

SITE REMEDIAL ACTION AND MONITORING SUMMARY REPORT

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

November 18, 2016
Project No. 81167198

Prepared for:
PNEC Corp dba SC Fuels
Orange, California

Prepared by:
Terracon Consultants, Inc.
Mountlake Terrace, WA 98042

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The Terracon logo features the word "Terracon" in a bold, white, sans-serif font. The letter "T" is stylized with a vertical bar to its left, creating a unique graphic element. The logo is set against a dark red background.

Geotechnical ■ Environmental ■ Construction Materials ■ Facilities



November 18, 2016

Department of Ecology, NW Region
3190 160th Avenue SE
Bellevue, WA 98008

Attn: Ms. Sonia Fernandez, VCP Coordinator
P: (425) 649-7233
E: sofe461@ecy.wa.gov

and

PNEC Corporation d.b.a. SC Fuels
1800 West Katella Avenue, Suite 400
Orange, California 92867

Attn: Mr. De Holbrook
P: 714-516-7273
E: holbrookd@scfuels.com

RE: Site Remedial Action and Monitoring Summary Report
PNEC Corp Former Bainbridge Island Bulk Petroleum Facility
Shepard Way NW & Bromley Place NW
Bainbridge Island, Kitsap County, Washington 98110
Terracon Project No. 81167198

Dear Ms. Fernandez and Mr. Holbrook:

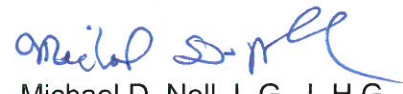
Terracon Consultants, Inc. (Terracon) is pleased to submit this Site Remedial Action and Monitoring Summary Report for the above-referenced site. This document was prepared as a supplement to a Voluntary Cleanup Program (VCP) application previously submitted to Ecology by Terracon on June 3, 2016. Terracon prepared this document on behalf of Pacific Northwest Energy Corporation, d.b.a. SC Fuels (PNEC), the current property owner and VCP applicant. PNEC is seeking a No Further Action (NFA) determination from Ecology for the site.

Please contact either of the undersigned at 425-771-3304 if you have questions regarding the information provided in the report.

Sincerely,
Terracon



Lucas Swart, L.G.
Project Manager



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

Terracon Consultants, Inc. 21905 64th Avenue West, Suite 100 Mountlake Terrace, WA 98043
P [425] 771 3304 F [425] 771 3549 terracon.com

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Bainbridge Island, Kitsap County, Washington**

**Terracon Project No. 81167198
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1.0 INTRODUCTION

The purpose of this Site Remedial Action and Monitoring Summary Report is to provide Ecology with a summary of the remedial cleanup actions and follow-up groundwater monitoring activities that have been completed at the site between 2003 and July 2016, and to request an NFA determination for the site from Ecology. This report is a supplement to the VCP application package submitted to Ecology on June 3, 2016.

1.1 General Site Information

The site is a former heating oil bulk petroleum storage facility located in Kitsap County at the southwest corner of the intersection of Shepard Way NW and Bromley Place NW east of Weaver Avenue in Bainbridge Island, Washington (Kitsap County Parcel No. 272502-4-005-2011). The property is located in the southwest quarter of the southeast quarter of section 27, township 25 north, range 2 east.

The 0.9-acre parcel is unpaved, and measures approximately 60 feet wide (east to west) and 600 feet long. The surrounding properties are residential or undeveloped park property. Weaver Creek is located along a portion of the west side of the site, and Eagle Harbor is located at the south end of the site. A residential housing development (Leslie Landing) and associated private road (Bromley Place NW) and a City of Bainbridge Island walking path right-of-way (ROW) are located east of the site. City of Bainbridge Island park property (Strawberry Plant Park) is located west of the site.

A Topographic Map that shows the site in relation to the surrounding area is included as Exhibit 1 in Appendix A. A Site Diagram showing the approximate locations of former site features and site cross-section locations is included as Exhibit 2 in Appendix A. North-south and east-west site cross-sections are illustrated in Exhibit 3 and Exhibit 4 of Appendix A. The most current (July 2016) groundwater gradient map with a rose diagram depicting a summary of historical groundwater gradient directions is as Exhibit 5 in Appendix A.



Terracon Consultants, Inc. 21905 64th Avenue West, Suite 100 Mountlake Terrace, WA 98043
P [425] 771 3304 F [425] 771 3549 terracon.com



A summary of groundwater monitoring results for 2007 through July 2016 is included in Table 1 and Table 2 of Appendix B. Washington State Model Toxics Control Act (MTCA) Method B workbook calculation sheets of site-specific groundwater cleanup levels for samples collected from select site monitoring wells are included in Appendix C. Historical site figures, summary tables, and boring logs are included in Appendix D.

1.2 Site History

The historical 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. Former site features consisted of two 10,000-gallon and two 4,000 gallon, horizontal, above ground storage tanks (ASTs); a pumping station; an overhead loading rack; and, a retention pond in the southern portion of the property.

Tosco Corporation (Tosco) acquired the site from UNOCAL in March 1997 as part of a portfolio of Western US assets. PNEC purchased the site from Tosco in June 1997 and removed the facility ASTs, pumping station, and overhead loading rack structures from the site in September 1997.

Tosco conducted a subsurface investigation at the site in 1997, as described in further detail below. Soil and groundwater impacts exceeding the Washington State Model Toxics Control Act (MTCA) Method A cleanup levels were detected. The site was 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 MTCA cleanup levels, and concentrations of Unspecified Petroleum Products in soil at levels exceeding MTCA cleanup levels at the site. The CSCSL also lists suspected concentrations of Unspecified Petroleum Products in surface water at the site. Tosco entered the site into the VCP in March 2000 (VCP Site No. NW0425) and continued to perform assessment, remediation, and monitoring work at the site until June 2007, when environmental responsibility for the site was transferred to PNEC and the site was removed from the VCP.

2.0 PREVIOUS ENVIRONMENTAL INVESTIGATIONS

2.1 Previous Work by Others

Pacific Environmental Group (PEG) conducted a site assessment in September 1997 as part of Tosco's due diligence program for a portfolio of bulk plants acquired from Unocal in March 1997. Seven hand auger borings (HA-1 through HA-7) were advanced to

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depths of 1 to 5 feet below the ground surface (bgs) near the overhead loading rack, ASTs, pumping station, and retention pond. The boring locations are shown in Attachment F1 (labeled in the upper right portion of the attachment) in Appendix D.

Based on the historical use of the site as a heating oil storage facility, soil samples were analyzed for diesel- and oil-range total petroleum hydrocarbons (TPH). Diesel-range TPH concentrations exceeding the MTCA Method A cleanup level of 2,000 milligrams per kilogram (mg/kg) were reported for seven soil samples collected from borings HA-3, HA-5, HA-6, and HA-7 (located near the overhead loading rack, ASTs, and pumping station), at concentrations ranging from 2,360 mg/kg to 21,200 mg/kg. The remaining soil sample results were below the MTCA Method A cleanup levels. A summary of the soil sample results is included in Attachment T1 in Appendix D. Following the soil sampling event, the overhead loading rack, ASTs, and pumping station were removed from the site by PNEC.

Noll Environmental, Inc. (NEI) and Cascade Drilling (Cascade) conducted additional site assessment work in December 1999. Ten borings (SB-1 through SB-10; see Attachment F1 in Appendix D) were advanced to depths of 7 to 11 feet bgs near the former ASTs, overhead loading rack, and retention pond using a direct-push technology (DPT) drill rig. Soil samples were collected continuously from the borings, beginning at 2 feet bgs. Copies of the boring logs are included as Attachments B1 through B10 in Appendix B. Groundwater was encountered in the borings at approximately 6 feet bgs. Grab groundwater samples were collected from borings SB-1 through SB-3 and SB-7 through SB-10. Soil and groundwater samples were analyzed for gasoline-, diesel-, and oil-range TPH; and for benzene, toluene, ethylbenzene, and xylenes (BTEX). The SB-2 and SB-3 grab groundwater samples were also analyzed for total and dissolved lead.

Gasoline-range TPH concentrations exceeding the MTCA Method A cleanup level of 100 mg/kg (for sites where benzene is not present) were reported for five soil samples collected at depths ranging from 3 to 7 feet bgs from borings SB-3, SB-4, SB-5, and SB-7 (located near the former ASTs and the inlet pipe to the detention pond), at concentrations ranging from 189 to 799 mg/kg. Diesel-range TPH concentrations exceeding the MTCA Method A cleanup level were reported for two soil samples, collected at 3 and 6 feet bgs, from boring SB-3, at concentrations of 4,410 mg/kg and 2,790 mg/kg, respectively. The remaining soil sample results were below the MTCA Method A cleanup levels (see Attachment T1 in Appendix D).

Gasoline-range TPH concentrations exceeding the MTCA Method A cleanup level of 800 micrograms per liter (µg/L) were reported for the grab groundwater samples collected from borings SB-3 and SB-7, at concentrations of 2,490 µg/L and 32,300 µg/L, respectively. Diesel-range TPH concentrations exceeding the MTCA Method A cleanup level of 500 µg/L were reported for grab groundwater samples, collected from borings

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SB-3 and SB-7 through SB-10, at concentrations ranging from 1,370 to 404,000 µg/L. The remaining grab groundwater sample results were below the MTCA Method A cleanup levels (see Attachment T8 in Appendix D).

Following site characterization work completed in 1999, NEI and Cowlitz Clean Sweep (CCS) excavated petroleum-contaminated soil (PCS) from the detention pond area in June 2000. The soil consisted of approximately 0.5 feet of brown organic-rich sandy silt, underlain by olive gray sandy silt, grading to gray sandy silt (glacial till) with some diesel-like odor. A pocket of gray sandy gravel with a strong petroleum like odor was excavated from the northeast corner of the pond. Approximately 90 cubic yards (CY) of PCS were disposed of at the TPS Technologies (TPS) thermal treatment facility in Lakewood, Washington. Four soil samples collected from the base of the excavation (Pondsed-1-6' through Pondsed-4-6') were tested for gasoline-, diesel-, and oil-range TPH; and for BTEX. Soil excavation and sample locations are shown on Attachment F2 in Appendix D. Soil sample results were below the MTCA Method A cleanup levels (see Attachment T3 in Appendix D).

NEI and CCS excavated PCS from the former ASTs and loading rack area in June 2001. Excavated soils consisted of reddish brown to dark brown silty sand with gravel (fill) to approximately 4 feet bgs, olive to olive gray silty sand and sandy gravel with a strong petroleum-like odor from approximately 4 to 10 feet bgs, and very stiff olive to olive gray sandy silt (glacial till) with no odor from approximately 10 to 12 feet bgs. Approximately 400 CY of PCS were excavated from between 4 and 12 feet bgs and transported offsite for thermal treatment and disposal at TPS. In addition, about 2,600 gallons of petroleum impacted water were removed from the excavation for offsite disposal at an approved facility. Three east-west trending trenches (north, middle, and south) were advanced at the base of the excavation to approximately 12 feet bgs to accommodate the installation of remediation piping, as described below. Fourteen soil samples were collected from the excavation bottom, sidewalls, and trenches at depths ranging from approximately 5 to 12 feet bgs. Soil excavation and sample locations are shown on Attachment F2 in Appendix D.

Collected soil, excavation water, and stockpile samples were analyzed for gasoline-, diesel-, and oil-range TPH-G; and for BTEX. Gasoline-range TPH concentrations exceeding the MTCA Method A cleanup level were reported for eight soil samples collected at depths ranging from 5 to 10 feet bgs, at concentrations ranging from 122 to 715 mg/kg. Diesel-range TPH concentrations exceeding the MTCA Method A cleanup level were reported for one soil sample collected at 5 feet bgs from the east wall of the excavation at a concentration of 2,530 mg/kg. Two "clean" soil stockpile samples (CSS-1 and CSS-2) also contained diesel-range TPH at concentrations of 2,290 mg/kg and 2,040 mg/kg, respectively, which exceeded the MTCA Method A cleanup level. Benzene was not detected in the soil samples. One excavation water sample

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(Excav-Water1) contained gasoline-range TPH at 22,500 µg/L, exceeding the MTCA Method A cleanup level. An excavation water sample collected the following day (Excav-Water2) did not contain gasoline-range TPH above the MTCA Method A cleanup level. The remaining soil and excavation water sample results were below the MTCA Method A cleanup levels (see Attachment T3 and T4 in Appendix D).

Prior to backfilling the remedial excavation, pea gravel was placed in the bottom of each of the three excavated remedial trenches and 1-inch diameter polyvinyl chloride (PVC) pipes with 3/8-inch holes drilled in the bottom were laid in each trench and bedded in the pea gravel. The north and middle perforated pipes were 20 feet long and the south perforated pipe was 10 feet long. Following installation of the piping and backfill of the excavation, dilute hydrogen peroxide and nutrients were pumped into the horizontal remediation pipes at a low flow rate on several occasions between 2001 and 2003. In addition, prior to backfill, Regenesis Oxygen Releasing Compound (ORC®) and fertilizer were applied to the bottom of the excavation and in a portion of the clean sand and gravel fill placed into the excavation. Approximately 10 CY of the "clean" stockpiled soil was also treated with ORC® and used as fill in the excavation above the groundwater table. The remaining "clean" stockpiled soil was hauled offsite for thermal treatment and disposal.

In June 2001, NEI and Cascade advanced five soil borings to approximately 15.5 feet bgs and completed the borings as monitoring wells MW-1 through MW-5 (see Attachment F2 in Appendix D). Lithologies encountered included olive to olive brown silty gravel and gravelly sand from the surface to depths of 6.5 to 13 feet bgs, underlain by gray to olive gray sandy silt and silty gravel. Groundwater was encountered in the borings at 9 to 13 feet bgs. The wells were completed to 15.5 feet bgs using 2-inch diameter PVC casing with slotted well screen set at 5 to 15 feet bgs. Depth to water in the wells ranged from 5.30 to 8.30 feet below the top of the PVC casing (TOC) in June 2001. The inferred groundwater flow direction was toward the south, southwest, and southeast.

Soil samples collected from MW-1 and MW-3 through MW-5 at 5 and 10 feet bgs were analyzed for gasoline-, diesel-, and oil-range TPH using the Northwest Hydrocarbon Identification Method NWTPH-HCID. Soil samples collected from MW-2 at 5, 10, and 15 feet bgs and groundwater samples collected from wells MW-1 through MW-5 and the three perforated remedial treatment pipes (N-PERF PIPE, MID-PERF PIPE, and S PERF PIPE) were analyzed for gasoline-, diesel-, and oil-range TPH and for BTEX. The groundwater samples collected from monitoring wells MW-1 through MW-3 and MW-5 were analyzed for total and dissolved lead. The groundwater samples collected from wells MW-2 and MW-5 and from the middle perforated remedial treatment pipe (MID PERF PIPE) were analyzed for polycyclic aromatic hydrocarbons (PAHs) with selected ion monitoring (SIM).

Gasoline-range TPH was detected at a concentration of 186 mg/kg in the soil sample collected at 10 feet bgs from the MW-2 soil boring, exceeding the MTCA Method A cleanup level. Gasoline-range TPH was detected at a concentration of 1,380 µg/L in the groundwater sample collected from well MW-2, exceeding the MTCA Method a cleanup level. Diesel-range TPH was detected at concentration ranging from 661 µg/L to 1,780 µg/L in the groundwater samples collected from well MW-2 and the perforated remedial treatment pipes, exceeding the MTCA Method a cleanup level. The remaining soil and groundwater sample results were below the MTCA Method A cleanup levels (see Attachments T5 and T9 through T12 in Appendix D).

NEI conducted quarterly groundwater monitoring at the site between June 2001 and December 2002. Groundwater samples were collected from the wells and perforated pipes in September and December 2001; and in March, May, September, and December 2002. Measured depth to groundwater in the wells ranged from 3 to 7 feet below TOC between September 2001 and March 2002, with an inferred groundwater flow direction toward the south, southwest, and southeast. Based on the elevated concentrations of gasoline- and diesel-range TPH detected at MW-2, groundwater in the vicinity of MW-2 and in the three perforated remedial treatment pipes were treated with a dilute solution of hydrogen peroxide and dissolved nutrients in September, October, and November 2002 in order to enhance in situ bioremediation.

The groundwater samples were analyzed for gasoline-, diesel-, and oil-range TPH; and for BTEX. Samples collected in May 2002 were also analyzed for total and dissolved lead, gasoline additive volatile organic compounds (VOCs), and PAHs, and samples collected in September and December 2002 were analyzed for PAHs. Gasoline-range TPH was detected in the duplicate sample collected from well MW-2 in September 2001. Diesel-range TPH (ranging from 521 µg/L to 6,890 µg/L) was detected in the groundwater samples collected from well MW-2 at concentrations exceeding the MTCA Method A cleanup level in September 2001; and March, May, September, and December 2002. The remaining groundwater sample results were below the MTCA Method A cleanup levels (see Attachments T9 through T12 in Appendix D).

In March 2003, NEI and CCS performed additional remedial excavation work in the area of well MW-2. Well MW-2 was properly decommissioned and removed during the remedial excavation work. The remedial excavation measured approximately 20 feet north-south by 5 feet east-west, and 10 feet bgs. The north and east sidewalls abutted the previous remedial excavation completed in 2001. A pocket of impacted soil measuring approximately 3 feet thick and 10 feet across was left in place on the west property boundary at approximately 7 to 10 feet below grade due to geotechnical concerns related to undermining the adjoining property. Three soil samples (WWALL-4, -7, and -8) were collected from the pocket of impacted soil in west wall of the excavation, at depths of 4, 7, and 8 feet bgs, respectively, in order to determine residual

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soil concentrations at the property boundary. Soil excavation and sample locations are shown on Attachment F3 in Appendix D.

The remedial excavation west sidewall soil samples were analyzed for gasoline-, diesel-, and oil-range TPH; and for BTEX. The samples collected at 7 and 8 feet bgs contained gasoline-range TPH at concentrations of 367 mg/kg and 107 mg/kg, respectively, exceeding the MTCA Method A cleanup level. The soil sample collected at 7 feet bgs also contained diesel-range TPH at a concentration of 6,550 mg/kg, which exceeds the MTCA Method A cleanup level. The remaining soil sample results were below the MTCA Method A cleanup levels (see Attachment T6 in Appendix D). Prior to backfilling with 3/8-inch minus crushed gravel, the base and west sidewall of the excavation were treated with ORC® and Miracle Gro.

Following the soil excavation work, NEI and Cascade installed replacement well MW-2A and remediation well RW-1 to approximately 15 feet bgs in the remedial excavation area in March 2003. Well MW-2A was completed near the west property boundary using 2-inch PVC well casing, and RW-1 was completed west of the former ASTs using 4-inch PVC well casing. Soil samples collected from the borings at approximately 10, 12.5, and 15 feet bgs were analyzed for gasoline-, diesel-, and oil-range TPH; and for BTEX. The soil sample results were below the MTCA Method A cleanup levels (see Attachment T7 in Appendix D).

Additional remedial treatment at the site during 2003 consisted of applications of dilute hydrogen peroxide and nutrients into wells MW-2A, RW-1, and the perforated remedial treatment pipes, and the installation of ORC® remedial treatment socks into wells MW-2A, MW-5, and RW-1. The ORC® socks were typically removed approximately one month prior to each groundwater sampling event, and replaced with new ORC® socks after the groundwater sampling event was completed.

NEI collected groundwater samples from wells MW-1, MW-2A, MW-3 through MW-5, and RW-1 in March and June 2003. Samples were analyzed for gasoline-, diesel-, and oil-range TPH; and BTEX. Diesel-range TPH (ranging from 537 µg/L to 8,180 µg/L) was detected in the groundwater samples collected from wells MW-2A, MW-5, and RW-1 at concentrations exceeding the MTCA Method A cleanup level in March and/or June 2003. Oil-range TPH (ranging from 692 µg/L and 533 µg/L) was detected in the groundwater samples collected from well MW-2A in March and June 2003, respectively, at concentrations exceeding the MTCA Method A cleanup level of 500 µg/L. All other laboratory analytical results for the groundwater samples collected from the site wells in March and June 2003 were below the MTCA Method A cleanup levels (see Attachments T9 and T10 in Appendix D).

In February 2005, Secor International Incorporated (Secor) reportedly oversaw the advancement of seven soil borings at the site (B-1 through B-7) to depths of approximately 8 feet bgs. Groundwater was reportedly encountered in boring B-7 at 8 feet bgs; the remaining borings were dry. Boring B-1 was located north of the 2001 excavation; B-2, B-3 and B-6 were located east of the 2001 excavation; and B-4, B-5, and B-7 were located on the west property boundary, north and south of well MW-2A (see Attachment F4 in Appendix D). Soil samples collected from the borings were reportedly analyzed for gasoline-, diesel-, and oil-range TPH; BTEX; PAHs; and metals (cadmium, chromium, and lead).

Gasoline-range TPH was reportedly detected at concentrations exceeding the MTCA Method A cleanup level in soil samples collected from borings B-2, B-5, B-6, and B-7 at 7 to 8 feet bgs. Diesel-range TPH was reportedly detected at a concentration exceeding the MTCA Method A cleanup level in the soil sample collected from boring B-5 at 8 feet bgs. The remaining sample results were reportedly below the MTCA Method A cleanup levels. According to Secor, the laboratory report indicated that the detected diesel-range TPH did not appear to be a typical diesel product and Secor inferred that biogenic interference may have been responsible for the reported diesel-range TPH detections. A copy of the Secor report was not available to Terracon for review.

Secor conducted quarterly groundwater sampling at the site between December 2005 and June 2007. Groundwater samples collected from wells MW-1, MW-2A, MW-3, MW-4, MW-5, and RW-1 were analyzed gasoline-, diesel-, and oil-range TPH; BTEX; and methyl tert butyl ether (MTBE). Diesel-range TPH was detected in the groundwater samples collected from well MW-5 between December 2005 and June 2007 at concentrations ranging from 840 µg/L to 2,000 µg/L, exceeding the MTCA Method A cleanup level. The groundwater sample collected from well MW-2A in September 2006 contained diesel-range TPH at a concentration of 2,700 µg/L and oil-range TPH at a concentration of 530 µg/L, exceeding the MTCA Method A cleanup levels.

2.2 Previous Work by Terracon

In August of 2014, Terracon collected groundwater samples from wells MW-1, MW-2A, MW-3 through MW-5, and RW-1. Groundwater samples had not been collected from the site since June 2007. The results were documented in our report, *Groundwater Monitoring Report: August 2014*, dated September 30, 2014. Prior to sampling, the wells were redeveloped using a clean downhole pump and disposable bailers and allowed to recover for 48-hours prior to sampling. 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 the samples collected.

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The inferred groundwater flow direction was generally toward the south and southwest, consistent with previous sampling events. A summary table of the groundwater sampling results is included in Table 1 of Appendix B.

In January 2015, Terracon completed remedial treatment injections at the site. Terracon completed an Ecology underground injection control (UIC) site well registration for remediation well RW-1, and injected approximately 360 pounds of RegenOx® Part A and 240 pounds of RegenOx® Part B mixed with 1,325 gallons of potable water to create a solution with a concentration of approximately 3.5% to 4.5% of RegenOx®. 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). In February 2015, 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 well MW-5 had a diesel-range TPH concentration of 1,200 µg/L and an oil-range TPH concentration of 560 µg/L, exceeding the MTCA Method A cleanup level of 500 µg/L for each contaminant. The remaining groundwater sample results were below the MTCA Method A cleanup levels (see Table 1 in Appendix B).

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. 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. The remaining groundwater sample results were below the MTCA Method A cleanup levels (see Table 1 in Appendix B).

In February 2016, 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: February 2016*, dated April 14, 2016. The groundwater sample collected from MW-5 in February 2016 contained a diesel-range TPH concentration of 810 µg/L, exceeding the MTCA Method A cleanup level. The remaining groundwater sample results were below the MTCA Method A cleanup levels (see Table 1 in Appendix B).

The groundwater samples collected from wells MW-2A, MW-5, and RW-1 in February 2016 were additionally analyzed for extractable petroleum hydrocarbons (EPH) and PAHs in order to calculate TPH groundwater cleanup levels for the samples using the Ecology MTCA Method B Workbook, *MTCATPH11.1*. 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 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 groundwater sample collected from well MW-5 contained 81 µg/L of aromatic hydrocarbons in the C8–C12 equivalent carbon range 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 groundwater samples collected from wells MW-2A and RW-1. Based on the results of the MTCA Method B Workbook calculations, the calculated site-specific TPH concentrations in the site groundwater ranged from approximately 251 µg/L to 307 µg/L, which are below the calculated protective groundwater concentrations of 431 µg/L to 471 µg/L; therefore, the remnant TPH concentrations in site groundwater do not represent a risk to human health. Copies of the MTCA Method B Workbook calculation sheets are included in Appendix C.

In April and July 2016, Terracon measured depth to groundwater and collected groundwater samples from wells MW-1, MW-2A, MW-4 through MW-5, and RW-1. The results of the April 2016 groundwater sampling event were documented in our report, *Groundwater Monitoring Report: April 2016*, dated May 23, 2016. A report for the July 2016 groundwater sampling results is currently being prepared. A summary of the April and July 2016 groundwater sampling results is presented in Table 1 of Appendix B.

The groundwater sample collected from MW-5 in April 2016 contained an oil-range TPH concentration of 1,300 µg/L, exceeding the MTCA Method A cleanup level. The groundwater samples collected from wells MW-2A and MW-5 in July 2016 contained diesel-range TPH concentrations of 770 µg/L and 560 µg/L, respectively, slightly exceeding the MTCA Method A cleanup level.

The groundwater samples collected from wells MW-2A, MW-5, and RW-1 in April and/or July 2016 were additionally analyzed for EPH and PAHs in order to calculate TPH groundwater cleanup levels for the samples using the Ecology MTCA Method B

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November 18, 2016 ■ Terracon Project No. 81167198



Workbook, as described above. The groundwater sample collected from well MW-5 contained 84 µg/L of aromatic hydrocarbons in the C12–C16 equivalent carbon range in April 2016. The groundwater sample collected from well MW-2A contained 50 µg/L of aliphatic hydrocarbons in the C21–C34 equivalent carbon range in July 2016. One carcinogenic PAH (benzo(a)anthracene) was detected in the groundwater samples collected from wells MW-2A, MW-5, and RW-1 in July 2016 at concentrations ranging from 0.040 to 0.047 µg/L, below the MTCA Method B cleanup level of 0.12 µg/L.

Based on the results of the MTCA Method B Workbook calculations, the calculated site-specific TPH concentrations in the site groundwater ranged from approximately 250 µg/L to 309 µg/L in April 2016, and from approximately 250 µg/L to 284 µg/L in July 2016, which are below the calculated protective groundwater concentrations of 437 µg/L to 480 µg/L; therefore, the remnant TPH concentrations in site groundwater do not represent a risk to human health. Copies of the MTCA Method B Workbook calculation sheets are included in Appendix C.

Eight non-carcinogenic PAHs (naphthalene, 1-methylnaphthalene, acenaphthene, fluorene, phenanthrene, anthracene, pyrene, and benzo(g,h,i)perylene) were detected in the groundwater samples collected from wells MW-2A, MW-5, and/or RW-1 in April and/or July 2016. Naphthalene was detected in the groundwater samples collected from MW-5 and RW-1 at concentrations of 0.27 µg/L and 0.41 µg/L, respectively, well below the MTCA Method A cleanup level of 160 µg/L. 1-Methylnaphthalene was detected in the groundwater sample collected from RW-1 at a concentration of 2.3 µg/L, well below the MTCA Method B non-cancer cleanup level of 560 µg/L. Acenaphthene was detected in the groundwater sample collected from RW-1 at a concentration of 0.14 µg/L, well below the MTCA Method B cleanup level of 960 µg/L. Fluorene was detected in the groundwater sample collected from RW-1 at a concentration of 0.12 µg/L, well below the MTCA Method B cleanup level of 640 µg/L. Phenanthrene was detected in the groundwater sample collected from RW-1 at a concentration of 0.14 µg/L. Ecology has not established a cleanup level for phenanthrene in groundwater. Anthracene was detected in the groundwater sample collected from RW-1 at a concentration of 0.16 µg/L, well below the MTCA Method B cleanup level of 4,800 µg/L. Pyrene was detected in the groundwater samples collected from MW-2A and MW-5 at concentrations of 0.21 µg/L and 0.045 µg/L, respectively, well below the MTCA Method B cleanup level of 480 µg/L. Benzo(g,h,i)perylene was detected in the groundwater samples collected from wells MW-2A, MW-5, and RW-1 at concentrations ranging from 0.025 µg/L and 0.25 µg/L. Ecology has not established a cleanup level for benzo(g,h,i)perylene in groundwater.

2.3 Site Geology and Hydrogeology

The property is flat and unpaved, with some gravel cover. Site soils include tan to brown silt and sandy silt with some yellowish to reddish brown sand and silty sand from the surface to about 4 feet bgs, underlain by olive gray gravelly silt and sandy silt with some sand layers (glacial till) from about 4 to at least 11 feet bgs. Groundwater was encountered in the borings at approximately 6 feet bgs. Site cross-sections are included as Exhibit 3 and Exhibit 4 in Appendix A.

Measured depth to groundwater in the wells varies seasonally from approximately 3 to 7 feet below the top of the well casing (TOC). The inferred groundwater flow direction beneath the site has varied, but flows predominantly toward the south and southwest (toward Eagle Harbor). The groundwater gradient in July 2016 is depicted, along with a rose diagram showing the historical groundwater gradient direction, in Exhibit 5.

2.4 Contaminants of Concern

Based on the results of our 2014 to 2016 groundwater monitoring events conducted by Terracon, and given our understanding of the site history, contaminants of concern (COCs) at the site were previously identified as gasoline-, diesel-, and oil-range TPH; BTEX; and PAHs. Following extensive remedial activities at the site, gasoline-range TPH and BTEX are no longer detected in the site groundwater. Based on our site findings, current COCs at the site are diesel- and oil-range TPH and PAHs (see Table 1 in Appendix B).

2.5 Proposed Site Cleanup Standards and Points of Compliance

2.5.1 MTCA Cleanup Standards

MTCA cleanup levels are concentrations of hazardous substances that have been determined to be protective of human health and the environment under specific exposure conditions, as established under Chapter 70.105D Revised Code of Washington (RCW) and its implementing regulation, Chapter 173-340 Washington Administrative Code (WAC). Applicable cleanup levels under MTCA can be developed using either default Method A tabulated values or using Method B site-specific, risk-based formulations. Although both Method A and Method B cleanup levels allow for unrestricted land use (including residential use), Method A cleanup levels are the most conservative and protective of human health and the environment.

MTCA Method A soil and groundwater cleanup levels have been selected for this project site. Where a MTCA Method A cleanup level has not been established for a PAH

compound, the MTCA Method B cleanup level will be used. Due to apparent organic interferences that have resulted in elevated diesel- or oil-range TPH detections in groundwater, EPH analytical results and the MTCA Method B TPH calculations will be used to demonstrate that TPH concentrations in groundwater meet the MTCA cleanup goals for the site.

2.5.2 Points of Compliance

Points of Compliance (POCs) designate the locations on the site where cleanup levels must be met for each medium of concern. The POCs for the site were established in accordance with WAC 173-340-740(6) for soil and WAC 173-340-720(8) for groundwater.

The standard POC for soil contamination beneath the site is approximately 15 feet bgs, which represents a reasonable estimate of the depth that could be accessed during normal site redevelopment activities (WAC 173-340-740[6][d]). Soil containing concentrations of COCs above the MTCA Method A cleanup levels has been removed and/or remediated to below MTCA cleanup levels, as evidenced by sampling results, as well as by empirical groundwater results indicating that groundwater is no longer adversely affected by residual soil impacts.

The POC for groundwater is the point or points where the groundwater cleanup levels established must be attained for the site to be in compliance with cleanup standards (WAC 173-340-720(8)(a)). The POC for groundwater has been achieved, based on the fact that concentrations of COCs have been reduced to below MTCA Method A cleanup levels at the site, or to below the site-specific MTCA Method B cleanup level protective of groundwater. Historical groundwater sampling identified elevated concentrations of COCs at the site. Currently, three quarters of post-remedial action groundwater sampling have been completed. Although low concentrations of diesel- or oil-range TPH have been identified at concentrations exceeding the MTCA Method A cleanup levels, EPH results and MTCA Method B calculations have demonstrated that TPH in the site groundwater is compliant with MTCA cleanup goals.

3.0 CONCEPTUAL SITE MODEL

A conceptual model of hydrogeologic and environmental conditions was developed based on the results of Terracon's site investigation, previously completed assessments performed by others at the site, and work performed by Terracon on other projects in this area of Bainbridge Island. The conceptual model is based on the following key assumptions:

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- Probable subsurface conditions at the site would consist of glacial till, weathered glacial till, and imported fill material used in excavations conducted at the site from 2000 to 2003, to at least 15 feet bgs.
- The soils would be a mixture of sand, silt, and gravel.
- Groundwater would likely be encountered at approximately 5 to 6 feet bgs, and migrate toward the south-southwest.
- The probable location of potential on-site impaired media would be in the areas of the former ASTs, pumping station, and overhead loading rack associated with the former heating oil bulk petroleum storage and distribution facility.
- Potential COCs would be TPH in the diesel- and oil-range.

For the purposes of this evaluation, the conceptual hydrogeologic model is limited to the shallow groundwater. The purpose of the model is to aid the evaluation of potential contaminant migration over time, particularly with regard to evaluating remedial actions completed at the site.

The site operated primarily as a heating oil storage and distribution facility from approximately 1970 until 1997. The site was unpaved, and covered with gravel or exposed soil. The site operations included several ASTs, a pumping station, and an overhead loading rack. An unlined drainage ditch on the west portion of the ASTs area directed surface water to a stormwater retention pond located south of the ASTs. Spills to the ground surface would have infiltrated into the soil. The site stopped operations in 1997, and the ASTs, pumping station, and overhead loading rack were removed for the site.

3.1 Potential Exposure Pathways

In addition to the elements of MTCA cleanup standards, potential exposure pathways for the site and potential downstream receptors for COCs detected at the site were evaluated as part of our selection process for a cleanup action alternative. A discussion of potential exposure pathways is included below.

3.1.1 Soil-to-Groundwater Pathway

Previous investigations identified groundwater at depths of 5 to 6 feet bgs. Previous remediation efforts removed contaminated soil, where identified, to depths of approximately 11 feet bgs. In addition, various remedial amendments (ORC®,

RegenOx Part A and Part B, dilute hydrogen peroxide, and Miracle Gro) were applied to cleanup residual soil impacts at deeper intervals. Based on groundwater monitoring results from 2016, the potential for petroleum impacts in soil to affect groundwater quality was very low. As a result, there is a low likelihood of potential exposure through the soil-to-groundwater pathway.

3.1.2 Direct-Contact Pathway

Direct contact with soil and groundwater exhibiting concentrations of petroleum hydrocarbons in excess of MTCA Method A cleanup levels is limited to human receptors who come into close contact with the media via direct exposure, including dermal contact or ingestion of excavated soil or groundwater. The standard point of compliance for soil contamination beneath a site is approximately 15 feet bgs, which represents a reasonable estimate of the depth that could be accessed during normal site redevelopment activities (WAC 173-340-740[6][d]). Since remediation activities have been undertaken and the contaminated soil within 11 feet of the ground surface has been either treated or removed from the site, the direct-contact pathway has been addressed and is no longer considered an exposure risk.

3.1.3 Vapor Intrusion Pathway

Volatile organic compounds, including BTEX, have been identified at the site. However, source control by excavation of contaminated soils and treatment of residual soil and groundwater impacts have successfully removed impacts from volatile constituents to site media. Since remedial activities have been undertaken and the contaminated soil and groundwater identified have been successfully removed from the site or remediated in place, the vapor intrusion pathway has been addressed and is no longer an exposure risk.

4.0 REQUEST FOR NO FURTHER ACTION DETERMINATION

Soil removal by excavation and in situ soil and groundwater remedial treatment by chemical oxidation and enhanced bioremediation have been performed at the site as an independent action intended to meet the requirements of the 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, revised June 2016.

Residual gasoline- and/or diesel-range TPH in soil exceeding the MTCA Method A cleanup levels were identified in March 2003 in two soil samples (WWALL-7 and

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WWALL-8) collected from the west wall of an excavation at 7 and 8 feet bgs, respectively (below the seasonal groundwater table), near well MW-2A. The TPH impacts were confined to a pocket of soil measuring approximately 3 feet thick and 10 feet across that was left in place near the west property boundary. Residual TPH in soil at this area of the site has been treated via chemical oxidation in 2003 and 2015. Based on empirical groundwater monitoring data collected from well MW-2A since 2014, the residual soil impacts left in place near the west property boundary have not adversely affected groundwater at the site.

Groundwater samples collected from monitoring wells at the site between 2014 and 2016 have been in compliance with MTCA Method A cleanup levels, with the exception of diesel- and/or oil-range TPH detected in three wells (MW-2A, MW-, and RW-1) at concentrations slightly exceeding the MTCA Method A cleanup level of 500 µg/L on one or more occasions. Additional analyses for the groundwater samples collected from these wells using the NWEPH method has demonstrated that the residual impacts are not TPH-related, and are likely an artifact of organic carbon interferences.

Based on the data collected from the site, Terracon, on behalf of PNEC Corporation d.b.a. SC Fuels, is requesting a No Further Action (NFA) determination for the site from Ecology.

4.1 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 remedial treatment and follow-up monitoring services were performed in accordance with the scope of work agreed with you, our client, as reflected in our proposal.

4.2 Reliance

This Site Remedial Action and Monitoring Summary 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.

APPENDIX A - EXHIBITS

Exhibit 1 - Topographic Map

Exhibit 2 - Site Diagram

Exhibit 3 – North-South Cross-Section

Exhibit 4 – East-West Cross-Section

Exhibit 5 – Groundwater Contour Map – July 7, 2016



LEGEND:



APPROXIMATE SITE
BOUNDARY

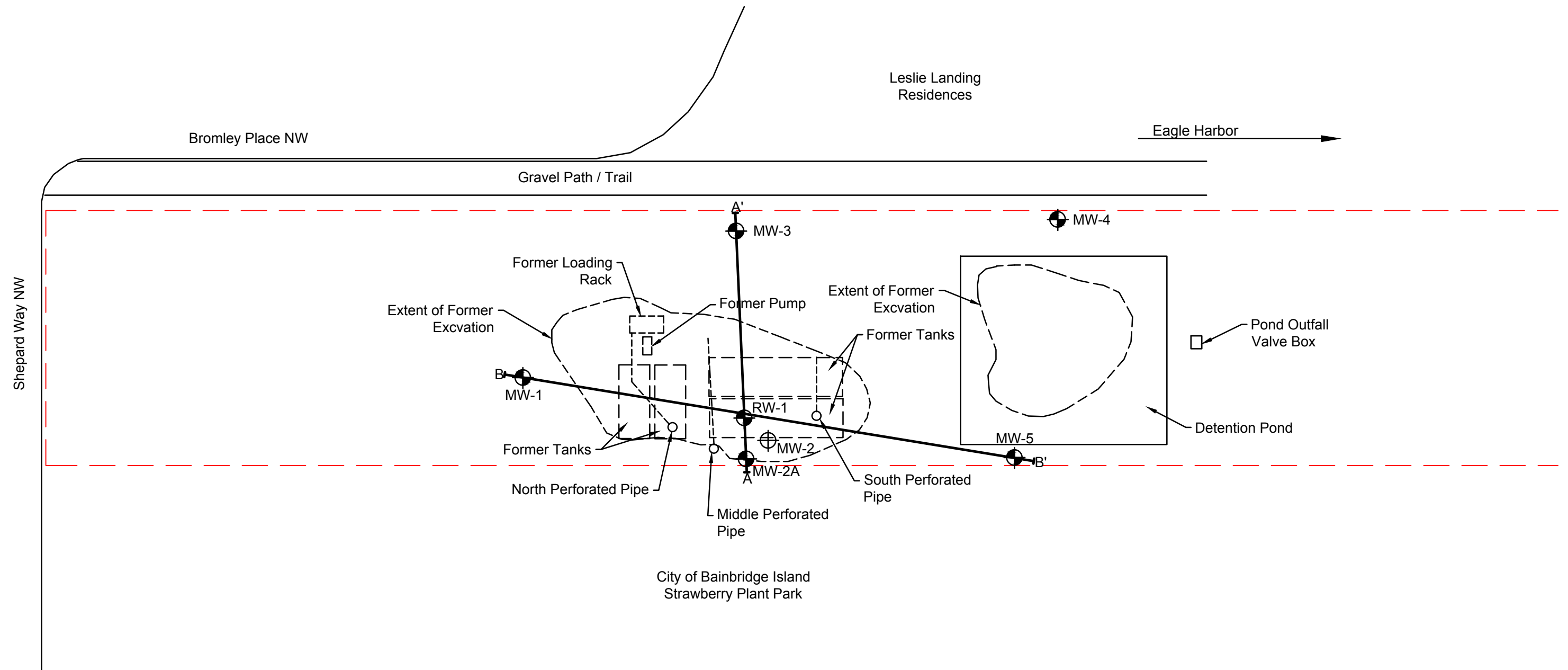
Project Mng:	MDN
Drawn By:	SAB
Checked By:	MDN
Approved By:	MYW
Project No.	81167198
Scale:	Not to Scale
File No.	Exhibit 1
Date:	November 2016

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

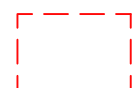
TOPOGRAPHIC MAP
Former PNEC Bulk Petroleum Facility
Shepard Way NW & Bromley Place NW
Brainbridge Island, Kitsap County, Washington

EXHIBIT

1



LEGEND:



APPROXIMATE SITE BOUNDARY



MW-1

MONITORING WELL NUMBER
AND APPROXIMATE LOCATION



MW-2

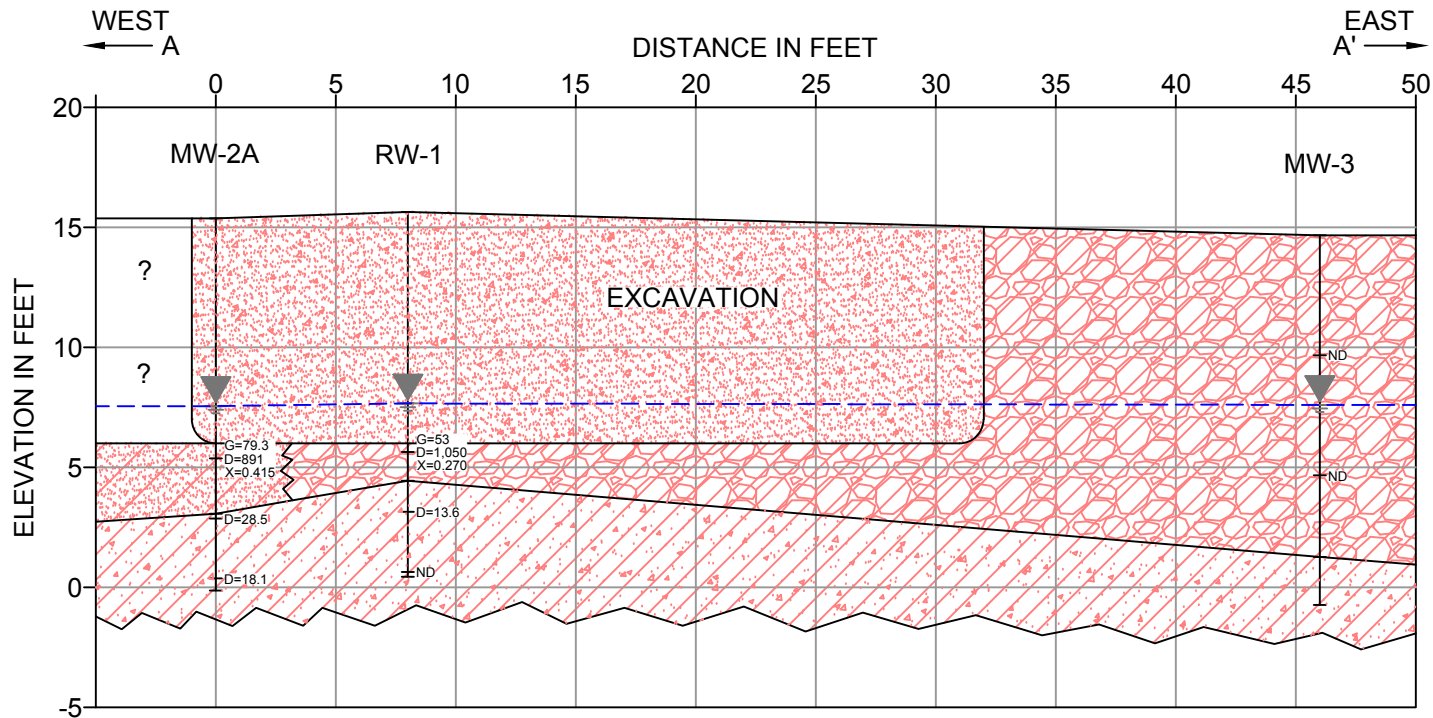
FORMER MONITORING WELL
LOCATION



APPROXIMATE LOCATION OF
CROSS-SECTION



Project Mng'r: MDN		Project No. 81167198		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		EXHIBIT
Drawn By: SAB/RMS		Scale: AS SHOWN			Former PNEC Bulk Petroleum Facility Shepard Way NW & Bromley Place NW		2
Checked By: MDN		File No. Exhibit 2			Bainbridge Island, Kitsap County, Washington		
Approved By: MYW		Date: November 2016					



LEGEND



GRAVELLY SAND FILL (SW-SP)



SILTY SAND W/ GRAVEL (SM)



GRAVELLY SILT WITH SAND/
SANDY SILT WITH GRAVEL (ML)



SANDY GRAVEL (GP)/ SILTY
GRAVEL WITH SAND (GM)



APPROXIMATE GROUNDWATER
ELEVATION JULY 7, 2016



DEPTH TO GROUNDWATER
OBSERVED IN WELLS
JULY 7, 2016



APPROXIMATE SCALE IN FEET

SOIL SAMPLE ANALYTICAL RESULTS (MILLIGRAMS PER KILOGRAMS)

G = GASOLINE-RANGE TPH
D = DIESEL-RANGE TPH
O = OIL-RANGE TPH
B = BENZENE
T = TOLUENE
E = ETHYLBENZENE
X = XYLENES
TPH = TOTAL PETROLEUM HYDROCARBONS
HD = NOT DETECTED

Project Mgr:	MDN	Project No.	81167198
Drawn By:	AMP	Scale:	AS SHOWN
Checked By:	SD	File No.	Exhibit 3
Approved By:	MDN	Date:	November 2016

Terracon
Consulting Engineers and Scientists

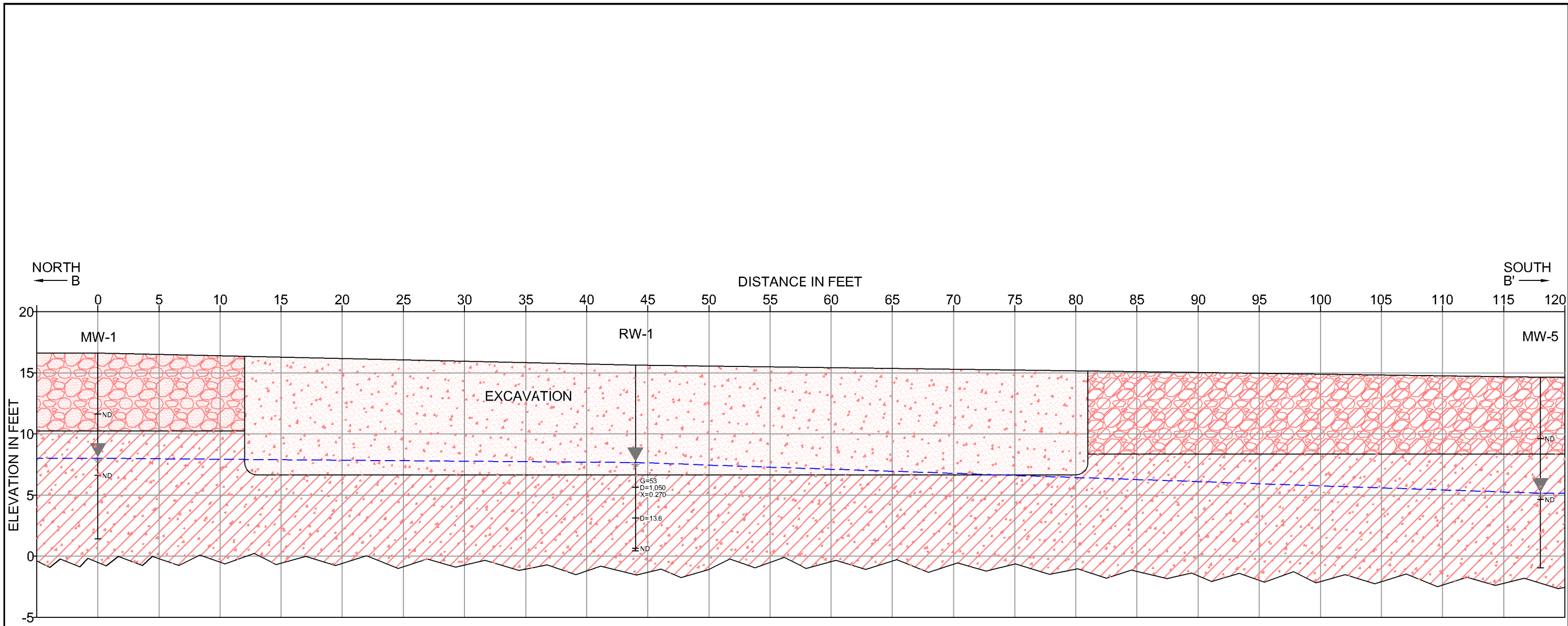
21905 64th Avenue W., Ste 100 Mountlake Terrace, WA 98043
PH. (425) 771-3304 FAX. (425) 771-3549

CROSS SECTION A-A'

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

EXHIBIT

3



SOIL SAMPLE ANALYTICAL RESULTS (MILLIGRAMS PER KILOGRAMS)

G = GASOLINE-RANGE TPH
D = DIESEL-RANGE TPH
O = OIL-RANGE TPH
B = BENZENE
T = TOLUENE
E = ETHYLBENZENE
X = XYLENES
TPH = TOTAL PETROLEUM HYDROCARBONS
ND = NOT DETECTED

LEGEND



FILL (GRAVELLY SAND (SW, SP))



GRAVELY SAND WITH SILT (SP)



GRAVELLY SILT WITH SAND/
SANDY SILT WITH GRAVEL/
SILT WITH GRAVEL (ML)



SILTY GRAVEL WITH SAND (GM)



DEPTH TO GROUNDWATER
OBSERVED IN WELLS
JULY 7, 2016



INFERRED GROUNDWATER
ELEVATION JULY 7, 2016



APPROXIMATE SCALE IN FEET

Project Mngr:	MDN	Project No:	81167198
Drawn By:	AMP	Scale:	AS SHOWN
Checked By:	SD	File No:	Exhibit 4
Approved By:	MDN	Date:	November 2016

Terracon
Consulting Engineers and Scientists

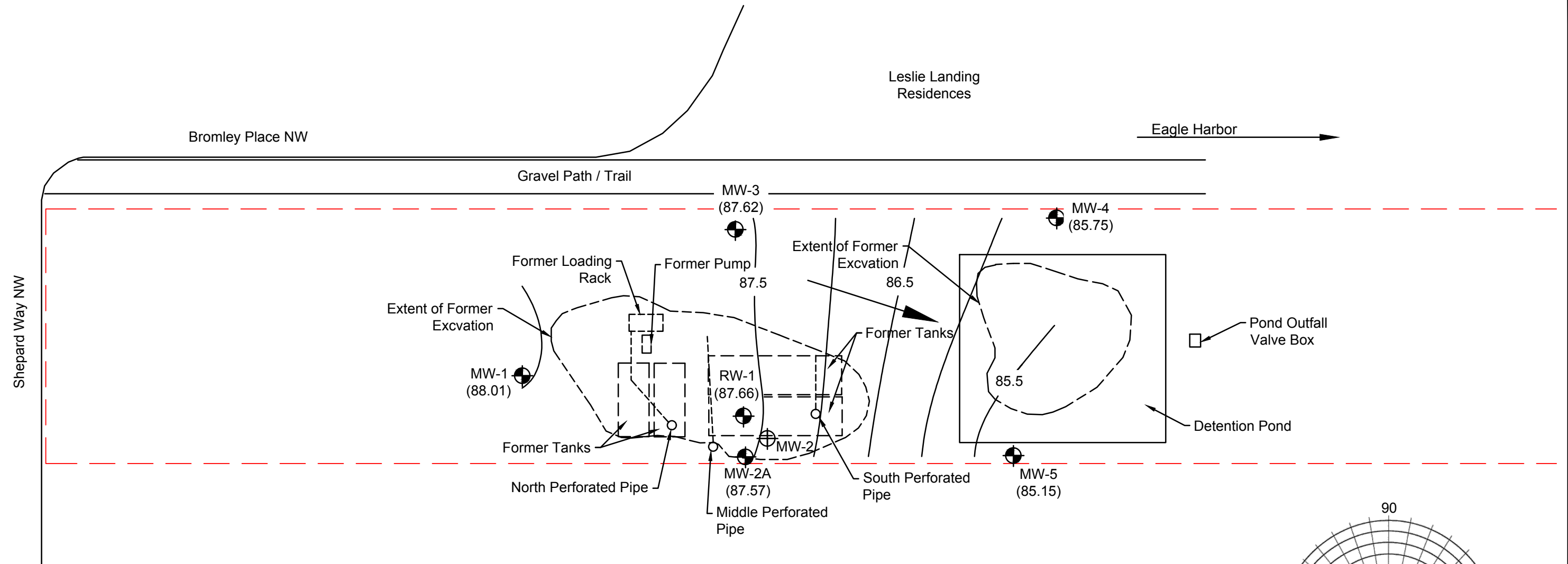
21905 64th Avenue W, Ste 100 Mountlake Terrace, WA 98043
PH. (425) 771-3304 FAX. (425) 771-3549

CROSS SECTION B-B'

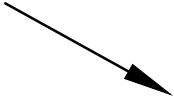
Former PNEC Bulk Petroleum Facility
Shepard Way NW & Bromley Place NW
Bainbridge Island, Kitsap County, Washington

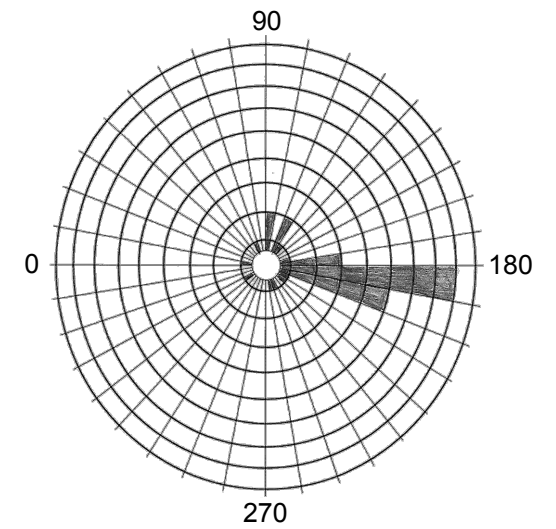
EXHIBIT

4



LEGEND:

-  APPROXIMATE SITE BOUNDARY
-  **MW-1**
(88.01) MONITORING WELL NUMBER AND APPROXIMATE LOCATION
(Groundwater elevation, April 20, 2016)
-  **MW-2** FORMER MONITORING WELL LOCATION
-  INFERRED GROUNDWATER FLOW DIRECTION
-  **87.5** GROUNDWATER CONTOUR (feet)



Project Mng'r: MDN Drawn By: SAB/RMS Checked By: MDN Approved By: MYW		Project No. 81167198 Scale: AS SHOWN File No. Exhibit 5 Date: November 2016	Terracon Consulting Engineers and Scientists 21905 64th Avenue W, Ste 100 Mountlake Terrace, WA 98043 PH. (425) 771-3304 FAX. (425) 771-3549	GROUNDWATER CONTOUR MAP - July 7, 2016 Former PNEC Bulk Petroleum Facility Shepard Way NW & Bromley Place NW Bainbridge Island, Kitsap County, Washington	EXHIBIT 5
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APPENDIX B - TABLES

Table 1 – Summary of Groundwater Analytical Results

TABLE 1

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

all concentrations are in $\mu\text{g/l}$ (micrograms per liter)

[illegible]

TABLE 1

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

all concentrations are in $\mu\text{g/l}$ (micrograms per liter)

[illegible]

TABLE 1

SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
TOSCO/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	Depth to Groundwater (feet)	TPH			VOCs					PAHs									EPH	
			Gasoline-Range	Diesel-Range	Oil-Range	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Naphthalene	1-Methylnaphthalene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Pyrene	Benzo[A]Anthracene	Benzo[G,H,I]Perylene	C12-C16 Aromatics	C21-C34 Aliphatics
RW-1	7/7/2016	7.98	ND (<130)	300	ND (<250)	ND (<2.0)	ND (<2.0)	ND (<2.0)	ND (<6.0)	--	0.41	2.3	0.14	0.12	0.14	0.16	ND (<0.035)	0.047	0.12	56	ND (<50)
	4/20/2016	5.65	ND (<130)	ND (<310)	ND (<310)	ND (<2.0)	ND (<2.0)	ND (<2.0)	ND (<4.0)	--	--	--	--	--	--	--	--	--	--	--	--
	2/11/2016	4.70	--	290	ND (<250)	--	--	--	--	--	ND (<0.50)	ND (<0.50)	ND (<0.50)	ND (<0.50)	ND (<0.50)	ND (<0.50)	ND (<0.50)	ND (<0.50)	ND (<0.50)	ND (<50)	ND (<50)
	7/1/2015	7.79	--	870	ND (<250)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	4/9/2015	5.21	--	540	ND (<400)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	2/11/2015	4.06	--	410	ND (<250)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	8/21/2014	8.45	ND (<100)	210	ND (<250)	ND (<0.50)	ND (<5.0)	ND (<0.50)	ND (<1.5)	--	--	--	--	--	--	--	--	--	--	--	--
	6/18/2007	7.02	ND (<50)	280	ND (<96)	ND (<0.5)	ND (<0.7)	ND (<0.8)	ND (<0.8)	ND (<0.5)	--	--	--	--	--	--	--	--	--	--	--
	3/26/2007	5.03	ND (<48)	210	ND (<95)	ND (<0.5)	ND (<0.5)	ND (<0.5)	ND (<0.5)	ND (<0.5)	--	--	--	--	--	--	--	--	--	--	--
	12/20/2006	4.70	ND (<48)	180	ND (<96)	ND (<0.5)	ND (<0.7)	ND (<0.8)	ND (<0.8)	ND (<0.5)	--	--	--	--	--	--	--	--	--	--	--
	9/13/2006	8.80	ND (<48)	ND (<77)	ND (<96)	ND (<0.5)	ND (<0.7)	ND (<0.8)	ND (<0.8)	ND (<0.5)	--	--	--	--	--	--	--	--	--	--	--
MTCA Method A or Method B Cleanup Level			1,000 ¹	500	500	5	1,000	700	1,000	20	160	560	960	640	NE	4,800	480	0.12	NE	NA	NA

- 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
 - Benzene not present in groundwater
- F1
 - Reporting limit for compound raised due to low sample amount
- - Not tested
- ND
 - Not detected above laboratory reporting limit

APPENDIX C

MTCA Method B TPH Workbook Spreadsheets

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
 Sample info: MW-2A

2. Enter Ground Water Concentration Measured

Notes for Data Entry

Chemical of Concern or EC Group	Measured GW Conc	GW Cleanup Level	Current Condition			Adjusted Condition			
			HQ	RISK	Pass or Fail?	GW Conc being tested	HQ	RISK	Pass or Fail?
	ug/L	ug/L	unitless	unitless		ug/L	unitless	unitless	
Petroleum EC Fraction									
AL_EC >5-6									
AL_EC >6-8									
AL_EC >8-10	25		1.04E-01			4.30E+01	1.79E-01		
AL_EC >10-12	25		1.04E-01			4.30E+01	1.79E-01		
AL_EC >12-16	25		5.21E-02			4.30E+01	8.95E-02		
AL_EC >16-21	25		7.81E-04			4.30E+01	1.34E-03		
AL_EC >21-34	25		7.81E-04			4.30E+01	1.34E-03		
AR_EC >8-10	25		3.13E-02			4.30E+01	5.37E-02		
AR_EC >10-12	25		1.56E-01			4.30E+01	2.69E-01		
AR_EC >12-16	25		3.13E-02			4.30E+01	5.37E-02		
AR_EC >16-21	25		5.21E-02			4.30E+01	8.95E-02		
AR_EC >21-34	25		3.91E-02			4.30E+01	6.71E-02		
Benzene		5							
Toluene		1000							
Ethylbenzene		700							
Total Xylenes		1000							
Naphthalene	0.25	160	1.56E-03			4.30E-01	2.69E-03		
1-Methyl Naphthalene	0.25		6.25E-04			4.30E-01	1.07E-03		
2-Methyl Naphthalene	0.25		7.81E-03			4.30E-01	1.34E-02		
n-Hexane									
MTBE		20							
Ethylene Dibromide (EDB)		0.01							
1,2 Dichloroethane (EDC)		5							
Benzo(a)anthracene		for			for				for
Benzo(b)fluoranthene		all			all				all
Benzo(k)fluoranthene		cPAHs			cPAHs				cPAHs
Benzo(a)pyrene		Risk =							
Chrysene		1E-05							
Dibenz(a,h)anthracene					Σ Risk=				Σ Risk=
Indeno(1,2,3-cd)pyrene					0.00E+00				0.00E+00
Sum	250.75		5.82E-01	0.00E+00		4.31E+02	1.00E+00	0.00E+00	

TEST CURRENT CONDITION

Measured TPH GW Conc, ug/L = 250.75
 HI = 5.819E-01
 RISK = 0.000E+00
 Pass or Fail? Pass

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: HI = 1

Most Stringent? YES

Protective TPH GW Conc, ug/L = 430.93

HI = 1.00E+00

RISK = 0.00E+00

SUMMARY OF PROTECTIVE GW CONCENTRATIONS

Protective GW TPH Conc, ug/L	430.93			
Most Stringent Criterion	HI = 1			
Ground Water Criteria	Most Stringent?	GW TPH, ug/L	RISK @	HI @
HI = 1	YES	4.31E+02	0.00E+00	1.00E+00
Total Risk = 1E-5	NA	NA	NA	NA
Total Risk = 1E-6	NA	NA	NA	NA
Benzene MCL = 5 ug/L	NA	NA	NA	NA
MTBE = 20 ug/L	NA	NA	NA	NA
Risk of cPAHs = 1E-5	NA	NA	NA	NA
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

Sample info: MW-5

2. Enter Ground Water Concentration Measured

Notes for Data Entry 1

Chemical of Concern or EC Group	Measured GW Conc	GW Cleanup Level	Current Condition			Adjusted Condition			
			HQ	RISK	Pass or Fail?	GW Conc being tested	HQ	RISK	Pass or Fail?
	ug/L	ug/L	unitless	unitless		ug/L	unitless	unitless	
Petroleum EC Fraction									
AL_EC >5-6									
AL_EC >6-8									
AL_EC >8-10	25		1.04E-01			3.84E+01	1.60E-01		
AL_EC >10-12	25		1.04E-01			3.84E+01	1.60E-01		
AL_EC >12-16	25		5.21E-02			3.84E+01	7.99E-02		
AL_EC >16-21	25		7.81E-04			3.84E+01	1.20E-03		
AL_EC >21-34	25		7.81E-04			3.84E+01	1.20E-03		
AR_EC >8-10	25		3.13E-02			3.84E+01	4.79E-02		
AR_EC >10-12	25		1.56E-01			3.84E+01	2.40E-01		
AR_EC >12-16	81		1.01E-01			1.24E+02	1.55E-01		
AR_EC >16-21	25		5.21E-02			3.84E+01	7.99E-02		
AR_EC >21-34	25		3.91E-02			3.84E+01	5.99E-02		
Benzene		5							
Toluene		1000							
Ethylbenzene		700							
Total Xylenes		1000							
Naphthalene	0.25	160	1.56E-03			3.84E-01	2.40E-03		
1-Methyl Naphthalene	0.25		6.25E-04			3.84E-01	9.59E-04		
2-Methyl Naphthalene	0.25		7.81E-03			3.84E-01	1.20E-02		
n-Hexane									
MTBE		20							
Ethylene Dibromide (EDB)		0.01							
1,2 Dichloroethane (EDC)		5							
Benzo(a)anthracene		for			for				for
Benzo(b)fluoranthene		all			all				all
Benzo(k)fluoranthene		cPAHs			cPAHs				cPAHs
Benzo(a)pyrene		Risk =							
Chrysene		1E-05							
Dibenz(a,h)anthracene					Σ Risk=				Σ Risk=
Indeno(1,2,3-cd)pyrene					0.00E+00				0.00E+00
Sum	306.75		6.52E-01	0.00E+00		4.71E+02	1.00E+00	0.00E+00	

TEST CURRENT CONDITION

Measured TPH GW Conc, ug/L = 306.75

HI = 6.519E-01

RISK = 0.000E+00

Pass or Fail? Pass

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: HI = 1

Most Stringent? YES

Protective TPH GW Conc, ug/L = 470.57

HI = 1.00E+00

RISK = 0.00E+00

SUMMARY OF PROTECTIVE GW CONCENTRATIONS

Protective GW TPH Conc, ug/L		470.57		
Most Stringent Criterion		HI = 1		
Ground Water Criteria	Most Stringent?	GW TPH, ug/L	RISK @	HI @
HI = 1	YES	4.71E+02	0.00E+00	1.00E+00
Total Risk = 1E-5	NA	NA	NA	NA
Total Risk = 1E-6	NA	NA	NA	NA
Benzene MCL = 5 ug/L	NA	NA	NA	NA
MTBE = 20 ug/L	NA	NA	NA	NA
Risk of cPAHs = 1E-5	NA	NA	NA	NA
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
 Sample info: RW-1

2. Enter Ground Water Concentration Measured

Notes for Data Entry

Chemical of Concern or EC Group	Measured GW Conc	GW Cleanup Level	Current Condition			Adjusted Condition			
			HQ	RISK	Pass or Fail?	GW Conc being tested	HQ	RISK	Pass or Fail?
	ug/L	ug/L	unitless	unitless		ug/L	unitless	unitless	
Petroleum EC Fraction									
AL_EC >5-6									
AL_EC >6-8									
AL_EC >8-10	25		1.04E-01			4.30E+01	1.79E-01		
AL_EC >10-12	25		1.04E-01			4.30E+01	1.79E-01		
AL_EC >12-16	25		5.21E-02			4.30E+01	8.95E-02		
AL_EC >16-21	25		7.81E-04			4.30E+01	1.34E-03		
AL_EC >21-34	25		7.81E-04			4.30E+01	1.34E-03		
AR_EC >8-10	25		3.13E-02			4.30E+01	5.37E-02		
AR_EC >10-12	25		1.56E-01			4.30E+01	2.69E-01		
AR_EC >12-16	25		3.13E-02			4.30E+01	5.37E-02		
AR_EC >16-21	25		5.21E-02			4.30E+01	8.95E-02		
AR_EC >21-34	25		3.91E-02			4.30E+01	6.71E-02		
Benzene		5							
Toluene		1000							
Ethylbenzene		700							
Total Xylenes		1000							
Naphthalene	0.25	160	1.56E-03			4.30E-01	2.69E-03		
1-Methyl Naphthalene	0.25		6.25E-04			4.30E-01	1.07E-03		
2-Methyl Naphthalene	0.25		7.81E-03			4.30E-01	1.34E-02		
n-Hexane									
MTBE		20							
Ethylene Dibromide (EDB)		0.01							
1,2 Dichloroethane (EDC)		5							
Benzo(a)anthracene		for			for				for
Benzo(b)fluoranthene		all			all				all
Benzo(k)fluoranthene		cPAHs			cPAHs				cPAHs
Benzo(a)pyrene		Risk =							
Chrysene		1E-05							
Dibenz(a,h)anthracene					Σ Risk=				Σ Risk=
Indeno(1,2,3-cd)pyrene					0.00E+00				0.00E+00
Sum	250.75		5.82E-01	0.00E+00		4.31E+02	1.00E+00	0.00E+00	

TEST CURRENT CONDITION

Measured TPH GW Conc, ug/L = 250.75
 HI = 5.819E-01
 RISK = 0.000E+00
 Pass or Fail? Pass

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: HI = 1

Most Stringent? YES

Protective TPH GW Conc, ug/L = 430.93

HI = 1.00E+00

RISK = 0.00E+00

SUMMARY OF PROTECTIVE GW CONCENTRATIONS

Protective GW TPH Conc, ug/L	430.93			
Most Stringent Criterion	HI = 1			
Ground Water Criteria	Most Stringent?	GW TPH, ug/L	RISK @	HI @
HI = 1	YES	4.31E+02	0.00E+00	1.00E+00
Total Risk = 1E-5	NA	NA	NA	NA
Total Risk = 1E-6	NA	NA	NA	NA
Benzene MCL = 5 ug/L	NA	NA	NA	NA
MTBE = 20 ug/L	NA	NA	NA	NA
Risk of cPAHs = 1E-5	NA	NA	NA	NA
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: 4/20/2016
 Site Name: Former Tosco BI Bulk Plant 1784
 Sample info: MW-2A

2. Enter Ground Water Concentration Measured

Notes for Data Entry

Chemical of Concern or EC Group	Measured GW Conc	GW Cleanup Level	Current Condition			Adjusted Condition			
			HQ	RISK	Pass or Fail?	GW Conc being tested	HQ	RISK	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			2.50E+01	1.04E-01		
AL_EC >10-12	25		1.04E-01			2.50E+01	1.04E-01		
AL_EC >12-16	25		5.21E-02			2.50E+01	5.21E-02		
AL_EC >16-21	25		7.81E-04			2.50E+01	7.81E-04		
AL_EC >21-34	25		7.81E-04			2.50E+01	7.81E-04		
AR_EC >8-10	25		3.13E-02			2.50E+01	3.12E-02		
AR_EC >10-12	25		1.56E-01			2.50E+01	1.56E-01		
AR_EC >12-16	25		3.13E-02			2.50E+01	3.12E-02		
AR_EC >16-21	25		5.21E-02			2.50E+01	5.21E-02		
AR_EC >21-34	25		3.91E-02			2.50E+01	3.90E-02		
Benzene	0	5							
Toluene	0	1000							
Ethylbenzene	0	700							
Total Xylenes	0	1000							
Naphthalene	0.01	160	6.25E-05			1.00E-02	6.25E-05		
1-Methyl Naphthalene	0.01		2.50E-05			1.00E-02	2.50E-05		
2-Methyl Naphthalene	0.01		3.13E-04			1.00E-02	3.12E-04		
n-Hexane	0								
MTBE	0	20							
Ethylene Dibromide (EDB)	0	0.01							
1,2 Dichloroethane (EDC)	0	5							
Benzo(a)anthracene	0.01	for		8.34E-08	for	1.00E-02		8.34E-08	for
Benzo(b)fluoranthene	0.01	all		8.34E-08	all	1.00E-02		8.34E-08	all
Benzo(k)fluoranthene	0.01	cPAHs		8.34E-08	cPAHs	1.00E-02		8.34E-08	cPAHs
Benzo(a)pyrene	0.01	Risk =		8.34E-07		1.00E-02		8.34E-07	
Chrysene	0.01	1E-05		8.34E-09		1.00E-02		8.34E-09	
Dibenz(a,h)anthracene	0.01			8.34E-08	S Risk=	1.00E-02		8.34E-08	S Risk=
Indeno(1,2,3-cd)pyrene	0.01			8.34E-08	1.26E-06	1.00E-02		8.34E-08	1.26E-06
Sum	250.1		5.72E-01	1.26E-06		2.50E+02	5.72E-01	1.26E-06	

TEST CURRENT CONDITION

Measured TPH GW Conc, ug/L = 250.1
 HI = 5.723E-01
 RISK = 1.260E-06
 Pass or Fail? Pass

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: HI = 1

Most Stringent? YES

Protective TPH GW Conc, ug/L = 437.03

HI = 1.00E+00

RISK = 2.20E-06

SUMMARY OF PROTECTIVE GW CONCENTRATIONS

Protective GW TPH Conc, ug/L		437.03		
Most Stringent Criterion		HI = 1		
Ground Water Criteria	Most Stringent?	GW TPH, ug/L	RISK @	HI @
HI = 1	YES	4.37E+02	2.20E-06	1.00E+00
Total Risk = 1E-5	NO	1.99E+03	1.00E-05	4.54E+00
Total Risk = 1E-6	YES	1.99E+02	1.00E-06	4.54E-01
Benzene MCL = 5 ug/L	NA	NA	NA	NA
MTBE = 20 ug/L	NA	NA	NA	NA
Risk of cPAHs = 1E-5	NO	1.99E+03	1.00E-05	4.54E+00
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= 250

HI= 5.72E-01

RISK= 1.26E-06

Pass or Fail? Pass

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

1. Enter Site Information

Date: 4/20/2016
 Site Name: Former Tosco BI Bulk Plant 1784
 Sample info: MW-5

2. Enter Ground Water Concentration Measured

Notes for Data Entry

Chemical of Concern or EC Group	Measured GW Conc	GW Cleanup Level	Current Condition			Adjusted Condition			
			HQ	RISK	Pass or Fail?	GW Conc being tested	HQ	RISK	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			2.50E+01	1.04E-01		
AL_EC >10-12	25		1.04E-01			2.50E+01	1.04E-01		
AL_EC >12-16	25		5.21E-02			2.50E+01	5.21E-02		
AL_EC >16-21	25		7.81E-04			2.50E+01	7.81E-04		
AL_EC >21-34	25		7.81E-04			2.50E+01	7.81E-04		
AR_EC >8-10	25		3.13E-02			2.50E+01	3.13E-02		
AR_EC >10-12	25		1.56E-01			2.50E+01	1.56E-01		
AR_EC >12-16	84		1.05E-01			8.40E+01	1.05E-01		
AR_EC >16-21	25		5.21E-02			2.50E+01	5.21E-02		
AR_EC >21-34	25		3.91E-02			2.50E+01	3.91E-02		
Benzene	0	5							
Toluene	0	1000							
Ethylbenzene	0	700							
Total Xylenes	0	1000							
Naphthalene	0.27	160	1.69E-03			2.70E-01	1.69E-03		
1-Methyl Naphthalene	0.01		2.50E-05			1.00E-02	2.50E-05		
2-Methyl Naphthalene	0.01		3.13E-04			1.00E-02	3.13E-04		
n-Hexane	0								
MTBE	0	20							
Ethylene Dibromide (EDB)	0	0.01							
1,2 Dichloroethane (EDC)	0	5							
Benzo(a)anthracene	0.01	for		8.34E-08	for	1.00E-02		8.34E-08	for
Benzo(b)fluoranthene	0.01	all		8.34E-08	all	1.00E-02		8.34E-08	all
Benzo(k)fluoranthene	0.01	cPAHs		8.34E-08	cPAHs	1.00E-02		8.34E-08	cPAHs
Benzo(a)pyrene	0.01	Risk =		8.34E-07		1.00E-02		8.34E-07	
Chrysene	0.01	1E-05		8.34E-09		1.00E-02		8.34E-09	
Dibenz(a,h)anthracene	0.01			8.34E-08	S Risk=	1.00E-02		8.34E-08	S Risk=
Indeno(1,2,3-cd)pyrene	0.01			8.34E-08	1.26E-06	1.00E-02		8.34E-08	1.26E-06
Sum	309.36		6.48E-01	1.26E-06		3.09E+02	6.48E-01	1.26E-06	

TEST CURRENT CONDITION

Measured TPH GW Conc, ug/L = 309.36
 HI = 6.477E-01
 RISK = 1.260E-06
 Pass or Fail? Pass

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: HI = 1

Most Stringent? YES

Protective TPH GW Conc, ug/L = 477.67

HI = 1.00E+00

RISK = 1.95E-06

SUMMARY OF PROTECTIVE GW CONCENTRATIONS

Protective GW TPH Conc, ug/L		477.67		
Most Stringent Criterion		HI = 1		
Ground Water Criteria	Most Stringent?	GW TPH, ug/L	RISK @	HI @
HI = 1	YES	4.78E+02	1.95E-06	1.00E+00
Total Risk = 1E-5	NO	2.46E+03	1.00E-05	5.14E+00
Total Risk = 1E-6	YES	2.46E+02	1.00E-06	5.14E-01
Benzene MCL = 5 ug/L	NA	NA	NA	NA
MTBE = 20 ug/L	NA	NA	NA	NA
Risk of cPAHs = 1E-5	NO	2.46E+03	1.00E-05	5.14E+00
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 = 309.36

HI = 6.48E-01

RISK = 1.26E-06

Pass or Fail? Pass

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

1. Enter Site Information

Date: 7/7/2016
 Site Name: Former Tosco BI Bulk Plant 1784
 Sample info: MW-2A

2. Enter Ground Water Concentration Measured

Notes for Data Entry

Chemical of Concern or EC Group	Measured GW Conc	GW Cleanup Level	Current Condition			Adjusted Condition			
			HQ	RISK	Pass or Fail?	GW Conc being tested	HQ	RISK	Pass or Fail?
	ug/L	ug/L	unitless	unitless		ug/L	unitless	unitless	
Petroleum EC Fraction									
AL_EC >5-6									
AL_EC >6-8									
AL_EC >8-10	25		1.04E-01			5.43E+01	2.26E-01		
AL_EC >10-12	25		1.04E-01			5.43E+01	2.26E-01		
AL_EC >12-16	25		5.21E-02			5.43E+01	1.13E-01		
AL_EC >16-21	25		7.81E-04			5.43E+01	1.70E-03		
AL_EC >21-34	50		1.56E-03			1.09E+02	3.39E-03		
AR_EC >8-10	25		3.13E-02			5.43E+01	6.79E-02		
AR_EC >10-12	25		1.56E-01			5.43E+01	3.39E-01		
AR_EC >12-16	25		3.13E-02			5.43E+01	6.79E-02		
AR_EC >16-21	25		5.21E-02			5.43E+01	1.13E-01		
AR_EC >21-34	25		3.91E-02			5.43E+01	8.48E-02		
Benzene		5							
Toluene		1000							
Ethylbenzene		700							
Total Xylenes		1000							
Naphthalene	0.011	160	6.88E-05			2.39E-02	1.49E-04		
1-Methyl Naphthalene	0.014		3.50E-05			3.04E-02	7.60E-05		
2-Methyl Naphthalene	0.025		7.81E-04			5.43E-02	1.70E-03		
n-Hexane									
MTBE		20							
Ethylene Dibromide (EDB)		0.01							
1,2 Dichloroethane (EDC)		5							
Benzo(a)anthracene	0.04	for	3.34E-07	for		8.69E-02	7.25E-07	for	
Benzo(b)fluoranthene	0.043	all	3.59E-07	all		9.34E-02	7.79E-07	all	
Benzo(k)fluoranthene	0.07	cPAHs	5.84E-07	cPAHs		1.52E-01	1.27E-06	cPAHs	
Benzo(a)pyrene	0.032	Risk =	2.67E-06			6.95E-02	5.80E-06		
Chrysene	0.029	1E-05	2.42E-08			6.30E-02	5.25E-08		
Dibenz(a,h)anthracene	0.05		4.17E-07	Σ Risk=		1.09E-01	9.06E-07	Σ Risk=	
Indeno(1,2,3-cd)pyrene	0.026		2.17E-07	4.60E-06		5.65E-02	4.71E-07	1.00E-05	
Sum	275.34		5.74E-01	4.60E-06		5.98E+02	1.25E+00	1.00E-05	

TEST CURRENT CONDITION

Measured TPH GW Conc, ug/L = 275.34
 HI = 5.735E-01
 RISK = 4.604E-06
 Pass or Fail? Pass

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: HI = 1

Most Stringent? YES

Protective TPH GW Conc, ug/L = 480.07

HI = 1.00E+00

RISK = 8.03E-06

SUMMARY OF PROTECTIVE GW CONCENTRATIONS

Protective GW TPH Conc, ug/L		480.07		
Most Stringent Criterion		HI = 1		
Ground Water Criteria	Most Stringent?	GW TPH, ug/L	RISK @	HI @
HI = 1	YES	4.80E+02	8.03E-06	1.00E+00
Total Risk = 1E-5	NO	5.98E+02	1.00E-05	1.25E+00
Total Risk = 1E-6	YES	5.98E+01	1.00E-06	1.25E-01
Benzene MCL = 5 ug/L	NA	NA	NA	NA
MTBE = 20 ug/L	NA	NA	NA	NA
Risk of cPAHs = 1E-5	NO	5.98E+02	1.00E-05	1.25E+00
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: 7/7/2016
 Site Name: Former Tosco BI Bulk Plant 1784
 Sample info: MW-5

2. Enter Ground Water Concentration Measured

Notes for Data Entry

Chemical of Concern or EC Group	Measured GW Conc	GW Cleanup Level	Current Condition			Adjusted Condition			
			HQ	RISK	Pass or Fail?	GW Conc being tested	HQ	RISK	Pass or Fail?
	ug/L	ug/L	unitless	unitless		ug/L	unitless	unitless	
Petroleum EC Fraction									
AL_EC >5-6									
AL_EC >6-8									
AL_EC >8-10	25		1.04E-01			5.37E+01	2.24E-01		
AL_EC >10-12	25		1.04E-01			5.37E+01	2.24E-01		
AL_EC >12-16	25		5.21E-02			5.37E+01	1.12E-01		
AL_EC >16-21	25		7.81E-04			5.37E+01	1.68E-03		
AL_EC >21-34	25		7.81E-04			5.37E+01	1.68E-03		
AR_EC >8-10	25		3.13E-02			5.37E+01	6.71E-02		
AR_EC >10-12	25		1.56E-01			5.37E+01	3.36E-01		
AR_EC >12-16	25		3.13E-02			5.37E+01	6.71E-02		
AR_EC >16-21	25		5.21E-02			5.37E+01	1.12E-01		
AR_EC >21-34	25		3.91E-02			5.37E+01	8.39E-02		
Benzene		5							
Toluene		1000							
Ethylbenzene		700							
Total Xylenes		1000							
Naphthalene	0.011	160	6.88E-05			2.36E-02	1.48E-04		
1-Methyl Naphthalene	0.014		3.50E-05			3.01E-02	7.52E-05		
2-Methyl Naphthalene	0.025		7.81E-04			5.37E-02	1.68E-03		
n-Hexane									
MTBE		20							
Ethylene Dibromide (EDB)		0.01							
1,2 Dichloroethane (EDC)		5							
Benzo(a)anthracene	0.046	for	3.84E-07	for		9.88E-02		8.25E-07	for
Benzo(b)fluoranthene	0.043	all	3.59E-07	all		9.24E-02		7.71E-07	all
Benzo(k)fluoranthene	0.07	cPAHs	5.84E-07	cPAHs		1.50E-01		1.25E-06	cPAHs
Benzo(a)pyrene	0.032	Risk =	2.67E-06			6.88E-02		5.74E-06	
Chrysene	0.029	1E-05	2.42E-08			6.23E-02		5.20E-08	
Dibenz(a,h)anthracene	0.05		4.17E-07	Σ Risk=		1.07E-01		8.96E-07	Σ Risk=
Indeno(1,2,3-cd)pyrene	0.026		2.17E-07	4.65E-06		5.59E-02		4.66E-07	1.00E-05
Sum	250.346		5.73E-01	4.65E-06		5.38E+02	1.23E+00	1.00E-05	

TEST CURRENT CONDITION

Measured TPH GW Conc, ug/L = 250.346
 HI = 5.728E-01
 RISK = 4.654E-06
 Pass or Fail? Pass

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: HI = 1

Most Stringent? YES

Protective TPH GW Conc, ug/L = 437.09

HI = 1.00E+00

RISK = 8.13E-06

SUMMARY OF PROTECTIVE GW CONCENTRATIONS

Protective GW TPH Conc, ug/L		437.09		
Most Stringent Criterion		HI = 1		
Ground Water Criteria	Most Stringent?	GW TPH, ug/L	RISK @	HI @
HI = 1	YES	4.37E+02	8.13E-06	1.00E+00
Total Risk = 1E-5	NO	5.38E+02	1.00E-05	1.23E+00
Total Risk = 1E-6	YES	5.38E+01	1.00E-06	1.23E-01
Benzene MCL = 5 ug/L	NA	NA	NA	NA
MTBE = 20 ug/L	NA	NA	NA	NA
Risk of cPAHs = 1E-5	NO	5.38E+02	1.00E-05	1.23E+00
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: 7/7/2016
 Site Name: Former Tosco BI Bulk Plant 1784
 Sample info: RW-1

2. Enter Ground Water Concentration Measured

Notes for Data Entry

Chemical of Concern or EC Group	Measured GW Conc	GW Cleanup Level	Current Condition			Adjusted Condition			
			HQ	RISK	Pass or Fail?	GW Conc being tested	HQ	RISK	Pass or Fail?
	ug/L	ug/L	unitless	unitless		ug/L	unitless	unitless	
Petroleum EC Fraction									
AL_EC >5-6									
AL_EC >6-8									
AL_EC >8-10	25		1.04E-01			5.36E+01	2.23E-01		
AL_EC >10-12	25		1.04E-01			5.36E+01	2.23E-01		
AL_EC >12-16	56		1.17E-01			1.20E+02	2.50E-01		
AL_EC >16-21	25		7.81E-04			5.36E+01	1.68E-03		
AL_EC >21-34	25		7.81E-04			5.36E+01	1.68E-03		
AR_EC >8-10	25		3.13E-02			5.36E+01	6.70E-02		
AR_EC >10-12	25		1.56E-01			5.36E+01	3.35E-01		
AR_EC >12-16	25		3.13E-02			5.36E+01	6.70E-02		
AR_EC >16-21	25		5.21E-02			5.36E+01	1.12E-01		
AR_EC >21-34	25		3.91E-02			5.36E+01	8.38E-02		
Benzene		5							
Toluene		1000							
Ethylbenzene		700							
Total Xylenes		1000							
Naphthalene	0.41	160	2.56E-03			8.79E-01	5.50E-03		
1-Methyl Naphthalene	2.3		5.75E-03			4.93E+00	1.23E-02		
2-Methyl Naphthalene	0.025		7.81E-04			5.36E-02	1.68E-03		
n-Hexane									
MTBE		20							
Ethylene Dibromide (EDB)		0.01							
1,2 Dichloroethane (EDC)		5							
Benzo(a)anthracene	0.047	for	3.92E-07	for		1.01E-01		8.41E-07	for
Benzo(b)fluoranthene	0.043	all	3.59E-07	all		9.22E-02		7.69E-07	all
Benzo(k)fluoranthene	0.07	cPAHs	5.84E-07	cPAHs		1.50E-01		1.25E-06	cPAHs
Benzo(a)pyrene	0.032	Risk =	2.67E-06			6.86E-02		5.73E-06	
Chrysene	0.029	1E-05	2.42E-08			6.22E-02		5.19E-08	
Dibenz(a,h)anthracene	0.05		4.17E-07	Σ Risk=		1.07E-01		8.95E-07	Σ Risk=
Indeno(1,2,3-cd)pyrene	0.026		2.17E-07	4.66E-06		5.58E-02		4.65E-07	1.00E-05
Sum	284.032		6.46E-01	4.66E-06		6.09E+02	1.38E+00	1.00E-05	

TEST CURRENT CONDITION

Measured TPH GW Conc, ug/L = 284.032
 HI = 6.456E-01
 RISK = 4.663E-06
 Pass or Fail? Pass

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: HI = 1

Most Stringent? YES

Protective TPH GW Conc, ug/L = 439.98

HI = 1.00E+00

RISK = 7.22E-06

SUMMARY OF PROTECTIVE GW CONCENTRATIONS

Protective GW TPH Conc, ug/L	439.98			
Most Stringent Criterion	HI = 1			
Ground Water Criteria	Most Stringent?	GW TPH, ug/L	RISK @	HI @
HI = 1	YES	4.40E+02	7.22E-06	1.00E+00
Total Risk = 1E-5	NO	6.09E+02	1.00E-05	1.38E+00
Total Risk = 1E-6	YES	6.09E+01	1.00E-06	1.38E-01
Benzene MCL = 5 ug/L	NA	NA	NA	NA
MTBE = 20 ug/L	NA	NA	NA	NA
Risk of cPAHs = 1E-5	NO	6.09E+02	1.00E-05	1.38E-00
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=

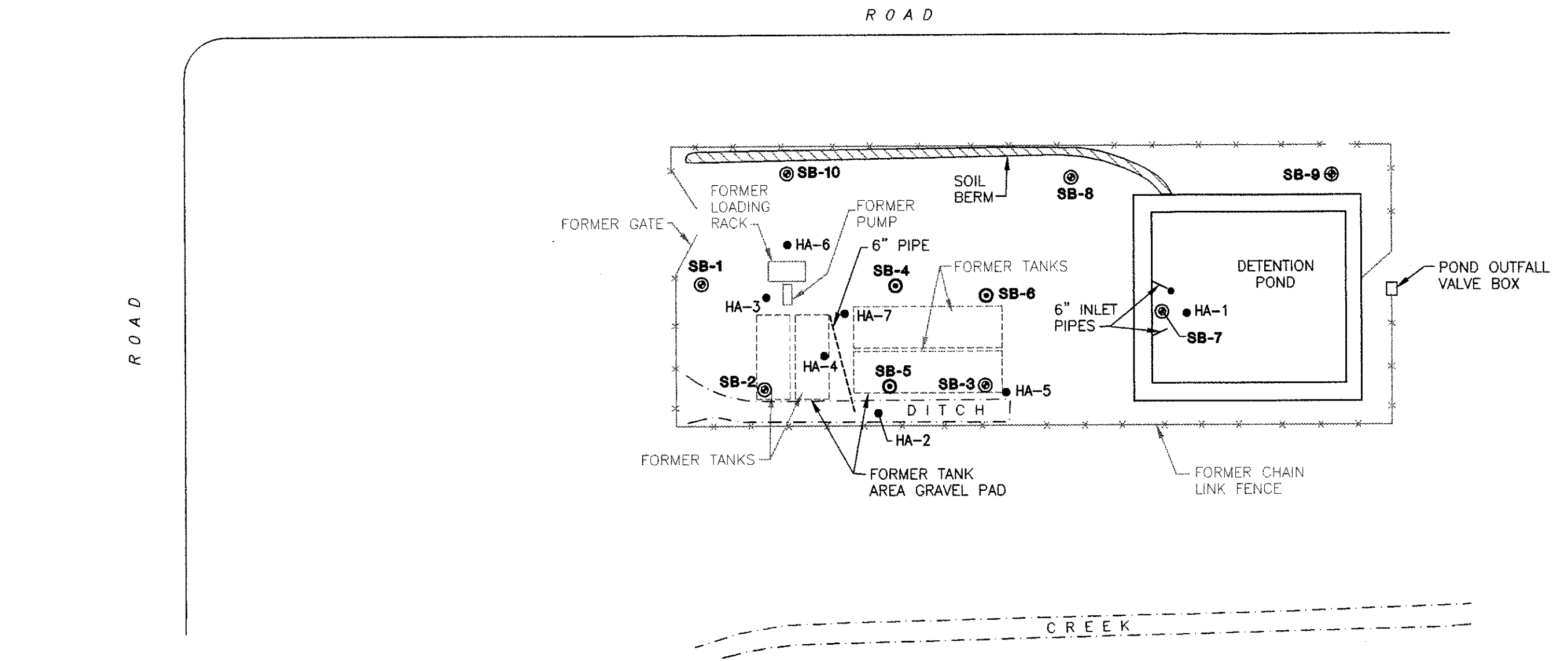
RISK=

Pass or Fail?

APPENDIX D

Historical Figures, Tables, and Boring Logs

Historical Figures



LEGEND:

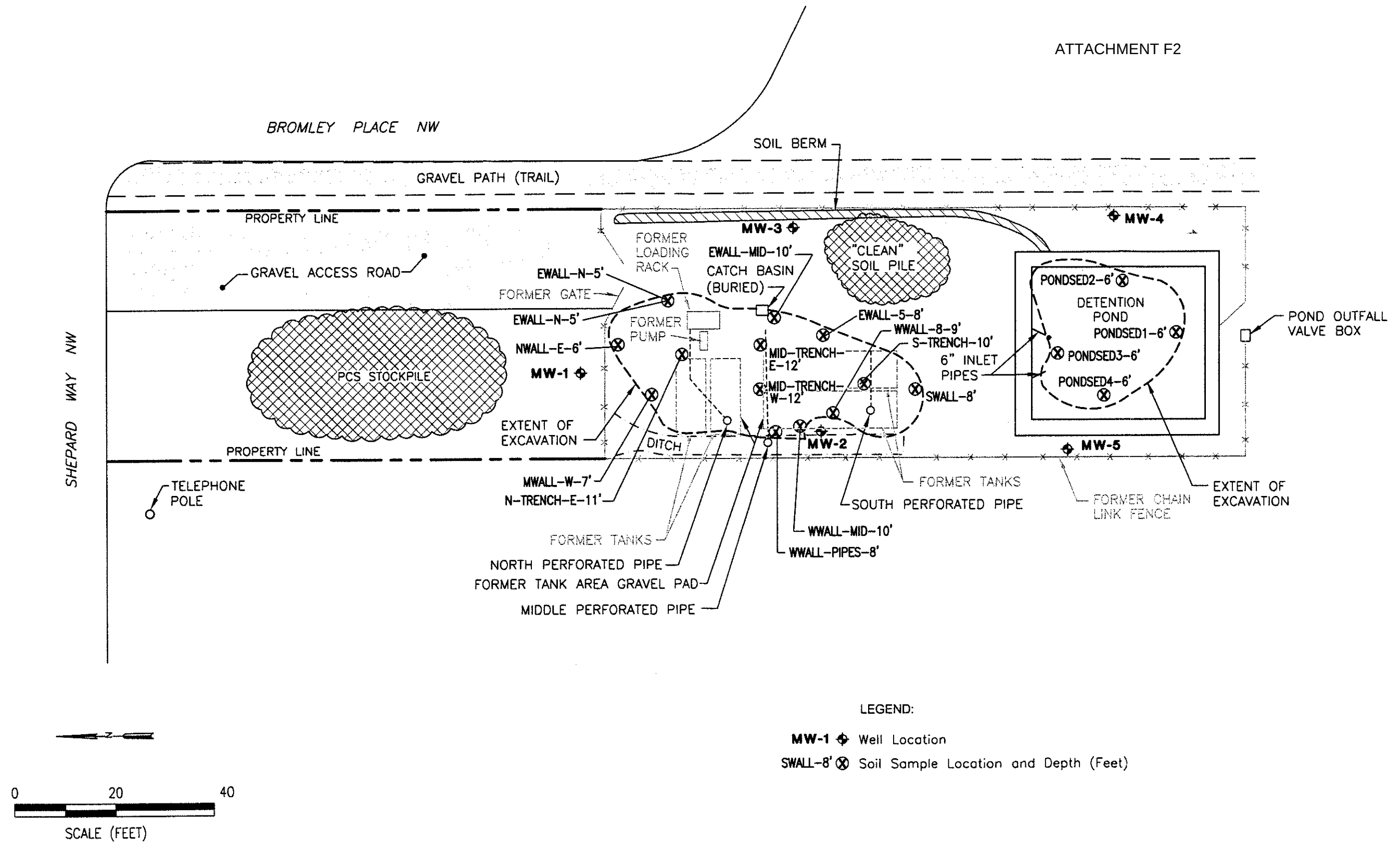
- SB-9 ⊕ Geoprobe Boring - Soil Sample Only
- SB-3 ⊕ Geoprobe Boring - Soil and Groundwater Samples
- HA-1 • Previous Hand Auger Sample Location

SOURCE: PACIFIC ENVIRONMENTAL GROUP, INC.

NOLL
Environmental, Inc.

DATE:	12-99
DESIGN BY:	
DRAWN BY:	LSP
CHECKED BY:	
SCALE:	1=1
PROJ. NO.	99-02-011
FILE:	NOLL36B

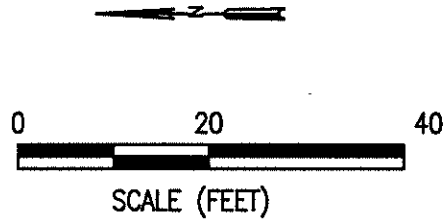
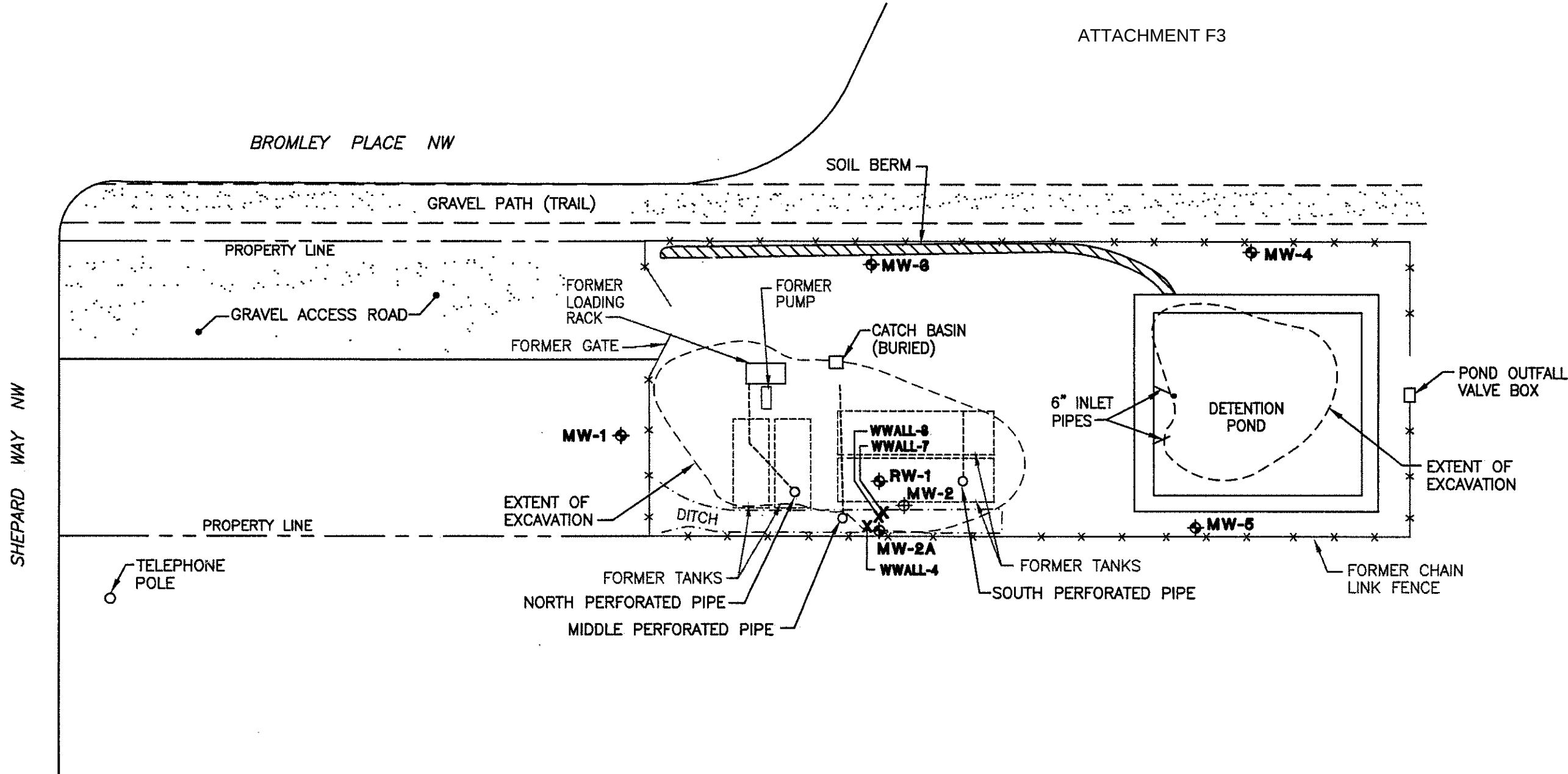
Figure 2
FORMER TOSCO BULK PLANT 1783A
WEAVER AVENUE
BAINBRIDGE ISLAND, WASHINGTON
SAMPLE LOCATION MAP



NOLL
Environmental, Inc.

DATE:	8-01-01
DESIGN BY:	
DRAWN BY:	LSP
CHECKED BY:	
SCALE:	1=1
PROJ. NO.	99-02-011
FILE:	TOSCO-1783A-F3

Figure 3
FORMER TOSCO BULK PLANT 1783A
WEAVER AVENUE
BAINBRIDGE ISLAND, WASHINGTON
SOIL EXCAVATION MAP



LEGEND:

- MW-2 ⊕ Former Well Location
- MW-1 ⊕ Well Location
- WWALL-4 X Approximate Soil Sample Location

NOLL
Environmental, Inc.

DATE:	4/25/03
DESIGN BY:	
DRAWN BY:	LSP
CHECKED BY:	
SCALE:	1"=20'
PROJ. NO.	99-02-011
FILE:	TOSC01784-SSL-F3

Figure 3
FORMER TOSCO BULK PLANT 1784
SHEPARD WAY NW & BROMLEY PLACE NW
BAINBRIDGE ISLAND, WASHINGTON
SOIL SAMPLE LOCATION MAP

BROMLEY PLACE NORTHWEST

SHEPARD WAY NORTHWEST

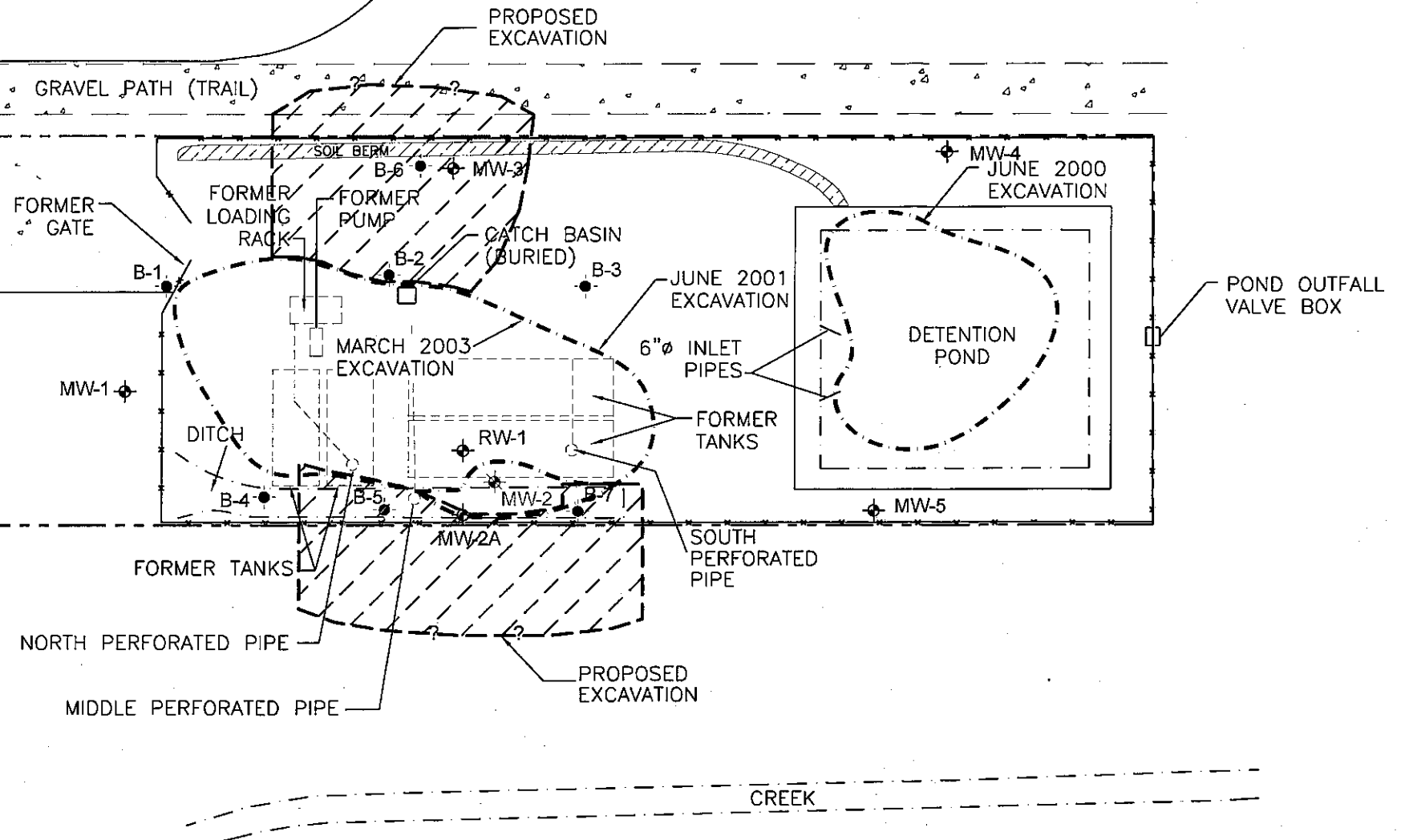
LEGEND

- SITE BOUNDARY
- - - - - FORMER CHAIN-LINK FENCE
- ⊕ MONITORING WELL LOCATION
- ⊗ ABANDONED OR DESTROYED MONITORING WELL LOCATION
- SOIL BORING LOCATION
- ▤ PROPOSED EXCAVATION BOUNDARY

NOTES:

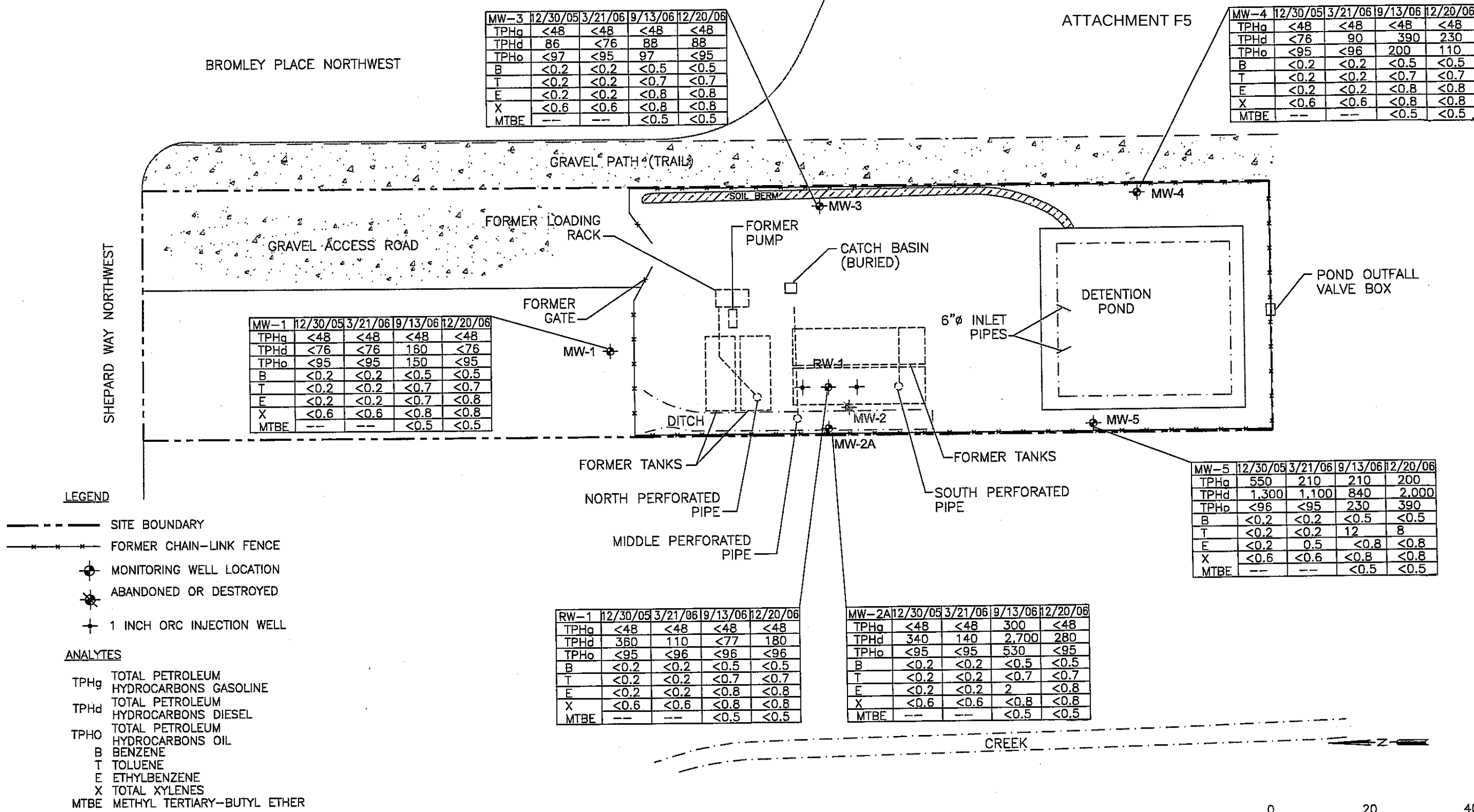
- 1). ALL LOCATIONS ARE APPROXIMATE.
- 2). ALL SOIL BORING LOCATIONS TAKEN BY GEOPROBE ON 02/16/2005

SOURCE:
 BASE MAP FROM: NOLL ENVIRONMENTAL, INC., TITLED FORMER TOSCO BULK PLANT 1784,
 SOIL SAMPLE LOCATION MAP, FIGURE 3, DATED 4/25/03, PROJECT NUMBER 99-02-011,
 CADD FILE: TOSCO1784-SSL-F3.



 12034 134th COURT NE, SUITE 102 REDMOND, WASHINGTON PH (425) 372-1600/FAX (425) 372-1650	PREPARED FOR: ConocoPhillips FORMER FACILITY NO. 0961 SHEPARD WAY NW & BROMLEY PL. NW, BAINBRIDGE ISLAND, WASHINGTON	SITE PLAN WITH PROPOSED EXCAVATION AREA	FIGURE: 2
	JOB NUMBER: 01CP.00916.11	DRAWN BY: R. EDWARDS	CHECKED BY: APPROVED BY:

FILEPATH:Q:\CADD-0\Files\Projects\CONOCO\WASHINGTON\0961\0961(SP - EXCAVATION).DWG MODIFIED BY CTORRES AT Nov 08, 2005 - 13:48



SOURCE:
BASE MAP FROM: NOLL ENVIRONMENTAL, INC., TITLED FORMER TOSCO BULK PLANT 1784,
SOIL SAMPLE LOCATION MAP, FIGURE 3, DATED 4/25/03, PROJECT NUMBER 99-02-011,
CADD FILE: TOSCO1784-SSL-F3.

12034 134th COURT NE, SUITE 102
REDMOND, WASHINGTON
PH (425) 372-1600/FAX (425) 372-1650

PREPARED FOR:
ConocoPhillips
FORMER FACILITY NO. 0961
SHEPARD WAY NW & BROMLEY PL. NW,
BAINBRIDGE ISLAND, WASHINGTON

JOB NUMBER: 01CP.00961.00
DRAWN BY: CFS

**SITE PLAN WITH
GROUNDWATER ANALYTICAL RESULTS
(12/30/05-12/20/06)**

CHECKED BY: APPROVED BY: DATE: 01/23/07

FIGURE:
3

0961(1Q06).dwg

Historical Tables

Table 1: Summary of Previous Soil Sample Analytical Results
Former Tosco Bulk Plant 1784
SW Corner Shepard and Bromley, Bainbridge Island, WA

ATTACHMENT T1

Sample Name	Sample Date	Sample Depth (ft)	WTPH-G	WTPH-D extended		EPA Method 8021B				EPA Method 6020	
			TPH-G	TPH-D	TPH-O	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Total Lead	Dissolved Lead
Previous Soil Sample Results (mg/Kg)											
HA1-1	9/15/97	1.0	—	12	nd	—	—	—	—	—	—
HA2-1	9/15/97	1.0	—	293	59.8	—	—	—	—	—	—
HA2-3	9/15/97	3.0	—	232	27.7	—	—	—	—	—	—
HA3-0.5	9/15/97	0.5	—	9,390	nd	—	—	—	—	—	—
HA3-3	9/15/97	3.0	—	9,110	nd	—	—	—	—	—	—
HA3-5	9/15/97	5.0	—	2,360	nd	—	—	—	—	—	—
HA4-1	9/15/97	1.0	—	1,110	31.3	—	—	—	—	—	—
HA4-2.5	9/15/97	2.5	—	28.7	nd	—	—	—	—	—	—
HA5-1	9/15/97	1.0	—	21,200	710	—	—	—	—	—	—
HA5-4.5	9/15/97	4.5	—	8,240	nd	—	—	—	—	—	—
HA6-1	9/15/97	1.0	—	15,600	nd	—	—	—	—	—	—
HA6-3.5	9/15/97	3.5	—	240	nd	—	—	—	—	—	—
HA7-1	9/15/97	1.0	—	7,370	nd	—	—	—	—	—	—

NOTES:

nd = Not detected (See Lab Report for Detection Limits). — = Not analyzed. mg/Kg = milligrams per kilogram.

TPH-G = Total petroleum hydrocarbons as gasoline. TPH-D = Total petroleum hydrocarbons as diesel.

TPH-O = Total petroleum hydrocarbons as oil.

Table 1: Summary of Previous Soil Sample Analytical Results
Former Tosco Bulk Plant 1784
SW Corner Shepard and Bromley, Bainbridge Island, WA

ATTACHMENT T2

Sample Name	Sample Date	Sample Depth (ft)	WTPH-G	WTPH-D extended		EPA Method 8021B				EPA Method 6020	
			TPH-G	TPH-D	TPH-O	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Total Lead	Dissolved Lead
Previous Soil Sample Results (mg/Kg)											
SB1-4	12/3/99	4	nd	nd	nd	nd	nd	nd	nd	—	—
SB1-6	12/3/99	6	—	—	—	—	—	—	—	—	—
SB2-4	12/3/99	4	—	—	—	—	—	—	—	—	—
SB2-7	12/3/99	7	nd	nd	nd	nd	nd	nd	nd	—	—
SB3-3	12/3/99	3	681	4,410	nd	nd	nd	nd	nd	—	—
SB3-6	12/3/99	6	799	2,790	nd	nd	nd	nd	nd	—	—
SB4-3	12/3/99	3	—	—	—	—	—	—	—	—	—
SB4-7	12/3/99	7	777	1,410	nd	nd	nd	nd	nd	—	—
SB5-4	12/3/99	4	nd	nd	nd	nd	nd	nd	nd	—	—
SB5-7	12/3/99	7	223	1,110	nd	nd	nd	nd	nd	—	—
SB6-4	12/3/99	4	41.2	138	nd	nd	nd	nd	nd	—	—
SB6-6	12/3/99	6	nd	nd	nd	nd	nd	nd	nd	—	—
SB7-3	12/3/99	3	nd	14.4	nd	nd	nd	nd	nd	—	—
SB7-6	12/3/99	6	189	182	nd	nd	nd	nd	nd	—	—
SB8-4	12/3/99	4	—	—	—	—	—	—	—	—	—
SB8-7	12/3/99	7	nd	nd	nd	nd	nd	nd	nd	—	—
SB9-4	12/3/99	4	—	—	—	—	—	—	—	—	—
SB9-7	12/3/99	7	nd	nd	nd	nd	nd	nd	nd	—	—
SB9-10	12/3/99	10	—	—	—	—	—	—	—	—	—
SB10-4	12/3/99	4	—	—	—	—	—	—	—	—	—
SB10-7	12/3/99	7	50.7	360	nd	nd	nd	nd	nd	—	—

**Table 2: Summary of Excavation Soil and Water Analytical Results
Former Tosco Bulk Plant 1784
SW Corner - Shepard and Bromley, Bainbridge Island, WA**

ATTACHMENT T3

Sample Name	Sample Date	Sample Depth (ft)	WTPH-G	WTPH-D extended		EPA Method 8021B				EPA
			TPH-G	TPH-D	TPH-O	Benzene	Toluene	Ethyl-benzene	Total Xylenes	8260B MtBE
Excavation Soil Sample Results (mg/Kg)										
Pondsed-1-6'	6/27/00	6	nd	353	nd	nd	nd	nd	nd	—
Pondsed-2-6'	6/27/00	6	nd	29.5	40.8	nd	nd	nd	nd	—
Pondsed-3-6'	6/27/00	6	nd	nd	nd	nd	nd	nd	nd	—
Pondsed-4-6'	6/27/00	6	nd	nd	nd	nd	nd	nd	nd	—
Mid-Trench-E-12'	6/12/01	12	14.9	57.2	nd	nd	nd	nd	nd	—
Mid-Trench-W-12'	6/12/01	12	nd	nd	nd	nd	nd	nd	nd	—
N-Trench-E-11'	6/12/01	11	nd	nd	nd	nd	nd	nd	nd	—
S-Trench-E-10'	6/12/01	10	nd	nd	nd	nd	nd	nd	nd	—
EWALL-N-5'	6/13/01	5	715	2,530	nd	nd	nd	nd	1.17	—
NWALL-E-6'	6/13/01	6	183	655	nd	nd	nd	nd	nd	—
NWALL-W-7'	6/13/01	7	nd	nd	nd	nd	nd	nd	nd	—
WWALL-N-7'	6/13/01	7	295	984	nd	nd	nd	nd	nd	—
EWALL-MID-10'	6/13/01	10	183	804	nd	nd	nd	nd	nd	—
WWALL-MID-10'	6/13/01	10	264	1,330	nd	nd	nd	nd	nd	—
SWALL-8'	6/13/01	8	7.55	40.3	nd	nd	nd	nd	nd	—
EWALL-S-8'	6/13/01	8	122	586	nd	nd	nd	nd	nd	—
WWALL-PIPES-8'	6/13/01	8	302	1,660	nd	nd	nd	nd	nd	—
WWALL-S-9'	6/13/01	9	179	723	nd	nd	nd	nd	nd	—

**Table 2: Summary of Excavation Soil and Water Analytical Results
Former Tosco Bulk Plant 1784
SW Corner - Shepard and Bromley, Bainbridge Island, WA**

ATTACHMENT T4

Sample Name	Sample Date	Sample Depth (ft)	WTPH-G	WTPH-D extended		EPA Method 8021B				EPA
			TPH-G	TPH-D	TPH-O	Benzene	Toluene	Ethyl-benzene	Total Xylenes	8260B MtBE
Excavation "Clean" Soil Stockpile Sample Results (mg/Kg)										
CSS-1	6/12/01	9	191	2,290	nd	nd	nd	nd	0.227	—
CSS-2	6/12/01	9	136	1,150	nd	nd	nd	nd	0.166	—
CSS-3	6/12/01	9	342	2,040	nd	nd	nd	nd	0.490	—
PIT RUN	6/13/01	9	nd	nd	nd	nd	nd	nd	nd	—
Excavation PCS Soil Stockpile Sample Results (mg/Kg)										
PCS	6/13/01	9	354	1,970	nd	nd	nd	nd	nd	—
Excavation Water Sample Results (µg/L)										
Excav-Water1	6/12/01	10	22,500	52.9	nd	nd	nd	nd	nd	nd
Excav-Water2	6/13/01	10	132	18.3	nd	nd	0.611	nd	nd	nd

NOTES:

nd = Not detected (See Lab Report for Detection Limits). — = Not analyzed. mg/Kg = milligrams per kilogram.

TPH-G = Total petroleum hydrocarbons as gasoline. TPH-D = Total petroleum hydrocarbons as diesel.

TPH-O = Total petroleum hydrocarbons as oil.

MtBE = Methyl tert butyl ether

Table 3: Summary of Well Boring Soil Analytical Results
Former Tosco Bulk Plant 1784
SW Corner - Shepard and Bromley, Bainbridge Island, WA

ATTACHMENT T5

Sample Name	Sample Date	Sample Depth (ft)	WTPH-G	WTPH-D extended		EPA Method 8021B			
			TPH-G	TPH-D	TPH-O	Benzene	Toluene	Ethyl-benzene	Total Xylenes
Soil Boring Sample Results (mg/Kg)									
MW1-5	6/27/01	5	nd	nd	nd	nd	nd	nd	nd
MW1-10	6/27/01	10	nd	nd	nd	nd	nd	nd	nd
MW2-5	6/27/01	5	nd	24.4	nd	nd	nd	nd	nd
MW2-10	6/27/01	10	186	900	nd	nd	nd	0.179	0.461
MW2-15	6/27/01	15	75.9	477	nd	nd	nd	0.0604	0.179
MW3-5	6/27/01	5	nd	nd	nd	nd	nd	nd	nd
MW3-10	6/27/01	10	nd	nd	nd	nd	nd	nd	nd
MW4-5	6/27/01	5	nd	nd	nd	nd	nd	nd	nd
MW4-10	6/27/01	10	nd	nd	nd	nd	nd	nd	nd
MW5-5	6/27/01	5	nd	nd	nd	nd	nd	nd	nd
MW5-10	6/27/01	10	nd	nd	nd	nd	nd	nd	nd

NOTES:

nd = Not detected (See Lab Report for Detection Limits). — = Not analyzed. mg/Kg = milligrams per kilogram.

TPH-G = Total petroleum hydrocarbons as gasoline. TPH-D = Total petroleum hydrocarbons as diesel.

TPH-O = Total petroleum hydrocarbons as oil.

Table 1: Summary of Excavation Soil Analytical Results
Former Tosco/Unocal Bulk Plant 1784
SW Corner - Shepard and Bromley, Bainbridge Island, WA

Sample Name	Sample Date	Sample Depth (ft)	EPA Method 8021B						
			TPH-G	TPH-D	TPH-O	Benzene	Toluene	Ethyl-benzene	Total Xylenes
Current Excavation Soil Sample Results (mg/Kg)									
WWALL-4	3/7/03	4	nd	567	nd	nd	nd	nd	nd
WWALL-7	3/7/03	7	367	6,550	nd	nd	nd	nd	1.81
WWALL-8	3/7/03	8	107	1,240	nd	nd	nd	0.145	0.411
Previous Excavation Soil Sample Results (mg/Kg)									
Mid-Trench-E-12'	6/12/01	12	14.9	57.2	nd	nd	nd	nd	nd
Mid-Trench-W-12'	6/12/01	12	nd	nd	nd	nd	nd	nd	nd
N-Trench-E-11'	6/12/01	11	nd	nd	nd	nd	nd	nd	nd
S-Trench-E-10'	6/12/01	10	nd	nd	nd	nd	nd	nd	nd
EWALL-N-5'	6/13/01	5	715	2,530	nd	nd	nd	nd	1.17
NWALL-E-6'	6/13/01	6	183	655	nd	nd	nd	nd	nd
NWALL-W-7'	6/13/01	7	nd	nd	nd	nd	nd	nd	nd
WWALL-N-7'	6/13/01	7	295	984	nd	nd	nd	nd	nd
EWALL-MID-10'	6/13/01	10	183	804	nd	nd	nd	nd	nd
WWALL-MID-10'	6/13/01	10	264	1,330	nd	nd	nd	nd	nd
SWALL-8'	6/13/01	8	7.55	40.3	nd	nd	nd	nd	nd
EWALL-S-8'	6/13/01	8	122	586	nd	nd	nd	nd	nd
WWALL-PIPES-8'	6/13/01	8	302	1,660	nd	nd	nd	nd	nd
WWALL-S-9'	6/13/01	9	179	723	nd	nd	nd	nd	nd
Pondsed-1-6'	6/27/00	6	nd	353	nd	nd	nd	nd	nd
Pondsed-2-6'	6/27/00	6	nd	29.5	40.8	nd	nd	nd	nd
Pondsed-3-6'	6/27/00	6	nd	nd	nd	nd	nd	nd	nd
Pondsed-4-6'	6/27/00	6	nd	nd	nd	nd	nd	nd	nd

NOTES:

nd = Not detected (See Lab Report for Detection Limits). mg/Kg = milligrams per kilogram.

TPH-G = Total petroleum hydrocarbons as gasoline by Methods WTPH-G or NWTPH-Gx.

TPH-D = Total petroleum hydrocarbons as diesel by Methods WTPH-D extended or NWTPH-Dx.

TPH-O = Total petroleum hydrocarbons as oil by Methods WTPH-D extended or NWTPH-Dx.

Table 2: Summary of Well Boring Soil Analytical Results
Former Tosco/Unocal Bulk Plant 1784
SW Corner - Shepard and Bromley, Bainbridge Island, WA

Sample Name	Sample Date	Sample Depth (ft)	EPA Method 8021B						
			TPH-G	TPH-D	TPH-O	Benzene	Toluene	Ethyl-benzene	Total Xylenes
Soil Boring Sample Results (mg/Kg)									
MW2A-10	3/19/03	10	79.3	891	nd	nd	nd	nd	0.415
MW2A-12.5	3/19/03	12.5	nd	28.5	nd	nd	nd	nd	nd
MW2A-15	3/19/03	15	nd	18.1	nd	nd	nd	nd	nd
RW1-10	3/19/03	10	53.0	1,050	nd	nd	nd	nd	0.270
RW1-12.5	3/19/03	12.5	nd	13.6	nd	nd	nd	nd	nd
RW1-15	3/19/03	15	nd	nd	nd	nd	nd	nd	nd
Previous Soil Boring Sample Results (mg/Kg)									
MW1-5	6/27/01	5	nd	nd	nd	—	—	—	—
MW1-10	6/27/01	10	nd	nd	nd	—	—	—	—
MW2-5	6/27/01	5	nd	24.4	nd	nd	nd	nd	nd
MW2-10	6/27/01	10	186	900	nd	nd	nd	0.179	0.461
MW2-15	6/27/01	15	75.9	477	nd	nd	nd	0.0604	0.179
MW3-5	6/27/01	5	nd	nd	nd	—	—	—	—
MW3-10	6/27/01	10	nd	nd	nd	—	—	—	—
MW4-5	6/27/01	5	nd	nd	nd	—	—	—	—
MW4-10	6/27/01	10	nd	nd	nd	—	—	—	—
MW5-5	6/27/01	5	nd	nd	nd	—	—	—	—
MW5-10	6/27/01	10	nd	nd	nd	—	—	—	—

NOTES:

nd = Not detected (See Lab Report for Detection Limits). — = Not analyzed. mg/Kg = milligrams per kilogram.

TPH-G = Total petroleum hydrocarbons as gasoline by Methods WTPH-G or NWTPH-Gx.

TPH-D = Total petroleum hydrocarbons as diesel by Methods WTPH-D extended or NWTPH-Dx.

TPH-O = Total petroleum hydrocarbons as oil by Methods WTPH-D extended or NWTPH-Dx.

Table 2: Summary of Groundwater Analytical Results
Former Tosco/Unocal Bulk Plant 1784
SW Corner - Shepard and Bromley, Bainbridge Island, WA

ATTACHMENT T8

Sample Name	Sample Date	Sample Depth (ft)	NWTPH-Gx	NWTPH-Dx		EPA Method 8021B				8260B	EPA Method 6020		
			TPH-G	TPH-D	TPH-O	Benzene	Toluene	Ethyl-benzene	Total Xylenes	VOCs	Total Lead	Dissolved Lead	
Previous Groundwater Grab Sample Results (µg/L)													
SB1W	12/3/99	6	nd	394	nd	nd	nd	nd	nd	—	—	—	
SB2W	12/3/99	6	nd	470	nd	nd	0.611	nd	nd	—	6.28	nd	
SB3W	12/3/99	6	2,490	404,000	nd	4.79	nd	51.1	82.5	—	2.89	nd	
SB7W	12/3/99	4	32,300	104,000	nd	nd	nd	nd	nd	—	—	—	
SB8W	12/3/99	6	nd	1,370	nd	nd	nd	nd	nd	—	—	—	
SB9W	12/3/99	6	nd	4,040	nd	nd	nd	nd	nd	—	—	—	
SB10W	12/3/99	6	363	14,900	nd	nd	nd	nd	1.03	—	—	—	
MTCA Method A CCLs			800	500	500	5	700	1,000	1,000	—	5	5	

NOTES:

nd = Not detected (See Lab Report for Detection Limits). — = Not analyzed.

TPH-G = Total petroleum hydrocarbons as gasoline. TPH-D = Total petroleum hydrocarbons as diesel.

TPH-O = Total petroleum hydrocarbons as oil.

µg/L = micrograms per liter.

MTCA = Model Toxics Control Act. CCL = Cleanup Level.

BOLD = Concentration exceeds MTCA Method A CCL.

Table 2: Summary of Groundwater Analytical Results
Former Tosco/Unocal Bulk Plant 1784
SW Corner - Shepard and Bromley, Bainbridge Island, WA

ATTACHMENT T9

Sample Name	Sample Date	Sample Depth (ft)	NWTPH-Gx	NWTPH-Dx		EPA Method 8021B				8260B	EPA Method 6020	
			TPH-G	TPH-D	TPH-O	Benzene	Toluene	Ethyl-benzene	Total Xylenes	VOCs	Total Lead	Dissolved Lead
Groundwater Sample Results (µg/L)												
MW-1	6/26/03	6.93	nd	nd	nd	nd	nd	nd	nd	—	—	—
MW-1	3/30/03	4.43	nd	nd	nd	nd	nd	nd	nd	—	—	—
MW-1	12/21/02	4.42	nd	nd	nd	nd	nd	nd	nd	—	—	—
MW-1	9/30/02	8.83	nd	nd	nd	nd	nd	nd	nd	—	—	—
MW-1	5/23/02	5.89	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW-1	3/26/02	4.45	nd	nd	nd	nd	nd	nd	nd	—	—	—
MW-1	12/11/01	4.19	nd	nd	nd	nd	nd	nd	nd	—	—	—
MW-1	9/13/01	6.78	nd	nd	nd	nd	nd	nd	nd	—	—	—
MW-1	6/28/01	7.03	nd	nd	nd	nd	nd	nd	1.02	—	nd	nd
MW-2A	6/26/03	6.49	728	8,180	533	nd	33.4	2.87	3.79	—	—	—
MW-100 (MW-2A Dup)	6/26/03	—	470	5,190	692	nd	32.7	2.83	3.61	—	—	—
MW-2A	3/30/03	4.43	567	4,370	nd	nd	nd	2.24	4.55	—	—	—
MW-100 (MW-2A Dup)	3/30/03	—	530	3,030	nd	nd	nd	2.38	4.87	—	—	—
MW-2	Decommissioned 3/4/03		—	—	—	—	—	—	—	—	—	—
MW-2	12/21/02	5.14	157	3,810	nd	nd	nd	nd	nd	—	—	—
MW-100 (MW-2 Dup)	12/21/02	—	165	3,830	nd	nd	nd	nd	nd	—	—	—
MW-2	9/30/02	8.61	368	5,020	nd	nd	nd	1.46	2.14	—	—	—
MW-100 (MW-2 Dup)	9/30/02	—	342	6,890	nd	nd	nd	1.26	1.77	—	—	—
MW-2	5/23/02	5.91	327	1,240	nd	nd	nd	2.23	2.01	nd	nd	nd
MW-100 (MW-2 Dup)	5/23/02	—	336	1,110	nd	nd	nd	2.01	1.78	nd	nd	nd
MW-2	3/26/02	4.86	134	521	nd	nd	nd	nd	nd	—	—	—
MW-100 (MW-2 Dup)	3/26/02	—	174	495	nd	nd	nd	nd	nd	—	—	—
MW-2	12/11/01	4.71	77.8	nd	nd	nd	nd	nd	nd	—	—	—
MW-100 (MW-2 Dup)	12/11/01	—	78.3	nd	nd	nd	nd	nd	nd	—	—	—
MW-2	9/13/01	6.71	697	649	nd	nd	0.762	5.93	5.61	—	—	—
MW-100 (MW-2 Dup)	9/13/01	—	926	648	nd	nd	0.772	6.74	6.71	—	—	—
MW-2	6/28/01	7.17	1,370	1,780	nd	0.677	nd	11.0	18.6	—	nd	nd
MW-100 (MW-2 Dup)	6/28/01	—	1,380	1,380	nd	0.748	nd	12.1	19.7	—	—	—
MTCA Method A CCLs			800	500	500	5	700	1,000	1,000	—	5	5

**Table 2: Summary of Groundwater Analytical Results
Former Tosco/Unocal Bulk Plant 1784
SW Corner - Shepard and Bromley, Bainbridge Island, WA**

ATTACHMENT T10

Sample Name	Sample Date	Sample Depth (ft)	NWTPH-Gx	NWTPH-Dx		EPA Method 8021B				8260B	EPA Method 6020	
			TPH-G	TPH-D	TPH-O	Benzene	Toluene	Ethyl- benzene	Total Xylenes	VOCs	Total Lead	Dissolved Lead
Groundwater Sample Results (µg/L)												
MW-3	6/26/03	5.59	nd	nd	nd	nd	nd	nd	nd	—	—	—
MW-3	3/30/03	3.16	nd	nd	nd	nd	nd	nd	nd	—	—	—
MW-3	12/21/02	3.27	nd	nd	nd	nd	nd	nd	nd	—	—	—
MW-3	9/30/02	7.11	nd	nd	nd	nd	0.513	nd	nd	—	—	—
MW-3	5/23/02	4.73	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW-3	3/26/02	3.38	nd	nd	nd	nd	nd	nd	nd	—	—	—
MW-3	12/11/01	2.83	nd	nd	nd	nd	nd	nd	nd	—	—	—
MW-3	9/13/01	5.75	905	nd	nd	nd	0.738	5.92	5.68	—	—	—
MW-3	6/28/01	5.30	nd	nd	nd	nd	nd	nd	nd	—	nd	nd
MW-4	6/26/03	6.57	nd	496	nd	nd	nd	nd	nd	—	—	—
MW-4	3/30/03	3.62	nd	nd	nd	nd	nd	nd	nd	—	—	—
MW-4	12/21/02	4.00	nd	nd	nd	nd	nd	nd	nd	—	—	—
MW-4	9/30/02	9.32	nd	nd	nd	nd	nd	nd	nd	—	—	—
MW-4	5/23/02	4.53	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW-4	3/26/02	3.63	nd	nd	nd	nd	nd	nd	nd	—	—	—
MW-4	12/11/01	3.44	nd	nd	nd	nd	nd	nd	nd	—	—	—
MW-4	9/13/01	7.05	nd	nd	nd	nd	nd	nd	nd	—	—	—
MW-4	6/28/01	8.30	nd	nd	nd	nd	nd	nd	1.18	—	—	—
MW-5	6/26/03	5.81	111	537	nd	nd	nd	nd	nd	—	—	—
MW-5	3/30/03	4.00	377	1,410	nd	nd	nd	0.520	nd	—	—	—
MW-5	12/21/02	4.24	385	734	nd	nd	nd	5.38	3.77	—	—	—
MW-5	9/30/02	11.12	95.2	nd	nd	nd	nd	nd	nd	—	—	—
MW-5	5/23/02	4.81	236	428	nd	nd	nd	nd	nd	nd	nd	nd
MW-5	3/26/02	4.00	469	454	nd	nd	nd	1.94	1.87	—	—	—
MW-5	12/11/01	3.91	571	358	nd	nd	nd	nd	nd	—	—	—
MW-5	9/13/01	5.61	77.8	nd	nd	nd	nd	nd	nd	—	—	—
MW-5	6/28/01	6.05	nd	290	nd	nd	nd	nd	nd	—	nd	nd
RW-1	6/26/03	6.73	nd	471	nd	nd	nd	nd	nd	—	—	—
RW-1	3/30/03	4.64	179	1,600	nd	nd	nd	nd	nd	—	—	—
MTCA Method A CCLs			800	500	500	5	700	1,000	1,000	—	5	5

Table 2: Summary of Groundwater Analytical Results
Former Tosco/Unocal Bulk Plant 1784
SW Corner - Shepard and Bromley, Bainbridge Island, WA

ATTACHMENT T11

Sample Name	Sample Date	Sample Depth (ft)	NWTPH-Gx	NWTPH-Dx		EPA Method 8021B				8260B	EPA Method 6020	
			TPH-G	TPH-D	TPH-O	Benzene	Toluene	Ethyl-benzene	Total Xylenes	VOCs	Total Lead	Dissolved Lead
Groundwater Sample Results (µg/L)												
N-PERF PIPE	12/21/02	—	nd	nd	nd	nd	nd	nd	nd	—	—	—
N-PERF PIPE	9/30/02	—	nd	nd	nd	nd	nd	nd	nd	—	—	—
N-PERF PIPE	5/22/02	—	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
N-PERF PIPE	3/26/02	—	nd	nd	nd	nd	nd	nd	nd	—	—	—
N-PERF PIPE	12/11/01	—	nd	nd	nd	nd	nd	nd	nd	—	—	—
N-PERF PIPE	9/13/01	—	nd	nd	nd	nd	nd	nd	nd	—	—	—
N-PERF PIPE	6/27/01	—	160	663	nd	nd	nd	nd	1.53	—	—	—
MID-PERF PIPE	12/21/02	—	nd	nd	nd	nd	nd	nd	nd	—	—	—
MID-PERF PIPE	9/30/02	—	nd	nd	nd	nd	nd	nd	nd	—	—	—
MID-PERF PIPE	5/22/02	—	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MID-PERF PIPE	3/26/02	—	nd	nd	nd	nd	nd	nd	nd	—	—	—
MID-PERF PIPE	12/11/01	—	57	nd	nd	nd	nd	nd	nd	—	—	—
MID-PERF PIPE	9/13/01	—	289	426	nd	nd	nd	0.766	2.12	—	—	—
MID-PERF PIPE	6/27/01	—	604	1,110	nd	0.796	nd	1.52	6.06	—	—	—
S-PERF PIPE	12/21/02	—	nd	289	nd	nd	nd	nd	nd	—	—	—
S-PERF PIPE	9/30/02	—	nd	nd	nd	nd	nd	nd	nd	—	—	—
S-PERF PIPE	5/22/02	—	154	nd	nd	nd	nd	1.05	nd	nd	nd	nd
S-PERF PIPE	3/26/02	—	204	nd	nd	nd	nd	1.78	nd	—	—	—
S-PERF PIPE	12/11/01	—	116	nd	nd	nd	nd	nd	nd	—	—	—
S-PERF PIPE	9/13/01	—	246	406	nd	nd	1.51	nd	nd	—	—	—
S-PERF PIPE	6/27/01	—	241	842	nd	nd	0.641	0.754	2.25	—	—	—
Trip Blank	6/26/03	—	nd	—	—	nd	nd	nd	nd	—	—	—
Trip Blank	3/26/02	—	nd	—	—	nd	nd	nd	nd	—	—	—
Trip Blank	12/11/01	—	nd	—	—	nd	nd	nd	nd	—	—	—
Trip Blank	9/13/01	—	nd	—	—	nd	nd	nd	nd	—	—	—
MTCA Method A CCLs			800	500	500	5	700	1,000	1,000	—	5	5

NOTES:

nd = Not detected (See Lab Report for Detection Limits). — = Not analyzed.

TPH-G = Total petroleum hydrocarbons as gasoline. TPH-D = Total petroleum hydrocarbons as diesel.

TPH-O = Total petroleum hydrocarbons as oil.

µg/L = micrograms per liter.

MTCA = Model Toxics Control Act. CCL = Cleanup Level.

BOLD = Concentration exceeds MTCA Method A CCL.

Table 3: Summary of Detected Polynuclear Aromatic Hydrocarbons in Groundwater
Former Tosco/Unocal Bulk Plant 1784, SW Corner - Shepard and Bromley, Bainbridge Island, WA

ATTACHMENT T12

Sample Name	Sample Date	Sample Depth (ft)	PAHs by GC/MS with Selected Ion Monitoring (EPA Method 8270M-SIM)												
			1-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo (a) anthracene	Benzo (b) fluoranthene	Chrysene	Fluoranthene	Fluorene	Naphthalene	Phenanthrene	Pyrene
Groundwater Sample Results (µg/L)															
MW-1	12/21/02	4.42	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01
MW-1	9/30/02	8.83	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01
MW-1	5/23/02	5.89	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	0.132	<0.1	<0.1
MW-1	6/28/01	7.03	—	—	—	—	—	—	—	—	—	—	—	—	—
MW-2	12/21/02	5.14	0.06	<0.01	0.27	<0.01	0.09	<0.01	<0.01	<0.01	<0.01	0.33	0.15	0.15	0.07
MW-100 (MW-2 Dup)	12/21/02	—	0.07	<0.01	0.14	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.17	0.13	<0.01	0.05
MW-2	9/30/02	8.61	5.7	1.1	0.8	<0.01	<0.01	0.05	<0.01	<0.01	0.18	0.82	1.2	<0.01	0.19
MW-2	5/23/02	5.91	9.89	4.30	0.868	<0.1	<0.1	<0.01	<0.01	<0.01	<0.1	2.01	4.01	0.819	<0.1
MW-100 (MW-2 Dup)	5/23/02	—	9.85	4.68	0.824	<0.1	<0.1	<0.01	<0.01	<0.01	<0.1	2.15	4.55	0.920	<0.1
MW-2	6/28/01	7.17	—	—	2.04	0.303	<0.2	<0.2	<0.2	<0.2	<0.2	5.83	5.41	0.227	<0.2
MW-100 (MW-2 Dup)	6/28/01	—	—	—	—	—	—	—	—	—	—	—	—	—	—
MW-3	12/21/02	3.27	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01
MW-3	9/30/02	7.11	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW-200 (MW-3 Dup)	9/30/02	—	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW-3	5/23/02	4.73	<0.1	<0.1	<0.1	<0.1	<0.1	0.0132	0.0122	0.0174	<0.1	<0.1	<0.1	<0.1	<0.1
MW-3	6/28/01	5.30	—	—	—	—	—	—	—	—	—	—	—	—	—
MW-4	12/21/02	4.00	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW-4	9/30/02	9.32	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
MW-4	5/23/02	4.53	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1
MW-4	6/28/01	8.30	—	—	—	—	—	—	—	—	—	—	—	—	—
MW-5	12/21/02	4.24	6.7	1.1	0.37	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.36	4.2	<0.01	<0.01
MW-5	9/30/02	11.12	0.36	0.03	0.47	<0.01	0.08	<0.01	<0.01	<0.01	<0.01	2.2	0.02	2.1	0.03
MW-5	5/23/02	4.81	<0.1	<0.1	1.38	<0.1	0.121	<0.01	<0.01	<0.01	<0.1	4.36	<0.1	1.33	<0.1
MW-5	6/28/01	6.05	—	—	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
N-PERF PIPE	12/21/02	—	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	<0.01	<0.01
N-PERF PIPE	5/22/02	—	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1
N-PERF PIPE	6/27/01	—	—	—	—	—	—	—	—	—	—	—	—	—	—
MID-PERF PIPE	12/21/02	—	0.05	0.02	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	0.04	<0.01	<0.01
MID-PERF PIPE	5/22/02	—	<0.1	<0.1	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1
MID-PERF PIPE	6/27/01	—	—	—	1.32	0.339	<0.2	<0.2	<0.2	<0.2	<0.2	3.17	<0.2	1.58	<0.2
S-PERF PIPE	12/21/02	—	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.04	<0.01	<0.01
S-PERF PIPE	5/22/02	—	2.44	<0.1	0.386	<0.1	<0.1	<0.01	<0.01	<0.01	<0.1	1.08	<0.1	1.33	<0.1
S-PERF PIPE	6/27/01	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Applicable MTCA Method B CCLs			(Not Listed)	(Not Listed)	960	(Not Listed)	4,800	0.012	0.012	0.012	640	640	32	(Not Listed)	480

NOTES:

— = Not analyzed

µg/L = micrograms per liter.

MTCA = Model Toxics Control Act. CCL = Cleanup Level.

BOLD = Concentration exceeds MTCA Method B CCL.

Historical Boring Logs

LOG OF EXPLORATORY BORING

PROJECT NAME Former Tosco Bulk Plant
 LOCATION Bainbridge Island, Washington
 DRILLED BY Cascade Drilling
 DRILL METHOD Geoprobe
 LOGGED BY Mike Noll

BORING NO. SB-1
 PAGE 1 OF 1
 GROUND ELEV. 12/3/99
 TOTAL DEPTH 8.00'
 DATE COMPLETED 12/3/99

SAMPLE NUMBER	SAMPLE TYPE	PID (ppm)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
1	SS	1.0						0 to 0.5 foot: CRUSHED ROCK (FILL)
								0.5 to 2.0 feet: SILT (ML) , tan to brown, 80 to 85 percent low to medium plasticity fines, 15 to 20 percent fine to medium sand, stiff, moist.
								2.0 to 3.5 feet: GRAVELLY SAND (SP) , tan to olive brown, 80 to 90 percent fine to medium and some coarse sand, 10 to 15 percent fine to medium subrounded gravel, trace to 5 percent fines, medium dense. No odor.
2	SS	0.3	ATD					3.5 to 8.0 feet: GRAVELLY SILT (ML) , olive gray, 60 to 70 percent low plasticity fines, 15 to 20 percent fine to coarse sand, 10 to 15 percent fine to medium subangular to subrounded gravel, very stiff, dry to moist (GLACIAL TILL). No odor.
								Bottom of boring at 8.0 feet. Groundwater encountered at 6.0 feet.
								Boring abandoned with bentonite chips hydrated with potable water to 1.0 foot bgs, and soil cuttings from 0 to 1.0 foot bgs.

REMARKS

(1) SS = 2-inch O.D. split spoon sampler driven using drilling rig hydraulics. (2) PID = Portable photoionization detector calibrated to 100 parts per million (ppm) isobutylene. (3) ATD = At Time of Drilling.

LOG OF EXPLORATORY BORING

PROJECT NAME Former Tosco Bulk Plant
 LOCATION Bainbridge Island, Washington
 DRILLED BY Cascade Drilling
 DRILL METHOD Geoprobe
 LOGGED BY Mike Noll

BORING NO. SB-2
 PAGE 1 OF 1
 GROUND ELEV. 14.00'
 TOTAL DEPTH 8.00'
 DATE COMPLETED 12/3/99

SAMPLE NUMBER	SAMPLE TYPE	PID (ppm)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
1	SS	1.6						0 to 1.5 feet: SANDY GRAVEL (GP) , olive gray to brown, 75 to 80 percent fine to medium subrounded gravel, 20 to 25 percent fine to coarse sand, medium dense, moist (FILL). Some staining.
2	SS	3.0	▽ ATD	5				1.5 to 4.0 feet: SANDY SILT (ML) , brown, 75 to 80 percent low plasticity fines, 15 to 20 percent fine to medium sand, stiff, moist to wet. No odor.
								4.0 to 6.0 feet: SAND (SP) , olive gray, 80 to 85 percent fine to medium and some coarse sand, 5 to 10 percent low plasticity fines, 5 to 10 percent fine subrounded gravel, dense, dry to moist. No odor.
								6.0 to 6.5 feet: SAND (SW) , olive brown, 70 to 80 percent fine to coarse sand, 10 to 15 percent fine subrounded gravel, 5 to 10 percent nonplastic fines, medium dense, moist. No odor.
				10				6.5 to 8.0 feet: SILT (ML) , olive gray, 60 to 65 percent nonplastic fines, 20 percent fine to medium subangular to subrounded gravel, 10 to 15 percent fine to coarse sand, stiff, dry to moist. No odor.
								@ 8.0 feet: dry.
								Bottom of boring at 8.0 feet. Groundwater encountered at 6.0 feet.
				15				Boring abandoned with bentonite chips hydrated with potable water to 1.0 foot bgs, and soil cuttings from 0 to 1.0 foot bgs.
				20				

REMARKS

(1) SS = 2-inch O.D. split spoon sampler driven using drilling rig hydraulics. (2) PID = Portable photoionization detector calibrated to 100 parts per million (ppm) isobutylene. (3) ATD = At Time of Drilling.

LOG OF EXPLORATORY BORING

PROJECT NAME Former Tosco Bulk Plant
 LOCATION Bainbridge Island, Washington
 DRILLED BY Cascade Drilling
 DRILL METHOD Geoprobe
 LOGGED BY Mike Noll

BORING NO. SB-3
 PAGE 1 OF 1
 GROUND ELEV.
 TOTAL DEPTH 8.00'
 DATE COMPLETED 12/3/99

SAMPLE NUMBER	SAMPLE TYPE	PID (ppm)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
1	SS	39.0		5				0 to 2.0 feet: GRAVEL AND SILTY GRAVEL (GP) , brown to olive, 80 percent fine to medium and some coarse subrounded gravel, 5 to 10 percent fine to coarse sand, 10 to 15 percent low plasticity fines, medium dense, moist (FILL). Some staining.
2	SS	62.0	ATD					2.0 to 3.0 feet: SAND (SP) , olive, 80 to 90 percent fine to medium sand, 5 to 10 percent low plasticity fines, 5 to 10 percent fine subrounded gravel, medium dense, dry to moist. Strong diesel-like odor.
								3.0 to 8.0 feet: GRAVELLY SILT AND SANDY SILT (ML) , olive to olive gray, 60 to 70 percent low plasticity fines, 15 to 20 percent fine to coarse sand, 15 to 20 percent fine to medium subangular to subrounded gravel, very stiff, moist to wet (GLACIAL TILL). Strong diesel-like odor and some sheen on soil.
				10				Bottom of boring at 8.0 feet. Groundwater encountered at 6.0 feet.
				15				Boring abandoned with bentonite chips hydrated with potable water to 1.0 foot bgs, and soil cuttings from 0 to 1.0 foot bgs.
				20				

REMARKS

(1) SS = 2-inch O.D. split spoon sampler driven using drilling rig hydraulics. (2) PID = Portable photoionization detector calibrated to 100 parts per million (ppm) isobutylene. (3) ATD = At Time of Drilling.

LOG OF EXPLORATORY BORING

PROJECT NAME Former Tosco Bulk Plant
 LOCATION Bainbridge Island, Washington
 DRILLED BY Cascade Drilling
 DRILL METHOD Geoprobe
 LOGGED BY Mike Noll

BORING NO. SB-4
 PAGE 1 OF 1
 GROUND ELEV.
 TOTAL DEPTH 8.00'
 DATE COMPLETED 12/3/99

SAMPLE NUMBER	SAMPLE TYPE	PID (ppm)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
1	SS	6.4						0 to 2.0 feet: GRAVEL AND SILTY GRAVEL (GP) , brown to olive, 80 percent fine to medium and some coarse subrounded gravel, 5 to 10 percent fine to coarse sand, 10 to 15 percent low plasticity fines, medium dense, moist (FILL).
2	SS	43.1	ATD	5				2.0 to 3.0 feet: SILT (ML) , brown, 75 to 80 percent nonplastic fines, 15 to 20 percent fine sand, trace fine gravel, stiff, moist, some roots and organics. No odor.
								3.0 to 6.0 feet: SAND (SW) , olive gray, 85 to 90 percent fine to coarse sand, 10 to 15 percent fine subrounded gravel, trace fines, medium dense, moist to wet. No odor.
								@ 5.0 to 6.0 feet: Wet. Diesel-like odor.
								6.0 to 7.0 feet: SILTY SAND (SM) , olive gray, 70 to 80 percent fine to coarse sand, 10 to 20 percent nonplastic fines, 5 to 10 percent fine subrounded gravel, dense, wet. Diesel-like odor.
								7.0 to 8.0 feet: GRAVELLY SILT (ML) , gray, 50 to 60 percent nonplastic fines, 35 to 40 percent fine to medium subangular to subrounded gravel, 5 to 10 percent fine to coarse sand, very stiff, wet. Diesel-like odor.
								Bottom of boring at 8.0 feet. Groundwater encountered at 6.0 feet.
								Boring abandoned with bentonite chips hydrated with potable water to 1.0 foot bgs, and soil cuttings from 0 to 1.0 foot bgs.

REMARKS

(1) SS = 2-inch O.D. split spoon sampler driven using drilling rig hydraulics. (2) PID = Portable photoionization detector calibrated to 100 parts per million (ppm) isobutylene. (3) ATD = At Time of Drilling.

LOG OF EXPLORATORY BORING

PROJECT NAME Former Tosco Bulk Plant
 LOCATION Bainbridge Island, Washington
 DRILLED BY Cascade Drilling
 DRILL METHOD Geoprobe
 LOGGED BY Mike Noll

BORING NO. SB-5
 PAGE 1 OF 1
 GROUND ELEV.
 TOTAL DEPTH 8.00'
 DATE COMPLETED 12/3/99

SAMPLE NUMBER	SAMPLE TYPE	PID (ppm)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
1	SS	3.7		5				0 to 2.0 feet: GRAVEL AND SILTY GRAVEL (GP), brown to olive, 80 percent fine to medium and some coarse subrounded gravel, 5 to 10 percent fine to coarse sand, 10 to 15 percent low plasticity fines, medium dense, moist (FILL). 2.0 to 3.0 feet: SANDY SILT (ML), brown to dark brown, 80 to 85 percent nonplastic fines, 15 percent fine sand, trace organics, soft, moist. Diesel-like odor. 3.0 to 4.0 feet: SAND (SP), yellowish to reddish brown, 80 to 90 percent fine sand, trace fine gravel, 5 to 10 percent nonplastic fines, medium dense, moist. Diesel-like odor. 4.0 to 7.5 feet: SILTY SAND (SM), olive brown, 80 to 85 percent fine to coarse sand, 15 to 20 percent nonplastic fines, trace fine gravel, medium dense, moist. Diesel-like odor. 7.5 to 8.0 feet: GRAVELLY SILT WITH SAND (ML), olive to olive gray, 60 to 70 percent low plasticity fines, 15 to 20 percent fine to coarse sand, 15 to 20 percent fine to medium subangular to subrounded gravel, very stiff, dry to moist (GLACIAL TILL). Some diesel-like odor. Bottom of boring at 8.0 feet. Groundwater not encountered. Boring abandoned with bentonite chips hydrated with potable water to 1.0 foot bgs, and soil cuttings from 0 to 1.0 foot bgs.
2	SS	13.2		10				
				15				
				20				

REMARKS

(1) SS = 2-inch O.D. split spoon sampler driven using drilling rig hydraulics. (2) PID = Portable photoionization detector calibrated to 100 parts per million (ppm) isobutylene.

LOG OF EXPLORATORY BORING

PROJECT NAME **Former Tosco Bulk Plant**
 LOCATION **Bainbridge Island, Washington**
 DRILLED BY **Cascade Drilling**
 DRILL METHOD **Geoprobe**
 LOGGED BY **Mike Noll**

BORING NO. **SB-6**
 PAGE **1 OF 1**
 GROUND ELEV.
 TOTAL DEPTH **8.00'**
 DATE COMPLETED **12/3/99**

SAMPLE NUMBER	SAMPLE TYPE	PID (ppm)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
1	SS	15.2		5				0 to 2.0 feet: SANDY GRAVEL (GP), brown to olive brown, 60 to 70 percent fine to medium subangular gravel, 20 to 30 percent fine to coarse sand, 5 to 10 percent low plasticity fines, medium dense, moist (FILL). Some staining. 2.0 to 4.0 feet: SILT AND SANDY SILT (ML), brown to reddish brown, 80 to 90 percent low to medium plasticity fines, 10 to 20 percent fine sand, stiff, moist. Some charcoal and organics. Some petroleum-like odor. 4.0 to 6.0 feet: SILTY SAND (SM), olive to olive gray, 60 to 80 percent fine to coarse sand, 10 to 15 percent low plasticity fines, 5 to 10 percent fine to medium subangular to subrounded gravel, dense, moist to wet. Some petroleum-like odor. 6.0 to 8.0 feet: GRAVELLY SILT WITH SAND (ML), olive to olive gray, 60 to 70 percent low plasticity fines, 15 to 20 percent fine to coarse subangular to subrounded gravel, 15 to 20 percent fine to coarse sand, stiff to very stiff, wet, becoming dry. Faint petroleum-like odor. Bottom of boring at 8.0 feet. Groundwater encountered at 6.0 feet. Boring abandoned with bentonite chips hydrated with potable water to 1.0 foot bgs, and soil cuttings from 0 to 1.0 foot bgs.
2	SS	3.0	ATD					

REMARKS

(1) SS = 2-inch O.D. split spoon sampler driven using drilling rig hydraulics. (2) PID = Portable photoionization detector calibrated to 100 parts per million (ppm) isobutylene. (3) ATD = At Time of Drilling.

LOG OF EXPLORATORY BORING

PROJECT NAME Former Tosco Bulk Plant
 LOCATION Bainbridge Island, Washington
 DRILLED BY Cascade Drilling
 DRILL METHOD Geoprobe
 LOGGED BY Mike Noll

BORING NO. SB-7
 PAGE 1 OF 1
 GROUND ELEV. 7.00'
 TOTAL DEPTH 7.00'
 DATE COMPLETED 12/3/99

SAMPLE NUMBER	SAMPLE TYPE	PID (ppm)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
1	SS	1.6						0 to 7.0 feet: GRAVELLY SILT WITH SAND (ML), olive to olive brown, becoming olive to olive gray at 2.0 feet, 50 to 60 percent low plasticity fines, 25 to 30 percent fine to coarse subangular to subrounded gravel, 15 to 10 percent fine to coarse sand, very stiff, moist. No odor.
2	SS	23.0						@ 6.0 feet: 30 to 40 percent fine to coarse subangular to subrounded gravel, 15 to 20 percent fine to coarse sand, wet. Moderate diesel-like odor.
								Bottom of boring at 7.0 feet. Groundwater encountered at 4.0 feet.
								Boring abandoned with bentonite chips hydrated with potable water to 1.0 foot bgs, and soil cuttings from 0 to 1.0 foot bgs.

REMARKS

(1) SS = 2-inch O.D. split spoon sampler driven using drilling rig hydraulics. (2) PID = Portable photoionization detector calibrated to 100 parts per million (ppm) isobutylene. (3) ATD = At Time of Drilling.

LOG OF EXPLORATORY BORING

PROJECT NAME Former Tosco Bulk Plant
 LOCATION Bainbridge Island, Washington
 DRILLED BY Cascade Drilling
 DRILL METHOD Geoprobe
 LOGGED BY Mike Noll

BORING NO. SB-8
 PAGE 1 OF 1
 GROUND ELEV.
 TOTAL DEPTH 8.00'
 DATE COMPLETED 12/3/99

SAMPLE NUMBER	SAMPLE TYPE	PID (ppm)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
1	SS	3.0						0 to 1.5 feet: SILTY GRAVEL WITH SAND (GM) , brown, 60 to 65 percent fine to coarse subangular to subrounded gravel, 20 to 25 percent low plasticity fines, 15 to 20 percent fine to coarse sand, medium dense, moist (FILL). No odor.
2	SS	1.6	▽ ATD	5				1.5 to 3.0 feet: SILT AND SANDY SILT (ML) , tan to reddish brown, 80 to 90 percent low to medium plasticity fines, 10 to 20 percent fine sand, stiff, moist. No odor.
								3.0 to 4.0 feet: SILTY SAND (SM) , tan to reddish brown, 70 to 80 percent fine to medium sand, 20 to 30 percent low plasticity fines, medium dense, moist. No odor.
								4.0 to 8.0 feet: GRAVELLY SILT AND SANDY SILT (ML) , olive to olive gray, 60 to 70 percent nonplastic to low plasticity fines, 20 to 25 percent fine to coarse subangular to subrounded gravel, 15 to 20 percent fine to coarse sand, stiff to very stiff, moist, becoming wet at 6.0 feet (GLACIAL TILL). No odor.
				10				Bottom of boring at 8.0 feet. Groundwater encountered at 6.0 feet.
				15				Boring abandoned with bentonite chips hydrated with potable water to 1.0 foot bgs, and soil cuttings from 0 to 1.0 foot bgs.
				20				

REMARKS

(1) SS = 2-inch O.D. split spoon sampler driven using drilling rig hydraulics. (2) PID = Portable photoionization detector calibrated to 100 parts per million (ppm) isobutylene. (3) ATD = At Time of Drilling.

LOG OF EXPLORATORY BORING

PROJECT NAME Former Tosco Bulk Plant
 LOCATION Bainbridge Island, Washington
 DRILLED BY Cascade Drilling
 DRILL METHOD Geoprobe
 LOGGED BY Mike Noll

BORING NO. SB-9
 PAGE 1 OF 1
 GROUND ELEV.
 TOTAL DEPTH 11.00'
 DATE COMPLETED 12/3/99

SAMPLE NUMBER	SAMPLE TYPE	PID (ppm)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
1	SS	1.6		5				0 to 7.0 feet: SILT AND SANDY SILT (ML) , brown to olive brown, becoming olive to olive gray with yellowish mottling at 3.5 feet, 70 to 80 percent low plasticity fines, 20 to 30 percent fine sand, stiff, moist, becoming wet at 6.0 feet. Some diesel-like odor.
2	SS	1.0	▽ ATD					
3	SS	1.0		10				7.0 to 11.0 feet: SILT (ML) , olive gray, 85 to 95 percent nonplastic fines, 5 to 10 percent fine subrounded gravel, 5 to 10 percent fine to coarse sand, stiff, dry to moist (GLACIAL TILL). No odor.
				15				Bottom of boring at 11.0 feet. Groundwater encountered at 6.0 feet.
				20				Boring abandoned with bentonite chips hydrated with potable water to 1.0 foot bgs, and soil cuttings from 0 to 1.0 foot bgs.

REMARKS

(1) SS = 2-inch O.D. split spoon sampler driven using drilling rig hydraulics. (2) PID = Portable photoionization detector calibrated to 100 parts per million (ppm) isobutylene. (3) ATD = At Time of Drilling.

LOG OF EXPLORATORY BORING

PROJECT NAME Former Tosco Bulk Plant
 LOCATION Bainbridge Island, Washington
 DRILLED BY Cascade Drilling
 DRILL METHOD Geoprobe
 LOGGED BY Mike Noll

BORING NO. SB-10
 PAGE 1 OF 1
 GROUND ELEV.
 TOTAL DEPTH 8.00'
 DATE COMPLETED 12/3/99

SAMPLE NUMBER	SAMPLE TYPE	PID (ppm)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHOLOGIC COLUMN	LITHOLOGIC DESCRIPTION
1	SS	1.0		5				0 to 2.0 feet: SILTY GRAVEL WITH SAND (GM) , brown, 60 to 65 percent fine to coarse subangular to subrounded gravel, 20 to 25 percent low plasticity fines, 15 to 20 percent fine to coarse sand, medium dense, moist (FILL).
2	SS	9.8	ATD					2.0 to 3.0 feet: SILT (ML) , dark brown to reddish brown, 80 to 90 percent low plasticity fines, 5 to 10 percent fine to coarse sand, trace fine subrounded gravel, trace organics, soft, moist. Faint petroleum-like odor.
								3.0 to 4.0 feet: SAND (SP) , brown, 80 to 90 percent fine and some medium to coarse sand, 5 to 10 percent nonplastic fines, medium dense, moist to wet. Faint petroleum-like odor.
								4.0 to 4.5 feet: SAND (SW) , olive brown, 80 to 90 percent fine to coarse sand, 5 to 10 percent nonplastic fines, medium dense, wet. Faint petroleum-like odor.
				10				4.5 to 5.0 feet: GRAVELLY SILT (ML) , 50 to 60 percent nonplastic fines, 5 to 10 percent fine to coarse sand, 20 to 25 percent fine to medium subrounded gravel, stiff, moist. No odor.
								5.0 to 7.0 feet: SAND (SP) , olive gray, 90 to 95 percent fine to medium and some coarse sand, trace to 5 percent fine subrounded gravel, trace fines, medium dense, wet. Faint petroleum-like odor.
				15				7.0 to 8.0 feet: GRAVELLY SILT (ML) , olive brown, 50 to 60 percent nonplastic fines, 25 to 30 percent fine to medium subrounded gravel, 5 to 15 percent fine to coarse sand, stiff, wet. Some petroleum-like odor.
								@ 7.5 feet: Gray. Strong petroleum-like odor.
								Bottom of boring at 8.0 feet.
								Groundwater encountered at 6.0 feet.
								Boring abandoned with bentonite chips hydrated with potable water to 1.0 foot bgs, and soil cuttings from 0 to 1.0 foot bgs.
				20				

REMARKS

(1) SS = 2-inch O.D. split spoon sampler driven using drilling rig hydraulics. (2) PID = Portable photoionization detector calibrated to 100 parts per million (ppm) isobutylene. (3) ATD = At Time of Drilling.

LOG OF EXPLORATORY BORING

PROJECT NAME **Tosco**
 LOCATION **Former Bainbridge Island Bulk Plant 1783A**
 DRILLED BY **Cascade Drilling, Inc.**
 DRILL METHOD **Hollow Stem Auger**
 LOGGED BY **Mike Noll**

BORING NO. **MW-1**
 PAGE **1 of 2**
 TOC ELEV. **96.62**
 TOTAL DEPTH **15.2'**
 DATE COMPLETED **6/27/01**

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm)	BLOWS PER 6 INCHES	GROUND WATER LEVEL	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHO- LOGIC COLUMN	LITHOLOGIC DESCRIPTION
MW1-5' (SB)	0	32 50/6"		5				0 to 6.5 feet: GRAVELLY SAND with SILT (SP), olive to olive brown, 50 to 60 percent fine to coarse sand, 30 percent fine to medium subangular to subrounded gravel, 10 to 20 percent low plasticity fines, dense, moist, some wood debris and organics. No odor.
MW1-10' (SB)	0	22 30 38	ATD	10				6.5 to 12 feet: SANDY SILT with gravel (ML), gray to olive gray, 50 to 60 percent non-plastic to low plasticity fines, 30 percent fine to medium and some coarse sand, 10 to 20 percent fine to medium subangular to subrounded gravel, stiff to very stiff, moist to wet. No odor.
MW1-15' (SB)	0	50/5"		15				12 to 15.5 feet: GRAVELLY SILT with sand (ML), gray to olive gray, 65 to 70 percent non-plastic fines, 20 percent fine to medium subrounded gravel, 10 to 15 percent fine to medium and some coarse sand, very stiff, dry to moist. No odor.
								Bottom of boring at 15.2 feet. Boring sampled to 15.5 feet.
								See Page 2 for Well Completion Details.

REMARKS

(1) SB = Split Barrel sampler, driven using a 140-pound hammer dropped 30 inches. (2) PID = Photoionization Detector, calibrated to 100 parts per million (ppm) isobutylene. (3) ATD = At Time of Drilling. (4) TOC = Top of Casing Elevation.

LOG OF EXPLORATORY BORING

PROJECT NAME **Tosco**
 LOCATION **Former Bainbridge Island Bulk Plant 1783A**
 DRILLED BY **Cascade Drilling, Inc.**
 DRILL METHOD **Hollow Stem Auger**
 LOGGED BY **Mike Noll**

BORING NO. **MW-1**
 PAGE **2 of 2**
 TOC ELEV. **96.62**
 TOTAL DEPTH **15.2'**
 DATE COMPLETED **6/27/01**

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm)	BLOWS PER 6 INCHES	GROUND WATER LEVEL	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHO- LOGIC COLUMN	LITHOLOGIC DESCRIPTION
				25				WELL COMPLETION DETAILS 0.3 to 4.8 feet: 2-inch-diameter, flush threaded, Schedule 40 PVC blank riser pipe. 4.8 to 14.8 feet: 2-inch-diameter, flush threaded, Schedule 40 PVC well screen with 0.010-inch machine-cut slots. 14.8 to 15.2 feet: 2-inch-diameter, flush-threaded, tapered end cap. 0 to 1.5 feet: Concrete. 1.5 to 4.0 feet: Bentonite chips hydrated with potable water. 4.0 to 15.2 feet: 10-20 Colorado silica sand.
				30				
				35				
				40				

REMARKS

(1) SB = Split Barrel sampler, driven using a 140-pound hammer dropped 30 inches. (2) PID = Photoionization Detector, calibrated to 100 parts per million (ppm) isobutylene. (3) ATD = At Time of Drilling. (4) TOC = Top of Casing Elevation.

NOLL ENVIRONMENTAL, INC.

LOG OF EXPLORATORY BORING

PROJECT NAME **Tosco**
 LOCATION **Former Bainbridge Island Bulk Plant 1783A**
 DRILLED BY **Cascade Drilling, Inc.**
 DRILL METHOD **Hollow Stem Auger**
 LOGGED BY **Mike Noil**

BORING NO. **MW-2**
 PAGE **1 of 2**
 TOC ELEV. **95.75**
 TOTAL DEPTH **15.3'**
 DATE COMPLETED **6/27/01**

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm)	BLOWS PER 6 INCHES	GROUND WATER LEVEL	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHO- LOGIC COLUMN	LITHOLOGIC DESCRIPTION
MW2-5' (SB)	0	33 35 58		5				0 to 7.5 feet: SILTY GRAVEL with sand (GM) , olive to olive brown, 55 percent fine to medium and some coarse subangular to subrounded gravel, 30 percent non-plastic to low plasticity fines, 15 percent fine to coarse sand, dense, dry to moist. No odor.
MW2-10' (SB)	35	31 35 38	ATD	10				7.5 to 15.5 feet: SILTY GRAVEL (GM) , gray to olive gray, 60 to 65 percent fine to coarse subangular to subrounded gravel, 20 to 25 percent low plasticity fines, 10 to 15 percent fine to coarse sand, dense, wet. Slight petroleum-like odor, becoming moderate at 15 feet. Some sheen on sample at 15 feet.
MW2-15' (SB)	24	50/6"		15				Bottom of boring at 15.3 feet. Boring sampled to 15.5 feet.
				20				See Page 2 for Well Completion Details.

REMARKS

(1) SB = Split Barrel sampler, driven using a 140-pound hammer dropped 30 inches. (2) PID = Photoionization Detector, calibrated to 100 parts per million (ppm) isobutylene. (3) ATD = At Time of Drilling. (4) TOC = Top of Casing Elevation.

LOG OF EXPLORATORY BORING

PROJECT NAME Tosco
 LOCATION Former Bainbridge Island Bulk Plant 1783A
 DRILLED BY Cascade Drilling, Inc.
 DRILL METHOD Hollow Stem Auger
 LOGGED BY Mike Noll

BORING NO. MW-2
 PAGE 2 of 2
 TOC ELEV. 95.75
 TOTAL DEPTH 15.3'
 DATE COMPLETED 6/27/01

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm)	BLOWS PER 6 INCHES	GROUND WATER LEVEL	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHO- LOGIC COLUMN	LITHOLOGIC DESCRIPTION
				25				WELL COMPLETION DETAILS 0.3 to 4.9 feet: 2-inch-diameter, flush threaded, Schedule 40 PVC blank riser pipe. 4.9 to 14.9 feet: 2-inch-diameter, flush threaded, Schedule 40 PVC well screen with 0.010-inch machine-cut slots. 14.9 to 15.3 feet: 2-inch-diameter, flush-threaded, tapered end cap. 0 to 1.5 feet: Concrete. 1.5 to 4.0 feet: Bentonite chips hydrated with potable water. 4.0 to 15.3 feet: 10-20 Colorado silica sand.
				30				
				35				
				40				

REMARKS

(1) SB = Split Barrel sampler, driven using a 140-pound hammer dropped 30 inches. (2) PID = Photoionization Detector, calibrated to 100 parts per million (ppm) isobutylene. (3) ATD = At Time of Drilling. (4) TOC = Top of Casing Elevation.

NOLL ENVIRONMENTAL, INC.

LOG OF EXPLORATORY BORING

PROJECT NAME **Tosco**
 LOCATION **Former Bainbridge Island Bulk Plant 1783A**
 DRILLED BY **Cascade Drilling, Inc.**
 DRILL METHOD **Hollow Stem Auger**
 LOGGED BY **Mike Noll**

BORING NO. **MW-3**
 PAGE **1 of 2**
 TOC ELEV. **94.66**
 TOTAL DEPTH **15.4'**
 DATE COMPLETED **6/27/01**

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm)	BLOWS PER 6 INCHES	GROUND WATER LEVEL	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHO- LOGIC COLUMN	LITHOLOGIC DESCRIPTION
MW3-5' (SB)	0	25 50/5"		5				0 to 13 feet: SILTY GRAVEL with sand (GM) , olive to olive brown, 60 percent fine to coarse subangular to subrounded gravel, 25 percent non-plastic to low plasticity fines, 15 percent fine to coarse sand, dense to very dense, dry to moist, becoming wet at 10 feet. Common cobbles to 13 feet. No odor.
MW3-10' (SB)	0	25 50/5"	ATD	10				
MW3-15' (SB)	0	50/6"		15				13 to 15.5 feet: SILT with sand (ML) , gray to olive gray, 85 to 90 percent non-plastic to low plasticity fines, 10 to 15 percent fine to coarse sand, trace to 5 percent fine subrounded gravel, stiff to very stiff, dry to moist. No odor.
								Bottom of boring at 15.4 feet. Boring sampled to 15.5 feet.
								See Page 2 for Well Completion Details.

REMARKS

(1) SB = Split Barrel sampler, driven using a 140-pound hammer dropped 30 inches. (2) PID = Photoionization Detector, calibrated to 100 parts per million (ppm) isobutylene. (3) ATD = At Time of Drilling. (4) TOC = Top of Casing Elevation.

NOLL ENVIRONMENTAL, INC.

TOSCO5.gds:1.07/11/01.TOSCO5...20-02-11

LOG OF EXPLORATORY BORING

PROJECT NAME **Tosco**
LOCATION **Former Bainbridge Island Bulk Plant 1783A**
DRILLED BY **Cascade Drilling, Inc.**
DRILL METHOD **Hollow Stem Auger**
LOGGED BY **Mike Noll**

BORING NO.	MW-3
PAGE	2 of 2
TOC ELEV.	94.66
TOTAL DEPTH	15.4'
DATE COMPLETED	6/27/01

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm)	BLOWS PER 6 INCHES	GROUND WATER LEVEL	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHO- LOGIC COLUMN	LITHOLOGIC DESCRIPTION
								WELL COMPLETION DETAILS 0.3 to 5.0 feet: 2-inch-diameter, flush threaded, Schedule 40 PVC blank riser pipe. 5.0 to 15.0 feet: 2-inch-diameter, flush threaded, Schedule 40 PVC well screen with 0.010-inch machine-cut slots. 15.0 to 15.4 feet: 2-inch-diameter, flush-threaded, tapered end cap. 0 to 1.5 feet: Concrete. 1.5 to 4.0 feet: Bentonite chips hydrated with potable water. 4.0 to 15.4 feet: 10-20 Colorado silica sand.

REMARKS

(1) SB = Split Barrel sampler, driven using a 140-pound hammer dropped 30 inches. (2) PID = Photoionization Detector, calibrated to 100 parts per million (ppm) isobutylene. (3) ATD = At Time of Drilling. (4) TOC = Top of Casing Elevation.

NOLL ENVIRONMENTAL, INC.

LOG OF EXPLORATORY BORING

PROJECT NAME Tosco
 LOCATION Former Bainbridge Island Bulk Plant 1783A
 DRILLED BY Cascade Drilling, Inc.
 DRILL METHOD Hollow Stem Auger
 LOGGED BY Mike Noll

BORING NO. MW-4
 PAGE 1 of 2
 TOC ELEV. 94.15
 TOTAL DEPTH 15.9'
 DATE COMPLETED 6/27/01

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm)	BLOWS PER 6 INCHES	GROUND WATER LEVEL	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHO- LOGIC COLUMN	LITHOLOGIC DESCRIPTION
MW4-5' (SB)	0	39 50/5"		5				0 to 6.5 feet: SILTY GRAVEL with sand (GM) , olive to olive brown, 60 percent fine to medium and some coarse subangular to subrounded gravel, 20 to 25 percent low plasticity fines, 15 to 20 percent fine to coarse sand, dense, moist. No odor.
MW4-10' (SB)	0	35 50/6"		10				6.5 to 16.0 feet: SILT with gravel (ML) , gray to olive gray, some olive, 65 to 75 percent non-plastic to low plasticity fines, 10 to 20 percent fine subrounded gravel, 10 to 15 percent fine to medium and some coarse sand, stiff to very stiff, dry to moist. No odor.
MW4-15' (SB)	0	40 50/6"		15				Bottom of boring at 15.9 feet. Boring sampled to 16.0 feet.
				20				See Page 2 for Well Completion Details.

REMARKS

(1) SB = Split Barrel sampler, driven using a 140-pound hammer dropped 30 inches. (2) PID = Photoionization Detector, calibrated to 100 parts per million (ppm) isobutylene. (3) ATD = At Time of Drilling. (4) TOC = Top of Casing Elevation.

LOG OF EXPLORATORY BORING

PROJECT NAME Tosco
 LOCATION Former Bainbridge Island Bulk Plant 1783A
 DRILLED BY Cascade Drilling, Inc.
 DRILL METHOD Hollow Stem Auger
 LOGGED BY Mike Noll

BORING NO. MW-4
 PAGE 2 of 2
 TOC ELEV. 94.15
 TOTAL DEPTH 15.9'
 DATE COMPLETED 6/27/01

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm)	BLOWS PER 6 INCHES	GROUND WATER LEVEL	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHO- LOGIC COLUMN	LITHOLOGIC DESCRIPTION
				25				WELL COMPLETION DETAILS 0.3 to 4.9 feet: 2-inch-diameter, flush threaded, Schedule 40 PVC blank riser pipe. 4.9 to 14.9 feet: 2-inch-diameter, flush threaded, Schedule 40 PVC well screen with 0.010-inch machine-cut slots. 14.9 to 15.3 feet: 2-inch-diameter, flush-threaded, tapered end cap. 0 to 1.5 feet: Concrete. 1.5 to 4.0 feet: Bentonite chips hydrated with potable water. 4.0 to 15.9 feet: 10-20 Colorado silica sand.
				30				
				35				
				40				

REMARKS

(1) SB = Split Barrel sampler, driven using a 140-pound hammer dropped 30 inches. (2) PID = Photoionization Detector, calibrated to 100 parts per million (ppm) isobutylene. (3) ATD = At Time of Drilling. (4) TOC = Top of Casing Elevation.

NOLL ENVIRONMENTAL, INC.

LOG OF EXPLORATORY BORING

PROJECT NAME Tosco
 LOCATION Former Bainbridge Island Bulk Plant 1783A
 DRILLED BY Cascade Drilling, Inc.
 DRILL METHOD Hollow Stem Auger
 LOGGED BY Mike Noll

BORING NO. MW-5
 PAGE 1 of 2
 TOC ELEV. 94.64
 TOTAL DEPTH 15.6'
 DATE COMPLETED 6/27/01

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm)	BLOWS PER 6 INCHES	GROUND WATER LEVEL	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHO- LOGIC COLUMN	LITHOLOGIC DESCRIPTION
MW5-5' (SB)	0	35 50/6"		5				0 to 6.5 feet: SILTY GRAVEL with sand (GM), olive to olive gray, some olive brown, 60 percent fine to medium and some coarse subangular to subrounded gravel, 20 to 25 percent non-plastic to low plasticity fines, 15 to 20 percent fine to coarse sand, dense, dry to moist, some brown organics and roots. No odor.
MW5-10' (SB)	0	60/6"	ATD	10				6.5 to 15.6 feet: SILT with gravel (ML), gray, some olive to olive gray, 75 to 80 percent non-plastic to low plasticity fines, 5 to 15 percent fine and some medium subrounded gravel, trace to 10 percent fine to medium and some coarse sand, stiff to very stiff, dry to moist. No odor.
MW5-15' (SB)	0	70/6"		15				Bottom of boring at 15.6 feet. Boring sampled to 15.6 feet.
				20				See Page 2 for Well Completion Details.

REMARKS

(1) SB = Split Barrel sampler, driven using a 140-pound hammer dropped 30 inches. (2) PID = Photoionization Detector, calibrated to 100 parts per million (ppm) isobutylene. (3) ATD = At Time of Drilling. (4) TOC = Top of Casing Elevation.

LOG OF EXPLORATORY BORING

PROJECT NAME **Tosco**
 LOCATION **Former Bainbridge Island Bulk Plant 1783A**
 DRILLED BY **Cascade Drilling, Inc.**
 DRILL METHOD **Hollow Stem Auger**
 LOGGED BY **Mike Noll**

BORING NO. **MW-5**
 PAGE **2 of 2**
 TOC ELEV. **94.64**
 TOTAL DEPTH **15.6'**
 DATE COMPLETED **6/27/01**

SAMPLE NUMBER (SAMPLE TYPE)	PID (in ppm)	BLOWS PER 6 INCHES	GROUND WATER LEVEL	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHO- LOGIC COLUMN	LITHOLOGIC DESCRIPTION
				25				WELL COMPLETION DETAILS 0.3 to 5.2 feet: 2-inch-diameter, flush threaded, Schedule 40 PVC blank riser pipe. 5.2 to 15.2 feet: 2-inch-diameter, flush threaded, Schedule 40 PVC well screen with 0.010-inch machine-cut slots. 15.2 to 15.6 feet: 2-inch-diameter, flush-threaded, tapered end cap. 0 to 1.5 feet: Concrete. 1.5 to 4.0 feet: Bentonite chips hydrated with potable water. 4.0 to 15.6 feet: 10-20 Colorado silica sand.
				30				
				35				
				40				

REMARKS

(1) SB = Split Barrel sampler, driven using a 140-pound hammer dropped 30 inches. (2) PID = Photoionization Detector, calibrated to 100 parts per million (ppm) isobutylene. (3) ATD = At Time of Drilling. (4) TOC = Top of Casing Elevation.

NOLL ENVIRONMENTAL, INC.

LOG OF EXPLORATORY BORING

PROJECT NAME **Former Bainbridge Island Bulk Plant 1784**
 LOCATION **Bainbridge Island, Washington**
 DRILLED BY **Cascade Drilling**
 DRILL METHOD **Hollow-stem Auger**
 LOGGED BY **Mike Noll**

BORING NO. **MW-2A**
 PAGE **1 of 2**
 REFERENCE ELEV. **95.37**
 TOTAL DEPTH **15.5'**
 DATE COMPLETED **3/19/03**

SAMPLE NUMBER	SAMPLE METHOD	BLOWS PER 6 INCHES	GROUND WATER LEVEL	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHO-LOGIC COLUMN	LITHOLOGIC DESCRIPTION
			▽ 0930 3/30/03	5				0 to 9.0 feet: GRAVELLY SAND (SP) , olive brown, 60 percent fine to medium and some coarse sand, 30 percent fine to medium subrounded gravel, 10 percent low plasticity fines, medium dense, moist (Fill).
MW2A-10'	SB	28 35 40		10				9.0 to 12.0 feet: SILTY SAND with gravel (SM) , 50 percent fine to coarse sand, 30 percent low plasticity fines, 20 percent fine to medium subrounded gravel, medium dense, moist to wet, some hydrocarbon-like odor, heavy sheen.
MW2A-12.5'	SB	50/6"						12.0 to 15.5 feet: GRAVELLY SILT with sand and SANDY SILT with gravel (ML) , brown to olive brown, becoming gray to olive gray, 50 to 60 percent non-plastic to low plasticity fines, 20 to 30 percent fine to medium with some coarse sand, 10 to 30 percent fine to medium subrounded gravel, stiff to very stiff, moist, becoming dry to moist at 15 feet, no odor or sheen.
MW2A-15'	SB	50/5"		15				Bottom of boring at 15.3 feet. Sampled to 15.5 feet.
				20				See Page 2 for Well Completion Details.

REMARKS

1) SB = Split Barrel sampler, driven using a 300-lb hammer dropped 30 inches.

NOLL ENVIRONMENTAL, INC.

LOG OF EXPLORATORY BORING

PROJECT NAME **Former Bainbridge Island Bulk Plant 1784**
 LOCATION **Bainbridge Island, Washington**
 DRILLED BY **Cascade Drilling**
 DRILL METHOD **Hollow-stem Auger**
 LOGGED BY **Mike Noll**

BORING NO. **MW-2A**
 PAGE **2 of 2**
 REFERENCE ELEV. **95.37**
 TOTAL DEPTH **15.5'**
 DATE COMPLETED **3/19/03**

SAMPLE NUMBER	SAMPLE METHOD	BLOWS PER 6 INCHES	GROUND WATER LEVEL	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHO- LOGIC COLUMN	LITHOLOGIC DESCRIPTION
				25				WELL COMPLETION DETAILS 0.3 to 4.8 feet: 2-inch-diameter, flush-threaded, Schedule 40 PVC blank riser pipe. 4.8 to 14.8 feet: 2-inch-diameter, flush-threaded, Schedule 40 PVC well screen with 0.010-inch machine-cut slots. 14.8 to 15.3 feet: 2-inch-diameter, flush-threaded, Schedule 40 PVC tapered end cap. 0 to 1.0 foot: Concrete. 1.0 to 3.0 feet: Bentonite chips hydrated with potable water. 3.0 to 15.3 feet: #2 Monterey silica sand.
				30				
				35				
				40				

REMARKS

1) SB = Split Barrel sampler, driven using a 300-lb hammer dropped 30 inches.

LOG OF EXPLORATORY BORING

PROJECT NAME **Former Bainbridge Island Bulk Plant 1784**
 LOCATION **Bainbridge Island, Washington**
 DRILLED BY **Cascade Drilling**
 DRILL METHOD **Hollow-stem Auger**
 LOGGED BY **Mike Noll**

BORING NO. **RW-1**
 PAGE **1 of 2**
 REFERENCE ELEV. **95.64**
 TOTAL DEPTH **15.2'**
 DATE COMPLETED **3/19/03**

SAMPLE NUMBER	SAMPLE METHOD	BLOWS PER 6 INCHES	GROUND WATER LEVEL	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHO-LOGIC COLUMN	LITHOLOGIC DESCRIPTION
			▽ 0930 3/30/03	5				0 to 9.0 feet: GRAVELLY SAND (SW) , olive gray, 60 percent fine to coarse sand, 30 percent fine to medium subrounded gravel, 5 to 10 percent fines, medium dense, moist, no odor (Fill).
RW1-10'	SB	8 15 37		10				9.0 to 11.0 feet: SANDY GRAVEL (GP) , gray to olive gray, 80 percent fine subrounded gravel, 20 percent fine to coarse sand, loose to medium dense, moist to wet, slight petroleum-like odor (pea gravel).
RW1-12.5'	SB	50/6"		15				11.0 to 15.5 feet: GRAVELLY SILT with sand and SANDY SILT with gravel (ML) , gray brown to olive brown, becoming dark gray at 15 feet, 50 to 70 percent non-plastic to low plasticity fines, 20 to 30 percent fine to coarse sand, 10 to 30 percent fine to medium subangular to subrounded gravel, firm to stiff, moist to wet, some hydrocarbon-like odor and a heavy sheen at 11 feet, no odor or sheen below 12 feet.
RW1-15'	SB	80/6"						Bottom of boring at 15.2 feet. Sampled to 15.5 feet.
				20				See Page 2 for Well Completion Details.

REMARKS

1) SB = Split Barrel sampler, driven using a 300-lb hammer dropped 30 inches.

NOLL ENVIRONMENTAL, INC.

CPC.gds:1.5/2/03.CPC

LOG OF EXPLORATORY BORING

PROJECT NAME **Former Bainbridge Island Bulk Plant 1784**
 LOCATION **Bainbridge Island, Washington**
 DRILLED BY **Cascade Drilling**
 DRILL METHOD **Hollow-stem Auger**
 LOGGED BY **Mike Noll**

BORING NO. **RW-1**
 PAGE **2 of 2**
 REFERENCE ELEV. **95.64**
 TOTAL DEPTH **15.2'**
 DATE COMPLETED **3/19/03**

SAMPLE NUMBER	SAMPLE METHOD	BLOWS PER 6 INCHES	GROUND WATER LEVEL	DEPTH IN FEET	SAMPLES	WELL DETAILS	LITHO- LOGIC COLUMN	LITHOLOGIC DESCRIPTION
				25				WELL COMPLETION DETAILS 0.3 to 4.7 feet: 4-inch-diameter, flush-threaded, Schedule 40 PVC blank riser pipe. 4.7 to 14.7 feet: 4-inch-diameter, flush-threaded, Schedule 40 PVC well screen with 0.020-inch machine-cut slots. 14.7 to 15.2 feet: 4-inch-diameter, flush-threaded, Schedule 40 PVC end cap. 0 to 1.0 foot: Concrete. 1.0 to 3.0 feet: Bentonite chips hydrated with potable water. 3.0 to 15.5 feet: #2 Monterey silica sand.
				30				
				35				
				40				

REMARKS

1) SB = Split Barrel sampler, driven using a 300-lb hammer dropped 30 inches.

NOLL ENVIRONMENTAL, INC.

CPC.gds:1.5/2/03.CPC