/01/10	10/07/10 13:47	101007B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	410	90	361		mg/kg

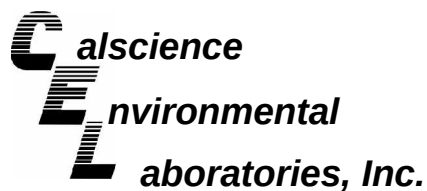
Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	95	60-126	

SO-241809-100110-SR-SB-11-25	10-10-0131-4-H	10/01/10 09:20	Solid	GC 22	10/01/10	10/05/10 19:45	101005B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	4.2	0.21	0.852		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	107	60-126	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Analytical Report



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

Date Received: 10/02/10
Work Order No: 10-10-0131
Preparation: EPA 5035
Method: NWTPH-Gx

Project: 11700 NE 160th St., Bothell, WA

Page 2 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-100110-SR-SB-11-30	10-10-0131-5-H	10/01/10 09:40	Solid	GC 22	10/01/10	10/05/10 20:18	101005B01

Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	1.7	0.25	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	99	60-126	

SO-241809-100110-SR-SB-11-20	10-10-0131-6-J	10/01/10 09:13	Solid	GC 22	10/01/10	10/07/10 14:20	101007B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	18	12	46		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	86	60-126	

Method Blank	099-12-848-158	N/A	Solid	GC 22	10/05/10	10/05/10 12:03	101005B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	0.25	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	92	60-126	

Method Blank	099-12-848-162	N/A	Solid	GC 22	10/07/10	10/07/10 12:10	101007B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	10	40		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	85	60-126	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Conestoga-Rovers & Associates
 1420 80th St. SW, Suite A
 Everett, WA 98203-6248

Date Received: 10/02/10
 Work Order No: 10-10-0131
 Preparation: EPA 5035
 Method: EPA 8260B
 Units: mg/kg

Project: 11700 NE 160th St., Bothell, WA

Page 1 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-100110-SR-SB-11-6	10-10-0131-1-F	10/01/10 08:50	Solid	GC/MS V V	10/01/10	10/06/10 14:54	101006L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	0.055	0.00086	0.862		Toluene	0.088	0.00086	0.862	
Ethylbenzene	0.37	0.040	40.5		Xylenes (total)	1.4	0.081	40.5	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
Dibromofluoromethane	99	79-133			1,2-Dichloroethane-d4	93	71-155		
1,4-Bromofluorobenzene	101	80-120			Toluene-d8	103	80-120		

SO-241809-100110-SR-SB-11-10	10-10-0131-2-F	10/01/10 09:04	Solid	GC/MS V V	10/01/10	10/06/10 15:20	101006L01
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	0.0018	0.00087	0.874		Toluene	0.0053	0.00087	0.874	
Ethylbenzene	3.2	0.038	38.2		Xylenes (total)	16	0.076	38.2	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
Dibromofluoromethane	98	79-133			1,2-Dichloroethane-d4	94	71-155		
1,4-Bromofluorobenzene	105	80-120			Toluene-d8	102	80-120		

SO-241809-100110-SR-SB-11-15	10-10-0131-3-F	10/01/10 09:07	Solid	GC/MS V V	10/01/10	10/06/10 15:45	101006L01
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	0.0042	0.00091	0.911		Toluene	0.026	0.00091	0.911	
Ethylbenzene	5.1	0.072	71.6		Xylenes (total)	24	0.14	71.6	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
Dibromofluoromethane	102	79-133			1,2-Dichloroethane-d4	93	71-155		
1,4-Bromofluorobenzene	102	80-120			Toluene-d8	109	80-120		

SO-241809-100110-SR-SB-11-25	10-10-0131-4-F	10/01/10 09:20	Solid	GC/MS V V	10/01/10	10/06/10 16:12	101006L01
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	0.0013	0.00077	0.773		Toluene	0.0051	0.00077	0.773	
Ethylbenzene	0.087	0.00077	0.773		Xylenes (total)	0.85	0.097	48.3	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
Dibromofluoromethane	98	79-133			1,2-Dichloroethane-d4	97	71-155		
1,4-Bromofluorobenzene	98	80-120			Toluene-d8	103	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Analytical Report



Conestoga-Rovers & Associates

1420 80th St. SW, Suite A

Everett, WA 98203-6248

Date Received:

10/02/10

Work Order No:

10-10-0131

Preparation:

EPA 5035

Method:

EPA 8260B

Units:

mg/kg

Project: 11700 NE 160th St., Bothell, WA

Page 2 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-100110-SR-SB-11-30	10-10-0131-5-F	10/01/10 09:40	Solid	GC/MS V V	10/01/10	10/06/10 16:37	101006L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	0.0069	0.00092	0.917		Toluene	0.0078	0.00092	0.917	
Ethylbenzene	0.12	0.00092	0.917		Xylenes (total)	0.35	0.0018	0.917	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
Dibromofluoromethane	98	79-133			1,2-Dichloroethane-d4	95	71-155		
1,4-Bromofluorobenzene	101	80-120			Toluene-d8	100	80-120		

SO-241809-100110-SR-SB-11-20	10-10-0131-6-F	10/01/10 09:13	Solid	GC/MS V V	10/01/10	10/06/10 17:03	101006L01
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Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	0.0013	0.00085	0.853		Toluene	0.0056	0.00085	0.853	
Ethylbenzene	0.063	0.00085	0.853		Xylenes (total)	0.30	0.0017	0.853	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
Dibromofluoromethane	97	79-133			1,2-Dichloroethane-d4	96	71-155		
1,4-Bromofluorobenzene	98	80-120			Toluene-d8	100	80-120		

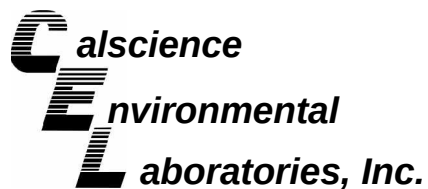
Method Blank	095-01-025-20,515	N/A	Solid	GC/MS V V	10/06/10	10/06/10 11:28	101006L01
--------------	-------------------	-----	-------	-----------	----------	----------------	-----------

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.0010	1		Toluene	ND	0.0010	1	
Ethylbenzene	ND	0.0010	1		Xylenes (total)	ND	0.0020	1	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
Dibromofluoromethane	100	79-133			1,2-Dichloroethane-d4	95	71-155		
1,4-Bromofluorobenzene	95	80-120			Toluene-d8	100	80-120		

Method Blank	095-01-025-20,519	N/A	Solid	GC/MS V V	10/07/10	10/07/10 11:13	101007L02
--------------	-------------------	-----	-------	-----------	----------	----------------	-----------

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.10	100		Toluene	ND	0.10	100	
Ethylbenzene	ND	0.10	100		Xylenes (total)	ND	0.20	100	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
Dibromofluoromethane	96	79-133			1,2-Dichloroethane-d4	90	71-155		
1,4-Bromofluorobenzene	99	80-120			Toluene-d8	100	80-120		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



Quality Control - Spike/Spike Duplicate



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

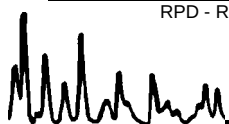
Date Received: 10/02/10
Work Order No: 10-10-0131
Preparation: EPA 3550B
Method: NWTPH-Dx

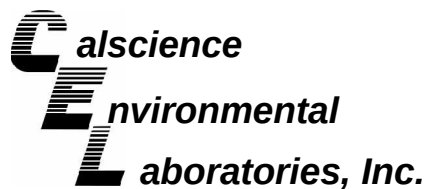
Project 11700 NE 160th St., Bothell, WA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
10-10-0132-6	Solid	GC 27	10/07/10	10/10/10	101007S06

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TPH as Diesel Range	98	100	64-130	1	0-15	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

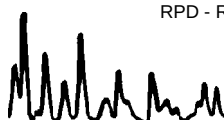
Date Received: N/A
Work Order No: 10-10-0131
Preparation: EPA 3550B
Method: NWTPH-Dx

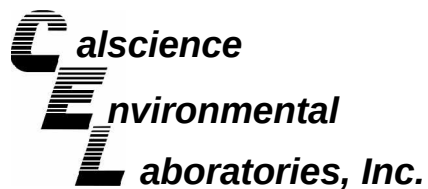
Project: 11700 NE 160th St., Bothell, WA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-838-104	Solid	GC 27	10/07/10	10/10/10	101007B06

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TPH as Diesel Range	97	105	75-123	9	0-12	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

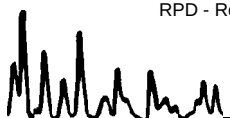
Date Received: N/A
Work Order No: 10-10-0131
Preparation: EPA 5035
Method: NWTPH-Gx

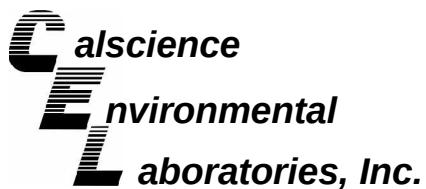
Project: 11700 NE 160th St., Bothell, WA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-848-158	Solid	GC 22	10/05/10	10/05/10	101005B01

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TPH as Gasoline	84	84	55-139	0	0-18	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

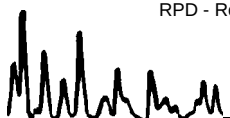
Date Received: N/A
Work Order No: 10-10-0131
Preparation: EPA 5035
Method: NWTPH-Gx

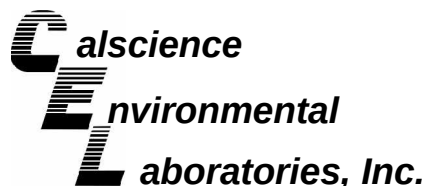
Project: 11700 NE 160th St., Bothell, WA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-848-162	Solid	GC 22	10/07/10	10/07/10	101007B01

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TPH as Gasoline	77	79	55-139	3	0-18	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

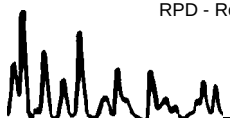
Date Received: N/A
Work Order No: 10-10-0131
Preparation: EPA 5035
Method: EPA 8260B

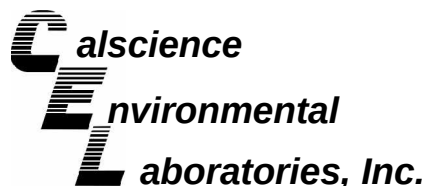
Project: 11700 NE 160th St., Bothell, WA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
095-01-025-20,515	Solid	GC/MS V V	10/06/10	10/06/10	101006L01

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	93	92	80-120	1	0-20	
Ethylbenzene	99	96	80-120	3	0-20	
Toluene	97	96	80-120	0	0-20	
Methyl-t-Butyl Ether (MTBE)	92	93	70-124	0	0-20	
Tert-Butyl Alcohol (TBA)	102	103	73-121	1	0-20	
Diisopropyl Ether (DIPE)	88	88	69-129	1	0-20	
Ethyl-t-Butyl Ether (ETBE)	88	88	70-124	1	0-20	
Tert-Amyl-Methyl Ether (TAME)	89	89	74-122	1	0-20	
Ethanol	96	86	51-135	11	0-27	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Conestoga-Rovers & Associates
1420 80th St. SW, Suite A
Everett, WA 98203-6248

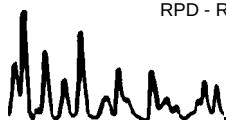
Date Received: N/A
Work Order No: 10-10-0131
Preparation: EPA 5035
Method: EPA 8260B

Project: 11700 NE 160th St., Bothell, WA

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
095-01-025-20,519	Solid	GC/MS V V	10/07/10	10/07/10	101007L02

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	97	96	80-120	2	0-20	
Ethylbenzene	100	100	80-120	0	0-20	
Toluene	100	98	80-120	2	0-20	
Methyl-t-Butyl Ether (MTBE)	99	95	70-124	4	0-20	
Tert-Butyl Alcohol (TBA)	110	106	73-121	3	0-20	
Diisopropyl Ether (DIPE)	91	90	69-129	1	0-20	
Ethyl-t-Butyl Ether (ETBE)	91	89	70-124	2	0-20	
Tert-Amyl-Methyl Ether (TAME)	93	91	74-122	3	0-20	
Ethanol	103	98	51-135	5	0-27	

RPD - Relative Percent Difference , CL - Control Limit



Glossary of Terms and Qualifiers



Work Order Number: 10-10-0131

<u>Qualifier</u>	<u>Definition</u>
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution, therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported without further clarification.
B	Analyte was present in the associated method blank.
E	Concentration exceeds the calibration range.
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
ME	LCS Recovery Percentage is within LCS ME Control Limit range.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.
	Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture.



78
200

FedEx® *US Airbill*
Express

FedEx
Tracking
Number

8704 8094 7720

Reci

fedex.com 1.800.GoFedEx 1.800.463.3339

RECIPIENT: PEEL HERE

1 From This portion can be removed for Recipient's records.

Date 10/1/10 FedEx Tracking Number 870480947720
Sender's Name Christina McElland Phone 425 563-6514
Company Conestoga-Rovers & Associates
Address 20818 44th Ave W Suite 190 Dept./Floor/Suite/Room
City Lynnwood State WA ZIP 98036

2 Your Internal Billing Reference

3 To
Recipient's Name SAMPLE CONTROL Phone 714 895-5494
Company CALSCIENCE ENVIRON ☐ HOLD Weekday ☐ HOLD Saturday
Print FedEx location address below. NOT available for FedEx First Overnight. Print FedEx location address below. Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.
Address 7440 LINCOLN WAY Dept./Floor/Suite/Room
We cannot deliver to P.O. boxes or P.O. ZIP codes.
Address
Print FedEx location address here if HOLD option is selected.
City GARDEN GROVE State CA ZIP 92841-1427



8704 8094 7720

4a Express Package Service

☒ **FedEx Priority Overnight** * Next business morning. * Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected. ☐ **FedEx Standard Overnight** * Next business afternoon. * Saturday Delivery NOT available. ☐ **FedEx Express Saver** * Third business day. * Saturday Delivery NOT available.

4b Express Freight Service

☐ **FedEx 1Day Freight** * Next business day. * Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected. ☐ **FedEx 2Day Freight** * Second business day. * Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected. ☐ **FedEx 3Day Freight** * Third business day. * Saturday Delivery NOT available.

5 Packaging

☐ **FedEx Envelope*** ☐ **FedEx Pak*** Includes FedEx Small Pak, FedEx Large Pak, and FedEx Sturdy Pak. ☐ **FedEx Box** ☐ **FedEx Tube**

6 Special Handling and Delivery Signature Options

☒ **SATURDAY Delivery** * NOT available for FedEx Standard Overnight, FedEx First Overnight, FedEx Express Saver, or FedEx 3Day. ☐ **No Signature Required** * Package may be left without obtaining a signature for delivery. ☐ **Direct Signature** * Someone at recipient's address may sign for delivery. ☐ **Indirect Signature** * If no one is at address, someone may sign for delivery. ☐ **Dry Ice** * Dry Ice, 3, UN 1845. ☐ **Cargo**

Does this shipment contain dangerous goods?

☒ **No** ☐ **Yes** As per attached Shipper's Declaration. ☐ **Yes** Shipper's Declaration not required. ☐ **Dry Ice** Dry Ice, 3, UN 1845. ☐ **Cargo**

7 Payment Bill to:

☐ **Sender** Acct. No. in Section 1 will be billed. ☒ **Recipient** ☐ **Third Party** ☐ **Credit Card** Enter FedEx Acct. No. or Credit Card No. below.
Total Packages 1368 Total Weight 41.05 lbs. Credit Card Auth.

*Our liability is limited to \$100 unless you declare a higher value. See the current FedEx Service Guide for details.

Rev. Date 2/08-Part #158279-©1994-2008 FedEx-PRINTED IN U.S.A.-SRS

0131

WORK ORDER #: 10-10-0131

SAMPLE RECEIPT FORMCooler 1 of 1CLIENT: CRADATE: 10/02/10**TEMPERATURE:** Thermometer ID: SC1 (Criteria: 0.0 °C – 6.0 °C, not frozen)Temperature 4 . 3 °C + 0.5 °C (CF) = 4 . 8 °C ☐ Blank ☒ Sample☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____).☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.☐ Received at ambient temperature, placed on ice for transport by Courier.Ambient Temperature: ☐ Air ☐ FilterInitial: TN**CUSTODY SEALS INTACT:**☒ Cooler ☐ _____ ☐ No (Not Intact) ☐ Not Present ☐ N/AInitial: TN☐ Sample ☐ _____ ☐ No (Not Intact) ☒ Not PresentInitial: TN**SAMPLE CONDITION:**

	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples.....	☒	☐	☐
COC document(s) received complete.....	☒	☐	☐

☐ Collection date/time, matrix, and/or # of containers logged in based on sample labels.☐ No analysis requested. ☐ Not relinquished. ☐ No date/time relinquished.

Sampler's name indicated on COC.....	☒	☐	☐
--------------------------------------	-------------------------------------	--------------------------	--------------------------

Sample container label(s) consistent with COC.....	☐	☒	☐
--	--------------------------	-------------------------------------	--------------------------

Sample container(s) intact and good condition.....	☐	☒	☐
--	--------------------------	-------------------------------------	--------------------------

Proper containers and sufficient volume for analyses requested.....	☒	☐	☐
---	-------------------------------------	--------------------------	--------------------------

Analyses received within holding time.....	☒	☐	☐
--	-------------------------------------	--------------------------	--------------------------

pH / Residual Chlorine / Dissolved Sulfide received within 24 hours.....	☐	☐	☒
--	--------------------------	--------------------------	-------------------------------------

Proper preservation noted on COC or sample container.....	☒	☐	☐
---	-------------------------------------	--------------------------	--------------------------

☐ Unpreserved vials received for Volatiles analysis

Volatile analysis container(s) free of headspace.....	☐	☐	☒
---	--------------------------	--------------------------	-------------------------------------

Tedlar bag(s) free of condensation.....	☐	☐	☒
---	--------------------------	--------------------------	-------------------------------------

CONTAINER TYPE:Solid: ☐ 4ozCGJ ☒ 8ozCGJ ☐ 16ozCGJ ☐ Sleeve (____) ☐ EnCores® ☒ TerraCores® ☒ 2oz PJWater: ☐ VOA ☐ VOAh ☐ VOAna₂ ☐ 125AGB ☐ 125AGBh ☐ 125AGBp ☐ 1AGB ☐ 1AGBna₂ ☐ 1AGBs☐ 500AGB ☐ 500AGJ ☐ 500AGJs ☐ 250AGB ☐ 250CGB ☐ 250CGBs ☐ 1PB ☐ 500PB ☐ 500PBna☐ 250PB ☐ 250PBn ☐ 125PB ☐ 125PBznna ☐ 100PJ ☐ 100PJna₂ ☐ _____ ☐ _____ ☐ _____Air: ☐ Tedlar® ☐ Summa® Other: ☐ _____ Trip Blank Lot#: _____ Labeled/Checked by: TNContainer: C: Clear A: Amber P: Plastic G: Glass J: Jar B: Bottle Z: Ziploc/Resealable Bag E: Envelope Reviewed by: YLPreservative: h: HCL n: HNO₃ na₂: Na₂S₂O₃ na: NaOH p: H₃PO₄ s: H₂SO₄ znna: ZnAc₂+NaOH f: Field-filtered Scanned by: YL

WORK ORDER #: **10-10-0131**

SAMPLE ANOMALY FORM

SAMPLES - CONTAINERS & LABELS:

Comments:

- ☐ Sample(s)/Container(s) NOT RECEIVED but listed on COC
- ☒ Sample(s)/Container(s) received but NOT LISTED on COC
- ☐ Holding time expired – list sample ID(s) and test
- ☐ Insufficient quantities for analysis – list test
- ☐ Improper container(s) used – list test
- ☐ Improper preservative used – list test
- ☐ No preservative noted on COC or label – list test & notify lab
- ☐ Sample labels illegible – note test/container type
- ☐ Sample label(s) do not match COC – Note in comments
 - ☐ Sample ID
 - ☐ Date and/or Time Collected
 - ☐ Project Information
 - ☐ # of Container(s)
 - ☐ Analysis
- ☒ Sample container(s) compromised – Note in comments
 - ☐ Water present in sample container
 - ☒ Broken
- ☐ Sample container(s) not labeled
- ☐ Air sample container(s) compromised – Note in comments
 - ☐ Flat
 - ☐ Very low in volume
 - ☐ Leaking (Not transferred - duplicate bag submitted)
 - ☐ Leaking (transferred into Calscience Tedlar® Bag*)
 - ☐ Leaking (transferred into Client's Tedlar® Bag*)
- ☐ Other: _____

(-6) Received 9 containers
labeled as 50-241809-100110-SR-SB-11-2
10/01/10, 9 = 13,
1 x 8oz CGJ
2 x 2oz PU
6 x Terracore

(-2) 1 x 8oz CGJ received
broken and transferred to
new container

(-3) 1 x terracore received
with broken cap.

HEADSPACE – Containers with Bubble > 6mm or ¼ inch:

Sample #	Container ID(s)	# of Vials Received	Sample #	Container ID(s)	# of Vials Received	Sample #	Container ID(s)	# of Cont. received	Analysis

Comments: _____

*Transferred at Client's request.

Initial / Date: TN 10/02/10

LAB (LOCATION)

☒ CALSCIENCE ()
☐ SPL Houston ()
☐ XENCO ()
☐ TEST AMERICA ()
☐ OTHER ()



Shell Oil Products Chain Of Custody Record

LAB (LOCATION)
☒ CALSCIENCE ()
☐ SPL Houston ()
☐ XENCO ()
☐ TEST AMERICA ()
☐ OTHER ()

Print Bill To Contact Name
CRA

INCIDENT # (ENV. SERVICES)
92995017

DATE: 10/1/10

PAGE: 1 of 1

PO #
120531

SAP #
120531

GLOBAL ID NO.
120531

Site
1700 NE 160th St Bothell WA

PHONE NO.
425-212-5100

E-MAIL
cschweigert@CRAworld.com

CONSULTANT PROJECT NO.
241809

LAB USE ONLY
10-10-0131

CONTESTO-ROVERS & ASSOCIATES
ADDRESS: 425-212-5100 425-212-5199 425-212-5100 20918 44th Ave. W Lynnwood, WA
PROJECT CONTACT (Please copy or PDF Report to): Christina McClelland
TELEPHONE: 425-212-5100 FAX: 425-212-5199 E-MAIL: cmcclelland@craeworld.com

LOG CODE
CRAW

TURNAROUND TIME (CALENDAR DAYS):
☒ STANDARD (14 DAY) ☐ 5 DAYS ☐ 3 DAYS ☐ 2 DAYS ☐ 24 HOURS ☐ RESULTS NEEDED ON WEEKEND

LAB - RWQCB REPORT FORMAT ☐ USE AGENCY: ☐ RESULTS NEEDED ON WEEKEND

SPECIAL INSTRUCTIONS OR NOTES:
☒ SHELL CONTRACT RATE APPLIES
☐ STATE REIMBURSEMENT RATE APPLIES
☐ EDD NOT NEEDED
☒ RECEIPT VERIFICATION REQUESTED

See SPL PM for WA Dept. of Ecology MTCA Method A cleanup levels for minimum detection limits

TURNAROUND TIME (CALENDAR DAYS): ☒ STANDARD (14 DAY) ☐ 5 DAYS ☐ 3 DAYS ☐ 2 DAYS ☐ 24 HOURS ☐ RESULTS NEEDED ON WEEKEND										REQUESTED ANALYSIS															TEMPERATURE ON RECEIPT C°																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
SPECIAL INSTRUCTIONS OR NOTES : Copy final report to Shell.Lab.Billing@cravworld.com See SPL PM for WA Dept. of Ecology MTCA Method A cleanup levels for <u>minimum</u> detection limits										PRESERVATIVE			MATRIX		NO. OF CONT.	NWTPH-GX	NWTPH-DX w/Silica Gel Cleanup	BTEX (8260B)	5 Oxygenates, MTBE, TBA, DIPE, TAME, ETBE (8260B)	EDC (8260B)	EDC (8011)	Total Lead (6020)	PCBs (8082)	PAHs (8070 SIM)	VOCs Full list (8260B)	Pest (8080)	NWTPH-VPH	NWTPH-EPH	n-Hexane (9071B)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					

Relinquished by: (Signature) [Signature] **Date:** 10/1/10 **Time:** 5:00pm

Relinquished by: (Signature) [Signature] **Date:** 10/1/10 **Time:** 5:00pm

Relinquished by: (Signature) [Signature] **Date:** 10/02/10 **Time:** 1000

Relinquished by: (Signature) [Signature] **Date:** 10/02/10 **Time:** 1000

APPENDIX G

SENSITIVE RECEPTOR SURVEY

SENSITIVE RECEPTOR SEARCH

for the site

120531

11700 NE 160TH, BOTHELL WA

performed for

DELTA ENVIRONMENTAL

05-21-2005

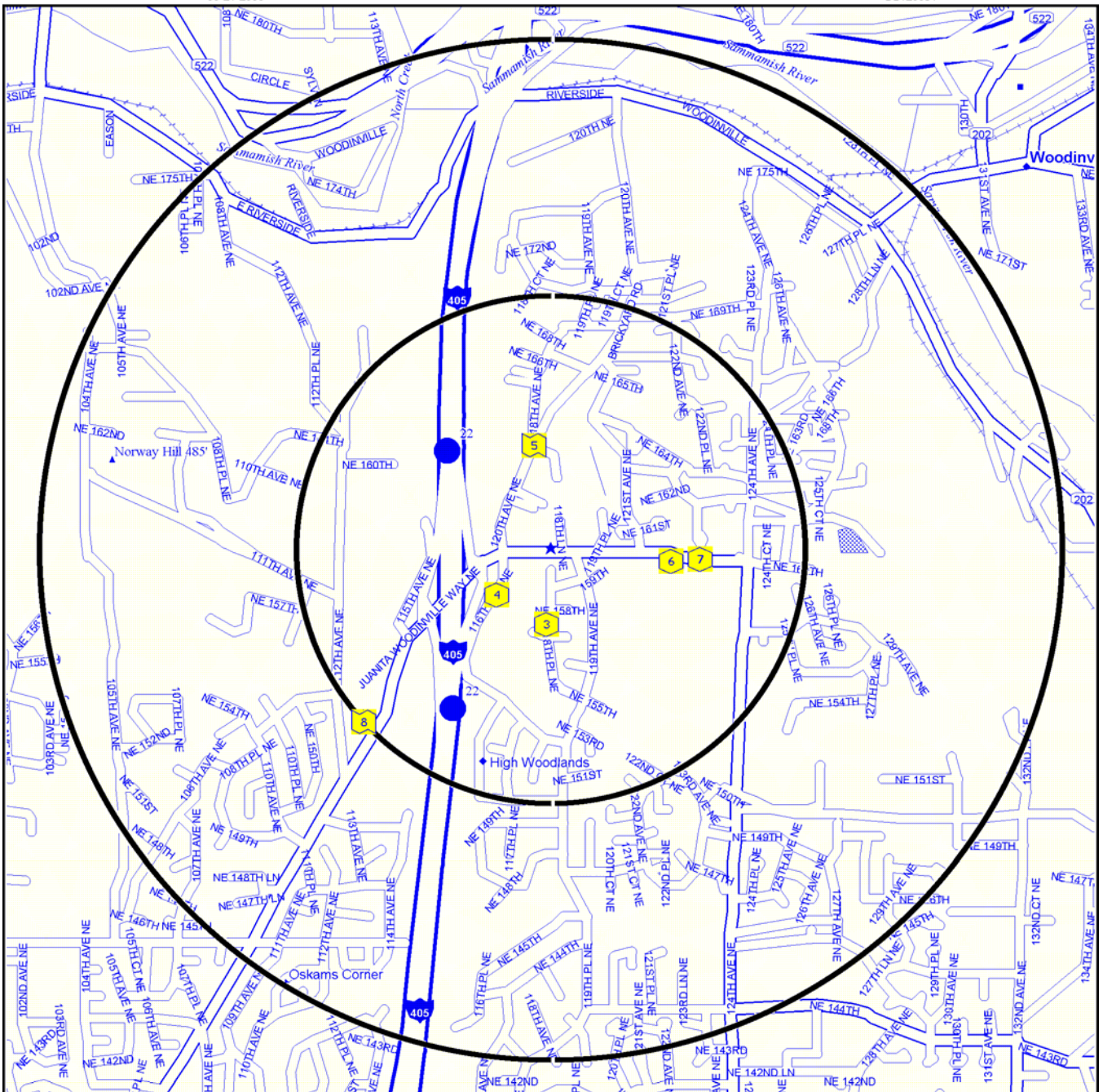
INTRODUCTION

This document, prepared on the request of DELTA ENVIRONMENTAL, reports the findings of BBL's investigation of environmental concerns in the vicinity of 11700 Ne 160th, Bothell WA. It is divided in the following segments:

- **Map** - showing the location of the identified sites relative to the subject site.
- **Topographic, Contour, Wetland and Aerial Map** - showing the surrounding area of the subject site.
- **Summary** - listing the identified sites by street names.
- **Final Report** - describing the sources investigated and the resulting findings:

Sensitive Receptors	Pge	Search Dist	Site	< 600'	600-1640'	1640-3280'	3280-5280'	area	un kwn	total
Educational Institutions	1	1/2 mile		2	1	1				4
Hospitals	2	1/2 mile								
Leaking Underground Storage Tanks	2	1/2 mile	1	1						2
Total References			1	3	1	1				6
Total Sites			1	4	1	1	1			8

* The classification by distance takes into consideration physical property sizes by assuming a standard size.

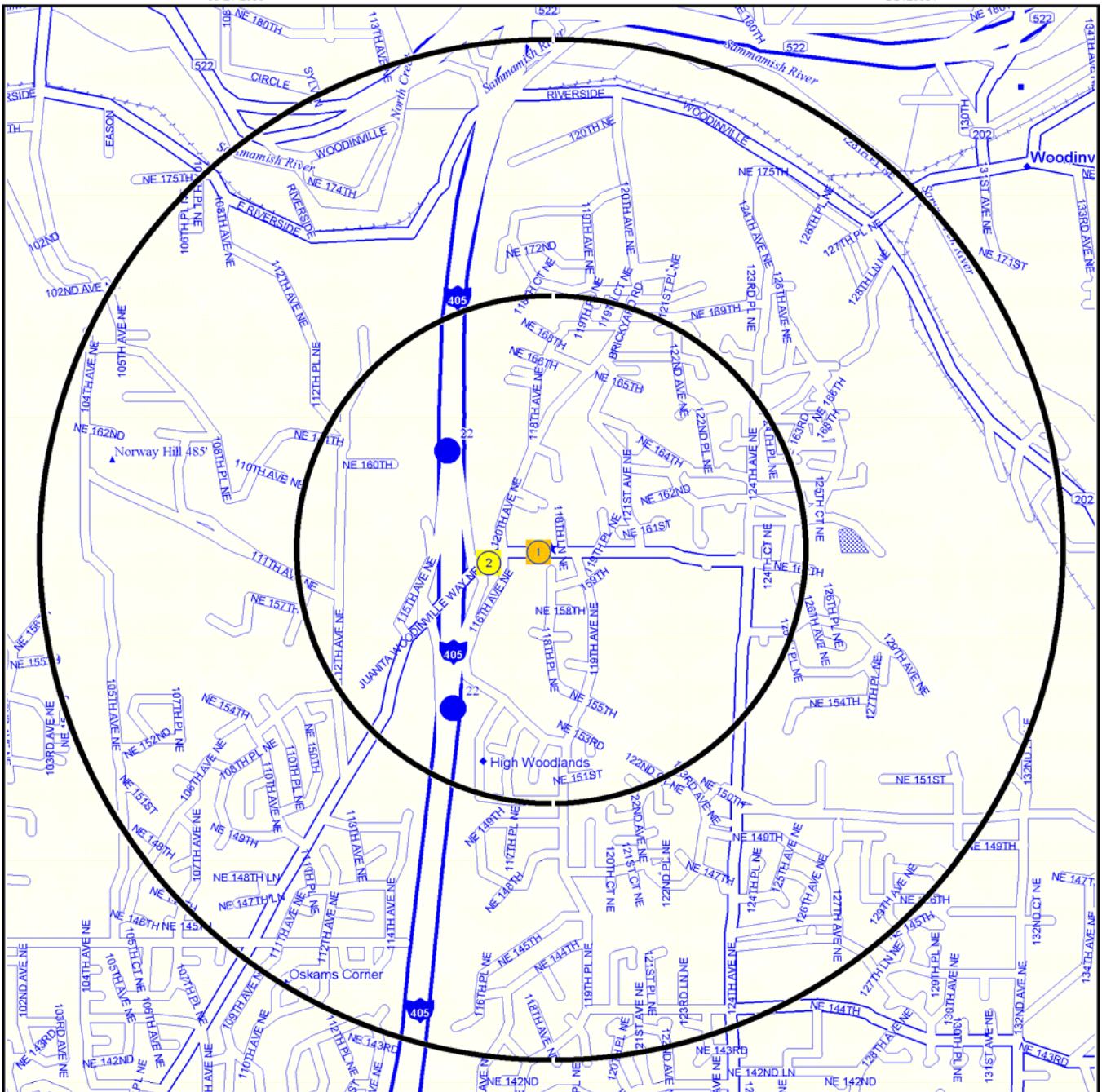


1.6 inches = 1/2 mile (the circles do not include any buffer zone)



-  SCHOOLS/UNIVERSITIES
-  HOSPITALS/NURSING HOMES
- 
- 
-  WATER WELLS

APPROXIMATE LOCATION OF IDENTIFIED SITES WITH SENSITIVE RECEPTORS IN THE VICINITY
AT 11700 NE 160TH, BOTHELL



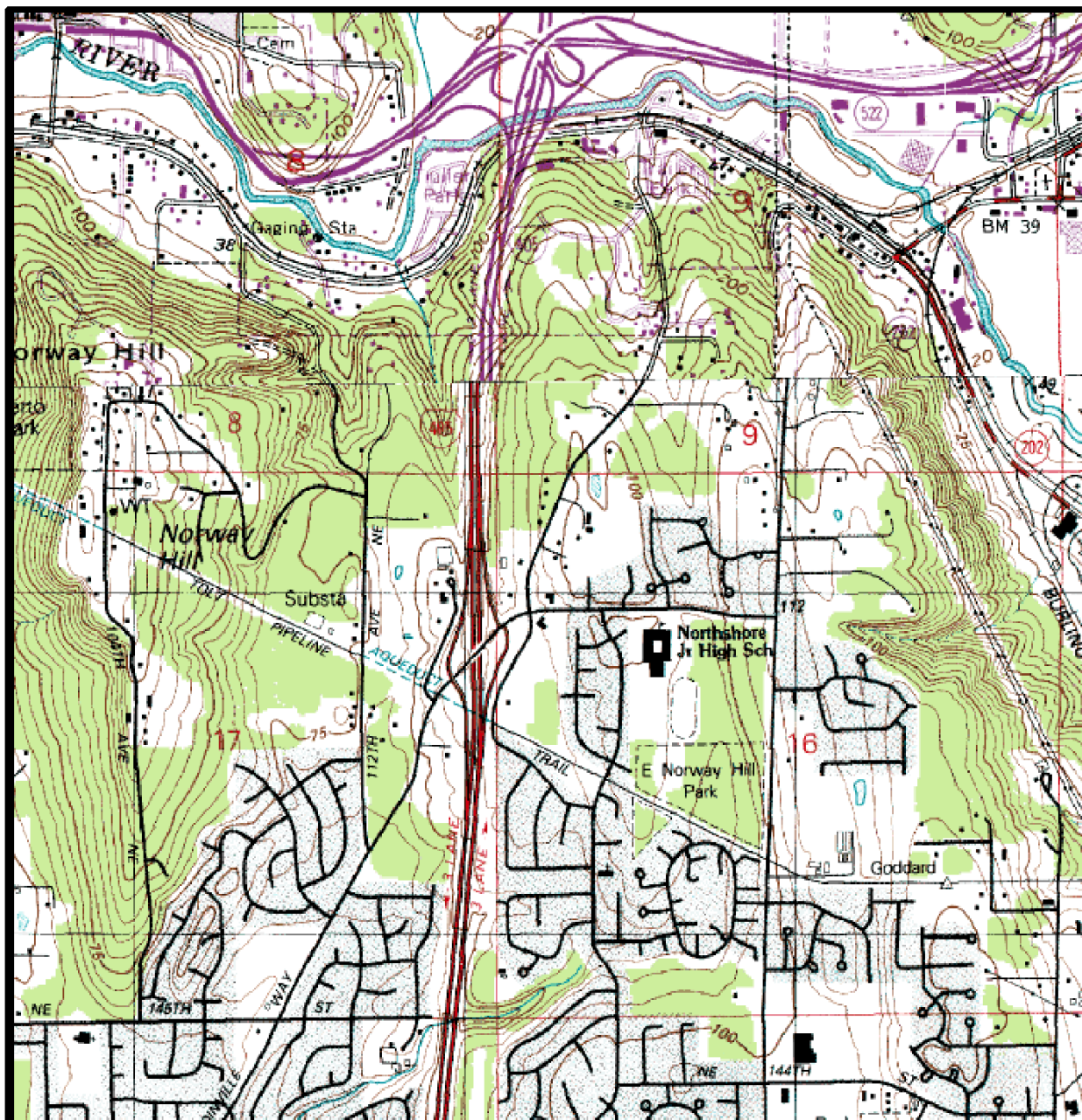
1.6 inches = 1/2 mile (the circles do not include any buffer zone)



LEAKING UNDERGROUND FUEL TANK WITH 'No Further Action' status
LEAKING UNDERGROUND FUEL TANK

APPROXIMATE LOCATION OF IDENTIFIED SITES WITH LEAKING TANKS IN THE VICINITY
AT 11700 NE 160TH, BOTHELL

1.	TEXACO STATION # 63232 1469	11700 NE 160TH ST
2.	CHEVRON STATION # 9-3299	15900 116TH AVE NE
3.	EVERGREEN ACADEMY	16017 118TH PL NE
4.	KINDER CARE LEARNING CTR	15816 116TH AVE NE
5.	..end..	
6.	NORTHSHORE JUNIOR HIGH SCHOOL	12101 NE 160TH ST
7.	WOODMOOR ELEMENTARY SCHOOL	12225 NE 160TH ST
8.	..end..	



Longitude: -122° 10' 54.3"
Latitude: 47° 44' 37.8"

UTM Easting: 561340 meters
UTM Northing: 5287937 meters
UTM Zone: NAD 10

County: KING

AREA RADON ESTIMATES

KING County (15 sites tested)

<2 pCi/L	97.2%
2-4 pCi/L	0.9%
4-8 pCi/L	1.9%
8-20 pCi/L	0.0%
20 > pCi/L	0.0%

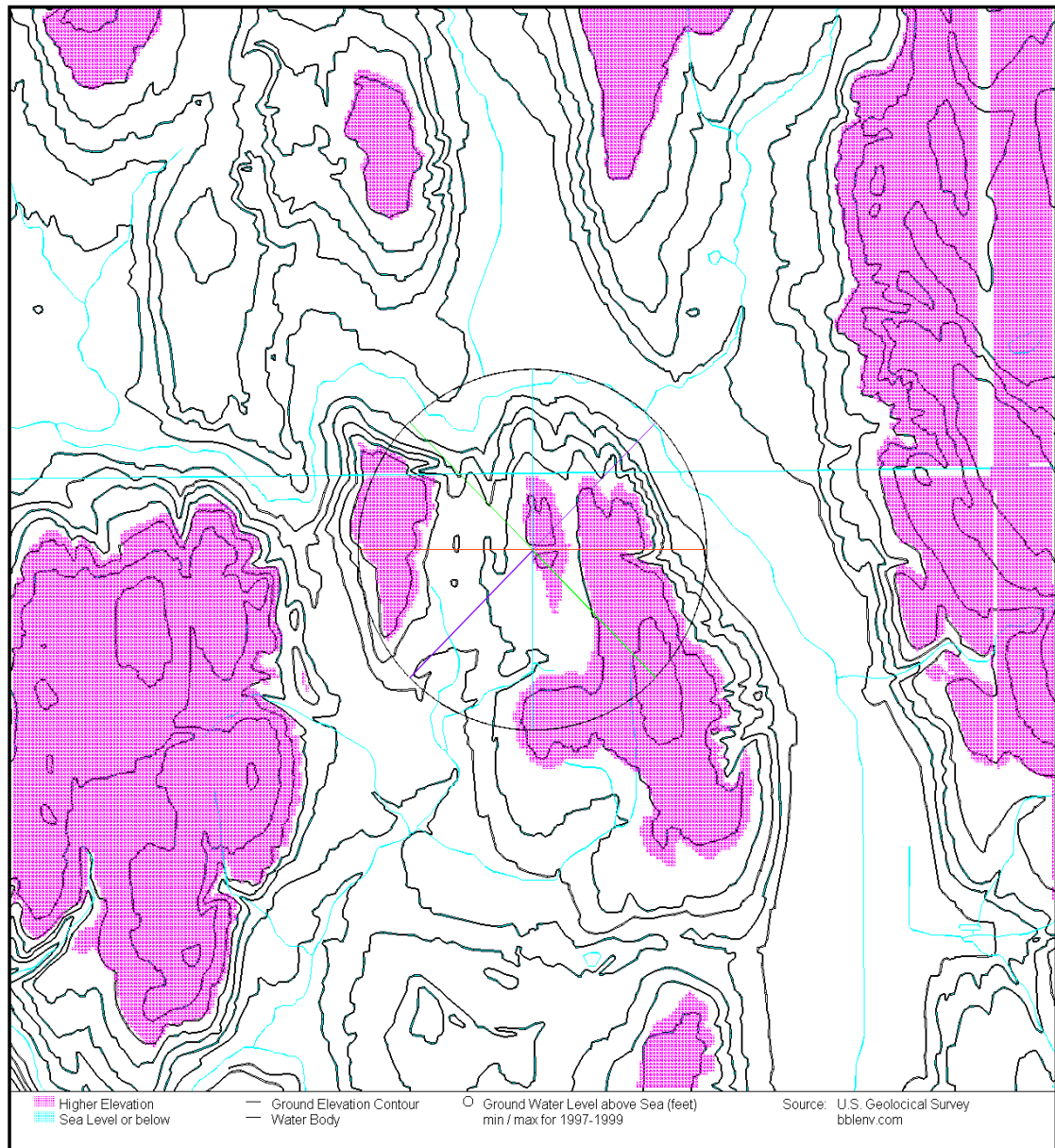
Source: U.S. Dept of Interior, Geological Survey

BELLEVUE NORTH [WA] 1982

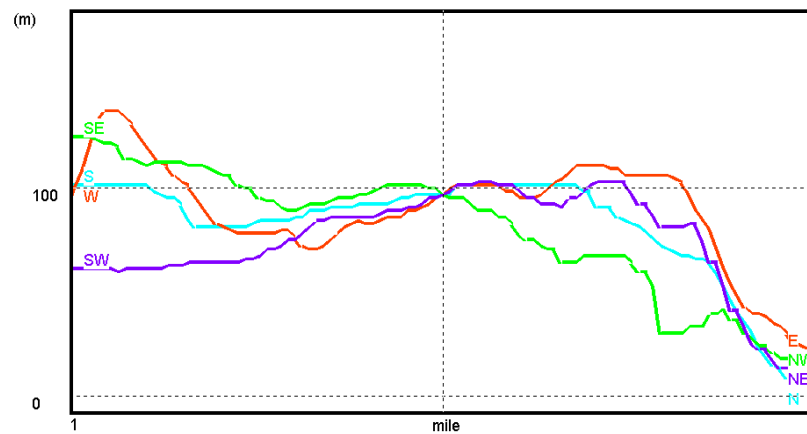
Scale: 1.6 inches to 1/2 mile

UTM North is straight up

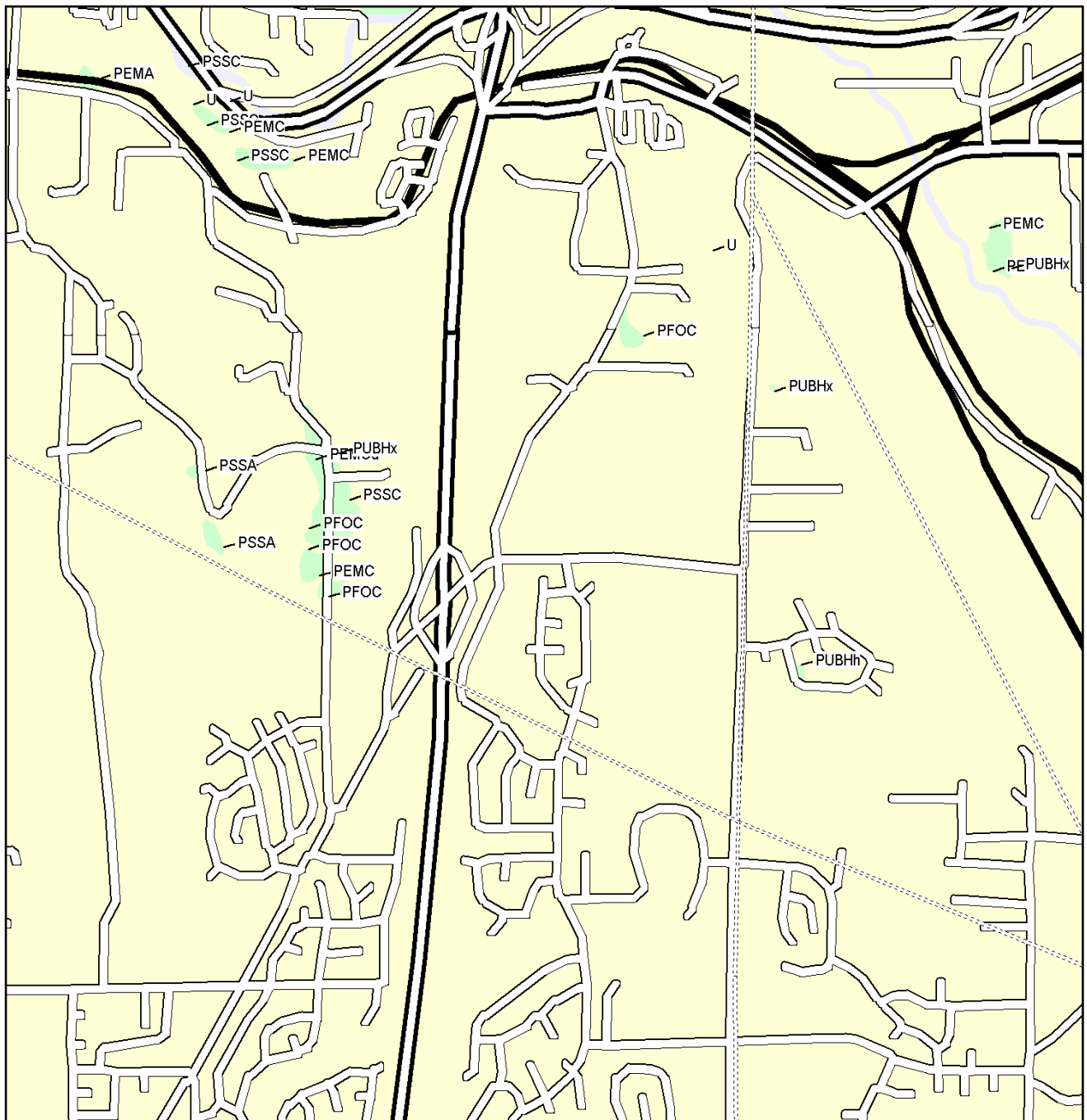
TOPOGRAPHIC MAP OF THE VICINITY OF THE SUBJECT SITE LOCATED AT
11700 NE 160TH, BOTHELL



Elevation Contour overview map (6*6 mile)

Elevation Profiles (± 1 mile)

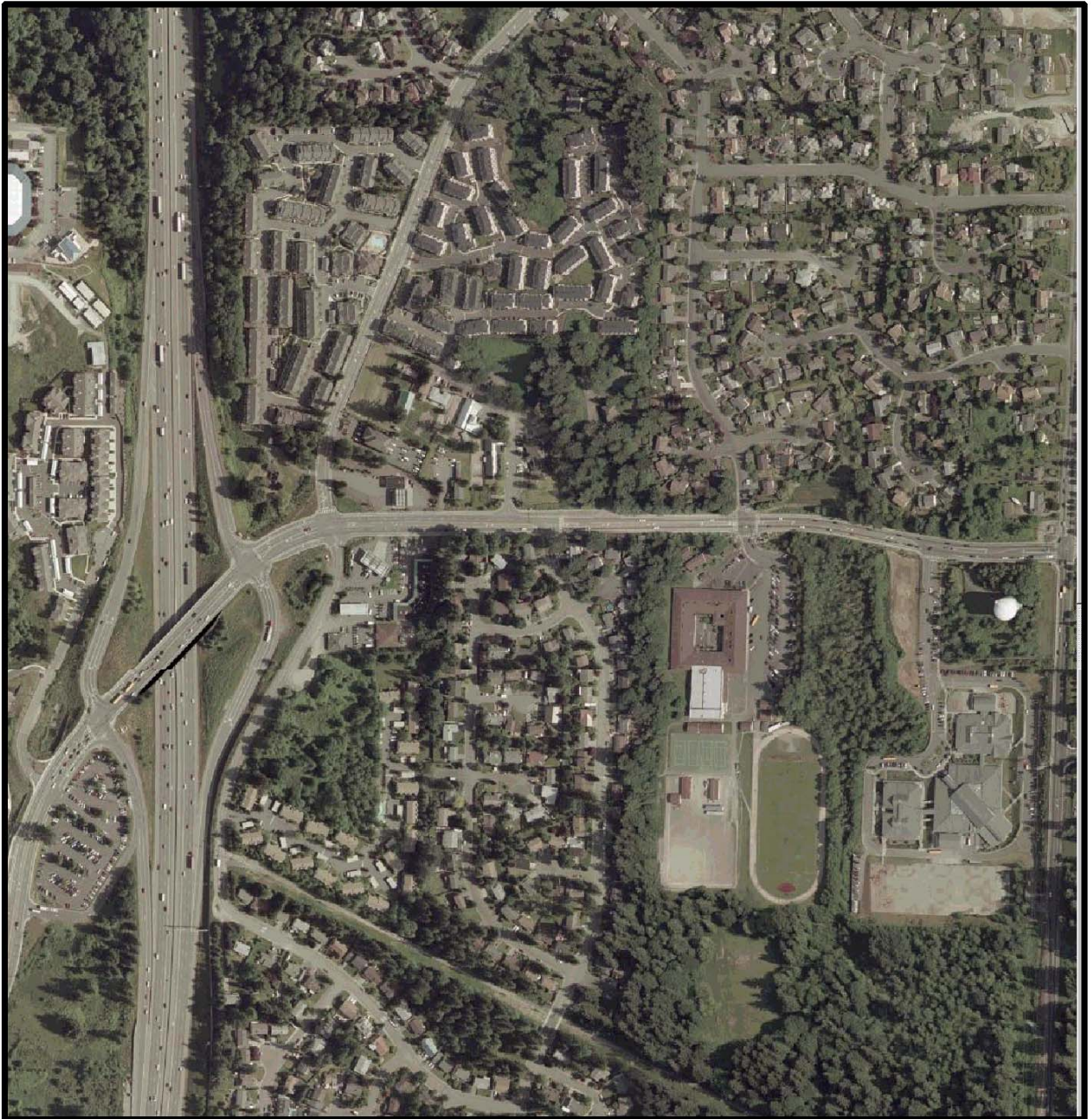
CONTOUR DATA IN THE VICINITY OF THE SUBJECT SITE LOCATED AT
11700 NE 160TH, BOTHELL



CLASSES		SUBCLASSES		MODIFIERS	
E	ESTUARINE	RB	rock bottom	A	temporary
		RS	rocky shore	B	saturated
1	Subtidal	1	bedrock	C	seasonal
2	Intertidal	2	boulder	D	seasonal well drained
P	PALUSTRINE	6	vegetated non pioneer	E	seasonal saturated
		FL	flat	F	semipermanent
R	RIVERINE	SB	stream bed	G	intermittently exposed
		BB	beach bar	H	permanent
1	Tidal	UB	unconsolidated bottom	J	intermittently flooded
2	Lower perennial	US	unconsolidated shore	K	artificial
3	Upper Perennial	1	cobble/gravel	L	subtidal
4	Intermittent	2	sand	M	irregularly exposed
5	Unknown Perenni	3	mud	N	regular
M	MARINE	4	organic	P	irregular
		5	vegetated pioneer	R	seasonal tidal
1	Subtidal	6	vegetated non pioneer	S	temporary tidal
2	Intertidal	EM	emergent	T	semipermanent tidal
L	LACUSTRINE	1	persistent	V	permanent tidal
		2	nonpersistent	Z	interm. exposed permanent
1	Limnetic	3	narrow leaved nonpersistent	W	interm. flooded temporary
2	Littoral	4	broad leaved nonpersistent	Y	saturated semiperm seasonal
U	UPLAND	5	narrow leaved persistent	U	unknown
		6	broad leaved persistent		
		RF	reef		
		1	mollusc/coral		
		2	worm		
		OW	open water		
		AB	aquatic bed		
		1	"submergent algal		
		2	submergent vascular		
		3	submergent moss		
		4	floating leaved		
		5	floating		
		6	unknown submergent		
		7	unknown surface		
		SS	scrub shrub		
		FD	forested		
		1	broad leaved deciduous		
		2	needle leaved deciduous		
		3	broad leaved evergreen		
		4	needle leaved evergreen		
		5	dead		
		6	deciduous		
		7	evergreen		
		ML	moss / lichen		

source: USDI Fish & Wildlife Service / bblenv.com
Issaquah 07/81

National Wetlands Inventory in the vicinity of the subject site located at
11700 NE 160TH, BOTHELL



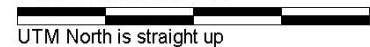
Longitude: -122° 10' 54.3"
Latitude: 47° 44' 37.8"

UTM Easting: 561340 meters
UTM Northing: 5287937 meters
UTM Zone: NAD 10

County: KING

Project:
Quadrangle:
Date: 6/13/2002
Film Type: Black & White

Scale: 1 inch to 528 feet



UTM North is straight up

Source: U.S. Dept of Interior, Geological Survey

AERIAL PHOTOGRAPH OF THE VICINITY OF THE SUBJECT SITE LOCATED AT
11700 NE 160TH, BOTHELL

SENSITIVE RECEPTOR SEARCH

SUMMARY

Job: DL120531

; ADDRESS		CITY	LOCATION	SOU- RCE	STA- TUS	PA GE	MAP LOC	DIR
; OFF-SITE SENSITIVE RECEPTORS, WITHIN 600' - 1640' OF THE SUBJECT SITE								
16017	118TH PL NE	BOTHELL	EVERGREEN ACADEMY EVERGREEN ACADEMY EVERGREEN ACADEMY	SX SX SX	1 1 1	3	S	700'
15816	116TH AVE NE	BOTHELL	KINDER CARE LEARNING CTR KINDER CARE LEARNING CTR	SX SX	1 1	4	SW	700'
defined.	5 N	1000'	..end..	R		Error!	Bookmark not	
defined.			..end..	R		Error!	Bookmark not	
12101	NE 160TH ST	BOTHELL	NORTHSHORE JUNIOR HIGH SCHOOL	SX	1	6	E	1500'
OFF-SITE SENSITIVE RECEPTORS, WITHIN 1640' - 3280' OF THE SUBJECT SITE								
12225	NE 160TH ST	BOTHELL	WOODMOOR ELEMENTARY SCHOOL	SX	2	7	E	1800'
defined.	8 SW	2800'	..end..	R		Error!	Bookmark not	

LEAKING UNDERGROUND TANKS

120531

11700 NE 160TH, BOTHELL WA

Page: 1

Date: 05-21-2005

Job: DL120531

; ADDRESS

CITY

LOCATION

SOU-
RCESTA-
TUSPA
GEMAP DIR
LOC

;

LEAKING UNDERGROUND TANKS, WITHIN 600' OF THE SUBJECT SITE

11700

NE 160TH ST

BOTHELL

TEXACO STATION # 63232 1469

LUST

2

1**LEAKING UNDERGROUND TANKS, WITHIN 600' - 1640' OF THE SUBJECT SITE**

15900

116TH AVE NE

BOTHELL

CHEVRON STATION # 9-3299

LUST

2

2

W

700'

—

REFERENCED SOURCES

Date: 05-21-2005

Job: DL120531

SX EDUCATIONAL INSTITUTIONS

HX HOSPITALS

LUST LEAKING UNDERGROUND STORAGE TANKS

INTRODUCTION

BBL has used its best effort but makes no claims as to the completeness or accuracy of the referenced government sources or the completeness of the search. Our records are frequently updated but only as current as their publishing date and may not represent the entire field of known or potential hazardous waste or contaminated sites. To ensure complete coverage of the subject property and surrounding area, sites may be included in the list if there is any doubt as to the location because of discrepancies in map location, zip code, address, or other information in our sources. For additional information call 858 793-0641.

OFF-SITE SENSITIVE RECEPTORS

SC Schools

Child Care Center, Preschools, Schools & Colleges

This list has been researched within half of a mile radius of the subject site.

Site: EVERGREEN ACADEMY
Address: 16017 118TH PL NE
City: BOTHELL
Map Loc: 3 - about 700 feet S of the subject
Status: 835102

Site: EVERGREEN ACADEMY
Address: 16017 118TH PL NE
City: BOTHELL
Map Loc: 3 - about 700 feet S of the subject
Status: 835101

Site: EVERGREEN ACADEMY
Address: 16017 118TH PL NE
City: BOTHELL
Map Loc: 3 - about 700 feet S of the subject
Status: 821103

Site: KINDER CARE LEARNING CTR
Address: 15816 116TH AVE NE
City: BOTHELL
Map Loc: 4 - about 700 feet SW of the subject
Status: 835102

Site: KINDER CARE LEARNING CTR
Address: 15816 116TH AVE NE
City: BOTHELL
Map Loc: 4 - about 700 feet SW of the subject
Status: 835101

Site: NORTSHORE JUNIOR HIGH SCHOOL
Address: 12101 NE 160TH ST
City: BOTHELL
Map Loc: 6 - about 1500 feet E of the subject
Status: 821103

Site: WOODMOOR ELEMENTARY SCHOOL
Address: 12225 NE 160TH ST
City: BOTHELL
Map Loc: 7 - about 1800 feet E of the subject
Status: 821103

HOSP Hospitals

Hospitals and Nursing Care facilities

No listings within half of a mile radius of the subject site.

WASHINGTON STATE SOURCES

LUST Leaking Underground Storage Tanks (LUST)

Each of the Regional Departments of Ecology maintain a list of Leaking Underground Storage Tanks (LUST)

This list has been researched within half of a mile radius of the subject site.

Site: TEXACO STATION # 63232 1469
Address: 11700 NE 160TH ST
City: BOTHELL
Map Loc: 1 - the subject site
Status: - -

id: 4493

A release (#2849) was reported to have occurred on 12/30/91 .
Ground water cleanup started on 5/29/92 .
Soil cleanup started on 5/29/92 .

Site: CHEVRON STATION # 9-3299
Address: 15900 116TH AVE NE
City: BOTHELL
Map Loc: 2 - about 700 feet W of the subject
Status: - -

id: 5138

A release (#4933) was reported to have occurred on 9/21/93 .
Soil awaiting cleanup on 6/1/95 .

120531

11700 NE 160TH, BOTHELL

Page: 3

Date: 05-21-2005

Job: DL120531

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APPENDIX H

TERRESTRIAL ECOLOGICAL EVALUATION



Voluntary Cleanup Program

Washington State Department of Ecology Toxics Cleanup Program

TERRESTRIAL ECOLOGICAL EVALUATION EXCLUSION FORM

Under the Model Toxics Control Act (MTCA), a Terrestrial Ecological Evaluation (TEE) is not required if the Site meets the criteria in WAC 173-340-7491 for an exclusion. If you determine that your Site does not require a TEE, please complete this form and submit it to the Department of Ecology (Ecology) at the appropriate time, either with your VCP Application or with a subsequent request for a written opinion. Please note that exclusion from the TEE does not exclude the Site from an evaluation of aquatic or sediment ecological receptors.

If your Site does not meet the criteria for exclusion under WAC 173-340-7491, then you may have to conduct a simplified TEE in accordance with WAC 173-340-7492 or a site-specific TEE in accordance with WAC 173-340-7493. If you have questions about conducting a simplified or site-specific TEE, please contact the Ecology site manager assigned to your Site or the appropriate Ecology regional office.

Step 1: IDENTIFY HAZARDOUS WASTE SITE AND EVALUATOR

Please identify below the hazardous waste site for which you are documenting an exclusion from conducting a TEE and the name of the person who conducted the evaluation.

Facility/Site Name: Shell Station 120531

Facility/Site Address: 11700 Northeast 160th Street, Bothell, WA

Facility/Site No: 63265631

VCP Project No.: NW2053

Name of Evaluator: Elizabeth Rugh

Step 2: DOCUMENT BASIS FOR EXCLUSION

The bases for excluding a site from a terrestrial ecological evaluation are set forth in WAC 173-340-7491(1). Please identify below the basis for excluding your Site from further evaluation. Please check all that apply.

POINT OF COMPLIANCE – WAC 173-340-7491(1)(A)

- 1-☐ No contamination present at site.
- 2-☐ All contamination is 15 feet below ground level prior to remedial activities.
- 3-☐ All contamination is six feet below ground level and an institutional control has been implemented as required by WAC 173-340-440.
- 4-☐ All contamination is below a site-specific point of compliance established in compliance with WAC 173-340-7490(4)(b) with an institutional control implemented as required by WAC 173-340-440. ***Please provide documentation that describes the rationale for setting a site-specific point of compliance.***

BARRIERS TO EXPOSURE – WAC 173-340-7491(1)(b)

- 5-☐ 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 an institutional control has been implemented as required by WAC 173-340-440. ***An exclusion based on future land use must have a completion date for future development that is acceptable to Ecology.***

Step 2: DOCUMENT BASIS FOR EXCLUSION continued

UNDEVELOPED LAND – WAC 173-340-7491(1)(c)

“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 by wildlife.

- There is less than one-quarter acre 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.
- 6- ☐ For sites not containing any of the chemicals mentioned above, there is less than one-and-a-half acres of contiguous undeveloped land on or within 500 feet of any area of the Site.
- 7- ☒

BACKGROUND CONCENTRATIONS – WAC 173-340-7491(1)(d)

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

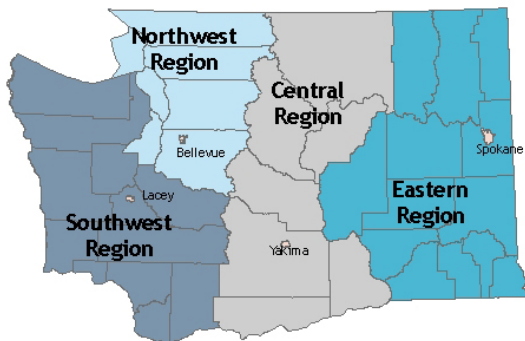
Step 3: PROVIDE EXPLANATION FOR EXCLUSION (IF NECESSARY)

The site is fully paved with asphalt or concrete. None of the chemicals listed in point 6 (above) are present at the site and there is less than one-and-one-half acres of contiguous undeveloped land on or within 500 feet of the any area of the Site (see attached map).

Attach additional pages if necessary.

Step 4: SUBMITTAL

Please mail your completed form to Ecology at the appropriate time, either with your VCP Application or with a subsequent request for a written opinion. If you complete the form after you enter the VCP, 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 Maser
3190 160th Ave. SE
Bellevue, WA 98008-5452

Southwest Region:

Attn: Scott Rose
P.O. Box 47775
Olympia, WA 98504-7775

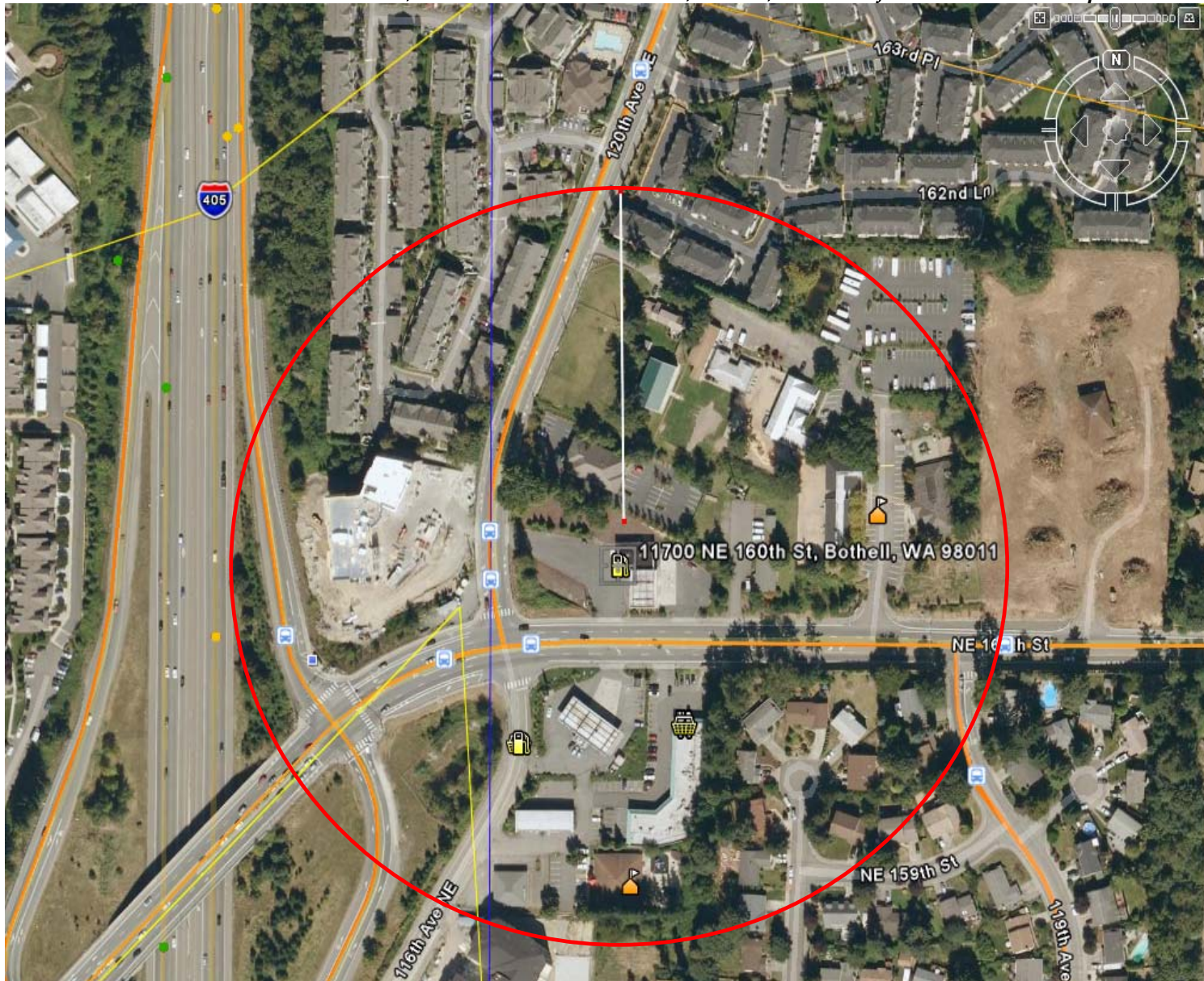
Central Region:

Attn: Mark Dunbar
15 W. Yakima Ave., Suite 200
Yakima, WA 98902

Eastern Region:

Patti Carter
N. 4601 Monroe
Spokane WA 99205-1295

Shell-Branded Service Station, 11700 Northeast 160th Street, Bothell, WA – 500-foot radius Aerial Map



APPENDIX I

REFERENCE MATERIAL FOR SITE-SPECIFIC CLEANUP LEVEL CALCULATION

Appendix A: Table of RBCs (continued)

See Table 2.4 for a description of the pathways. Refer to page A-5 for an explanation of the notes.

Contaminated Medium		GROUNDWATER µg/L (ppb)						GROUNDWATER µg/L (ppb)		AIR (see notes) µg/m ³					
Exposure Pathway		Vapor Intrusion into Buildings RBC _{vi}						GW in Excavation RBC _{we}		Inhalation RBC _{air}					
Receptor Scenario		Residential		Urban Residential		Occupational		Construction and Excavation Worker		Residential		Urban Residential		Occupational	
Contaminant of Concern	Note		Note		Note		Note		Note		Note		Note		Note
Benzene	c, v	160		340		2,700		1,700		0.27		0.57		1.5	
Toluene	nc, v	210,000		210,000		-	>S	78,000		400		400		1,600	
Ethylbenzene	nc, v	-	>S	-	>S	-	>S	110,000		1,100		1,100		4,200	
Xylenes	nc, v	59,000		59,000		-	>S	22,000		110		110		420	
iso-propylbenzene	nc, v	-	>S	-	>S	-	>S	-	>S	400		400		1,600	
n-propylbenzene	nc, v	-	>S	-	>S	-	>S	-	>S	150		150		580	
1,2,4-trimethylbenzene	nc, v	4,300		4,300		51,000		1,300		6.2		6.2		25	
1,3,5-trimethylbenzene	nc, v	3,200		3,200		38,000		1,400		6.2		6.2		25	
Acenaphthene	nc, v	-	>S	-	>S	-	>S	-	>S	220		220		880	
Anthracene	nc, v	-	>S	-	>S	-	>S	-	>S	1,100	>Pv	1,100	>Pv	4,400	>Pv
Benz[a]anthracene	c, nv	-	>S	-	>S	-	>S	9.1		0.0098		0.021		0.056	
Benzo[b]fluoranthene	c, nv	-	>S	-	>S	-	>S	-	>S	0.0098		0.021		0.056	
Benzo[k]fluoranthene	c, nv	-	>S	-	>S	-	>S	-	>S	0.098	>Pv	0.21	>Pv	0.56	>Pv
Benzo[a]pyrene	c, nv	-	>S	-	>S	-	>S	0.53		0.00098		0.0021		0.0056	
Chrysene	c, nv	-	>S	-	>S	-	>S	-	>S	0.98		2.1		5.6	
Dibenz[a,h]anthracene	c, nv	-	>S	-	>S	-	>S	0.21		0.00098	>Pv	0.0021	>Pv	0.0056	>Pv
Fluoranthene	nc, nv	-	>S	-	>S	-	>S	-	>S	150	>Pv	150	>Pv	580	>Pv
Fluorene	nc, v	-	>S	-	>S	-	>S	-	>S	150		150		580	
Indeno[1,2,3-cd]pyrene	c, nv	-	>S	-	>S	-	>S	-	>S	0.0098	>Pv	0.021	>Pv	0.056	>Pv
Naphthalene	nc, v	29,000		29,000		-	>S	680		3.1		3.1		13	
Pyrene	nc, nv	-	>S	-	>S	-	>S	-	>S	110	>Pv	110	>Pv	440	>Pv
MTBE	c, v	17,000		36,000		280,000		31,000		4.0		8.5		23	
EDB (1,2-dibromoethane)	c, v	110		230		1,800		20		0.0093		0.020		0.053	
EDC (1,2-dichloroethane)	c, v	210		460		3,600		600		0.079		0.17		0.45	
Lead	NA, NA		NA		NA		NA		NA		NA		NA		NA
Generic Gasoline	nc, v	-	>S	-	>S	-	>S	12,000		650		650		2,600	
Generic Diesel / Heating Oil	nc, nv	-	>S	-	>S	-	>S	-	>S	120		120		490	
Generic Mineral Insulating Oil	nc, nv	-	>S	-	>S	-	>S	-	>S	490		490		2,000	

Notes and References for Table of RBCs:

The numbers in this table will be updated as new information becomes available. The current version of this guidance document can be found on the Department's UST program web site at <http://www.deq.state.or.us/wmc/tank/toc-fct.htm> or the Environmental Cleanup web site at <http://www.deq.state.or.us/wmc/cleanup/guidelst.htm>

Although RBC values for air are included in this table, air samples are not routinely required at cleanup sites due to the great temporal and spatial variability in air concentrations that makes it difficult to collect representative samples. The air inhalation pathway is usually taken into account indirectly by considering volatilization from contaminated soils or groundwater. Air monitoring may be applied when soil or groundwater screening levels are exceeded for the indoor air pathway and additional tests are needed to assess exposure. Under these circumstances the air concentrations must meet the air RBCs in Table A, not OSHA or other air standards. We suggest that you discuss such sampling with the Department before implementation.

The symbols in the "Note" columns have the following meanings:

- c This chemical is a known or suspected carcinogen. The RBCs in this row were calculated using equations for carcinogens described in Appendix B.
- >C_{sat} This soil RBC exceeds the limit of three-phase equilibrium partitioning. Refer to Appendix D for the corresponding value of C_{sat}. Soil concentrations in excess of C_{sat} indicate that free product might be present. See Section B.2.1.4 for additional information.
- L The values for lead reported in this table are not derived from the equations developed in Appendix B. See Section B.3.4 for the source of the lead numbers and information on applying them.
- >MAX The constituent RBC for this pathway is greater than 100,000 mg/kg. The TPH RBC is greater than the maximum amount that would be present if all of the initial air space is filled with petroleum product. The Department believes it is highly unlikely that such concentrations will ever be encountered.
- NA This pathway is not applicable to the chemical of interest.
- nc This chemical has non-carcinogenic toxic effects. The RBCs in this row were calculated using equations for noncarcinogens described in Appendix B.
- nv This chemical is classified as "nonvolatile" for purposes of the exposure calculations in this document.
- >P The air concentration reported for the RBC exceeds the vapor pressure of the pure chemical. It can be assumed that this constituent can not create an unacceptable risk by this pathway. See Section B.2.1.4 for additional information.
- >S This groundwater RBC exceeds the solubility limit. Refer to Appendix D for the corresponding value of S. Groundwater concentrations in excess of S indicate that free product may be present. See Section B.2.1.4 for additional information.
- v This chemical is classified as "volatile" for purposes of the exposure calculations in this document.
- The RBC for this indirect pathway is not printed since it is assumed that it is not physically possible to exceed the unacceptable risk level by this pathway. See Section B.2.1.4 for additional information.

From Oregon Department of Environmental Quality, *Risk-Based Decision Making for the Remediation of Petroleum-Contaminated Sites*, 2003.

Construction and excavation worker – Carcinogens (benzene values for excavation workers as an example):

p. B-65, equation [B-161]

RBC_{we} = Risk-based concentration for excavation or construction worker exposure to Groundwater ($\mu\text{g/L}$)

$ARL_c = 1.00 \times 10^{-6}$ (unitless)	[p. C-1; Appendix C]
$AT_c = 70 \text{ yr}$	[p. C-1; Appendix C]
365 days per year	[Calendar]
$BW_a = 70 \text{ kg}$	[p. C-1; Appendix C]
$ED_e = 1 \text{ yr}$	[p. C-1; Appendix C]
$EF_e = 9 \text{ day/yr}$	[p. C-1; Appendix C]
$IRA_a = 7 \text{ m}^3/\text{d}$	[p. C-1; Appendix C]
$VF_{we} = 0.5 \text{ L/m}^3$	[p. C-1; Appendix C]
$SF_i = 0.027 \text{ (mg/Kg-day)}^{-1}$	[p. E-1; Appendix E]
$DA_w = 3.68 \times 10^{-5} \text{ L/cm}^2\text{-event}$	[p. E-1; Appendix E]
$EVF_w = 2 \text{ events/day}$	[p. C-1; Appendix C]
$SA_w = 5700 \text{ cm}^2$	[p. C-1; Appendix C]
$SF_o = 0.055 \text{ (mg/Kg-day)}^{-1}$	[p. E-1; Appendix E]
$10^3 \mu\text{g/mg}$	[Equation constant; p. B-65]

Construction and Excavation Worker – Carcinogens

$$RBC_{we} (\mu\text{g/L}) = \frac{ARL_c \cdot AT_c \cdot 365 \text{ d/yr} \cdot BW_a}{ED_e \cdot EF_e \cdot [(IRA_a \cdot VF_{we} \cdot SF_i) + (DA_w \cdot EvF_w \cdot SA_w \cdot SF_o)]} \cdot 10^3 \mu\text{g/mg} \quad [B-161]$$

Construction and Excavation Worker – Noncarcinogens

$$RBC_{we} (\mu\text{g/L}) = \frac{ARL_n \cdot AT_{ne} \cdot 365 \text{ d/yr} \cdot BW_a}{ED_e \cdot EF_e \cdot \left[\left(\frac{IRA_a \cdot VF_{we}}{RfD_i} \right) + \left(\frac{DA_w \cdot EvF_w \cdot SA_w}{RfD_o} \right) \right]} \cdot 10^3 \mu\text{g/mg} \quad [B-162]$$

where:

RBC_{we}	=	Risk-Based Concentration for Excavation or Construction Worker Exposure to Groundwater ($\mu\text{g/L}$)
ARL_c	=	Acceptable risk level – carcinogens (unitless)
ARL_n	=	Acceptable risk level – noncarcinogens (unitless)
AT_c	=	Averaging time – carcinogens (yr)
AT_{ne}	=	Averaging time – noncarcinogens (yr)
BW_a	=	Body weight (kg)
DA_w	=	Dermal absorption factor for groundwater ($\text{L}/\text{cm}^2\text{-event}$)
ED_e	=	Exposure duration (yr)
EF_e	=	Exposure frequency (d/yr)
EvF_w	=	Event frequency for groundwater contact (event/d)
IRA_a	=	Inhalation rate (m^3/d)
RfD_i	=	Reference dose – inhaled ($\text{mg}/\text{kg-d}$)
RfD_o	=	Reference dose – oral ($\text{mg}/\text{kg-d}$)
SA_w	=	Skin surface contact area to groundwater (cm^2)
SF_i	=	Cancer slope factor – inhaled ($\text{mg}/\text{kg-d}$) ⁻¹
SF_o	=	Cancer slope factor – oral ($\text{mg}/\text{kg-d}$) ⁻¹
VF_{we}	=	Volatilization factor for water in an excavation (L/m^3)

* In this scenario, the subscript "e" can represent either the excavation OR construction worker depending on the situation being modeled.

Values of DA_w used for the generic RBCs are listed in Appendix E. Note that these values are not only chemical-specific, but they also depend on whether the exposure event time (t_{event}) is less than or greater than the time required for dermal absorption to reach steady state (t^*). The exposure event time used for the generic RBCs for excavation worker exposure to groundwater is two hours. In most cases where site-specific RBCs are being calculated it is expected that t_{event} will remain the same. In cases where t_{event} is changed or where values of DA_w are needed for chemicals not included in the Table of RBCs, equations [B-163] and [B-164] can be used to calculate values of DA_w .⁵⁴

⁵⁴ Equations [B-163] and [B-164] are only for *organic compounds in water*. Please refer to EPA (2001b) for information about calculating DA_w for inorganics.

Appendix C: Exposure Factors

Parameter (unit)	Symbol	Residential		Urban Residential		Occupational		Construction Worker		Excavation Worker	
			Note		Note		Note		Note		Note
ACCEPTABLE RISK LEVELS											
Acceptable Risk Level - Carcinogens	ARLc	1.00E-06	1	=		=		=		=	
Acceptable Risk Level - Noncarcinogens	ARLn	1	1	=		=		=		=	
EXPOSURE PARAMETERS											
Averaging Time - Carcinogen (yr)	ATc	70	2	=		=		=		=	
Averaging Time - Noncarcinogen (yr)	ATn	30	2	11	2	25	2	1	2	1	2
Averaging Time - Noncarcinogen, Child (yr)	ATnc	6	2	6	2	NA		NA		NA	
Body Weight - Adult (kg)	BWa	70	3	=		=		=		=	
Body Weight - Child (kg)	BWc	15	3	=		NA		NA		NA	
Exposure Duration - Adult (yr)	ED	30	3	11	4	25	3	1	21	1	6
Exposure Duration - Child (yr)	EDc	6	3	6	4	NA		NA		NA	
Exposure Frequency (day/yr)	EF	350	3	175	3a	250	6	250	6	9	6
Event Frequency - Groundwater (events/day)	EvFwe	NA		NA		NA		2	6	=	
Event Time - Groundwater (hr/event)	t _{event}	NA		NA		NA		2	6	=	
Inhalation Rate - Adult (m ³ /day)	IRA	20	4	20	4	7	4a	7	4a	7	4a
Inhalation Rate - Child (m ³ /day)	IRAc	8.3	4	=		NA		NA		NA	
Soil Ingestion Rate - Adult (mg/day)	IRS	100	6	100	6	100	6	330	21	330	21
Soil Ingestion Rate - Child (mg/day)	IRSc	200	4	200	4	NA		NA		NA	
Water Ingestion Rate - Adult (L/day)	IRW	2.0	2	2.0	2	0.7	4a	NA		NA	
Water Ingestion Rate - Child (L/day)	IRWc	1.5	2	=		NA		NA		NA	
Skin Surface Area - Adult to Soil (cm ²)	SA	5700	4	5700	4	3300	4	3300	4	3300	4
Skin Surface Area - Child to Soil (cm ²)	SAC	2800	4	=		NA		NA		NA	
Skin Surface Area - Adult to Groundwater (cm ²)	SAw	NA		NA		NA		5700	4	5700	4
Soil to Skin Adherence Factor - Adult (mg/cm ² -day)	AF	0.07	5a	0.07	5a	0.10	5b	0.30	5c	0.30	5c
Soil to Skin Adherence Factor - Child (mg/cm ² -day)	AFc	0.20	5d	=		NA		NA		NA	
AGE-ADJUSTED EXPOSURE FACTORS											
Inhalation Factor - Air (m ³ -yr/kg-d)	IFAadj	10.18	7	4.75	7a	NA		NA		NA	
Ingestion Factor - Soil (mg-yr/kg-d)	IFSadj	114	7	87	7a	NA		NA		NA	
Ingestion Factor - Water (L-yr/kg-d)	IFWadj	1.29	7	0.74	7a	NA		NA		NA	
Surface Area Factor - Skin (mg-yr/kg-d)	SFSadj	361	7	253	7a	NA		NA		NA	

Appendix C: Exposure Factors (continued)

Parameter (unit)	Symbol	Residential		Urban Residential		Occupational		Construction Worker		Excavation Worker	
			Note		Note		Note		Note		Note
SITE PARAMETERS											
Soil Bulk Density (g/cm ³)	ρ_b	1.70	8	=		=		=		=	
Soil Particle Density (g/cm ³)	ρ_s	2.74	9	=		=		=		=	
Soil Porosity	n	0.38	8	=		=		=		=	
Air Content - Vadose Zone Soils	n_a	0.26	10	=		=		=		=	
Air Content - Cap. Fringe Soils	n_{acap}	0.038	10	=		=		=		=	
Air Content - Foundation Cracks	n_{ack}	0.26	10	=		=		=		=	
Water Content - Vadose Zone Soils	n_w	0.12	8	=		=		=		=	
Water Content - Cap. Fringe Soils	n_{wcap}	0.342	8	=		=		=		=	
Water Content - Foundation Cracks	n_{work}	0.12	11	=		=		=		=	
Vadose Zone Thickness (cm)	L_v	295	12	=		=		=		=	
Capillary Fringe Thickness (cm)	L_{cap}	5.00	8	=		=		=		=	
Fraction Organic Carbon (shallow soil)	f_{oc}	0.005	8a	=		=		=		=	
Depth to Groundwater (cm)	L_w	300	8	=		=		=		=	
Groundwater Dilution-Attenuation Factor	DAF	60	19	=		=		=		=	
SOIL CONTAMINATION PARAMETERS											
Thickness of Contaminated Surface Soils (cm)	L_{ss}	100	8	=		=		=		=	
Fraction of Site with Surface Soil Contamination	f_{ss}	0.50	16	=		=		=		=	
Thickness of Clean Surface Soils (cm)	L_c	100	8	=		=		=		=	
Thickness of Subsurface Contamination (cm)	L_s	200	8	=		=		=		=	
Fraction of Site with Subsurface Vol. To Outdoor Air	f_{so}	0.50	17	=		=		=		=	
Thickness of Clean Soils Under Building (cm)	L_{cb}	100	8	=		=		=		=	
Thickness of Contaminated Soils Under Building (cm)	L_{sb}	200	8	=		=		=		=	
Fraction of Contaminated Soils Under Building	f_{sb}	0.50	18	=		=		=		=	
Particulate Emission Factor for Soils (kg/m ³)	PEF	7.58E-10	13	=		=		=		=	

Appendix C: Exposure Factors (continued)

Parameter (unit)	Symbol	Residential		Urban Residential		Occupational		Construction Worker		Excavation Worker	
			Note		Note		Note		Note		Note
BUILDING PARAMETERS											
Building Air Exchange Rate (1/day)	ER	24	14	=		48	14	NA		NA	
Building Height (indoor air mixing zone) (cm)	L _B	200	8	=		300	8	NA		NA	
Foundation Wall Thickness (cm)	L _{crk}	15	8	=		=		NA		NA	
Foundation Crack Fraction	f _{crk}	0.0010	15	=		=		NA		NA	
VOLATILIZATION FACTORS											
Averaging time for Volatilization -Adults (yr)	t _{vol}	25	16	=		=		=		=	
Averaging time for Volatilization -Children (yr)	t _{volc}	6	16	=		NA		NA		NA	
Max. Soil to Building Vol. Factor (kg/m ³)	VF _{sl} max	3.88E-03	18	3.88E-03	18	1.29E-03	18	NA		NA	
Max. <u>Surface</u> Soil Vol. Factor - Adult (kg/m ³)	VF _{ss} max	1.57E-05	16	1.57E-05	16	1.57E-05	16	1.57E-05	16	1.57E-05	16
Max. <u>Surface</u> Soil Vol. Factor - Child (kg/m ³)	VF _{ss} max	6.53E-05	16	=		NA		NA		NA	
Max. Soil to Outdoor Air Vol. Factor - Adult (kg/m ³)	VF _{so} max	3.13E-05	17	3.13E-05	17	3.13E-05	17	NA		NA	
Volatile Organics Dispersion Term (g/m ² -s per kg/m ³)	Q/C	6.88E+01	13	=		=		=		=	
MISCELLANEOUS PARAMETERS											
Ideal Gas Law Constant (m ³ -atm/K-mol)	R	8.21E-05	20	=		=		=		=	
Absolute Temperature (K)	T	2.93E+02	20	=		=		=		=	

Notes and References for Table of Exposure Factors:

- = This exposure parameter is the same as the residential value.
- NA This exposure parameter is not required for any of the RBCs.
1. Acceptable risk levels are specified in statute (ORS 465.315) and defined in rule (OAR 340-122-0115).
 2. EPA (1989)
 3. EPA (1991b)
 - 3a. Professional judgment: EF for urban resident = 1/2 residential EF
 4. EPA (1997c)
 - 4a. Incorporates time spent at work (8 hr/24 hr day)
 5. EPA (2001a)
 - 5a. Mean for residential adult gardener
 - 5b. Mean for commercial gardener used to represent upper end commercial exposure
 - 5c. 95th percentile construction worker
 - 5d. 95th percentile daycare child
 6. DEQ (1998b)
 7. Calculated from equations given in EPA (1998a).
 - 7a. Modified for urban scenario by analogy to equations given in EPA (1998a).
 8. ASTM (1995b)
 - 8a. f_{oc} is an average of ASTM (1995b) and EPA (1996b) defaults.
 9. Calculated from $p_s = p_b / (1-n)$.
 10. Calculated from $n_a = n - n_w$; $n_{acap} = n - n_{wcap}$; $n_{acrk} = n - n_{work}$.
 11. n_{work} assumed = n_w .
 12. Calculated from $L_v = L_w - L_{cap}$
 13. EPA (1996b)
 14. Estimated from data reported in Michigan DEQ (1998).
 15. Derived from range of floor-wall seam gaps given in EPA (1997b).
 16. Refer to Section B.3.2.1 in RBDM (DEQ, 2003).
 17. Refer to Section B.3.2.2 in RBDM (DEQ, 2003).
 18. Refer to Section B.3.2.3 in RBDM (DEQ, 2003).
 19. Refer to Section B.3.2.4 in RBDM (DEQ, 2003).
 20. Refer to discussion of Henry's Law Constants in Section B.2.1.2 in RBDM (DEQ, 2003).
 21. EPA (2002c)

Appendix D: Chemical Data

Data used for Constituent RBC Calculations

Chemical	Vol	Mol. Wt.	S		P	C _{sat}	K _{oc}		K _H		H	D _{air}		D _w	
	Class	(g/mol)	(mg/L)		(μg/m ³)	(mg/kg)	(cm ² /g)		(m ³ -atm/mol)			(cm ² /s)		(cm ² /s)	
	Note 1	Note 2		Note	Note 4a	Note 4b		Note		Note	Note 6		Note		Note
Benzene	v	78	1.75E+03	3	4.04E+08	7.01E+02	5.89E+01	5	5.55E-03	3	2.31E-01	8.80E-02	3	9.80E-06	3
Toluene	v	92	5.26E+02	3	1.45E+08	5.38E+02	1.82E+02	5	6.64E-03	3	2.76E-01	8.70E-02	3	8.60E-06	3
Ethylbenzene	v	106	1.69E+02	3	5.54E+07	3.27E+02	3.63E+02	5	7.88E-03	3	3.28E-01	7.50E-02	3	7.80E-06	3
Xylenes	v	106	1.75E+02	3a	4.90E+07	3.58E+02	3.86E+02	5a	6.73E-03	3a	2.80E-01	7.80E-02	3a	8.75E-06	3a
iso-propylbenzene	v	120	3.00E+01	9	1.62E+07	3.35E+02	2.20E+03	9	1.30E-02	9	5.41E-01	7.50E-02	9	7.80E-06	9
n-propylbenzene	v	120	1.40E+01	9	7.57E+06	1.98E+02	2.80E+03	9	1.30E-02	9	5.41E-01	7.50E-02	9	7.80E-06	9
1,2,4-trimethylbenzene	v	120	5.70E+01	9	1.35E+07	1.06E+03	3.70E+03	9	5.70E-03	9	2.37E-01	7.50E-02	9	7.10E-06	9
1,3,5-trimethylbenzene	v	120	5.00E+01	9	1.60E+07	2.11E+02	8.20E+02	9	7.70E-03	9	3.20E-01	7.50E-02	9	7.10E-06	9
Acenaphthene	v	154	4.24E+00	3	2.73E+04	1.04E+02	4.90E+03	5	1.55E-04	3	6.45E-03	4.21E-02	3	7.69E-06	3
Anthracene	v	178	4.34E-02	3	1.17E+02	6.40E+00	2.95E+04	5	6.50E-05	3	2.70E-03	3.24E-02	3	7.74E-06	3
Benz[a]anthracene	nv	228	9.40E-03	3	1.31E+00	1.87E+01	3.98E+05	5	3.35E-06	3	1.39E-04	5.10E-02	3	9.00E-06	3
Benzo[b]fluoranthene	nv	252	1.50E-03	3	6.93E+00	9.23E+00	1.23E+06	5	1.11E-04	3	4.62E-03	2.26E-02	3	5.56E-06	3
Benzo[k]fluoranthene	nv	252	8.00E-04	3	2.76E-02	4.92E+00	1.23E+06	5	8.29E-07	3	3.45E-05	2.26E-02	3	5.56E-06	3
Benzo[a]pyrene	nv	252	1.62E-03	3	7.61E-02	8.26E+00	1.02E+06	5	1.13E-06	3	4.70E-05	4.30E-02	3	9.00E-06	3
Chrysene	nv	228	1.60E-03	3	6.30E+00	3.18E+00	3.98E+05	5	9.46E-05	3	3.93E-03	2.48E-02	3	6.21E-06	3
Dibenz[a,h]anthracene	nv	278	2.49E-04	3	1.52E-04	4.73E+00	3.80E+06	5	1.47E-08	3	6.11E-07	2.02E-02	3	5.18E-06	3
Fluoranthene	nv	202	2.06E-01	3	1.38E+02	1.10E+02	1.07E+05	5	1.61E-05	3	6.70E-04	3.02E-02	3	6.35E-06	3
Fluorene	v	166	1.98E+00	3	5.23E+03	1.37E+02	1.38E+04	5	6.35E-05	3	2.64E-03	3.63E-02	3	7.88E-06	3
Indeno[1,2,3-cd]pyrene	nv	276	2.20E-05	3	1.46E-03	3.82E-01	3.47E+06	5	1.60E-06	3	6.65E-05	1.90E-02	3	5.66E-06	3
Naphthalene	v	128	3.10E+01	3	6.23E+05	3.12E+02	2.00E+03	5	4.83E-04	3	2.01E-02	5.90E-02	3	7.50E-06	3
Pyrene	nv	202	1.35E-01	3	6.18E+01	7.09E+01	1.05E+05	5	1.10E-05	3	4.58E-04	2.72E-02	3	7.24E-06	3
MTBE	v	88	5.10E+04	7	1.25E+09	6.65E+03	1.12E+01	7	5.87E-04	7	2.44E-02	1.10E-01	8	1.05E-05	8
EDB (1,2-dibromoethane)	v	188	3.40E+03	9	4.53E+07	7.25E+02	2.81E+01	9	3.20E-04	9	1.33E-02	7.33E-02	9	8.06E-06	9
EDC (1,2-dichloroethane)	v	99	8.52E+03	3	3.45E+08	1.40E+03	1.74E+01	5	9.74E-04	3	4.05E-02	1.04E-01	3	9.90E-06	3
Lead	NA	207	NA	10	NA	NA	NA	10	NA	10	NA	NA	10	NA	10

Appendix D: Chemical Data (continued)

Data used for TPH RBC Calculations

Fuel Fraction or Constituent	Vol Class	MW (g/mol)	Density (g/cm ³)	S (mg/L)	P (ug/m ³)	K _H (m ³ -atm/mol)	H'	Log K _{oc}	K _{oc} (cm ³ /g)	D _{air} (cm ² /s)	D _w (cm ² /s)
Aliphatic C5-C6	v	81	0.68	3.6E+01	1.2E+09	7.94E-01	33	2.9	7.9E+02	1.0E-01	1.0E-05
Aliphatic >C6-C8	v	100	0.73	5.4E+00	2.7E+08	1.20E+00	50	3.6	4.0E+03	1.0E-01	1.0E-05
Aliphatic >C8-C10	v	130	0.73	4.3E-01	3.4E+07	1.92E+00	80	4.5	3.2E+04	1.0E-01	1.0E-05
Aliphatic >C10-C12	v	160	0.76	3.4E-02	4.1E+06	2.89E+00	120	5.4	2.5E+05	1.0E-01	1.0E-05
Aliphatic >C12-C16	nv	200	0.77	7.6E-04	4.0E+05	1.25E+01	520	6.7	5.0E+06	1.0E-01	1.0E-05
Aliphatic >C16-C21	nv	270	0.78	2.5E-06	1.2E+04	1.18E+02	4900	8.8	6.3E+08	1.0E-01	1.0E-05
Aliphatic >C21-C34	nv	400	0.78	1.5E-11	1.5E+00	2.41E+03	100000	10.0	1.1E+10	1.0E-01	1.0E-05
Aromatic >C8-C10	v	120	0.87	6.5E+01	3.1E+07	1.15E-02	0.48	3.2	1.6E+03	1.0E-01	1.0E-05
Aromatic >C10-C12	v	130	0.90	2.5E+01	3.5E+06	3.37E-03	0.14	3.4	2.5E+03	1.0E-01	1.0E-05
Aromatic >C12-C16	v	150	1.02	5.8E+00	3.1E+05	1.27E-03	0.053	3.7	5.0E+03	1.0E-01	1.0E-05
Aromatic >C16-C21	v	190	1.23	6.5E-01	8.5E+03	3.13E-04	0.013	4.2	1.6E+04	1.0E-01	1.0E-05
Aromatic >C21-C34	nv	240	1.28	6.6E-03	4.4E+00	1.61E-05	0.00067	5.1	1.3E+05	1.0E-01	1.0E-05
n-Hexane	v	86	0.70	1.8E+01	9.0E+07	1.20E-01	5.0	2.9	8.9E+02	2.0E-01	7.8E-06
Benzene	v	78	0.88	1.8E+03	4.0E+08	5.55E-03	0.23	1.8	5.9E+01	8.8E-02	9.8E-06
Toluene	v	92	0.87	5.3E+02	1.5E+08	6.64E-03	0.28	2.3	1.8E+02	8.7E-02	8.6E-06
Ethylbenzene	v	106	0.87	1.7E+02	5.5E+07	7.88E-03	0.33	2.6	3.6E+02	7.5E-02	7.8E-06
Total Xylenes	v	106	0.88	1.8E+02	4.9E+07	6.73E-03	0.28	2.6	3.9E+02	7.8E-02	8.8E-06
1,2,4-trimethylbenzene	v	120	0.88	5.7E+01	6.2E+04	5.70E-03	0.24	3.6	3.7E+03	7.5E-02	7.1E-06
1,3,5-trimethylbenzene	v	120	0.87	5.0E+01	1.6E+07	7.70E-03	0.32	2.9	8.2E+02	7.5E-02	7.1E-06
Naphthalene	v	128	1.15	3.1E+01	6.2E+05	4.83E-04	0.02	3.3	2.0E+03	5.9E-02	7.5E-06

Notes and References for Table of Chemical Data:

- nv This chemical is classified as "nonvolatile" for purposes of the exposure calculations in this document.
- v This chemical is classified as "volatile" for purposes of the exposure calculations in this document.
1. Volatility is based on EPA (1991a). A "volatile" constituent has a Henry's constant $> 10^{-6} \text{ m}^3\text{-atm/mol}$ and a molecular weight $< 200 \text{ g/mol}$.
 2. Molecular weights can be obtained from many common chemical handbooks and chemistry texts. No specific reference was used here.
 3. Values from Table 36 (S and H) and Table 37 (D_{air} and D_w) in EPA (1996b).
 - a. These are the average values for the three xylene isomers.
 4.
 - a. Vapor pressure is calculated from the relationship $P = H * S * 1000000$, where H is the dimensionless Henry's constant, S is the solubility in mg/L, and 1000000 is a conversion factor yielding units of $\mu\text{g/m}^3$ for direct comparison to RBC_{air} values.
 - b. C_{sat} is calculated using equation [B-21]. See Section B.2.1.4.
 5. K_{oc} s are the "Calculated Values" from Table 39 in EPA (1996b).
 - a. This is the average Koc value for the three xylene isomers.
 6. Dimensionless Henry's constants are calculated from the relationship $H = K_H / R * T$ where K_H is the Henry's constant in $\text{m}^3\text{-atm/mol}$, R is the ideal gas law constant ($8.21 \times 10^{-5} \text{ m}^3\text{-atm/K-mol}$), and T is the absolute temperature (293 K).
 7. Howard (1993)
 8. D_{air} and D_w estimated using equation [B-57]. See Section B.2.3.2.
 9. EPA (2002a)
 10. NA : These data are not applicable since the lead RBCs are not calculated by the Department. See Section B.3.4.

Appendix E: Toxicological Data

Data used for Constituent RBC Calculations

Chemical	Risk Type	SF _o		SF _i		Chronic				Subchronic				RAF _d	K _p (cm/hr)	τ (hr)	t* (hr)	B	DA _w	
		(mg/Kg-day) ¹		(mg/Kg-day) ¹		RfD _o (mg/Kg-day)		RfD _i (mg/Kg-day)		RfD _o (mg/Kg-day)		RfD _i (mg/Kg-day)							(L/cm ² -event)	
			Note		Note		Note		Note		Note		Note						Note 5	
Benzene	c	0.055	1j	0.027	1j	0.004	2	0.0086	1k,2	-	-	-	-	0.00E+00	1.50E-02	2.90E-01	7.00E-01	1.00E-01	8	3.68E-05
Toluene	nc	NA		NA		0.2	1f	0.11	1d,2	2	12	0.26	12	0.00E+00	3.10E-02	3.50E-01	8.40E-01	1.00E-01	8	8.02E-05
Ethylbenzene	nc	NA		NA		0.1	1c	0.29	1c,2	0.11	12	-	-	0.00E+00	4.90E-02	4.20E-01	1.01E+00	2.00E-01	8	1.31E-04
Xylenes	nc	NA		NA		0.2	1k	0.029	1k,2	-	-	-	-	0.00E+00	5.30E-02	4.20E-01	1.01E+00	2.00E-01	8	1.42E-04
iso-propylbenzene	nc	NA		NA		0.1	1g	0.11	1g,2	-	-	-	-	0.00E+00	7.46E-02	4.93E-01	1.18E+00	3.14E-01	7	2.09E-04
n-propylbenzene	nc	NA		NA		0.04	4	0.04	3	-	-	-	-	0.00E+00	8.74E-02	4.93E-01	1.18E+00	3.68E-01	7	2.44E-04
1,2,4-trimethylbenzene	nc	NA		NA		0.05	4	0.0017	4	-	-	-	-	0.00E+00	1.10E-01	4.93E-01	1.18E+00	4.65E-01	7	3.05E-04
1,3,5-trimethylbenzene	nc	NA		NA		0.05	4	0.0017	4	0.5	12	-	-	0.00E+00	3.81E-02	4.93E-01	1.18E+00	1.60E-01	7	1.09E-04
Acenaphthene	nc	NA		NA		0.06	1f	0.06	3	-	-	-	-	0.00E+00	8.41E-02	7.65E-01	1.84E+00	4.01E-01	7	2.96E-04
Anthracene	nc	NA		NA		0.3	1e	0.3	3	-	-	-	-	0.00E+00	1.61E-01	1.04E+00	4.00E+00	8.25E-01	7	6.42E-04
Benz[a]anthracene	c	0.73	4	0.73	3	NA		NA		-	-	-	-	1.30E-01	4.70E-01	2.03E+00	8.53E+00	2.80E+00	8	2.62E-03
Benzo[b]fluoranthene	c	0.73	4	0.73	3	NA		NA		-	-	-	-	1.30E-01	7.00E-01	2.77E+00	1.20E+01	4.30E+00	8	4.55E-03
Benzo[k]fluoranthene	c	0.073	4	0.073	3	NA		NA		-	-	-	-	1.30E-01	7.60E-01	2.71E+00	1.18E+01	4.64E+00	7	4.89E-03
Benzo[a]pyrene	c	7.3	4	7.3	3	NA		NA		-	-	-	-	1.30E-01	7.00E-01	2.69E+00	1.17E+01	4.30E+00	8	4.49E-03
Chrysene	c	0.0073	4	0.0073	3	NA		NA		-	-	-	-	1.30E-01	4.70E-01	2.03E+00	8.53E+00	2.80E+00	8	2.62E-03
Dibenz[a,h]anthracene	c	7.3	4	7.3	3	NA		NA		-	-	-	-	1.30E-01	1.50E+00	3.88E+00	1.76E+01	9.70E+00	8	1.15E-02
Fluoranthene	nc	NA		NA		0.04	1e	0.04	3	0.4	12	-	-	1.30E-01	2.20E-01	1.45E+00	5.68E+00	1.20E+00	8	1.04E-03
Fluorene	nc	NA		NA		0.04	1b	0.04	3	0.4	12	-	-	0.00E+00	1.12E-01	8.93E-01	2.14E+00	5.55E-01	7	4.13E-04
Indeno[1,2,3-cd]pyrene	c	0.73	4	0.73	3	NA		NA		-	-	-	-	1.30E-01	1.11E+00	3.69E+00	1.65E+01	7.06E+00	8	8.30E-03
Naphthalene	nc	NA		NA		0.02	1i	0.00086	1i,2	-	-	-	-	0.00E+00	4.70E-02	5.60E-01	1.34E+00	2.00E-01	8	1.41E-04
Pyrene	nc	NA		NA		0.03	1e	0.03	3	-	-	-	-	1.30E-01	2.76E-01	1.42E+00	5.64E+00	1.51E+00	7	1.29E-03
MTBE (methyl t-butyl ether)	c	0.0018	13	0.0018	13	0.86	2	0.86	1e,2	-	-	-	-	0.00E+00	3.45E-03	3.27E-01	7.84E-01	1.25E-02	8	9.11E-06
EDB (1,2-dibromoethane)	c	85	1g	0.77	1g	0.000057	10	0.000057	10	-	-	-	-	0.00E+00	1.75E-03	1.19E+00	2.85E+00	9.21E-03	8	7.43E-06
EDC (1,2-dichloroethane)	c	0.091	1c	0.091	3	0.03	4	0.0014	4	-	-	-	-	0.00E+00	4.01E-03	3.76E-01	9.03E-01	1.53E-02	8	1.10E-05
Lead	NA	NA	9	NA	9	NA	9	NA	9	NA	9	NA	9	NA	NA	NA	NA	NA	9	NA

Appendix E: Toxicological Data (continued)

Data used for TPH RBC Calculations

Chemical	Risk Type	SF _o (mg/Kg-day) ⁻¹	SF _i (mg/Kg-day) ⁻¹	Chronic		Subchronic		RAF _d	K _p (cm/hr)	τ (hr)	t* (hr)	B	DA _w (L/cm ² -event)
				RfD _o (mg/Kg-day)	RfD _i (mg/Kg-day)	RfD _o (mg/Kg-day)	RfD _i (mg/Kg-day)						
				Note 11	Note 11	Note 11	Note 11	Note 5	Note 14	Note 14	Note 14	Note 14	Note 8
Aliphatic C5-C6	nc	NA	NA	5.7	5.7	-	-	0.00E+00	6.30E-02	2.98E-01	7.16E-01	2.18E-01	1.49E-04
Aliphatic >C6-C8	nc	NA	NA	5.7	5.7	-	-	0.00E+00	1.43E-01	3.81E-01	9.15E-01	5.49E-01	3.45E-04
Aliphatic >C8-C10	nc	NA	NA	0.1	0.3	-	-	0.00E+00	3.81E-01	5.61E-01	2.25E+00	1.67E+00	1.11E-03
Aliphatic >C10-C12	nc	NA	NA	0.1	0.3	-	-	0.00E+00	1.02E+00	8.26E-01	3.62E+00	4.94E+00	3.61E-03
Aliphatic >C12-C16	nc	NA	NA	0.1	0.3	-	-	1.30E-01	4.37E+00	1.38E+00	6.41E+00	2.38E+01	2.01E-02
Aliphatic >C16-C21	nc	NA	NA	2	2	-	-	1.30E-01	4.31E+01	3.41E+00	1.61E+01	2.72E+02	3.11E-01
Aliphatic >C21-C34	nc	NA	NA	2	2	-	-	1.30E-01	5.00E+01	1.82E+01	8.58E+01	3.84E+02	8.34E-01
Aromatic >C8-C10	nc	NA	NA	0.04	0.06	-	-	0.00E+00	6.01E-02	4.93E-01	1.18E+00	2.53E-01	1.70E-04
Aromatic >C10-C12	nc	NA	NA	0.04	0.06	-	-	0.00E+00	7.15E-02	5.61E-01	1.35E+00	3.14E-01	2.13E-04
Aromatic >C12-C16	nc	NA	NA	0.04	0.06	-	-	0.00E+00	8.72E-02	7.26E-01	1.74E+00	4.11E-01	2.98E-04
Aromatic >C16-C21	nc	NA	NA	0.03	0.03	-	-	0.00E+00	1.11E-01	1.22E+00	2.92E+00	5.90E-01	4.80E-04
Aromatic >C21-C34	nc	NA	NA	0.03	0.03	-	-	1.30E-01	2.29E-01	2.32E+00	9.13E+00	1.37E+00	1.37E-03
n-Hexane	nc	NA	NA	0.06	0.057	0.6	0.057	0.00E+00	5.90E-02	3.18E-01	7.64E-01	2.11E-01	1.43E-04
Benzene	nc	0.055	0.027	0.004	0.0086	-	-	0.00E+00	1.50E-02	2.90E-01	7.00E-01	1.00E-01	3.68E-05
Toluene	nc	NA	NA	0.2	0.11	2	0.26	0.00E+00	3.10E-02	3.50E-01	8.40E-01	1.00E-01	8.02E-05
Ethylbenzene	nc	NA	NA	0.1	0.29	0.11	-	0.00E+00	4.90E-02	4.20E-01	1.01E+00	2.00E-01	1.31E-04
Total Xylenes	nc	NA	NA	0.2	0.029	-	-	0.00E+00	5.30E-02	4.20E-01	1.01E+00	2.00E-01	1.42E-04
1,2,4-trimethylbenzene	nc	NA	NA	0.05	0.0017	-	-	0.00E+00	1.10E-01	4.93E-01	1.18E+00	4.65E-01	3.05E-04
1,3,5-trimethylbenzene	nc	NA	NA	0.05	0.0017	0.5	-	0.00E+00	3.81E-02	4.93E-01	1.18E+00	1.60E-01	1.09E-04
Naphthalene	nc	NA	NA	0.02	0.00086	-	-	0.00E+00	4.70E-02	5.60E-01	1.34E+00	2.00E-01	1.41E-04

Notes and References for Table of Toxicological Data:

- c This chemical is a known or suspected carcinogen.
- nc This chemical is a noncarcinogen.
- There is no subchronic RfD value available for this chemical as of the date of this document.
- 1. U. S. EPA, Office of Research and Development, Integrated Risk Information System (IRIS)
 - 1a. IRIS, 1987
 - 1b. IRIS, 1990
 - 1c. IRIS, 1991
 - 1d. IRIS, 1992
 - 1e. IRIS, 1993
 - 1f. IRIS, 1994
 - 1g. IRIS, 1997
 - 1i. IRIS, 1998
 - 1j. IRIS, 2000
 - 1k. IRIS, 2003
- 2. Converted from Inhalation reference concentration (RfC in mg/m^3) by the following relationship: $\text{RfDi} = \text{RfC} * 20 \text{ m}^3/\text{day} / 70 \text{ kg}$.
- 3. Route extrapolation, RfDi assumed to be equivalent to RfDo, or SFI assumed to be equivalent to SFo.
- 4. U.S. EPA, Office of Research and Development, National Center for Environmental Assessment (NCEA).
 - 4a. 1993
 - 4b. 2002
- 5. Dermal absorption fraction values are from Exhibit 3-4 in EPA (2001b).
- 6. Kp, t, t*, and B are from Exhibit B-3 in EPA (2001b).
- 7. Kp, t, t*, and B were calculated from equations given in Appendix A in EPA (2001b).
- 8. DAw is calculated from equations given in EPA (2001b). See Section B.3.3.4.
- 9. NA: These data are not applicable since the lead RBCs are not calculated by the Department. See Section B.3.4.
- 10. EPA, 1997e.
- 11. See Appendix G for the toxicity factors for the TPH fractions.
- 12. ORNL (2003).
- 13. California Environmental Protection Agency (CalEPA), Office of Environmental Health Hazard Assessment (OEHHA):
 - SFo – Public Health Goal for Methyl Tertiary Butyl Ether (MTBE) in Drinking Water, March 1999.
 - SFI – Air Toxics Hot Spots Program Risk Assessment Guidelines, Part II, Technical Support Document for Describing Available Cancer Potency Factors, 19 December 2002.
- 14. For the TPH fractions, Kp, t, t*, and B were calculated from equations given in Appendix A in EPA (2001b). Kp was calculated from Kow using the relationship $\log(\text{Koc}) + 0.21 = \log(\text{Kow})$ from Table 4 in TPHCWG (1997a).

APPENDIX J

MTCA METHOD B SOIL CLEANUP LEVEL CALCULATION

A1 Soil Cleanup Levels: Worksheet for Soil Data Entry: Refer to WAC 173-340-720, 740,745, 747, 750

1. Enter Site Information

Date: 01/20/10

Site Name: 11700 Northeast 160th Street, Bothell, Washington

Sample Name: SB-8-6

2. Enter Soil Concentration Measured

Chemical of Concern or Equivalent Carbon Group	Measured Soil Conc dry basis mg/kg	Composition Ratio %
Petroleum EC Fraction		
AL_EC >5-6	510	3.35%
AL_EC >6-8	5,100	33.46%
AL_EC >8-10	60	0.39%
AL_EC >10-12	1,100	7.22%
AL_EC >12-16	240	1.57%
AL_EC >16-21	78	0.51%
AL_EC >21-34	25	0.16%
AR_EC >8-10	4,250	27.88%
AR_EC >10-12	1,735	11.38%
AR_EC >12-16	200	1.31%
AR_EC >16-21	590	3.87%
AR_EC >21-34	26	0.17%
Benzene	1.55	0.01%
Toluene	1.55	0.01%
Ethylbenzene	230	1.51%
Total Xylenes	920	6.04%
Naphthalene	65	0.43%
1-Methyl Naphthalene		0.00%
2-Methyl Naphthalene		0.00%
n-Hexane	110	0.72%
MTBE		0.00%
Ethylene Dibromide (EDB)		0.00%
1,2 Dichloroethane (EDC)		0.00%
Benzo(a)anthracene		0.00%
Benzo(b)fluoranthene		0.00%
Benzo(k)fluoranthene		0.00%
Benzo(a)pyrene		0.00%
Chrysene		0.00%
Dibenz(a,h)anthracene		0.00%
Indeno(1,2,3-cd)pyrene		0.00%
Sum	15242.1	100.00%

3. Enter Site-Specific Hydrogeological Data

Total soil porosity:	0.43	Unitless
Volumetric water content:	0.3	Unitless
Volumetric air content:	0.13	Unitless
Soil bulk density measured:	1.5	kg/L
Fraction Organic Carbon:	0.003	Unitless
Dilution Factor:	20	Unitless

4. Target TPH Ground Water Concentration (if adjusted)

If you adjusted the target TPH ground water concentration, enter adjusted value here: 800 ug/L

Notes for Data Entry

Set Default Hydrogeology

Clear All Soil Concentration Data Entry Cells

Restore All Soil Concentration Data cleared previously

The analytical concentrations of the following hazardous substances will be subtracted from the associated EC-Fractions to avoid double counting as per Table 3.3 of the Washington State Department of Ecology's Workbook Tools for Calculating Soil and Groundwater Cleanup Levels under the Model Toxics Control Act Cleanup Regulation User's Guide for MTCATPH 11.1 & MTCASGL 11.0.

Hazardous Substance	Associated EC-Fraction
n-Hexane (C ₆ HC ₆)	AL_EC >5-6
Ethylbenzene and Xylenes (C ₈ HC ₁₀)	AR_EC >8-10
Naphthalene (C ₁₀ HC ₈)	AR_EC >10-12
Benzo(a)anthracene (C ₁₈ HC ₁₂)	AR_EC >16-21
Benzo(b)fluoranthene (C ₂₀ HC ₁₂)	AR_EC >16-21
Benzo(k)fluoranthene (C ₂₀ HC ₁₂)	AR_EC >16-21
Benzo(a)pyrene (C ₂₀ HC ₁₂)	AR_EC >16-21
Chrysene (C ₁₈ HC ₁₂)	AR_EC >16-21
Dibenz(a,h)anthracene (C ₂₂ HC ₁₄)	AR_EC >21-34
Indeno(1,2,3-cd)pyrene (C ₂₂ HC ₁₄)	AR_EC >21-34

A2 Soil Cleanup Levels: Calculation and Summary of Results. Refer to WAC 173-340-720, 740, 745, 747, 750

Site Information

Date: 1/20/2010

Site Name: 11700 Northeast 160th Street, Bothell, Washington

Sample Name: SB-8-6

Measured Soil TPH Concentration, mg/kg: 15,242.100

1. Summary of Calculation Results

Exposure Pathway	Method/Goal	Protective Soil TPH Conc, mg/kg	With Measured Soil Conc		Does Measured Soil Conc Pass or Fail?
			RISK @	HI @	
Protection of Soil Direct Contact: Human Health	Method B	4,956	8.53E-08	3.08E+00	Fail
	Method C	86,445	1.14E-08	1.76E-01	Pass
Protection of Method B Ground Water Quality (Leaching)	Potable GW: Human Health Protection	82	1.56E-05	2.85E+00	Fail
	Target TPH GW Conc. @ 800 ug/L	88	NA	NA	Fail

Warning! Check to determine if a simplified or site-specific Terrestrial Ecological Evaluation may be required (Refer to WAC 173-340-7490 through ~7494).

Warning! Check Residual Saturation (WAC340-747(10)).

2. Results for Protection of Soil Direct Contact Pathway: Human Health

	Method B: Unrestricted Land Use	Method C: Industrial Land Use
Protective Soil Concentration, TPH mg/kg	4,955.93	86,444.81
Most Stringent Criterion	HI =1	HI =1

Soil Criteria	Protective Soil Concentration @Method B				Protective Soil Concentration @Method C			
	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @	Most Stringent?	TPH Conc, mg/kg	RISK @	HI @
HI =1	YES	4.96E+03	2.78E-08	1.00E+00	YES	8.64E+04	6.48E-08	1.00E+00
Total Risk=1E-5	NO	1.79E+06	1.00E-05	3.60E+02	NO	1.33E+07	1.00E-05	1.54E+02
Risk of Benzene= 1E-6	NO	1.79E+05	1.00E-06	3.60E+01	NA			
Risk of cPAHs mixture= 1E-6	NA	NA	NA	NA				
EDB	NA	NA	NA	NA				
EDC	NA	NA	NA	NA				

3. Results for Protection of Ground Water Quality (Leaching Pathway)

3.1. Protection of Potable Ground Water Quality (Method B): Human Health Protection

Most Stringent Criterion	HI=1
Protective Ground Water Concentration, ug/L	749.81
Protective Soil Concentration, mg/kg	81.80

Ground Water Criteria	Protective Potable Ground Water Concentration @Method B				Protective Soil Conc, mg/kg
	Most Stringent?	TPH Conc, ug/L	RISK @	HI @	
HI=1	YES	7.50E+02	1.29E-06	1.00E+00	8.18E+01
Total Risk = 1E-5	NO	1.82E+03	1.00E-05	2.61E+00	1.35E+03
Total Risk = 1E-6	YES	5.87E+02	1.00E-06	7.82E-01	6.35E+01
Risk of cPAHs mixture= 1E-5	NA	NA	NA	NA	NA
Benzene MCL = 5 ug/L	NO	1.69E+03	6.29E-06	2.35E+00	5.49E+02
MTBE = 20 ug/L	NA	NA	NA	NA	NA

3.2. Protection of Ground Water Quality for TPH Ground Water Concentration previously adjusted and entered

Ground Water Criteria	Protective Ground Water Concentration			Protective Soil Conc, mg/kg
	TPH Conc, ug/L	Risk @	HI @	
Target TPH GW Conc = 800 ug/L	8.00E+02	1.38E-06	1.07E+00	8.81E+01