GROUNDWATER MONITORING REPORT: FEBRUARY 2016

PNEC Corp Former Bulk Petroleum Facility
Shepard Way NW & Bromley Place NW
Bainbridge Island, Kitsap County, Washington

April 14, 2016
Project No. 81147093B

Prepared for:
PNEC Corp dba SC Fuels
Orange, California

Prepared by:
Terracon Consultants, Inc.
Mountlake Terrace, WA

Terracon

April 14, 2016

SC Fuels/PNEC Corp
1800 West Katella Avenue, Suite 400
Orange, California 92867

Attn: Mr. De Holbrook

Re: Groundwater Monitoring Report – February 2016
PNEC Corp Former Bulk Petroleum Facility
Shepard Way NW & Bromley Place NW
Bainbridge Island, Kitsap County, Washington
Terracon Project No. 81147093B

Dear Mr. Holbrook:

Terracon Consultants, Inc. (Terracon) is pleased to submit this Groundwater Monitoring Report for the above referenced site. This work was performed in general accordance with the Supplement to Agreement for Services dated February 9, 2016, added to the Terracon Proposal No. P81150111 dated April 3, 2015, and the terms, conditions and limitations in the Environmental Consulting Agreement between Terracon Consultants, Inc. and Pacific Northwest Energy Corporation (PNEC Corp), d.b.a. SC Fuels, dated April 3, 2015.

We appreciate the opportunity to perform these services for SC Fuels/PNEC Corp. In addition to sampling services, our professionals provide geotechnical, environmental, construction materials, and facilities services on a wide variety of projects locally, regionally and nationally. For more detailed information on all of Terracon's services please visit our website at www.terracon.com. If there are any questions regarding this report or if we may be of further assistance, please do not hesitate to contact us.

Sincerely,
Terracon Consultants, Inc.

EOR

S. Kyle Long
Environmental Technician

State of Washington
Hydrogeologist
1403
Licensed Geologist
MICHAEL D. NOLL

Michael D. Noll, L.G., L.H.G.
Senior Project Manager

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1.0 INTRODUCTION

This groundwater monitoring report documents additional post-groundwater treatment sampling activities that were conducted at the PNEC Corp Former Bulk Petroleum Facility site (Site), located on the southwest corner of Shepard Way NW & Bromley Place NW in Bainbridge Island, Kitsap County, Washington. Groundwater sampling was performed on February 11, 2016. The property (Kitsap County Parcel No. 272502-4-005-2011) covers approximately 0.9 acres. A Topographic Map is included as Figure 1 that shows the Site in relation to the surrounding area. Figure 2 presents the locations of the monitoring wells and former features at the Site. Figure 3 depicts the February 2016 groundwater contour map.

The site is listed in the Washington Department of Ecology (Ecology) Confirmed and Suspected Contaminated Sites List (CSCSL) as Tosco Bainbridge Island Bulk Plant 1784 (Facility Site ID 26595127, Cleanup Site ID 3960). The CSCSL lists confirmed concentrations of Priority Pollutant Metals, Non-Halogenated Solvents, and Unspecified Petroleum Products in groundwater at levels exceeding the Washington State Model Toxics Control Act (MTCA), and concentrations of Unspecified Petroleum Products in soil at levels exceeding MTCA at the site. The CSCSL also lists suspected concentrations of Unspecified Petroleum Products in surface water at the site.

1.1 Scope of Work

Terracon completed a Washington Department of Ecology (Ecology) underground injection control (UIC) site well registration for remediation well RW-1, and injected Regenesis RegenOx® Part A and Part B solution into RW-1 in an effort to treat site groundwater for residual diesel-range petroleum hydrocarbon impacts at nearby site groundwater monitoring wells MW-2A and MW-5. After a period of approximately three weeks, Terracon began follow-up groundwater monitoring at wells MW-2A, MW-5, and RW-1 to further evaluate concentrations of diesel-range total petroleum hydrocarbons (TPH) at the Site.

The groundwater remedial treatment work was performed as an independent action intended to meet the requirements of the Washington State Model Toxics Control Act

(MTCA) Cleanup Regulation, as established in Chapter 173-340 of the Washington Administrative Code (WAC173-340), in order to achieve regulatory closure. Work was performed in general accordance with MTCA and the *Guidance for Remediation of Petroleum Contaminated Sites,* Ecology Publication No. 10-09-057, dated September 2011.

This report includes a description of the groundwater sample collection activities, tables showing current and historical depth to groundwater measurements and analytical results, and a copy of the analytical laboratory report with chain-of-custody documentation.

1.2 Standard of Care

Terracon's services were performed in a manner consistent with generally accepted practices of the profession undertaken in similar studies in the same geographical area during the same time period. Please note that Terracon does not warrant the work of laboratories, regulatory agencies or other third parties supplying information used in the preparation of the report. These groundwater monitoring services were performed in accordance with the scope of work agreed with you, our client, as reflected in our proposal.

1.3 Additional Scope Limitations

This report was intended to reduce, but not eliminate, uncertainty regarding the existence of recognized environmental conditions in connection with the subject site. Findings, conclusions and recommendations resulting from these services are based upon information derived from the on-site activities and other services performed under this scope of work; such information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, non-detectable or not present during these services, and we cannot represent that the site contains no hazardous substances, toxic materials, petroleum products, or other latent conditions beyond those identified during this groundwater sampling event. Subsurface conditions may vary from those encountered at the time of construction or at specific borings or wells or during other surveys, tests, assessments, investigations or exploratory services. The data, interpretations, findings, and our recommendations are based solely upon data obtained at the time and within the scope of these services. If, during future site development, different subsurface conditions from those encountered during our explorations are observed or appear to be present, we must be advised promptly so that we can review these conditions and reconsider or modify our conclusions and recommendations where necessary.

1.4 Reliance

This report has been prepared for the exclusive use and reliance of PNEC Corp/SC Fuels. Use or reliance by any other party (except a governmental entity having jurisdiction over the Site) is prohibited without the written authorization of PNEC Corp/SC Fuels and Terracon.

Reliance on this report by the client and all authorized parties will be subject to the terms, conditions and limitations stated in this report and Terracon's agreement for services. The limitation of liability defined in the terms and conditions is the aggregate limit of Terracon's liability to the client and all relying parties unless otherwise agreed in writing.

2.0 SITE HISTORY AND PREVIOUS SAMPLING EVENTS

A bulk petroleum storage facility was constructed on the Site by Union Oil Company of California (UNOCAL) in about 1970, and was used primarily for heating oil storage. Tosco Corporation (Tosco) acquired the Site in March 1997 from UNOCAL as part of a portfolio of Western US assets. PNEC Corp purchased the Site from Tosco in June 1997. PNEC removed the facility aboveground storage tanks (ASTs), pumping station, and overhead loading rack structures from the Site in 1997. The attached Figure 2 Site Diagram shows the approximate locations of former site features. Neither Tosco nor PNEC Corp operated the facility.

Tosco conducted a subsurface investigation at the Site in 1997. Soil and groundwater impacts exceeding the MTCA Method A cleanup levels were detected and the Site was listed in the Ecology CSCSL. Tosco continued to perform assessment, remediation, and monitoring work at the Site until June 2007, when environmental responsibility for the Site was transferred to PNEC Corp.

Five groundwater monitoring wells (MW-1 through MW-5) were installed at the Site by others in June 2001 (Figure 2). Well MW-2 was excavated and removed during petroleum-contaminated soil (PCS) excavation work in March 2003, and replacement well MW-2A and remediation well RW-1 were installed at that time. Measured depth to groundwater in the wells has ranged from approximately 4 to 11 feet below the top of the well casing (TOC), with an inferred groundwater flow direction that has varied, but has flowed mainly toward the south and southwest. Groundwater samples were collected from the wells on a quarterly or annual basis between 2001 and 2007. Samples were analyzed for gasoline-, diesel-, and oil-range TPH; benzene, toluene, ethylbenzene, and xylenes (BTEX); volatile organic hydrocarbons (VOCs); polycyclic aromatic hydrocarbons (PAHs); and/or total and dissolved lead. Diesel-range TPH (1,100 micrograms per liter [µg/L]) was detected in well MW-5 in June 2007, at a

concentration exceeding the MTCA Method A cleanup level (500 µg/L). All other laboratory analytical results for the groundwater samples collected from the site wells in June 2007 were below the MTCA Method A or Method B cleanup levels. Historical groundwater data collected from the Site in 2006 and 2007 are included in Table 1 and Table 2.

Terracon collected groundwater samples from wells MW-1, MW-2A, MW-3, MW-4, MW-5, and RW-1 in August 2014. Prior to that sampling event, no groundwater samples had been collected from the Site since June 2007. The results were documented in our report, *Groundwater Monitoring Report: August 2014*, dated September 30, 2014. Diesel-range TPH was identified in the samples collected from groundwater monitoring wells MW-2A and MW-5 at concentrations of 920 µg/L and 800 µg/L, respectively, exceeding the MTCA Method A cleanup level. Gasoline-range TPH, BTEX compounds, and total lead were not identified above the laboratory method reporting limits (MRLs) in any of the samples collected. The groundwater flow direction was generally toward the south and southwest, consistent with previous sampling events. It appeared that the groundwater in the vicinity of monitoring wells MW-2A and MW-5 remained impacted with residual diesel-range TPH.

In January 2015, Terracon completed remedial injections on the Site. Approximately 360 pounds of RegenOx® Part A and 240 pounds of RegenOx® Part B were mixed with 1,325 gallons of potable water, to create a solution with a concentration of approximately 3.5% to 4.5% of RegenOx® Part A. The RegenOx® Part A and Part B mixtures were pumped into well RW-1 at a pumping rate of approximately 4 gallons per minute (gpm). After a period of approximately three weeks following the RegenOx® Part A and Part B injections, Terracon measured depth to groundwater and collected groundwater samples from wells MW-2A, MW-5, and RW-1. The results were documented in our report, *Remedial Treatment Report: January 2015*, dated April 2, 2015. The groundwater sample collected from MW-5 had a diesel-range TPH concentration of 1,200 µg/L and an oil-range TPH concentration of 560 µg/L, both exceeding the MTCA Method A cleanup level of 500 µg/L.

In April and July 2015, Terracon measured depth to groundwater and collected groundwater samples from wells MW-2A, MW-5, and RW-1. The results were documented in our report, *Groundwater Monitoring Report: April and July 2015*, dated August 21, 2015. The groundwater sample collected from MW-2A in July 2015 contained a diesel-range TPH concentration of 510 µg/L, exceeding the MTCA Method A cleanup level of 500 µg/L. The groundwater samples collected from MW-5 in April and July 2015 contained diesel-range TPH concentrations of 940 µg/L and 610 µg/L, respectively, exceeding the MTCA Method A cleanup level. The groundwater samples collected from RW-1 in April and July 2015 contained diesel-range TPH at

concentrations of 540 µg/L and 870 µg/L, respectively, exceeding the MTCA Method A cleanup level.

3.0 GROUNDWATER SAMPLING

On February 11, 2016, Terracon measured depth to groundwater and collected groundwater samples from wells MW-2A, MW-5, and RW-1. Depth to groundwater in each well was measured prior to sample collection. The water level probe was cleaned using an Alconox® wash and distilled water rinse before use in each well.

The wells were purged using a peristaltic pump equipped with clean tubing. Low-flow groundwater discharge rates were maintained during purging in order to minimize the drawdown of the water level in the wells. Groundwater parameters (pH, temperature, specific conductance, and dissolved oxygen) were measured during well purging using a multifunction meter and a flow-through cell. Samples were collected when all parameters were within 10% for two consecutive readings.

The purge water was stored onsite in a Department of Transportation (DOT) approved 55-gallon steel drum. The drum was properly labeled and left onsite near well MW-1 pending receipt of laboratory analytical results. Following the stabilization of measured groundwater parameters, samples were collected utilizing the peristaltic pump. Discharge from the peristaltic pump was directed into laboratory provided glassware. Each sample container was labeled with the site name, date, time, and well/sample number.

Measured depth to water ranged from 2.96 feet below TOC at well MW-3 to 4.70 feet below TOC at well RW-1 (Table 1). Measured depth to groundwater and TOC elevation data relative to a site datum were used to determine the relative groundwater elevation at each well. Based on groundwater level measurements collected during the February 2016 groundwater sampling event, groundwater flow direction at the Site was generally to the south and southwest (Figure 3).

Purge volumes were approximately 0.5 gallons from wells MW-2A, MW-5, and RW-1. The purge water from wells MW-2A, MW-5 and RW-1 was clear, with no sediment. No hydrocarbon-like odor was observed in the purge water from any of the wells.

3.1 Analytical Laboratory Testing

Groundwater samples from the February 2016 sampling event were delivered to ALS Environmental Laboratory, a Washington-accredited analytical laboratory located in Everett, Washington.

The groundwater samples were submitted for laboratory analysis for the following:

- Diesel- and oil-range TPH via Northwest Method NWTPH-Dx,
- Diesel- and oil-range TPH via Northwest Method NWTPH-Dx with a silica gel cleanup,
- Extractable Petroleum Hydrocarbons (EPH) by the Washington EPH Method, and
- Polycyclic Aromatic Hydrocarbons (PAHs) by EPA Method 8270 with selected ion monitoring (SIM).

The Washington EPH Method evaluates diesel- and oil-range TPH based on carbon range fractions. Specifically, the EPH Method quantifies the presence of both aromatic and aliphatic hydrocarbon molecules in a sample, in the 8 to 10 carbon atom range (C8-C10), C10-C12, C12-C16, C16-C21, and C21-C34. Analysis for EPH is used to determine the chemical composition of the petroleum product(s) present and allow for calculations to establish alternative site specific cleanup levels for those contaminants in groundwater at that location.

The executed chain-of-custody forms and laboratory analytical certificates are provided in Appendix A. All analyses were completed using standard turnaround times.

3.2 Quality Assurance/Quality Control Results

The analytical results for the current investigation were checked for completeness immediately upon receipt from the laboratory to ensure that data and QA/QC information requested were present. Data quality was assessed by considering hold times, surrogate recovery, method blanks, matrix spike and matrix spike duplicate (MS/MSD) recovery, and detection limits. QA/QC review was completed using guidance described in *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (Draft Final, USEPA, 2005). Our evaluation assumes that the QA/QC is correct as reported by the laboratory, and merely provides an interpretation of the QA/QC results.

- Hold Times: All analyses were completed within specified hold times.

- Surrogate Recoveries: All surrogate recoveries were within laboratory limits.

- Method Blanks: Analytes were not detected in any of the laboratory method blanks.

- MS/MSD Results: MS and MSD recoveries were all within laboratory limits, and Relative Percent Differences (RPDs) between MS and MSD recoveries were all within laboratory limits.

- Laboratory Reporting Limits: Reporting limits were below relevant MTCA cleanup levels. The reporting limits for the PAHs analyses were elevated above normal laboratory limits due to a reduced sample volume.

Based upon our interpretation of quality control information provided by the laboratory, it is our opinion that the overall datasets are useable as qualified for the purposes of these groundwater sampling events.

4.0 LABORATORY ANALYTICAL RESULTS

A summary of analytical results for groundwater quality from the February 2016 sampling event is presented in Table 2. The results are tabulated, with the state cleanup levels included for comparison. The complete laboratory reports and chain-of-custody forms for analytical results from these sampling events are included in Appendix A.

Diesel- and Oil-Range Organics

Diesel-range TPH was identified above the laboratory reporting limit in the samples collected from monitoring well MW-5 and remediation well RW-1. Diesel-range TPH was detected in the sample collected from MW-5 at a concentration of 810 µg/L, exceeding the MTCA Method A cleanup level of 500 µg/L. Diesel-range TPH was detected in the sample collected from RW-1 at a concentration of 290 µg/L, below the MTCA Method A cleanup level. Oil-range TPH was not detected in the samples above the laboratory method reporting limit (MRL).

Diesel- and Oil-Range Organics with Silica Gel Cleanup

Following a treatment by silica gel cleanup to remove non-polar organics from the samples, the diesel-range TPH concentration in the sample collected from MW-5 was reported at 400 µg/L, below the MTCA Method A cleanup level of 500 µg/L. Diesel- and oil-range TPH were not identified above the laboratory MRL in the remaining samples.

Extractable Petroleum Hydrocarbons

Aromatic hydrocarbons in the C12-C16 range were identified at a concentration of 81 µg/L in the sample collected from monitoring well MW-5. EPH results were below the laboratory MRLs for the remaining samples.

Polycyclic Aromatic Hydrocarbons

Fluorene was detected at a concentration of 3.1 µg/L in the sample collected from monitoring well MW-5, below the MTCA Method B cleanup level of 640 µg/L. PAHs were not detected above the laboratory MRLs in the remaining samples.

5.0 FINDINGS AND CONCLUSIONS

Wells MW-2A, MW-5, and RW-1 were sampled in February 2016, approximately 1 year following RegenOx® injections at well RW-1.

Based on the results of the groundwater sampling events completed in February 2016, the findings and conclusions of this report are as follows:

- Diesel-range TPH was identified in the sample collected from well MW-5 at concentration of 810 µg/L, exceeding the MTCA Method A cleanup level of 500 µg/L.
- Following treatment using a silica gel cleanup, the diesel-range TPH in the sample collected from well MW-5 had a reported concentration of 400 µg/L, below the MTCA Method A cleanup level.
- The groundwater flow direction is generally toward the south and southwest, consistent with previous findings.

The groundwater samples were additionally analyzed for EPH and PAHs in order to calculate TPH groundwater cleanup levels for the samples using the Ecology MTCA Method B Workbook, *MTCATPH11.1*. The groundwater sample collected from well MW-5 contained 81 µg/L of aromatic hydrocarbons in the C8–C12 range using the EPH analytical method, and one non-carcinogenic PAH (fluorene) at a concentration of 3.1 µg/L, which is well below the MTCA Method B cleanup level of 640 µg/L. EPH carbon ranges and PAHs were not detected in the remaining groundwater samples.

The MTCA Method B Workbook stipulates that a value equal to ½ of the laboratory method detection limit be entered into the workbook for all contaminants that were not detected but are suspected to be present at the Site. For contaminants not suspected to be present (i.e., the gasoline additive methyl tert butyl ether [MTBE]), a value of 0 can be entered into the workbook. The workbook calculates a total TPH groundwater result for each sample, and provides an evaluation as to whether the TPH contaminants in the Site groundwater represent a risk to human health if used as a drinking water source.

The calculated groundwater TPH concentrations for the samples collected from wells MW-2A, MW-5, and RW-1 failed the most stringent groundwater criteria due to the

elevated laboratory MRL (50 µg/L) used for reporting the PAH concentrations, which was the result of an insufficient sample volume.

6.0 RECOMMENDATIONS

Based on the results of the February 2016 groundwater monitoring event conducted at the Site, Terracon recommends that groundwater sampling be conducted at all Site wells beginning in the second Quarter of 2016, in order to begin the Site closure quarterly sampling process. The Site should be enrolled in the Ecology Voluntary Cleanup Program.

FIGURES

Figure 1 - Topographic Map
Figure 2 - Site Diagram
Figure 3 – Groundwater Contour Map – February 2016

USGS Suquamish, WA, 7.5-minute Quadrangles, 1981.

LEGEND:

APPROXIMATE SITE BOUNDARY

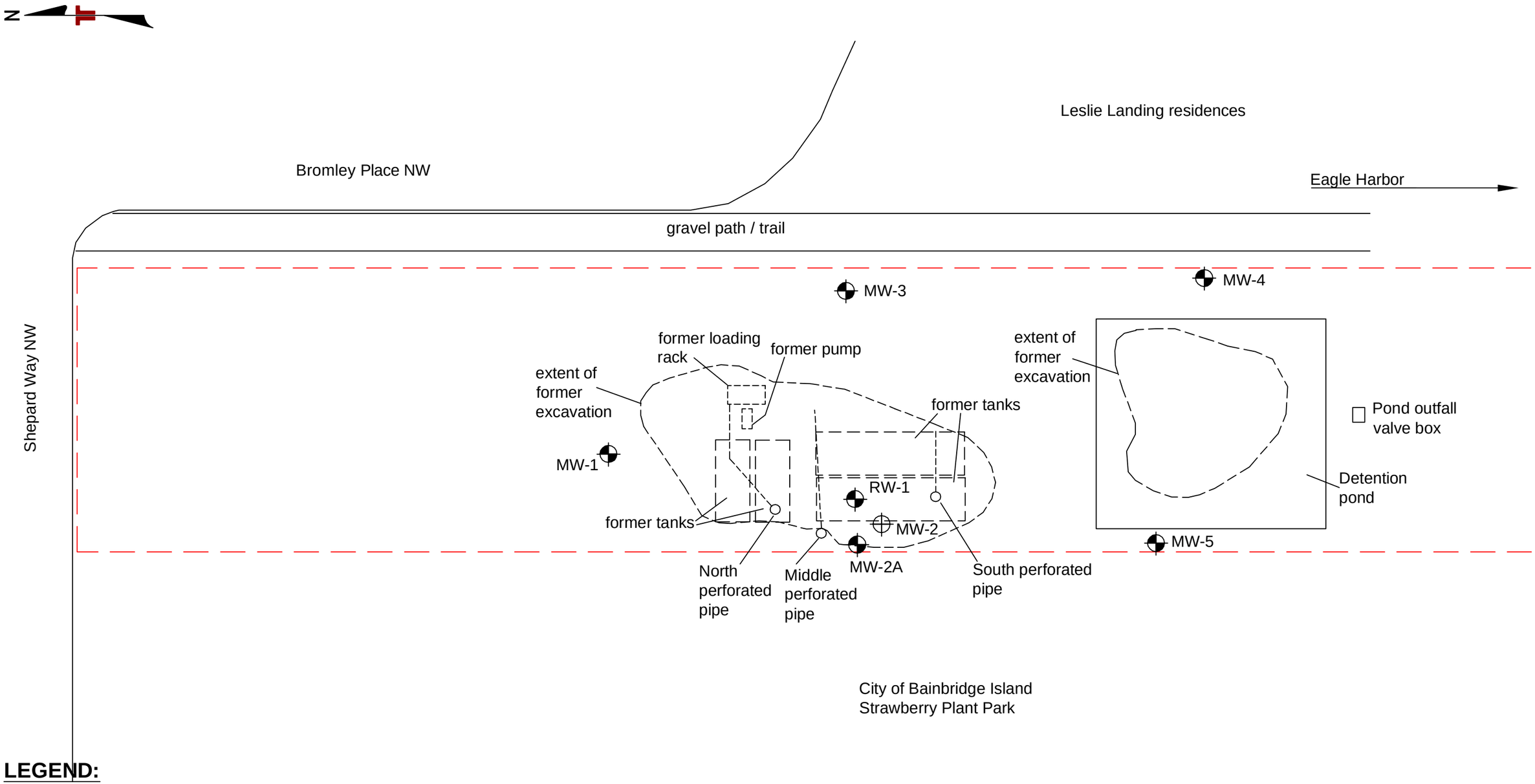
Project Mngr: MDN	Project No. 81147093B
Drawn By: SAB	Scale: Not to Scale
Checked By: MDN	File No.
Approved By: MYW	Date: February 2016

Terracon
Consulting Engineers and Scientists
21905 64th Avenue W., Ste 100 Mountlake Terrace, WA 98043
PH. (425) 771-3304 FAX. (425) 771-3549

TOPOGRAPHIC MAP

Former PNEC Bulk Petroleum Facility
Shepard Way NW & Bromley Place NW
Brainbridge Island, Kitsap County, Washington

FIG. No. 1



LEGEND:

APPROXIMATE SITE BOUNDARY

MW-1 — MONITORING WELL NUMBER AND APPROXIMATE LOCATION

MW-2 — FORMER MONITORING WELL LOCATION

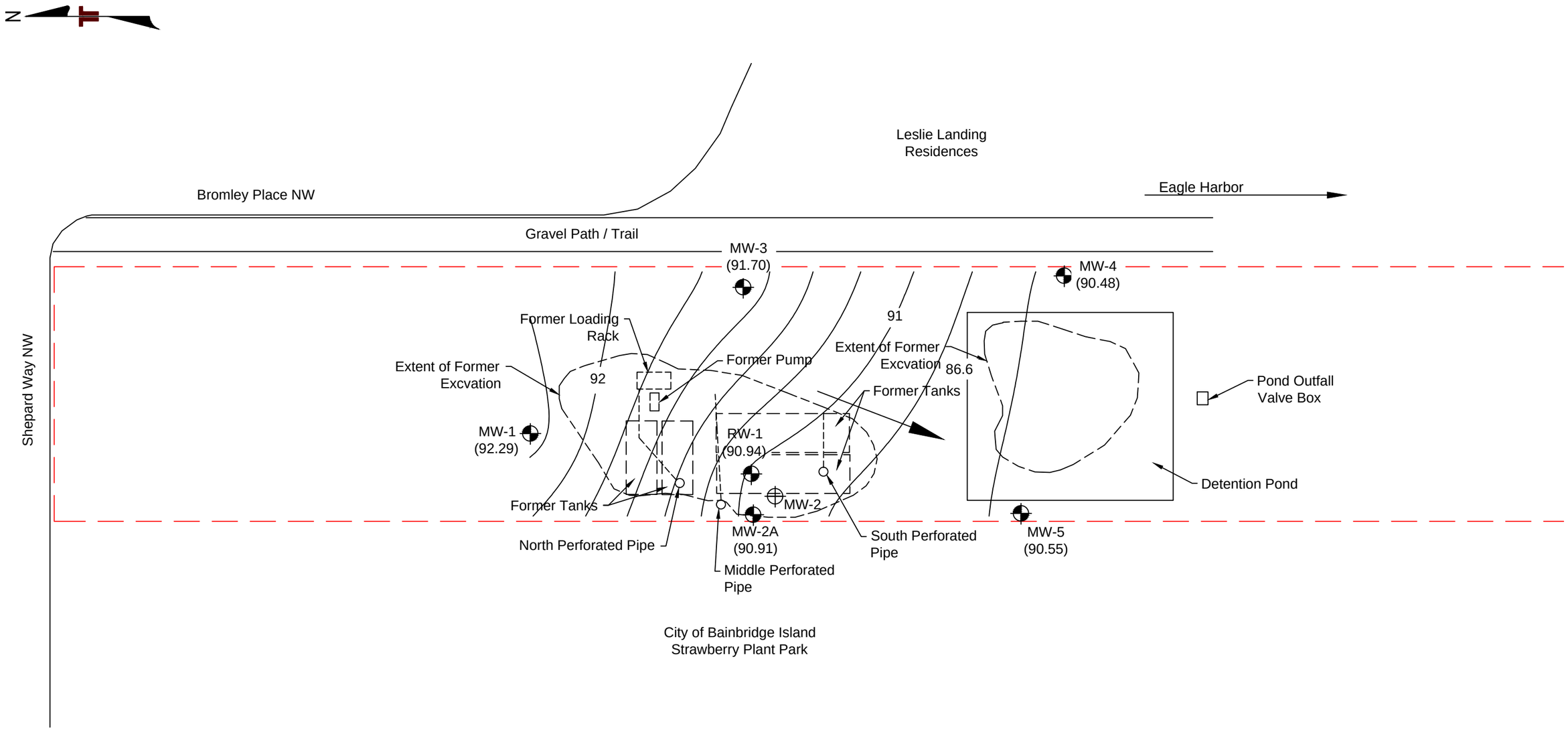
Project Mngr:	MDN
Drawn By:	SAB
Checked By:	MDN
Approved By:	MYW
Project No.	81147093
Scale:	Not to Scale
File No.	
Date:	September 2014

Terracon
Consulting Engineers and Scientists
21905 64th Avenue W, Ste 100 Mountlake Terrace, WA 98043
PH. (425) 771-3304 FAX. (425) 771-3549

SITE DIAGRAM

Former PNEC Bulk Petroleum Facility
Shepard Way NW & Bromley Place NW
Bainbridge Island, Kitsap County, Washington

FIG. No. 2



LEGEND:

APPROXIMATE SITE BOUNDARY

INFERRED GROUNDWATER FLOW DIRECTION

92 GROUNDWATER CONTOUR (feet)

MW-1 (92.29) MONITORING WELL NUMBER AND APPROXIMATE LOCATION (Groundwater elevation, February 11, 2016)

MW-2 FORMER MONITORING WELL LOCATION

20 0 5 10 20
SCALE IN FEET

Project Mngr: MDN	Project No. 81147093B
Drawn By: SAB/RMS	Scale: AS SHOWN
Checked By: MDN	File No. gwcontFeb2016.dwg
Approved By: MYW	Date: February 2016

Terracon
Consulting Engineers and Scientists
21905 64th Avenue W, Ste 100 Mountlake Terrace, WA 98043
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GROUNDWATER CONTOUR MAP - February 11, 2016

Former PNEC Bulk Petroleum Facility
Shepard Way NW & Bromley Place NW
Bainbridge Island, Kitsap County, Washington

FIG. No. 3

TABLES

Table 1 – Summary of Depth to Groundwater Measurements
Table 2 – Summary of Groundwater Analytical Results

TABLE 1

SUMMARY OF DEPTH TO GROUNDWATER MEASUREMENTS
PNEC Former Bulk Petroleum Facility
Shepard Way NW and Bromley Place NW
Bainbridge Island, Kitsap County, Washington

Well Number	Sampling Date	TOC Elevation (Feet)	Depth to Water (Feet)	Relative Groundwater Elevation (Feet)
MW-1	9/13/2006	96.62	9.40	87.22
	12/20/2006		3.85	92.77
screened 4.8-14.8 feet	3/26/2007		4.49	92.13
	6/18/2007		7.08	89.54
	8/19/2014		9.00	87.62
	8/21/2014		9.09	87.53
	4/9/2015		4.88	91.74
	7/1/2015		8.53	88.09
	2/11/2016		4.33	92.29
MW-2A	9/13/2006	95.37	8.88	86.49
	12/20/2006		4.46	90.91
screened 4.8-14.8 feet	3/26/2007		4.79	90.58
	6/18/2007		6.78	88.59
	8/19/2014		8.24	87.13
	8/21/2014		8.31	87.06
	2/11/2015		3.83	91.54
	4/9/2015		4.97	90.40
	7/1/2015		7.61	87.76
	2/11/2016		4.46	90.91
MW-3	9/13/2006	94.66	7.40	87.26
	12/20/2006		3.95	90.71
screened 5-15 feet	3/26/2007		3.41	91.25
	6/18/2007		5.77	88.89
	8/19/2014		7.19	87.47
	8/21/2014		7.30	87.36
	4/9/2015		3.85	90.81
	7/1/2015		6.93	87.73
	2/11/2016		2.96	91.70

TABLE 1

SUMMARY OF DEPTH TO GROUNDWATER MEASUREMENTS
PNEC Former Bulk Petroleum Facility
Shepard Way NW and Bromley Place NW
Bainbridge Island, Kitsap County, Washington

Well Number	Sampling Date	TOC Elevation (Feet)	Depth to Water (Feet)	Relative Groundwater Elevation (Feet)
MW-4	9/13/2006	94.15	9.65	84.50
	12/20/2006		3.34	90.81
screened 4.9-14.9 feet	3/26/2007		3.91	90.24
	6/18/2007		6.90	87.25
	8/19/2014		8.76	85.39
	8/21/2014		8.94	85.21
	4/9/2015		4.20	89.95
	7/1/2015		8.33	85.82
	2/11/2016		3.67	90.48
MW-5	9/13/2006	94.64	11.60	83.04
	12/20/2006		3.97	90.67
screened 5.2-15.2 feet	3/26/2007		4.28	90.36
	6/18/2007		6.10	88.54
	8/19/2014		10.48	84.16
	8/21/2014		10.71	83.93
	2/11/2015		3.82	90.82
	4/9/2015		4.61	90.03
	7/1/2015		8.01	86.63
	2/11/2016		4.09	90.55
RW-1	9/13/2006	95.64	8.80	86.84
	12/20/2006		4.70	90.94
screened 4.7-14.7 feet	3/26/2007		5.03	90.61
	6/18/2007		7.02	88.62
	8/19/2014		8.40	87.24
	8/21/2014		8.45	87.19
	2/11/2015		4.06	91.58
	4/9/2015		5.21	90.43
	7/1/2015		7.79	87.85
	2/11/2016		4.70	90.94

TOC: top of casing

All the monitoring wells are 2-inch diameter

TABLE 2

SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
PNEC Former Bulk Petroleum Facility
Shepard Way NW and Bromley Place NW
Bainbridge Island, Kitsap County, Washington

all concentrations are in µg/l (micrograms per liter)

Sample Name	Sample Date	TPH					EPH	PAHs	BTEX				MTBE
		Gasoline-Range	Diesel-Range	Diesel-Range Silica Gel Cleanup	Oil-Range	Oil-Range Silica Gel Cleanup			Benzene	Toluene	Ethylbenzene	Xylenes	
MW-1	8/21/2014	ND (<100)	ND (<100)	--	ND (<250)	--	--	--	ND (<0.50)	ND (<5.0)	ND (<0.50)	ND (<1.5)	--
	6/18/2007	ND (<50)	ND (<76)	--	ND (<95)	--	--	--	ND (<0.5)	ND (<0.7)	ND (<0.8)	ND (<0.8)	ND (<0.5)
	3/26/2007	ND (<240)	ND (<75)	--	ND (<94)	--	--	--	ND (<0.5)	ND (<0.5)	ND (<0.5)	ND (<0.5)	ND (<0.5)
	12/20/2006	ND (<48)	ND (<76)	--	ND (<95)	--	--	--	ND (<0.5)	ND (<0.7)	ND (<0.8)	ND (<0.8)	ND (<0.5)
	9/13/2006	ND (<48)	**160**	**--**	**150**	**--**	**--**	**--**	ND (<0.5)	ND (<0.7)	ND (<0.7)	ND (<0.8)	ND (<0.5)
MW-2A	2/11/2016	--	**210**	ND (<130)	ND (<250)	ND (<250)	ND (<50)	ND (<0.50)	--	--	--	--	--
	7/1/2015	--	**510**	--	ND (<250)	--	--	--	--	--	--	--	--
	4/9/2015	--	ND (<400)	--	ND (<400)	--	--	--	--	--	--	--	--
	2/11/2015	--	**330**	--	ND <250	--	--	--	--	--	--	--	--
	8/21/2014	ND (<100)	**920**	--	**360**	--	--	--	ND (<0.50)	ND (<5.0)	ND (<0.50)	ND (<1.5)	--
	6/18/2007	ND (<50)	**330**	--	ND (<95)	--	--	--	ND (<0.5)	ND (<0.7)	ND (<0.8)	ND (<0.8)	ND (<0.5)
	3/26/2007	ND (<48)	**300**	--	**120**	--	--	--	ND (<0.5)	ND (<0.5)	ND (<0.5)	ND (<0.5)	ND (<0.5)
	12/20/2006	ND (<48)	**280**	--	ND (<95)	--	--	--	ND (<0.5)	ND (<0.7)	ND (<0.8)	ND (<0.8)	ND (<0.5)
	9/13/2006	**300**	**2,700**	--	**530**	--	--	--	ND (<0.5)	ND (<0.7)	**2**	ND (<0.8)	ND (<0.5)
MW-3	8/21/2014	ND (<100)	ND (<100)		ND (<250)		--	--	ND (<0.50)	ND (<5.0)	ND (<0.50)	ND (<1.5)	--
	6/18/2007	ND (<50)	ND (<76)	--	ND (<95)	--	--	--	ND (<0.5)	ND (<0.7)	ND (<0.8)	ND (<0.8)	ND (<0.5)
	3/26/2007	ND (<48)	ND (<75)	--	ND (<94)	--	--	--	ND (<0.5)	ND (<0.5)	ND (<0.5)	ND (<0.5)	ND (<0.5)
	12/20/2006	ND (<48)	**88**	--	ND (<95)	--	--	--	ND (<0.5)	ND (<0.7)	ND (<0.8)	ND (<0.8)	ND (<0.5)
	9/13/2006	ND (<48)	**88**	--	**97**	--	--	--	ND (<0.5)	ND (<0.7)	ND (<0.8)	ND (<0.8)	ND (<0.5)

TABLE 2

SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
PNEC Former Bulk Petroleum Facility
Shepard Way NW and Bromley Place NW
Bainbridge Island, Kitsap County, Washington

all concentrations are in µg/l (micrograms per liter)

Sample Name	Sample Date	TPH					EPH	PAHs	BTEX				MTBE
		Gasoline-Range	Diesel-Range	Diesel-Range Silica Gel Cleanup	Oil-Range	Oil-Range Silica Gel Cleanup			Benzene	Toluene	Ethylbenzene	Xylenes	
MW-4	8/21/2014	ND (<100)	**410**	**--**	**270**	**--**	**--**	**--**	ND (<0.50)	ND (<5.0)	ND (<0.50)	ND (<1.5)	--
	6/18/2007	ND (<50)	**430**	--	ND (<95)	--	--	--	ND (<0.5)	ND (<0.7)	ND (<0.8)	ND (<0.8)	ND (<0.5)
	3/26/2007	ND (<48)	**150**	--	ND (<95)	--	--	--	ND (<0.5)	ND (<0.5)	ND (<0.5)	ND (<0.5)	ND (<0.5)
	12/20/2006	ND (<48)	**230**	--	**110**	--	--	--	ND (<0.5)	ND (<0.7)	ND (<0.8)	ND (<0.8)	ND (<0.5)
	9/13/2006	ND (<48)	**390**	--	**200**	--	--	--	ND (<0.5)	ND (<0.7)	ND (<0.8)	ND (<0.8)	ND (<0.5)
MW-5	2/11/2016	--	**810**	**400**	ND (<250)	ND (<250)	**81***	**1.3****	--	--	--	--	--
	7/1/2015	--	**620**	--	ND (<250)	--	--	--	--	--	--	--	--
	4/9/2015	--	**940**	--	ND (<400)	--	--	--	--	--	--	--	--
	2/11/2015	--	**1200**	--	**560**	--	--	--	--	--	--	--	--
	8/21/2014	ND (<100)	**800**	--	ND (<500)	--	--	--	ND (<0.50)	ND (<5.0)	ND (<0.50)	ND (<1.5)	--
	6/18/2007	**130**	**1,100**	--	**120**	--	--	--	ND (<0.5)	ND (<0.7)	ND (<0.8)	ND (<0.8)	ND (<0.5)
	3/26/2007	**250**	**1,300**	--	**300**	--	--	--	ND (<0.5)	**0.7**	ND (<0.5)	ND (<0.5)	ND (<0.5)
	12/20/2006	**200**	**2,000**	--	**390**	--	--	--	ND (<0.5)	**8**	ND (<0.8)	ND (<0.8)	ND (<0.5)
	9/13/2006	**61**	**840**	--	**230**	--	--	--	ND (<0.5)	**12**	ND (<0.8)	ND (<0.8)	ND (<0.5)

TABLE 2

SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
PNEC Former Bulk Petroleum Facility
Shepard Way NW and Bromley Place NW
Bainbridge Island, Kitsap County, Washington

all concentrations are in µg/l (micrograms per liter)

Sample Name	Sample Date	TPH					EPH	PAHs	BTEX				MTBE
		Gasoline-Range	Diesel-Range	Diesel-Range Silica Gel Cleanup	Oil-Range	Oil-Range Silica Gel Cleanup			Benzene	Toluene	Ethylbenzene	Xylenes	
RW-1	2/11/2016	--	**290**	ND (<130)	ND (<250)	ND (<250)	ND (<50)	ND (<0.50)	--	--	--	--	--
	7/1/2015	--	**870**	--	ND (<250)	--	--	--	--	--	--	--	--
	4/9/2015	--	**540**	--	ND (<400)	--	--	--	--	--	--	--	--
	2/11/2015	--	**410**	--	ND (<250)	--	--	--	--	--	--	--	--
	8/21/2014	ND (<100)	**210**	--	ND (<250)	--	--	--	ND (<0.50)	ND (<5.0)	ND (<0.50)	ND (<1.5)	--
	6/18/2007	ND (<50)	**280**	--	ND (<96)	--	--	--	ND (<0.5)	ND (<0.7)	ND (<0.8)	ND (<0.8)	ND (<0.5)
	3/26/2007	ND (<48)	**210**	--	ND (<95)	--	--	--	ND (<0.5)	ND (<0.5)	ND (<0.5)	ND (<0.5)	ND (<0.5)
	12/20/2006	ND (<48)	**180**	--	ND (<96)	--	--	--	ND (<0.5)	ND (<0.7)	ND (<0.8)	ND (<0.8)	ND (<0.5)
	9/13/2006	ND (<48)	ND (<77)	--	ND (<96)	--	--	--	ND (<0.5)	ND (<0.7)	ND (<0.8)	ND (<0.8)	ND (<0.5)
MTCA Method A Cleanup Level		**1,000** [1]	**500**	**NA**	**500**	**NA**	**NA**	**NA**	**5**	**1,000**	**700**	**1,000**	**20**

Note: - Concentrations detected are in **BOLD** type.
- Shaded and **BOLD** concentrations are above MTCA cleanup levels.

TPH - Total petroleum hydrocarbons
EPH - Extractable petroleum hydrocarbons
PAH - Polycyclic aromatic hydrocarbons
MTBE - Methyl tert butyl ether
MTCA - Model Toxics Control Act
1 - No detectable benzene in ground water
-- - Not tested
ND - Not detected above laboratory reporting limit
* - >C12-C16 aromatics carbon range only
** - Fluorene only

Appendix A

Analytical Reports and Chain-of-Custody Documentation

February 25, 2016

Mr. Mike Noll
Terracon
21905 - 64th Ave W, Suite 100
Mountlake Terrace, WA 98043

Dear Mr. Noll,

On February 11th, 6 samples were received by our laboratory and assigned our laboratory project number EV16020087. The project was identified as your 81147093B. The sample identification and requested analyses are outlined on the attached chain of custody record.

No abnormalities or nonconformances were observed during the analyses of the project samples.

Please do not hesitate to call me if you have any questions or if I can be of further assistance.

Sincerely,

ALS Laboratory Group

Rick Bagan
Laboratory Director

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 98208 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Group USA, Corp dba ALS Environmental

ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT:	Terracon 21905 - 64th Ave W, Suite 100 Mountlake Terrace, WA 98043	DATE: ALS JOB#: ALS SAMPLE#:	2/25/2016 EV16020087 EV16020087-01
CLIENT CONTACT:	Mike Noll	DATE RECEIVED:	02/11/2016
CLIENT PROJECT:	81147093B	COLLECTION DATE:	2/11/2016 10:34:00 AM
CLIENT SAMPLE ID	MW-2A	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Diesel Range	NWTPH-DX w/ SGA	U	130	1	UG/L	02/17/2016	EBS
TPH-Oil Range	NWTPH-DX w/ SGA	U	250	1	UG/L	02/17/2016	EBS
>C8-C10 Aliphatics	NWEPH	U	50	1	UG/L	02/21/2016	EBS
>C10-C12 Aliphatics	NWEPH	U	50	1	UG/L	02/21/2016	EBS
>C12-C16 Aliphatics	NWEPH	U	50	1	UG/L	02/21/2016	EBS
>C16-C21 Aliphatics	NWEPH	U	50	1	UG/L	02/21/2016	EBS
>C21-C34 Aliphatics	NWEPH	U	50	1	UG/L	02/21/2016	EBS
>C8-C10 Aromatics	NWEPH	U	50	1	UG/L	02/21/2016	EBS
>C10-C12 Aromatics	NWEPH	U	50	1	UG/L	02/21/2016	EBS
>C12-C16 Aromatics	NWEPH	U	50	1	UG/L	02/21/2016	EBS
>C16-C21 Aromatics	NWEPH	U	50	1	UG/L	02/21/2016	EBS
>C21-C34 Aromatics	NWEPH	U	50	1	UG/L	02/21/2016	EBS
Naphthalene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
2-Methylnaphthalene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
1-Methylnaphthalene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Acenaphthylene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Acenaphthene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Fluorene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Phenanthrene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Anthracene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Fluoranthene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Pyrene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Benzo[A]Anthracene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Chrysene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Benzo[B]Fluoranthene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Benzo[K]Fluoranthene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Benzo[A]Pyrene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Dibenz[A,H]Anthracene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Benzo[G,H,I]Perylene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
C25	NWTPH-DX w/ SGA	**109**	02/17/2016	EBS
C25	NWEPH	**93.5**	02/21/2016	EBS
p-Terphenyl	NWEPH	**88.8**	02/21/2016	EBS
Terphenyl-d14	EPA-8270 SIM	**104**	02/25/2016	GAP

U - Analyte analyzed for but not detected at level above reporting limit.

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 98208 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Group USA, Corp dba ALS Environmental

ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT:	Terracon 21905 - 64th Ave W, Suite 100 Mountlake Terrace, WA 98043	DATE:	2/25/2016
		ALS JOB#:	EV16020087
		ALS SAMPLE#:	EV16020087-02
CLIENT CONTACT:	Mike Noll	DATE RECEIVED:	02/11/2016
CLIENT PROJECT:	81147093B	COLLECTION DATE:	2/11/2016 12:29:00 PM
CLIENT SAMPLE ID	MW-5	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Diesel Range	NWTPH-DX w/ SGA	**400**	130	1	UG/L	02/17/2016	EBS
TPH-Oil Range	NWTPH-DX w/ SGA	U	250	1	UG/L	02/17/2016	EBS
>C8-C10 Aliphatics	NWEPH	U	50	1	UG/L	02/21/2016	EBS
>C10-C12 Aliphatics	NWEPH	U	50	1	UG/L	02/21/2016	EBS
>C12-C16 Aliphatics	NWEPH	U	50	1	UG/L	02/21/2016	EBS
>C16-C21 Aliphatics	NWEPH	U	50	1	UG/L	02/21/2016	EBS
>C21-C34 Aliphatics	NWEPH	U	50	1	UG/L	02/21/2016	EBS
>C8-C10 Aromatics	NWEPH	U	50	1	UG/L	02/21/2016	EBS
>C10-C12 Aromatics	NWEPH	U	50	1	UG/L	02/21/2016	EBS
>C12-C16 Aromatics	NWEPH	**81**	50	1	UG/L	02/21/2016	EBS
>C16-C21 Aromatics	NWEPH	U	50	1	UG/L	02/21/2016	EBS
>C21-C34 Aromatics	NWEPH	U	50	1	UG/L	02/21/2016	EBS
Naphthalene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
2-Methylnaphthalene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
1-Methylnaphthalene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Acenaphthylene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Acenaphthene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Fluorene	EPA-8270 SIM	**1.3**	0.50	1	UG/L	02/25/2016	GAP
Phenanthrene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Anthracene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Fluoranthene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Pyrene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Benzo[A]Anthracene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Chrysene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Benzo[B]Fluoranthene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Benzo[K]Fluoranthene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Benzo[A]Pyrene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Dibenz[A,H]Anthracene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Benzo[G,H,I]Perylene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
C25	NWTPH-DX w/ SGA	**114**	02/17/2016	EBS
C25	NWEPH	**88.4**	02/21/2016	EBS
p-Terphenyl	NWEPH	**94.1**	02/21/2016	EBS
Terphenyl-d14	EPA-8270 SIM	**119**	02/25/2016	GAP

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains an unidentified diesel range product.

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CERTIFICATE OF ANALYSIS

CLIENT:	Terracon 21905 - 64th Ave W, Suite 100 Mountlake Terrace, WA 98043	DATE: ALS JOB#: ALS SAMPLE#:	2/25/2016 EV16020087 EV16020087-03
CLIENT CONTACT:	Mike Noll	DATE RECEIVED:	02/11/2016
CLIENT PROJECT:	81147093B	COLLECTION DATE:	2/11/2016 11:34:00 AM
CLIENT SAMPLE ID	RW-1	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Diesel Range	NWTPH-DX w/ SGA	U	130	1	UG/L	02/17/2016	EBS
TPH-Oil Range	NWTPH-DX w/ SGA	U	250	1	UG/L	02/17/2016	EBS
>C8-C10 Aliphatics	NWEPH	U	50	1	UG/L	02/21/2016	EBS
>C10-C12 Aliphatics	NWEPH	U	50	1	UG/L	02/21/2016	EBS
>C12-C16 Aliphatics	NWEPH	U	50	1	UG/L	02/21/2016	EBS
>C16-C21 Aliphatics	NWEPH	U	50	1	UG/L	02/21/2016	EBS
>C21-C34 Aliphatics	NWEPH	U	50	1	UG/L	02/21/2016	EBS
>C8-C10 Aromatics	NWEPH	U	50	1	UG/L	02/21/2016	EBS
>C10-C12 Aromatics	NWEPH	U	50	1	UG/L	02/21/2016	EBS
>C12-C16 Aromatics	NWEPH	U	50	1	UG/L	02/21/2016	EBS
>C16-C21 Aromatics	NWEPH	U	50	1	UG/L	02/21/2016	EBS
>C21-C34 Aromatics	NWEPH	U	50	1	UG/L	02/21/2016	EBS
Naphthalene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
2-Methylnaphthalene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
1-Methylnaphthalene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Acenaphthylene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Acenaphthene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Fluorene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Phenanthrene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Anthracene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Fluoranthene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Pyrene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Benzo[A]Anthracene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Chrysene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Benzo[B]Fluoranthene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Benzo[K]Fluoranthene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Benzo[A]Pyrene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Dibenz[A,H]Anthracene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP
Benzo[G,H,I]Perylene	EPA-8270 SIM	U	0.50	1	UG/L	02/25/2016	GAP

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
C25	NWTPH-DX w/ SGA	**108**	02/17/2016	EBS
C25	NWEPH	**113**	02/21/2016	EBS
p-Terphenyl	NWEPH	**99.7**	02/21/2016	EBS
Terphenyl-d14	EPA-8270 SIM	**101**	02/25/2016	GAP

U - Analyte analyzed for but not detected at level above reporting limit.

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 98208 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Group USA, Corp dba ALS Environmental

ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT:	Terracon 21905 - 64th Ave W, Suite 100 Mountlake Terrace, WA 98043	DATE:	2/25/2016
		ALS JOB#:	EV16020087
		ALS SAMPLE#:	EV16020087-04
CLIENT CONTACT:	Mike Noll	DATE RECEIVED:	02/11/2016
CLIENT PROJECT:	81147093B	COLLECTION DATE:	2/11/2016 10:34:00 AM
CLIENT SAMPLE ID	MW-2A	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Diesel Range	NWTPH-DX	**210**	130	1	UG/L	02/18/2016	EBS
TPH-Oil Range	NWTPH-DX	U	250	1	UG/L	02/18/2016	EBS

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
C25	NWTPH-DX	**98.3**	02/18/2016	EBS

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains weathered diesel.

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 98208 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Group USA, Corp dba ALS Environmental

ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT:	Terracon 21905 - 64th Ave W, Suite 100 Mountlake Terrace, WA 98043	DATE:	2/25/2016
		ALS JOB#:	EV16020087
		ALS SAMPLE#:	EV16020087-05
CLIENT CONTACT:	Mike Noll	DATE RECEIVED:	02/11/2016
CLIENT PROJECT:	81147093B	COLLECTION DATE:	2/11/2016 12:29:00 PM
CLIENT SAMPLE ID	MW-5	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Diesel Range	NWTPH-DX	**810**	130	1	UG/L	02/18/2016	EBS
TPH-Oil Range	NWTPH-DX	U	250	1	UG/L	02/18/2016	EBS

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
C25	NWTPH-DX	**107**	02/18/2016	EBS

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains highly weathered diesel.

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 98208 | PHONE 425-356-2600 | FAX 425-356-2626
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CERTIFICATE OF ANALYSIS

CLIENT:	Terracon 21905 - 64th Ave W, Suite 100 Mountlake Terrace, WA 98043	DATE:	2/25/2016
		ALS JOB#:	EV16020087
		ALS SAMPLE#:	EV16020087-06
CLIENT CONTACT:	Mike Noll	DATE RECEIVED:	02/11/2016
CLIENT PROJECT:	81147093B	COLLECTION DATE:	2/11/2016 11:34:00 AM
CLIENT SAMPLE ID	RW-1	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Diesel Range	NWTPH-DX	**290**	130	1	UG/L	02/18/2016	EBS
TPH-Oil Range	NWTPH-DX	U	250	1	UG/L	02/18/2016	EBS

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
C25	NWTPH-DX	**105**	02/18/2016	EBS

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains weathered diesel.

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ALS Group USA, Corp dba ALS Environmental

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CERTIFICATE OF ANALYSIS

CLIENT: Terracon
21905 - 64th Ave W, Suite 100
Mountlake Terrace, WA 98043

CLIENT CONTACT: Mike Noll
CLIENT PROJECT: 81147093B

DATE: 2/25/2016
ALS SDG#: EV16020087
WDOE ACCREDITATION: C601

LABORATORY BLANK RESULTS

MB-021716W - Batch 101502 - Water by NWTPH-DX

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
TPH-Diesel Range	NWTPH-DX	U	UG/L	130	02/17/2016	EBS
TPH-Oil Range	NWTPH-DX	U	UG/L	250	02/17/2016	EBS

U - Analyte analyzed for but not detected at level above reporting limit.

MBLK-269891ALK - Batch R269891 - Water by NWEPH

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
>C8-C10 Aliphatics	NWEPH	U	UG/L	50	02/21/2016	EBS
>C10-C12 Aliphatics	NWEPH	U	UG/L	50	02/21/2016	EBS
>C12-C16 Aliphatics	NWEPH	U	UG/L	50	02/21/2016	EBS
>C16-C21 Aliphatics	NWEPH	U	UG/L	50	02/21/2016	EBS
>C21-C34 Aliphatics	NWEPH	U	UG/L	50	02/21/2016	EBS

U - Analyte analyzed for but not detected at level above reporting limit.

MBLK-269891ARO - Batch R269891 - Water by NWEPH

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
>C8-C10 Aromatics	NWEPH	U	UG/L	50	02/21/2016	EBS
>C10-C12 Aromatics	NWEPH	U	UG/L	50	02/21/2016	EBS
>C12-C16 Aromatics	NWEPH	U	UG/L	50	02/21/2016	EBS
>C16-C21 Aromatics	NWEPH	U	UG/L	50	02/21/2016	EBS
>C21-C34 Aromatics	NWEPH	U	UG/L	50	02/21/2016	EBS

U - Analyte analyzed for but not detected at level above reporting limit.

MB-021816W - Batch 101793 - Water by EPA-8270 SIM

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
Naphthalene	EPA-8270 SIM	U	UG/L	0.50	02/25/2016	GAP
2-Methylnaphthalene	EPA-8270 SIM	U	UG/L	0.50	02/25/2016	GAP
1-Methylnaphthalene	EPA-8270 SIM	U	UG/L	0.50	02/25/2016	GAP
Acenaphthylene	EPA-8270 SIM	U	UG/L	0.50	02/25/2016	GAP
Acenaphthene	EPA-8270 SIM	U	UG/L	0.50	02/25/2016	GAP
Fluorene	EPA-8270 SIM	U	UG/L	0.50	02/25/2016	GAP
Phenanthrene	EPA-8270 SIM	U	UG/L	0.50	02/25/2016	GAP
Anthracene	EPA-8270 SIM	U	UG/L	0.50	02/25/2016	GAP
Fluoranthene	EPA-8270 SIM	U	UG/L	0.50	02/25/2016	GAP
Pyrene	EPA-8270 SIM	U	UG/L	0.50	02/25/2016	GAP

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CERTIFICATE OF ANALYSIS

CLIENT:	Terracon 21905 - 64th Ave W, Suite 100 Mountlake Terrace, WA 98043	DATE:	2/25/2016
		ALS SDG#:	EV16020087
		WDOE ACCREDITATION:	C601
CLIENT CONTACT:	Mike Noll		
CLIENT PROJECT:	81147093B		

LABORATORY BLANK RESULTS

MB-021816W - Batch 101793 - Water by EPA-8270 SIM

Benzo[A]Anthracene	EPA-8270 SIM	U	UG/L	0.50	02/25/2016	GAP
Chrysene	EPA-8270 SIM	U	UG/L	0.50	02/25/2016	GAP
Benzo[B]Fluoranthene	EPA-8270 SIM	U	UG/L	0.50	02/25/2016	GAP
Benzo[K]Fluoranthene	EPA-8270 SIM	U	UG/L	0.50	02/25/2016	GAP
Benzo[A]Pyrene	EPA-8270 SIM	U	UG/L	0.50	02/25/2016	GAP
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	U	UG/L	0.50	02/25/2016	GAP
Dibenz[A,H]Anthracene	EPA-8270 SIM	U	UG/L	0.50	02/25/2016	GAP
Benzo[G,H,I]Perylene	EPA-8270 SIM	U	UG/L	0.50	02/25/2016	GAP

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT: Terracon
21905 - 64th Ave W, Suite 100
Mountlake Terrace, WA 98043

CLIENT CONTACT: Mike Noll
CLIENT PROJECT: 81147093B

DATE: 2/25/2016
ALS SDG#: EV16020087
WDOE ACCREDITATION: C601

LABORATORY CONTROL SAMPLE RESULTS

ALS Test Batch ID: 101502 - Water by NWTPH-DX

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	ANALYSIS DATE	ANALYSIS BY
TPH-Diesel Range - BS	NWTPH-DX	98.7			02/17/2016	EBS
TPH-Diesel Range - BSD	NWTPH-DX	95.0	4		02/17/2016	EBS

ALS Test Batch ID: R269891 - Water by NWEPH

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	ANALYSIS DATE	ANALYSIS BY
>C8-C10 Aliphatics - BS	NWEPH	76.9			02/25/2016	EBS
>C8-C10 Aliphatics - BSD	NWEPH	79.5	3		02/25/2016	EBS
>C10-C12 Aliphatics - BS	NWEPH	84.8			02/25/2016	EBS
>C10-C12 Aliphatics - BSD	NWEPH	89.0	5		02/25/2016	EBS
>C12-C16 Aliphatics - BS	NWEPH	90.4			02/25/2016	EBS
>C12-C16 Aliphatics - BSD	NWEPH	99.8	10		02/25/2016	EBS
>C16-C21 Aliphatics - BS	NWEPH	92.6			02/25/2016	EBS
>C16-C21 Aliphatics - BSD	NWEPH	104	12		02/25/2016	EBS
>C21-C34 Aliphatics - BS	NWEPH	93.0			02/25/2016	EBS
>C21-C34 Aliphatics - BSD	NWEPH	105	12		02/25/2016	EBS
>C8-C10 Aromatics - BS	NWEPH	87.3			02/25/2016	EBS
>C8-C10 Aromatics - BSD	NWEPH	103	16		02/25/2016	EBS
>C10-C12 Aromatics - BS	NWEPH	97.0			02/25/2016	EBS
>C10-C12 Aromatics - BSD	NWEPH	114	16		02/25/2016	EBS
>C12-C16 Aromatics - BS	NWEPH	100			02/25/2016	EBS
>C12-C16 Aromatics - BSD	NWEPH	118	17		02/25/2016	EBS
>C16-C21 Aromatics - BS	NWEPH	102			02/25/2016	EBS
>C16-C21 Aromatics - BSD	NWEPH	120	17		02/25/2016	EBS
>C21-C34 Aromatics - BS	NWEPH	99.1			02/25/2016	EBS
>C21-C34 Aromatics - BSD	NWEPH	117	17		02/25/2016	EBS

ALS Test Batch ID: 101793 - Water by EPA-8270 SIM

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	ANALYSIS DATE	ANALYSIS BY
Naphthalene - BS	EPA-8270 SIM	70.7			02/25/2016	GAP
Naphthalene - BSD	EPA-8270 SIM	71.1	1		02/25/2016	GAP
Acenaphthene - BS	EPA-8270 SIM	78.0			02/25/2016	GAP
Acenaphthene - BSD	EPA-8270 SIM	78.2	0		02/25/2016	GAP
Pyrene - BS	EPA-8270 SIM	82.8			02/25/2016	GAP
Pyrene - BSD	EPA-8270 SIM	92.0	10		02/25/2016	GAP
Benzo[G,H,I]Perylene - BS	EPA-8270 SIM	76.3			02/25/2016	GAP
Benzo[G,H,I]Perylene - BSD	EPA-8270 SIM	75.4	1		02/25/2016	GAP

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CERTIFICATE OF ANALYSIS

APPROVED BY

Laboratory Director

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http://www.alsglobal.com

Chain Of Custody/ Laboratory Analysis Request

ALS Job# (Laboratory Use Only): EV1602087

Date 2/11/16 Page 1 Of 1

PROJECT ID: 81147093B
REPORT TO COMPANY: Terracon
PROJECT MANAGER: Mike Noll
ADDRESS: 2905 64th Ave W Ste 100, Mountlake Terrace, WA 98043
PHONE: 425-771-3304 FAX:
P.O. #: E-MAIL: mdnoll@terracon.com
INVOICE TO COMPANY:
ATTENTION: Same
ADDRESS:

SAMPLE I.D.	DATE	TIME	TYPE	LAB#	NWTPH-HCID	NWTPH-DX w/SGC	~~NWTPH-DX~~ DX no cleanup	BTEX by EPA-8021	MTBE by EPA-8021 ☐ EPA-8260 ☐	Halogenated Volatiles by EPA 8260	Volatile Organic Compounds by EPA 8260	EDB / EDC by EPA 8260 SIM (water)	EDB / EDC by EPA 8260 (soil)	Semivolatile Organic Compounds by EPA 8270	Polycyclic Aromatic Hydrocarbons (PAH) by EPA-8270 SIM ☑	PCB ☐ Pesticides ☐ by EPA 8081/8082	Metals-MTCA-5 ☐ RCRA-8 ☐ Pri Pol ☐ TAL ☐	Metals Other (Specify)	TCLP-Metals ☐ VOA ☐ Semi-Vol ☐ Pest ☐ Herbs ☐	OTHER (Specify): EPH (hold)	NUMBER OF CONTAINERS	RECEIVED IN GOOD CONDITION?
1. MW-2A	2/11/16	10:34	GW	1		X									X				X	3	
2. MW-5	"	12:29	"	2		X									X				X	3	
3. RW-1	"	11:34	"	3		X									X				X	3	
4.																					
5. MW-2A	2/11/16	10:34	W	4			X														
6. MW-5	"	12:29	"	5			X														
7. RW-1	"	11:34	"	6			X														
8.																					
9.																					
10.																					

SPECIAL INSTRUCTIONS: 5-Day Rev natural contrast (X) Added per mike

SIGNATURES (Name, Company, Date, Time):

1. Relinquished By: Terracon 2/11/16 3:45
   Received By: ALS 2/11/16 3:45
2. Relinquished By:
   Received By:

TURNAROUND REQUESTED in Business Days*

Organic, Metals & Inorganic Analysis: 10 Standard | 5 | 3 | 2 | 1 | SAME DAY

Fuels & Hydrocarbon Analysis: 5 Standard | 3 | 1 | SAME DAY

OTHER: Specify:

*Turnaround request less than standard may incur Rush Charges

Appendix B

MTCA Method B Groundwater TPH Cleanup Level Calculation Worksheets

B. Worksheet for Calculating Potable Ground Water Cleanup Levels
(Method B only) WAC 173-340-720

1. Enter Site Information

Date: 2/11/2016
Site Name: Former Tosco BI Bulk Plant 1784; EPH data analysis; ND = zero out
Sample info: GW sample: MW-2A; sample type: N

2. Enter Ground Water Concentration Measured

Notes for Data Entry

Chemical of Concern or EC Group	Measured GW Conc	GW Cleanup Level	Current Condition HQ	Current Condition RISK	Current Condition Pass or Fail?	Adjusted Condition GW Conc being tested	Adjusted Condition HQ	Adjusted Condition RISK	Adjusted Condition Pass or Fail?
	ug/L	ug/L	unitless	unitless		ug/L	unitless	unitless	
Petroleum EC Fraction									
AL_EC >5-6	0								
AL_EC >6-8	0								
AL_EC >8-10	25		1.04E-01			7.94E+00	3.31E-02		
AL_EC >10-12	25		1.04E-01			7.94E+00	3.31E-02		
AL_EC >12-16	25		5.21E-02			7.94E+00	1.65E-02		
AL_EC >16-21	25		7.81E-04			7.94E+00	2.48E-04		
AL_EC >21-34	25		7.81E-04			7.94E+00	2.48E-04		
AR_EC >8-10	25		3.13E-02			7.94E+00	9.92E-03		
AR_EC >10-12	25		1.56E-01			7.94E+00	4.96E-02		
AR_EC >12-16	25		3.13E-02			7.94E+00	9.92E-03		
AR_EC >16-21	25		5.21E-02			7.94E+00	1.65E-02		
AR_EC >21-34	25		3.91E-02			7.94E+00	1.24E-02		
Benzene	0	5							
Toluene	0	1000							
Ethylbenzene	0	700							
Total Xylenes	0	1000							
Naphthalene	0.25	160	1.56E-03			7.94E-02	4.96E-04		
1-Methyl Naphthalene	0.25		6.25E-04			7.94E-02	1.98E-04		
2-Methyl Naphthalene	0.25		7.81E-03			7.94E-02	2.48E-03		
n-Hexane	0								
MTBE	0	20							
Ethylene Dibromide (EDB)	0	0.01							
1,2 Dichloroethane (EDC)	0	5							
Benzo(a)anthracene	0.25	for		2.09E-06	*for*	7.94E-02		6.62E-07	*for*
Benzo(b)fluoranthene	0.25	all		2.09E-06	*all*	7.94E-02		6.62E-07	*all*
Benzo(k)fluoranthene	0.25	cPAHs		2.09E-06	*cPAHs*	7.94E-02		6.62E-07	*cPAHs*
Benzo(a)pyrene	0.25	Risk =		2.09E-05	***Fail***	7.94E-02		6.62E-06	
Chrysene	0.25	1E-05		2.09E-07		7.94E-02		6.62E-08	
Dibenz(a,h)anthracene	0.25			2.09E-06	Σ Risk=	7.94E-02		6.62E-07	Σ Risk=
Indeno(1,2,3-cd)pyrene	0.25			2.09E-06	3.15E-05	7.94E-02		6.62E-07	1.00E-05
Sum	**252.5**		5.82E-01	3.15E-05	***Fail***	8.02E+01	1.85E-01	1.00E-05	

TEST CURRENT CONDITION

Measured TPH GW Conc, ug/L = 252.5
HI = 5.819E-01
RISK = 3.149E-05
Pass or Fail? ***Fail***

CALCULATE PROTECTIVE CONDITION

This tool allows the user to calculate a protective TPH ground water concentration based on various ground water quality criteria. The Workbook uses the same composition ratio as for the measured data.

Calculate Protective TPH GW Conc

Selected Criterion: Risk of cPAHs = 1E-5
Most Stringent? YES

Protective TPH GW Conc, ug/L = 80.17
HI = 1.85E-01
RISK = 1.00E-05

SUMMARY OF PROTECTIVE GW CONCENTRATIONS

Protective GW TPH Conc, ug/L	**80.17**
Most Stringent Criterion	**Risk of cPAHs = 1E-5**

Ground Water Criteria	Most Stringent?	GW TPH, ug/L	RISK @	HI @
HI = 1	*NO*	4.34E+02	5.41E-05	1.00E+00
Total Risk = 1E-5	YES	8.02E+01	1.00E-05	1.85E-01
Total Risk = 1E-6	YES	8.02E+00	1.00E-06	1.85E-02
Benzene MCL = 5 ug/L	NA	NA	NA	NA
MTBE = 20 ug/L	NA	NA	NA	NA
Risk of cPAHs = 1E-5	YES	8.02E+01	1.00E-05	1.85E-01
Toluene =1000 ug/L	NA	NA	NA	NA
Ethylbenzene = 700 ug/L	NA	NA	NA	NA
Total Xylenes = 1000 ug/L	NA	NA	NA	NA

TEST ADJUSTED CONDITION

This tool allows the user to test whether a particular TPH soil concentration is protective of human health. The Workbook uses the same composition ratio as for the measured data.

Test Adjusted TPH GW Conc

Tested TPH GW Conc, ug/L=
HI=
RISK=
Pass or Fail?

B. Worksheet for Calculating Potable Ground Water Cleanup Levels
(Method B only) WAC 173-340-720

1. Enter Site Information

Date: 2/11/2016
Site Name: Former Tosco BI Bulk Plant 1784; EPH data analysis; ND = zero out
Sample info: GW sample: MW-5; sample type: N

2. Enter Ground Water Concentration Measured

Notes for Data Entry

Chemical of Concern or EC Group	Measured GW Conc	GW Cleanup Level	Current Condition HQ	Current Condition RISK	Current Condition Pass or Fail?	Adjusted Condition GW Conc being tested	Adjusted Condition HQ	Adjusted Condition RISK	Adjusted Condition Pass or Fail?
	ug/L	ug/L	unitless	unitless		ug/L	unitless	unitless	
Petroleum EC Fraction									
AL_EC >5-6	0								
AL_EC >6-8	0								
AL_EC >8-10	25		1.04E-01			7.94E+00	3.31E-02		
AL_EC >10-12	25		1.04E-01			7.94E+00	3.31E-02		
AL_EC >12-16	25		5.21E-02			7.94E+00	1.65E-02		
AL_EC >16-21	25		7.81E-04			7.94E+00	2.48E-04		
AL_EC >21-34	25		7.81E-04			7.94E+00	2.48E-04		
AR_EC >8-10	25		3.13E-02			7.94E+00	9.92E-03		
AR_EC >10-12	25		1.56E-01			7.94E+00	4.96E-02		
AR_EC >12-16	81		1.01E-01			2.57E+01	3.21E-02		
AR_EC >16-21	25		5.21E-02			7.94E+00	1.65E-02		
AR_EC >21-34	25		3.91E-02			7.94E+00	1.24E-02		
Benzene	0	5							
Toluene	0	1000							
Ethylbenzene	0	700							
Total Xylenes	0	1000							
Naphthalene	0.25	160	1.56E-03			7.94E-02	4.96E-04		
1-Methyl Naphthalene	0.25		6.25E-04			7.94E-02	1.98E-04		
2-Methyl Naphthalene	0.25		7.81E-03			7.94E-02	2.48E-03		
n-Hexane	0								
MTBE	0	20							
Ethylene Dibromide (EDB)	0	0.01							
1,2 Dichloroethane (EDC)	0	5							
Benzo(a)anthracene	0.25	for		2.09E-06	*for*	7.94E-02		6.62E-07	*for*
Benzo(b)fluoranthene	0.25	all		2.09E-06	*all*	7.94E-02		6.62E-07	*all*
Benzo(k)fluoranthene	0.25	cPAHs		2.09E-06	*cPAHs*	7.94E-02		6.62E-07	*cPAHs*
Benzo(a)pyrene	0.25	Risk =		2.09E-05	***Fail***	7.94E-02		6.62E-06	
Chrysene	0.25	1E-05		2.09E-07		7.94E-02		6.62E-08	
Dibenz(a,h)anthracene	0.25			2.09E-06	Σ Risk=	7.94E-02		6.62E-07	Σ Risk=
Indeno(1,2,3-cd)pyrene	0.25			2.09E-06	3.15E-05	7.94E-02		6.62E-07	1.00E-05
Sum	**308.5**		6.52E-01	3.15E-05	***Fail***	9.80E+01	2.07E-01	1.00E-05	

TEST CURRENT CONDITION

Measured TPH GW Conc, ug/L = 308.5
HI = 6.519E-01
RISK = 3.149E-05
Pass or Fail? ***Fail***

CALCULATE PROTECTIVE CONDITION

This tool allows the user to calculate a protective TPH ground water concentration based on various ground water quality criteria. The Workbook uses the same composition ratio as for the measured data.

Calculate Protective TPH GW Conc

Selected Criterion: Risk of cPAHs = 1E-5
Most Stringent? YES

Protective TPH GW Conc, ug/L = 97.95
HI = 2.07E-01
RISK = 1.00E-05

SUMMARY OF PROTECTIVE GW CONCENTRATIONS

Protective GW TPH Conc, ug/L	**97.95**
Most Stringent Criterion	**Risk of cPAHs = 1E-5**

Ground Water Criteria	Most Stringent?	GW TPH, ug/L	RISK @	HI @
HI = 1	*NO*	4.73E+02	4.83E-05	1.00E+00
Total Risk = 1E-5	YES	9.80E+01	1.00E-05	2.07E-01
Total Risk = 1E-6	YES	9.80E+00	1.00E-06	2.07E-02
Benzene MCL = 5 ug/L	NA	NA	NA	NA
MTBE = 20 ug/L	NA	NA	NA	NA
Risk of cPAHs = 1E-5	YES	9.80E+01	1.00E-05	2.07E-01
Toluene =1000 ug/L	NA	NA	NA	NA
Ethylbenzene = 700 ug/L	NA	NA	NA	NA
Total Xylenes = 1000 ug/L	NA	NA	NA	NA

TEST ADJUSTED CONDITION

This tool allows the user to test whether a particular TPH soil concentration is protective of human health. The Workbook uses the same composition ratio as for the measured data.

Test Adjusted TPH GW Conc

Tested TPH GW Conc, ug/L=
HI=
RISK=
Pass or Fail?

B. Worksheet for Calculating Potable Ground Water Cleanup Levels
(Method B only) WAC 173-340-720

1. Enter Site Information

Date: 2/11/2016
Site Name: Former Tosco BI Bulk Plant 1784; EPH data analysis; ND = zero out
Sample info: GW sample: RW-1; sample type: N

2. Enter Ground Water Concentration Measured

Notes for Data Entry

Chemical of Concern or EC Group	Measured GW Conc	GW Cleanup Level	Current Condition HQ	Current Condition RISK	Current Condition Pass or Fail?	Adjusted Condition GW Conc being tested	Adjusted Condition HQ	Adjusted Condition RISK	Adjusted Condition Pass or Fail?
	ug/L	ug/L	unitless	unitless		ug/L	unitless	unitless	
Petroleum EC Fraction									
AL_EC >5-6	0								
AL_EC >6-8	0								
AL_EC >8-10	25		1.04E-01			7.94E+00	3.31E-02		
AL_EC >10-12	25		1.04E-01			7.94E+00	3.31E-02		
AL_EC >12-16	25		5.21E-02			7.94E+00	1.65E-02		
AL_EC >16-21	25		7.81E-04			7.94E+00	2.48E-04		
AL_EC >21-34	25		7.81E-04			7.94E+00	2.48E-04		
AR_EC >8-10	25		3.13E-02			7.94E+00	9.92E-03		
AR_EC >10-12	25		1.56E-01			7.94E+00	4.96E-02		
AR_EC >12-16	25		3.13E-02			7.94E+00	9.92E-03		
AR_EC >16-21	25		5.21E-02			7.94E+00	1.65E-02		
AR_EC >21-34	25		3.91E-02			7.94E+00	1.24E-02		
Benzene	0	5							
Toluene	0	1000							
Ethylbenzene	0	700							
Total Xylenes	0	1000							
Naphthalene	0.25	160	1.56E-03			7.94E-02	4.96E-04		
1-Methyl Naphthalene	0.25		6.25E-04			7.94E-02	1.98E-04		
2-Methyl Naphthalene	0.25		7.81E-03			7.94E-02	2.48E-03		
n-Hexane	0								
MTBE	0	20							
Ethylene Dibromide (EDB)	0	0.01							
1,2 Dichloroethane (EDC)	0	5							
Benzo(a)anthracene	0.25	for		2.09E-06	*for*	7.94E-02		6.62E-07	*for*
Benzo(b)fluoranthene	0.25	all		2.09E-06	*all*	7.94E-02		6.62E-07	*all*
Benzo(k)fluoranthene	0.25	cPAHs		2.09E-06	*cPAHs*	7.94E-02		6.62E-07	*cPAHs*
Benzo(a)pyrene	0.25	Risk =		2.09E-05	***Fail***	7.94E-02		6.62E-06	
Chrysene	0.25	1E-05		2.09E-07		7.94E-02		6.62E-08	
Dibenz(a,h)anthracene	0.25			2.09E-06	Σ Risk=	7.94E-02		6.62E-07	Σ Risk=
Indeno(1,2,3-cd)pyrene	0.25			2.09E-06	3.15E-05	7.94E-02		6.62E-07	1.00E-05
Sum	**252.5**		5.82E-01	3.15E-05	***Fail***	8.02E+01	1.85E-01	1.00E-05	

TEST CURRENT CONDITION

Measured TPH GW Conc, ug/L = 252.5
HI = 5.819E-01
RISK = 3.149E-05
Pass or Fail? ***Fail***

CALCULATE PROTECTIVE CONDITION

This tool allows the user to calculate a protective TPH ground water concentration based on various ground water quality criteria. The Workbook uses the same composition ratio as for the measured data.

Calculate Protective TPH GW Conc

Selected Criterion: Risk of cPAHs = 1E-5
Most Stringent? YES

Protective TPH GW Conc, ug/L = 80.17
HI = 1.85E-01
RISK = 1.00E-05

SUMMARY OF PROTECTIVE GW CONCENTRATIONS

Protective GW TPH Conc, ug/L	**80.17**
Most Stringent Criterion	**Risk of cPAHs = 1E-5**

Ground Water Criteria	Most Stringent?	GW TPH, ug/L	RISK @	HI @
HI = 1	*NO*	4.34E+02	5.41E-05	1.00E+00
Total Risk = 1E-5	YES	8.02E+01	1.00E-05	1.85E-01
Total Risk = 1E-6	YES	8.02E+00	1.00E-06	1.85E-02
Benzene MCL = 5 ug/L	NA	NA	NA	NA
MTBE = 20 ug/L	NA	NA	NA	NA
Risk of cPAHs = 1E-5	YES	8.02E+01	1.00E-05	1.85E-01
Toluene =1000 ug/L	NA	NA	NA	NA
Ethylbenzene = 700 ug/L	NA	NA	NA	NA
Total Xylenes = 1000 ug/L	NA	NA	NA	NA

TEST ADJUSTED CONDITION

This tool allows the user to test whether a particular TPH soil concentration is protective of human health. The Workbook uses the same composition ratio as for the measured data.

Test Adjusted TPH GW Conc

Tested TPH GW Conc, ug/L=
HI=
RISK=
Pass or Fail?