

# **REMEDIAL INVESTIGATION REPORT**

# SHELL-BRANDED WHOLESALE FACILITY 11700 NORTHEAST 160<sup>TH</sup> 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

#### Prepared by: Conestoga-Rovers & Associates

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Christina McClelland

Brian Peters, LG





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### TABLE OF CONTENTS

#### <u>Page</u>

1.0	INTROD	UCTION	1
	1.1	SITE INFORMATION	1
	1.2	PURPOSE	1
2.0	SITE IDE	NTIFICATION AND DESCRIPTION	1
2.0	21	SITE DISCOVERY AND RECHT ATORY STATUS	1 1
	2.1	SITE AND PROPERTY LOCATION /DEEINITION	 າ
	2.2	NEICHBORHOOD SETTING	·····∠ 2
	2.3		∠ 2
	2.4		
3.0	PROPER	FY DEVELOPMENT AND HISTORY	3
	3.1	PAST PROPERTY USES AND FACILITIES	3
	3.2	CURRENT PROPERTY USE AND FACILITIES	4
	3.3	PROPOSED OR POTENTIAL FUTURE SITE USES	4
	3.4	ZONING	5
	3.5	TRANSPORTATION/ROADS	5
	3.6	UTILITIES AND WATER SUPPLY	5
	3.7	POTENTIAL SOURCES OF SITE CONTAMINATION	6
	3.8	POTENTIAL SOURCES OF CONTAMINATION FROM NEIGHB	ORING
		PROPERTIES	6
4.0	ENIVIRO	ΝΜΕΝΤΑΙ ΙΝΙΖΕΥΤΙς ΑΤΙΩΝ SUMMARY	6
<b>1.</b> 0	/ 1	POTENTIAL CONSTITUENTS OE CONCERN	
	4.1	SOII	
	4.2 1.3	SURFACE WATER	0
	4.5 1 1	CROUNDWATER	ر ۵
	4.4	SEDIMENT	9
	4.5	AIP /SOIL VADOR	9
	4.0	NATUDAL DECOUDCES / MILDUEE	9
	4.7	CULTUDAL HISTODY / A DCH A EQLOCY	10
	4.8		10
	4.9	INTERIM ACTIONS	10
5.0	NATURA	AL CONDITIONS	10
	5.1	GEOLOGY	10
	5.2	SURFACE WATER	11
	5.3	GROUNDWATER	11
	5.4	NATURAL RESOURCES AND ECOLOGICAL RECEPTORS	12
60	CONTAN	MINANT OCCURRENCE AND MOVEMENT	12
0.0	61	WASTE MATERIAI	12
	6.2	SOII	12
	63	SURFACE WATER	13
	64	GROUNDWATER	13 12
	65	SEDIMENT	15 15
	6.6	AIR /SOIL VAPOR	15 15
	0.0		10
7.0	CONCEP	TUAL MODEL	15

8.0	CLEANU	P STANDARDS – SOIL AND GROUNDWATER	17
	8.1	GROUNDWATER	17
	8.2	SOIL	18
9.0	AREAS R	EQUIRING FUTURE MANAGEMENT	19
	9.1	CONSTITUENTS OF CONCERN	19
	9.2	SOIL - VERTICAL AND LATERAL	19
	9.3	GROUNDWATER - VERTICAL AND LATERAL	19
	9.4	SEDIMENT	19
	9.5	SURFACE WATER	20
	9.6	SOIL VAPOR/AIR	20
10.0	REFEREN	CES	21

#### LIST OF FIGURES (Following Text)

- FIGURE 1 VICINITY MAP
- FIGURE 2 SITE MAP
- FIGURE 3 AREA MAP
- FIGURE 4 SOIL INVESTIGATION DATA MAP
- FIGURE 5 CROSS SECTION A-A'
- FIGURE 6 CROSS SECTION B-B'
- FIGURE 7 GROUNDWATER ELEVATION AND CHEMICAL CONCENTRATION MAP - AUGUST 4, 2010

#### LIST OF TABLES

- TABLE 1SUMMARY OF HISTORICAL SOIL ANALYTICAL DATA
- TABLE 2SUMMARY OF GROUNDWATER MONITORING DATA

#### LIST OF APPENDICES

- APPENDIX A ENVIRONMENTAL DOCUMENT LIST
- APPENDIX B LEGAL DESCRIPTION OF PROPERTY, PRESENT OWNER AND OPERATOR, KNOWN PAST OWNERS AND OPERATORS
- APPENDIX C SUMMARY OF PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIVITIES
- APPENDIX D AVAILABLE HISTORICAL SOIL BORING LOGS
- APPENDIX E BORING LOGS FOR MW-8 THROUGH MW-11 AND SB-6 THROUGH SB-9
- APPENDIX F LABORATORY ANALYTICAL REPORTS

APPENDIX GSENSITIVE RECEPTOR SURVEYAPPENDIX HTERRESTRIAL ECOLOGICAL EVALUATIONAPPENDIX IREFERENCE MATERIAL FOR SITE-SPECIFIC CLEANUP LEVEL<br/>CALCULATIONAPPENDIX JMTCA METHOD B SOIL CLEANUP LEVEL CALCULATION

#### 1.0 <u>INTRODUCTION</u>

#### 1.1 <u>SITE INFORMATION</u>

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

Current Owner/Operator:

PacWest Energy, LLC

#### 1.2 <u>PURPOSE</u>

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 160<sup>th</sup> Street, Bothell, King County, Washington, at the northeast corner of Northeast 160<sup>th</sup> 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 160<sup>th</sup> 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 <u>NEIGHBORHOOD SETTING</u>

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 160<sup>th</sup> 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 <sup>1</sup>/<sub>2</sub> mile southwest of the Site. The Sammamish River is also located within <sup>3</sup>/<sub>4</sub> 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 <u>PHYSIOGRAPHIC SETTING/TOPOGRAPHY</u>

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.

UST Volume	Content	Date Installed	Date Decommissioned
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 <u>CURRENT PROPERTY USE AND FACILITIES</u>

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.

Tank Type & Volume	Content	Date Installed	Tank Status
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 160<sup>th</sup> Street and Brickyard Road. Northeast 160<sup>th</sup> 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 160<sup>th</sup> 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 100<sup>th</sup> Avenue Northeast. The section of Juanita Woodinville Way Northeast to the west of the Property is also known as Brickyard Road. Brickyard Road becomes 116<sup>th</sup> Avenue Northeast immediately south of the intersection with Northeast 160<sup>th</sup> Street, while Juanita Woodinville Road continues to the southeast.

#### 3.6 <u>UTILITIES AND WATER SUPPLY</u>

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 160<sup>th</sup> 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 160<sup>th</sup> 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 <sup>1</sup>/<sub>2</sub> mile of the Property. Chevron-branded service station #9-3299, located at 15900 116<sup>th</sup> Avenue Northeast, is approximately 700 feet southwest of the Property (Figure 3). E-Data Resources, Inc. (EDR) identified two additional LUST sites within <sup>1</sup>/<sub>2</sub> mile of the Property, including Washington Department of Transportation Totem Lake Remediation, located within a <sup>1</sup>/<sub>4</sub> mile southwest of the Property and Vibert Nursery, Inc., located within a <sup>1</sup>/<sub>2</sub> 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 <u>POTENTIAL CONSTITUENTS OF CONCERN</u>

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:

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

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 <u>SURFACE WATER</u>

No surface water sampling has been conducted at the Site.

#### 4.4 <u>GROUNDWATER</u>

A total of twelve groundwater monitoring wells have been installed on-Property and one monitoring well has been installed off-Property within Northeast 160<sup>th</sup> 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 160<sup>th</sup> 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 <u>SEDIMENT</u>

No sediment sampling has been conducted at the Site.

#### 4.6 <u>AIR/SOIL VAPOR</u>

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 <u>NATURAL RESOURCES/WILDLIFE</u>

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

### 4.8 <u>CULTURAL HISTORY/ARCHAEOLOGY</u>

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

### 4.9 <u>INTERIM ACTIONS</u>

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 <u>NATURAL CONDITIONS</u>

# 5.1 <u>GEOLOGY</u>

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 <u>SURFACE WATER</u>

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 <u>GROUNDWATER</u>

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 x 10<sup>-5</sup> 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 <sup>3</sup>/<sub>4</sub> mile to the east of the Property and Juanita Creek is located approximately <sup>1</sup>/<sub>2</sub> mile to the southwest of the Property. Four educational centers are located within <sup>1</sup>/<sub>2</sub> 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 <sup>1</sup>/<sub>4</sub> 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 <u>CONTAMINANT OCCURRENCE AND MOVEMENT</u>

#### 6.1 <u>WASTE MATERIAL</u>

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 <u>SOIL</u>

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 <u>SURFACE WATER</u>

No surface water has been sampled at the Site.

# 6.4 <u>GROUNDWATER</u>

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 though 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 <u>SEDIMENT</u>

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

#### 6.6 <u>AIR/SOIL VAPOR</u>

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 <u>CONCEPTUAL MODEL</u>

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 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 x 10<sup>-5</sup> 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 <u>CLEANUP STANDARDS - SOIL AND GROUNDWATER</u>

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 <u>GROUNDWATER</u>

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 equation<sup>1</sup>:

<sup>&</sup>lt;sup>1</sup> 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.

$$\begin{array}{c} \text{RBC}_{\text{we}} & \underline{\text{ARL}_c * \text{AT}_c * 365 \text{ d/yr} * \text{BW}_a} \\ (\mu g/L) = & \overline{\text{ED}_e * \text{EF}_e * [(\text{IRA}_a * \text{VF}_{\text{we}} * \text{SF}_i) + (\text{DA}_w * \text{EvF}_w * \text{SA}_w * \\ & SF_o)]} & * 10^3 \,\mu\text{g/mg} \end{array}$$

Where:

<b>RBC</b> <sub>we</sub>	=	Risk-Based Concentration for Excavation or Construction Worker Exposure to		
		Groundwater (in $\mu$ g/L)		
ARL <sub>c</sub>	=	AccepTable risk level – carcinogens (unitless)		
AT <sub>c</sub>	=	Averaging time – carcinogens (yr)		
$BW_a$	=	Body weight (kilograms)		
ED <sub>e</sub>	=	Exposure duration (yr)		
EFe	=	Exposure frequency $(d/yr)$		
IRA <sub>a</sub>	=	Inhalation rate $(m^3/d)$		
VFwe	=	Volatilization factor for water in an excavation $(L/m^3)$		
$SF_i$	=	Cancer slop factor – inhaled (mg/kg-d) <sup>-1</sup>		
$DA_w$	=	Dermal absorption factor for groundwater (L/cm <sup>2</sup> -event)		
$EvF_w$	=	Event frequency for groundwater contact (event/d)		
$SA_w$	=	Skin surface contact area to groundwater (cm <sup>2</sup> )		
SFo	=	Cancer slope factor – oral (mg/kg-d) <sup>-1</sup>		

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 <u>SOIL</u>

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 <u>CONSTITUENTS OF CONCERN</u>

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 <u>SOIL - VERTICAL AND LATERAL</u>

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 <u>GROUNDWATER - VERTICAL AND LATERAL</u>

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 <u>SEDIMENT</u>

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 <u>SOIL VAPOR/AIR</u>

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 <u>REFERENCES</u>

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



241809-2009(006)GN-WA006 MAR 09/2010





241809-2009(006)GN-WA004 MAR 01/2011



- MW-1 MONITORING WELL LOCATION
- MW-2 MONITORING WELL LOCATION
- SB-1 SOIL BORING LOCATION (CRA, 2008)
- PI-5 X EXCAVATION SOIL SAMPLE (SEACOR, 1992)
- NEPI@7' ☑ SOIL SAMPLE LOCATION (SEACOR, 1996)
- WOBOT-8 SOIL SAMPLE LOCATION (NOLL, 2003)
  - SB-6 SOIL BORING LOCATION (CRA, 2009)
  - SB-10 SOIL BORING LOCATION (CRA, 2010)

    - — EXCAVATION EXTENT (1991)
    - — EXCAVATION EXTENT (1996)
      - APPROXIMATE PROPERTY BOUNDARY
      - INDICATES ALL CONCENTRATIONS WERE BELOW LABORATORY REPORTING LIMITS
      - INDICATES AT LEAST ONE CONCENTRATION WAS DETECTED ABOVE THE LABORATORY REPORTING LIMITS, BUT NO CONCENTRATION EXCEEDED THE SITE SPECIFIC CLEANUP LEVELS
      - INDICATES AT LEAST ONE CONCENTRATION EXCEEDED THE SITE SPECIFIC CLEANUP LEVELS
      - INDICATES SOIL SAMPLE HAS BEEN CONFIRMED. THE CONFIRMATION SOIL SAMPLE WAS BELOW THE SITE SPECIFIC CLEAN UP LEVELS

figure 4

30f

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



241809-2009(006)GN-WA005 MAR 01/2011

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

figure 5



241809-2009(006)GN-WA005 MAR 01/2011



TABLES
			_	HY	DROCARBO	ONS			PRIMAI	RY VOCs			LEAD	OXYGENATES	PA	Hs
Sample ID	Consultant	Sample Date	Depth	TPHg	TPHd	ТРНо	В	Т	Ε	X	EDB	EDC	Total	MTBE	Naphthalene	Total cPAHs <sup>1</sup>
		MTCA Method A Cle	anup Levels	30/100	2,000	2,000	0.03	7	6	9	0.005	NE	250	0.1	5	0.1
		Site Specific Cle	anup Levels	4,956	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																
РІ-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			82			
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	<10			<0.05	<0.10	<0.10	<0.10			78			
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	24			21			
Waste Oil UST Excavation			-					0.20								
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						

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

				HY	DROCARBO	ONS			PRIMA	RY VOCs			LEAD	OXYGENATES	PA	1Hs
Sample ID	Consultant	Sample Date	Depth	TPHg	TPHd	TPHo	В	Т	Ε	X	EDB	EDC	Total	MTBE	Naphthalene	Total cPAHs <sup>1</sup>
	N	ITCA Method A Cle	anup Levels	30/100	2,000	2,000	0.03	7	6	9	0.005	NE	250	0.1	5	0.1
		Site Specific Cle	anup Levels	4,956	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	85	<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	<0.0013	<0.0019	1.67	<0.0059	<0.036	<0.036
SB3-25	CRA (2008)	6/11/2008	25	<0.027	17	10	<0.000	<0.000	<0.000	<0.000	<0.0011 a	<0.0005	2.8	<0.0005	<0.035	<0.035
SB4 25	CRA (2008)	6/11/2008	25	\$0.010 8.7	17	75	0.000	0.073	0.000	0.000	<0.0014 a	<0.000	2.0	<0.000	<0.035	<0.033
SB5-25	CRA (2008)	6/11/2008	25	0.23	9.7	7.8	< 0.0011	< 0.0044	< 0.025	< 0.0044	<0.0014 a	<0.0039	2.40	< 0.0044	<0.036	<0.036
SO 241800 051000 HB SB 6 0	CPA (2000)	5/10/2000	Q	o oob	<5.0	25	0.0022	0.021	0.024	0.12	<0.00076	<0.00076	2 81	<0.0015	<0.020	0.06
SO 241800 051000 HB SB 6 10	CRA(2009)	5/19/2009	10	560 <sup>b</sup>	~0.0 200*	<5.0	<0.0052	5.8	10	65	<0.00070	<0.00070	2.01	<0.0015	~0.020 2.2	<0.00
SO 241809-051909-11D-3D-0-19	CRA(2009)	5/19/2009	0	<0.18 <sup>b</sup>	200 <5.0	<5.0	<0.40	0.0025	0.0011	0.0050	<0.40	<0.40	2.24	<0.73	<0.020	0.020
SO 241809-051909-11D-3D-7-9	CRA(2009)	5/19/2009	9 14	<0.18 0.48 <sup>b</sup>	<0.0 5.0	14	0.00000	0.0023	0.0011	0.0050	<0.00085	<0.00085	2.00	<0.0013	<0.020	<0.020
SO 241800 051000 HB MM 8 5	CRA(2009)	5/18/2009	5	<0.40	<5.0	<5.0	0.0014	<0.0042	<0.00080	<0.022	<0.00080	<0.00080	2.05	<0.0017	<0.020	<0.020
SO 241809-051909-11D-WW-6-5	CRA(2009)	5/18/2009	14	<0.22	<5.0	<5.0	<0.00091	<0.00030	<0.00030	<0.0016	<0.00030	<0.00070	2 72	<0.0016	<0.020	<0.020
SO 241809-051909-11D-WW-8-14	CRA(2009)	5/18/2009	5	<0.21 0.5 <sup>b</sup>	<5.0	<5.0	0.00079	0.00079	<0.00079	0.0052	<0.00079	<0.00079	2.42	<0.0010	<0.020	<0.020
SO-241809-051909-HB-MW-9-14	CRA (2009)	5/19/2009	14	93 <sup>b</sup>	<5.0 39*	<5.0	0.0023	0.00048	0.49	2.9	<0.00048	< 0.00048	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*	<31	<31	230	920				_	65	_
SO 241809-012010 TM SD 0 8	CRA (2010)	1/20/2010	0	<0.21	20	03	<0.00071	<0.00071	<0.00071	<0.0014					05	
50-241809-012110-114-5D-9-8	CRA (2010)	1/21/2010	0 20	<0.21	52 <5.0	93 ~E 0	<0.00071	<0.00071	<0.00071	<0.0014						
50-241809-012210-1141-5D-9-20	CRA (2010)	1/22/2010	20	<0.14	<5.0	<5.0	<0.00084	<0.00065	<0.00084	<0.0013						
SO-241809-012010-1M-MW-10-9.5	CRA (2010)	1/20/2010	9.5 14 E	<0.18	<0.0 E 0*	<5.0	<0.00084	<0.00084	<0.00084	<0.0017						
SO-241809-012010-TM-MW-10-14.5 SO-241809-012110-TM-MW-11-4	CRA (2010) CRA (2010)	1/20/2010	14.5 4	<0.18	5.8" <5.0	<5.0 <5.0	<0.00068 <0.00076	<0.00068	<0.00068 <0.00076	<0.0014 <0.0015						
CO 241000 100110 CD CD 10 (		10/1/2010	6	25	~= 0	~ 0	-0.044	-0.046	0.000	0.25						
5U-241809-100110-5K-5B-10-6	CRA (2010)	10/1/2010	b 10	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						
50-241809-100110-5K-5B-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-SK-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						

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

				HY	DROCARBO	ONS			PRIMAF	RY VOCs			LEAD	OXYGENATES	PA	Hs
Sample ID	Consultant	Sample Date	Depth	TPHg	TPHd	ТРНо	В	Т	Е	X	EDB	EDC	Total	MTBE	Naphthalene	Total cPAHs <sup>1</sup>
		MTCA Method A Cl	eanup Levels	30/100	2,000	2,000	0.03	7	6	9	0.005	NE	250	0.1	5	0.1
		Site Specific Cl	eanup Levels	4,956	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

<sup>1</sup> 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 1

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

					HYD	ROCARBC	ONS			PRIMA	RY VOCs				ОХ	YGENATI	ES		L	EAD	PAH	s
Sample ID	Date	TOC	DTW	GWE	TPHg	TPHd	TPHo	В	Т	Ε	X	EDB	EDC	MTBE	TBA	DIPE	ETBE	TAME	Total	Dissolved	Naphthalene	cPAHs
	Model Toxics	Control Act Me	thod A Screen	ning 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 Clea	nup 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-1	02/07/94	94.91	13.45	81.46	17,000			850	1,600	460	3,800								5.3			
MW-1 <sup>c</sup>	02/07/94	94.91	13.45	81.46	18,000			860	1,700	470	3,900											
MW-1	06/22/94	94.91	21.78	73.13	55,000			1,200	7,100	2,800	13,000									5.6		
MW-1	09/19/94	94.91	17.64	77.27	76,700			1,137	7,650	2,740	12,200									3		
MW-1	01/05/94	94.91	14.11	80.80	27,000			240	980	1,400	6,000									ND		
MW-1 <sup>c</sup>	01/05/94	94.91	14.11	80.80	44,000			210	1,500	1,900	7,500											
MW-1	03/23/95	94.91	11.9	83.01	26,000			190	1,200	1,600	5,500									ND		
MW-1	06/06/95	94.91	16.93	77.98	40,000			730	3,800	2,700	11,000									ND		
MW-1	09/12/95	94.91	17.76	77.15	86,000			1,000	6,500	3,100	13,000									7		
MW-1	12/05/95	94.91	10.48	84.43	46,000			200	1,400	1,800	7,400									3		
MW-1	03/21/96	94.91	13.49	81.42	64,000			340	2,800	2,600	9,800											
MW-1°	03/21/96	94.91	13.49	81.42	64,000			300	2,600	2,500	9 <i>,</i> 300											
MW-1	06/17/96								Well	inadverten	tly buried o	during site o	constructi	on not me	easured							
MW-1	09/23/96								Well	inadverten	tly buried o	luring site o	constructi	on not me	easured							
MW-1	12/16/96								Well	inadverten	tly buried o	luring site o	constructi	on not me	easured							
MW-1	06/27/97	91.10	15.15	75.95	59,100			126	1,400	2,670	6,940											
MW-1°	06/27/97	91.10	15.15	75.95	58,700			124	1,460	2,880	8,880											
MW-1	09/16/97	91.10	18.45	72.65																		
MW-1	01/06/98	91.10	18.26	72.84																		
MW-1	03/23/98	91.10	14.95	76.15	47,300			160	1,000	1,660	6,260											
MW-1	06/20/98	91.10	16.52	74.58	43,000			110	474	2,120	7,310											
MW-1	09/21/98	91.10	22.49	68.61	37,200			678	923	2,150	7,120											
MW-1	12/16/98	91.10	15.08	76.02	37,300			221	790	1,950	6,270											
MW-1	04/08/99	91.10	16.07	75.03	33,200			86.9	478	1,650	5,600			<500 e								
MW-1	10/07/99	91.10	22.27	68.83	42,200			586	1,690	2,210	6,880											
MW-1	03/21/00	91.10	16.74	74.36	30,000			104	310	1,850	5,490											
MW-1	09/30/00	91.10	22.88	68.22	22,700			590	227	1,760	3,500											
MW-1	02/03/01	91.10	18.57	72.53	17,100			88.6	143	1,730	3,940			<40.0 e								
MW-1	07/10/01	91.10	18.92	72.18	30,000			209	309	2,050	4,710			<5.00								
MIVV-1	02/25/02	91.10	14.35	76.75	17,900			/8.0	84.1	1,240	3,150											
MIVV-1	07/11/02	91.10	17.30	73.80	32,000			92	130	1,700	2,800											
MIVV-1	01/02/03	91.10	21.07	70.03	46,000			240	180	2,500	5,460											
NIVV-1	07/14/03	91.10	20.41	70.69	38,000			320	350	2,200	5,550 1.955											
MIVV-1	01/23/04	91.10	16.45	74.65	19,000			100	~1	000 0.100	1,855											
MVV-1	07/23/04	91.10	20.84	70.26	24,000			180	250	2,100	5,030											
MIW-1	01/10/05	91.10	18.02	73.08	12,000			76	54	880	1,638											
MW-1	07/15/05	91.10	17.20	73.90	11,000			99	17.7	1,500	2,356											
NIVV-1	01/11/06	91.10	12.81	76.29	1.050			74	17.7	406	74Z			 -= 00								
NIV-1	02/15/0/	91.10	10.00	73.10	1,050			5.44 100	4.09	28.2	03.4 2.000			<b>~</b> 5.00	<b>~50.0</b>	<1.00	<1.00	<1.00				
IVI VV - 1 M/(A7 1	09/11/0/	91.10	17.44	75.00	15 E00			122	144 605	28 4	2,900				<50.0	~1.00	~1.00	<1.00				
1V1 V V - 1 M/1A7 1	02/20/08	91.10 01.10	19.81	70.29	14 000			170	170	20.4 2 100	6.250			<b>\</b> 3.00	<b>~</b> 50.0	×1.00	×1.00	×1.00				
NATA7 1	00/12/00	91.10 01.10	10.79	75.00	10.000			170 E0	170	620	1 400			 <25 o	<250		~=0					
MM7 1 *	02/04/09	200 52	18.20	280 72	15,000	 5 300 J	<100	100	±∠ 100	900	2 500	<0.010	 <1.6	<10 <10	<200	<10	<10	<10	1 71		360	<01
141 4 4 -1	00/ 10/ 09	277.00	10.00	200.75	10,000	5,500 u	~100	190	100	200	2,000	-0.010	~1.0	~10	~200	~10	~10	~10	1./1		500	-0.1

					HYD	ROCARBO	NS			PRIMA	RY VOCs				ОХ	YGENATI	ES		L	EAD	PAH	5
Sample ID	Date	TOC	DTW	GWE	TPHg	TPHd	ТРНо	В	Т	Ε	X	EDB	EDC	MTBE	TBA	DIPE	ETBE	TAME	Total	Dissolved	Naphthalene	cPAHs
	Model Toxics	Control Act Me	thod A Scree	ning 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 Clea	nup 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-1 g	02/05/10	299.53	14.14	285.39	11,000	5,100 d	<100	60	28	460	830			<1.0	<10	<2.0	<2.0	<2.0			200	
MW-1 g	08/04/10	299.53	15.68	283.85	10,000	6,200 d	<100	45	22	200	430										210	
_																						
MW-2	02/07/94	94.63	17.87	76.76	4,200			230	16	400	870								ND			
MW-2	06/22/94	94.63	14.71	79.92	4,300			180	15	370	670									ND		
MW-2	09/19/94	94.63	16.12	78.51	1,650			79	4.1	128	201									ND		
MW-2	01/05/95	94.63	13.58	81.05	1,900			85	6.4	220	320									ND		
MW-2	03/23/95	94.63	11.60	83.03	1,500			74	5.9	160	280									ND		
MW-2	06/06/95	94.63	15.65	78.98	2,800			154	15	330	520									ND		
MW-2	09/12/95	94.63	17.33	77.30	2,300			70	11	180	280									ND		
MW-2	12/05/95	94.63	11.10	83.53	1,300			41	3.5	130	150									ND		
MW-2	03/21/96	94.63																				
MW-2	06/17/96	94.63								Well	Destroyed	During Wi	dening of	Northeast 1	160th Stree	t						
											,	Ū	U									
MW-3	02/07/94	99.57	21.68	77.89	2,500			220	12	220	280.0								ND			
MW-3	06/22/94	99.57	22.16	77.41	5,300			270	26	400	270.0									ND		
MW-3 <sup>c</sup>	06/22/94	99.57	22.16	77.41	4,900			260	23	400	250.0											
MW-3	09/19/94	99.57	23.46	76.11	1,340			158	5.2	118	32.0									5		
MW-3 <sup>c</sup>	09/19/94	99.57	23.46	76.11	1,300			150	7.4	116	35.0											
MW-3	01/05/95	99.57	22.72	76.85	2,500			160	15	180	120.0									ND		
MW-3 <sup>c</sup>	01/05/95	99.57	22.72	76.85	2,000			130	8	150	77.0											
MW-3	03/23/95	99.57	21.82	77.75	2,100			120	13	150	84.0									ND		
MW-3 <sup>c</sup>	03/23/95	99.57	21.82	77.75	2,200			120	12	160	110.0											
MW-3	06/06/95	99.57	22.20	77.37	2,900			120	34	190	210.0									ND		
MW-3 <sup>c</sup>	06/06/95	99.57	22.20	77.37	3,100			130	41	220	260.0									ND		
MW-3	09/12/95	99.57	23.06	76.51	1,300			62	8.1	98	86.0									56		
MW-3 <sup>c</sup>	09/12/95	99.57	23.06	76.51	1,300			61	8.8	94	96.0											
MW-3	12/05/95	99.57	22.24	77.33	1,800			65	7.7	95	90.0											
MW-3	03/21/96	99.57	21.22	78.35																		
MW-3	06/17/96	99.57	21.25	78.32	3,920			121	7.19	238	87.4											
MW-3 <sup>c</sup>	06/17/96	99.57	21.25	78.32	4,290			87.5	6.58	211	115.0											
MW-3	09/23/96	99.57	22.83	76.74																		
MW-3	12/16/96	99.57	22.66	76.91	878			29.8	1.1	49.5	7.6											
MW-3 <sup>c</sup>	12/16/96	99.57	22.66	76.91	580			29.4	1.6	41.9	7.3											
MW-3	06/27/97	99.57	21.01	78.56	3,580			42.5	3.64	135	51.4											
MW-3	09/16/97	99.57	21.80	77.77	4,010			63.3	4.06	171	74.6											
MW-3	01/06/98	99.57	21.65	77.92	1,160			30.3	1.6	58.8	16.4											
MW-3	03/23/98	99.57	26.65	72.92																		
MW-3	06/20/98	99.57	21.65	77.92	1,380			37.7	2.86	67.6	18.4											
MW-3	09/21/98	99.57	23.05	76.52																		
MW-3	12/16/98	99.57	23.65	75.92	ND			8.96	0.907	ND	ND											
MW-3	04/08/99	99.57	22.66	76.91	959			12.7	<1.40	19.0	15.1			<8.20								
MW-3	10/07/99	99.57	24.27	75.30	<50.0			2.87	< 0.5	< 0.5	<1.0											
MW-3	03/21/00	99.57	23.41	76.16	262			3.42	<0.5	1.8	1.6											

Sumple         Date         Date <thdate< th="">        Date        Date         <th< th=""><th></th><th></th><th></th><th></th><th></th><th>HYD</th><th>ROCARBO</th><th>ONS</th><th></th><th></th><th>PRIMA</th><th>RY VOCs</th><th></th><th></th><th></th><th>ОХ</th><th>YGENATI</th><th>ES</th><th></th><th>L</th><th>EAD</th><th>PAH</th><th>s</th></th<></thdate<>						HYD	ROCARBO	ONS			PRIMA	RY VOCs				ОХ	YGENATI	ES		L	EAD	PAH	s
Mall         Unit         Mall         Mall <th< th=""><th>Sample ID</th><th>Date</th><th>TOC</th><th>DTW</th><th>GWE</th><th>TPHg</th><th>TPHd</th><th>TPHo</th><th>В</th><th>Т</th><th>Ε</th><th>X</th><th>EDB</th><th>EDC</th><th>MTBE</th><th>TBA</th><th>DIPE</th><th>ETBE</th><th>TAME</th><th>Total</th><th>Dissolved</th><th>Naphthalene</th><th>cPAHs</th></th<>	Sample ID	Date	TOC	DTW	GWE	TPHg	TPHd	TPHo	В	Т	Ε	X	EDB	EDC	MTBE	TBA	DIPE	ETBE	TAME	Total	Dissolved	Naphthalene	cPAHs
b         b		Model Toxics	Control Act Me	ethod A Scree	ning 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
Nors         Op/ID			Site	e-specific Clea	nup 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
NN3         09/3/0         997         246         759         4.30         -         -         10         60/3         327         120         -        -         -         - <td></td> <td></td> <td></td> <td></td> <td></td> <td>(µg/L)</td>						(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)
MNA3     00/30     09/37     2166     7.50     8.80     - <th< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>																							
MM3     02/16/01     997     24.11     7.56     6.80     -    - <th< td=""><td>MW-3</td><td>09/30/00</td><td>99.57</td><td>23.66</td><td>75.91</td><td>8,360</td><td></td><td></td><td>189</td><td>69.3</td><td>32.7</td><td>1,200</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>	MW-3	09/30/00	99.57	23.66	75.91	8,360			189	69.3	32.7	1,200											
MN43     07/10/10     997     233     76.4     680     -	MW-3	02/03/01	99.57	24.11	75.46	430			62.0	5.26	7.10	15.7											
MM3     00/10/10     987     23.3     6.44     688     -	MW-3	07/10/01	99.57	23.33	76.24	<80			12.1	< 0.500	< 0.500	<1.00											
MM33       00/11/02       98.57       27.68       70.8       200       - </td <td>MW-3</td> <td>02/25/02</td> <td>99.57</td> <td>23.13</td> <td>76.44</td> <td>688</td> <td></td> <td></td> <td>13.8</td> <td>0.795</td> <td>7.39</td> <td>6.63</td> <td></td>	MW-3	02/25/02	99.57	23.13	76.44	688			13.8	0.795	7.39	6.63											
MM3         01/07/08         98/57         24.07         74.90         4250           1 <td>MW-3</td> <td>07/11/02</td> <td>99.57</td> <td>22.56</td> <td>77.01</td> <td>300</td> <td></td> <td></td> <td>2.2</td> <td>&lt;1</td> <td>3.8</td> <td>1.7</td> <td></td>	MW-3	07/11/02	99.57	22.56	77.01	300			2.2	<1	3.8	1.7											
MM-3     07/14/03     09/57     25.8     75.8     75.8     75.9     75.0 <td>MW-3</td> <td>01/02/03</td> <td>99.57</td> <td>24.67</td> <td>74.90</td> <td>&lt;250</td> <td></td> <td></td> <td>41</td> <td>&lt;1</td> <td>&lt;1</td> <td>&lt;1</td> <td></td>	MW-3	01/02/03	99.57	24.67	74.90	<250			41	<1	<1	<1											
MM:3     01/2/04     99.57     25.8     75.5     25.0       1     1     1	MW-3	07/14/03	99.57	23.73	75.84	<250			6.9	<1	<1	1.7											
MM-3     01/21/14     9957     2125     75.2     250     - <t< td=""><td>MW-3</td><td>01/23/04</td><td>99.57</td><td>23.82</td><td>75.75</td><td>&lt;250</td><td></td><td></td><td>170</td><td>&lt;1</td><td>&lt;1</td><td>1.5</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	MW-3	01/23/04	99.57	23.82	75.75	<250			170	<1	<1	1.5											
MM3     01/10/05     9957     24.2     75.2     250 <t< td=""><td>MW-3</td><td>07/23/04</td><td>99.57</td><td>23.98</td><td>75.59</td><td>&lt;250</td><td></td><td></td><td>&lt;1</td><td>&lt;1</td><td>&lt;1</td><td>&lt;1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	MW-3	07/23/04	99.57	23.98	75.59	<250			<1	<1	<1	<1											
MM-3       07/15/U5       99.57       22.97       76.88       < 50        -1       -1       -1 <td>MW-3</td> <td>01/10/05</td> <td>99.57</td> <td>24.25</td> <td>75.32</td> <td>&lt;250</td> <td></td> <td></td> <td>&lt;1</td> <td>&lt;1</td> <td>&lt;1</td> <td>&lt;1</td> <td></td>	MW-3	01/10/05	99.57	24.25	75.32	<250			<1	<1	<1	<1											
MM-3     01/10/6     99:57     24.87     76.10     65.0	MW-3	07/15/05	99.57	22.99	76.58	<50			<1	<1	<1	<1											
MM-3       92/15/07       99:57       21.8       76.2       1.20       -       -       1.96       <1.00       <1.00       <1.00       <1.00       -	MW-3	01/11/06	99.57	23.47	76.10	<50			< 0.500	< 0.500	< 0.500	< 0.1											
MM-3       09/11/07       99.57       24.8       74.94       <	MW-3	02/15/07	99.57	23.05	76.52	1,230			1.96	< 0.500	< 0.500	<3.00			<5.00	<50.0	<1.00	<1.00	<1.00				
MM-3       002/20/68       9957       22.10       76.44       722         1.23       64.00       61.00  0.50       <0.00       <0.00       <0.00       <0.00       <0.00       <0.00       <0.00       <0.00       <0.00       <0.00       <0.00       <0.00       <0.00       <0.00       <0.00       <0.00       <0.00       <0.00       <0.00       <0.00       <0.00       <0.00       <0.00       <0.00       <0.00       <0.00       <0.00       <0.00       <0.00       <0.00       <0.00       <0.00       <0.00       <0.00       <0.00       <0.00       <0.00       <0.0	MW-3	09/11/07	99.57	24.63	74.94	<50.0			< 0.500	< 0.500	< 0.500	<3.00											
MW3       09/12/08       957       23.0       76.4       <10        0.5       <1       <1            0.5       <1.0          0.5       <1.0          0.5       <1.0          0.5       <1.0         0.5       <1.0       <1.0         0.5       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.	MW-3	02/20/08	99.57	22.73	76.84	722			1.23	< 0.500	< 0.500	<3.00			<5.00	<50.0	<1.00	<1.00	<1.00				
MW-3       02/04/09       99.57       23.11       76.46       640         0.85       <1.00       <1.0         <1.0         <1.0         <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0       <1.0 <th< td=""><td>MW-3</td><td>08/12/08</td><td>99.57</td><td>23.10</td><td>76.47</td><td>&lt;100</td><td></td><td></td><td>&lt;0.5</td><td>&lt;1</td><td>&lt;1</td><td>&lt;1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>	MW-3	08/12/08	99.57	23.10	76.47	<100			<0.5	<1	<1	<1											
MW3*       08/13/0       303.37       21.33       28.04       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100 <td>MW-3</td> <td>02/04/09</td> <td>99.57</td> <td>23.11</td> <td>76.46</td> <td>640</td> <td></td> <td></td> <td>0.85</td> <td>&lt;1.400</td> <td>&lt;1.0</td> <td>&lt;1.0</td> <td></td> <td></td> <td>&lt;1.0</td> <td>14.0</td> <td>&lt;2.0</td> <td>&lt;2.0</td> <td>&lt;2.0</td> <td></td> <td></td> <td></td> <td></td>	MW-3	02/04/09	99.57	23.11	76.46	640			0.85	<1.400	<1.0	<1.0			<1.0	14.0	<2.0	<2.0	<2.0				
MW-3       02/05/10       303.37       21.52       281.85       430       180 d       <100       <0.50       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <10       <	MW-3*	08/13/09	303.37	23.33	280.04	<100	170 d	<100	< 0.50	< 0.50	< 0.50	< 0.50	< 0.010	< 0.50	< 0.50	4.0	< 0.50	< 0.50	< 0.50	2.93		0.14	< 0.1
MW-3       08/04/10       36.37       20.10       28.27       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100       <100 <td>MW-3</td> <td>02/05/10</td> <td>303.37</td> <td>21.52</td> <td>281.85</td> <td>430</td> <td>180 d</td> <td>&lt;100</td> <td>&lt; 0.50</td> <td>&lt;1.0</td> <td>&lt;1.0</td> <td>&lt;1.0</td> <td></td> <td></td> <td>&lt;1.0</td> <td>&lt;10</td> <td>&lt;2.0</td> <td>&lt;2.0</td> <td>&lt;2.0</td> <td></td> <td></td> <td></td> <td></td>	MW-3	02/05/10	303.37	21.52	281.85	430	180 d	<100	< 0.50	<1.0	<1.0	<1.0			<1.0	<10	<2.0	<2.0	<2.0				
MW4       02/07/94       102.75       31.42       71.33       ND         ND       ND       ND       ND       ND       ND          ND         ND       ND       ND       ND       ND          ND         ND       ND       ND       ND       ND         ND         ND       ND         ND	MW-3	08/04/10	303.37	20.10	283.27	<100	<100	<100	<0.50	<1.0	<1.0	<1.0											
MW4     06/0/94     102/5     31.42     1.1.33     ND       ND     ND     ND     ND        ND     ND     ND     ND        ND     ND     ND     ND     ND     ND              ND              ND                    ND </td <td>1 6147 4</td> <td>02/07/04</td> <td>100 75</td> <td>01.40</td> <td>71.00</td> <td>NID</td> <td></td> <td></td> <td>NID</td> <td></td> <td>NID</td> <td>NID</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>NID</td> <td></td> <td></td> <td></td>	1 6147 4	02/07/04	100 75	01.40	71.00	NID			NID		NID	NID								NID			
MW4       09/12/94       102.75       32.85       ADD       ND	MW-4	02/07/94	102.75	31.42	71.33	ND			ND	ND	ND	ND								ND	 NID		
MW4       09/19/94       102.75       32.56       69.60       ND        ND       ND       ND       ND       ND       ND       ND                     ND         ND         ND       ND       ND       ND       ND       ND       ND         ND         ND	NIVV-4	06/22/94	102.75	31.80	70.95	ND			ND	ND	ND	ND									ND		
MW4       01/05/94       102/55       32.64       69.91       ND        ND       ND       ND       ND         ND       ND         ND       ND          ND         ND       ND          ND         ND       ND               ND             ND       ND               ND <th< td=""><td>IVI VV -4</td><td>09/19/94</td><td>102.75</td><td>32.95</td><td>69.60</td><td>ND</td><td></td><td></td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>ND</td><td></td><td></td></th<>	IVI VV -4	09/19/94	102.75	32.95	69.60	ND			ND	ND	ND	ND									ND		
MW4       05/2/93       102/93       11.13       ND       ND </td <td>IVI VV -4</td> <td>01/05/94</td> <td>102.75</td> <td>32.84 21.60</td> <td>09.91 71.15</td> <td>ND</td> <td></td> <td></td> <td>ND</td> <td>ND</td> <td>ND</td> <td>ND</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>ND</td> <td></td> <td></td>	IVI VV -4	01/05/94	102.75	32.84 21.60	09.91 71.15	ND			ND	ND	ND	ND									ND		
MW4       06/06/95       102/5       31.20       70.83       ND        ND	NIW -4	05/25/95	102.75	21.00	71.15	ND			ND	ND	ND	0.80									ND		
MW-4       0/12/93       102.75       32.25       70.83       ND        ND       ND       ND       ND          ND       ND       ND       ND          ND       ND       ND       ND	MM7 4	00/00/95	102.75	31.90	70.85	ND			ND	ND	ND	0.69 NID									ND		
MW-4       12/07/90       102.75       32.80       03.90       ND       III       III       ND       ND       ND       III       IIII       IIII       IIII       IIIII       IIIIIII       IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	MM 4	12/05/95	102.75	32.72	60.00	ND			ND	ND	ND	ND									ND		
MW-4       06/17/96       102.75       31.30       71.50       m </td <td>MW 4</td> <td>03/21/96</td> <td>102.75</td> <td>31.20</td> <td>71 55</td> <td>ND</td> <td></td> <td></td> <td>ND</td> <td>IND.</td> <td>ND</td> <td>ND</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>IND.</td> <td></td> <td></td>	MW 4	03/21/96	102.75	31.20	71 55	ND			ND	IND.	ND	ND									IND.		
MW-4       00/17/30       102.75       32.62       70.13 <td>MW-4</td> <td>05/21/90</td> <td>102.75</td> <td>31.20</td> <td>71.55</td> <td>ND</td> <td></td> <td></td> <td>ND</td> <td>ND</td> <td>ND</td> <td>ND</td> <td></td>	MW-4	05/21/90	102.75	31.20	71.55	ND			ND	ND	ND	ND											
MW-4       12/16/96       102.75       32.95       69.80       ND        ND       ND       ND       ND	MW-4	09/23/96	102.75	32.62	70.13				110														
MW-4       06/27/97       102.75       35.35       67.40       ND        ND       ND       ND       ND	MW-4	12/16/96	102.75	32.02	69.80	ND			ND	ND	ND	ND											
MW-4       09/16/97       102.75       31.74       71.01       ND        ND       ND       ND       ND	MW-4	06/27/97	102.75	35 35	67.40	ND			ND	ND	ND	ND											
MW-4       01/06/98       102.75       31.25       71.50       ND        ND       ND       ND       ND	MW-4	09/16/97	102.75	31 74	71.01	ND			ND	ND	ND	ND											
MW-4       03/23/98       102.75       30.61       72.14       -	MW-4	01/06/98	102.75	31.25	71.50	ND			ND	ND	ND	ND											
MW-4       06/20/98       102.75       31.92       70.83       ND        ND       ND       ND	MW-4	03/23/98	102.75	30.61	72.14																		
MW-4       09/21/98       102.75       32.88       69.87 <td< td=""><td>MW-4</td><td>06/20/98</td><td>102.75</td><td>31 92</td><td>70.83</td><td>ND</td><td></td><td></td><td>ND</td><td>ND</td><td>ND</td><td>ND</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	MW-4	06/20/98	102.75	31 92	70.83	ND			ND	ND	ND	ND											
MW-4       12/16/98       102.75       33.50       69.25       ND        ND       ND       ND	MW-4	09/21/98	102.75	32.88	69.87																		
MW-4 04/08/99 102.75 32.82 69.93	MW-4	12/16/98	102.75	33.50	69.25	ND			ND	ND	ND	ND											
MW-4 10/07/99 102.75 33.97 68.78	MW-4	04/08/99	102.75	32.82	69.93																		
	MW-4	10/07/99	102 75	33 97	68 78																		
MW-4 03/21/00 102.75 33.07 69.68	MW-4	03/21/00	102.75	33.07	69.68																		
MW-4 09/30/00 102.75 33.39 69.36	MW-4	09/30/00	102.75	33.39	69.36																		

					HYD	ROCARBO	ONS			PRIMAI	RY VOCs				02	YGENATI	ES		L	EAD	PAH	s
Sample ID	Date	TOC	DTW	GWE	TPHg	TPHd	ТРНо	В	Т	Ε	X	EDB	EDC	MTBE	TBA	DIPE	ETBE	TAME	Total	Dissolved	Naphthalene	cPAHs
	Model Toxics	Control Act Me	thod A Scree	ning 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	e-specific Clea	nup 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-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 <sup>c</sup>	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 <sup>c</sup>	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																		

					HYL	ROCARBO	NS			PRIMAI	RY VOCs				02	XYGENATI	ES		L	EAD	PAH	s
Sample ID	Date	TOC	DTW	GWE	TPHg	TPHd	TPHo	В	Т	Ε	X	EDB	EDC	MTBE	TBA	DIPE	ETBE	TAME	Total	Dissolved	Naphthalene	cPAHs
	Model Toxi	cs Control Act Meth	od A Scree	ening 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-s	pecific Clea	anup 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)
	07/00/04	04.54	<b>0</b> 4 0 <b>7</b>	<b>72</b> 00																		
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	Drv																			
MW-6	06/17/96	,	5						W	ell Destroy	ved During	Widening	of Northe	ast 160th St	reet							
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 σ	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											
MM47.0 *	08/12/00	200.12	10.20	270.82	27.000	21 000 d	<500	24	E20	1.600	10.000	<0.010	<20	~12	<250	~12	~12	~12	1.64		570	<01
MW Of	00/15/09	299.13	19.50	2/9.03	12,000	21,000 u	<100	34 40	330	1,000	1 500	<0.010	N2.0	<2.0	<200	<1.0	<1.0	<12	1.04		570	<b>NO.1</b>
MW-91	02/05/10	299.31	9.95	289.36	13,000	6,000 a	<100	40	46	200	1,500			<2.0	<20	<4.0	<4.0	<b>~</b> 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															

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

					HYDI	ROCARBC	ONS			PRIMA	RY VOCs				02	<b>XYGENAT</b>	ES		L	EAD	РАН	s
Sample ID	Date	TOC	DTW	GWE	TPHg	TPHd	TPHo	В	Т	Ε	X	EDB	EDC	MTBE	TBA	DIPE	ETBE	TAME	Total	Dissolved	Naphthalene	cPAHs
	Model Toxics	Control Act Me	thod A Screen	ning 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 Clea	nup 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</pre>

--- = 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 De	ocument List: 11700 NE 160tl	h Street, Both	nell, WA	
Title	Author	Date	Subi Y/N	nitted to Ecology 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	Ν	N/A
Quarterly Groundwater Monitoring Report - September 1994	EMCON Northwest Inc	9/1/1994	N	N/A
Croundwater Campling Penert	EMCON Northwest Inc.	2/27/1005	v	4/21/1005
Report of Preliminary Environmental Site	EMCON Northwest, Inc.	2/27/1995	I	4/21/1995
Assessment	Groundwater Technology, Inc.	3/2//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	Inc.	6/25/1996	Ν	N/A
Compliance Soil Sampling Results	SECOR International, Inc.	8/5/1996	Ν	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,	9/29/1998	v	9/30/1998
Report of Environmental Services Drilling and	CooFingineers Inc	0/20/1008	N	573071550
Groundwater Sampling Activities - September	Pacific Environmental Group,	9/ 30/ 1998	IN	N/ A
1998 Groundwater Sampling Activities - December	Inc. Pacific Environmental Group,	11/18/1998	Y	11/20/1998
1998 Semi-Annual Groundwater Monitorng - Second	Inc.	1/20/1999	Y	1/27/1999
Quarter 1999 Semi-Annual Groundwater Monitorng - Fourth	SECOR International, Inc.	7/21/1999	Y	8/5/1999
Quarter 1999 Comi Annual Croundwater Monitoring First	SECOR International, Inc.	11/11/1999	Y	11/17/1999
Quarter 2000	SECOR International, Inc.	5/15/2000	Y	5/26/2000
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	Conestoga-Rovers & Associates	4/30/2008	v	5/5/2008
Phase II Environmental Site Assessment	Conestoga-Rovers & Associates	8/18/2000	v	8/21/2008
Groundwater Monitoring Report - Third Quarter	Concisioga-novers & Associates	10/21/2000	1	11 /2 /2000
2000	Conestoga-Kovers & Associates	10/31/2008	Ŷ	11/3/2008

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

# APPENDIX B

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

Known Listing of Owners and C	perators at 11700 Northeast 160 <sup>t</sup>	<sup>h</sup> Street, Bothell, WA
Owner	Business Operator	Approximate Years of Site Occupation
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	Parcel number	1626059114								
Mailing address	PROPERTY TAX DEPT PO BOX 4369	Tax Account number	162605911401								
Maning address	HOUSTON TX 77210	Levy code	7545								
		Jurisdiction	KING COUNTY								
		Present use	Conv Store with Gas								

\$1,823,800

Appraised value

Address(es) at this parcel 11700 NE 160TH ST 98011

# Legal description

LOT A OF KC SHORT PLAT NO 175023 RELORDING 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 C OR 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 BKYD 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	<u>20091221000369</u>	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	1761306	<u>20000627001738</u>	Special Warranty Deed	Other

E	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	<b>CONVENIENCE MARKET (419)</b>
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	Ν
		Elevators	

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

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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, PI6-4<sup>1</sup>, 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.

<sup>&</sup>lt;sup>1</sup> 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.

<u>1994</u> *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.

<u>1996 Monitoring Well Installation</u>: 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.

<u>1996 Stage II Vapor Recovery Installation</u>: 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.

<u>1996 Monitoring Well Destruction</u>: 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.

<u>1997</u> *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.

<u>2003 Waste Oil UST Removal</u>: 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 Assessment Report*.

<u>2009 Monitoring Well Installation</u>: 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.

<u>2010 Monitoring Well Installations</u>: 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



# Drilling Log

# Monitoring Well MW-1

Project <u>Site #63-232-1</u> . Location <u>11700 160th Ave</u> Surface Elev. Top of Casing <u>94.91 ft</u> . Screen: Dia <u>4 in</u> . Casing: Dia <u>4 in</u> . Fill Material <u>Colorado Sila</u> Drill Co. <u>Geoboring, Inc</u> .	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								
Checked By <u>Stan Haskin</u>	Checked By <u>Stan Haskins</u> Log By <u>Steve natural</u> Uate <u>211/94</u> Permit # License No								
Campletion ( tt.) Campletion ( ppm)	ON Structure) 20% to 35%, And 35% to 50%								
-2 - 2 - 3 - 34 -2 - 3 - 34 -2 - 3 - 34 -4 - 34 -6 - 34 - 34 -6 - 34 - 34 -10 - 34 - 34	5       6         8       7         5       5         8       7         5       5         8       7         32       13         32       13         32       13         32       13         32       13         32       13         32       13         32       13         32       24         30       24         40       50/3         25       50/3         26       50/3         27       14         40       38         50/5       17         50/6       22         50/5       17         50/6       22         50/5       17         50/6       22         50/5       17         50/6       22         50/5       17         50/6       21         21       21	SM SM SP	4 inches of beauty bark Dark brown silty SAND (SM), trace f (dry, medium dense, no odor) (grades light brown, trace organ (grades some fine gravel) Gray to dark brown, fine to medium S (dry, loose, slight hydrocarbon of (grades brown, and silt) Gray, fine to medium SAND (SP), little to coarse gravel (dry, very dense, moderate hyd (grades no odor) (grades coarse sand) (grades fine sand and silt) (grades brown) (grades brown) (grades some clay) Light tan to dark gray SILT (ML) ar (dry, hard, no hydrocarbon odor (grades some coarse gravel) (grades some clay, little coarse (grades light brown, slight hydro (grades dark gray, little medium	ine gravel hic material) SAND (SM), some silt and clay odor) le silt, trace fine rocarbon odor, GLACIAL TILL) hd fine sand, little fine gravel r) gravel) bcarbon odor) sand, no odor)					

05/26/1994 lithlog-mar93

GROUNDWATER

# Drilling Log

Monitoring Well MW-1

Project <u>Site #63-232-1469</u> Location <u>11700 160th Avenue NE, Bothell, WA</u>					hell, WA	0	Owner <u>Texaco Refining and Marketing Inc.</u> Proj. No. <u>020605286</u>
Depth (_ft.)	well Completion	PID (mqq)	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 24 24	Mell         Completi	(Edd) 120 30 8		ThOC) MOIE E 20/8 5	Graphic Craphic Craphi	EID SDSN ML SP CL SP	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50% (grades light gray, some fine sand) (grades dark gray, little fine sand) (localized lenses of medium sand) <i>Encountered water 11:25 hours 2/1/94</i> Dark gray, fine to medium SAND (SP), some clay (wet, very dense, no odor) (grades no clay) (grades no clay) (grades some clay) Dark gray to dark brown CLAY (CL), some silt (moist, hard, no odor, occassional sand lenses) Medium brown to medium gray, fine to coarse SAND, little gravel (wet, no odor) End of boring 12:25 hours 2/1/94
- 54 -  - 56 -							

05/26/1994 lithlog-mar93

Page: 2 of 2

GROUNDWATER TECHNOLOGY

05/26/1994 lithlog-mar93

# Drilling Log

# Monitoring Well MW-2



GROUNDWATER

# Drilling Log

Monitoring Well MW-2

Project _ Location	<u>Site #63-</u> _11700_160	<u>232–1</u> )th Avi	469 enue	NE, Boi	thell, WA	C	Dwner <u>Texaco Refining and Marketing Inc.</u> Proj. No. <u>020605286</u>				
Depth ( 11.)	well Completion	(mqq) DIq	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-2	10 F			Dark gray, fine to medium SAND (SW) (wet, dense, no odor)				
- 26 -		_		41 19 50/5		5₩					
- 28 -			NW-3	12 25 33			Dark gray fine SAND (SP) and silt and clay (moist, dense, no odor) (grades fine to medium sand, very dense)				
- 30 -		2	1111-2	50/8 20		SP					
- 32 - 	<u> </u>			12	ŻŻŻ	CL	Dark gray to brown CLAY (CL), little silt (moist, very stiff, no odor)				
- 34 -							~ End of Doring 16:30 hours 2/1/94				
- 36 -											
- 38 -											
- 40											
- 42 -											
- 44											
- 46 -											
- 48 -											
- 50 -											
- 52 -											
- 54 -											
- 56 -			•								

05/26/1994 lithlog-mar93

0 GROUNDWATER Technology

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# Drilling Log

# Monitoring Well MW-3

Project <u>Site #63</u> - Location <u>11700 160</u> Surface Elev Top of Casing <u>99</u> . Screen: Dia <u>4 in</u> . Casing: Dia <u>4 in</u> . Fill Material <u>Colora</u> Drill Co. <u>Geoboring</u> Driller <u>John Ronish</u>	Dwner <u>Texaco Refining and Marketing Inc.</u> See Site I         Proj. No.       020605286       For Boring         t.       Diameter 13 in.       COMMENT         t.       Static       21.68 ft.       300-pound         Type/Size       0.020 in.       300-pound         Type Schedule 40 PVC       Stem Auger       Date         Date       2/2-2/3/94       Permit #	<b>Location</b> 5: hammer, 30-inch drop			
Completion Completion	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 38	%, And 35% to 50%			
-2-2 -0 -2 -2 -4 -4 -6 -10 -12 -12 -14 -16 -16 -18 -20 -222 -222 -222 -222 -222 -222 -222 -222 -222 -222 -222 -2222 -222 -222 -222 -222 -222 -222 -222	2	50/4 MW-3A MW-3B MW-3C	GM ML ML	<ul> <li>4 inches of beauty bark</li> <li>Light brown fine to coarse GRAVEL (GM) and s (dry, no odor, IMPORTED BACKFILL)</li> <li>(cobbles broke split spoon sampler) (switch to 300 pound hammer)</li> <li>(grades little silt and cobbles)</li> <li>(grades little silt and cobbles)</li> <li>Light brown SILT (ML) and fine sand, some grad (dry, slight hydrocarbon odor)</li> <li>Light brown to gray fine GRAVEL (GP) (dry, moderate hydrocarbon odor, PEA GR.</li> <li>Light brown SILT (ML) and fine sand, trace grad (dry, hard, no odor)</li> <li>Encountered water 12:00 hours 2/2/94</li> <li>Gray SILT (ML) some clay, little fine sand (moist, hard, no odor)</li> </ul>	vel AVEL) ivel
03/27/1995 lithlog-ma	ar93				Page: 1 of 2



# Drilling Log



03/27/1995 lithlog-mar93

0 GROUNDWATER Technology

# Drilling Log

# Monitoring Well MW-4

Project Site #63-232-1469OwnerTexaco Refining and Marketing Inc.Location 11700 160th Avenue NE, Bothell, WAProj. No. 020605286Surface 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							See Site Map For Boring Location COMMENTS: 140-pound hammer, 30-inch drop					
Fill Materi Drill Co. <u></u> Driller <u>Joi</u>	al <u>Colora</u> Seoboring hn Ronish	<u>ado Sili</u> 1, Inc. 1		Meth By <u>Ste</u>	od <u>Ha</u> ve Ha	F ollow S ortmar	Stem Auger         Permit #					
Checked	Checked By <u>Stan Haskins</u> License No.											
Depth (ft.)	well Completion	(mqq)	Sample ID	Blow Count/ % Recovery	Graphic Log	uscs Class.	Descripti (Color, Texture, S Trace < 10%, Little 10% to 20%, Some	ON Structure) 20% to 35%, And 35% to 50%				
2 -												
- 0 - 2 - 2		2	M₩-2	39 50/3		ML	4 inches asphalt Greenish gray SILT (ML) and fine sa (dry, hard, no odor)	and, little grave!				
- 4							Medium to dark brown SILT (ML) and (dry, hard, no odor)	I fine sand, trace gravel				
- 6 -							(grades fine to coarse gravel)					
 - 8 		2	B	100/6								
- 10 -							(grades light gray)					
- 12 -		1	с	100/5		ML						
- 14				L								
- 18		З	ס	100/6								
- 20 -												
- 22 -		2	E	39 <b>1</b>			⊊ Encountered water 11:45 2/3/94					
- 24 -						SP	Gray to brown fine to coarse SAND (moist, very dense, no odor)	(SP), trace silt				
03/27/199	15 lithlog-m	ar93						Page: 1 of 2				

Page: 1 of 2



# **Drilling Log**

# Monitoring Well MW-4



03/27/1995 lithlog-mar93

SECC	R	Inter Bellev	national Incorporated we, Washington		· .		PAGE 1 OF 1
FACILITY TEXA	CO #0	63-23	2-1469 JOB	# <u>0011</u>	1-131-01		BORING/WELL_MW-5_
START 1/26/96	085	5	FINISH _1/26/96 1250	SURFA	IG TOP E	LEVA	TION
LOGGED BY <u>A.</u>	STOL		MONITORING DEVICE PHOTOVA	AC PID MI	ICROTIP	<u>MP-10</u>	00
COMMENTS SAM	IPLED	EVER	AY FIVE FEET USING A 2.5" I.D. X 18"	LONG SF	<u>PLIT SPO</u>	SA ON SI	AMPLER DRIVEN BY
<u>A 140 POUND H</u>	AMME	RWI	TH A 30" STROKE	ł	NSDOE W	ELL .	ACG204
PENETRATION RESULTS BLOWS BLOWS 6"/6"/6" /6"	Reading Sheen	Depth Below Surface, feet	Lithologic Description		Unified Soli Classification	Depth Below Surface, feet	Well Construction Schematic
		- 5 -				5 _	
			Decorotive Bark				
Hand Auger to 5'			Silty Sand, dark reddish brown, (5YR 3/2), mostly medium sand, little silt, moist, (topsoil) Silty Sand, light olive bown, (2.5Y 5/3), few fine gr fine to medium sand, little silt, slightly moist	fine to ravel, mostly	SM	-	
50/50 22 12	.1 <i>NS</i>	- 5				5	
100 for 6"	NS	- 10				- 10	
100 for 5"*18.7	7 NS	- ¥15 -	Wet			- 15	
100 for 6" 29.	1 <i>NS</i>	- 20 <sub>1</sub>	irace fine to coarse gravel, some silt, fine sand, dr	У			
100 for 4" 19.2	NS	- 25 E	ew fine to coarse gravel, fine to medium sand Boring terminated at 25.0 feet, sampler advanced to broundwater was encountered at approximately 15 fe Boring converted to a groundwater monitoring well o	) 25.5 feet. eet during dr n 1/26/96.	illing.	- 25	
ZZZ Field Screen/Lith Description Samp	ologic l <del>e</del>	₹ ₹	Groundwater Level at Time of Drilling Grada	tional	Concrete		2/12 Lapis Lustre Blank
Preserved Sample     No Recovery	•	₩ SD	Static Groundwater Level Contra Sheen Detected Contra				Sand Casing
Sample Submitted * for Laboratory Analysis	1 (2	NS NT .5Y 4/2	No Sheen Detected Locate Not Tested 2) Munsell (1990) Soil Color Charts ——— Contac	ed ximately ct	Bentonite		Screen Casing (0.010 slots) End Cap

DWG: TE13101L

	SE		<u>}</u>	2	Inter Bellev	national Incorporated w. Washington				PAGE 1 OF 1
	FACILITY LOCATIO	· <u> </u>	XACO 100 N	#6 E 10	<u>3-23</u> 50тн	2-1489JOB #JOB #	4 <u>0011</u> SURE	1-131-01		BORING/WELL_MW-6
	START _	1/26/	98 (	908	5	FINISHFINISH	CASIN	IG TOP E	ELEVAT	TION -
	LOGGED	BY _	A. 51	TOLI	AR	MONITORING DEVICE PHOTOVAC	PID M	ICROTIP	MP-10	00
	SUBCON	TRACI	OR A	ND	EQL	IPMENT CASCADE DRILLING INC; CME	55 10.	5" O.D. H	SA	
	COMMEN	15 <u></u> 5,	<u>AMPL</u>	ED	USIN	<u>G A 2.5" I.D. X 18" LONG SPLIT SPOON</u>	SAMPL	ER DRIV	EN BY	/
	<u>A 140 P</u>	OUND	HAM	ME	<u>7. WI</u>	T <u>H_A_30* STROKE</u>	<u> </u>	NSDOE N	/ELL_#	ACG 205
	PENETRATION RESULTS BLOWS	omple Depth ntervol, feet	PID Reading	Sheen	Jepth Below urface, feet	Lithologic Description		nified Soil assification	epth Below Irface, feet	Well Construction Schematic
	Hand Auger to 5' 50/50 for 4"	X	20.0	NS	0	Bare Ground Sand with Gravel, construction fill Silty Sand, olive brown, (2.5Y 4/3), few fine gravel, m fine to medium sand, little silt, moist	nostiy	SW SM	5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
•	50/30 for 3 75/100 100/70 100/100 for 5 150/100 for 5 150/175 for 5 100/75 for 4 100/125 for 120/100 for 3		17.2 22.7 15.2 15.0 11.1 21.0 21.6 25.5 21.9	NS NS NS NS NS NS NS NS	- 10	Οιγ			10 15	
	110/100 for 3 125/100 for 4 115/100 for 4 125/100 for 3 100/100 for 5 100/100 for 5 100/100 for 5 100/100 for 4		25.1 22.1 18.7 20.3 17.2 21.8 11.9 13.4	NS NS NS NS NS NS NS NS	- 20 - 25 - 30	Sand, lenses (<1" thick), moist Sand, dark gray, (2.5Y 4/1), mostly fine to medium s	and,	SP	20	
	100/75 for 5 100/75 for 5 70/80 60/70 40/55		15.4 20.3 20.0 16.7 17.8	NS NS NS NS NS	- 35 - 40	Few fine to coarse gravel Boring terminated at 39 feet, sampler advanced to 39 Groundwater encountered at approximately 29 feet duri	feet.		40	
				إيرا بالبليليا بالباليا	- 45	Boring converted to a groundwater monitoring well on	1/30/96.		45	
	VZZ Field Descr Prese No Ri	Screen/ iption S rved So ecovery	Litholog ample mple	nic	- 50 ↓ ↓ 50	Groundwater Level at Time of Drilling Static Groundwater Level Sheen Detected Contact	nal	Concrete	- 50	2/12 Lapis Lustre Blank Sand = f" PVC
	Samp * for Lo Analys	le Subra aborator, sis	nitted Y	(2	NS NT .5Y 4/	No Sheen Detected Located Not Tested 2) Munsell (1990) Soil Color Charts ——— Contact	nately	Bentonite		Cosing (0.010 slots) End Cop

DWG:	TE13102L	

.



:LJB:DEW:CMS 7/28/97

0401-071-54-1150

PROJE	STRATIGRAPHIC AND II (OVERB	NSTRUMENTATION LOG URDEN) HOLE DESIGNATION: MW2R				Page 1			
CLIEN	F: Shell Oil Products US ION: 11700 160th Street Bothell, Washington	DATE CON DRILLING FIELD PEF	MPLETED: June 9, 2008 METHOD: Air Knife RSONNEL: B. Palmer						
DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	BOREHOLE	SAN			APLE		
		·		NUMBER	NTERVA	REC (ft)	BLOW		
-	ASPHALT	0.75	CONCRETE						
-2	grained, high porosity, reddish-brown, dry, no odor								
-4			BENTONITE						
-6		7.50	BOREHOLE						
-8	END OF BOREHOLE @ 7.5ft BGS	1	•						
_ 10									
• • •									
- 12									
- 14									
- 16									
40									
- 10	~								
-20									
-22		· .							
24									
26									
28		1							
30									
32									
24									

•

G	(OVERB	URDE	N)				Pag	e 1 of
PROJE	CT NAME: BOTH 11700	HOLE	DESIGNATION: SB-1					
PROJE	CT NUMBER: 241809	DATE C	OMPLETED: June 11, 2008					
CLIEN	F: Shell Oil Products US	DRILLIN	IG METHOD: Hollow Stem Aug	er				
LOCAT	ION: 11700 160th Street	FIELD P	ERSONNEL: B. Palmer					
	Bothell, Washington			. •				
DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	BOREHOLE	~		SAMF	٦.E	
				NUMBER	NTERVA	REC (ft)	BLOW	PID (por
_	ASPHALT							
-2	SM-CLAYEY, SILTY SAND, with gravel, trace cobbles, compact, fine grained, medium porosity, gravish-brown, dry, no odor	0.75	CONCRETE					
-4 -6			BENTONITE	SB-1@5			46 >50	0
-8		· .						
- 10	- trace clay, trace gravel below 10 ft BGS			SB-1@10	$\mathbf{X}$		44 >50	0
- 12								
· 14 · 16	- with gravel, fine to medium grained below 15 ft BGS			S8-1@15			36 >50	0
		l l						
18								
20	- medium grained, high porosity, moist below 20			SB-1@20'	$\ge$		30 >50	0
22	ft BGS							
24							50	
26 -	SW-SAND, trace gravel, medium to coarse grained, high porosity, moist, no odor - wet below 26 ft BGS	25.00 26.00		58-1@25		, .	>50	0
28								
30								
32			• •					
34								
i	DTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER		RENT ELEVATION TABLE	.				

1
	(UVE)	KBURDE	N)				Pa	ge 1 o
PROJEC	T NAME: BOTH 11700	HOLE	DESIGNATION: SB-2					
PROJEC	T NUMBER: 241809	DATE C	OMPLETED: June 11, 2008					
CLIENT:	Shell Oil Products US	DRILLIN	G METHOD: Hollow Stem Aug	ger	•			
LOCATIO	DN: 11700 160th Street	FIELD F	PERSONNEL: B. Palmer			•		
	Bothell, Washington					. *		
DEPTH	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	BOREHOLE		`	SAM	PLE	
11005		# BGS		<u> </u>	AL.	£	2°	
				MR.	TER.	ů.	No.	
				ž	Ξ	<u>۳</u>	۳ <u>۵</u>	
.  -	ASPHALI SMCLAYEY SILTY SAND with ground troop	0.75	CONCRETE	·				i
-2	cobbles, very dense, fine grained, medium							۰,
_ [	porosity, grayish-brown, dry, no odor							
.4					ĺ			
.6			BENIONIE					
~								
			BOREHOLE					
10				58-26-10			29	
IV	- meaium grainea below 10 tt BGS						50	
12								
								i I
14							50	I
	- grayish tan below 15 ft BGS			36-20210			>50	
16								
18								
							50	
20	- high porosity below 20 ft BGS			\$8-2@20	$\geq$		>50	. 1
22								
					•			
24							24	
	<u>SW-SAND</u> , medium grained, high porosity,	25.00		\$8-2025			34	1
26	grayish tan, moist, no odor	2650						
	END OF BOREHOLE @ 26.5ft BGS	20.00						
28								
10								
2								
						. ·		
4	• •	.						

Ċ	/ (UVER	BUKDE	N)				Pa	ge 1 o
PROJEC	CT NAME: BOTH 11700	HOLE	ESIGNATION: SB-3	,				
PROJEC	CT NUMBER: 241809	DATE C	OMPLETED: June 11, 2008					
CLIENT:	Shell Oil Products US	DRILLIN	IG METHOD: Hollow Stem Au	ger				
LOCATIO	ON: 11700 160th Street	FIELD P	ERSONNEL: B. Palmer	-				
	Bothell, Washington							
DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	BOREHOLE		1 1	SAM	PLE	
				UMBER	JTERVA	REC (ft)	BLOW	
	ASPHALT	1		<u>  ~</u>	≤			
-2	SM-CLAYEY, SILTY SAND, with gravel, trace cobbles, compact to dense, fine to medium grained, medium to high porosity, dry, no odor	0.75	CONCRETE					•
-4			BENTONITE	S8-3@5			38 50	0
-6			pva					
10	- with silt, medium porosity, tan below 10 ft BGS		BOREHOLE	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 -	<u>GW-GRAVELLY SAND</u> , medium grained, high	20.00		S8-3@20		ľ	50 50	0
22	porosity, tan-gray, dry							
24				S 2000			16	
26	SW-SAND, medium grained, high porosity, tan-gray, moist, no odor - wet below 26 ft BGS END OF BOREHOLE @ 26 58 BCS	25.00 ⊈ 26.50					23	U
28								
0								
2								
4								

PROJECT	T NAME: BOTH 11700	HOLE	DESIGNATION: SB-4				
PROJECI	T NUMBER: 241809	DATE C	OMPLETED: June 11. 2008				
CLIENT:	Shell Oil Products US	DRILLIN	G METHOD: Hollow Stem Au	iaer			·
LOCATIO	N: 11700 160th Street	FIELD F	PERSONNEL: B. Palmer	0			
	Bothell, Washington						
DEPTH		DEPTH				SAMP	۲LE
ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ft BGS	BOREHOLE	Ŕ	٦	P	ູ່
				NUMBE	NTERV	REC (I	BLOV
	ASPHALT	0.33			-		
:  =	FILL, gravelly sand, with cobbles	1.00 1.33	CONCRETE				
-2	FILL, gravely sand, with cobbles, high porosity,	•					
-	dry, no odor						
-4							3
:	- low return @ 5 ft BGS due to large cobbles		BENTONITE	SB-4@5'			5 8
-6		1.					
-8		1	870				
			BOREHOLE				
-10 -	SM-SILTY SAND, fine to medium grained high	10.00		SB-4@10'	$\ge$		24 50
	porosity, gray, moist, no odor						
-12							
					а		
-14							
	- medium porosity below 15 ft BGS			SB-4@15			35 50
- 16							
-18				·			
· .							
-20				SB-4@20			39 50
-22							
-24		· ·					
-	SW-SAND, medium to coarse grained, high	25.00		S8-4@25			24 37
-26	porosity, gray, moist, no odor	26.50				ľ	
	END OF BOREHOLE @ 26.5ft BGS	20.00	<u>_</u>				
-28							
1							
30							
·							
32			•				
			•			•	
34						-	

•

PROJEC		HOLE D	ESIGNATION: SB-5	• .				
CLIENT:	CT NUMBER: 241809	DATE C	OMPLETED: June 11, 2008					
	: Shell Oil Products US	DRILLIN	IG METHOD: Hollow Stem Au	ger				
LOCATIO	ON: 11700 160th Street	FIELD P	ERSONNEL: B. Palmer				•	
	Bothell, Washington							
DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	BOREHOLE	<u>د</u>		SAM	PLE	
				NUMBE	INTERV/	REC (f	BLOW	''''''''''''''''''''''''''''''''''''
· ·	ASPHALT	0.33		1	<u> </u>	<u> </u>		
	FILL, sand, medium grained, high porosity,		CONCRETE			1		
-2	SM-CLAYEY, SILTY SAND, fine to medium	2.00						
	grained, medium porosity, tan, dry, no odor					[		
-4								
			BENTONITE	\$8-5@5		(	39 50	
-6								
8			080	1				•
			BOREHOLE					
10				\$8.5010			29	
	BGS						37	
				1				
12								
14							27	
	- with cobbles, trace gravel below 15 ft BGS			SB-5@15		·	40	ł
16							+0	
18								
·	111日 日本	l						
		·		50 5077			50	
	- no water return @ 20 ft BGS			- interest			>50	,
		1						
22		[				, ,		
					· . ]			
4					ŀ			
	- trace cobbles, high porosity, wet below 25 ft	¥		(\$ <b>8-5</b> 025			50 >50	(
6	BGS							
	END OF BOREHOLE @ 26.5ft BGS	26.50						
в								
		1	•					
				·				
-		· [						
			·					
2								
4								
NO								

APPENDIX E

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

PROJEC	T NUMBER: 241809		DATE C	OMPLETED: May 19, 2009							
CLIENT:	Shell Oil Products US		DRILLIN	IG METHOD: Air Knife/Hollow S	Stem A	uger					
LOCATIC	DN: 11700 NE 160th Street		FIELD P	PERSONNEL: H. Bays							
	Bothell, Washington					SAMDIE					
DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS		DEPTH ft BGS	MONITORING WELL	Н	VAL	SAIVIF	SE SE	[mo		
					NUMB	INTER	REC (	BLOV	ID [p		
	ASPHALT GM-SILTY GRAVEL, with sand, loose, fine to medium, poorly sorted, olive gray, moist, slight odor		0.75	2"0 PVC WELL CASING					0.4		
- - - 6 -	- Air Knife was used from 0 to 5.1 ft BGS SM-SILTY SAND, with gravel, loose, fine to medium grained, poorly sorted, olive gray, moist, slight odor	00	5.10	BENTONITE	MW85				2.1		
	- dense, no odor below 9 ft BGS				SS1		66.7	30 >50	0.7		
- - - - - - - - - - - - - - - -	- no gravel, well sorted, light brown, slight odor below 14 ft BGS			SCREEN	SS2MW-8-14		100.0	22 >50	1.4		
	- trace pebbles, medium gray, dry below 19 ft BGS				SS3	$\times$	66.7	28 >50	1.7		
- 22 - - - 24 -	<ul> <li>little pebbles, poorly sorted, light brown, wet below 24 ft BGS</li> </ul>				SS4	$\searrow$	33.3	>50	1.4		
- 26	END OF BOREHOLE @ 25.5ft BGS	<u> ··[·]·</u> ]	25.50	WELL DETAILS Screened interval:							
28				10.00 to 25.00ft BGS Length: 15ft Diameter: 2in Slot Size: 10							
5 - 30 				Material: PVC Seal: 2.00 to 8.00ft BGS							
32				Material: BENTONITE Sand Pack: 8.00 to 25.50ft BGS Material: 10-20 SILICA SAND							
34											
<u>N</u>	NOTES: MEASURING POINT ELEVATIONS MAY CHANGE WATER FOUND ♀ CHEMICAL ANALYSIS	; REFE	R TO CUP	RRENT ELEVATION TABLE							

PROJECT NAME: BOTH 11700

# STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

MW-8 HOLE DESIGNATION:

PROJEC	I NUMBER: 241809	DATEC		04.				
CLIENT:		FIELD PERSONNEL: H Bavs						
LOCATIC	DN: 11/00 NE 160th Street	FIELD F	'ERSONNEL: H. Bays					
	Botnell, Washington					SAM		
ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft BGS	MONITORING WELL	ц.	AL	۵۸۱۱ ټ	 	Ē
				NUMBE	INTERV.	REC (f	BLOM	PID [pp
	GP-GRAVEL and SAND (FILL), tan (observed from air knife cuttings-not sampled)	0.50						
- 2	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)		2"0 PVC WELL CASING	6				
- 4	- Air Knife was used from 0 to 5.1 ft BGS	5 10	BENTONITE					
- 6	SC-CLAYEY SAND, with gravel, loose, fine to medium grained, poorly sorted, medium gray, strong odor	0.10		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	$\mid$	33.3	1 1 2	960
- 12			WELL SCREEN					
- 14	- increase in gravel, denser, poorly sorted, light brown-gray, moist below 14 ft BGS		SAND PACK	SS2MW-9-14		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		SS3	$\mid$	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	$\left \right>$	100.0	12 18 26	37.5
- 26	END OF BOREHOLE @ 25.5ft BGS	 20.00	WELL DETAILS Screened interval: 10.00 to 25.00ff BGS					
- 28			Length: 15ft Diameter: 2in Slot Size: 10					
- 30			Material: PVC Seal: 2.00 to 8.00ft BGS Material: BENTONITE					
- 32			Sand Pack: 8.00 to 25.50ft BGS Material: 10-20 SILICA SAND					
- 34								

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### STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROLECT NAME: BOTH 11700     HOLE DESIGNATION: SBH0       PROLECT NAME: POLICY NAME 1001 Steet     DRILLING METHOD: Ar KniteHollow Stem Auger       DOINT: 1700 NE 1001 Steet     FIELD PERSONNE: H. Bays       Borbell, Washington     FIELD PERSONNE: H. Bays       DEPT:     STRATIGRAPHIC DESCRIPTION & REMARKS     PETT       DEPT:     STRATIGRAPHIC DESCRIPTION & REMARKS     PETT       DEPT:     STRATIGRAPHIC DESCRIPTION & REMARKS     PETT       Septidit     STRATIGRAPHIC DESCRIPTION & REMARKS     PETT       Septidit     STRATIGRAPHIC DESCRIPTION & REMARKS     PETT       Septidit     Stratigramed (7'to 4' in dimmeter); sand, sanpido)     10	$\smile$									
PROJECT NUMBER: 24109     DATE COMPLETED: May 19, 2009       CLEMT: Shell Orbadus US     PIELID PERSONNEL: H. Bays       Bohall, Washington     PETT BASS       Bohall, Washington     PETT BASS       Bohall, Washington     PETT BASS       Concorner     STRATIGRAPHIC DESCRIPTION & REMARKS       PETT BASS     BOREHOLE       ASPHALT     PETT BASS       Concorner     Stratigraphic (% to 4" in dimeter), sond, singled (% to 4" in dimeter), most, singled (% to 4" in dimeter), mos	PROJECT	NAME: BOTH 11700		HOLE D	ESIGNATION: SB-6					
CLENT: Shell OI Products US         DRILLING METHOD: Ark Anford-Hollow Stem Auger           ICONTON: 11700 NE 160th Street           DEFTH         STRATIGRAPHIC DESCRIPTION & REMARKS         DEFTH         BOREHOLE         SAMPLE           1         ASPHALIT         FILL angular grave (3" to 4" in diameter), sand, sampled)         0.70	PROJECT	NUMBER: 241809		DATE C	OMPLETED: May 19, 2009					
LCCATION:         1170 DNE 1600 Street         FIELD PERSONNEL:         H Bays           SAMPLE           SAMPLE           STRATIGRAPHIC DESCRIPTION & REMARKS         DEPTH H BGS         BOREHOLE	CLIENT: S	Shell Oil Products US		DRILLIN	IG METHOD: Air Knife/Hollow	Stem Au	uger			
Bothell, Washington         SMAPLE         SMAPLE           DEETH, BOS         STRATIGRAPHIC DESCRIPTION & REMARKS         DEETH, BOS         BOREHOLE         Image: Construction of the strategy of t	LOCATION	J: 11700 NE 160th Street		FIELD P	PERSONNEL: H. Bays					
DEFTY:         BOREHOLE         SAMPLE           ASPHALT         ASPHALT         BOREHOLE         Unit of an adverter in adverte		Bothell, Washington								
HEGS         STRUCTION ACCOUNTS         HEGS         DORCHOLE           ASPHALT         ASPHALT         - <td>DEPTH</td> <td></td> <td></td> <td>DEPTH</td> <td></td> <td></td> <td>SAMF</td> <td>PLE</td> <td></td>	DEPTH			DEPTH			SAMF	PLE		
ASPHALT         ASPHALT           2         ASPHALT           FLL, anguar gravel (3" to 4" in diameter), sand, sampled)         0.70           - Ark Kolle was used from 0 to 5 ft BGS           6         GM GRAVEL and SAND, dense, medium grained, poorly sotted, light olive brown, moist, strong odor         0.70           8         - Ark Kolle was used from 0 to 5 ft BGS         s.00           9         GM GRAVEL and SAND, dense, medium grained, poorly sotted, light olive brown, moist, strong odor         0.70           10         SM-SILTY SAND, some gravel, losse, fine to medium grained, medium olive gray, moist, strong odor         1000           12         - stronger odor below 14 ft BGS         1000           24         - stronger odor below 19 ft BGS         20.50           25         20.50         V           24         - stronger odor below 19 ft BGS         20.50           25         - stronger odor below 19 ft BGS         20.50           26         - stronger odor below 19 ft BGS         20.50           26         - stronger odor below 19 ft BGS	ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS		ft BGS	BOREHOLE	Ř	AL	t)	_ s	Ē
ASPHALT         ASPHALT           2         FL angular gravel (3" to 4" in diameter), sand, salt (observed from at knife cuttings-nd gased), 3" to 6" diameter gravel below 2.5 ft GGS         0.70         <						MBE	ERV	C (f	0 IN	[dd]
ASPHALT         Concentration           2         Fill, angular gravel (2° to 4° in diameter), sand, sampled)         0.70						D Z	NTE	RE	₩S	PID
FILL angular gravel (3' to 4'' in diameter), sand, sind, closered from is knet cutings-not sampled)       0.00       CONCRETE         4       - Air Knife was used from 0 to 5 ft BGS       5.00       BENTONITE       0.6         6       Grained, poorly sorted, light olive brown, most, sight odor       0.00       0       0.00       0       0.00       0       0.00       0       0.00       0       0.00       0       0.00       0       0.00       0       0.00       0       0.00       0       0.00       0       0.00       0       0.00       0       0.00       0       0.00       0       0.00       0       0.00       0       0.00       0       0.00       0       0       0.00       0       0       0.00       <		ASPHALT		0.70						
4      Ar Knife was used from 0 to 5 ft BGS       5.00       5.00       5.00       5.00       6       GMGRAVEL and SAND, dense, medium grained, poorly sorted, light olive brown, moist, signt odor       5.00       6       5.00       6 <t< td=""><td>-2</td><td>FILL, angular gravel (3" to 4" in diameter), sand, silt, (observed from air knife cuttings-not sampled) - cobbles, 3" to 6" diameter gravel below 2.5 ft PCS</td><td></td><td>0.70</td><td>CONCRETE</td><td></td><td></td><td></td><td></td><td></td></t<>	-2	FILL, angular gravel (3" to 4" in diameter), sand, silt, (observed from air knife cuttings-not sampled) - cobbles, 3" to 6" diameter gravel below 2.5 ft PCS		0.70	CONCRETE					
6       GM-GRAVEL and SAND, dense, medium       0.0       0.00	-4	- Air Knife was used from 0 to 5 ft BGS		5.00						
8       3	- 6	GM-GRAVEL and SAND, dense, medium grained, poorly sorted, light olive brown, moist, slight odor		5.00	BENTONTE					0.5
10       SM-SILTY SAND, some gravel, loose, fine to medum gravel, moist, strong odor       10.0       2       10.0       10.0       2 <td< td=""><td>- 8</td><td></td><td>000</td><td>0.00</td><td>- 12"0 BOREHOLE</td><td></td><td></td><td></td><td></td><td></td></td<>	- 8		000	0.00	- 12"0 BOREHOLE					
12      stronger odor below 14 ft BGS      stronger odor below 14 ft BGS      stronger odor below 19 ft BGS      stronger odor below 1	- 10	SM-SILTY SAND, some gravel, loose, fine to medium grained, medium olive gray, moist, strong odor		9.00		SS1/SB-69	X	100.0	2 4 6	19.5
14       - stronger odor below 14 ft BGS         16	- 12									
16       - stronger odor below 19 ft BGS         20       - stronger odor below 19 ft BGS         20       20.50         END OF BOREHOLE @ 20.5ft BGS         24         26         28         30         30         32         34	- 14	- stronger odor below 14 ft BGS				SS2	$\times$	100.0	22 >50	1391
18      stronger odor below 19 ft BGS       20.50       7       100.0       28       131         20       END OF BOREHOLE @ 20.5ft BGS       20.50       7       100.0       28       100.0       28       100.0       28       100.0       28       100.0       28       100.0       28       100.0       28       100.0       28       100.0       28       100.0 <t< td=""><td>- 16</td><td></td><td></td><td></td><td></td><td>e</td><td></td><td></td><td></td><td></td></t<>	- 16					e				
20       END OF BOREHOLE @ 20.5ft BGS       20.50       V       Image: Constraint of the second	- 18	- stronger odor below 19 ft BGS								
EEEE       20.50       Z       Z       Z         24       26       28       29       20.50	- 20					SS3/SB-6-19	$\times$	100.0	28 >50	1311
22       24       26       27       28       28       28       29       20 <td< td=""><td>20</td><td>END OF BOREHOLE @ 20.5ft BGS</td><td></td><td>20.50</td><td>¥ ////////</td><td></td><td><math> \rightarrow </math></td><td></td><td></td><td></td></td<>	20	END OF BOREHOLE @ 20.5ft BGS		20.50	¥ ////////		$ \rightarrow $			
22										
24	- 22									
26	- 24									
28	- 26									
28										
30     32       34	- 28									
30     32       34										
32 34	- 30									
32 34										
34	- 32									
34	.									
	- 34									
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE	NC	<u>DTES:</u> MEASURING POINT ELEVATIONS MAY CHANG	GE; REFI	ER TO CUF	RRENT ELEVATION TABLE					
WATER FOUND I		WATER FOUND								

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## STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

	STRATIGRAPHIC AND II (OVERB	NSTRU	IMENTATION LOG N)				Paç	ge 1 of 1
PROJE	CT NAME: BOTH 11700	HOLE D	DESIGNATION: SB-7					
PROJE	CT NUMBER: 241809	DATE C	COMPLETED: May 19, 2009					
CLIENT	: Shell Oil Products US	DRILLIN	NG METHOD: Air Knife/Hollow	Stem A	uger			
LOCATI	ION: 11700 NE 160th Street	FIELD F	PERSONNEL: H. Bays		-			
	Bothell, Washington							
DEPTH		DEPTH				SAM	PLE	
ft BGS	STRATIGRAPHIC DESCRIPTION & REWARKS	ft BGS	BOREHOLE	ĸ	'AL	f)	_S_	Ē
				NUMBE	INTERV	REC (	BLOV COUN <sup>-</sup>	PID [pp
-	ASPHALT	0.20 0.70						
-	ASPHALT	1.00						
<b>F</b> <sup>2</sup>	FILL, angular gravel, sand (observed from air							
F,	- large angular rocks @ 2 ft BGS							
-4								
F	<ul> <li>large angular rocks and concrete, no sand @ 5 ft BGS</li> </ul>	\$	BENTONITE					
6	- Air Knife was used from 0 to 5.1 ft BGS							
F								
- 8			← 12"0 BOREHOLE					
L	FILL, gravelly sand, loose, medium grained,	9.00			$ \land $	,	5	
10	subangular, poorly sorted, moist, strong odor			SS1/SB-7-9		100.0	5 5	4.5
-		$\left\{ \right.$						
- 12								
F		\$						
- 14	SM SILTY SAND with gravel dense fine to	14.00				7	8	
F	medium grained, poorly sorted, gray, moist,	•		SS2/SB-7-14	$ \times$	33.3	11	22.5
- 16	strong odor							
F								
	l literation and the second		¥					
E		19.00					8	
- 20	SW-SAND, with gravel, loose, medium to coarse grained, well sorted, dark gray, wet, strong odor	20.00		SS3	$\geq$	50.0	18 16	1522
	END OF BOREHOLE @ 20.0ft BGS							
- 22								
F								
- 24								
F								
26								
28								
<u> </u> 30								
32								
F								
34								
[		<u> </u>						
	NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REF	ER TO CUI	RRENT ELEVATION TABLE					
	CHEMICAL ANALYSIS							
L	)							

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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		DEPTH				SAM	PLE	
ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ft BGS		NUMBER	INTERVAL	REC (%)	BLOW COUNTS	PID [ppm]
2	ASPHALT SM-SILTY SAND, trace subangular gravel, brown (observed from air-knife cuttings)	1.50	CONCRETE					
- 4			2"0 PVC WELL CASING	i				
6	- perched water @ 5.5 ft BGS     - Air Knife was used from 0 to 6 ft BGS     SM-SILTY SAND, trace gravel, very fine to     medium grained sand, fine grained, angular to	6.00	BENTONITE	SS1/SB-10-6	$\geq$	10	100	0.6
	subangular gravel, brown-olive-gray, dry, no staining, no odor - gravel layer between 8 and 8.5 ft BGS ML-SILT, trace very fine sand, brown, dry, no staining, no odor	9.00		SS2SB-10.9	$\ge$	50	39 74	0.3
12								
- 14 	- trace medium, subangular gravel below 14 ft BGS			SS3/SB-10-14	$\ge$	50	30 100\5.5	0.7
- 16 - - - 18								
20	SW-SAND with silt, very fine to medium grained,	19.50	BOREHOLE	S\$4/SB-10-19.		67	25 42 48	0.1
22								
- 24 	ML-SILT, trace very fine sand, brown, dry, no	24.50 25.50		SS5/SB-10-24.9	$\ge$	100	40 58	0.3
26 	END OF BOREHOLE @ 25.5ft BGS		WELL DETAILS Screened interval: 10.00 to 25.00ft BGS Length: 15ft					
			Diameter: 2in Slot Size: 10 Material: PVC Sand Pack:					
19.600 			8.00 to 20.50ft BGS Material: 2/12 SAND					
34								
	NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REF	ER TO CUI	RRENT ELEVATION TABLE				1	

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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	STRATICRAPHIC DESCRIPTION & REMARKS	DEPTH				SAM	PLE	
	ft BGS		ft BGS		NUMBER	NTERVAL	REC (%)	BLOW	[mdd] Cle
ŀ			0.20		~	4			ш.
	- - 	FILL, angular cobbles, plant roots	2.00		0000000000				0
	- - - 4	ML-SIL1, trace clay, trace sand, trace gravel, very fine grained sand, fine grained, subrounded gravel, brown, dry, no staining, no odor		HYDRATED BENTONITE	331/30-11-2				0
	-	Air Knife was used from 0 to 6 ft BCS		WELL CASING	SS2SB-11-4	$\sim$			0.1
		- wet to saturated, slight hydrocarbon odor @ 6 ft BGS			SS3/SB-11-6	X	100		9.9
-	— 10 -	SM-SILTY SAND, very fine to fine grained sand, brown-gray, dry, no staining, no odor	10.00		SS4/SB-11-10	X	100	50	0.2
-	- 								
-	- 14 - -			SAND PACK	SS5/SB-11-15	$\times$	33	50\4	0.5
	— 16 - -								
	— 18 - -			BOREHOLE	SS6/SB-11-19	$\times$	37	50\5	0.6
		END OF BOREHOLE @ 20.5ft BGS	20.50	WELL DETAILS					
-	- 22 -			Screened interval: 5.00 to 20.00ft BGS Length: 15ft					
-	- 24 			Slot Size: 10 Material: PVC Sand Pack:					
3/17/10	- 26 			3.50 to 20.50ft BGS Material: 2/12 SAND					
ORP.GDT	- 								
J CRA C	- 30 								
:41809.GP	- 								
EN LOG 2	- 34 								
OVERBURD		NOTES:       MEASURING POINT ELEVATIONS MAY CHANGE; REI         WATER FOUND ♀       CHEMICAL ANALYSIS	FER TO CU	RRENT ELEVATION TABLE					

LOCATIO	ON: 11700 NE 160th Street		FIELD F	PERSO	NNEL: T. Mullin				
	Bothwell, Washington								
DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS		DEPTH ft BGS		BOREHOLE	<u>к</u>	AL	SAMI	PLE
						NUMBE	INTERV	REC (9	
-2 -4 -6 -8 -10 -12 -14 -16 -18 -20 -22 -24 -22 -24 -26 -28 -30 -32 -34	BEAUTY BARK         SC-CLAYEY SAND, gray (observed from air-knife cuttings)         - large boulder in west sidewall @ 4 ft BGS         - Air Knife was used from 0 to 5 ft BGS         ML-CLAYEY SILT, trace organics, dry, gray stain, strong hydrocarbon odor         - wet @ 7 ft BGS         - trace sand, trace gravel, trace clay, very fine to medium grained sand, fine to medium grained, subangular gravel, brown below 9.5 ft BGS         - very fine grained sand, wet to saturated below 14.5 ft BGS         - light gray stain between 19.5 and 20 ft BGS         END OF BOREHOLE @ 20.5ft BGS		0.25		TOPSOIL CONCRETE HYDRATED BENTONITE 8°0 BOREHOLE	SSI5886		22 50 10 50 33	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 25 50/-
- 34	NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; WATER FOUND ♀ CHEMICAL ANALYSIS	REFE	ER TO CUI	RENT	ELEVATION TABLE			L	

Page 1 of 1

PID [ppm]

1236

113

226

81.8

PROJECT NAME: BOTH 11700 PROJECT NUMBER: 241809

CLIENT: Shell Oil Products US

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



OVERBURDEN LOG 241809.GPJ CRA\_CORP.GDT 3/17/10

PROJEC	CT NAME: BOTH 11700	HOLE DESIGNATION: SB-9									
PROJEC	CT NUMBER: 241809	DATE CO	DATE COMPLETED: January 22, 2010								
CLIENT:	Shell Oil Products US	DRILLIN	G METHOD: Air Knife/Hollow	Stem A	uger						
LOCATIO	ON: 11700 NE 160th Street	FIELD PI	ERSONNEL: T. Mullin								
	Bothwell, Washington										
DEPTH		DEPTH									
ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ft BGS	BOREHOLE	R	'AL	(%	<sup>N</sup>	[m]			
				MBI	ER/	<u> </u>	N.	dd] (			
				۲ z	INT	R	<sup>™</sup> 8	PIC			
-	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		CONCRETE								
	staining, no odor (FILL)			SS1/SB-9-25	$\sim$	25		0.2			
	ML-SILT, trace gravel, trace sand, medium to	5.00	HYDRATED BENTONITE	SS2/SB-9-5	$\ge$	100		0.2			
6 	coarse grained, subangular gravel, very fine sand, brown, dry, no staining, no odor										
8	- subrounded, medium grained gravel below 8 ft BGS		<-── 8"∅ BOREHOLE	SS3/SB-9-8	$\geq$	50		0.4			
- 10	- Air Knife was used from 0 to 10 ft BGS										
	SM-SILTY SAND, very fine to fine grained, olive gray, dry, no staining, no odor			SS4/SB-9-10	$\geq$	25	50\3	1			
12  -											
- 14											
	- brown-gray below 15 ft BGS						50\5	0.5			
- 16 				333309-9-13			5015	0.5			
20		20.50		SS6/SB-9-20	>		50\4	1			
	END OF BOREHOLE @ 20.5ft BGS	20.00									
- 22											
-											
- 24											
-											
≥ 26 ≷ -											
28											
g'⊢ 30 5 -											
<u>- 32</u>											
2 - 34 2 -											
	NOTES: MEASURING POINT ELEVATIONS MAY CHANGE;	REFER TO CUR	RENT ELEVATION TABLE								

Page 1 of 1



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	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH			1	SAMI	PLE	
ft BGS		ft BGS		NUMBER	INTERVAL	REC (%)	BLOW COUNTS	PID (ppm)
-	ASPHALT	0.25						
- 2 2	AIRKNIFE TO 5ft BGS 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					
4 				1HA	$\ge$	100	12	1045
-6	- no plasticity, olive gray, slight odor at 6.0ft BGS		8" BOREHOLE	2HSA SB10-6		100	16 18	1030
- 10	SP-SAND, with silt, trace gravel, fine to	10.00	BENTONITE CHIPS	3HSA SB10-10		67	31 50	350
- - 	medium grained, dense, poorly graded, light gray, dry, odor							
- 14 	SM-SILTY SAND with fine grained sand, trace	15.00		4HSA SB10-15		67	38 50	1045
	gravel, dense, poorly graded, olive gray, dry, strong odor							
				5HSA		83	41	350
							50	
01/6							50/	
204 101 101 101 101 101 101 101 101 101 1	SP-SAND, fine to medium grained, poorly graded, loose, slightly dense, light gray, moist, strong odor	25.00		6HSA SB10-25		33	5"	1500
N.GPJ CRA 28 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				71104		67	50/	00
06	SM-SILTY SAND fine grained sand, dense, poorly graded, olive gray, dry, slight odor	30.00		/HSA	$\mid$	67	6"	80
NERBURD	NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; RE WATER FOUND ↓ CHEMICAL ANALYSIS	FER TO C	URRENT ELEVATION TABLE					
	$\sim$							



OVERBURDEN LOG 241809WIN.GPJ CRA\_CORP.GDT 10/19/10

# STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 2 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	STRATIGRAPHIC DESCRIPTION & REMARKS		DEPTH	MONITORING WELL		1.	SAM	PLE	
			11 003		NUMBER	INTERVAL	REC (%)	BLOW COUNTS	PID (ppm)
- 34	SP SAND with silt fine to modium argingd		35.00		8HSA SB10-35,		50	50/ 6"	185
- 36	sand, poorly graded, olive gray, wet, slight odor								
- 38								50/	
-40	SP-SAND, trace silt and gravel, fine to medium grained, poorly graded, loose, slightly dense, light gray, wet, slight odor		40.00		9HSA	$\mid$	50	5"	45
-42				SCREEN					
-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		50	50/ 6"	28
-48								45	
-50 -	SP-SAND, trace silt, fine, medium and coarse grained, loose, poorly graded, olive gray, no odor		50.00		11HSA SB10-50		75	50/ 6"	0.5
-54	- saturated at 53.0ft BGS							45	
- 56	SP-SAND, trace silt, fine, medium and coarse grained, loose, poorly graded, olive gray, saturated, no odor		55.00		12HSA		100	43 50	0.0
- 58					121104		100	42	0.0
-60	END OF BOREHOLE @ 60.5ft BGS		60.50	WELL DETAILS	13H5A	$\bowtie$	100	50/ 5"	0.0
- 62 - 64				Screened interval: 40.00 to 60.00ft BGS Length: 20ft Diameter: 2in Slot Size: 0.010 Material: PVC Seal: 5.00 to 37.00ft BGS					
<u>N(</u>	UTES: MEASURING POINT ELEVATIONS MAY CHAI WATER FOUND ↓ CHEMICAL ANALYSIS	NGE; RE	FER TO C	URRENT ELEVATION TABLE					



Page 3 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	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH			SAMPLE						
ft BGS		ft BGS		3ER	RVAL	(%)	NV VTS	(mq			
				NUM	NTEF	REC	BLC	a) OIA			
_			Sand Pack:		_						
-			37.00 to 60.00ft BGS Material: #2 SAND								
-											
-72											
-											
74 											
- 76											
-											
80 											
-											
- 02											
-											
86											
-											
2 											
92											
š⊢94											
90											
%⊢ 3 −98											
	WATER FOUND ¥		CALLER LEVATION TABLE								
8											



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	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH	BOREHOLE		1	SAM	PLE	
ft BGS		ft BGS		NUMBER	INTERVAL	REC (%)	BLOW COUNTS	PID (ppm)
-24	ASPHALT AIRKNIFE TO 5ft BGS SM-SILTY SAND, with gravel, fine to medium grained, dense, poorly graded, low plasticity, olive gray, dry, no odor	0.25	CONCRETE					
- 	SM-SILTY SAND, with fine grained sand, dense, poorly graded, low plasticity, olive gray, damp, slight odor	6.00	8" BOREHOLE	1HA 2HSA SB11-6	X	100	14 20 25	0.0 100
- 10 - 12	SP-SAND, trace silt, fine to medium grained, dense, no plasticity, light gray, dry, strong odor	10.00	BENTONITE	3HSA SB11-10	$\times$	83	41 50/ 6"	1928
- 12 	- fine to coarse grained sand, damp at 15.0ft BGS			4HSA SB11-15		83	4 5 50	1650
	SM-SILTY SAND, fine grained sand, trace gravel, dense, poorly graded, olive gray, dry, strong odor	20.00		SHSA SB11-20	$\times$	67	46 50/ 5"	1742
- 	- no gravel, medium to coarse grainedsand, very dense at 25.0ft BGS			6HSA SB11-25	$\times$	67	50/ 5"	1945
28 	- fine grained sand, dense, slight odor at 30.0ft	30.50		7HSA SB11-30		67	31/ 5"	65
12700 241800000 127000 12700 1	END OF BOREHOLE @ 30.5ft BGS							
	NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; RE	EFER TO C	URRENT ELEVATION TABLE	<u> </u>	<u> </u>	<u> </u>	<u> </u>	

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,

tessu (ee

Calscience Environmental Laboratories, Inc. Jessie Lee Project Manager

CA-ELAP ID: 1230 • NELAP ID: 03220CA • CSDLAC ID: 10109 • SCAQMD ID: 93LA0830 7440 Lincoln Way, Garden Grove, CA 92841-1427 • TEL:(714) 895-5494 • FAX: (714) 894-7501

### Page 2 of 34

Page 1 of 2



Conestoga-Rovers & AssociatesDate Received:05/22/091420 80th St. SW, Suite AWork Order No:09-05-1995Everett, WA 98203-6248Preparation:EPA 3050BMethod:EPA 6020

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

Date/Time Date Lab Sample Date/Time QC Batch ID Matrix Instrument Prepared Analyzed Collected **Client Sample Number** Number 05/22/09 SO-241809-051909-HB-MW-8-14 ICP/MS 03 05/22/09 090522L02 05/19/09 09:39 Solid 09-05-1995-1-A 17:10 Parameter **Result** RL DF Qual Units Lead 3.72 0.100 1 mg/kg 05/22/09 SO-241809-051809-HB-MW-9-5 05/18/09 16:00 Solid ICP/MS 03 05/22/09 090522L02 09-05-1995-2-A 17:13 Parameter Result RL DF Qual Units 3.42 0.100 1 Lead mg/kg 05/22/09 SO-241809-051809-HB-MW-8-5 05/18/09 10:28 Solid ICP/MS 03 05/22/09 090522L02 09-05-1995-3-A 17:16 DF Parameter Result RL Qual Units Lead 3.19 0.100 1 mg/kg 05/22/09 SO-241809-051909-HB-DUP Solid ICP/MS 03 05/22/09 090522L02 09-05-1995-4-A 05/19/09 00:00 17:19 Parameter Result <u>RL</u> DF Qual <u>Units</u> Lead 2.22 0.100 1 mg/kg 05/22/09 SO-241809-051909-HB-SB-6-9 090522L02 Solid ICP/MS 03 05/22/09 09-05-1995-5-A 05/19/09 17:22 DF RL Qual Units Parameter Result I ead 2.81 0.100 1 mg/kg 05/22/09 SO-241809-051909-HB-SB-6-19 090522L02 Solid ICP/MS 03 05/22/09 09-05-1995-6-A 05/19/09 12·44 17:25 RL DF Qual Parameter Result Units 2.24 0.100 1 Lead mg/kg

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



# Page 3 of 34

ACCOR





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

Work Order No: Preparation: Method:

# 09-05-1995 EPA 3050B EPA 6020

Page 2 of 2

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

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	<u>Result</u>	<u>RL</u>	DF	Qual	<u>Units</u>			
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
Parameter	<u>Result</u>	<u>RL</u>	DF	Qual	<u>Units</u>			
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
Parameter	<u>Result</u>	<u>RL</u>	DF	Qual	<u>Units</u>			
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
Parameter	<u>Result</u>	RL	DF	Qual	<u>Units</u>			
Lead	ND	0.100	1		mg/kg			









Conestoga-Rovers & Ass	ociates				Date Rec	eived:				05/22/09
1420 80th St. SW, Suite	4				Work Orc	ler No:			09	-05-1995
Everett, WA 98203-6248					Preparati	on:			EP	A 3550B
					Method:				NV	/TPH-Dx
					Units:					mg/kg
Project: 11700 NE 160th	St., Both	nell, WA	4						Pa	ge 1 of 3
Client Sample Number			La	ıb Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-051909-HB-MW-8-14			09-05- <sup>,</sup>	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 v	vas subjecte	d to Silica	Gel treat	ment prior	to analysis.					
<u>Parameter</u>	Result	<u>RL</u>	DF	Qual	Parameter			<u>Result</u>	<u>RL</u> <u>D</u>	- Qual
TPH as Diesel Range	ND	5.0	1	<b>a</b> .	TPH as Motor	Oil Range		ND	5.0	1
Surrogates:	<u>REC (%)</u>	<u>Control</u>		Qual						
Decachlorobiphenyl	99	<u>61-145</u>								
SO-241809-051809-HB-MW-9-5			09-05- <sup>,</sup>	1995-2-A	05/18/09 16:00	Solid	GC 43	05/24/09	05/24/09 21:21	090524B01
Comment(s): -The sample extract v	vas subjecte	d to Silica	Gel treat	ment prior	to analysis.					
Parameter	Result	<u>RL</u>	DF	Qual	Parameter			<u>Result</u>	<u>RL</u> D	<u>Qual</u>
TPH as Diesel Range	ND	5.0	1		TPH as Motor	Oil Range		ND	5.0	1
Surrogates:	<u>REC (%)</u>	<u>Control</u> Limits		<u>Qual</u>						
Decachlorobiphenyl	97	61-145								
SO-241809-051809-HB-MW-8-5			09-05- <sup>,</sup>	1995-3-A	05/18/09 10:28	Solid	GC 43	05/24/09	05/24/09 21:41	090524B01
Comment(s): -The sample extract v	vas subjecte	d to Silica	Gel treat	ment prior	to analysis.					
Parameter	Result	<u>RL</u>	DF	<u>Qual</u>	Parameter			<u>Result</u>	<u>RL</u> DI	<u>    Qual</u>
TPH as Diesel Range	ND	5.0	1		TPH as Motor	Oil Range		ND	5.0	1
Surrogates:	<u>REC (%)</u>	<u>Control</u>		Qual						
Decachlorobiphenyl	97	<u>1111115</u> 61-145								
SO-241809-051909-HB-DUP			09-05- <sup>,</sup>	1995-4-A	05/19/09 00:00	Solid	GC 43	05/24/09	05/24/09 10:01	090524B01
Comment(s): -The sample chromat Quantitation of the un	ographic pat known hydro	tern for TF ocarbon(s)	PH does in the sa	not match ample was	the chromatogra based upon the	phic patterr specified st	n of the specif andard.	ied standard	d.	
- I he sample extract v	vas subjecte	d to Silica	Gel treat	ment prior	to analysis.			Decult		
	Kesult			Qual	Parameter			Kesult	<u>kl</u> <u>Di</u>	<u>- Qual</u>
Surrogates:	160 REC (%)	5.0 <u>Control</u>	1	Qual	IPH as Motor	UII Range		ND	5.0	1
Decachlorobiphenyl	99	<u>Limits</u> 61-145								

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

7440 L







Conestoga-Rovers & Ass	ociates				Date Red	ceived:				05/22/09
1420 80th St. SW, Suite	A				Work Ore	der No:			09	-05-1995
Everett, WA 98203-6248					Preparat	ion:			EP	A 3550B
					Method:				NV	VTPH-Dx
					Units:					mg/kg
Project: 11700 NE 160th	St., Botl	nell, W <i>i</i>	4						Pa	ge 2 of 3
Client Sample Number			La	ab 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 subjecte	d to Silica	Gel treat	ment prior	to analysis.					
Parameter	Result	<u>RL</u>	DF	Qual	Parameter			Result	<u>RL</u> D	F <u>Qual</u>
TPH as Diesel Range	ND	5.0	1		TPH as Motor	Oil Range		25	5.0	1
Surrogates:	<u>REC (%)</u>	<u>Control</u>		<u>Qual</u>						
Decachlorobiphenyl	94	<u>Limits</u> 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
-The sample extract v <u>Parameter</u> TPH as Diesel Range <u>Surrogates:</u> Decachlorobinbenvl	was subjecte <u>Result</u> 200 <u>REC (%)</u> 00	d to Silica <u>RL</u> 5.0 <u>Control</u> <u>Limits</u>	Gel treat <u>DF</u> 1	ment prior <u>Qual</u> <u>Qual</u>	to analysis. <u>Parameter</u> TPH as Motor	Oil Range		<u>Result</u> ND	<u>RL D</u> 5.0	<u>F Qual</u> 1
SO-241809-051909-HB-SB-7-9		01-140	09-05-	1995-7-A	05/19/09 11:30	Solid	GC 43	05/24/09	05/24/09 11:03	090524B01
Commont(s): The sample extract	vas subiasta	d to Silica	Col troat	mont prior	to analysis					
Parameter	Result	RI	DF	Qual	Parameter			Result	RI D	F Qual
TPH as Diesel Range	ND	5.0	1	0,0,0,0	TPH as Motor	Oil Range		ND	5.0	1
Surrogates:	<u>REC (%)</u>	Control		Qual						
Decachlorobiphenyl	91	<u>Limits</u> 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
Comment(s): -The sample extract	was subjecte	d to Silica	Gel treat	ment prior	to analysis.					
Parameter	Result	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Parameter</u>			<u>Result</u>	<u>RL D</u>	F <u>Qual</u>
TPH as Diesel Range Surrogates:	5.0 <u>REC (%)</u>	5.0 <u>Control</u>	1	Qual	TPH as Motor	Oil Range		14	5.0	1
Decachlorobiphenvl	101	<u>Limits</u> 61-145								

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

hm





Page 6 of 34

Conestoga-Rovers & As	sociates				Date Rec	ceived:				05/22/09		
1420 80th St. SW, Suite	A				Work Ord	der No:		09	-05-1995			
Everett, WA 98203-6248	3				Preparat	ion:		EPA 3550B				
,					Method:				NV	VTPH-Dx		
					Units:					mg/kg		
Project: 11700 NE 160t	h St., Botl	hell, W <i>i</i>	4						Pa	ge 3 of 3		
Client Sample Number			La	ab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID		
SO-241809-051909-HB-MW-9-14	4		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 chrom Quantitation of the u	atographic pat unknown hydro	ttern for TF ocarbon(s) ed to Silica	PH does in the sa Gel treat	not match ample was tment prior	the chromatogra based upon the to analysis	aphic patterr specified st	n of the speci andard.	fied standard	I.			
Parameter	<u>Result</u>	<u>RL</u>	DF	Qual	Parameter			Result	<u>RL</u> D	<u>F</u> Qual		
TPH as Diesel Range <u>Surrogates:</u>	39 <u>REC (%)</u>	5.0 Control	1	Qual	TPH as Motor	Oil Range		ND 5	5.0	1		
Decachlorobiphenyl	107	<u>Limits</u> 61-145										
Method Blank			099-12	2-838-21	N/A	Solid	GC 43	05/24/09	05/24/09 17:57	090524B01		
Parameter	<u>Result</u>	<u>RL</u>	DF	Qual								
TPH as Diesel Range	ND	5.0	1									
Surrogates:	<u>REC (%)</u>	Control		Qual								
Decachlorobiphenyl	97	61-145										

hm

### Page 7 of 34



Conestoga-Rovers & Associates	Date Received:	05/22/09
1420 80th St. SW, Suite A	Work Order No:	09-05-1995
Everett, WA 98203-6248	Preparation:	EPA 5035
	Method:	NWTPH-Gx
	Method.	NVVIPH-

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

Page 1 of 3 Date/Time Date Date/Time Lab Sample QC Batch ID Matrix Instrument Prepared Analyzed **Client Sample Number** Number Collected 06/04/09 SO-241809-051909-HB-MW-8-14 GC 11 05/19/09 090603B01 05/19/09 09:39 Solid 09-05-1995-1-F 14:44 Comment(s): -Sample analyzed outside recommended holding time. Parameter Result DF Qual Units RL TPH as Gasoline ND 0.21 0.855 mg/kg Surrogates: REC (%) Control Limits Qual 1,4-Bromofluorobenzene 73 60-126 06/04/09 SO-241809-051809-HB-MW-9-5 GC 11 090603B01 09-05-1995-2-F 05/18/09 16:00 Solid 05/18/09 15:17 Comment(s): -Sample analyzed outside recommended holding time. Parameter <u>RL</u> DF Qual <u>Units</u> Result TPH as Gasoline 0.50 0.20 0.791 mg/kg Surrogates: **REC (%) Control Limits** Qual 1,4-Bromofluorobenzene 79 60-126 06/04/09 15:51 05/18/09 10:28 SO-241809-051809-HB-MW-8-5 Solid GC 11 05/18/09 090603B01 09-05-1995-3-F 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 06/04/09 SO-241809-051909-HB-DUP 090603B02 05/19/09 Solid GC 11 05/19/09 09-05-1995-4-H 18:37 Comment(s): -Sample analyzed outside recommended holding time. Parameter <u>RL</u> DF Qual Units Result

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

480

113

**REC (%)** 

22

Control Limits

60-126



TPH as Gasoline

1,4-Bromofluorobenzene

Surrogates:

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Qual

mg/kg

89.8



# Page 8 of 34



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

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

Project: 11700 NE 160th St., I	11700 NE 160th St., Bothell, WA Page 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-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 out	side recommer	nded holding time.							
Parameter	<u>Result</u>	<u>RL</u>	DF	<u>Qual</u>	<u>Units</u>				
TPH as Gasoline	0.90	0.18	0.71		mg/kg				
Surrogates:	<u>REC (%)</u>	Control Limits		<u>Qual</u>					
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	
Comment(s): -Sample analyzed out	side recommer	nded holding time.							
Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>				
TPH as Gasoline	560	21	83.9		mg/kg				
Surrogates:	<u>REC (%)</u>	Control Limits		<u>Qual</u>					
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	
Comment(s): -Sample analyzed out	side recommer	nded holding time.							
Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>				
TPH as Gasoline	ND	0.18	0.731		mg/kg				
Surrogates:	<u>REC (%)</u>	Control Limits		<u>Qual</u>					
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	
Comment(s): -Sample analyzed out	side recommer	nded holding time.							
Parameter	<u>Result</u>	<u>RL</u>	DF	<u>Qual</u>	<u>Units</u>				
TPH as Gasoline	0.48	0.18	0.734		mg/kg				
Surrogates:	<u>REC (%)</u>	Control Limits		<u>Qual</u>					

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

82

60-126



1,4-Bromofluorobenzene



# Page 9 of 34



Conestoga-Rovers & Associates	Date Received:	05/22/09
1420 80th St. SW, Suite A	Work Order No:	09-05-1995
Everett, WA 98203-6248	Preparation:	EPA 5035
	Method:	NWTPH-Gx

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

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 outs Parameter	ide recommer <u>Result</u>	nded holding time. <u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>			
TPH as Gasoline	93	46	182		mg/kg			
Surrogates:	<u>REC (%)</u>	Control Limits		<u>Qual</u>				
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
Parameter	<u>Result</u>	<u>RL</u>	DF	<u>Qual</u>	<u>Units</u>			
TPH as Gasoline	ND	0.25	1		mg/kg			
Surrogates:	<u>REC (%)</u>	Control Limits		<u>Qual</u>				
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
Parameter	<u>Result</u>	<u>RL</u>	DF	Qual	<u>Units</u>			
TPH as Gasoline	ND	10	40		mg/kg			
Surrogates:	<u>REC (%)</u>	Control Limits		<u>Qual</u>				
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
Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>			
TPH as Gasoline	ND	10	40		mg/kg			
Surrogates:	<u>REC (%)</u>	Control Limits		<u>Qual</u>				
1,4-Bromofluorobenzene	76	60-126						

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



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Page 3 of 3

# Page 10 of 34





Conestoga-Rovers & Associates 1420 80th St. SW, Suite A Everett, WA 98203-6248 Date Received: Work Order No: Preparation: Method: E Units:

05/22/09 09-05-1995 EPA 3545 EPA 8270C SIM PAHs mg/kg

Page 1 of 5

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

Client Sample Number			La	ıb Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Ti I Analyz	ime æd	QC Batch ID
SO-241809-051909-HB-MW-8-14			09-05- <sup>,</sup>	1995-1-A	05/19/09 09:39	Solid	GC/MS GG	05/22/09	05/27/ 23:4	09 4	090522L06
Parameter	Result	<u>RL</u>	<u>DF</u>	Qual	Parameter			Result	<u>RL</u>	DF	Qual
Naphthalene	ND	0.020	1		Benzo (a) Anth	racene		ND	0.020	1	
2-Methylnaphthalene	ND	0.020	1		Chrysene			ND	0.020	1	
Acenaphthylene	ND	0.020	1		Benzo (k) Fluor	anthene		ND	0.020	1	
Acenaphthene	ND	0.020	1		Benzo (b) Fluo	ranthene		ND	0.020	1	
Fluorene	ND	0.020	1		Benzo (a) Pyre	ne		ND	0.020	1	
Phenanthrene	ND	0.020	1		Benzo (g,h,i) P	erylene		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) Ar	nthracene		ND	0.020	1	
Pyrene	ND	0.020	1		1-Methylnaphth	alene		ND	0.020	1	
Surrogates:	<u>REC (%)</u>	<u>Control</u> Limits		<u>Qual</u>	Surrogates:		<u> </u>	<u>REC (%)</u>	<u>Control</u> Limits		<u>Qual</u>
Nitrobenzene-d5	92	18-162			2-Fluorobiphen	yl		71	14-146		
p-Terphenyl-d14	76	34-148									
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/ 22:1:	09 2	090522L06
Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	Qual	Parameter			<u>Result</u>	<u>RL</u>	DF	<u>Qual</u>
Naphthalene	ND	0.020	1		Benzo (a) Anth	racene		ND	0.020	1	
2-Methylnaphthalene	ND	0.020	1		Chrysene			ND	0.020	1	
Acenaphthylene	ND	0.020	1		Benzo (k) Fluor	anthene		ND	0.020	1	
Acenaphthene	ND	0.020	1		Benzo (b) Fluo	ranthene		ND	0.020	1	
Fluorene	ND	0.020	1		Benzo (a) Pyre	ne		ND	0.020	1	
Phenanthrene	ND	0.020	1		Benzo (g,h,i) P	erylene		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) Ar	nthracene		ND	0.020	1	
Pyrene	ND	0.020	1		1-Methylnaphth	alene		ND	0.020	1	
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control</u>		<u>Qual</u>	Surrogates:		<u> </u>	REC (%)	<u>Control</u>		<u>Qual</u>
Nitrobenzene-d5	91	<u>18-162</u>			2-Fluorobiphen	yl		87	<u>14-146</u>		
p-Terphenyl-d14	82	34-148									

MM

# Page 11 of 34





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

Date Received: Work Order No: Preparation: Method: EPA 8270C SIM PAHs Units:

mg/kg Page 2 of 5

05/22/09

09-05-1995

EPA 3545

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

Client Sample Number			La	ıb Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Ti I Analyz	ime ied	QC Batch ID
SO-241809-051809-HB-MW-8-5			09-05- <sup>,</sup>	1995-3-A	05/18/09 10:28	Solid	GC/MS GG	05/22/09	05/28/ 00:3	09 D	090522L06
Parameter	<u>Result</u>	<u>RL</u>	DF	<u>Qual</u>	Parameter			<u>Result</u>	<u>RL</u>	DF	Qual
Naphthalene	ND	0.020	1		Benzo (a) Anth	racene		ND	0.020	1	
2-Methylnaphthalene	ND	0.020	1		Chrysene			ND	0.020	1	
Acenaphthylene	ND	0.020	1		Benzo (k) Fluor	anthene		ND	0.020	1	
Acenaphthene	ND	0.020	1		Benzo (b) Fluor	ranthene		ND	0.020	1	
Fluorene	ND	0.020	1		Benzo (a) Pyrei	ne		ND	0.020	1	
Phenanthrene	ND	0.020	1		Benzo (g,h,i) P	erylene		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) Ar	nthracene		ND	0.020	1	
Pyrene	ND	0.020	1		1-Methylnaphth	alene		ND	0.020	1	
Surrogates:	<u>REC (%)</u>	<u>Control</u> Limits		Qual	Surrogates:		<u> </u>	REC (%)	<u>Control</u>		<u>Qual</u>
Nitrobenzene-d5	78	18-162			2-Fluorobiphen	vl		62	14-146		
p-Terphenyl-d14	71	34-148			•	,					
SO-241809-051909-HB-DUP			09-05- <sup>⁄</sup>	1995-4-A	05/19/09 00:00	Solid	GC/MS GG	05/22/09	05/27/ 18:24	09 4	090522L06
Parameter	Result	RL	DF	Qual	Parameter			Result	RL	DF	Qual
Naphthalene	1.8	0 10	5		Benzo (a) Anth	racene		ND	0 020	1	
2-Methylnaphthalene	2.0	0.10	5		Chrvsene			ND	0.020	1	
Acenaphthylene	ND	0.020	1		Benzo (k) Fluor	anthene		ND	0.020	1	
Acenaphthene	ND	0.020	1		Benzo (b) Fluor	ranthene		ND	0.020	1	
Fluorene	ND	0.020	1		Benzo (a) Pyrei	ne		ND	0.020	1	
Phenanthrene	ND	0.020	1		Benzo (g,h,i) Po	erylene		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) Ar	thracene		ND	0.020	1	
Pyrene	ND	0.020	1		1-Methylnaphth	alene		0.90	0.020	1	
Surrogates:	<u>REC (%)</u>	<u>Control</u>		Qual	Surrogates:		<u> </u>	<u>REC (%)</u>	<u>Control</u>		<u>Qual</u>
Nitrobenzene-d5	113	18-162			2-Fluorobiphen	yl		78	14-146		
p-Terphenyl-d14	83	34-148									

hM

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# Page 12 of 34





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

Date Received: Work Order No: Preparation: Method: EPA 8270C SIM PAHs Units:

Page 3 of 5

05/22/09

09-05-1995

EPA 3545

mg/kg

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

Client Sample Number			La	ab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/T d Analyz	ïme zed	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 01:1	/09 5	090522L06
Parameter	<u>Result</u>	<u>RL</u>	DF	Qual	Parameter			<u>Result</u>	<u>RL</u>	DF	<u>Qual</u>
Naphthalene	ND	0.020	1		Benzo (a) Anth	racene		0.038	0.020	1	
2-Methylnaphthalene	ND	0.020	1		Chrysene			0.052	0.020	1	
Acenaphthylene	ND	0.020	1		Benzo (k) Fluo	ranthene		0.049	0.020	1	
Acenaphthene	ND	0.020	1		Benzo (b) Fluo	ranthene		0.061	0.020	1	
Fluorene	ND	0.020	1		Benzo (a) Pvre	ne		0.041	0.020	1	
Phenanthrene	ND	0.020	1		Benzo (g,h,i) P	ervlene		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) Ar	nthracene		ND	0.020	1	
Pyrene	0.090	0.020	1		1-Methylnaphth	nalene		ND	0.020	1	
Surrogates:	<u>REC (%)</u>	<u>Control</u> Limits		<u>Qual</u>	Surrogates:		<u>I</u>	<u>REC (%)</u>	<u>Control</u>		<u>Qual</u>
Nitrobenzene-d5	87	18-162			2-Fluorobiphen	vl		67	14-146		
p-Terphenyl-d14	74	34-148			•	,					
SO-241809-051909-HB-SB-6-19			09-05- <sup>-</sup>	1995-6-A	05/19/09 12:44	Solid	GC/MS GG	05/22/09	05/27 19:1	/09 0	090522L06
Parameter	<u>Result</u>	RL	DF	Qual	Parameter			Result	RL	DF	Qual
Naphthalene	2.3	0 10	5		Benzo (a) Anth	racene		ND	0 020	1	
2-Methvlnaphthalene	2.2	0.10	5		Chrvsene			ND	0.020	1	
Acenaphthylene	ND	0.020	1		Benzo (k) Fluo	ranthene		ND	0.020	1	
Acenaphthene	ND	0.020	1		Benzo (b) Fluo	ranthene		ND	0.020	1	
Fluorene	ND	0.020	1		Benzo (a) Pyre	ne		ND	0.020	1	
Phenanthrene	ND	0.020	1		Benzo (g,h,i) P	erylene		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) Ar	nthracene		ND	0.020	1	
Pyrene	ND	0.020	1		1-Methylnaphth	nalene		0.98	0.020	1	
Surrogates:	<u>REC (%)</u>	<u>Control</u>		Qual	Surrogates:		<u>I</u>	REC (%)	<u>Control</u>		<u>Qual</u>
Nitrobenzene-d5	108	18-162			2-Fluorobiphen	yl		61	14-146		
p-Terphenyl-d14	65	34-148			•	-					

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# Page 13 of 34





Conestoga-Rovers & Associates 1420 80th St. SW, Suite A Everett, WA 98203-6248 Date Received: Work Order No: Preparation: Method: Units:

05/22/09 09-05-1995 EPA 3545 EPA 8270C SIM PAHs mg/kg Page 4 of 5

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

Client Sample Number			La	ab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/T Analyz	ïme zed	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/ 02:0	/09 0	090522L06
Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	Qual	Parameter			<u>Result</u>	<u>RL</u>	DF	<u>Qual</u>
Naphthalene	ND	0.020	1		Benzo (a) Anth	racene		0.079	0.020	1	
2-Methylnaphthalene	ND	0.020	1		Chrysene			0.095	0.020	1	
Acenaphthylene	ND	0.020	1		Benzo (k) Fluor	ranthene		0.078	0.020	1	
Acenaphthene	ND	0.020	1		Benzo (b) Fluo	ranthene		0.11	0.020	1	
Fluorene	ND	0.020	1		Benzo (a) Pvre	ne		0.079	0.020	1	
Phenanthrene	0.051	0.020	1		Benzo (g,h,i) P	ervlene		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) Ar	nthracene		ND	0.020	1	
Pyrene	0.19	0.020	1		1-Methylnaphth	nalene		ND	0.020	1	
Surrogates:	<u>REC (%)</u>	<u>Control</u>		Qual	Surrogates:		<u> </u>	REC (%)	<u>Control</u>		<u>Qual</u>
Nitrobenzene-d5	84	18-162			2-Eluorobiphen	vl		62	14-146		
p-Terphenyl-d14	72	34-148				. <b>j</b> .		-			
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/ 22:5	/09 8	090522L06
Parameter	Result	RL	DF	Qual	Parameter			Result	RL	DF	Qual
Naphthalene	ND	0 020	1		Benzo (a) Anth	racene		ND	0 020	1	
2-Methylnaphthalene	ND	0.020	1		Chrysene			ND	0.020	1	
Acenaphthylene	ND	0.020	1		Benzo (k) Fluor	ranthene		ND	0.020	1	
Acenaphthene	ND	0.020	1		Benzo (b) Fluo	ranthene		ND	0.020	1	
Fluorene	ND	0.020	1		Benzo (a) Pyre	ne		ND	0.020	1	
Phenanthrene	ND	0.020	1		Benzo (g,h,i) P	ervlene		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) Ar	nthracene		ND	0.020	1	
Pyrene	0.039	0.020	1		1-Methylnaphth	nalene		ND	0.020	1	
Surrogates:	<u>REC (%)</u>	Control		<u>Qual</u>	Surrogates:		<u>I</u>	REC (%)	<u>Control</u>		Qual
Nitrobenzene-d5	82	18-162			2-Fluorobiphen	ıyl		59	14-146		
p-Terphenyl-d14	65	34-148									

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#### Page 14 of 34





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

Date Received: Work Order No: Preparation: Method: EPA 8270C SIM PAHs Units:

Page 5 of 5

05/22/09

09-05-1995

EPA 3545

mg/kg

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

Client Sample Number			La	ıb Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/T Analy	īme zed	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 19:5	/09 56	090522L06
Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	Qual	Parameter			<u>Result</u>	<u>RL</u>	DF	Qual
Naphthalene	0.33	0.020	1		Benzo (a) Anth	racene		ND	0.020	1	
2-Methylnaphthalene	0.39	0.020	1		Chrysene			ND	0.020	1	
Acenaphthylene	ND	0.020	1		Benzo (k) Fluor	ranthene		ND	0.020	1	
Acenaphthene	ND	0.020	1		Benzo (b) Fluo	ranthene		ND	0.020	1	
Fluorene	ND	0.020	1		Benzo (a) Pyre	ne		ND	0.020	1	
Phenanthrene	ND	0.020	1		Benzo (g,h,i) P	erylene		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) Ar	nthracene		ND	0.020	1	
Pyrene	ND	0.020	1		1-Methylnaphth	nalene		0.20	0.020	1	
Surrogates:	<u>REC (%)</u>	<u>Control</u>		Qual	Surrogates:		<u> </u>	<u>REC (%)</u>	Control		<u>Qual</u>
Nitrobenzene-d5	86	18-162			2-Fluorobiphen	vl		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 10:0	/09 )2	090522L06
Parameter	Result	RL	DF	Qual	Parameter			Result	RL	DF	Qual
Naphthalene	ND	0.020	1		Benzo (a) Anth	racene			0.020	1	
2-Methylnaphthalene	ND	0.020	1		Chrysene	labolio		ND	0.020	1	
Acenaphthylene	ND	0.020	1		Benzo (k) Fluor	ranthene		ND	0.020	1	
Acenaphthene	ND	0.020	1		Benzo (b) Fluo	ranthene		ND	0.020	. 1	
Fluorene	ND	0.020	1		Benzo (a) Pvre	ne		ND	0.020	1	
Phenanthrene	ND	0.020	1		Benzo (g,h,i) P	ervlene		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) Ar	nthracene		ND	0.020	1	
Pyrene	ND	0.020	1		1-Methylnaphth	nalene		ND	0.020	1	
Surrogates:	<u>REC (%)</u>	<u>Control</u>		Qual	Surrogates:		<u> </u>	<u>REC (%)</u>	Control		<u>Qual</u>
Nitrobenzene-d5	59	<u>Limits</u> 18-162			2-Fluorobiphen	yl		76	<u>Limits</u> 14-146		
p-Terphenyl-d14	75	34-148									

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### Page 15 of 34

05/22/09



Date Received:



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

1420 80th St. SW, Suite /	4				Work Ord	er No:			0	9-05-	1995		
Everett. WA 98203-6248					Preparatio	on:				EPA 5035			
,,					Method:				E	DA 8	260B		
					Linite:				L	n 7.07 m	200D		
					Units.						ig/itg		
Project: 11700 NE 160th	St., Both	nell, WA	A						F	age 1	l of 4		
			Lat	o Sample	Date/Time	Motrix	Instrument	Date	Date/Tim	e OC	Datab ID		
Client Sample Number			Ν	lumber	Collected	Matrix	Instrument	Preparec	Analyze		Batch ID		
SO-241809-051909-HB-MW-8-14			09-05-1	995-1-l	05/19/09 09:39	Solid	GC/MS VV	05/19/09	05/31/09 03:52	090	530L03		
Parameter	Result	RL	DF	Qual	Parameter			Result	RL	DF	Qual		
Benzene	ND	0 00079	0 789		Methyl-t-Butyl F	ther (MTB	E)	ND	0.0016	<u></u> 1 789			
1.2-Dibromoethane	ND	0.00079	0 789		Tert-Butyl Alcoh	nol (TBA)	_/	ND	0.016	0.789			
1.2-Dichloroethane	ND	0.00079	0 789		Diisopropyl Ethe	er (DIPE)		ND	0 00079	0 789			
Ethylbenzene	ND	0.00079	0 789		Ethyl-t-Butyl Eth	ner (ETBE)		ND	0.00079	789			
Toluene	ND	0.00079	0 789		Tert-Amvl-Meth	vl Ether (T	AME)	ND	0 00079	789			
Xvlenes (total)	ND	0.0016	0 789			J (			0100010				
Surrogates:	<u>REC (%)</u>	Control		<u>Qual</u>	Surrogates:			<u>REC (%)</u>	<u>Control</u>	<u>Qı</u>	ual		
Dibromofluoromethane	111	71-137			1.2-Dichloroetha	ane-d4		116	58-160				
1,4-Bromofluorobenzene	91	66-126			Toluene-d8			99	87-111				
SO-241809-051809-HB-MW-9-5			09-05-1	995-2-l	05/18/09 16:00	Solid	GC/MS VV	05/18/09	05/31/09 04:19	090	530L03		
Parameter	Result	RL	DF	Qual	Parameter			Result	RL	DF	Qual		
Benzene	0.0023	0 00048	0 476		Methyl-t-Butyl E	ther (MTB	E)	ND	0 00095	0 476			
1.2-Dibromoethane	ND	0 00048	0 476		Tert-Butvl Alcoh	nol (TBA)	_/	ND	0.0095	0 476			
1,2-Dichloroethane	ND	0.00048	0.476		Diisopropyl Ethe	er (DIPE)		ND	0.00048	0.476			
Ethylbenzene	ND	0.00048	0.476		Ethyl-t-Butyl Eth	ner (ETBÉ)		ND	0.00048	0.476			
Toluene	0.00048	0.00048	0.476		Tert-Amyl-Meth	vl Ether (T	AME)	ND	0.00048	0.476			
Xylenes (total)	0.0052	0.00095	0.476										
Surrogates:	<u>REC (%)</u>	<u>Control</u>		Qual	Surrogates:			<u>REC (%)</u>	<u>Control</u>	<u>Qı</u>	ual		
Dibromofluoromethane	102	<u>Limits</u> 71_137			1.2-Dichloroeth	ane_d4		104	<u>Limits</u> 58-160				
1,4-Bromofluorobenzene	95	66-126			Toluene-d8			104	87-111				
SO-241809-051809-HB-MW-8-5			09-05-1	995-3-l	05/18/09 10:28	Solid	GC/MS VV	05/18/09	05/31/09 04:46	090	530L03		
Devenueter	Decult	D'		0!	Devenuetar			Desit			Qual		
Parameter	<u>Result</u>	<u>KL</u>		Qual	Parameter			Kesult	<u>KL</u>		Qual		
Benzene	0.00091	0.00080	0.805		Methyl-t-Butyl E	ther (MIBI	E)	ND	0.0016	0.805			
1,2-Dibromoethane	ND	0.00080	0.805		I ert-Butyl Alcoh	INDI (IBA)		ND	0.016	J.805			
		0.00080	0.805			er (DIPE)			0.00080	J.805			
Eurypenzene		0.00080	0.805						0.00080	J.805			
I Oluene Xylance (total)		0.00080	0.805		i ert-Amyi-ivieth	yı ⊨trier (17	AIVIE)	ND	0.00080	J.805			
Ayrenes (lotal)		0.0016 Control	0.805	Qual	Surragataa				Control	0	u ol		
Surroyales.	<u>REU (%)</u>	Limits		Qudi	Surroyales.				Limits		ial		
Dibromofluoromethane	111	71-137			1,2-Dichloroetha	ane-d4		113	58-160				
1,4-Bromofluorobenzene	86	66-126			Toluene-d8			100	87-111				

RL - Reporting Limit ,

DF - Dilution Factor ,

Qual - Qualifiers

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### Page 16 of 34

05/22/09



Date Received:



Conestoga-Rovers & Associates Ct CM/ Cuite 1420 80th Everett, W

1420 80th St. SW, Suite	A				Work Ord	ler No:			C	9-05-1995			
Everett, WA 98203-6248					Preparatio		EPA 5035						
					Method:				F	DA 8260B			
					Linits:				L	ma/ka			
D					Onito.				-				
Project: 11700 NE 160th	St., Bot	neii, w <i>r</i>	4						F	age 2 of 4			
			La	b Sample	Date/Time	Matrix	Instrument	Date	Date/Tim				
			<u> </u>	Number	Collected	IVIAU IX	monument	Preparec	Analyze				
SO-241809-051909-HB-DUP			09-05-1	995-4-K	05/19/09 00:00	Solid	GC/MS VV	05/19/09	05/31/0 05:13	9 090530L04			
Parameter	Result	RL	DF	Qual	Parameter			Result	RL	DF Qual			
Benzene	ND	0.41	412		Methyl-t-Butyl E	Ether (MTB	E)	ND	0.82	412			
1,2-Dibromoethane	ND	0.41	412		Tert-Butyl Alcol	hol (TBA)	,	ND	8.2	412			
1,2-Dichloroethane	ND	0.41	412		Diisopropyl Eth	er (DIPE)		ND	0.41	412			
Ethylbenzene	10	0.41	412		Ethyl-t-Butyl Etl	her (ETBÉ)	)	ND	0.41	412			
Toluene	8.3	0.41	412		Tert-Amyl-Meth	vl Ether (T	AME)	ND	0.41	412			
Xylenes (total)	66	0.82	412		,	, ,	,						
Surrogates:	<u>REC (%)</u>	<u>Control</u> Limits		<u>Qual</u>	Surrogates:			<u>REC (%)</u>	<u>Control</u> Limits	<u>Qual</u>			
Dibromofluoromethane	102	71-137			1,2-Dichloroeth	ane-d4		100	58-160				
1,4-Bromofluorobenzene	97	66-126			Toluene-d8			102	87-111				
SO-241809-051909-HB-SB-6-9			09-05-1	995-5-I	05/19/09 12:28	Solid	GC/MS VV	05/19/09	05/31/0 05:40	9 090530L03			
Parameter	<u>Result</u>	<u>RL</u>	DF	Qual	Parameter			Result	<u>RL</u>	<u>DF Qual</u>			
Benzene	0.0032	0.00076	0.756		Methyl-t-Butyl E	Ether (MTB	E)	ND	0.0015	0.756			
1,2-Dibromoethane	ND	0.00076	0.756		Tert-Butyl Alcol	hol (TBA)	,	ND	0.015	0.756			
1,2-Dichloroethane	ND	0.00076	0.756		Diisopropyl Eth	er (DIPE)		ND	0.00076	0.756			
Ethylbenzene	0.024	0.00076	0.756		Ethyl-t-Butyl Et	her (ETBE)	)	ND	0.00076	0.756			
Toluene	0.021	0.00076	0.756		Tert-Amyl-Meth	yl Ether (T	AME)	ND	0.00076	0.756			
Xylenes (total)	0.13	0.0015	0.756		-								
Surrogates:	<u>REC (%)</u>	<u>Control</u>		<u>Qual</u>	Surrogates:			<u>REC (%)</u>	<u>Control</u>	Qual			
Dibromofluoromethane	102	<u>LIIIIIS</u> 71-137			1 2-Dichloroeth	ane-d4		104	<u>LIIIIIS</u> 58-160				
1,4-Bromofluorobenzene	98	66-126			Toluene-d8			103	87-111				
SO-241809-051909-HB-SB-6-19			09-05-1	995-6-K	05/19/09 12:44	Solid	GC/MS VV	05/19/09	05/31/09 06:06	9 090530L04			
Deservator	Desult	DI		Qual	Denementen			Desult		DE Quel			
Parameter	Kesult	<u>KL</u>		Qual	Parameter		_`	Result	<u>KL</u>				
Benzene	ND	0.40	396		Methyl-t-Butyl E	tner (MTB	E)	ND	0.79	396			
1,2-Dibromoethane	ND	0.40	396		I ert-Butyl Alcol	nol (IBA)		ND	7.9	396			
	ND 10	0.40	396		Dilsopropyl Eth	er (DIPE)			0.40	396			
Enyidenzene	10	0.40	396		Etnyi-t-Butyi Eti	ner (EIBE)			0.40	396			
I Oluene Videnes (total)	5.8 65	0.40	396		i ert-Amyl-Meth	iyi ⊨tner (T	AIVIE)	ND	0.40	396			
		0.79 Control	396	Quel	Currogetee				Control	Quel			
Surrogates:	<u>REC (%)</u>	Limits			Surrogates:			<u>keu (%)</u>	Limits	<u>Qual</u>			
Dibromofluoromethane	98	71-137			1,2-Dichloroeth	ane-d4		94	58-160				
4.4. December of the second second	100	66-126			Toluene-d8			100	87_111				

RL - Reporting Limit , DF - Dilution Factor

Qual - Qualifiers ,

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### Page 17 of 34

05/22/09



Date Received:



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

EPA 5035 PA 8260B mg/kg
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mg/kg
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RL - Reporting Limit ,

DF - Dilution Factor Qual - Qualifiers ,

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#### Page 18 of 34

05/22/09



Date Received:



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

1420 80th St. SW, Suite	4				Work C	order No:			09	09-05-1995			
Everett WA 98203-6248					Prepara	ation <sup>.</sup>			EPA 5035				
					Method								
					Unite	-				ma/ka			
					Units.					iiig/kg			
Project: 11700 NE 160th	St., Bot	hell, WA	4						P	age 4 of 4			
			La	b Sample	Date/Time	e Matrix	I	Date	Date/Time				
Client Sample Number			<u> </u>	Number	Collected	l Iviatrix	Instrument	Preparec	Analyzed	QC Batch ID			
Method Blank			095-01	-025-17,83	3 N/A	Solid	GC/MS VV	05/30/09	05/30/09 23:51	090530L03			
Parameter	Result	RL	DF	Qual	Parameter			Result	RL I	OF Qual			
Benzene	ND	0.0010	1		Methyl-t-But	vl Ether (MTB	E)	ND	0 0020	1			
1 2-Dibromoethane	ND	0.0010	1		Tert-Butyl A	Icohol (TBA)	_/	ND	0.0020	1			
1 2-Dichloroethane	ND	0.0010	1		Diisopropyl I	Ether (DIPE)		ND	0.0010	1			
Fthylbenzene	ND	0.0010	1		Ethyl-t-Butyl	Ether (ETBE)		ND	0.0010	1			
Toluene	ND	0.0010	1		Tert-AmvI-M	lethyl Ether (T		ND	0.0010	1			
Xylenes (total)	ND	0.0010	1				un_)	ND	0.0010				
Surrogates:	<u>REC (%)</u>	<u>Control</u>		Qual	Surrogates:			<u>REC (%)</u>	<u>Control</u>	Qual			
Dibromofluoromethane	105	71-137			1.2-Dichloro	ethane-d4		103	58-160				
1,4-Bromofluorobenzene	92	66-126			Toluene-d8			100	87-111				
Method Blank			095-01	-025-17,834	4 N/A	Solid	GC/MS VV	05/30/09	05/30/09 23:24	090530L04			
Parameter	<u>Result</u>	<u>RL</u>	DF	Qual	Parameter			Result	<u>RL [</u>	<u>DF Qual</u>			
Benzene	ND	0.10	100		Methyl-t-But	yl Ether (MTB	E)	ND	0.20	100			
1,2-Dibromoethane	ND	0.10	100		Tert-Butyl A	Icohol (TBA)	,	ND	2.0	100			
1,2-Dichloroethane	ND	0.10	100		Diisopropyl I	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-M	lethyl Ether (T	AME)	ND	0.10	100			
Xylenes (total)	ND	0.20	100		-								
Surrogates:	<u>REC (%)</u>	<u>Control</u>		<u>Qual</u>	Surrogates:			<u>REC (%)</u>	<u>Control</u>	<u>Qual</u>			
		<u>Limits</u>							<u>Limits</u>				
Dibromotluoromethane	101	71-137			1,2-Dichloro	ethane-d4		94	58-160				
I,4-Bromonuorobenzene	94	66-126			Toluene-d8			98	87-111				
Method Blank			095-01	-025-17,83	9 N/A	Solid	GC/MS VV	06/01/09	06/01/09 11:40	090601L02			
Parameter	<u>Result</u>	<u>RL</u>	DF	Qual	Parameter			<u>Result</u>	<u>RL</u>	<u>DF Qual</u>			
Benzene	ND	0.10	100		Methyl-t-But	yl Ether (MTB	E)	ND	0.20	100			
1.2-Dibromoethane	ND	0.10	100		Tert-Butvl A	Icohol (TBA)	,	ND	2.0	100			
1,2-Dichloroethane	ND	0.10	100		Diisopropyl I	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-M	lethyl Ether (T	AME)	ND	0.10	100			
Xylenes (total)	ND	0.20	100			- (							
Surrogates:	<u>REC (%)</u>	<u>Control</u> <u>Limits</u>		Qual	Surrogates:			<u>REC (%)</u>	<u>Control</u> Limits	Qual			
Dibromofluoromethane	104	71-137			1,2-Dichloro	ethane-d4		102	58-160				
1,4-Bromofluorobenzene	96	66-126			Toluene-d8			99	87-111				

RL - Reporting Limit , DF - Dilution Factor

Qual - Qualifiers ,

nM
05/22/09

EPA 6020





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

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

# 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 CI		Cl Qualifiers
	MO /MEO	MOD /MEO	<u>MILLO OL</u>		
Lead	102	102	62-134	0 0-23	i

RPD - Relative Percent Difference, CL - Control Limit

hM 7440 Lincoln Way, Garden Grove, CA 92841-1427 • TEL:(714) 895-5494 •

FAX: (714) 894-7501





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

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

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

Quality Control Sample ID	Matrix	Instrument	Date Prepared	ŀ	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		RPD		Qualifiers
	MO /ITCE	MOD /MLC	<u>/IREC CE</u>		<u>INI D OL</u>	Qualmers
TPH as Diesel Range	91	90	64-130	2	0-15	

RPD - Relative Percent Difference, CL - Control Limit

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aboratories, Inc.

Conestoga-Rovers & Associates	Date Received:	05/22/09
1420 80th St. SW, Suite A	Work Order No:	09-05-1995
Everett, WA 98203-6248	Preparation:	EPA 3545
	Method:	EPA 8270C SIM
		PAHs

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

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Date epared Analyzec		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	<u>%REC CL</u>	<u>RPD</u>	RPD CL	<u>Qualifiers</u>	
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

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# A DOLLED IN ACCORDANCE

Conestoga-Rovers & Associates	Date Received:	N/A
1420 80th St. SW, Suite A	Work Order No:	09-05-1995
Everett, WA 98203-6248	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 Batc Number	h
096-10-002-1,513	Solid	ICP/MS 03	05/22/09	05/22/09	090522L02	
Parameter	LCS 9	KREC LCSD	<u>%REC %F</u>	REC CL RPD	RPD CL	<b>Qualifiers</b>
Lead	100	) 101	6	30-120 1	0-20	

RPD - Relative Percent Difference, CL - Control Limit





# 

Conestoga-Rovers & Associates	Date Received:	N/A
1420 80th St. SW, Suite A	Work Order No:	09-05-1995
Everett, WA 98203-6248	Preparation:	EPA 3550B
	Method:	NWTPH-Dx

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

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Da Anal	ite yzed	LCS/LCSD Batc Number	h
099-12-838-21	Solid	GC 43	05/24/09	05/24	ŀ/09	090524B01	
Parameter	LCS	<u>REC</u> LCSD	%REC	%REC CL	<u>RPD</u>	RPD CL	Qualifiers
TPH as Diesel Range	91	90		75-123	2	0-12	

RPD - Relative Percent Difference, CL - Control Limit





# A DITED IN ACCORDANCE

Conestoga-Rovers & Associates	Date Received:	N/A
1420 80th St. SW, Suite A	Work Order No:	09-05-1995
Everett, WA 98203-6248	Preparation:	EPA 5035
	Method:	NWTPH-Gx

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

Quality Control Sample ID	Matrix	Instrum	Da ent Prep	ate bared	Date Analyzed	LCS/LCSD Bate Number	ch
099-12-848-25	Solid	GC 11	06/0	3/09	06/04/09	090603B01	
Parameter	LCS %	6REC	LCSD %REC	<u>%REC</u>	CL RPD	RPD CL	<b>Qualifiers</b>
TPH as Gasoline	85		83	55-13	39 3	0-18	

RPD - Relative Percent Difference, CL - Control Limit





# A DE DE LA ACCORDANCE

Conestoga-Rovers & Associates	Date Received:	N/A
1420 80th St. SW, Suite A	Work Order No:	09-05-1995
Everett, WA 98203-6248	Preparation:	EPA 5035
	Method:	NWTPH-Gx

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

Quality Control Sample ID	Matrix	Matrix Instrument		Da Analy	te /zed	LCS/LCSD Batc Number	h
099-12-848-26	Solid	GC 11	06/03/09	06/04	/09	090603B02	
Parameter	LCS %	<u> 6REC LCSD</u>	%REC	%REC CL	<u>RPD</u>	RPD CL	Qualifiers
TPH as Gasoline	85	83		55-139	3	0-18	

RPD - Relative Percent Difference, CL - Control Limit





# s nelac

Conestoga-Rovers & Associates	Date Received:	N/A
1420 80th St. SW, Suite A	Work Order No:	09-05-1995
Everett, WA 98203-6248	Preparation:	EPA 5035
	Method:	NWTPH-Gx

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

Quality Control Sample ID	Matrix	Instru	ument	Dat Prepa	e Ired	Da Analy	te /zed	LCS/LCSD Bato Number	h
099-12-848-27	Solid	GC	11	06/04	/09	06/04	/09	090604B02	
Deremeter					0/ DC		חחח		Qualifiara
Parameter	<u>LCS %</u>	<u> KEC</u>	LCSD %I	REC	<u>%RE</u>		RPD	RPD CL	Quaimers
TPH as Gasoline	85		85		55-	139	1	0-18	

RPD - Relative Percent Difference, CL - Control Limit







Conestoga-Rovers & Associates	Date Received:	N/A
1420 80th St. SW, Suite A	Work Order No:	09-05-1995
Everett, WA 98203-6248	Preparation:	EPA 3545
	Method:	EPA 8270C SIM PAHs

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Da Analy	ite ⁄zed	LCS/LCSD I Numbe	Batch
099-06-010-313	Solid	GC/MS GG	05/22/09	05/27/	09	090522L	06
Parameter	LCS %REC	LCSD %REC	<u>%REC CL</u>	ME_CL	<u>RPD</u>	RPD CL	Qualifiers
Naphthalene	98	98	21-133	2-152	0	0-25	
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	ME
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	

Total number of LCS compounds : 18

Total number of ME compounds : 1

Total number of ME compounds allowed : 1

LCS ME CL validation result : Pass

nM

RPD - Relative Percent Difference, CL - Control Limit





Conestoga-Rovers & Associates	Date Received:	N/A
1420 80th St. SW, Suite A	Work Order No:	09-05-1995
Everett, WA 98203-6248	Preparation:	EPA 5035
	Method:	EPA 8260B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Da Analy	ite vzed	LCS/LCSD E Number	Batch
095-01-025-17,833	Solid	GC/MS VV	05/30/09	05/30/	09	090530L0	03
Parameter	LCS %REC	LCSD %REC	<u>%REC CL</u>	ME_CL	<u>RPD</u>	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	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

nM

RPD - Relative Percent Difference, CL - Control Limit





Conestoga-Rovers & Associates	Date Received:	N/A
1420 80th St. SW, Suite A	Work Order No:	09-05-1995
Everett, WA 98203-6248	Preparation:	EPA 5035
	Method:	EPA 8260B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Da Analy	te /zed	LCS/LCSD E Number	Batch
095-01-025-17,834	Solid	GC/MS VV	05/30/09	05/30/	09	090530L0	)4
Parameter	LCS %REC	LCSD %REC	<u>%REC CL</u>	ME_CL	<u>RPD</u>	RPD CL	<b>Qualifiers</b>
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

nM

RPD - Relative Percent Difference, CL - Control Limit





Conestoga-Rovers & Associates	Date Received:	N/A
1420 80th St. SW, Suite A	Work Order No:	09-05-1995
Everett, WA 98203-6248	Preparation:	EPA 5035
	Method:	EPA 8260B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Da Analy	ite vzed	LCS/LCSD E Number	Batch
095-01-025-17,839	Solid	GC/MS VV	06/01/09	06/01/	09	090601L0	)2
Parameter	LCS %REC	LCSD %REC	<u>%REC CL</u>	ME_CL	<u>RPD</u>	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

nM

RPD - Relative Percent Difference, CL - Control Limit





Work Order Number: 09-05-1995

<u>Qualifier</u>	Definition
*	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.
А	Result is the average of all dilutions, as defined by the method.
В	Analyte was present in the associated method blank.
С	Analyte presence was not confirmed on primary column.
Е	Concentration exceeds the calibration range.
Н	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.
Ν	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.
Х	% 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,

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not corrected for % moisture.

~ M

Record	IDENT # (ENV SERVICES)	3 9 9 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			E-HANE: CONSULTANT PROJECT NO:	sectiveigent@CRAworld.com			TEMPERATURE ON RECEIPT	8	· · · · · · · · · · · · · · · · · · ·	(8)		5) eue	Example 2 Container PID Readings	TOLE 1 1 1	TOL X IN IN IS INCIRCL				K. W. O	Kraller 2		N ( TAT ) D		Date:	$\frac{Pa}{S} = \frac{1}{S} \frac{1}{F} \frac$			5/22/09 1000 K
Oil Products Chain Of Custody	Print Bill To Contact Name: INCI	Darol lem Righte 19	# 0d	ITE ADDRESS: Street and Gty 11 7 Arx A Dirry 11 x Prix C. L. 72 x 11 State		Christine Schweigert, CRA, Everett 425-212-5100	Hart Zan S		Ç.	Cles	[9] (29) (29) (29) (29) (29) (29) (29) (29)	(8260) (8260) (0) (9) (0) (82606 (2) (2) (2) (2) (2) (2) (2) (2) (2) (2)	H H H (60) (60) (1111 (1111) (	н-Еы 94-ЛЬ 8080) 8080) 8080) 8080) 8080 (800 (800	имт вте: в ох: в	X X X X X X X X X X		X XX X XXX X	X X X X X X X	X X X X X X X X X X X X X X X X X X X	X X X X X X X X	XXX X XX X X X	X X X X X X X	X X X X X X X					I UVV	11/1 - ON
Shell Shell	Please Check Appropriate Box:			1096 0005			Thesperie Convert D. Im		SHELL CONTRACT RATE APPLIES	C STATE REIMBURSEMENT RATE APPLIES	C EDD NOT NEEDED	d A URECEIPT VERIFICATION REQUESTED		TIME MATRIX NO. OF	HCL HN03 H2SO4 NONE OTHER	C137 50 XX 9	1600 52 XX 9	5 XX 3201	6 X X   25	1, XX 25 9m			131 Sc XX 7	1135 5C XY 9	Bactitud by Canonines	To ol al	Recoverd by: (Signature)	Restitut hr. Elementaria	(american)	
DOUSCIENCE (JAN CALL)	SPI. Houston			Conestoga-Rovers & Associates	1420 80th St SW, Sulte , Everett, WA 98203	Lushin Fosti En	TLEMMONE: FAX: 426-212-5199	LA - RWQCB REPORT FORMAT	SPECIAL INSTRUCTIONS OR NOTES	VERY IMPORTANTII		See Laboratory PM for WA Dept. of Ecology MTCA Metho cleanup levels for <u>minimum</u> detection limits	SAM	the Field Sample Identification		1 20-241601-251509-145-MW-8-4 5/19	2 2 - 41207 75 R. C 444 7-5 5114	2	N	U15 1, 7-85-64-5-2151-1,201-2	1 5 61-9-95-44-621,157-624 10-55	2	11-2-2-2-1-1-2-2-1-1-2-1-1-2-1-1-1-2-1-1-1-2-1-1-1-2-1-1-1-2-1-1-1-2-1-1-1-2-1-1-1-2-1-1-2-1-1-2-2-1-2	5034481 x1-051544-148 ABN-9-14 5/19	Relinquished by: (Signal yes)	Haulthen to pro-	Felinquished by: (Signature)	Relinquished by: (Signature)	Fedex 868250006658	

----J\_\_\_\_\_

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WORK ORDER #: 0	9-05-1 888
Laboratories, Inc. SAMPLE RECEIPT FORM	Cooler <u>\</u> of <u>1</u>
CLIENT: CRA	DATE: 5 122 109
TEMPERATURE: (Criteria: 0.0 °C – 6.0 °C, not frozen)	
Temperature $2 \cdot 2 \cdot 2 \circ C - 0.2 \circ C (CF) = 2 \cdot 1 \circ C \Box E$	Blank 🛛 Sample
□ Sample(s) outside temperature criteria (PM/APM contacted by:).	
$\Box$ Sample(s) outside temperature criteria but received on ice/chilled on same day o	of sampling.
□ Received at ambient temperature, placed on ice for transport by Couri	er.
Ambient Temperature:	y Initial: <u>UB</u>
CUSTODY SEALS INTACT:	1112
Cooler  No (Not Intact) Not Present	$\square$ N/A Initial: $\frac{\sqrt{2}}{110}$
□ Sample □ □ No (Not Intact) ☑ Not Present	Initial: <u></u>
SAMPLE CONDITION: Yes	s No N/A
Chain-Of-Custody (COC) document(s) received with samples	
COC document(s) received complete	
$\Box$ Collection date/time, matrix, and/or # of containers logged in based on sample labels.	
$\Box$ COC not relinquished. $\Box$ No date relinquished. $\Box$ No time relinquished.	1
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 <sup>®</sup> ☑Te	erraCores <sup>®</sup> <u>I</u> 202P]
Water:  VOA  VOAh  VOAna <sub>2</sub> 125AGB  125AGBh  125AGBp  1	1AGB □1AGBna₂ □1AGBs
□500AGB □500AGJ □500AGJs □250AGB □250CGB □250CGBs □	]1PB □500PB □500PB <b>na</b>
□250PB □250PBn □125PB □125PBznna □100PB □100PBna₂ □	
Air: $\Box$ Tedlar <sup>®</sup> $\Box$ Summa <sup>®</sup> $\Box$ Other: $\Box$ O	Checked/Labeled by:
Container: C: Clear A: Amber P: Plastic G: Glass J: Jar (Wide-mouth) B: Bottle (Narrow-mouth)	Reviewed by: <u>W-SC</u>
rieservauve: n: not n: nivos na2:Na25203 Na: NaOH p: H3PO4 s: H2SO4 znna: ZnAc2+NaOH f: Field	a-filtered Scanned by:

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SOP T100\_090 (03/13/09)

Galscience	WORK ORDER #:	09-05-	तिषि सि हि
aboratories, inc. SAMPLE	RECEIPT FOR	RM Coo	ler <u>2</u> of <u>2</u>
CLIENT:		DATE: _5	122/09
TEMPERATURE: (Criteria: 0.0 °C – 6.0 °C, not	frozen)		
Temperature <u>2.7</u> °C - 0.2°C (CF)	= <u>2.5</u> ℃	🗆 Blank 🛛 🖸	Sample
□ Sample(s) outside temperature criteria (PM/APN	/ contacted by:).		
Sample(s) outside temperature criteria but recei	ved on ice/chilled on same d	lay of sampling.	
□ Received at ambient temperature, placed o	n ice for transport by Co	ourier.	
Ambient Temperature:  Air  Filter	Metals Only DPCBs	Only	Initial: <u>WB</u>
	ntaat) 🗖 Nat Propont		(1)B
	ntact) Driet Present		
SAMPLE CONDITION:		Yes I	No N/A
Chain-Of-Custody (COC) document(s) received v	vith samples	. 🗹 📃 [	
COC document(s) received complete		. 🖬 🛛	
□ Collection date/time, matrix, and/or # of containers log	ged in based on sample labels		
$\Box$ COC not relinquished. $\Box$ 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 requ	ested		
Analyses received within holding time			
Proper preservation noted on COC or sample con	ntainer	. 2	
Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace		. 🗆 🛛	
Tedlar bag(s) free of condensation		. 🗆 🛛	
	ι	n /	· _
Solid: □4ozCGJ	Sleeve □EnCores <sup>®</sup>	a TerraCores®	BZ0285
Water: □VOA □VOAh □VOAna₂ □125AGB	□125AGBh □125AGBp	□1AGB □1A	GB <b>na₂</b> □1AGB <b>s</b>
□500AGB □500AGJ □500AGJs □250AGB	□250CGB □250CGBs	□1PB □50	0PB □500PB <b>na</b>
□250PB □250PBn □125PB □125PBznna □	100PB □100PBna₂ □	🗆	[]]
Air: □Tedlar <sup>®</sup> □Summa <sup>®</sup> □ Othe	»r: □	Checked/Lat	peled by: <u>UM</u>
Container: C: Clear A: Amber P: Plastic G: Glass J: Jar (W Preservative: h: HCL n: HNO3 na <sub>2</sub> :Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> Na: NaOH p: H <sub>3</sub> F	/ide-mouth) <b>B</b> : Bottle (Narrow-mo PO4 <b>s:</b> H <sub>2</sub> SO4 <b>znna:</b> ZnAc <sub>2</sub> +NaOH f	uth) <b>Revie</b> : Field-filtered <b>Sca</b>	wed by: nned by:

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SOP	T100_	090	(03/13/09)

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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,

Philip Samelle for

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

CA-ELAP ID: 1230 · NELAP ID: 03220CA · CSDLAC ID: 10109 · SCAQMD ID: 93LA0830 7440 Lincoln Way, Garden Grove, CA 92841-1427 · TEL:(714) 895-5494 · FAX: (714) 894-7501





Page 2 of 22

Conestoga-Rovers & Assoc	ciates				Date Rec	eived:				(	01/22/10
1420 80th St. SW. Suite A					Work Orc	ler No:				10-	01-1634
Everett WA 98203-6248					Preparati	on.				FP	A 3550B
					Method:	011.					
					Units:					INV	mg/kg
Project: 11700 NE 160th S	St., Both	ell, WA	1							Pa	ge 1 of 1
Client Sample Number			La M	b Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date Ana	/Time lyzed	QC Batch ID
SO-241809-012010-TM-MW-10-9.5			10-01-1	634-1-A	01/20/10 10:10	Solid	GC 49	01/25/10	01/2 16	26/10 :18	100125B01S
Comment(s): -The sample extract was	s subjected	to Silica C	Gel treati	ment prior 1	to analysis.						
Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	Parameter			Result	<u>RL</u>	DF	<u>Qual</u>
TPH as Diesel Range	ND	5.0	1		TPH as Motor	Oil Range		ND	5.0	1	
Surrogates:	<u>REC (%)</u>	<u>Control</u> Limits	<u>Qua</u>	<u>I</u>							
Decachlorobiphenyl	108	61-145									
SO-241809-012010-TM-MW-10-14.5			10-01-1	634-2-A	01/20/10 10:20	Solid	GC 49	01/25/10	01/2 16	26/10 :34	100125B01S
Quantitation of the unkn -The sample extract was <u>Parameter</u> TPH as Diesel Range <u>Surrogates:</u> Decachlorobiphenyl	subjected <u>Result</u> 5.8 <u>REC (%)</u> 114	carbon(s) i to Silica ( <u>RL</u> 5.0 <u>Control</u> <u>Limits</u> 61-145	in the sa Gel treatr <u>DF</u> 1 <u>Qua</u>	mple was to nent prior f Qual	based upon the to analysis. <u>Parameter</u> TPH as Motor	Oil Range	andard.	<u>Result</u> ND	<u>RL</u> 5.0	<u>DF</u> 1	Qual
SO-241809-012010-TM-SB-8-6			10-01-1	634-3-A	01/20/10 13:10	Solid	GC 49	01/25/10	01/2 17	26/10 :25	100125B01S
Comment(s): -The sample chromatog Quantitation of the unkn -The sample extract was <u>Parameter</u> TPH as Diesel Range <u>Surrogates:</u> Decachlorobiphenyl	raphic patte own hydroo s subjected <u>Result</u> 9000 <u>REC (%)</u> 119	ern for TP carbon(s) i to Silica ( <u>RL</u> 50 <u>Control</u> <u>Limits</u> 61-145	H does r in the sa Gel treatr <u>DF</u> 10 <u>Qua</u>	not match t mple was t ment prior t <u>Qual</u>	he chromatogra based upon the to analysis. <u>Parameter</u> TPH as Motor	phic pattern specified st Oil Range	of the specif andard.	ied standar <u>Result</u> 65	d. <u>RL</u> 5.0	<u>DF</u> 1	Qual
Method Blank			099-12-	-838-60	N/A	Solid	GC 49	01/25/10	01/2 18	25/10 :55	100125B01S
Parameter TPH as Diesel Range Surrogates: Decachlorobiphenyl	<u>Result</u> ND <u>REC (%)</u> 104	<u>RL</u> 5.0 <u>Control</u> <u>Limits</u> 61-145	DF 1 Qua	Qual							

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

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# Page 3 of 22

Page 1 of 2



Conestoga-Rovers & AssociatesDate Received:01/22/101420 80th St. SW, Suite AWork Order No:10-01-1634Everett, WA 98203-6248Preparation:EPA 5035Method:NWTPH-Gx

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

Date/Time Date Lab Sample Date/Time QC Batch ID Matrix Instrument Prepared Analyzed **Client Sample Number** Number Collected 01/24/10 SO-241809-012010-TM-MW-10-9.5 GC 1 01/20/10 100120B08 10-01-1634-1-I 01/20/10 10:10 Solid 16:36 Parameter **Result** <u>RL</u> DF Qual Units TPH as Gasoline ND 0.18 0.71 mg/kg Surrogates: REC (%) Control Limits Qual 1,4-Bromofluorobenzene 85 60-126 01/24/10 SO-241809-012010-TM-MW-10-14.5 GC 1 100120B08 10-01-1634-2-I 01/20/10 10:20 Solid 01/20/10 17:08 Parameter Result RL DF Qual <u>Units</u> TPH as Gasoline ND 0.714 0.18 mg/kg Surrogates: REC (%) **Control Limits** Qual 1,4-Bromofluorobenzene 86 60-126 01/25/10 01/20/10 13:10 SO-241809-012010-TM-SB-8-6 Solid GC 1 01/20/10 100125B02 10-01-1634-3-K 17:39 Parameter Result RL DF Qual <u>Units</u> TPH as Gasoline 6100 620 2500 mg/kg Surrogates: REC (%) Control Limits Qual 1,4-Bromofluorobenzene 98 60-126 01/24/10 Method Blank 01/23/10 100120B08 N/A Solid GC 1 099-12-848-77 12:20 Parameter 1 1 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









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

Date Received: Work Order No: Preparation: Method:

### Page 2 of 2

01/22/10

10-01-1634

EPA 5035

NWTPH-Gx

Project: 11700 NE 160th St., Bothell, WA									
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	<u>Result</u>	<u>RL</u>	DF	<u>Qual</u>	<u>Units</u>				
TPH as Gasoline	ND	10	40		mg/kg				
Surrogates:	<u>REC (%)</u>	Control Limits		<u>Qual</u>					
1,4-Bromofluorobenzene	82	60-126							

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Date Received:

Page 5 of 22

01/22/10

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Conestoga-Rovers & Associates 14 E

1420 80th St. SW, Suite A Everett, WA 98203-6248					Work Orde Preparatic Method: Units:	er No: on:			1 E	0-01-1634 EPA 5035 PA 8260B mg/kg
Project: 11700 NE 160th S	St., Both	ell, WA	۱						F	Page 1 of 2
Client Sample Number			Lat N	o Sample lumber	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Tin Analyze	ne d QC Batch ID
SO-241809-012010-TM-MW-10-9.5			10-01-1	634-1-F	01/20/10 10:10	Solid	GC/MS Z	01/20/10	01/24/1 03:16	0 100123L02
Parameter	Result	<u>RL</u>	DF	Qual	Parameter			Result	<u>RL [</u>	<u>)F Qual</u>
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:	<u>REC (%)</u>	<u>Control</u> Limits	<u>Qual</u>		Surrogates:			<u>REC (%)</u>	<u>Control</u> Limits	Qual
Dibromofluoromethane	102	71-137			1,2-Dichloroetha	ane-d4		109	58-160	
1,4-Bromofluorobenzene	102	66-126			Toluene-d8			100	87-111	
SO-241809-012010-TM-MW-10-14.5			10-01-1	634-2-G	01/20/10 10:20	Solid	GC/MS Z	01/20/10	01/25/1 20:08	0 100125L01
Parameter	Result	<u>RL</u>	DF	Qual	Parameter			<u>Result</u>	<u>RL</u>	<u>)F Qual</u>
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:	<u>REC (%)</u>	<u>Control</u> Limits	<u>Qual</u>		Surrogates:			<u>REC (%)</u>	<u>Control</u> Limits	Qual
Dibromofluoromethane	103	71-137			1,2-Dichloroetha	ane-d4		106	58-160	
1,4-Bromofluorobenzene	101	66-126			Toluene-d8			100	87-111	
SO-241809-012010-TM-SB-8-6			10-01-1	634-3-H	01/20/10 13:10	Solid	GC/MS Z	01/20/10	01/25/1 20:37	0 100125L02
Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	Parameter			<u>Result</u>	<u>RL</u>	<u>)F Qual</u>
Benzene	ND	3.1	3110		Toluene			ND	3.1	3110
Ethylbenzene	230	3.1	3110		Xylenes (total)			920	6.2	3110
Surrogates:	<u>REC (%)</u>	<u>Control</u> Limits	<u>Qual</u>		Surrogates:			<u>REC (%)</u>	<u>Control</u> Limits	Qual
Dibromofluoromethane	103	71-137			1,2-Dichloroetha	ane-d4		104	58-160	
1,4-Bromofluorobenzene	104	66-126			Toluene-d8			101	87-111	
Method Blank			095-01-	025-18,83	1 N/A	Solid	GC/MS Z	01/25/10	01/25/1 15:49	0 100125L01
Parameter	Result	RL	DF	Qual	Parameter			Result	<u>RL</u>	DF Qual
Benzene	ND	0.0010	1		Toluene			ND	0.0010	1
Ethylbenzene	ND	0.0010	1		Xylenes (total)			ND	0.0020	1
Surrogates:	<u>REC (%)</u>	<u>Control</u> Limits	<u>Qual</u>		Surrogates:			<u>REC (%)</u>	<u>Control</u> Limits	Qual
Dibromofluoromethane	102	71-137			1,2-Dichloroetha	ane-d4		97	58-160	
1,4-Bromofluorobenzene	102	66-126			Toluene-d8			101	87-111	

RL - Reporting Limit ,

DF - Dilution Factor Qual - Qualifiers ,

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# Page 6 of 22

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<u>Limits</u>

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Conestoga-Rovers & Associates 1420 8 Evere

Conestoga-Rovers & Asso 1420 80th St. SW, Suite A Everett, WA 98203-6248	ciates				Date Rece Work Ord Preparatic Method: Units:	eived: er No: on:			10 E EP	01/22/10 -01-1634 PA 5035 A 8260B mg/kg
Project: 11700 NE 160th 3	St., Both	ell, VV <i>P</i>	4						Pa	ge 2 of 2
Client Sample Number			La	ab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank			095-01	1-025-18,832	2 N/A	Solid	GC/MS Z	01/23/10	01/24/10 01:20	100123L02
Parameter	<u>Result</u>	<u>RL</u>	DF	Qual	Parameter			Result	<u>RL</u> DE	Qual
Benzene	ND	0.0010	1		Toluene			ND	0.0010 1	
Ethylbenzene	ND	0.0010	1		Xylenes (total)			ND	0.0020 1	
Surrogates:	<u>REC (%)</u>	<u>Control</u> Limits	<u>Qu</u>	al	Surrogates:			<u>REC (%)</u>	Control ( Limits	<u>Qual</u>
Dibromofluoromethane	99	71-137			1,2-Dichloroeth	ane-d4		99	58-160	
1,4-Bromofluorobenzene	98	66-126			Toluene-d8			101	87-111	
Method Blank			095-01	1-025-18,83:	3 N/A	Solid	GC/MS Z	01/25/10	01/25/10 15:20	100125L02
Parameter	<u>Result</u>	<u>RL</u>	DF	Qual	Parameter			Result	<u>RL</u> DF	Qual
Benzene	ND	0.10	100		Toluene			ND	0.10 100	)
Ethylbenzene	ND	0.10	100		Xylenes (total)			ND	0.20 100	0
Surrogates:	<u>REC (%)</u>	Control	<u>Qu</u>	al	Surrogates:			<u>REC (%)</u>	Control (	<u>Qual</u>

1,2-Dichloroethane-d4

Toluene-d8

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

<u>Limits</u>

71-137

66-126

102

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Dibromofluoromethane

1,4-Bromofluorobenzene





Conestoga-Rovers & Associates 1420 80th St. SW, Suite A Everett, WA 98203-6248 Date Received: Work Order No: Preparation: Method:

# 01/22/10 10-01-1634 EPA 3550B EPA 8015B (M)

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

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Δ	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	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	Qualifiers
TPH as Diesel	92	93	64-130	0	0-15	

RPD - Relative Percent Difference, CL - Control Limit

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# A DITED IN ACCORDANCE

Conestoga-Rovers & Associates	Date Received:	N/A
1420 80th St. SW, Suite A	Work Order No:	10-01-1634
Everett, WA 98203-6248	Preparation:	EPA 3550B
	Method:	NWTPH-Dx

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

Quality Control Sample ID	Matrix	Instrument	Date Prepare	Da d Ana	ate yzed	LCS/LCSD Bate Number	ch
099-12-838-60	Solid	GC 49	01/25/1	0 01/2	5/10	100125B01S	
Parameter	<u>LCS %</u>	<u> REC LCSD</u>	%REC	%REC CL	<u>RPD</u>	<u>RPD CL</u>	<b>Qualifiers</b>
TPH as Diesel Range	94	93	3	75-123	1	0-12	

RPD - Relative Percent Difference, CL - Control Limit





# A DEPARTURE IN ACCORDANCE

Conestoga-Rovers & Associates	Date Received:	N/A
1420 80th St. SW, Suite A	Work Order No:	10-01-1634
Everett, WA 98203-6248	Preparation:	EPA 5035
	Method:	NWTPH-Gx

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

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyz	e zed	LCS/LCSD Batc Number	h
099-12-848-77	Solid	GC 1	01/23/10	01/24/ <sup>,</sup>	10	100120B08	
Parameter	<u>LCS %</u>	REC LCSD	<u>%REC %</u>	REC CL	<u>RPD</u>	RPD CL	Qualifiers
TPH as Gasoline	89	90		55-139	1	0-18	

RPD - Relative Percent Difference, CL - Control Limit







Conestoga-Rovers & Associates	Date Received:	N/A
1420 80th St. SW, Suite A	Work Order No:	10-01-1634
Everett, WA 98203-6248	Preparation:	EPA 5035
	Method:	NWTPH-Gx

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyz	e zed	LCS/LCSD Batc Number	h
099-12-848-78	Solid	GC 1	01/25/10	01/25/	10	100125B02	
Parameter	<u>LCS 9</u>	6REC LCSD	<u>%REC %</u>	6REC CL	<u>RPD</u>	RPD CL	Qualifiers
TPH as Gasoline	98	100	)	55-139	2	0-18	

RPD - Relative Percent Difference, CL - Control Limit







Conestoga-Rovers & Associates	Date Received:	N/A
1420 80th St. SW, Suite A	Work Order No:	10-01-1634
Everett, WA 98203-6248	Preparation:	EPA 5035
	Method:	EPA 8260B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Da Analy	te /zed	LCS/LCSD E Number	Batch
095-01-025-18,832	Solid	GC/MS Z	01/23/10	01/23/	10	100123L0	)2
Parameter	LCS %REC	LCSD %REC	<u>%REC CL</u>	ME CL	<u>RPD</u>	RPD CL	<u>Qualifiers</u>
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 :16Total number of ME compounds :0Total number of ME compounds allowed :LCS ME CL validation result :Pass

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RPD - Relative Percent Difference, CL - Control Limit

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Conestoga-Rovers & Associates	Date Received:	N/A
1420 80th St. SW, Suite A	Work Order No:	10-01-1634
Everett, WA 98203-6248	Preparation:	EPA 5035
	Method:	EPA 8260B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Da Analy	te /zed	LCS/LCSD E Number	Batch
095-01-025-18,831	Solid	GC/MS Z	01/25/10	01/25/	10	100125L0	)1
Parameter	LCS %REC	LCSD %REC	<u>%REC CL</u>	ME CL	<u>RPD</u>	RPD CL	<u>Qualifiers</u>
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 :16Total number of ME compounds :1Total number of ME compounds allowed :LCS ME CL validation result :Pass

RPD - Relative Percent Difference, CL - Control Limit

1

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Conestoga-Rovers & Associates	Date Received:	N/A
1420 80th St. SW, Suite A	Work Order No:	10-01-1634
Everett, WA 98203-6248	Preparation:	EPA 5035
	Method:	EPA 8260B

Quality Control Sample ID	Matrix	Instrument	Date strument Prepared		te /zed	LCS/LCSD E Number	Batch
095-01-025-18,833	Solid	GC/MS Z	01/25/10	01/25/	10	100125L0	)2
Parameter	LCS %REC	LCSD %REC	<u>%REC CL</u>	ME CL	<u>RPD</u>	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 :16Total number of ME compounds :1Total number of ME compounds allowed :LCS ME CL validation result :Pass

RPD - Relative Percent Difference, CL - Control Limit

1

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# **Glossary of Terms and Qualifiers**



Work Order Number: 10-01-1634

<u>Qualifier</u>	Definition
*	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.
А	Result is the average of all dilutions, as defined by the method.
В	Analyte was present in the associated method blank.
С	Analyte presence was not confirmed on primary column.
Е	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.
Ν	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.
Х	% 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.

		1 17 DATE: 01/20/10		3 i PAGE: of		TTM 1 1201,0 CONSULTANT PROJECT NO:	DCRAworld.com 241809					1 Yes			Container PID Readings or Laboratory Notes		X - 24/ 20.7 - 27	OPO-02 62 11		Karant (-H CL	TYHA to melude	terto	ce : Emella	Crewer laican	10 17CO		1020	of	05/2/06 Revision
Of Custody Record	INCIDENT # (ENV SER	0 2 0 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0	SAP#	311211121012	C. 41 . 1 Brate GLOBALID NO.:	C I WALL FUNIT	425-212-5100 Cochweigert@		REQUESTED ANALYSIS				178) * (8260) * (8260)	96) <del>8</del> Hd3 Hd3 (00) \$11 111 \$11 111 \$11 111	MHs (80 WTPH- est (808 WTPH-	N N N N									01/20/	Date Date	PUN 112211C		
II Oil Products Chain	Print Bill To Contact Name:	I Jeff Clark 2418	PO #	1 0 - 4 0 2 1 3	TITON NF ICOUNTY 4	EDF DELVERABLE TO (Neme, Company, Office (constant):	Christine Schwalgert, CRA, Everett	The Mult			Ciean IIG ,AI	Gel ( E, TE 3)	020) s; W28() s; M78 s; M78 s; M28 s;	082) 11) 2008) 2008) 2008) 2008) 2008) 2008)	е ца			XXX								11			
Shel	se Check Appropriate Box:				(00 CODE			stren C crower the com	C 24 HOURS C C REEDED ON WEEKEND		SHELL CONTRACT RATE APPLIES		SECEPT VERIFICATION REQUESTED	PRESERVATIVE	MATRIX NO. C NO. C NO. C	50 X X 9			AN X 1					calved by: (Signature)	To FedEx	ceived by: (Signature)	celved by: (Signature)		
00)	Please	L ENV. SERVICES			ssociates	, Everett, WA 98203	Pi Raport loj. 	P2 446-01 FAX 425-212-6199 FAX	eNDAR DAYS);	RMAT 🝾 🔲 UST AGENCY:	ONS OR NOTES :		or Wa Dept. of Ecology MTCA Method A <u>nimum</u> detection limits	SAMPLING	imple Identification DATE TIME	-0120 10 - 7m-My-10-25 01/24 1010	-0:20:0-m-Niw-10-45 1 1020	01 2010- Tm-58-5-6 1310	Blenk ,						-C Mulls	εν	70		
LAB (LOCATI	SPL Houston (		TEST AMERICA		Conestoga-Rovers & /	ADDRESS: 1420 BOth St SW, Suite	PROJECT CONTACT (Hardoopy or P	TELEPHONE: 425-212-5100	TURNAROUND TIME (CALI	🔲 LA - RWQCB REPORT FO	SPECIAL INSTRUCT	VERY IMPORTAN	See Laboratory PM cleanup levels for <u>m</u>		LAB Field Sc use outr	30-241809	2 So-24809	3 Su- 241809-	I Temp					Relinquished by: (Signature)		2	Relinquished by: (Signature)		

(634) (1635)

DZDD Fine FedEx Retrieval Copy	4a     Express Package Service     * In most treations.     Packages up to 150 flbs.       1     FedEx Priority Overnight     5 Kent Priority Overnight     5 Kent Priority Overnight       1     FedEx Priority Overnight     5 Kent Priority Overnight     5 Kent Priority Overnight       1     FedEx Priority Overnight     5 Kent Priority Overnight     5 Kent Priority Overnight       1     FedEx Priority Overnight     5 Kent Priority Overnight     5 Kent Priority Overnight       1     FedEx 20ay     Samuely Priority Overnight     5 Kent Priority Overnight       3     FedEx 20ay     Samuel Priority Overnight     5 Kent Priority Overnight       3     FedEx 20ay     20 FedEx Priority Overnight     5 Kent Priority Overnight       3     FedEx 20ay     20 FedEx 20ay     20 FedEx 20ay       3     FedEx 20ay     20 FedEx 20ay     20 FedEx 20ay       3     FedEx 20ay     20 FedEx 20ay     20 FedEx 20ay       40     Express Federal Resource     Parkanes non-150 His	7       To Edel X. 10.9, Freight.         8       Stateware an Mourt winness SNTIBLY.         8       Fold X. 20.9, Freight.         8       Stood Manages of Annual Annua Annual Annual Annua Annual Annual Annua Annual Annual Annual An	6 Special Handling and Delivery Signature Options           3 SATURDAY DELIVERY           8 No Signature Required           9 No Signature Required           10 Strategeneration           10 Strategeneration <t< th=""><th>No         4         Yes Seperationation         Yes Support Seperationation         No           Dangeneus proti finduluing dy/cleal carnot be shipped in Fedic pactaging or plead a Fedic Equeres Unp Bax         6         Dry log         0         x         kg</th><th>7 Payment Bill to: Senter Sin Recipient 3 Third Party 4 Credit Card A. below disk Recipient 3 Third Party 4 Credit Card 5 Acc No. 6 Acc</th></t<>	No         4         Yes Seperationation         Yes Support Seperationation         No           Dangeneus proti finduluing dy/cleal carnot be shipped in Fedic pactaging or plead a Fedic Equeres Unp Bax         6         Dry log         0         x         kg	7 Payment Bill to: Senter Sin Recipient 3 Third Party 4 Credit Card A. below disk Recipient 3 Third Party 4 Credit Card 5 Acc No. 6 Acc
<b>Fed</b> 로汉。 <i>US Airbill</i> 용기고 9764 8368	11 From Date 1/21/10 Sender's Fedex Sender's L. Strammon Number 12769307 Sender's L. Strammon Phone 805 964-6010 Company / KS COTD.	Address 130 Robin Hill Kd. Deptheorementer	3 To Recipiont's Sample Recent Phone 714 875-54914 Name Company Calscreeter ENV Labs1 Blow Workshow And Dates Will Recent Contractions and Andress Address 714 Mark 1990 Will Recent Contractions and Address 714 400 Lincoln Mark 1990 Mark	We cannot deliver to P.D. boxes or P.D. ZiP codes. Address Print FedEx toration address have if a HOLD option is selected.	Car For France State C.A. ZP 72841

Page 16 of 22

2

Calscience · WORK ORDE	R #: <b>10-(</b>	)1-[[][	534
Anticonmental SAMPLE RECEIPT	ORM	Cooler _	<u> </u>
CLIENT: CRA	DATE	: <u>01/2</u>	2/10
TEMPERATURE: Thermometer ID: SC1 (Criteria: 0.0 °C – 6.0 °C, no	t frozen)		
Temperature _ 2 . 1 °C + 0.5 °C (CF) = _ 2 .6 °C	C 🛛 Blank	🗧 🗆 Sam	ple
Sample(s) outside temperature criteria (PM/APM contacted by:	).		
Sample(s) outside temperature criteria but received on ice/chilled on s	ame day of sam	pling.	
☐ Received at ambient temperature, placed on ice for transport	by Courier.		
Ambient Temperature:	PCBs Only	Initi	ial:
CUSTODY SEALS INTACT:	······································		
v Cooler □ □ No (Not Intact) □ Not Pro	esent □N/	A Init	ial: AD
$\Box$ Sample $\Box$ $\Box$ No (Not Intact) $\Box$ Not Pr	esent	Init	ial:
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	e labels.		
☐ No analysis requested.  ☐ Not relinquished.  ☐ No date/time relinquish	ed.		
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	🗆		Ł
Tedlar bag(s) free of condensation			$\checkmark$
CONTAINER TYPE:			
Solid: □4ozCGJ Ø8ozCGJ □16ozCGJ □Sleeve □EnCores	s® 🖵 TerraCo	ores® 🔎	GOMLPT
Water: □VOA □VOAh □VOAna₂ □125AGB □125AGBh □125A		B⊡1AGB <b>na</b>	₂ □1AGB <b>s</b>
□500AGB □500AGJ □500AGJs □250AGB □250CGB □250	CGBs □1PB	□500PB	]500PB <b>na</b>
□250PB □250PBn □125PB □125PBznna □100PJ □100PJna	2 □ □	] [	]
Air: □Tedlar <sup>®</sup> □Summa <sup>®</sup> Other: □ Trip Blank Lot#:		Checked k	ру: <u> </u>
Container: C: Clear A: Amber P: Plastic G: Glass J: Jar B: Bottle Z: Ziploc/Resealable E	Bag E: Envelope	Reviewed b	ру:
Preservative: h: HCL n: HNO3 na2:Na2S2O3 Na: NaOH p: H3PO4 s: H2SO4 znna: ZnAc2	NaOH f: Field-filtere	ed Scanned b	ру:

1.000



### CERTIFICATE OF ANALYSIS

CLIENT: Ca	lscience Environmental Laboratories, Inc.	DATE:	2/1/2010
744	40 Lincoln Way	ALS JOB#:	1001087
Ga	rden Grove, CA 92841-1427	DATE RECEIVED:	1/20/2010
		WDOE ACCREDITATION #:	C1336

ALS SAMPLE #:	-01	
CLIENT SAMPLE ID:	1/20/2010	SO-241809-012010-TM-SB-8-6
CLIENT PROJECT ID:	11700 NE 1	60th St., Bothell, WA
OLIENT OONTAOT.	Addit Dalig	

DATA RESULTS							
ANALYTE	METHOD	<b>RESULTS</b> *	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 LIMT.

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

APPROVED BY:

Part Bagun

Page 1



### 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.

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Page 2



#### 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	<b>Total Aliphatics</b>	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

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Part Bagun

Page 3


#### 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 DangCLIENT 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:

Port Bagun

Page 4

Radirpuland Dy (Bignature)	Naryamet by: (Stynutra)		00-241809-012010-Th-58-86	LA- RINCOR REPORT FORMAT LIST AGENCY: SPECIAL INSTRUCTIONS OR NOTES : VERY IMPORTANTIII See Laboratory PM for WA Dept. of Ecology MTCA cleanup levels for <u>minimum</u> detection limits Field Sample Identification		1420 BOth St SW, Suite, Everet, WA 98203 Houser contract encours and have by Justan Forshen Xuan 12000	swetna couever Conestoga-Rovera & Associates	LAB (LOCATION) Soussince (Source, CA) Also Houseon Destron Destron Destron
Spenned by: (Bypmisso) Russied by: (Bypmisso)	Posennel by Jepterson		$H \times X$	SAMPLING MATTRX TIME MATTRX I TIME MATTRX I HICL   MNOS   M2504 MONE   OTHER MONT.	2 DAYS 24 HOURS RESULTS NEEDED ON WEEKEND	Deng jfoslænetræner 14.cm Xdongelichtertenee		SHEL FIFELINE     Comes     SHELL FIFELINE
12 0/0 /20				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		Christine Bohweigert CRA, Everett 425-212-5100	ATTE ADDRESSES Blowed and City UTOO NE LOOTA St. Both Ut	Oil Products Chain Of Custody F Print Bill To Cantact Name: Xuan Dang Calscienze 92
0444 0444 0444 0444 0441 0441 0441 0441		H03/43~	XX Report to (	n-Hexane (90715) Nap Halere S (8260) Vap Halere S (8260) Container PID Res		cd.ve/macRAmodd.com 241180		Record       JENT # IEMV SERVICES     DOEX IF NO INCLEMENT IN       - 999     901       - 999     901       - 199     901       - 199     901       - 199     901       - 199     901       - 199     901

record per 5035 low kits

1801091







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,

Philip Samelle for

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

CA-ELAP ID: 1230 · NELAP ID: 03220CA · CSDLAC ID: 10109 · SCAQMD ID: 93LA0830 7440 Lincoln Way, Garden Grove, CA 92841-1427 · TEL:(714) 895-5494 · FAX: (714) 894-7501





Page 2 of 12

01/23/10 Conestoga-Rovers & Associates Date Received: 1420 80th St. SW, Suite A Work Order No: 10-01-1716 Everett, WA 98203-6248 Preparation: EPA 3550B Method: **NWTPH-Dx** Units: mg/kg Project: 11700 NE 160th St., Bothell, WA Page 1 of 1 Date Date/Time Lab Sample Date/Time Matrix QC Batch ID Instrument Client Sample Number Prepared Analyzed Number Collected 01/27/10 SO-241809-012110-TM-SB-9-8 10-01-1716-1-A 01/21/10 Solid 01/26/10 100126B03S GC 46 10:30 04:10 Comment(s): -The sample extract was subjected to Silica Gel treatment prior to analysis. DF DF Parameter <u>Result</u> <u>RL</u> Qual Parameter Result RL Qual TPH as Diesel Range 32 5.0 TPH as Motor Oil Range 93 5.0 1 1 <u>Qual</u> REC (%) Control Surrogates: Limits 129 Decachlorobiphenyl 61-145 SO-241809-012110-TM-MW-11-4 01/27/10 10-01-1716-2-A 01/21/10 Solid GC 46 01/26/10 100126B03S 13:00 04:26 Comment(s): -The sample extract was subjected to Silica Gel treatment prior to analysis. DF RL DF Parameter <u>Result</u> <u>RL</u> Qual Parameter <u>Result</u> Qual TPH as Diesel Range TPH as Motor Oil Range ND ND 5.0 5.0 1 1 REC (%) Control Qual Surrogates: Limits 1 4 1 129 61-145 Decachlorobiphenyl 01/27/10 SO-241809-012210-TM-SB-9-20 10-01-1716-3-A 01/22/10 Solid GC 46 01/26/10 100126B03S 09:30 04:42 Comment(s): -The sample extract was subjected to Silica Gel treatment prior to analysis. <u>RL</u> DF Result <u>RL</u> DF Qual Parameter Result Qual Parameter TPH as Diesel Range ND TPH as Motor Oil Range ND 5.0 5.0 1 1 **Control** Qual **REC (%)** Surrogates: Limits 126 61-145 Decachlorobiphenyl 01/26/10 099-12-838-59 N/A 100126B03S Method Blank Solid GC 46 01/26/10 22:06 DF Parameter **Result** <u>RL</u> <u>Qual</u> TPH as Diesel Range ND 5.0 1 REC (%) Control Qual Surrogates: <u>Limits</u> Decachlorobiphenyl 109 61-145

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

## Page 3 of 12

Page 1 of 1



Conestoga-Rovers & AssociatesDate Received:01/23/101420 80th St. SW, Suite AWork Order No:10-01-1716Everett, WA 98203-6248Preparation:EPA 5035Method:NWTPH-Gx

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

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	<u>Result</u>	<u>RL</u>	DF	<u>Qual</u>	<u>Units</u>			
TPH as Gasoline	ND	0.21	0.828		mg/kg			
Surrogates:	<u>REC (%)</u>	Control Limits		<u>Qual</u>				
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
Parameter	<u>Result</u>	<u>RL</u>	DF	<u>Qual</u>	<u>Units</u>			
TPH as Gasoline	ND	0.17	0.677		mg/kg			
Surrogates:	<u>REC (%)</u>	Control Limits		<u>Qual</u>				
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
Parameter	<u>Result</u>	<u>RL</u>	DF	<u>Qual</u>	<u>Units</u>			
TPH as Gasoline	ND	0.14	0.559		mg/kg			
Surrogates:	<u>REC (%)</u>	Control Limits		<u>Qual</u>				
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
Parameter	<u>Result</u>	<u>RL</u>	DF	<u>Qual</u>	<u>Units</u>			
TPH as Gasoline	ND	0.25	1		mg/kg			
Surrogates:	<u>REC (%)</u>	Control Limits		<u>Qual</u>				
1,4-Bromofluorobenzene	81	60-126						

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





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Date Received:

Page 4 of 12

01/23/10

IN ACCORD

Conestoga-Rovers & Associates 14 E

1420 80th St. SW, Suite A	L .				Work Orde	er No:			1	0-01-17	16
Everett, WA 98203-6248					Preparatic	on:				EPA 503	35
					Method:				E	PA 8260	ЭB
					Units:					mg/	kg
Project: 11700 NE 160th	St., Both	ell, WA	١						F	Page 1 of	f 1
Client Sample Number			Lat N	o Sample Iumber	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Tin Analyze	ne d QC Bato	ch ID
SO-241809-012110-TM-SB-9-8			10-01-1	716-1-F	01/21/10 10:30	Solid	GC/MS Z	01/21/10	01/25/1 21:06	0 100125	L01
Parameter	<u>Result</u>	<u>RL</u>	DF	<u>Qual</u>	Parameter			<u>Result</u>	<u>RL [</u>	<u>F Qual</u>	<u>I</u>
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:	<u>REC (%)</u>	<u>Control</u> Limits	<u>Qual</u>	<u> </u>	Surrogates:			<u>REC (%)</u>	<u>Control</u> Limits	<u>Qual</u>	
Dibromofluoromethane	101	71-137			1,2-Dichloroeth	ane-d4		108	58-160		
1,4-Bromofluorobenzene	103	66-126			Toluene-d8			101	87-111		
SO-241809-012110-TM-MW-11-4			10-01-1	716-2-F	01/21/10 13:00	Solid	GC/MS Z	01/21/10	01/25/1 21:35	0 100125	L01
Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	Parameter			<u>Result</u>	<u>RL [</u>	<u>F Qual</u>	<u> </u>
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	
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control</u> Limits	<u>Qual</u>	<u> </u>	Surrogates:			<u>REC (%)</u>	<u>Control</u> Limits	<u>Qual</u>	
Dibromofluoromethane	101	71-137			1,2-Dichloroeth	ane-d4		107	58-160		
1,4-Bromofluorobenzene	102	66-126			Toluene-d8			99	87-111		
SO-241809-012210-TM-SB-9-20			10-01-1	716-3-F	01/22/10 09:30	Solid	GC/MS Z	01/22/10	01/25/1 22:04	0 100125	L01
Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	Parameter			<u>Result</u>	<u>RL [</u>	<u>F Qual</u>	<u>I</u>
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:	<u>REC (%)</u>	<u>Control</u> Limits	<u>Qual</u>		Surrogates:			<u>REC (%)</u>	<u>Control</u> Limits	<u>Qual</u>	
Dibromofluoromethane	100	71-137			1,2-Dichloroeth	ane-d4		107	58-160		
1,4-Bromofluorobenzene	104	66-126			Toluene-d8			100	87-111		
Method Blank			095-01-	025-18,83	31 N/A	Solid	GC/MS Z	01/25/10	01/25/1 15:49	0 100125	L01
Parameter	Result	<u>RL</u>	DF	Qual	Parameter	_		Result	<u>RL</u>	<u>F Qual</u>	<u> </u>
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</u> Limits	<u>Qual</u>	<u> </u>	Surrogates:			<u>REC (%)</u>	<u>Control</u> Limits	<u>Qual</u>	
Dibromofluoromethane	102	71-137			1,2-Dichloroeth	ane-d4		97	58-160		
1,4-Bromofluorobenzene	102	66-126			Toluene-d8			101	87-111		

RL - Reporting Limit ,

DF - Dilution Factor , Qual - Qualifiers

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Conestoga-Rovers & Associates 1420 80th St. SW, Suite A Everett, WA 98203-6248 Date Received: Work Order No: Preparation: Method:

## 01/23/10 10-01-1716 EPA 3550B 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	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
TPH as Diesel	102	86	64-130	17	0-15	4

RPD - Relative Percent Difference, CL - Control Limit



• FAX: (714) 894-7501



# A DE DIN ACCORDANCE

Conestoga-Rovers & Associates	Date Received:	N/A
1420 80th St. SW, Suite A	Work Order No:	10-01-1716
Everett, WA 98203-6248	Preparation:	EPA 3550B
	Method:	NWTPH-Dx

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

Quality Control Sample ID	Matrix	Instrument	Date Prepare	D ed Ana	ate lyzed	LCS/LCSD Bate Number	h
099-12-838-59	Solid	GC 46	01/26/1	0 01/2	6/10	100126B03S	
Parameter	<u>LCS %</u>	<u> KREC LCSI</u>	D %REC	%REC CL	RPD	RPD CL	<u>Qualifiers</u>
TPH as Diesel Range	98	9	6	75-123	2	0-12	

RPD - Relative Percent Difference, CL - Control Limit





# A DEPARTURE IN ACCORDANCE

Conestoga-Rovers & Associates	Date Received:	N/A
1420 80th St. SW, Suite A	Work Order No:	10-01-1716
Everett, WA 98203-6248	Preparation:	EPA 5035
	Method:	NWTPH-Gx

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

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Da Anal	te ∕zed	LCS/LCSD Batc Number	h
099-12-848-79	Solid	GC 1	01/25/10	01/25	5/10	100125B01	
Parameter	<u>LCS %</u>	<u> KREC LCSD</u>	%REC	%REC CL	RPD	RPD CL	<u>Qualifiers</u>
TPH as Gasoline	98	100	)	55-139	2	0-18	

RPD - Relative Percent Difference, CL - Control Limit







Conestoga-Rovers & Associates	Date Received:	N/A
1420 80th St. SW, Suite A	Work Order No:	10-01-1716
Everett, WA 98203-6248	Preparation:	EPA 5035
	Method:	EPA 8260B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Da Analy	ite ∕zed	LCS/LCSD E Number	Batch
095-01-025-18,831	Solid	GC/MS Z	01/25/10	01/25/	'10	100125L0	)1
Parameter	LCS %REC	LCSD %REC	<u>%REC CL</u>	ME CL	<u>RPD</u>	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 :16Total number of ME compounds :1Total number of ME compounds allowed :LCS ME CL validation result :Pass

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RPD - Relative Percent Difference, CL - Control Limit

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Work Order Number: 10-01-1716

<u>Qualifier</u>	Definition
*	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.
А	Result is the average of all dilutions, as defined by the method.
В	Analyte was present in the associated method blank.
С	Analyte presence was not confirmed on primary column.
Е	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.
Ν	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.
Х	% 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.

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Production     Production <th>IPIENT:</th> <th>Address 1470 8072 St Say</th> <th>Ster 1)</th> <th>To Lopiess Trielight Service Package     Package     FedEx 10a y Freight*     Second business day     unless SATURDAY Delivery is selected,     unless SATURDAY Delivery is selected,     Call for Confination.</th> <th>IS OVER TSO ID )ay Freight so day.** shvery NOT available. ** To most locations:</th>	IPIENT:	Address 1470 8072 St Say	Ster 1)	To Lopiess Trielight Service Package     Package     FedEx 10a y Freight*     Second business day     unless SATURDAY Delivery is selected,     unless SATURDAY Delivery is selected,     Call for Confination.	IS OVER TSO ID )ay Freight so day.** shvery NOT available. ** To most locations:
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Calscience -	WORK ORDER #: 10-01-	775
SAMPLE I	RECEIPT FORM Cooler	<u>/</u> of <u>/</u>
CLIENT: <u>CRA</u>	DATE: <u>01 /-</u>	<u>23/10</u>
TEMPERATURE: Thermometer ID: SC1 (Criteri	a: 0.0 °C – 6.0 °C, not frozen)	
Temperature $\underline{/} \cdot \underline{/} \circ C + 0.5 \circ C (CF)$	= $2 \cdot 3^{\circ}$ Blank $\Box$ Sam	nple
□ Sample(s) outside temperature criteria (PM/APM	contacted by:).	
□ Sample(s) outside temperature criteria but receiv	ed on ice/chilled on same day of sampling.	
□ Received at ambient temperature, placed or	i ice for transport by Courier.	V(-
Ambient l'emperature: L'Air L'Filter L'I	Aetals Only 🛛 PCBs Only Init	
CUSTODY SEALS INTACT:		
Cooler     I      No (Not Ir	.tact) I2∕Not Present □ N/A Ini	tial: <u>V</u>
□ Sample □ □ No (Not Ir	tact) Not Present Init	tial:
SAMPLE CONDITION:	Yes No	N/A
Chain-Of-Custody (COC) document(s) received w		
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	Jed in based on sample labels.	
Sampler's name indicated on COC		Г
Sample container label(s) consistent with COC		m
Sample container(s) intact and good condition		
Correct containers and volume for analyses reque	ested	
Analyses received within holding time		□ .
Proper preservation noted on COC or sample con	tainer	
$\Box$ Unpreserved vials received for Volatiles analysis		
Volatile analysis container(s) free of headspace		
Tedlar bag(s) free of condensation	🗆 🛛	$\checkmark$
CONTAINER TYPE:	4 7	
Solid: □4ozCGJ Ø8ozCGJ □16ozCGJ □	Sleeve □EnCores <sup>®</sup> ÅTerraCores <sup>®</sup> ∠_ <u>(</u>	boml PJ
Water: □VOA □VOAh □VOAna₂ □125AGB	∃125AGBh □125AGBp □1AGB □1AGBna	a₂ □1AGB <b>s</b>
□500AGB □500AGJ □500AGJs □250AGB	□250CGB □250CGBs □1PB □500PB	⊒500PB <b>na</b>
□250PB □250PBn □125PB □125PBznna □	100PJ □100PJna₂ □ □ [	□
Air: □Tedlar <sup>®</sup> □Summa <sup>®</sup> Other: □	rip Blank Lot#: Checked I	by: <u>{</u>
Container: C: Clear A: Amber P: Plastic G: Glass J: Jar B: Bott	e Z: Ziploc/Resealable Bag E: Envelope Reviewed I	by: 125C
Preservative: h: HCL n: HNO3 na <sub>2</sub> :Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> Na: NaOH p: H <sub>3</sub> P	D <sub>4</sub> s: H <sub>2</sub> SO <sub>4</sub> znna: ZnAc <sub>2</sub> +NaOH f: Field-filtered Scanned	by: <u> </u>

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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,

Impa

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

CA-ELAP ID: 1230 · NELAP ID: 03220CA · CSDLAC ID: 10109 · SCAQMD ID: 93LA0830 7440 Lincoln Way, Garden Grove, CA 92841-1427 · TEL:(714) 895-5494 · FAX: (714) 894-7501







Conestoga-Rovers & Assoc	ciates				Date Rec	eived:					10/02/10
1420 80th St. SW, Suite A					Work Order No: 10-10-0130						
Everett, WA 98203-6248					Preparati	on:				EP	A 3550B
					Method:					NW	/TPH-Dx
					Units:						mg/kg
Project: 11700 NE 160th S	St., Both	ell, WA	١							Pa	ge 1 of 2
Client Sample Number			La N	b Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date Ana	e/Time alyzed	QC Batch ID
SO-241809-100110-SR-SB-10-6			10-10-0	)130-1-A	10/01/10 10:30	Solid	GC 27	10/07/10	10/ 04	11/10 4:05	101007B06
Comment(s): -The sample extract was	s subjected	to Silica (	Gel treati	ment prior	to analysis.						
Parameter	Result	<u>RL</u>	DF	<u>Qual</u>	Parameter			<u>Result</u>	<u>RL</u>	DF	<u>Qual</u>
TPH as Diesel Range	ND	5.0	1		TPH as Motor	Oil Range		ND	5.0	1	
Surrogates:	<u>REC (%)</u>	<u>Control</u> Limits	<u>Qua</u>	<u>l</u>							
Decachlorobiphenyl	92	61-145									
SO-241809-100110-SR-SB-10-10			10-10-0	)130-2-A	10/01/10 10:40	Solid	GC 27	10/07/10	10/ 0/	11/10 4:22	101007B06
Comment(s): -The sample extract was	s subjected	to Silica 0	Gel treati	ment prior	to analysis.						
Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	Parameter			<u>Result</u>	<u>RL</u>	DF	<u>Qual</u>
TPH as Diesel Range	ND	5.0	1		TPH as Motor	Oil Range		ND	5.0	1	
Surrogates:	<u>REC (%)</u>	<u>Control</u> Limits	<u>Qua</u>	<u>II</u>							
Decachlorobiphenyl	92	61-145									
SO-241809-100110-SR-SB-10-15			10-10-0	0130-3-A	10/01/10 10:45	Solid	GC 27	10/07/10	10/ 04	11/10 4:41	101007B06
Comment(s): -The sample extract was	s subjected	to Silica (	Gel treati	ment prior	to analysis.						
Parameter	<u>Result</u>	<u>RL</u>	DF	<u>Qual</u>	Parameter			<u>Result</u>	<u>RL</u>	DF	<u>Qual</u>
TPH as Diesel Range	ND	5.0	1		TPH as Motor	Oil Range		ND	5.0	1	
Surrogates:	<u>REC (%)</u>	Control Limits	<u>Qua</u>	<u>ll</u>							
Decachlorobiphenyl	89	61-145									
SO-241809-100110-SR-SB-10-25			10-10-0	)130-4-A	10/01/10 11:00	Solid	GC 27	10/07/10	10/ 04	11/10 4:58	101007B06
Comment(s): -The sample chromatog Quantitation of the unkn	raphic patte	ern for TP carbon(s)	H does r in the sa	not match mple was	the chromatogra based upon the	phic pattern specified st	of the specif andard.	ied standar	d.		
- I he sample extract was	s subjected	to Silica (	jel treati	ment prior	to analysis.			Decult	ы		Qual
	12			Qual							<u>Qual</u>
Surrogates:	1∠ REC (%)	ວ.ບ <u>Control</u>	ו Qua	I	I PT as iniotor	Uli Kange		UN	5.0	1	
<u> </u>		Limits		-							
Decachlorobiphenyl	91	61-145									

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

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Conestoga-Rovers & Asso	ciates				Date Rec	eived:					10/02/10
1420 80th St. SW, Suite A					Work Order No: 10-10-0130						
Everett, WA 98203-6248					Preparati	on:				EP.	A 3550B
,					Method:					NW	/TPH-Dx
					Units:						ma/ka
Project: 11700 NE 160th S	St., Both	ell, WA	4		•••••					Pa	ge 2 of 2
	- ,	- )	1		Det /			Dete	Dete	/Time	<u> </u>
Client Sample Number			La N	b Sample Number	Collected	Matrix	Instrument	Prepared	Ana	lyzed	QC Batch ID
SO-241809-100110-SR-SB-10-35			10-10-0	130-5-A	10/01/10 11:32	Solid	GC 27	10/07/10	10/1 05	1/10 :16	101007B06
Comment(s): -The sample extract wa	s subjected	to Silica	Gel treatr	nent prior	to analysis.						
Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	Parameter			<u>Result</u>	<u>RL</u>	DF	<u>Qual</u>
TPH as Diesel Range	ND	5.0	1		TPH as Motor	Oil Range		ND	5.0	1	
Surrogates:	<u>REC (%)</u>	<u>Control</u>	<u>Qua</u>	<u>l</u>							
Decachlorohinhonyl	100	<u>Limits</u> 61-145									
SO-241809-100110-SR-SB-10-45	100	01 140	10-10-0	130-6-A	10/01/10 13:05	Solid	GC 27	10/07/10	10/1 05	1/10 :34	101007B06
Comment(s): -The sample extract wa	s subjected	to Silica (	Gel treatr	ment 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	<u></u>
Surrogates:	<u>REC (%)</u>	<u>Control</u>	Qua	<u>I</u>					0.0	•	
		<u>Limits</u>									
Decachlorobiphenyl	97	61-145									
SO-241809-100110-SR-SB-10-50			10-10-0	130-7-A	10/01/10 13:25	Solid	GC 27	10/07/10	10/1 05	1/10 :52	101007B06
Comment(s): -The sample extract wa	s subjected	to Silica	Gel treatr	ment prior	to analysis.						
Parameter	Result	<u>RL</u>	DF	<u>Qual</u>	Parameter			Result	<u>RL</u>	DF	<u>Qual</u>
TPH as Diesel Range	ND	5.0	1		TPH as Motor	Oil Range		ND	5.0	1	
Surrogates:	<u>REC (%)</u>	<u>Control</u> Limits	<u>Qua</u>	<u>I</u>							
Decachlorobiphenyl	99	61-145									
Method Blank			099-12·	838-104	N/A	Solid	GC 27	10/07/10	10/1 22	0/10 :26	101007B06
Parameter	Result	RL	DF	Qual							
TPH as Diesel Range	ND	5.0	1	_							
Surrogates:	<u>REC (%)</u>	<u>Control</u> Limits	<u>Qua</u>	<u>I</u>							
Decachlorobiphenvl	92	61-145									

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

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## Page 4 of 24

Page 1 of 3



Conestoga-Rovers & AssociatesDate Received:10/02/101420 80th St. SW, Suite AWork Order No:10-10-0130Everett, WA 98203-6248Preparation:EPA 5035Method:NWTPH-Gx

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

Date/Time Date Lab Sample Date/Time QC Batch ID Matrix Instrument Prepared Analyzed **Client Sample Number** Number Collected 10/07/10 SO-241809-100110-SR-SB-10-6 GC 18 10/01/10 101006B01 10-10-0130-1-I 10/01/10 10:30 Solid 03:10 Parameter **Result** <u>RL</u> 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 10/07/10 SO-241809-100110-SR-SB-10-10 101006B01 10-10-0130-2-I 10/01/10 10:40 Solid GC 18 10/01/10 03:47 Parameter Result <u>RL</u> DF Qual <u>Units</u> TPH as Gasoline 0.20 0.817 2.8 mg/kg Surrogates: REC (%) **Control Limits** Qual 1,4-Bromofluorobenzene 119 60-126 10/07/10 10/01/10 10:45 SO-241809-100110-SR-SB-10-15 Solid GC 18 10/01/10 101006B01 10-10-0130-3-I 04:25 Parameter Result RL DF Qual <u>Units</u> TPH as Gasoline 1.0 0.20 0.818 mg/kg Surrogates: REC (%) Control Limits Qual 1,4-Bromofluorobenzene 99 60-126 10/06/10 SO-241809-100110-SR-SB-10-25 101005B02 10/01/10 11:00 Solid GC 29 10/01/10 10-10-0130-4-J 00:42 Parameter Result RL DF Qual Units TPH as Gasoline 20 79 150 mg/kg Surrogates: **REC (%) Control Limits** Qual 1,4-Bromofluorobenzene 88 60-126

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





## Page 5 of 24

Page 2 of 3



Conestoga-Rovers & AssociatesDate Received:10/02/101420 80th St. SW, Suite AWork Order No:10-10-0130Everett, WA 98203-6248Preparation:EPA 5035Method:NWTPH-Gx

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

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	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>			
TPH as Gasoline	9.2	3.8	15		mg/kg			
Surrogates:	<u>REC (%)</u>	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
Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>			
TPH as Gasoline	ND	0.25	0.99		mg/kg			
Surrogates:	<u>REC (%)</u>	Control Limits		<u>Qual</u>				
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
Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>			
TPH as Gasoline	ND	0.25	0.996		mg/kg			
Surrogates:	<u>REC (%)</u>	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
Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>			
TPH as Gasoline	ND	0.25	1		mg/kg			
Surrogates:	<u>REC (%)</u>	Control Limits		<u>Qual</u>				
1,4-Bromofluorobenzene	91	60-126						

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





## Page 6 of 24

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

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

Date Received: Work Order No: Preparation: Method:

## Page 3 of 3

10-10-0130

**NWTPH-Gx** 

EPA 5035

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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		099-12-848-160	N/A	Solid	GC 29	10/05/10	10/05/10 12:28	101005B02	
Parameter	<u>Result</u>	<u>RL</u>	DF	<u>Qual</u>	<u>Units</u>				
TPH as Gasoline	ND	10	40		mg/kg				
Surrogates:	<u>REC (%)</u>	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	
Parameter	<u>Result</u>	<u>RL</u>	DF	<u>Qual</u>	<u>Units</u>				
TPH as Gasoline	ND	10	40		mg/kg				
Surrogates:	<u>REC (%)</u>	Control Limits		<u>Qual</u>					
1,4-Bromofluorobenzene	91	60-126							

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Date Received:

10/02/10



Conestoga-Rovers & Associates 1 Е

1420 80th St. SW, Suite A					Work Orde	er No:			10	-10-0130
Everett, WA 98203-6248					Preparatio	n:			E	PA 5035
					Method:				EP	A 8260B
					Units:					mg/kg
Project: 11700 NE 160th	St., Both	ell, WA	۸						Pa	ge 1 of 3
Client Sample Number			Lat	o Sample	Date/Time	Matrix	Instrument	Date Prepared	Date/Time Analvzed	QC Batch ID
SO-241809-100110-SR-SB-10-6			10-10-0	130-1-G	10/01/10 10:30	Solid	GC/MS Q	10/01/10	10/04/10 21:12	101004L02
Parameter	Result	RI	DE	Qual	Parameter			Result	RI DE	Qual
Renzene	ND	0.046	<u>16</u> 2	<u>Quui</u>	Toluene				0.046 46	2
Ethylbenzene	0.098	0.046	46.2		Xvlenes (total)			0.25	0.092 46	.2
Surrogates:	<u>REC (%)</u>	<u>Control</u> Limits	Qual	<u>l</u>	Surrogates:			<u>REC (%)</u>	Control Limits	Qual
Dibromofluoromethane	111	79-133			1.2-Dichloroeth	ane-d4		107	71-155	
1,4-Bromofluorobenzene	93	80-120			Toluene-d8			104	80-120	
SO-241809-100110-SR-SB-10-10			10-10-0	130-2-E	10/01/10 10:40	Solid	GC/MS Q	10/01/10	10/05/10 15:12	101005L01
Parameter	<u>Result</u>	<u>RL</u>	DF	<u>Qual</u>	Parameter			Result	<u>RL</u> DE	Qual
Benzene	0.0011	0.00091	0.914		Toluene			0.0022	0.00091 0.9	914
Ethylbenzene	0.010	0.00091	0.914		Xylenes (total)			0.038	0.0018 0.9	914
Surrogates:	<u>REC (%)</u>	<u>Control</u> Limits	<u>Qual</u>	<u>l</u>	Surrogates:			<u>REC (%)</u>	Control Limits	Qual
Dibromofluoromethane	112	79-133			1,2-Dichloroetha	ane-d4		117	71-155	
1,4-Bromofluorobenzene	99	80-120			Toluene-d8			105	80-120	
SO-241809-100110-SR-SB-10-15			10-10-0	130-3-G	10/01/10 10:45	Solid	GC/MS Q	10/01/10	10/04/10 22:12	101004L02
Parameter	<u>Result</u>	<u>RL</u>	DF	<u>Qual</u>	Parameter			<u>Result</u>	<u>RL DF</u>	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:	<u>REC (%)</u>	<u>Control</u> Limits	<u>Qual</u>	<u> </u>	Surrogates:			<u>REC (%)</u>	Control Limits	Qual
Dibromofluoromethane	116	79-133			1,2-Dichloroetha	ane-d4		114	71-155	
1,4-Bromofluorobenzene	93	80-120			Toluene-d8			103	80-120	
SO-241809-100110-SR-SB-10-25			10-10-0	130-4-E	10/01/10 11:00	Solid	GC/MS Q	10/01/10	10/04/10 22:43	101004L02
Parameter	Result	RL	DF	Qual	Parameter			Result	<u>RL</u> 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:	<u>REC (%)</u>	<u>Control</u> <u>Limits</u>	<u>Qual</u>	<u>l</u>	Surrogates:			<u>REC (%)</u>	<u>Control</u> Limits	Qual
Dibromofluoromethane	95	79-133			1,2-Dichloroetha	ane-d4		91	71-155	
1,4-Bromofluorobenzene	94	80-120			Toluene-d8			104	80-120	

DF - Dilution Factor , RL - Reporting Limit ,

Qual - Qualifiers

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Date Received:

10/02/10

IN ACCORD

Conestoga-Rovers & Associates 1 Е

1420 80th St. SW, Suite A					Work Orde	er No:			10	)-10-0130
Everett. WA 98203-6248					Preparatio	n:			E	EPA 5035
					Method:				F	24 8260B
					Linite:				L1	ma/ka
					Offits.				_	111g/10g
Project: 11700 NE 160th \$	St., Both	ell, WA	١						Pa	age 2 of 3
Client Sample Number			Lab N	Sample umber	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-100110-SR-SB-10-35			10-10-01	I30-5-Е	10/01/10 11:32	Solid	GC/MS V V	10/01/10	10/05/10 12:58	101005L01
Parameter	<u>Result</u>	RL	DF	Qual	Parameter			Result	<u>RL DF</u>	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	2
Surrogates:	<u>REC (%)</u>	<u>Control</u> Limits	<u>Qual</u>		Surrogates:			<u>REC (%)</u>	<u>Control</u> Limits	<u>Qual</u>
Dibromofluoromethane	101	79-133			1,2-Dichloroetha	ane-d4		102	71-155	
1,4-Bromofluorobenzene	103	80-120			Toluene-d8			102	80-120	
SO-241809-100110-SR-SB-10-45			10-10-01	130-6-E	10/01/10 13:05	Solid	GC/MS V V	10/01/10	10/05/10 13:23	101005L01
Parameter	<u>Result</u>	<u>RL</u>	DF	Qual	Parameter			<u>Result</u>	<u>RL DF</u>	Qual
Benzene	0.0010	0.00093	0.929		Toluene			0.0049	0.00093 0.5	929
Ethylbenzene	0.0069	0.00093	0.929		Xylenes (total)			0.035	0.0019 0.5	929
Surrogates:	<u>REC (%)</u>	<u>Control</u> Limits	<u>Qual</u>		Surrogates:			<u>REC (%)</u>	<u>Control</u> Limits	<u>Qual</u>
Dibromofluoromethane	102	79-133			1,2-Dichloroetha	ane-d4		100	71-155	
1,4-Bromofluorobenzene	97	80-120			Toluene-d8			100	80-120	
SO-241809-100110-SR-SB-10-50			10-10-01	130-7-C	10/01/10 13:25	Solid	GC/MS V V	10/01/10	10/04/10 18:00	101004L01
Parameter	Result	<u>RL</u>	DF	<u>Qual</u>	Parameter			<u>Result</u>	<u>RL</u> 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 0.5	965
Surrogates:	<u>REC (%)</u>	<u>Control</u> Limits	<u>Qual</u>		Surrogates:			<u>REC (%)</u>	<u>Control</u> Limits	Qual
Dibromofluoromethane	100	79-133			1,2-Dichloroetha	ane-d4		102	71-155	
1,4-Bromofluorobenzene	95	80-120			Toluene-d8			99	80-120	
Method Blank			095-01-0	)25-20,50	5 N/A	Solid	GC/MS Q	10/04/10	10/04/10 14:42	101004L02
Parameter	Result	<u>RL</u>	<u>DF</u>	<u>Qual</u>	Parameter			Result	<u>RL</u> DF	Qual
Benzene	ND	0.10	100		Toluene			ND	0.10 10	00
Ethylbenzene	ND	0.10	100		Xylenes (total)			ND	0.20 10	00
Surrogates:	<u>REC (%)</u>	<u>Control</u> Limits	<u>Qual</u>		Surrogates:			<u>REC (%)</u>	<u>Control</u> Limits	Qual
Dibromofluoromethane	112	79-133			1,2-Dichloroetha	ane-d4		107	71-155	
1,4-Bromofluorobenzene	92	80-120			Toluene-d8			98	80-120	

RL - Reporting Limit ,

DF - Dilution Factor Qual - Qualifiers ,

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Date Received:

10/02/10

IN ACCORD

Conestoga-Rovers & Associates E

1420 80th St. SW, Suite A Everett, WA 98203-6248					Work Orde Preparatio	er No: on:				10- EF	10-0130 PA 5035
					Method: Units:					EPA	A 8260B mg/kg
Project: 11700 NE 160th S	St., Both	ell, WA	١							Pag	ge 3 of 3
Client Sample Number			Lat N	o Sample lumber	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/T Analyz	ime zed	QC Batch ID
Method Blank			095-01-	025-20,50	7 N/A	Solid	GC/MS V V	10/04/10	10/04/ 12:5	/10 0	101004L01
Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	Parameter			<u>Result</u>	<u>RL</u>	DF	Qual
Benzene	ND	0.0010	1		Toluene			ND	0.0010	1	
Ethylbenzene	ND	0.0010	1		Xylenes (total)			ND	0.0020	1	
Surrogates:	<u>REC (%)</u>	<u>Control</u> Limits	<u>Qual</u>		Surrogates:			<u>REC (%)</u>	<u>Control</u> Limits	<u>Q</u>	ual
Dibromofluoromethane	100	79-133			1,2-Dichloroetha	ane-d4		95	71-155		
1,4-Bromofluorobenzene	93	80-120			Toluene-d8			98	80-120		
Method Blank			095-01-	025-20,50	8 N/A	Solid	GC/MS Q	10/05/10	10/05/ 14:4	/10 0	101005L01
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:	<u>REC (%)</u>	<u>Control</u> Limits	<u>Qual</u>		Surrogates:			<u>REC (%)</u>	<u>Control</u> Limits	<u>Q</u>	ual
Dibromofluoromethane	113	79-133			1,2-Dichloroetha	ane-d4		102	71-155		
1,4-Bromofluorobenzene	92	80-120			Toluene-d8			98	80-120		
Method Blank			095-01-	025-20,50	9 N/A	Solid	GC/MS V V	10/05/10	10/05/ 12:1	/10 0	101005L01
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:	<u>REC (%)</u>	<u>Control</u> Limits	<u>Qual</u>		Surrogates:			<u>REC (%)</u>	<u>Control</u> Limits	<u>Q</u>	ual
Dibromofluoromethane	98	79-133			1,2-Dichloroetha	ane-d4		94	71-155		
1,4-Bromofluorobenzene	93	80-120			Toluene-d8			98	80-120		
Method Blank			095-01-	025-20,51	0 N/A	Solid	GC/MS V V	10/05/10	10/05/ 11:4	/10 4	101005L02
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:	<u>REC (%)</u>	<u>Control</u> Limits	<u>Qual</u>		Surrogates:			<u>REC (%)</u>	<u>Control</u> Limits	<u>Q</u>	ual
Dibromofluoromethane	96	79-133			1,2-Dichloroetha	ane-d4		95	71-155		
1,4-Bromofluorobenzene	98	80-120			Toluene-d8			100	80-120		

RL - Reporting Limit ,

DF - Dilution Factor , Qual - Qualifiers

MM





Conestoga-Rovers & Associates 1420 80th St. SW, Suite A Everett, WA 98203-6248 Date Received: Work Order No: Preparation: Method:

## 10/02/10 10-10-0130 EPA 3550B NWTPH-Dx

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

Quality Control Sample ID	Matrix	Instrument	Date Prepared	ŀ	Date Analyzed	MS/MSD Batch Number
10-10-0132-6	Solid	GC 27	10/07/10		10/10/10	101007S06
<u>Parameter</u>	MS %REC	MSD %REC	<u>%REC CL</u>	<u>RPD</u>	RPD CL	<u>Qualifiers</u>
TPH as Diesel Range	98	100	64-130	1	0-15	

RPD - Relative Percent Difference, CL - Control Limit





# A DO THE IN ACCORDANCE

Conestoga-Rovers & Associates	Date Received:	N/A
1420 80th St. SW, Suite A	Work Order No:	10-10-0130
Everett, WA 98203-6248	Preparation:	EPA 3550B
	Method:	NWTPH-Dx

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

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Da Anal	ite yzed	LCS/LCSD Bate Number	h
099-12-838-104	Solid	GC 27	10/07/10	10/10	)/10	101007B06	
Parameter	<u>LCS %</u>	REC LCSD	%REC	%REC CL	<u>RPD</u>	RPD CL	Qualifiers
TPH as Diesel Range	97	105	5	75-123	9	0-12	

RPD - Relative Percent Difference, CL - Control Limit





# A DO THE IN ACCORDANCE

Conestoga-Rovers & Associates	Date Received:	N/A
1420 80th St. SW, Suite A	Work Order No:	10-10-0130
Everett, WA 98203-6248	Preparation:	EPA 5035
	Method:	NWTPH-Gx

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

Quality Control Sample ID	Matrix	Instrument	Da Prepa	te ared Ai	Date nalyzed	LCS/LCSD Bate Number	ch
099-12-848-160	Solid	GC 29	10/05	5/10 10	/05/10	101005B02	
Parameter	LCS %	<u> KREC LC</u>	SD %REC	<u>%REC CL</u>	<u>RPD</u>	RPD CL	<b>Qualifiers</b>
TPH as Gasoline	114		113	55-139	0	0-18	

RPD - Relative Percent Difference, CL - Control Limit





# A DITED IN ACCORDANCE

Conestoga-Rovers & Associates	Date Received:	N/A
1420 80th St. SW, Suite A	Work Order No:	10-10-0130
Everett, WA 98203-6248	Preparation:	EPA 5035
	Method:	NWTPH-Gx

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

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Dat Analy:	e zed	LCS/LCSD Batc Number	h
099-12-848-159	Solid	GC 18	10/06/10	10/06/	10	101006B01	
Parameter	LCS %	<u> KREC LCSD</u>	<u>%REC                                    </u>	6REC CL	<u>RPD</u>	RPD CL	Qualifiers
TPH as Gasoline	90	89	)	55-139	1	0-18	

RPD - Relative Percent Difference, CL - Control Limit





# A DITED IN ACCORDANCE

Conestoga-Rovers & Associates	Date Received:	N/A
1420 80th St. SW, Suite A	Work Order No:	10-10-0130
Everett, WA 98203-6248	Preparation:	EPA 5035
	Method:	NWTPH-Gx

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

Quality Control Sample ID	Matrix	Instru	ment	Date Prepared	Da Analy	te ⁄zed	LCS/LCSD Batc Number	h
099-12-848-161	Solid	GC	18	10/07/10	10/08	/10	101007B01	
Parameter	LCS %	<u>REC</u>	LCSD %R	EC	%REC CL	<u>RPD</u>	RPD CL	Qualifiers
TPH as Gasoline	90		91		55-139	1	0-18	

RPD - Relative Percent Difference, CL - Control Limit







Conestoga-Rovers & Associates	Date Received:	N/A
1420 80th St. SW, Suite A	Work Order No:	10-10-0130
Everett, WA 98203-6248	Preparation:	EPA 5035
	Method:	EPA 8260B

Quality Control Sample ID	Matrix	Instr	rument	Date Prepare	ed	Date Analyzed	LCS/LCSD Bate Number	ch
095-01-025-20,507	Solid	GC/N	ISVV	10/04/1	0	10/04/10	101004L01	
Parameter	LCS S	%REC	LCSD %	<u>REC</u>	<u>%REC C</u>	L <u>RPD</u>	RPD CL	<b>Qualifiers</b>
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

RPD - Relative





Conestoga-Rovers & Associates	Date Received:	N/A
1420 80th St. SW, Suite A	Work Order No:	10-10-0130
Everett, WA 98203-6248	Preparation:	EPA 5035
	Method:	EPA 8260B

Quality Control Sample ID	Matrix	Instrument		Date Prepared	A	Date Analyzed	LCS/LCSD Bate Number	h
095-01-025-20,505	Solid	GC/MS	Q	10/04/10	1	0/04/10	101004L02	
Parameter	LCS %	REC I	LCSD %R	EC 1	%REC CL	<u>RPD</u>	RPD CL	<u>Qualifiers</u>
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

RPD - Relativ





Conestoga-Rovers & Associates	Date Received:	N/A
1420 80th St. SW, Suite A	Work Order No:	10-10-0130
Everett, WA 98203-6248	Preparation:	EPA 5035
	Method:	EPA 8260B

Quality Control Sample ID	Matrix	Instrument		ate oared	Date Analyzed	LCS/LCSD Bat Number	:h	
095-01-025-20,508	Solid	GC/MS Q	10/0	05/10	10/05/10	101005L01		
Parameter	<u>LCS %</u>	REC LC	SD %REC	%REC	CL RPD	RPD CL	<b>Qualifiers</b>	
Benzene	105		106	80-12	.0 1	0-20		
Ethylbenzene	106		107	80-12	.0 1	0-20		
Toluene	108		108	80-12	0 0	0-20		
Methyl-t-Butyl Ether (MTBE)	105		107	70-12	4 2	0-20		
Tert-Butyl Alcohol (TBA)	92		91	73-12	1 1	0-20		
Diisopropyl Ether (DIPE)	108		108	69-12	9 0	0-20		
Ethyl-t-Butyl Ether (ETBE)	108		111	70-12	4 3	0-20		
Tert-Amyl-Methyl Ether (TAME)	106		107	74-12	2 1	0-20		
Ethanol	82		90	51-13	5 10	0-27		

RPD - Relative Percent Difference, CL - Control Limit





Conestoga-Rovers & Associates	Date Received:	N/A
1420 80th St. SW, Suite A	Work Order No:	10-10-0130
Everett, WA 98203-6248	Preparation:	EPA 5035
	Method:	EPA 8260B

Quality Control Sample ID	Matrix	Instrument		Date Prepare	ed	Date Analyzed	LCS/LCSD Bate Number	:h	
095-01-025-20,509	Solid	GC/N	ISVV	10/05/1	0	10/05/10	101005L01		
Parameter	LCS S	%REC	LCSD %	REC	<u>%REC C</u>	<u>L</u> <u>RPD</u>	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





Conestoga-Rovers & Associates	Date Received:	N/A
1420 80th St. SW, Suite A	Work Order No:	10-10-0130
Everett, WA 98203-6248	Preparation:	EPA 5035
	Method:	EPA 8260B

Quality Control Sample ID	Matrix	Instrument		Date Prepare	ed	Date Analyzed	LCS/LCSD Bate Number	h	
095-01-025-20,510	Solid	GC/N	ISVV	10/05/1	0	10/05/10	101005L02		
Parameter	LCS S	%REC	LCSD %	REC	<u>%REC C</u>	<u>L</u> <u>RPD</u>	RPD CL	<b>Qualifiers</b>	
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



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Work Order Number: 10-10-0130

0	
<u>Qualifier</u> *	Definition 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.
В	Analyte was present in the associated method blank.
Е	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.
Х	% 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.

Fedex. US Airbill 8737 7655 6453 0200 Express 1 From 4a Express Package Service Date 011/10 FedEx Standard Overnant Sender's FedEx 01 FedEx Priority Overnight Account Number Sender's Christina McClelland Phone 425 563-6514 03 FedEx 2Day Second business sss Satvei 20 Constant - Rovers fasser. 4b Express Freight Service Ander Company fedex.com 1.800.GoFedEx 1.800.463.3339 FedEx 1Day Freight Next business day.<sup>44</sup> Friday be delivered on Monday unle 70 Address 20518 44th AVE W, Swith 190 s SATURDAY FedEx 1Day Freight Booking No he delivered on Moi Delivery is selected Dept/Floor/Suite/Room FedEx 2Day Freight 80 nts will be delivered 83 FedEx 3Day Freight State WA ZIP 108-36 S 689.55 1.11 S SATI IRO City LYNNWOOC 5 Packaging • Declared value limit \$50 02 FedEx Pak\* Includes FedEx Sr FedEx Large Pak. 241209 06 FedEx Envelope\* 04 FedEx Tube 03 FedEx Box 2 Your Internal Billing Reference all Pak and 3 To Special Handling and Delivery Signature Options 6 sample (onfrol 895-549 Recipient's Name Phone 714 To3 SATURDAY DELIVERY alscience Environ 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 Company 34 HOLD Weekday 1440 Lincoln Way Does this shipment contain dangerous goods? location addres RED. NOT evail Address One box must be checked. X No 04 Aspects Declaration Aspects Declaration 06 Dry Ice Shipper's Declaration 06 Dry Ice S, UN 1845 HOLD Saturday Address Use this line for the HOLD location address or for continuation of your shipping addres Danger or place ous goods (including dry ice) cannot be shipped in FedEx packaging ad in a FedEx Express Drop Box. Cargo Aircraft 7 Payment Bill to: 4 284 Anden ONDV0 A State Sender Acct. No. in Se 2 Recipient 3 Third Party 5 4 Credit Card 1 2 8 4 8 4 Credit Cerd Auth <sup>†</sup>Our liability is limited to \$100 unless you declare a higher value. See the current FedEx Service Guide for details F Rev. Date 2/10 • Part #158281 • @1994-2010 FedEx • PRINTED IN U.S.A. SRY
				Page	23 of 24
Calscience Epvironmental	WOR	K ORDER #: '	10-10	-01	30
Laboratories, Inc.	AMPLE REC	EIPT FOR	RM c	;ooler <u> </u>	_ of _/
CLIENT: <u>CRA</u>			DATE:	10/02	/ 10
TEMPERATURE: Thermometer II	): SC1 (Criteria: 0.0 °C ⋅	- 6.0 °C, not frozen)			
Temperature $3.6°C+$	• <b>0.5</b> ° <b>C</b> (CF) = <u>4</u>	_•_/_°C 🗆	Blank	☐ Sample	Э
□ Sample(s) outside temperature c	riteria (PM/APM contacte	ed by:).			
□ Sample(s) outside temperature c	riteria but received on ice	e/chilled on same da	y of sampliı	ng.	
□ Received at ambient temperat	ure, placed on ice for	transport by Cou	ırier.		
Ambient Temperature:	□ Filter			Initial:	TN
•					
CUSTODY SEALS INTACT:					
□ Cooler □	□ No (Not Intact)	☑ Not Present	□ N/A	Initial	$\frac{TN}{TN}$
□ Sample □	No (Not Intact)	Not Present		Initial	TN
				No	
Chain Of Custody (COC) desumen	t(c) received with sam		62		
COC degument(a) received comple		pies			
				Z	
Collection date/time, matrix, and/or #	tof containers logged in bas	sed on sample labels.			
Li No analysis requested.	Inquished. LI No date/ti	me relinquisnea.		-	-
Sampler's name indicated on COC		••••••			
Sample container label(s) consistent			2 7		
Broner container(s) infact and goo		lostod			
Analyses received within holding fi	me				
nH / Residual Chlorine / Dissolved	Sulfide received within	24 hours			
Proper preservation noted on COC	or sample container	24 110013		П	
			2		<b>L</b>
Volatile analysis container(s) free o	of headsnace		Г		
Tedlar bag(s) free of condensation	110000000000000000000000000000000000000				
CONTAINER TYPE:					E
Solid: □4ozCGJ ☑8ozCGJ □1	6ozCGJ □Sleeve (_	) □EnCores	® ⊿Terra	Cores® Z	202P)
Water: □VOA □VOAh □VOAna	₂ □125AGB □125AG	GBh □125AGBp	□1AGB [	∃1AGB <mark>na</mark> ₂ [	∃1AGB <b>s</b>
□500AGB □500AGJ □500AGJ	s □250AGB □250C	GB 250CGBs	□1PB [	⊐500PB □5	00PB <b>na</b>
□250PB □250PBn □125PB □1	25PB <b>znna</b> □100PJ	□100PJ <b>na</b> ₂ □	□	□_	
Air: □Tedlar <sup>®</sup> □Summa <sup>®</sup> Othe	er: □ Trip Bla	nk Lot#:	_Labeled/0	Checked by:	TN
Container: C: Clear A: Amber P: Plastic G: Preservative: h: HCL n: HNO <sub>3</sub> na <sub>2</sub> :Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	Glass J: Jar B: Bottle Z: Ziple na: NaOH p: H <sub>3</sub> PO <sub>4</sub> s: H <sub>2</sub> SC	oc/Resealable Bag E: E D <sub>4</sub> <b>znna:</b> ZnAc <sub>2</sub> +NaOH <b>f</b> :	nvelope <b>F</b> Field-filtered	Reviewed by: Scanned by:	WSC

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										653		PAGE: 1 of 1
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s Dth St SW, Súlte , Everett, WA 98203				EOF VEL	VERABLE TO (Nam	. Company, Office Lo	attor);	PHONE NO		EAML:		CALSONET NO.
Governance of Freedom Land				Christ	Ine Schweig R NAVE(8) (Prim):	ert, CRA, Er	erett	425-21	2-5100	cschweige	1@CRAworld.c	om   - · · · · · · · · · · · · · · · · · ·
ME 425-212-5100 425-212-5199	CMCC	lellandec	sawor 122	2 2 2	ender	4 X	4 S Ku	للفركر ك				0-10-0130
ROUND TIME (CALENDAR DAYS): DARD (14 DAY) C S DAYS 3 DAYS	🗌 2 DAYS	C 24 HOURS	RESULTS NEEDED ON WEEK	END.	>			-	EQUESTI	D ANALYSIS		
RWQCB REPORT FORMAT					'30 							TEMPERATURE ON RECEIPT
IAL INSTRUCTIONS OR NOTES : final report to Shell.Lab.Billing@crav	world.com	SHELL CONTRACT RA	ITE APPLIES Ent Rate Applies	······	E, TBA, DIF			(8)				້ບ
SPL PM for WA Dept. of Ecology MTC/ rup levels for minimum detection limit	A Method A ts	S RECEIPT VENIFICATI	on requested		6) (8) 87M (88)	) E (85601	) (2050)	er (8260 SIW)	H	(8120		
	SAMPLING	E.	ESERVATIVE	x9-	-Dx /	2113) 2608 2608	) bse (2808	11   n		6) eu		
Field Sample Identification	DATE TIME	MATRIX HCL HNO3	H2SO4 NONE OTHER	Con or Find	H9TWN 3) X3T8 5 Oxyge	EDC (8) EDC (8)	) listoT PCBs ({	PAHs (		isxeH-n		Container PID Readings or Laboratory Notes
X-241877-100 110-58-53-11-6	1e(1 1030	So	*	9 X	ХX							
5-241979-100105R5B-10-10	1046	So	X	9 N	ΥX							
2-241 224-00 110-58 59-10-15	1045	ŝo	X	9 N	X							
-241507-100110-5R 58-10-25	1100	50	X	7 7	X							
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-241869-601 b -52 -38 11-54	20C)	50	×	X	א א							
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2-11502-10-5R-5 B-10-50	idi 1325		×	ア	X X							
									-			
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												05/2/08 Revision

Page 24 of 24

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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,

Impa

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

CA-ELAP ID: 1230 · NELAP ID: 03220CA · CSDLAC ID: 10109 · SCAQMD ID: 93LA0830 7440 Lincoln Way, Garden Grove, CA 92841-1427 · TEL:(714) 895-5494 · FAX: (714) 894-7501





Page 2 of 19

J J J J J	-Rovers & Asso	ciates			Date Rec	eived:					10/02/1
1420 80th S	St. SW, Suite A				Work Ord	der No:				10-	10-013
Everett, WA	A 98203-6248				Preparati	on:				EP.	A 3550
					Method:					NW	TPH-D
					Units:						mg/k
Project: 11	700 NE 160th \$	St., Both	ell, WA	A						Pa	ge 1 of :
Niont Sample N	umbor			Lab Sample	Date/Time	Matrix	Instrument	Date	Date	e/Time	QC Batch
SO-241809-10	0110-SR-SB-11-6			10-10-0131-1-A	10/01/10	Solid	GC 27	10/07/10	10/	/11/10	101007B
					00.50				0.	2.00	
Comment(s): -	The sample chromatog Quantitation of the unkr	graphic patte	ern for TP carbon(s)	H does not match in the sample was	the chromatogra based upon the	phic pattern specified sta	of the specif andard.	ied standar	rd.		
-	i ne sample extract wa	IS SUDJECTED	I to Silica	Jei treatment prior	to analysis.			Docult	ы	DE	Qual
	<b>Den en</b>	<u>Result</u>			<u>Parameter</u>			<u>Resuit</u>			Qual
PH as Diesei F	Range		5.0 Control		IPH as iviotor	Oll Range		8.1	5.0	1	
urrogates:		<u>REC (%)</u>	Limits	Quai							
ecachlorobiphe	enyl	92	61-145								
SO-241809-10	0110-SR-SB-11-10			10-10-0131-2-A	10/01/10 09:04	Solid	GC 27	10/07/10	10/ 0	'11/10 2:17	101007E
omment(s): -	The sample chromatog	graphic patte	ern for TP	H does not match	the chromatogra	phic pattern	of the specif	ied standa	rd.		
C	Quantitation of the unkr	nown hydrod	carbon(s)	in the sample was	based upon the	specified sta	andard.				
-	The sample extract wa	is subjected	to Silica	Gel treatment prior	to analysis.			<b>D</b> <i>V</i>			<b>.</b> .
<u>arameter</u>		Result	<u>RL</u>	<u>DF</u> <u>Qual</u>	Parameter			Result	<u>RL</u>	DF	Qual
PH as Diesel F	Range	45	5.0 Constant	1	TPH as Motor	Oil Range		ND	5.0	1	
Surrogates:		REC (%)	Control	Qual							
<u>arrogatoo.</u>			Limits								
ecachlorobiphe	enyl	92	<u>Limits</u> 61-145								
ecachlorobiphe SO-241809-10	enyl 00110-SR-SB-11-15	92	<u>Limits</u> 61-145	10-10-0131-3-A	10/01/10 09:07	Solid	GC 27	10/07/10	10/ 0	/11/10 2:35	101007E
Decachlorobiphe SO-241809-10	enyl 00110-SR-SB-11-15 The sample chromator	92 graphic patte	Limits 61-145 ern for TP	10-10-0131-3-A	<b>10/01/10</b> <b>09:07</b> the chromatogra	Solid	GC 27	<b>10/07/10</b>	<b>10/</b> 0: rd.	/11/10 2:35	101007E
Decachlorobiphe SO-241809-10 Comment(s): - C	enyl 00110-SR-SB-11-15 The sample chromatog Quantitation of the unkr The sample extract wa	92 graphic patte nown hydroo as subjected	Limits 61-145 ern for TP carbon(s) I to Silica (	10-10-0131-3-A H does not match in the sample was Gel treatment prior	<b>10/01/10</b> <b>09:07</b> the chromatogra based upon the to analysis.	Solid phic pattern specified sta	GC 27 of the specif	<b>10/07/10</b> ied standar	<b>10/</b> 0. rd.	11/10 2:35	101007E
Decachlorobiphe SO-241809-10 Comment(s): - Comment(s): - Comment(s): - Comment(s): -	enyl 00110-SR-SB-11-15 The sample chromatog Quantitation of the unkr The sample extract wa	92 graphic patte nown hydroo as subjected <u>Result</u>	Limits 61-145 ern for TP carbon(s) I to Silica ( <u>RL</u>	10-10-0131-3-A H does not match in the sample was Gel treatment prior DF Qual	10/01/10 09:07 the chromatogra based upon the to analysis. Parameter	Solid phic pattern specified sta	GC 27 of the specif andard.	<b>10/07/10</b> ied standar	10/ 0: rd. <u>RL</u>	11/10 2:35 DF	<b>101007E</b>
Comment(s): - Comment(s): - Comment Comment - Comment	enyl 00110-SR-SB-11-15 The sample chromatog Quantitation of the unkr The sample extract wa	92 graphic patter nown hydroo as subjected <u>Result</u> 19	Limits 61-145 ern for TP carbon(s) to Silica ( <u>RL</u> 5.0	10-10-0131-3-A         H does not match in the sample was         Get treatment prior         DF       Qual         1	10/01/10 09:07 the chromatogra based upon the to analysis. <u>Parameter</u> TPH as Motor	Solid phic pattern specified sta Oil Range	GC 27 of the specif andard.	<b>10/07/10</b> ied standar <u>Result</u> ND	10/ 0: rd. <u>RL</u> 5.0	11/10 2:35 DF 1	<b>101007E</b>
Comment(s): - arameter PH as Diesel F urrogates:	enyl 00110-SR-SB-11-15 The sample chromatog Quantitation of the unkr The sample extract wa Range	92 graphic patter hown hydroo as subjected <u>Result</u> 19 <u>REC (%)</u>	Limits 61-145 ern for TP carbon(s) to Silica ( <u>RL</u> 5.0 <u>Control</u>	10-10-0131-3-A         H does not match in the sample was         Gel treatment prior         DF       Qual         1         Qual	<b>10/01/10</b> <b>09:07</b> the chromatogra based upon the to analysis. <u>Parameter</u> TPH as Motor	Solid phic pattern specified sta Oil Range	GC 27 of the specif andard.	<b>10/07/10</b> ried standar <u>Result</u> ND	10/ 0. rd. <u>RL</u> 5.0	11/10 2:35 DF 1	<b>101007E</b>
Comment(s): - Comment(s): - Comment Co	enyl 00110-SR-SB-11-15 The sample chromatog Quantitation of the unkr The sample extract wa Range	92 graphic patter hown hydroc as subjected <u>Result</u> 19 <u>REC (%)</u>	Limits 61-145 ern for TP carbon(s) to Silica ( <u>RL</u> 5.0 <u>Control</u> Limits	<b>10-10-0131-3-A</b> H does not match         in the sample was         Gel treatment prior <u>DF</u> Qual         1         Qual	<b>10/01/10</b> <b>09:07</b> the chromatogra based upon the to analysis. <u>Parameter</u> TPH as Motor	Solid phic pattern specified sta Oil Range	GC 27 of the specif andard.	<b>10/07/10</b> iied standar <u>Result</u> ND	10/ 0 rd. <u>RL</u> 5.0	11/10 2:35 DF 1	<b>101007E</b>
Comment(s): Comment(s): Comment	enyl 00110-SR-SB-11-15 The sample chromatog Quantitation of the unkr The sample extract wa Range enyl	92 graphic patte nown hydrod as subjected <u>Result</u> 19 <u>REC (%)</u> 91	Limits 61-145 ern for TP carbon(s) to Silica ( <u>RL</u> 5.0 <u>Control</u> <u>Limits</u> 61-145	10-10-0131-3-A H does not match in the sample was Gel treatment prior <u>DF</u> Qual 1 Qual	10/01/10 09:07 the chromatogra based upon the to analysis. <u>Parameter</u> TPH as Motor	Solid aphic pattern specified sta Oil Range	GC 27 of the specif andard.	<b>10/07/10</b> Tied standar <u>Result</u> ND	10/ 0. rd. <u>RL</u> 5.0	11/10 2:35 DE 1	Qual
Comment(s): Comment(s): Comment	enyl 00110-SR-SB-11-15 The sample chromatog Quantitation of the unkr The sample extract wa Range enyl 00110-SR-SB-11-25	92 graphic patte nown hydroc is subjected <u>Result</u> 19 <u>REC (%)</u> 91	Limits 61-145 ern for TP carbon(s) to Silica ( <u>RL</u> 5.0 <u>Control</u> Limits 61-145	10-10-0131-3-A         H does not match         in the sample was         Gel treatment prior         DF       Qual         1         Qual	10/01/10 09:07 the chromatogra based upon the to analysis. <u>Parameter</u> TPH as Motor 10/01/10 09:20	Solid aphic pattern specified sta Oil Range Solid	GC 27 of the specif andard. GC 27	<b>10/07/10</b> ied standar <u>Result</u> ND <b>10/07/10</b>	10/ or rd. <u>RL</u> 5.0 <b>10/</b> 0	11/10 2:35 DE 1 1 11/10 3:11	101007E
Decachlorobiphe SO-241809-10 Comment(s): - Comment(s): - PH as Diesel F Surrogates: Decachlorobiphe SO-241809-10 Comment(s): -	enyl 00110-SR-SB-11-15 The sample chromatog Quantitation of the unkr The sample extract wa Range enyl 00110-SR-SB-11-25 The sample chromatog	92 graphic patte nown hydrod is subjected <u>Result</u> 19 <u>REC (%)</u> 91	Limits 61-145 ern for TP carbon(s) to Silica ( <u>RL</u> 5.0 <u>Control</u> Limits 61-145	10-10-0131-3-A         H does not match         in the sample was         Gel treatment prior         DF       Qual         1         Qual             10-10-0131-4-A    H does not match	10/01/10 09:07 the chromatogra based upon the to analysis. <u>Parameter</u> TPH as Motor 10/01/10 09:20 the chromatogra	Solid aphic pattern specified sta Oil Range Solid	GC 27 of the specif andard. GC 27 of the specif	10/07/10 ied standar <u>Result</u> ND 10/07/10	10/ 0. rd. <u>RL</u> 5.0 10/ 0.	11/10 2:35 DE 1 1 11/10 3:11	101007E
Decachlorobiphe SO-241809-10 Comment(s): - Carameter PH as Diesel F Surrogates: Decachlorobiphe SO-241809-10 Comment(s): - Comment(s): -	enyl 00110-SR-SB-11-15 The sample chromatog Quantitation of the unkr The sample extract wa Range enyl 00110-SR-SB-11-25 The sample chromatog Quantitation of the unkr The sample extract wa	92 graphic patte nown hydroo is subjected <u>Result</u> 19 <u>REC (%)</u> 91 graphic patte nown hydroo is subjected	Limits 61-145 ern for TP carbon(s) to Silica ( <u>RL</u> 5.0 <u>Control</u> Limits 61-145 ern for TP carbon(s) to Silica (	10-10-0131-3-A         H does not match         in the sample was         Gel treatment prior         DF       Qual         1         Qual             10-10-0131-4-A    H does not match in the sample was Gel treatment prior	10/01/10 09:07 the chromatogra based upon the to analysis. <u>Parameter</u> TPH as Motor 10/01/10 09:20 the chromatogra based upon the to analysis.	Solid aphic pattern specified sta Oil Range Solid aphic pattern specified sta	GC 27 of the specif andard. GC 27 of the specif andard.	10/07/10 ied standar <u>Result</u> ND 10/07/10	10/ 0. rd. <u>RL</u> 5.0 <b>10/</b> 0; rd.	11/10 2:35 DF 1 1 11/10 3:11	101007E
Decachlorobiphe SO-241809-10 Comment(s): - Comment(s): - PH as Diesel F Surrogates: Decachlorobiphe SO-241809-10 Comment(s): - Comment(s): - Comment(s): - Comment(s): - Comment(s): -	enyl 00110-SR-SB-11-15 The sample chromatog Quantitation of the unkr The sample extract wa Range enyl 00110-SR-SB-11-25 The sample chromatog Quantitation of the unkr The sample extract wa	92 graphic patte nown hydroc is subjected <u>Result</u> 19 <u>REC (%)</u> 91 graphic patte nown hydroc as subjected <u>Result</u>	Limits 61-145 ern for TP carbon(s) to Silica ( <u>RL</u> 5.0 <u>Control</u> Limits 61-145 ern for TP carbon(s) to Silica ( <u>RL</u>	10-10-0131-3-A         H does not match         in the sample was         Gel treatment prior         DF       Qual         1         Qual         10-10-0131-4-A         H does not match         in the sample was         Gel treatment prior         DF       Qual	10/01/10 09:07 the chromatogra based upon the to analysis. <u>Parameter</u> TPH as Motor 10/01/10 09:20 the chromatogra based upon the to analysis. <u>Parameter</u>	Solid aphic pattern specified sta Oil Range Solid aphic pattern specified sta	GC 27 of the specif andard. GC 27 of the specif andard.	10/07/10 ied standar <u>Result</u> ND 10/07/10 ied standar <u>Result</u>	10/ 0. rd. <u>RL</u> 5.0 10/ 0. rd.	11/10 2:35 DE 1 11/10 3:11	101007E
Decachlorobiphe SO-241809-10 Comment(s): - Comment(s): - PH as Diesel F Surrogates: Decachlorobiphe SO-241809-10 Comment(s): - Comment(s): - C	enyl 00110-SR-SB-11-15 The sample chromatog Quantitation of the unkr The sample extract wa Range enyl 00110-SR-SB-11-25 The sample chromatog Quantitation of the unkr The sample extract wa Range	92 graphic patte nown hydroc as subjected <u>Result</u> 19 <u>REC (%)</u> 91 graphic patte nown hydroc as subjected <u>Result</u> 20	Limits 61-145 ern for TP carbon(s) to Silica ( <u>RL</u> 5.0 <u>Control</u> Limits 61-145 ern for TP carbon(s) to Silica ( <u>RL</u> 5.0	10-10-0131-3-A         H does not match         in the sample was         Gel treatment prior         DF       Qual         1         0         0         0         0         0         0         0         0         0         0         0         0         0         0         1	10/01/10         09:07         the chromatogra         based upon the         to analysis.         Parameter         TPH as Motor         10/01/10         09:20         the chromatogra         based upon the         to analysis.         Parameter         TPH as Motor	Solid aphic pattern specified sta Oil Range Solid aphic pattern specified sta	GC 27 of the specif andard. GC 27 of the specif andard.	10/07/10 ied standar <u>Result</u> ND 10/07/10 ied standar <u>Result</u> ND	10/ 0. rd. 5.0 rd. <u>RL</u> 5.0	11/10 2:35 DE 1 11/10 3:11 <u>DF</u> 1	101007E
Decachlorobiphe SO-241809-10 Comment(s): - Comment(s): - Commenter PH as Diesel F Surrogates: Decachlorobiphe SO-241809-10 Comment(s): - Comment(s): - Comment(s	enyl 00110-SR-SB-11-15 The sample chromatog Quantitation of the unkr The sample extract wa Range enyl 00110-SR-SB-11-25 The sample chromatog Quantitation of the unkr The sample extract wa Range	92 graphic patte nown hydroo as subjected <u>Result</u> 19 <u>REC (%)</u> 91 graphic patte nown hydroo as subjected <u>Result</u> 20 <u>REC (%)</u>	Limits 61-145 ern for TP carbon(s) to Silica ( <u>RL</u> 5.0 <u>Control</u> <u>Limits</u> 61-145 ern for TP carbon(s) to Silica ( <u>RL</u> 5.0 <u>Control</u> to Silica ( <u>Limits</u> )	10-10-0131-3-A         H does not match         in the sample was         Gel treatment prior         DF       Qual         1         Qual         10-10-0131-4-A         H does not match         in the sample was         Gel treatment prior         DF       Qual         10-10-0131-4-A         H does not match         in the sample was         Gel treatment prior         DF       Qual         1       Qual         1       Qual	10/01/10         09:07         the chromatogra         based upon the         to analysis.         Parameter         TPH as Motor         10/01/10         09:20         the chromatogra         based upon the         to analysis.         Parameter         TPH as Motor         TPH as Motor	Solid aphic pattern specified sta Oil Range Solid aphic pattern specified sta	GC 27 of the specif andard. GC 27 of the specif andard.	10/07/10 ied standar <u>Result</u> ND 10/07/10 ied standar <u>Result</u> ND	10/ 0. rd. <u>RL</u> 5.0 rd. <u>RL</u> 5.0	11/10 2:35 DE 1 1 11/10 3:11	101007E
Decachlorobiphe SO-241809-10 Comment(s): - C C 'arameter 'PH as Diesel F Surrogates: 'ecachlorobiphe SO-241809-10 Comment(s): - C 'arameter PH as Diesel F urrogates: 'ecachlorobiphe	enyl 00110-SR-SB-11-15 The sample chromatog Quantitation of the unkr The sample extract wa Range enyl 00110-SR-SB-11-25 The sample chromatog Quantitation of the unkr The sample extract wa Range enyl	92 graphic patte nown hydroc is subjected <u>Result</u> 19 <u>REC (%)</u> 91 graphic patte nown hydroc is subjected <u>Result</u> 20 <u>REC (%)</u> 91	Limits 61-145 ern for TP carbon(s) to Silica ( <u>RL</u> 5.0 <u>Control</u> Limits 61-145 ern for TP carbon(s) to Silica ( <u>RL</u> 5.0 <u>Control</u> Limits 61-145	10-10-0131-3-A         H does not match         in the sample was         Gel treatment prior         DF       Qual         1         Qual         10-10-0131-4-A         H does not match         in the sample was         Gel treatment prior         DF       Qual         10-10-0131-4-A         H does not match         in the sample was         Gel treatment prior         DF       Qual         1       Qual         1       Qual	10/01/10         09:07         the chromatogra         based upon the         to analysis.         Parameter         TPH as Motor         10/01/10         09:20         the chromatogra         based upon the         to analysis.         Parameter         TPH as Motor	Solid aphic pattern specified sta Oil Range Solid aphic pattern specified sta Oil Range	GC 27 of the specif andard. GC 27 of the specif andard.	10/07/10 ied standar ND 10/07/10 ied standar <u>Result</u> ND	10/ 0. rd. <u>RL</u> 5.0 10/ 0. rd. <u>RL</u> 5.0	11/10 2:35 DE 1 11/10 3:11	101007E
Decachlorobiphe SO-241809-10 Comment(s): - C 'arameter 'PH as Diesel F Surrogates: Decachlorobiphe SO-241809-10 Comment(s): - C 'arameter 'PH as Diesel F 'urrogates: 'ecachlorobiphe	enyl 00110-SR-SB-11-15 The sample chromatog Quantitation of the unkr The sample extract wa Range enyl 00110-SR-SB-11-25 The sample chromatog Quantitation of the unkr The sample extract wa Range enyl	92 graphic patte nown hydroo is subjected <u>Result</u> 19 <u>REC (%)</u> 91 graphic patte nown hydroo is subjected <u>Result</u> 20 <u>REC (%)</u> 91	Limits 61-145 ern for TP carbon(s) to Silica ( <u>RL</u> 5.0 <u>Control</u> Limits 61-145 ern for TP carbon(s) to Silica ( <u>RL</u> 5.0 <u>Control</u> Limits 61-145	10-10-0131-3-A         H does not match         in the sample was         Gel treatment prior         DF       Qual         1         Qual         10-10-0131-4-A         H does not match         in the sample was         Gel treatment prior         DF       Qual         10-10-0131-4-A         H does not match         in the sample was         Gel treatment prior         DF       Qual         1       Qual         1       Qual	10/01/10 09:07 the chromatogra based upon the to analysis. <u>Parameter</u> TPH as Motor 10/01/10 09:20 the chromatogra based upon the to analysis. <u>Parameter</u> TPH as Motor	Solid aphic pattern specified sta Oil Range Solid aphic pattern specified sta Oil Range	GC 27 of the specif andard. GC 27 of the specif andard.	10/07/10 ied standar ND 10/07/10 ied standar <u>Result</u> ND	10/ 0. rd. 5.0 rd. <u>RL</u> 5.0	11/10 2:35 DF 1 11/10 3:11 DF 1	101007E
Decachlorobiphe SO-241809-10 Comment(s): - Comment(s): - PH as Diesel F Surrogates: Decachlorobiphe SO-241809-10 Comment(s): - C C C C C C C C C C C C C C C C C C C	enyl 00110-SR-SB-11-15 The sample chromatog Quantitation of the unkr The sample extract wa Range enyl 00110-SR-SB-11-25 The sample chromatog Quantitation of the unkr The sample extract wa Range enyl Poporting Limit	92 graphic patter nown hydroc is subjected <u>Result</u> 19 <u>REC (%)</u> 91 graphic patter nown hydroc is subjected <u>Result</u> 20 <u>REC (%)</u> 91	Limits 61-145 ern for TP carbon(s) to Silica ( <u>RL</u> 5.0 <u>Control</u> Limits 61-145 ern for TP carbon(s) to Silica ( <u>RL</u> 5.0 <u>Control</u> Limits 61-145	10-10-0131-3-A         H does not match         in the sample was         Gel treatment prior         DF       Qual         1         Qual         10-10-0131-4-A         H does not match         in the sample was         Gel treatment prior         DF       Qual         1       Qual         1       Qual         1       Qual         1       Qual         1       Qual         1       Qual	10/01/10         09:07         the chromatogra         based upon the         to analysis.         Parameter         TPH as Motor         10/01/10         09:20         the chromatogra         based upon the         to analysis.         Parameter         TPH as Motor         10/01/10         09:20         the chromatogra         based upon the         to analysis.         Parameter         TPH as Motor	Solid aphic pattern specified sta Oil Range Solid aphic pattern specified sta Oil Range	GC 27 of the specif andard. GC 27 of the specif andard.	10/07/10 ied standar ND 10/07/10 ied standar <u>Result</u> ND	10/ 0. rd. <u>RL</u> 5.0 10/ 0. rd. <u>RL</u> 5.0	11/10 2:35 DE 1 11/10 3:11	101007E







10/02/10 **Conestoga-Rovers & Associates** Date Received: 1420 80th St. SW, Suite A Work Order No: 10-10-0131 Everett, WA 98203-6248 Preparation: EPA 3550B Method: **NWTPH-Dx** Units: mg/kg Project: 11700 NE 160th St., Bothell, WA Page 2 of 2 Date/Time Date Lab Sample Date/Time Matrix QC Batch ID Instrument **Client Sample Number** Prepared Analyzed Number Collected 10/11/10 SO-241809-100110-SR-SB-11-30 10-10-0131-5-A 10/01/10 Solid GC 27 10/07/10 101007B06 09:40 03:29 Comment(s): -The sample extract was subjected to Silica Gel treatment prior to analysis. DF DF Parameter <u>Result</u> <u>RL</u> <u>Qual</u> Parameter Result RL Qual TPH as Diesel Range ND 5.0 TPH as Motor Oil Range ND 5.0 1 1 Qual REC (%) Control Surrogates: Limits 90 Decachlorobiphenyl 61-145 SO-241809-100110-SR-SB-11-20 10/01/10 10/11/10 101007B06 10-10-0131-6-A Solid GC 27 10/07/10 09:13 03:47 Comment(s): -The sample extract was subjected to Silica Gel treatment prior to analysis. Parameter DF Result RL DF <u>Result</u> <u>RL</u> Qual Parameter Qual TPH as Diesel Range ND TPH as Motor Oil Range ND 5.0 5.0 1 1 **Control** REC (%) Qual Surrogates: Limits 1 4 1 97 Decachlorobiphenyl 61-145 10/10/10 Method Blank 099-12-838-104 N/A Solid GC 27 10/07/10 101007B06 22:26 <u>RL</u> DF Qual Parameter <u>Result</u> TPH as Diesel Range ND 5.0 1 REC (%) Control Qual Surrogates: <u>Limits</u>

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

92

Decachlorobiphenyl

61-145

FAX: (714) 894-7501

#### Page 4 of 19



Conestoga-Rovers & AssociatesDate Received:10/02/101420 80th St. SW, Suite AWork Order No:10-10-0131Everett, WA 98203-6248Preparation:EPA 5035Method:NWTPH-Gx

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

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	<u>Result</u>	<u>RL</u>	DF	<u>Qual</u>	<u>Units</u>			
TPH as Gasoline	10	3.2	13		mg/kg			
Surrogates:	<u>REC (%)</u>	Control Limits		<u>Qual</u>				
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
Parameter	<u>Result</u>	<u>RL</u>	DE	Qual	<u>Units</u>			
TPH as Gasoline	140	11	44		mg/kg			
Surrogates:	<u>REC (%)</u>	Control Limits		<u>Qual</u>				
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
Parameter	<u>Result</u>	<u>RL</u>	DF	<u>Qual</u>	<u>Units</u>			
TPH as Gasoline	410	90	361		mg/kg			
Surrogates:	<u>REC (%)</u>	Control Limits		<u>Qual</u>				
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
Parameter	<u>Result</u>	<u>RL</u>	DF	Qual	<u>Units</u>			
TPH as Gasoline	4.2	0.21	0.852		mg/kg			
Surrogates:	<u>REC (%)</u>	Control Limits		<u>Qual</u>				
1,4-Bromofluorobenzene	107	60-126						

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



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Page 1 of 2

#### Page 5 of 19

Page 2 of 2



Conestoga-Rovers & AssociatesDate Received:10/02/101420 80th St. SW, Suite AWork Order No:10-10-0131Everett, WA 98203-6248Preparation:EPA 5035Method:NWTPH-Gx

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

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	<u>Result</u>	<u>RL</u>	DE	<u>Qual</u>	<u>Units</u>			
TPH as Gasoline	1.7	0.25	1		mg/kg			
Surrogates:	<u>REC (%)</u>	Control Limits		<u>Qual</u>				
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
Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>			
TPH as Gasoline	18	12	46		mg/kg			
Surrogates:	<u>REC (%)</u>	Control Limits		<u>Qual</u>				
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
Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>			
TPH as Gasoline	ND	0.25	1		mg/kg			
Surrogates:	<u>REC (%)</u>	Control Limits		<u>Qual</u>				
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
Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>			
TPH as Gasoline	ND	10	40		mg/kg			
Surrogates:	<u>REC (%)</u>	Control Limits		<u>Qual</u>				
1,4-Bromofluorobenzene	85	60-126						

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



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### Page 6 of 19

10/02/10



Date Received:



**Conestoga-Rovers & Associates** 1420 Eve

1420 80th St. SW, Suite A					Work Orde	er No:			10	-10-0131
Everen, WA 96203-6246					Method:	)[].			EF	PA 5035 PA 8260B
					Units:				_	mg/kg
Project: 11700 NE 160th \$	St., Both	ell, WA	١						Pa	age 1 of 2
Client Sample Number			Lab N	o Sample lumber	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SO-241809-100110-SR-SB-11-6			10-10-0	131-1-F	10/01/10 08:50	Solid	GC/MS V V	10/01/10	10/06/10 14:54	101006L01
Parameter	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	Parameter			<u>Result</u>	<u>RL</u> DF	<u>Qual</u>
Benzene	0.055	0.00086	0.862		Toluene			0.088	0.00086 0.8	862
Ethylbenzene	0.37	0.040	40.5		Xylenes (total)			1.4	0.081 40	0.5
Surrogates:	<u>REC (%)</u>	<u>Control</u> Limits	<u>Qual</u>		Surrogates:			<u>REC (%)</u>	<u>Control</u> Limits	<u>Qual</u>
Dibromofluoromethane	99	79-133			1,2-Dichloroetha	ane-d4		93	71-155	
1,4-Bromofluorobenzene	101	80-120			Toluene-d8			103	80-120	
SO-241809-100110-SR-SB-11-10			10-10-0	131-2-F	10/01/10 09:04	Solid	GC/MS V V	10/01/10	10/06/10 15:20	101006L01
Parameter	Result	RL	DF	Qual	Parameter			Result	RL DF	Qual
Benzene	0.0018	0.00087	0.874		Toluene			0.0053	0.00087 0.8	874
Ethylbenzene	3.2	0.038	38.2		Xylenes (total)			16	0.076 38	0.2
Surrogates:	<u>REC (%)</u>	<u>Control</u> Limits	<u>Qual</u>		Surrogates:			<u>REC (%)</u>	<u>Control</u> Limits	Qual
Dibromofluoromethane	98	79-133			1,2-Dichloroetha	ane-d4		94	71-155	
1,4-Bromofluorobenzene	105	80-120			Toluene-d8			102	80-120	
SO-241809-100110-SR-SB-11-15			10-10-0	131-3-F	10/01/10 09:07	Solid	GC/MS V V	10/01/10	10/06/10 15:45	101006L01
Parameter	<u>Result</u>	<u>RL</u>	DF	Qual	Parameter			<u>Result</u>	<u>RL</u> DF	Qual
Benzene	0.0042	0.00091	0.911		Toluene			0.026	0.00091 0.9	911
Ethylbenzene	5.1	0.072	71.6		Xylenes (total)			24	0.14 71	.6
Surrogates:	<u>REC (%)</u>	<u>Control</u> Limits	<u>Qual</u>		Surrogates:			<u>REC (%)</u>	<u>Control</u> Limits	<u>Qual</u>
Dibromofluoromethane	102	79-133			1,2-Dichloroetha	ane-d4		93	71-155	
1,4-Bromofluorobenzene	102	80-120			Toluene-d8			109	80-120	
SO-241809-100110-SR-SB-11-25			10-10-0	131-4-F	10/01/10 09:20	Solid	GC/MS V V	10/01/10	10/06/10 16:12	101006L01
Parameter	Result	RL	DF	Qual	Parameter			Result	<u>RL</u> 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	9.3
Surrogates:	<u>REC (%)</u>	<u>Control</u> Limits	<u>Qual</u>		Surrogates:			<u>REC (%)</u>	<u>Control</u> Limits	<u>Qual</u>
Dibromofluoromethane	98	79-133			1,2-Dichloroetha	ane-d4		97	71-155	
1,4-Bromofluorobenzene	98	80-120			Toluene-d8			103	80-120	

RL - Reporting Limit ,

DF - Dilution Factor Qual - Qualifiers ,

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## alscience nvironmental aboratories, Inc.

Date Received:

10/02/10

IN ACCORD

Conestoga-Rovers & Associates 1 Е

1420 80th St. SW, Suite A					Work Orde	er No:				10-1	0-0131
Everett, WA 98203-6248					Preparatio	n:				EP	A 5035
,					Method:				F	=PA	8260B
					Units <sup>.</sup>				-	/ (	ma/ka
Project: 11700 NE 160th	St Both				•				r	Daar	$3^{\circ}$ $3^{\circ}$
	5t., Doth		1							aye	52012
Client Sample Number			Lat N	o Sample lumber	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Tin Analyze	ne ed C	C Batch ID
SO-241809-100110-SR-SB-11-30			10-10-0	131-5-F	10/01/10 09:40	Solid	GC/MS V V	10/01/10	10/06/1 16:37	0 1	01006L01
Parameter	<u>Result</u>	<u>RL</u>	DF	Qual	Parameter			<u>Result</u>	<u>RL [</u>	<u>DF</u>	<u>Qual</u>
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:	<u>REC (%)</u>	<u>Control</u> Limits	<u>Qual</u>		Surrogates:			<u>REC (%)</u>	<u>Control</u> Limits	<u>Qu</u> a	al
Dibromofluoromethane	98	79-133			1,2-Dichloroetha	ane-d4		95	71-155		
1,4-Bromofluorobenzene	101	80-120			Toluene-d8			100	80-120		
SO-241809-100110-SR-SB-11-20			10-10-0	131-6-F	10/01/10 09:13	Solid	GC/MS V V	10/01/10	10/06/1 17:03	0 1	01006L01
Parameter	Result	RL	DF	Qual	Parameter			Result	RL [	)F	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:	<u>REC (%)</u>	<u>Control</u> Limits	<u>Qual</u>		Surrogates:			<u>REC (%)</u>	<u>Control</u> Limits	<u>Qu</u>	al
Dibromofluoromethane	97	79-133			1,2-Dichloroetha	ane-d4		96	71-155		
1,4-Bromofluorobenzene	98	80-120			Toluene-d8			100	80-120		
Method Blank			095-01-	025-20,51	5 N/A	Solid	GC/MS V V	10/06/10	10/06/1 11:28	0 1	01006L01
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:	<u>REC (%)</u>	<u>Control</u> Limits	<u>Qual</u>		Surrogates:			<u>REC (%)</u>	<u>Control</u> Limits	<u>Qu</u>	al
Dibromofluoromethane	100	79-133			1,2-Dichloroetha	ane-d4		95	71-155		
1,4-Bromofluorobenzene	95	80-120			Toluene-d8			100	80-120		
Method Blank			095-01-	025-20,51	9 N/A	Solid	GC/MS V V	10/07/10	10/07/1 11:13	0 1	01007L02
Parameter	Result	RL	DF	Qual	Parameter			Result	<u>RL [</u>	<u>DF</u>	<u>Qual</u>
Benzene	ND	0.10	100		Toluene			ND	0.10	100	
Ethylbenzene	ND	0.10	100		Xylenes (total)			ND	0.20	100	
Surrogates:	<u>REC (%)</u>	<u>Control</u> Limits	<u>Qual</u>		Surrogates:			<u>REC (%)</u>	<u>Control</u> Limits	<u>Qu</u>	al
Dibromofluoromethane	96	79-133			1,2-Dichloroetha	ane-d4		90	71-155		
1,4-Bromofluorobenzene	99	80-120			Toluene-d8			100	80-120		

RL - Reporting Limit ,

DF - Dilution Factor Qual - Qualifiers ,

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Conestoga-Rovers & Associates 1420 80th St. SW, Suite A Everett, WA 98203-6248 Date Received: Work Order No: Preparation: Method:

#### 10/02/10 10-10-0131 EPA 3550B 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	<u>MS %REC</u>	MSD %REC	<u>%REC CL</u>	<u>RPD</u> <u>RPD</u>	CL Qualifiers
TPH as Diesel Range	98	100	64-130	1 0-1	5

RPD - Relative Percent Difference, CL - Control Limit



# AND THE IN ACCORDANCE

Date Received:	N/A
Work Order No:	10-10-0131
Preparation:	EPA 3550B
Method:	NWTPH-Dx
	Date Received: Work Order No: Preparation: Method:

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

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Da Analy	te /zed	LCS/LCSD Batc Number	h
099-12-838-104	Solid	GC 27	10/07/10	10/10	/10	101007B06	
Parameter	LCS %	REC LCSD	<u>%REC 9</u>	%REC CL	<u>RPD</u>	RPD CL	<u>Qualifiers</u>
TPH as Diesel Range	97	105	5	75-123	9	0-12	

RPD - Relative Percent Difference, CL - Control Limit



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# A DITED IN ACCORDANCE

Conestoga-Rovers & Associates	Date Received:	N/A
1420 80th St. SW, Suite A	Work Order No:	10-10-0131
Everett, WA 98203-6248	Preparation:	EPA 5035
	Method:	NWTPH-Gx

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

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Da Analy	te vzed	LCS/LCSD Batc Number	h
099-12-848-158	Solid	GC 22	10/05/10	10/05	/10	101005B01	
Parameter	<u>LCS %</u>	<u> KREC LCSE</u>	%REC	%REC CL	RPD	RPD CL	<u>Qualifiers</u>
TPH as Gasoline	84	84	1	55-139	0	0-18	

RPD - Relative Percent Difference, CL - Control Limit



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# A DITED IN ACCORDANCE

Conestoga-Rovers & Associates	Date Received:	N/A
1420 80th St. SW, Suite A	Work Order No:	10-10-0131
Everett, WA 98203-6248	Preparation:	EPA 5035
	Method:	NWTPH-Gx

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

Quality Control Sample ID	Matrix	Instrument	Date Prepare	Da d Anal	ate yzed	LCS/LCSD Batc Number	:h
099-12-848-162	Solid	GC 22	10/07/1	0 10/07	7/10	101007B01	
Parameter	<u>LCS %</u>	<u> KREC LCSD</u>	%REC	%REC CL	<u>RPD</u>	RPD CL	Qualifiers
TPH as Gasoline	77	79	)	55-139	3	0-18	

RPD - Relative Percent Difference, CL - Control Limit



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Conestoga-Rovers & Associates	Date Received:	N/A
1420 80th St. SW, Suite A	Work Order No:	10-10-0131
Everett, WA 98203-6248	Preparation:	EPA 5035
	Method:	EPA 8260B

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

Quality Control Sample ID	Matrix	Instr	ument	Date Prepare	d	Date Analyzed	LCS/LCSD Bate Number	ch
095-01-025-20,515	Solid GC/N		ISVV	10/06/1	0	10/06/10	101006L01	
Parameter	LCS 9	<u>%REC</u>	LCSD %	<u>REC</u>	<u>%REC C</u>	L <u>RPD</u>	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	2	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

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Conestoga-Rovers & Associates	Date Received:	N/A
1420 80th St. SW, Suite A	Work Order No:	10-10-0131
Everett, WA 98203-6248	Preparation:	EPA 5035
	Method:	EPA 8260B

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

Quality Control Sample ID	Matrix	Instr	ument	Date Prepare	d ,	Date Analyzed	LCS/LCSD Bato Number	:h
095-01-025-20,519	Solid GC/N		IS V V	10/07/10	<b>D</b> 1	0/07/10	101007L02	
Parameter	LCS %	%REC	LCSD %	REC	<u>%REC CI</u>	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	3	98		51-135	5	0-27	

RPD - Relative Percent Difference, CL - Control Limit

MMM MM

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MM



Work Order Number: 10-10-0131

Qualifier *	Definition 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
I	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.
В	Analyte was present in the associated method blank.
Е	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.
Х	% 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.

dy Record	INCIDENT # (ENV SERVICES)	92995017 DATE 10110	SAP# SAP#	ståte sióbal i Dioc:		241809	00 cschweigert@CRAworld.com  Cschweigert@CRAworld.com LAB USE ONLY	N 10-10-0131	UESTED ANALYSIS	TEMPERATURE ON RECEIPT	ບໍ		(81200 H	WPH-VP EPH-Readings Container PID Readings or Laboratory Notes	-u -N								[0/1/10] Jine		15 of 0001 01/20/01	C5/2/06 Revision
01 Products Chain Of Custo	Print Bill To Contact Name:	Ad to	# 04	ITE ADDRESS: Street and City	1100 NE 1604 St BOYNEI	F DELIVERABLE TO (Name, Company, Othos Location)	hristine Schweigert, CRA, Everett 425-212-51	m Stephen Rasmusse	REQ	í∃c dr	Cleane BA, DII	0B) 3E' 1	B) (8260) (1) (1) (1) (1) (2) (2) (2) (2) (2) (2) (2) (2) (2) (2	MTPH-GX MTPH-DX MTPH-DX MKE, ETB MKE, ETB MKE, ETB MKE, 68082 MKE, 68082 MKE, 68082 MKE, 68082 MKE, 68082 MKE, 68082 MKE, 68082 MKE, 68082 MTPH-GX MTP			XXX	XXX							CEL	
Shell C	Please Check Appropriate Box:	Genv. Services Omotiva Retail	MOTTVA SD&CM		CRAW	44th Ave. W. Lynnword, WA		Emce lell and @ cerworld.com	2 DAYS         24 HOURS         ON WEEKEND		SHELL CONTRACT RATE APPLIES	rid.com	Aethod A Secent verification requested	SAMPLING PRESERVATIVE NO. OF UT IME AATRIX	HICL HN03 H2SO4 NONE OTHER		Oray soul X 9	pavy soil X 9	09-20 50il 1 1 2 3	Control X 0 1			Light Received by (Signalure)	10/1 Received by (Signature)	Received by: (Signature)	
ĽAB (LOCATION)				SAMPLING COMPANY:	Conestoga-Rovers & Associates	ADDRESS. 1420 South St. SWI, Suite, , Everent, WA 09203 ZOPID	PROJECT CONTACT (Hardrony) or POF Report to: Chnicthna MC/JOIIDINA	TELEPHONE TELEPHONE 425-212-5100 425-212-5199	TURNÁROUND TIME (CALENDAR DAYS): Xetandard (14 Day) 🛛 🗂 5 Days		SPECIAL INSTRUCTIONS OR NOTES :	Copy final report to Shell.Lab.Billing@craworl	See SPL PM for WA Dept. of Ecology MTCA M cleanup levels for minimum detection limits	Each Field Sample Identification		9-11-95-75-011001-1-00111-0-00 1	2 20-24/809-100/10-58-8-11-10	3 50 -241809 - 100110 -58 -58-11-15	7 50-241809-100110-38-28-11-22	5 50 - 2418099-10010-52 - 58-11-30			Particulated by: (Signature) CPA 10	Relitential by (Signature)	Relinquished by. (Signature)	

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Calscience Environmental	WORK	ORDER #:	10-10	)-0/	3 /
aboratories, Inc. SAMPLE	RECE		RM o	cooler _(	′ of _/_
CLIENT: CRA	_		DATE:	10/07	/ 10
TEMPERATURE: Thermometer ID: SC1 (Criteri	ia: 0.0 °C – €	6.0 °C, not frozen	)		
Temperature <u> </u>	) = <u> </u>	<u>. 8</u> °C	] Blank	🛛 Samp	le
Sample(s) outside temperature criteria (PM/APM)	M contacted	by:).			
☐ Sample(s) outside temperature criteria but recei	ived on ice/c	hilled on same da	y of sampli	ng.	
☐ Received at ambient temperature, placed o	on ice for tr	ansport by Co	urier.		
Ambient Temperature: 🗆 Air 🛛 Filter			٢	Initia	I:_ <i>TN</i>
	Intact)	□ Not Present	□ N/A	Initia	I TN
	Intact)	Not Present		Initia	
SAMPLE CONDITION:		Ň	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received	with sample	əs			
COC document(s) received complete					
□ Collection date/time, matrix, and/or # of containers log	gged in based	d on sample labels.			
🗆 No analysis requested. 🛛 🗆 Not relinquished. 🗌	] No date/time	e 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 analy	yses reque	sted	Ø		
Analyses received within holding time			Ø		
pH / Residual Chlorine / Dissolved Sulfide receiv	/ed within 2	4 hours			
Proper preservation noted on COC or sample co	ontainer		Ø		
Unpreserved vials received for Volatiles analysis	3				
Volatile analysis container(s) free of headspace.					
Tedlar bag(s) free of condensation	· · · · · · · · · · · · · · · · · · ·			2	
Solid: □4ozCGJ Ø8ozCGJ □16ozCGJ □S	Sleeve (	) □EnCores	® dTerra	Cores® Z	202 PJ
Water: DVOA DVOAh DVOAna <sub>2</sub> D125AGB	□125AGB	h □125AGBp	□1AGB	⊒1AGB <b>na₂</b>	□1AGB <b>s</b>
□500AGB □500AGJ □500AGJs □250AGB	□250CG	B □250CGBs	□1PB	□500PB 🗆	500PB <b>na</b>
□250PB □250PBn □125PB □125PBznna □	⊐100PJ □	100PJ <b>na₂</b> □		🗆	
Air: □Tedlar <sup>®</sup> □Summa <sup>®</sup> Other: □ Container: C: Clear A: Amber P: Plastic G: Glass J: Jar B: Bo Preservative: h: HCL n: HNO <sub>3</sub> na <sub>2</sub> :Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> na: NaOH p: H <sub>3</sub>	Trip Blant         ottle       Z: Ziploc/         3PO4       S: H2SO4	<b>k Lot#:</b> Resealable Bag E: E znna: ZnAc <sub>2</sub> +NaOH f:	_ <b>Labeled/</b> Envelope <b>I</b> Field-filtered	Checked by Reviewed by Scanned by	

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11

SOP T100\_090 (09/13/10)



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: 1

WORK ORDER #: 10-10- 0 1 3 1

## SAMPLE ANOMALY FORM

SAMPLI	ES - CO	NTAIN	ERS & L	ABELS:			Comme	ents:	
☐ Sam ☐ Sam ☐ Hoid ☐ Insuf ☐ Impr ☐ Impr ☐ Sam ☐ Sam ☐ Sam	ple(s)/Co ple(s)/Co ing time fficient o oper pro oper pro reservat ple labe ple labe Sample Date ar	ontainer ontainer expired quantitie ntainer servativ tive note ls illegit l(s) do r D nd/or Tir	r(s) NOT I r(s) receiv d – list sar es for ana s) used – ve used – ed on CO ble – note not match me Collec	(-6) [abele 10/01/ 1 2	Recedu d as s 10, 9: X 802 x 202. X Terr	red 9 containers 50-24/809-100/10-5R-5B-11- 13, . CO, J i <sup>0</sup> J a core			
	# of Co	ntainer(	s)						
	Analysi	s	- /						
Sam     Sam     Sam     Sam     Air s     C     Othe     HEADS	ple cont Water p Broken ple cont sample o Flat Very lo Leaking Leaking Leaking PACE –	ainer(s) present cainer(s) containe w in vol g (Not tr g (transf g (transf contai	compron in sample not labe er(s) com ume ransferred ferred int ferred int	nised – Note container led promised – d - duplicate o Calscienc o Client's To	e in comr Note in c bag sul e Tedlar edlar <sup>®</sup> Ba	nents comments <sup>®</sup> Bag*) ag*)  or ¼ inch:	(-2) brok (-3) wit	1 × 8. x conto 1 × th h brok	erracore received
Sample #	Container	# of Viais	Sample #	Container ID(s)	# of Vials	Sample #	Container	# of Cont.	Analysis
. <b> </b>		VACAIA60			Vereiaed	· · · · · · · · · · · · · · · · · · ·	in(s)	10001480	
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SOP T100\_090 (09/17/10)

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🗌 LA - RWQCB REPORT FORMAT					dr	ъе'							TEMPERA	URE ON RECEIPT
SPECIAL INSTRUCTIONS OR NOTES :		SHELL CONTRACT RA	TE APPLIES		1059	110 '								ບໍ
Copy final report to Shell.Lab.Billing@craw	orld.com	C STATE REIMBURSEME	INT RATE APPLIE	10	Cell C	(81,18)			(9					-
See SPL PM for WA Dept. of Ecology MTCA cleanus levels for minimum detection limit.	Method A	Z RECEIPT VERIFICATI	on requested		solli <u>S</u>	(1 (1 (1 (1 (1) (1) (1) (1) (1) (1) (1)		(020)	¥ (8560			(8120		
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Even Field Sample Identification	DATE TIME	MATRIX	ESERVATIVE	NO. 01	D-H9TWV	STEX (826	EDC (8011	otal Lead 908) 2500	70Cs Full	)808) tesc V UGTWW	a-Hqtwv	ensxeH-n	Contain or Lat	ar PID Readings oratory Notes
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Page 19 of 19

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.



APPROXIMATE LOCATION OF IDENTIFIED SITES WITH SENSITIVE RECEPTORS IN THE VICINITY AT 11700 NE 160TH, BOTHELL



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		



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



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: 6/13/2002 Date: 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

OFF-SITE SENSITIVE RECEPTORS	Page:	1
120531	Date:	05-21-2005
11700 NE 160TH, BOTHELL WA	Job:	DL120531

; ADDRE	SS	CITY	LOCATION	SOU- RCE	STA- TUS	PA GE	MAP LOC	DIR	
; OFF-	SITE SENSITIVE RECEPTORS	, WITHIN 600' - 1	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'
	Ev	1000	end	R		Erro	r! Bo	okmar	k not
defined.	ИС	1000	end	R		Erro	r! Bo	okmar	k not
12101	NE 160TH ST	BOTHELL	NORTHSHORE JUNIOR HIGH SCHOOL	SX		1	6	Е	1500'
OFF-	SITE SENSITIVE RECEPTORS	, WITHIN 1640' -	3280' OF THE SUBJECT SITE						
12225	NE 160TH ST	BOTHELL	WOODMOOR ELEMENTARY SCHOOL	SX		2	7	Е	1800'
defined.	<b>8</b> sw	2800'	end	R		Erro	r! Bo	okmar	k not

—

LEAKING UNDERGROUND TANKS 120531 11700 NE 160TH, BOTHELL WA			Page: Date: Job:	1 05-21-2005 DL120531
; ADDRESS	CITY	LOCATION	SOU- ST RCE TU	TA- PA MAP DIR US GE LOC
LEAKING UNDERGROUND TANKS	, WITHIN 600' O	F THE SUBJECT SITE		
11700 NE 160TH ST	BOTHELL	TEXACO STATION # 63232 1469	LUST	2 <b>1</b>
LEAKING UNDERGROUND TANKS	, WITHIN 600' -	1640' OF THE SUBJECT SITE		
15900 116TH AVE NE	BOTHELL	CHEVRON STATION # 9-3299	LUST	2 <b>2</b> 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:	NORTHSHORE JUNIOR HIGH SCHOOL
Address:	12101 NE 160TH ST
City:	BOTHELL
Map Loc:	6 - about 1500 feet E of the subject
Status:	821103
Page: 2 Date: 05-21-2005 Job: DL120531

Site:WOODMOOR ELEMENTARY SCHOOLAddress:12225 NE 160TH STCity:BOTHELLMap Loc:7 - about 1800 feet E of the subjectStatus: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: Address: City: Map Loc: Status:	TEXACO STATION # 63232 1469 11700 NE 160TH ST BOTHELL 1 - the subject site
	id: 4493
	A release (#2849) was reported to have occured on 12/30/91 . Ground water cleanup started on 5/29/92 . Soil cleanup started on 5/29/92 .
Site: Address: City: Map Loc: Status:	CHEVRON STATION # 9-3299 15900 116TH AVE NE BOTHELL 2 - about 700 feet W of the subject
	id: 5138
	A release (#4933) was reported to have occured on 9/21/93.

A release (#4933) was reported to have occured on 9/21/93. Soil awaiting cleanup on 6/1/95.

120531	Page:	3
11700 NE 160TH, BOTHELL	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.

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-

4-340-440. Please provide documentation that describes the rationale for setting a sitespecific 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 paying, 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, 6heptachlor, heptachlor epoxide, benzene hexachloride, toxaphene, hexachlorobenzene, pentachlorophenol, or pentachlorobenzene.

7-🖂

For sites not containing any of the chemicals mentioned above, there is less than one-and-ahalf acres of contiguous undeveloped land on or within 500 feet of any area of the Site.

#### BACKGROUND CONCENTRATIONS - WAC 173-340-7491(1)(d)

Concentrations of hazardous substances in soil do not exceed natural background levels as 8described 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	Northwest Region:	<b>Central Region:</b>
Region	Attn: Sara Maser	Attn: Mark Dunbar
Central	3190 160 <sup>th</sup> Ave. SE	15 W. Yakima Ave., Suite 200
Region	Bellevue, WA 98008-5452	Yakima, WA 98902
Southwest Region	Southwest Region: Attn: Scott Rose P.O. Box 47775 Olympia, WA 98504-7775	Eastern Region: Patti Carter N. 4601 Monroe Spokane WA 99205-1295

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



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				GROUND	NATE	R		GROUNDWATER AIR (see notes)									
Exposure Pathway			Vanc	r Intrusion	into Ri	uldinge			(U)								
Exposition admay			vape			manys		BRC	vation			Innalation					
Desertes Occaseda	····			Urban	Wi			Construction	n and								
Receptor Scenario		Resident		Residen	tial	Occupation	ai	Excavation V	/orker	Residential		Residen	tial	Occupational			
Contaminant of Concern	Note	No			Note		Note		Note	, +=	Note		Note		Note		
Benzene	C. V	160		340	r	2.700	T	1,700		0.27	l	0.57		15	r		
Toluene	nc, v	210,000		210,000			>s	78,000		400		400		1.600			
Ethylbenzene	nc, v	-	>\$	-	>\$		>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	~	>\$	-	>\$ <sup>·</sup>		>S	-	>\$	400		400		1,600	<u> </u>		
n-propylbenzene	nc, v	-	>S	. <b>-</b>	>\$	-	>s	-	>S	150	1	150		580	ŀ		
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	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	•	>\$	9.1		0.0098		0.021		0.056			
Benzo[b]fluoranthene	ic, nv	-	>S	-	>\$	-	>S		>S	0.0098		0.021		0.056			
Benzo[k]fluoranthene	c, nv	-	>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	-	>\$	150	>Pv	150	>Pv	580	>Pv		
Fluorefie	nc, v	• .	>S	-	>S	-	>S	-	>S	150		150		580			
Indeno[1,2,3-cd]pyrene	c, hv	. •	>\$	-	>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	110	>Pv	110	>Pv	440	>Pv		
МТВЕ	C, V	17,000	ļ	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	ļ	3,600	ļ	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	l .	650		2,600			
Generic Diesel / Heating Oil	nc, nv	-	>S	-	>S'	-	>S	-	>\$	120		120		490			
Generic Mineral Insulating Oil	nc, nv	i -	>S	-	>S	-	>S		>\$	490		490		2,000			

Department of Environmental Quality Risk-Based Decision Making Land Quality Division September 22, 2003

A-4

#### 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 <a href="http://www.deg.state.or.us/wmc/tank/toc-fct.htm">http://www.deg.state.or.us/wmc/tank/toc-fct.htm</a> or the Environmental Cleanup web site at <a href="http://www.deg.state.or.us/wmc/tank/toc-fct.htm">http://www.deg.state.or.us/wmc/tank/toc-fct.htm</a> or the Environmental Cleanup web site at <a href="http://www.deg.state.or.us/wmc/tank/toc-fct.htm">http://www.deg.state.or.us/wmc/tank/toc-fct.htm</a> or the Environmental Cleanup web site at <a href="http://www.deg.state.or.us/wmc/cleanup/guidelst.htm">http://www.deg.state.or.us/wmc/cleanup/guidelst.htm</a>

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<sub>sat</sub> This soil RBC exceeds the limit of three-phase equilibrium partitioning. Refer to Appendix D for the corresponding value of C<sub>sat</sub>. Soil concentrations in excess of C<sub>sat</sub> 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.
- ny 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.

<u>Construction and excavation worker – Carcinogens</u> (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 ( $\mu g/L$ )

ARL <sub>c</sub> = 1.00 x 10 <sup>-6</sup> (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 <sub>e</sub> = 1 yr	[p. C-1; Appendix C]
$EF_e = 9  day/yr$	[p. C-1; Appendix C]
$IRA_a = 7 m^3/d$	[p. C-1; Appendix C]
$VF_{we} = 0.5 L/m^3$	[p. C-1; Appendix C]
SF <sub>i</sub> = 0.027 (mg/Kg-day) <sup>-1</sup>	[p. E-1; Appendix E]
DA <sub>w</sub> = 3.68x10 <sup>-5</sup> L/cm <sup>2</sup> -event	[p. E-1; Appendix E]
EVF <sub>w</sub> = 2 events/day	[p. C-1; Appendix C]
$SA_w = 5700 \text{ cm}^2$	[p. C-1; Appendix C]
SFo = 0.055 (mg/Kg-day)-1	[p. E-1; Appendix E]
103 µg/mg	[Equation constant; p. B-65]

Construction and Excavation Worker -- Carcinogens

$$RBC_{we} (\mu g/L) = \frac{ARL_c \cdot AT_c \cdot 365 \, d/yr \cdot BW_a}{ED_e \cdot EF_e \cdot [(IRA_a \cdot VF_{we} \cdot SF_i) + (DA_w \cdot EvF_w \cdot SA_w \cdot SF_o)]} \cdot 10^3 \mu g / mg$$
[B-161]

**Construction and Excavation Worker – Noncarcinogens** 

$$RBC_{we} (\mu g/L) = \frac{ARL_n \cdot AT_{ne} \cdot 365 \, d/yr \cdot BW_a}{ED_e \cdot EF_e \cdot [(\frac{|RA_a \cdot VF_{we}|}{RfD_i}) + (\frac{DA_w \cdot EvF_w \cdot SA_w}{RfD_o})]} \cdot 10^3 \mu g / mg$$
[B-162]

where:

orker Exposure
•
•
•
•
•

\* 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<sub>event</sub>) 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<sub>event</sub> will remain the same. In cases where t<sub>event</sub> is changed or where values of DA<sub>w</sub> 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<sub>w</sub>.<sup>54</sup>

<sup>54</sup> Equations [B-163] and [B-164] are only for *organic compounds in water*. Please refer to EPA (2001b) for information about calculating DA<sub>w</sub> for inorganics.

Department of Environmental Quality Risk-Based Decision Making

## Appendix C: Exposure Factors

Parameter (unit)	Symbol	Resident	tial	Urban Residen	ı tial	Occupatio	onal	Construc	tion	Excavation Worker		
ACCEPTABLE RISK LEVELS			Note		Note		Note		Note		Note	
Acceptable Risk Level - Carcinogens	ARLC	1.00E-06			1		1		1	·····		
Acceptable Risk Level - Noncarcinogens	ARLn	1		]		-		=				
EXPOSURE PARAMETERS		<u> </u>	<u> </u>	1				=	_L			
Averaging Time - Carcinogen (yr)	ATc	70	2	=		=	1	=	T	=	T	
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	-	ΝΔ	-	
Body Weight - Adult (kg)	BWa	70	. 3	. =		=	i I			=		
Body Weight - Child (kg)	BWc	15	3	=		NA		NΔ		NA '		
Exposure Duration - Adult (yr)	ED	30	3	11	4	25	3	1	. 21	1		
Exposure Duration - Child (yr)	EDc	6	3	6	4	NA		ΝΔ	<b>_</b>	I NA		
Exposure Frequency (day/yr)	EF	350	3	175	3a	250	6	250		0		
Event Frequency - Groundwater (events/day)	EvFwe	NA		NA		NA		200	ß	9	Ů	
Event Time - Groundwater (hr/event)	tevent	NA		NA		NA		2				
Inhalation Rate - Adult (m³/day)	IRA	20	4	20	4	7	4a	7 ·		- 7	4.	
Inhalation Rate - Child (m³/day)	IRAc	8.3	4	=		NA		NA		NΔ		
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 <sup>2</sup> )	SA	5700	4	5700	4	3300	4	3300	4	3300	4	
Skin Surface Area - Child to Soil (cm <sup>2</sup> )	SAc	2800	4	=		NA		NA		NA		
Skin Surface Area - Adult to Groundwater (cm <sup>2</sup> )	SAw	NA .		NA		NA		5700	4	5700	4	
Soil to Skin Adherence Factor - Adult (mg/cm <sup>2</sup> -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 <sup>2</sup> -day)	AFc .	0.20	5d	= .		NA		NA		NA		
AGE-ADJUSTED EXPOSURE FACTORS							•••••••••••					
Inhalation Factor - Air (m³-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	NÁ		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		

Department of Environmental Quality Risk-Based Decision Making Land Quality Division September 22, 2003

C-1

## Appendix C: Exposure Factors (continued)

Parameter (unit)	Symbol	Resident	iai '	Urban Resident	ial	Occupatio	nal	Construct Worker	ion	Excavatio Worker	on
			Note		Note		Note		Note		Note
SITE PARAMETERS		1 70			<u> </u>		·····	_	J		
Soil Barticle Density (g/cm <sup>3</sup> )	РЬ	274	°.	_		-		=		. =	
Soil Parasity	Ps	2.74	9	-		-		=			
Air Content Vedece Zene Selle		0.30	8	-		= .		. =		=	
Air Content - Vadose Zone Solis	Π <sub>@</sub>	0.26	10	#		=		=		=	
Air Content - Cap. Fringe Soils	n <sub>acap</sub>	0.038	10	*		8		=		=	
Air Content - Foundation Cracks	<b>N</b> acrk	0.26	10	=		=		=		= '	
Water Content - Vadose Zone Soils	'nw	0.12	8	=		=		=		=	
Water Content - Cap. Fringe Soils	n <sub>wcap</sub>	0.342	8	*		=		=	1	=	
Water Content - Foundation Cracks	nwork	0.12	11	· =		=		=		=	
Vadose Zone Thickness (cm)	Lv	295	12	=		=		2		=	ŀ
Capillary Fringe Thickness (cm)	Lcap	5.00	8	#		_ =		= '		=	
Fraction Organic Carbon (shallow soil)	foc	0.005	8a	=		=		=		=	
Depth to Groundwater (cm)	Lw	300	8	=		=		= '		2	
Groundwater Dilution-Attenuation Factor	DAF	60	19	<b>1</b>		. =		Ξ		2	
SOIL CONTAMINATION PARAMETERS									1		
Thickness of Contaminated Surface Soils (cm)	Las	100	8	#				R.		=	
Fraction of Site with Surface Soli Contamination	f <sub>86</sub>	0.50	16	=		=		• =		*	
Thickness of Clean Surface Soils (cm)	Lo	100	8	<b>#</b>		<b>31</b> ·		.=		=	
Thickness of Subsurface Contamination (cm)	L.	200	8	=		=		=		=	,
Fraction of Site with Subsurface Vol. To Outdoor Air	fso	0.50	17	. = .		-		. =		=	
Thickness of Clean Soils Under Building (cm)	L <sub>cb</sub> .	100	8	=		n		=		#	
Thickness of Contaminated Soils Under Building (cm)	Lsb	200	8	.=	1	=		=		<b>*</b>	
Fraction of Contaminated Soils Under Building	f <sub>sb</sub>	0.50	18	=		=		=		<b>a</b> .	
Particulate Emission Factor for Soils (kg/m <sup>3</sup> )	PEF	7.58E-10	13	=				= .		=	

C-2

Department of Environmental Quality Risk-Based Decision Making

## Appendix C: Exposure Factors (continued)

Parameter (unit)	Symbol	Resident	ial	Urban Resident	ial	Occupatio	onal	Construct Worker	ion ·	Excavation Worker		
	L		Note		Note		Note		Note	·	Note	
Building Air Exchange Rate (1/day)	ER	24	14	=		48		NIA		NIA	T	
Building Height (indoor air mixing zone) (cm)	LB	200	8			300	8	NA NΔ		NA NA		
Foundation Wall Thickness (cm)	Lork	15	8		·	· =.		NA		ΝΔ		
Foundation Crack Fraction	fcrk	0.0010	15	<b>z</b> .	·	=		NA		NA		
VOLATILIZATION FACTORS			l,		Lesses and L	ويبذ التقديمين زراعا	<u> </u>				<u></u>	
Averaging time for Volatilization -Adults (yr)	tvol	25	16	=		=	TT	*	[	=	T	
Averaging time for Volatilization -Children (yr)	t <sub>voic</sub>	6	16	=		NA		NA		NA		
Max. Soil to Building Vol. Factor (kg/m <sup>3</sup> )	VF₅imax	3.88E-03	18	3.88E-03	18	1.29E-03	18	NA		NA		
Max. <u>Surface</u> Soil Vol. Factor - Adult (kg/m <sup>3</sup> )	VFssmax	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 <sup>3</sup> )	VFasmax	6.53E-05	16	· 🛥		NA		NA	•	NA	1	
Max. Soil to Outdoor Air Vol. Factor - Adult (kg/m <sup>3</sup> )	VF₅₀max	3.13E-05	17	3.13E-05	17	3.13E-05	17	NA		NA		
Volatile Organics Dispersion Term (g/m <sup>2</sup> -s per kg/m <sup>3</sup> )	Q/C	6.88E+01	13		.	2		=		=		
MISCELLANEOUS PARAMETERS			/l		<u></u>		<u></u>				<u> </u>	
Ideal Gas Law Constant (m <sup>3</sup> -atm/K-mol)	R	8.21E-05	20	#		=		. =		=======================================		
Absolute Temperature (K)	Т	2.93E+02	20	*. <b>=</b>		=		<b>=</b> `		. =		

C-3

Department of Environmental Quality Risk-Based Decision Making

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  $\rho_s = \rho_b/(1-n)$ .

10, Calculated from  $n_a$ =n-n<sub>w</sub>;  $n_{acap}$ =n-n<sub>wcap</sub>;  $n_{acrk}$ =n-n<sub>wcrk</sub>.

11. nw<sub>crk</sub> assumed = n<sub>w</sub>.

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 seem 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)

Department of Environmental Quality Risk-Based Decision Making

C-4

## Appendix D: Chemical Data

## Data used for Constituent RBC Calculations

Chemical	Vol	Mol. Wt.	S		Р	C <sub>sat</sub>	Koc		K <sub>H</sub>		H	Dair		Dw	
1	Class	(g/mol)	(mg/L)		(µg/m <sup>3</sup> )	(mg/kg)	(cm <sup>3</sup> /g)		(m³-atm/m	ol)		(cm <sup>2</sup> /s)		(cm²/s)	
	Note 1	Note 2		Note	Note 4a	Note 4b		Note		Note	Note 6	• ;	Note		Note
		70	4 755 . 00					<u> </u>							
	V	78	1./5E+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
loiuene		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	ġ	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	<b>V</b> .	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
МТВЕ	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 ·

Department of Environmental Quality Risk-Based Decision Making Land Quality Division September 22, 2003

D-1

Fuel Fraction or	Vol	MW .	Density	S	P	Кн	H'	Log K <sub>oc</sub>	Koc	Dair	. D <sub>w</sub>
Constituent	Class	(g/mol)	(g/cm <sup>3</sup> )	(mg/L)	(ug/m <sup>3</sup> )	(m <sup>3</sup> -atm/mol)			(cm³/g)	(cm²/s)	(cm²/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	. <b>v</b>	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

## Appendix D: Chemical Data (continued)

Data used for TPH RBC Calculations

Department of Environmental Quality Risk-Based Decision Making Land Quality Division September 22, 2003

D-2

### 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<sup>-5</sup> m<sup>3</sup>-atm/mol and a molecular weight < 200 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 ( $D_{alr}$  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 μg/m<sup>3</sup> for direct comparison to RBC<sub>air</sub> values.
  - b. C<sub>sat</sub> is calculated using equation [B-21]. See Section B.2.1.4.
- 5. Koos 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<sub>H</sub> / R \* T where K<sub>H</sub> is the Henry's constant in m<sup>3</sup>-atm/mol, R is the ideal gas law constant (8.21 x 10<sup>-5</sup> m<sup>3</sup>-atm/K-mol), and T is the absolute temperature (293 K).
- 7. Howard (1993)
- 8. Dair and Dw 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

· · · ·				•	•			Subci	ronic		<u> </u>		•							
Chemical	Risk	SF.		SF		RfD。		RfD		RfD	,	RfD	1	RAFd	K <sub>p</sub>	τ	t*	B.		DAw
	Туре	. (mg/Kg-day	/)-1	(mg/Kg-day	/)*1	(mg/Kg-day	Ŋ,	(mg/Kg-da	у).	(mg/Kg-d	ay)	(mg/Kg-d	lay)		(cm/hr)	(hr)	(hr)			(L/cm <sup>2</sup> -event)
· · ·			Note		Note		Note		Note		Note		Note	Note 5					Not	Note 8
								ļ						1						
Benzene	C	0.055	1j	0.027	1)	0.004	2	0.0086	1k,2	-		·•		0.00E+00	1.50E-02	2.90E-01	7.00E-01	1.00E-01	6	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	6	8.02E-05
Ethylbenzene	nc	NA		NA		0.1	10	Ò.29	1c,2	0.11	12	-		0.00E+00	4.90E-02	4.20E-01	1.01E+00	2.00E-01	6	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	6	1.42E-04
iso-propylbenzene	nc	NA		NA		0.1	1g	0.11	1g,2	-	·	-	<u> </u>	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	-		<b>-</b> ·		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	<u> </u>		-		0.00E+00	1.61E-01	1.04E+00	4.00E+00	8.25E-01	7	6.42Ę-04
Benz[a]anthracene	C	0.73	4	0.73	3	NA		NÄ		-				1.30E-01	4.70E-01	2.03E+00	8.53E+00	2.80E+00	6	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	6	4.55E-03
Benzo[k]fluoranthene	С	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	•	-	İ	-		1.30E-01	7.00E-01	2.69E+00	1.17E+01	4.30E+00	6	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	6	2.62E-03
Dibenz[a,h]anthracene	С	7.3	4	7.3	3	NA		NA		-		-		1.30E-01	1.50E+00	3.88E+00	1.76E+01	9.70E+00	6	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	6	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	С	0.73	4	0.73	3	NA		NA		<b>.</b>		•		1.30E-01	1.11E+00	3.69E+00	1.65E+01	7.06E+00	6	8.30E-03
Naphthalene	nc	NA		NA		0.02	11	0.00086	11,2	*		-		0.00E+00	4.70E-02	5.60E-01	1.34E+00	2.00E-01	6	1.41E-04
Pvrene	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	10,2	• ·		-		0.00E+00	3.45E-03	3.27E-01	7.84E-01	1.25E-02	6	9.11E-06
EDB (1,2-dibromoethane)	С	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	6	7.43E-06
EDC (1.2-dichloroethane)	с	0.091	10	0.091	3	0.03	4	0.0014	4	-		<b>-</b> .		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

Department of Environmental Quality Risk-Based Decision Making

E-1

## Appendix E: Toxicological Data (continued) Data used for TPH RBC Calculations

·····				Chr	onic	Subc	hronic	I			. •	•	
Chemical	Risk	SF。	SFi	RfD。	RfD <sub>1</sub>	RfD。	RfDi	RAF₄	Kp	τ	t*	B.	DAw
• · · ·	Туре	(mg/Kg-day) <sup>-1</sup>	(mg/Kg-day) <sup>-1</sup>	(mg/Kg-day)	(mg/Kg-day)	(mg/Kg-day)	(mg/Kg-day)		(cm/hr)	(hr)	(hr)		(L/cm <sup>2</sup> -
		Note 11	Note 11	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

Department of Environmental Quality Risk-Based Decision Making Land Quality Division September 22, 2003

E-2

#### 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

11. IRIS, 1998

1j. IRIS, 2000

1k. IRIS, 2003

2. Converted from inhalation reference concentration (RfC in mg/m<sup>3</sup>) by the following relationship: RfDi = RfC \* 20 m<sup>3</sup>/day / 70 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

40. 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(Koc) + 0.21 = log(Kow) from Table 4 in TPHCWG (1997a).

APPENDIX J

## MTCA METHOD B SOIL CLEANUP LEVEL CALCULATION

Washington State Department of Ecology, Toxics Cleanup Program: Soil Cleanup Level for TPH Sites - Main Data Entry Form and Calculation Summary

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	Measured Soil Conc	Composition				
or Equivalent Carbon Group	dry basis	Ratio				
	mg/kg	%				
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 Hy	varogeological Da	<u>ta</u>				
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 Wa	tter Concentation (i	f adjusted)				
If you adjusted the target TPH gro	ound water	_				
concentration, enter adjusted	800 .	ug/L				
value here:						

Notes for Data Entry	Set Default Hydrogeology
Clear All Soil Concent	tration Data Entry Cells
Restore All Soil Concentra	tion 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 <sub>6</sub> HC <sub>6</sub> )	AL_EC >5-6
Ethylbenzene and Xylenes (C <sub>8</sub> HC <sub>10</sub> )	AR_EC >8-10
Naphthalene ( $C_{10}HC_8$ )	AR_EC >10-12
Benzo(a)anthracene (C <sub>18</sub> HC <sub>12</sub> )	AR_EC >16-21
Benzo(b)fluoranthene (C <sub>20</sub> HC <sub>12</sub> )	AR_EC >16-21
Benzo(k)fluoranthene (C <sub>20</sub> HC <sub>12</sub> )	AR_EC >16-21
Benzo(a)pyrene (C <sub>20</sub> HC <sub>12</sub> )	AR_EC >16-21
Chrysene (C <sub>18</sub> HC <sub>12</sub> )	AR_EC >16-21
Dibenz(a,h)anthracene (C <sub>22</sub> HC <sub>14</sub> )	AR_EC >21-34
Indeno(1,2,3-cd)pyrene (C <sub>22</sub> HC <sub>14</sub> )	AR_EC >21-34

8:45 AM 3/8/2010 241809-6-APPI-SB-8-MTCATPH11.1.xls I:\Everett.Shell\WA Shell Sites\6-char\2418--\241809-11700 NE 160th, Bothell\241809-REPORTS\241809-RPT6-RI\ Washington State Department of Ecology, Toxics Cleanup Program: Soil Cleanup Level for TPH Sites - Main Data Entry Form and Calculation Summary

## A2 Soil Cleanup Levels: Calculation and Summary of Results. Refer to WAC 173-340-720, 740, 745, 747, 750

Site Information

Date: <u>1/20/2010</u> Site Name: <u>11700 Northeast 160th Street, Bothell, Washington</u> Sample Name: <u>SB-8-6</u> Measured Soil TPH Concentration, mg/kg: **15,242.100** 

#### 1. Summary of Calculation Results

Exposure Dathway	Mathod/Coal	Protective Soil	With Measur	red Soil Conc	Does Measured Soil	
Exposure ratilway	Method/Goal	TPH Conc, mg/kg		HI @	Conc Pass or Fail?	
Protection of Soil Direct	Method B	4,956	8.53E-08	3.08E+00	Fail	
Contact: Human Health	Method C	86,445	1.14E-08	1.76E-01	Pass	
Protection of Method B Ground	Potable GW: Human Health Protection	82	1.56E-05	2.85E+00	Fail	
Water Quality (Leaching)	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		

	Pro	tective Soil Concentr	ation @Method	ethod B Protective Soil Concentration				thod C
Soil Criteria	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				
Risk of cPAHs mixture= 1E-6	NA	NA	NA	NA		NIA		
EDB	NA	NA	NA	NA		INA		
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	Protective Potable Ground Water Concentration @Method B					
Ground water Criteria	Most Stringent?	TPH Conc, ug/L	RISK @	HI @	Conc, mg/kg		
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 = $5 \text{ ug/L}$	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

Cround Water Criteria	Protective Ground Water Concentration			Protective Soil	
Ground water Criteria	TPH Conc, ug/L	c, ug/L Risk @ HI @		Conc, mg/kg	
Target TPH GW Conc = 800 ug/L	8.00E+02	1.38E-06	1.07E+00	8.81E+01	

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