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January 20, 2004

Ms. Eva Chu
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Alameda County
JAN 28 2004

Subject: Texaco Gasoline Service Station (Formerly Freedom ARCO Station)
Site Address: 15101 Freedom Avenue, San Leandro, California

Dear Ms. Chu:

As you requested in your letter of November 12, 2003, enclosed for your review is SOMA's report entitled "Workplan to Install Off-Site Monitoring Wells" at the subject site.

Thank you for your time in reviewing this report. If you have any questions or comments, please call me at (925) 244-6600.

Sincerely,

Mansour Sepehr, Ph.D., PE
Principal Hydrogeologist

Enclosure

cc: Mr. Mohammad Pazdel w/enclosure





ENVIRONMENTAL ENGINEERING, INC.

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**WORKPLAN TO INSTALL
OFF-SITE MONITORING WELLS
TEXACO GASOLINE SERVICE STATION
15101 FREEDOM AVENUE
SAN LEANDRO, CALIFORNIA**

January 20, 2004

Project 2550

Prepared for

**Ms. Mohammad Pazdel
35840 Alcazar Court
Fremont, California 94536**

Prepared By

**SOMA Environmental Engineering, Inc.
2680 Bishop Drive, Suite 203
San Ramon, California 94583**

CERTIFICATION

This workplan has been prepared by SOMA Environmental Engineering, Inc. on behalf of Mr. Mohammed Pazdel, the property owner of 15101 Freedom Avenue, San Leandro, California to comply with a letter request from the Alameda County Health Care Services, dated November 12, 2003.



Mansour Sepehr, Ph.D., P.E.
Principal Hydrogeologist



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1.0 INTRODUCTION

This workplan has been prepared by SOMA Environmental Engineering, Inc., (SOMA) on behalf of Mr. Mohammad Pazdel, the property owner. As shown in Figure 1, the property is located at 15101 Freedom Avenue, between 151st Street and Fairmont Boulevard, just west of the 580 Freeway in San Leandro, California (the "Site"). Currently, the Site is an operating service station under the brand name of Texaco. This workplan has been prepared based on the Alameda County Health Care Services Agency's (ACHCS)'s request letter dated November 12, 2003.

Since the 1960's, the Site has been used as a gasoline service station. In 1985, Mr. Mohammad Pazdel purchased the business and in 1992 he purchased the property from Mr. Mohammad Mashhoon. From 1985 until 1997, when Mr. Pazdel sold the business, the Site operated as "Freedom ARCO Station". To comply with underground storage tank (UST) upgrade regulations, in 1999, three 10,000-gallon single-walled USTs were removed and replaced by new double-walled fuel tanks. During the UST upgrade, petroleum chemicals were detected in the subsurface soils, beneath the old USTs.

1.1 Previous Activities

On May 20, 1999, Geo-Logic oversaw the removal of three 10,000-gallon USTs, approximately 250 feet of product piping, and six dispensers at the Site. Paradiso Mechanical, Inc. removed and over-excavated the old USTs. The on-site participating agency was the ACHCS.

In May and June 1999, soil samples were collected from the tank excavation, beneath the dispensers, and beneath the product piping. Maximum total petroleum hydrocarbons as gasoline (TPH-g), benzene and Methyl tertiary Butyl Ether (MtBE) levels in the soil samples were 4,000,000 ug/Kg, 28,000 ug/Kg, and 930 ug/Kg, respectively.

On July 7, 1999, Paradiso Mechanical, Inc. installed a 20,000-gallon gasoline UST, an 8,000-gallon gasoline UST, and a 6,000-gallon diesel tank in the same tank cavity.

In July 2001, CSS Environmental Services (CSS) of San Rafael, California, at the request of the ACHCS, conducted an additional soil and groundwater investigation to further investigate potential petroleum hydrocarbon contamination discovered during the removal and upgrade of the USTs at the Site. Using direct-push technology, CSS drilled five hydropunches to a maximum depth of 31 feet. It appeared that the groundwater beneath the Site was semi-confined so that after drilling, the groundwater stabilized at depths of 17 to 20 feet below ground surface (bgs). The results of that investigation indicated that the petroleum-impacted soils are generally encountered below 19 feet bgs – predominantly within the capillary fringe.

On April 22 and 23, 2002, SOMA installed five 4-inch diameter groundwater monitoring wells, on-site, as shown in Figure 2. The wells were installed to evaluate the groundwater flow direction, gradient, and the extent of the petroleum hydrocarbon contamination beneath the Site. After installing the monitoring wells, SOMA personnel developed and sampled the wells. SOMA recommended installing temporary well boreholes to determine the areal and vertical extent of the plume.

Based on quarterly monitoring results, the groundwater has been flowing to the south/southeast and occasionally to the east/southeast. The quarterly monitoring results confirmed the presence of a heavily contaminated hydrocarbon plume that appeared to be migrating off the eastern half of the Site.

The ACHCS concurred with SOMA's recommendations to install the temporary well boreholes, and requested a workplan. The workplan was submitted to the

ACHCS on July 22, 2003 and approved on August 29, 2003. Based on SOMA's approved workplan, an off-site investigation was performed to evaluate the lateral extent of soil and groundwater contamination. The off-site investigation also included a sensitive receptor survey to locate water supply wells and/or water bodies within a 2,000 foot radius of the Site.

In September 2003, six temporary well boreholes were advanced to at least 40 feet bgs. SOMA encountered free product in temporary well borehole TWB-1, which is located closest to the Site, moderate petroleum hydrocarbon contamination southeast of the Site, and trace levels of hydrocarbon contamination south of and further away from the Site. As shown in Figure 2, Cross Section B-B', SOMA encountered at least two water-bearing zones (WBZs) in the off-site investigation. As shown in Table 1, analysis of saturated sediment samples from the 2nd WBZ indicates trace to non-detectable levels of petroleum hydrocarbon contaminants in that lower water-bearing zone. Based on field observations, the 1st WBZ appeared to be considerably more contaminated than the 2nd WBZ. Based on the results of that investigation, SOMA recommended installing off-site wells and sampling nearby water supply wells. This workplan addresses the scope of work recommended by SOMA.

2.0 SCOPE OF WORK

In a letter dated November 12, 2003, the ACHCS concurred with SOMA's recommendations and requested a workplan to install off-site monitoring wells and to sample nearby water supply wells. Based on the ACHCS's request, SOMA proposes to perform the following tasks:

- Task 1: Permit Acquisition and Preparation of Site Health and Safety Plan**
- Task 2: Installation of Off-Site Groundwater Monitoring Wells**

Task 3: Sample Nearby Water Supply Wells

Task 4: Laboratory Analysis

Task 5: Report Preparation

The following is a brief description of the above tasks.

2.1 Permit Acquisition and Preparation of Site Health and Safety Plan

For the drilling and installation of groundwater monitoring wells, necessary permits will be obtained from the Alameda County Public Works Agency, Water Resources Section.

Prior to the commencement of field activity, a site-specific health and safety plan (HASP) will be prepared by SOMA. The HASP is designed to address safety provisions during field activities. It provides procedures to protect the field crew from physical and chemical hazards resulting from drilling, well installation, and groundwater monitoring and sampling. The HASP establishes personnel responsibilities, general safe work practices, field procedures, personal protective equipment standards, decontamination procedures, and emergency action plans.

2.2 Installation of Off-Site Groundwater Monitoring Wells

Based on the results of SOMA's previous investigations, the petroleum hydrocarbon plume has migrated beyond the Site's boundaries. As shown in Figure 3, SOMA proposes installing four off-site groundwater monitoring wells (MW-6 through MW-9) to evaluate the groundwater flow direction, gradient, and the extent of the petroleum hydrocarbons beneath the off-site area, downgradient from the Site.

SOMA will oversee the installation of the off-site wells within the 1st WBZ to an approximate maximum depth of 30 feet bgs using a hollow-stem auger drilling rig. To avoid potential cross-contamination between the 1st and 2nd WBZs,

SOMA does not plan to install 2nd WBZ wells at this time. The rationale for this scope of work is explained below.

- The aquitard between these two WBZs - at TWB-1 (proposed MW-6) and TWB-2 (proposed MW-7) - is approximately one-foot thick.
- Because of the close proximity of proposed MW-8 to these two locations, the intervening aquitard is probably also thin at this location.
- Soil analytical results from the 2nd WBZ at TWB-2 (proposed MW-7) and TWB-5 (proposed MW-9) indicate trace to non-detectable levels of petroleum hydrocarbon contamination in this lower zone.
- Potential breaching of the one-foot thick aquitard between the 1st and 2nd WBZ would cross-contaminate the relatively clean 2nd WBZ.

During the drilling operation, the WBZ thickness will be verified by continuously sampling with an unlined sampler. The continuous sampling will commence from a few feet above the anticipated top of the 1st WBZ and continue through this upper WBZ to the top of the underlying aquitard. Based on lithologic observations in the field, the geologist will select screen intervals for each monitoring well. Relatively undisturbed sediment samples will be collected at several locations from the 1st WBZ to provide data for possible future fate and transport analysis.

With the exception of well MW-6, the drilling crew will install clean, 2-inch diameter, threaded, schedule 40 PVC pipe into the monitoring well boreholes. The screened interval will consist of slotted casing with 0.02-inch slots. The drilling crew will cap the bottom of the screen with a PVC cap fastened to the casing without solvent, adhesive, or cement. Because free product was encountered in the proposed MW-6 area, this well will be constructed with a 4-inch diameter casing for potential future use as an extraction well.

After setting the casing inside the borehole, the drilling crew will carefully pour 2/12 sand into the annular space to one or two feet above the screened interval. A one to two foot thick hydrated bentonite seal will be placed above the sand to prevent grout from infiltrating down into the sand pack. The drilling crew will then seal the well from the top of the bentonite to one-foot below surface grade with neat cement containing about 5% bentonite. At surface grade, a traffic-rated flush-mount well vault will be installed into a concrete foundation.

After the well installation, SOMA field personnel will develop the wells and a California registered surveyor will survey the wells. SOMA will use the survey results to determine the off-site groundwater flow direction and evaluate the extent of the groundwater petroleum hydrocarbon plumes.

2.3 Sampling Nearby Water Supply Wells

Because the Department of Water Resources' (DWR) records provided a street name with no address for one of the wells, SOMA will contact all residents on Oriole Avenue with a form letter to locate the well. After verifying the well's location, SOMA will obtain permission from the property owners to sample the water supply wells and collect representative groundwater samples. The groundwater samples will be analyzed for the petroleum hydrocarbon constituents of concern described below.

2.4 Laboratory Analysis

The soil and groundwater samples will be analyzed for total petroleum hydrocarbons as gasoline (TPH-g) and benzene, toluene, ethylbenzene, and xylenes (BTEX) using EPA Methods 8020 and 8015 Modified. The lab will also analyze the soil and groundwater samples for gas oxygenates using EPA Method 8260. One of the soil samples will also be analyzed for total organic carbon content and bulk density. The data will be used in chemical fate and transport modeling, if warranted.

2.5 Report Preparation

A technical report will be prepared to document the soil and groundwater conditions and the extent of the petroleum chemical contamination. The technical report will include a detailed description of field investigation procedures, investigative results, conclusions, and recommendations, as well as, figures, tables and geologic cross sections.

3.0 REFERENCES

SOMA Environmental Engineering Inc., November 5, 2003. "Off-Site Soil and Groundwater Investigation at Former Texaco Station, 15101 Freedom Avenue, San Leandro, California."

SOMA Environmental Engineering Inc., September 4, 2003. "Third Quarter 2003 Groundwater Monitoring Report, Texaco Gasoline Service Station, 15101 Freedom Avenue, San Leandro, California".

SOMA Environmental Engineering Inc., June 18, 2003. "Second Quarter 2003 Groundwater Monitoring Report, Texaco Gasoline Service Station, 15101 Freedom Avenue, San Leandro, California".

SOMA Environmental Engineering Inc., March 21, 2003. "First Quarter 2003 Groundwater Monitoring Report, Texaco Gasoline Service Station, 15101 Freedom Avenue, San Leandro, California".

SOMA Environmental Engineering Inc., December 19, 2002. "Fourth Quarter 2002 Groundwater Monitoring Report, Texaco Gasoline Service Station, 15101 Freedom Avenue, San Leandro, California".

SOMA Environmental Engineering Inc., September 26, 2002. "Third Quarter 2002 Groundwater Monitoring Report, Texaco Gasoline Service Station, 15101 Freedom Avenue, San Leandro, California".

SOMA Environmental Engineering Inc., June 19, 2002. "Second Quarter 2002 Groundwater Monitoring Report, Texaco Gasoline Service Station, 15101 Freedom Avenue, San Leandro, California".

Alameda County Health Care Services, August 23, 2001. A Letter in Connection with a Request for Conducting a Subsurface Investigation.

CSS Environmental Services, Inc., August 15, 2001. "Preliminary Site Assessment for the Property Located at 15101 Freedom Avenue, San Leandro, California".

Geo-logic, Geotechnical and Environmental Consulting Services, June 11, 1999. "Report of Soil Sampling During Tank Removal and Station Upgrade".

FIGURES

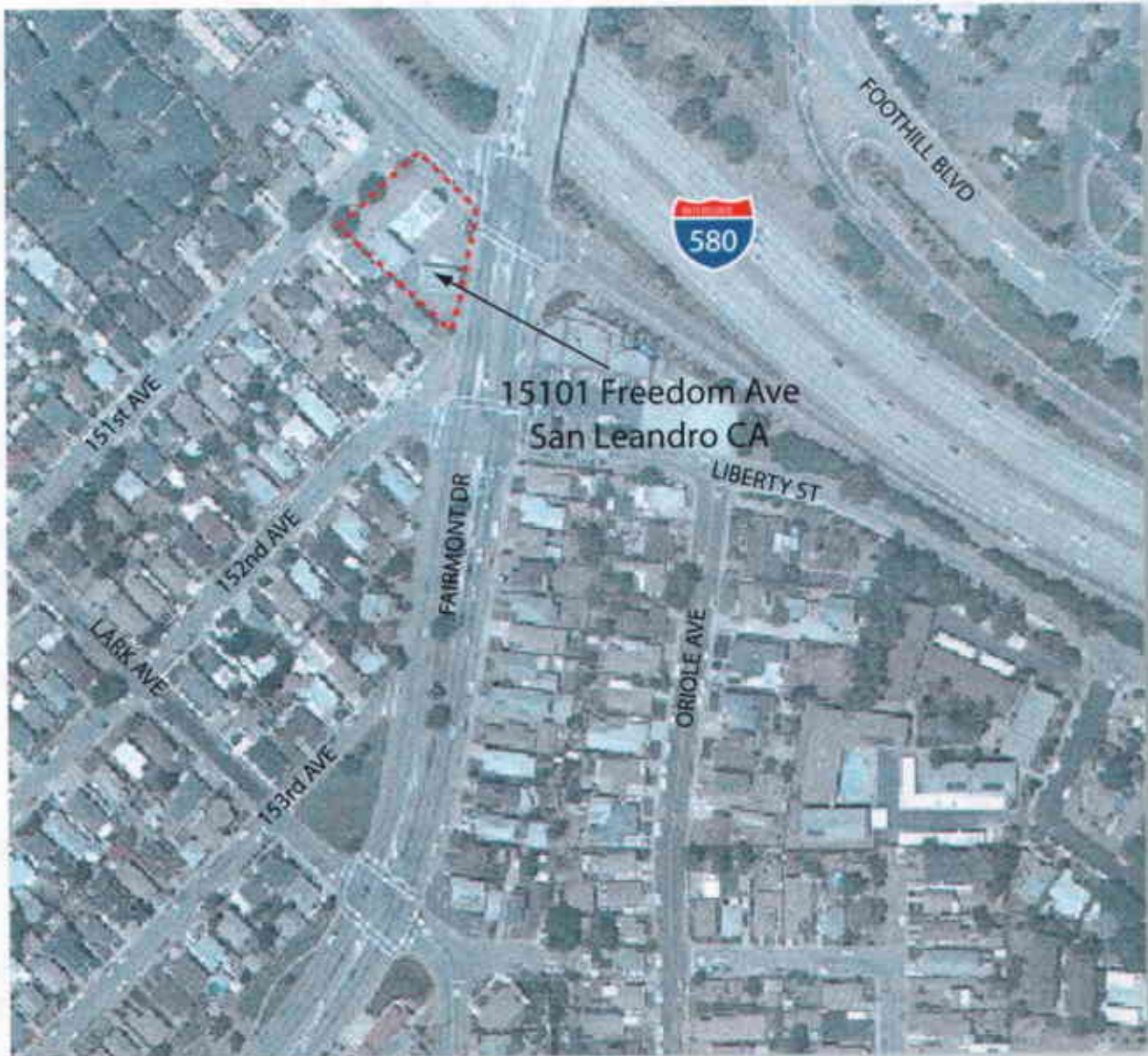


Figure 1: Site vicinity map.

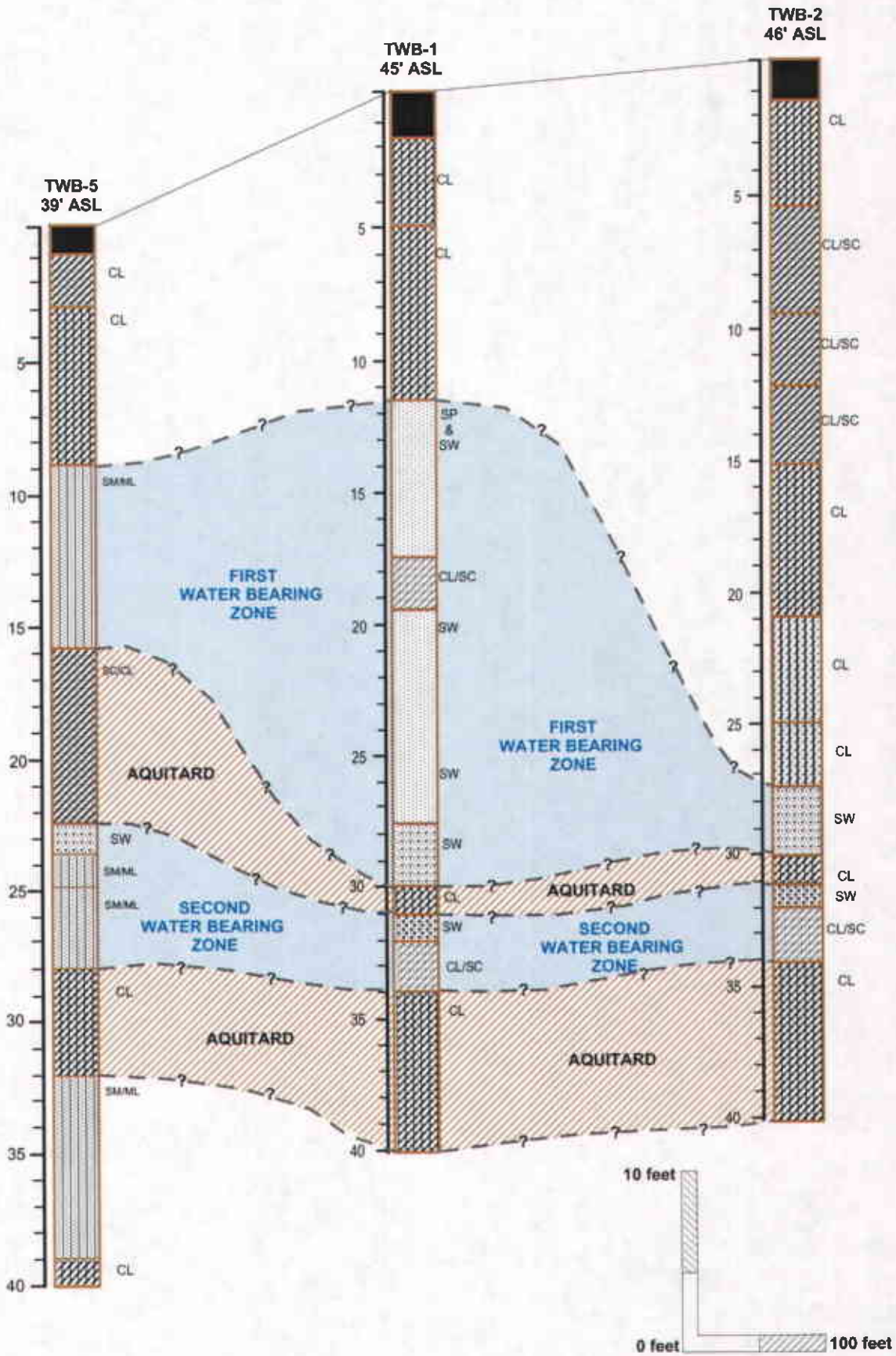





Figure 2: Geologic Cross Section B - B'.



-  PROPOSED OFFSITE MONITORING WELL
-  TEMPORARY WELL BOREHOLE
-  WATER SUPPLY WELL

approximate scale in feet
 0 250

Figure 3: Site vicinity map showing proposed offsite monitoring well locations, prior offsite wells and a water supply well.

Table 1
Soil Analytical Data
Petroleum Hydrocarbon and Gas Oxygenate Analyses
September 16,17, and October 1, 2003
15101 Freedom Avenue, San Leandro, California

Sample Id.	TPH-g (ug/kg)	Benzene (µg/kg)	Toluene (µg/kg)	Ethyl- Benzene (µg/kg)	Total Xylenes (µg/kg)	MtBE* (µg/kg)	1,2 DCE (µg/kg)
TWB-1 @ 16-16.5	<1,000	<5.2	<5.2	<5.2	<5.2	<4.8	<4.8
TWB-1 @ 18-18.5	1,800 ^f	<5.2	<5.2	<5.2	<5.2	<4.8	<4.8
TWB-1 @ 21.5-22	3,300,000	<500	<500	56,000	182,000	<1,800	<1,800
TWB-1 @ 24-24.5	4,000,000	<1,000	12,000	84,000	365,000	<1,300	<1,300
TWB-2 @ 22-20.5	29,000 ^f	<25	<25	53	288 ^c	<4.8	<4.8
TWB-2 @ 29.5-30	<990	<5.0	<5.0	<5.0	<5.0	<4.5	<4.5
TWB-2 @ 31-31.5	1,600	<5.3	<5.3	9.7 ^c	7.5	<4.6	<4.6
TWB-2 @ 33-33.25	<1,100	<5.4	<5.4	<5.4	<5.4	<4.6	<4.6
TWB-3 @ 20-20.5	<1,000	<5.2	<5.2	<5.2	<5.2	<4.9	<4.9
TWB-4A @ 33-33.5	<1,100	<5.3	<5.3	<5.3	<5.3	<5.0	<5.0
TWB-5 @ 32-32.5	<1,100	<5.3	<5.3	<5.3	<5.3	<4.4	<4.4
TWB-6 @ 20-20.5	<1,000	<5.2	<5.2	<5.2	<5.2	<4.5	<4.5
TWB-6 @ 28-30	<960	<4.8	<4.8	<4.8	<4.8	<4.7	<4.7
TWB-6 @ 38-39	<1,100	<5.4	<5.4	<5.4	<5.4	<4.8	<4.8

Notes:

Petroleum Hydrocarbons analyzed by EPA 8015 and 8021

Gas Oxygenates analyzed by EPA 3260B - all other gas oxygenates not detected above laboratory detection limits

< : not detected above laboratory reporting limits.

^f: Heavier hydrocarbons contributed to the quantitation

^f: Sample exhibits chromatographic pattern that does not resemble standard.

^c: Presence confirmed but RPD between columns exceeds 40%.