ExxonMobil Refining & Supply Company
Global Remediation - US Retail
4096 Piedmont Avenue #194
Oakland, CA 94611
510.547.8196
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Jennifer C. Sedlachek
Project Manager

ExxonMobil
Refining & Supply

June 30, 2006

Mr. Steven Plunkett
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, 2nd Floor
Alameda, California 94502

Subject: Former Mobil Station 99-105, 6301 San Pablo Avenue, Oakland, California

Dear Mr. Plunkett:

Attached for your review and comment is a copy of the *Case Closure Request* for the above-referenced site. The report, prepared by ETIC Engineering, Inc. of Pleasant Hill, California, summarizes the site history and presents information in support of case closure.

Upon information and belief, I declare, under penalty of perjury, that the information contained in the attached report is true and correct.

ExxonMobil requests a review for case closure. If you have any questions or comments, please contact me at 510.547.8196.

Sincerely,

For
Jennifer C. Sedlachek
Project Manager

Attachment: ETIC Case Closure Request dated June 2006

c: w/ attachment:
Mr. Chuck Headlee – California Regional Water Quality Control Board, San Francisco Bay Region
Ms. Connie Lam (property owner)

c: w/o attachment:
Ms. Christa Marting - ETIC Engineering, Inc.

ETIC ENGINEERING

Case Closure Request

Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

Prepared for

ExxonMobil Oil Corporation
4096 Piedmont Avenue #194
Oakland, California 94611

Prepared by

ETIC Engineering, Inc.
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(925) 602-4710

Hamidou Barry
Project Manager

6/29/06
Date

PROFESSIONAL GEOLOGIST
BRYAN CAMPBELL
No 7724
Exp 2/29/08
STATE OF CALIFORNIA

Bryan Campbell, P.G. #7724
Senior Geologist

6/29/06
Date

June 2006

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LIST OF FIGURES AND TABLES

Former Mobil Station 99-105

SITE CONTACTS

Station Number:	Former Mobil Station 99-105
Station Address:	6301 San Pablo Avenue Oakland, California
ExxonMobil Project Manager:	Jennifer C. Sedlachek ExxonMobil Refining and Supply Company 4096 Piedmont Avenue #194 Oakland, California 94611 (510) 547-8196
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ETIC Project Manager:	Hamidou Barry
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	Chuck Headlee California Regional Water Quality Control Board San Francisco Bay Region 1515 Clay Street, Suite 1400 Oakland, California 94612 (510) 622-2300

1. INTRODUCTION

At the request of ExxonMobil Oil Corporation (ExxonMobil), ETIC Engineering, Inc. (ETIC) has prepared this Case Closure Request for former Mobil Station 99-105, located at 6301 San Pablo Avenue, Oakland, California (Figure 1). The report summarizes site history, previous investigations and remedial actions, and water well locations in the vicinity and presents an evaluation of the site with respect to the Regional Water Quality Control Board, San Francisco Bay Region (RWQCB) criteria for a low risk groundwater case as defined by the RWQCB Interim Guidance on Required Cleanup at Low Risk Fuel Sites (RWQCB 1996). The information presented in this report indicates that the site meets the RWQCB low risk criteria, and a review for case closure is requested.

After a review of the third quarter 2001 Quarterly Progress Report dated 24 July 2001 by TRC, the Alameda County Health Care Services Agency (ACHCSA) submitted a letter, dated 7 September 2001. The letter from the ACHCSA requested the preparation of a Conceptual Site Model (CSM) in order to determine if site closure is warranted.

A CSM dated November 2001 prepared by TRC was submitted to the ACHCSA. The CSM included the information requested by the ACHCSA along with a scope of work for a proposed groundwater monitoring well (TRC 2001a).

In a letter dated 7 December 2001, the ACHCSA indicated that it had received and reviewed the CSM. The ACHCSA indicated that an additional groundwater monitoring well was not necessary and instead requested the preparation of a risk-based corrective action evaluation for the site. The letter stated that the City of Oakland Technical Background Document should be used as a guide for determining health risk. The letter also requested information on the disposition of soil and groundwater waste from the site.

A Risk-Based Corrective Action Report by TRC dated October 2002 was submitted to the ACHCSA. The report included a risk-based corrective action evaluation which was performed in accordance with the procedures of the American Society for Testing and Materials (ASTM) standard guide (ASTM 1995) as modified by the City of Oakland for the Oakland region (Oakland 2001). The report concluded that potential health risks posed to either current site workers or future residents/workers were likely not significant. The report proposed that quarterly monitoring and sampling be continued for one additional year to confirm the observed decreasing hydrocarbon trends in the groundwater and recommended site closure pending regulatory approval (TRC 2002).

A request for case closure was made in a letter dated 22 March 2005 from ExxonMobil to the ACHCSA. The letter stated that at least one year of quarterly groundwater monitoring had been conducted since the Risk-Based Corrective Action Report was issued and that hydrocarbon concentrations appeared to show a stable or decreasing trend.

In a letter dated 28 April 2005, the ACHCSA requested the submission of a stand-alone document in order to review the site for closure. This report has been prepared as the stand-alone document required for a review of the site for closure.

Correspondence is presented in Appendix A, the CSM is presented in Appendix B, and the Risk-Based Corrective Action Report is presented in Appendix C.

2. SITE BACKGROUND

2.1 SITE LOCATION AND LAND USE

Former Mobil Station 99-105 is located at 6301 San Pablo Avenue, Oakland, California, on the northwest corner of the intersection of San Pablo Avenue and 63rd Street (Figure 1). The site was used as a Mobil service station from 1951 to 1980. The site was used as a car rental lot after this time. The former four 2,000-gallon gasoline underground storage tanks (USTs) and one 350-gallon used-oil UST were not in use after 1980 and were removed in 1994 (Figure 2). The site is currently an automobile oil change facility. Commercial properties are situated to the north along San Pablo Avenue. To the east, across San Pablo Avenue, is an elementary school, and to the west and south are residential properties.

2.2 REGIONAL GEOLOGY AND HYDROGEOLOGY

The site is underlain by the Quaternary Temescal Formation, which consists of interfingering layers of clayey gravel, sandy silty clay, and various clay-silt-sand mixtures. The formation varies in thickness to a maximum of approximately 60 feet. Underlying the Temescal Formation is the Quaternary Alameda Formation, which consists of unconsolidated continental and marine gravels, sands, silts, and clays, with some shells and organic material in places. The formation has a maximum known thickness of 1,050 feet (TRC 2002).

The site is located in the East Bay Plain Groundwater Basin. Groundwater generally flows westward toward the San Francisco Bay (RWQCB 1995).

2.3 SITE GEOLOGY AND HYDROGEOLOGY

Soils encountered beneath the site generally consist of clayey sand, sandy clay, gravelly silts, and minor fine gravels and sand lenses from the surface to approximately 18 feet below ground surface (bgs) (Alton 1999). Inorganic silts, clayey sands, and inorganic clays of low to medium plasticity extend beneath the site to a depth of approximately 10-20 feet bgs, based on geologic logging of soils during monitoring well installation activities conducted in 1996. Geologic cross-sections are presented in the TRC 2002 report.

The average depth to groundwater at the site is approximately 7 feet bgs. Historical groundwater depths have ranged from 3.83 feet bgs (MW1 - January 1997) to 11.57 feet bgs (MW3 - October 1998). The groundwater gradient during the most recent groundwater monitoring event on 15 January 2004 was calculated to be 0.23 foot per foot (ft/ft) toward the southwest (ETIC 2004). The groundwater flow direction has varied from the northwest to the southwest (January 1999) (TRC 2001b).

2.4 SUMMARY OF INVESTIGATION ACTIVITIES

Previous environmental activities conducted at the site are listed below and were adapted from the Risk-Based Corrective Action Report prepared by TRC, dated October 2002 (TRC 2002). Boring and well locations are shown on Figure 2.

In 1994, four 2,000-gallon gasoline USTs and one 350-gallon used-oil UST were excavated and removed from the site. The product piping was removed from the site in February 1996. An estimated 367 cubic yards of soil was excavated and removed from the site during the UST and piping removals (Alisto 1996).

In March 1996, four groundwater monitoring wells (MW1 through MW4) were installed (Alisto 1996).

In March 1998, thirteen soil borings (AB-1 through AB-13) were drilled at the site (Alton 1998).

On 19 November 1998, a dual-phase extraction (DPE) event was conducted. Six temporary monitoring points (MP-1 through MP-6) were advanced to further characterize the extent of hydrocarbon-impacted vadose zone soil and to obtain vacuum readings and groundwater depths during the DPE event. Groundwater and vapors were extracted from wells MW3 and MW4. Vacuum response and groundwater depths were measured in the temporary monitoring points and monitoring wells during the DPE event. Approximately 21 pounds of vapor-phase hydrocarbons and 75 gallons of hydrocarbon-impacted groundwater were recovered during the event (Alton 1999). Following the extraction event, monitoring points MP-1 through MP-6 were abandoned in place.

In early 1999, over 200 cubic yards of soil was removed from the north area of the site during redevelopment activities conducted by the current property owner (i.e., as part of the construction of the current automobile oil change facility - see Figure 2 for location of facility). Monitoring well MW4 was inadvertently destroyed during these construction activities (TRC 2002).

During and shortly after soil excavation and site development activities were completed, communications between responsible parties and the ACHCSA occurred to determine the disposition of excavated soil and to ensure the absence of residual hydrocarbons in soils following excavation activities. Copies of these communications, which are included in the TRC 2002 report in Appendix C, document discussions regarding sampling of soils excavated by the property owner and associated confirmation analyses.

In July 1999, MW1 was properly destroyed in preparation of the construction activities (TRC 1999).

In January 2000, one soil boring (HA-1) was advanced in the footprint area of the oil change facility (i.e., prior to construction of the building) to confirm the absence of hydrocarbon impacts in this area (Figure 2).

In the fall of 2000, two of the three monitoring wells damaged during construction activities conducted by the current property owner in 1999 (MW2 and MW3) were rehabilitated and the third well (MW4) was replaced by newly installed well MW5 at this time. The remaining three wells (MW2, MW3, and MW5) were monitored on a quarterly basis until the last monitoring event took place on 15 January 2004 (Figure 2).
Well construction details are presented in Table 1, and groundwater monitoring data are summarized in Table 2. Historical soil sample analytical results are presented in Table 3, and

historical groundwater sample analytical results for temporary borings are presented in Table 4. Historical soil analytical results from UST removal are presented in Appendix D.

2.5 SUMMARY OF INTERIM REMEDIAL MEASURES

In August 1994, four 2,000-gallon gasoline USTs and one 350-gallon used-oil UST were excavated and removed from the site. Holes were observed in two of the gasoline tanks. Analysis of soil samples collected from the bottom of the gasoline tank excavation at 11 feet bgs indicated maximum concentrations of 520 mg/kg TPH-g and 0.18 mg/kg benzene. Liquid-phase hydrocarbons were observed in the groundwater of the gasoline tank excavation. Analysis of the soil sample from the bottom of the used-oil tank excavation indicated a maximum concentration of 21 mg/kg TPH-g, 1.2 mg/kg TPH-d, and 94 mg/kg Total Oil and Grease (TOG). Benzene was not reported above the laboratory detection limit (Alisto 1996).

In January 1996, additional compliance soil samples were collected from the UST excavations. A total of six soil samples were collected from the sidewalls of the gasoline tank excavation and a total of two soil samples were collected from the bottom of the used-oil tank excavation. Analysis of the soil samples from the gasoline tank excavation indicated a maximum of 9.5 mg/kg TPH-g, 44 mg/kg TPH-d, and 0.11 mg/kg benzene. Analysis of the soil samples from the used-oil tank excavation indicated a maximum of 2.9 mg/kg TPH-d and 10 mg/kg TOG. Benzene was not reported above the laboratory detection limit (Alisto 1996).

In February 1996, the standing water in the gasoline tank excavation, which had risen to approximately 3 feet bgs, was pumped from the excavation. Non-hazardous waste manifests in the Alisto 1996 report show a total of 16,170 gallons of water removed from the site at this time. Additional soil samples were collected from the bottom of the gasoline tank excavation. Analysis of those samples indicated a maximum of 640 mg/kg TPH-g and 160 mg/kg TPH-d. Benzene was not reported above the laboratory detection limit (Alisto 1996).

Also in February 1996, three 2-inch-diameter fiberglass and two 2-inch-diameter steel fuel pipelines were excavated and removed from the site. No holes were observed in the fiberglass piping. The steel piping showed signs of rust and staining was apparent at the pipe stub-ups near the northwest end of the former dispenser island. The excavation of the product lines was approximately 3 feet wide by 3 feet deep by 50 feet long, from the southeast corner of the gasoline tank excavation to the dispenser islands. An area of approximately 11 feet wide by 5 feet deep by 16 feet long was over-excavated near the northwest end of the former dispenser island to remove apparent petroleum hydrocarbon impacted soils. Compliance soil samples were collected every 20 linear feet from the former product line excavation. Analysis of those samples indicated a maximum concentration of 240 mg/kg TPH-g, 37 mg/kg TPH-d, and 0.30 mg/kg benzene (Alisto 1996).

An estimated 367 cubic yards of soil was excavated and removed from the site during the UST and piping removals (Alisto 1996). Site maps and analytical data from the UST and piping removals are provided in Appendix D.

On 19 November 1998, a DPE event was conducted. Six temporary monitoring points (MP-1 through MP-6) were advanced to further characterize the extent of hydrocarbon-impacted vadose zone soil and to obtain vacuum readings and groundwater depths during the DPE event.

Groundwater and vapors were extracted from wells MW3 and MW4. Vacuum response and groundwater depths were measured in the temporary monitoring points and monitoring wells during the DPE event. Approximately 21 pounds of vapor-phase hydrocarbons and 75 gallons of hydrocarbon-impacted groundwater were recovered during the event (Alton 1999). Following the extraction event, monitoring points MP-1 through MP-6 were abandoned in place.

In early 1999, over 200 cubic yards of soil were removed from the north area of the site during redevelopment activities conducted by the current property owner (i.e., as part of the construction of the current oil change facility. Monitoring well MW4 was inadvertently destroyed during these construction activities (TRC 2002).

3. WELL SURVEY

A sensitive receptor survey conducted in September 2001 indicated that no supply wells are located within a 1/2-mile radius of the site. Municipal water wells and private water wells were not identified within 2,000 feet of the site. Agencies contacted to locate nearby municipal and private water wells included the California Department of Water Resources, the Regional Water Quality Control Board, and the City of Oakland (TRC 2001a).

4. RWQCB CRITERIA FOR LOW RISK GROUNDWATER CASE

The site has been evaluated with respect to the criteria for a low risk groundwater case as defined by the RWQCB Interim Guidance on Required Cleanup at Low Risk Fuel Sites (RWQCB 1996). A discussion is presented below for each of the criteria:

1) The leak has been stopped and ongoing sources, including free product, have been removed or remediated.

- Four 2,000-gasoline USTs and one 350-gallon used-oil UST were excavated and removed from the site in 1994.
- The product piping was removed from the site in February 1996.
- An estimated 367 cubic yards of soil was excavated and removed from the site during the UST and piping removals.
- A DPE event was conducted in November 1998. Groundwater and vapors were extracted. Approximately 21 pounds of vapor-phase hydrocarbons and 75 gallons of hydrocarbon impacted groundwater were recovered during the event.
- Groundwater monitoring and sampling was conducted at the site since the initial installation of MW1 through MW4 in March 1996 until January 2004 when groundwater monitoring and sampling was discontinued. No detectable levels of MTBE were reported in any of the monitoring wells by EPA Method 8260.
- TPH-g has shown a decreasing trend in all existing wells (MW2, MW3, and MW5). Benzene has shown a stable trend in MW5 and a decreasing trend in MW2 and MW3. Hydrographs for all wells are provided in Appendix E.
- The maximum concentrations of benzene and TPH-g from the most recent groundwater monitoring event in January 2004 were 181 µg/L benzene (MW5) and 4,630 µg/L TPH-g (MW5).

For the above reasons, no ongoing sources are considered to be present with respect to ExxonMobil's former operations. The USTs have not been used since 1980 and were removed in 1994.

2) The site has been adequately characterized.

- Soil impact has been characterized through extensive soil sampling, as described in Section 2.
- Groundwater has been defined from the wells installed at the site (MW1-MW5) and grab groundwater samples collected from borings (HA1, AB1-AB4, AB6, and AB9-AB13). The groundwater flow direction is predominantly west-southwest. Currently wells MW2, MW3, and MW5 exist at the site downgradient of the former USTs and product lines. Stable or decreasing hydrocarbon concentrations have been demonstrated in wells MW2, MW3, and MW5 based on the groundwater monitoring conducted at those wells since October 2000.

For the above reasons, the site is considered adequately characterized.

3) The dissolved plume is not migrating.

- TPH-g, TPH-d, benzene, MTBE, and groundwater elevation graphs versus time for several monitoring wells are provided in Appendix E. The data indicate generally stable or decreasing trends for dissolved hydrocarbons.

For the above reason, the dissolved plume is considered stable.

4) No water wells, deeper drinking water aquifers, surface water, or other sensitive receptors are likely to be impacted.

- No municipal water wells and private water wells are identified within 2,000 feet of the site.
- The site is located in the East Bay Plain Groundwater Basin; groundwater generally flows toward the San Francisco Bay. The bay is located 5,000 feet to the west of the site. Therefore the bay is not expected to be significantly affected by remaining hydrocarbons at the site.

For the above reasons, no water wells, deeper drinking water aquifers, surface water, or other sensitive receptors are likely to be impacted.

5) The site presents no significant risk to human health.

A Risk-Based Corrective Action Report by TRC dated October 2002 was submitted to the ACHCSA. The report included a risk-based corrective action evaluation which was performed in accordance with the procedures of the ASTM standard guide (ASTM 1995) as modified by the City of Oakland for the Oakland region (Oakland 2001). The report concluded that potential health risks posed to either current site workers or future residents/workers were likely not significant (TRC 2002).

For the purpose of this report, the exposure pathways were reevaluated with respect to the latest Environmental Screening Levels (ESLs) as part of a Tier 1 screening of potential human health risks associated with chemicals of potential concern (COPCs) in the soil and groundwater beneath the site. As a part of this evaluation, all historical soil data were evaluated. As stated in previous reports (TRC 2001a and TRC 2002), site development activities conducted by the current property owner in 1999 resulted in the removal of over 200 cubic yards of soil from the central area of the site. As such, maximum concentrations in soil from locations which were not affected by this excavation were used in the analysis by TRC (TRC 2002) and in this evaluation. The results of this screening are detailed below.

Exposure Assessment

As previously indicated, the site is an active commercial/industrial facility characterized by a paved ground surface everywhere across the site. Onsite buildings are limited to the active automobile oil change facility building. Groundwater beneath the site is subject to seasonal variation and averages in depth from 5 to 12 feet bgs. There are no active water supply wells onsite or within a ½ -mile radius of the site. Land use downgradient of the site is residential.

Based on the above site conditions, potential exposure pathways and receptors were evaluated as follows:

Daily Site Occupants

Due to the presence of a paved surface across the entire site, direct exposure (incidental ingestion and dermal contact) to COPCs in soil at the site are considered incomplete for daily site occupants. Should the paved surface at the site be removed in the future, then potential direct exposure to COPCs in shallow soils (0 to 10 feet bgs) may be considered complete.

Given the seasonal variation in the depth to groundwater, the absence of onsite water supply wells, and existing paved surface, direct exposure to groundwater by daily site occupants is considered incomplete. Future development of water supplies at and in the vicinity of the site is not considered likely for shallow groundwater, given the presence of regional impacts in the vicinity of the site.

Due to the volatile nature of select COPCs, exposure pathways associated with emission of volatiles from soil and groundwater to indoor air may be considered complete for daily site occupants.

Future Construction/Maintenance Workers

To the extent where future construction/maintenance work at the site may involve penetration of the paved surface, then future construction/maintenance workers may also be exposed to soil COPCs in shallow soils (0 to 10 feet bgs). Given the seasonal variation in the depth to groundwater, construction/maintenance workers may also be potentially exposed to COPCs in groundwater. However, the potential exposure to groundwater by construction/maintenance workers would be addressed by a site-specific worker health and safety plan outlining necessary protective measures, including use of personal protective equipment. It is worth noting that construction/maintenance activities to depths beneath the water table will likely be preceded by dewatering activities, which will limit the potential for incidental direct exposure to exposed groundwater by future construction/maintenance workers.

Offsite Receptors

Offsite land use in the immediate vicinity of the site, including the adjacent downgradient property, is residential. In the absence of water supply wells (within ½ -mile radius), the sole potential for exposure to COPCs at offsite locations is emission of volatiles from groundwater emanating from the site. Therefore, groundwater to indoor air exposure pathway for offsite residential receptors may be considered complete.

Tier 1 Screening of Potential Health Risks

As the first step toward evaluation of potential health risks associated with COPCs at the site, a highly conservative Tier 1 analysis was performed. This analysis consisted of comparison of site maximum soil and groundwater concentrations to relevant ESLs adopted by the San Francisco Bay Regional Water Quality Control Board ([RWQCB], 2005) and corresponding to each of the

complete exposure pathways discussed above. This comparison is summarized in Tables 5 through 7.

Table 5 summarizes a comparison of maximum historical shallow soils (0 to 10 feet bgs) concentrations versus highly conservative ESLs corresponding to direct exposure by commercial/industrial workers and future construction/trench workers. As indicated in this table, except for benzene, none of the COPCs detected in shallow soils at the site exceed the conservative ESLs. Although the site maximum shallow soils concentration for benzene (1.2 mg/kg) exceeds the commercial/industrial land use ESL, the estimated carcinogenic risk associated with this exposure approximates 3×10^{-6} (see Table 5), which is within the EPA's target acceptable risk range of 1×10^{-4} to 1×10^{-6} and is protective of a target risk level of 1×10^{-5} typically used for evaluating risks at commercial/industrial facilities. Hence, the risk associated with the observed benzene level is considered insignificant.

Table 6 summarizes a comparison of maximum COPC concentrations in shallow soil to commercial/industrial cancer and non-cancer end-point ESLs for onsite indoor air exposure pathway. As seen in this table, except for benzene (1.2 mg/kg), none of the COPCs detected in shallow soils exceed their relevant ESLs for indoor air exposure pathway. The estimated total cumulative carcinogenic risk is 2.52×10^{-6}, which is within the EPA's target acceptable risk range of 1×10^{-4} to 1×10^{-6} and less than 1×10^{-5} typically used to evaluate commercial/industrial land use. The cumulative non-carcinogenic hazard is 1.21×10^{-2}, which is significantly less than the RWQCB's Tier 1 ESL target hazard quotient of 0.2 and EPA's target hazard of 1.0 for non-carcinogenic effects. Hence, risk associated with COPCs in shallow soils to indoor air exposure pathway corresponding to onsite commercial/industrial land use is considered insignificant.

Table 7 summarizes a comparison of maximum COPC concentrations in groundwater beneath the site over the last four quarters of sampling (April 2003 to January 2004) to ESLs for groundwater to indoor air exposure pathway corresponding to onsite commercial/industrial and offsite residential land use. As indicated in the table, none of the COPCs groundwater concentrations over the last four quarters exceed the ESLs.

Based on the above screening, site-related COPCs in soil and groundwater do not pose significant health risks to current and future onsite occupants and offsite receptors.

6) The site presents no significant risk to the environment.

- The site is located in a suburban setting which does not support a habitat for wildlife. The site is located in the East Bay Plain Groundwater Basin; groundwater generally flows toward the San Francisco Bay. The bay is located 5,000 feet to the west of the site. Therefore the bay is not expected to be significantly affected by remaining hydrocarbons at the site.

Based on the above evaluation, the site meets the RWQCB's "Low Risk" groundwater criteria.

5. SUMMARY

The following summarizes the environmental activities performed at former Mobil Station 99-105 and establishes the basis for site closure:

- Four 2,000-gasoline USTs and one 350-gallon used-oil UST were excavated and removed from the site in 1994. The product piping and approximately 367 cubic yards of soil were excavated were removed from the site in February 1996.
- A DPE event was conducted in November 1998. Groundwater and vapors were extracted. Approximately 21 pounds of vapor-phase hydrocarbons and 75 gallons of hydrocarbon impacted groundwater were recovered during the event.
- Soil impact has been characterized through extensive soil sampling, as described in Section 2 and groundwater has been defined from the wells installed at the site (MW1-MW5) and grab groundwater samples collected from borings (HA1, AB1-AB4, AB6, and AB9-AB13).
- Groundwater has been defined from the wells installed at the site (MW1-MW5) and grab groundwater samples collected from borings (HA1, AB1-AB4, AB6, and AB9-AB13).
- Based on data collected during investigations to date, no detectable levels of MTBE by EPA Method 8260 have been reported in any of the monitoring wells
- According to the Risk-Based Corrective Action Report by TRC, potential health risks posed to either current site workers or future residents/workers were likely not significant.
- According to the reevaluation of exposure pathways with respect to the latest ESLs, site-related COPCs in soil and groundwater do not pose significant health risks to current and future onsite occupants and offsite receptors.
- A well survey showed no municipal water wells and private water wells within 2,000 feet of the site.

On the basis of current site conditions, a review for case closure is requested.

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Figures

(Map Source: USGS Topography Map)

N

0 2,000

Scale (feet)

ETIC ENGINEERING

SITE LOCATION AND TOPOGRAPHY MAP
FORMER MOBIL STATION 99-105
6301 SAN PABLO AVENUE
OAKLAND, CALIFORNIA

FIGURE:
1

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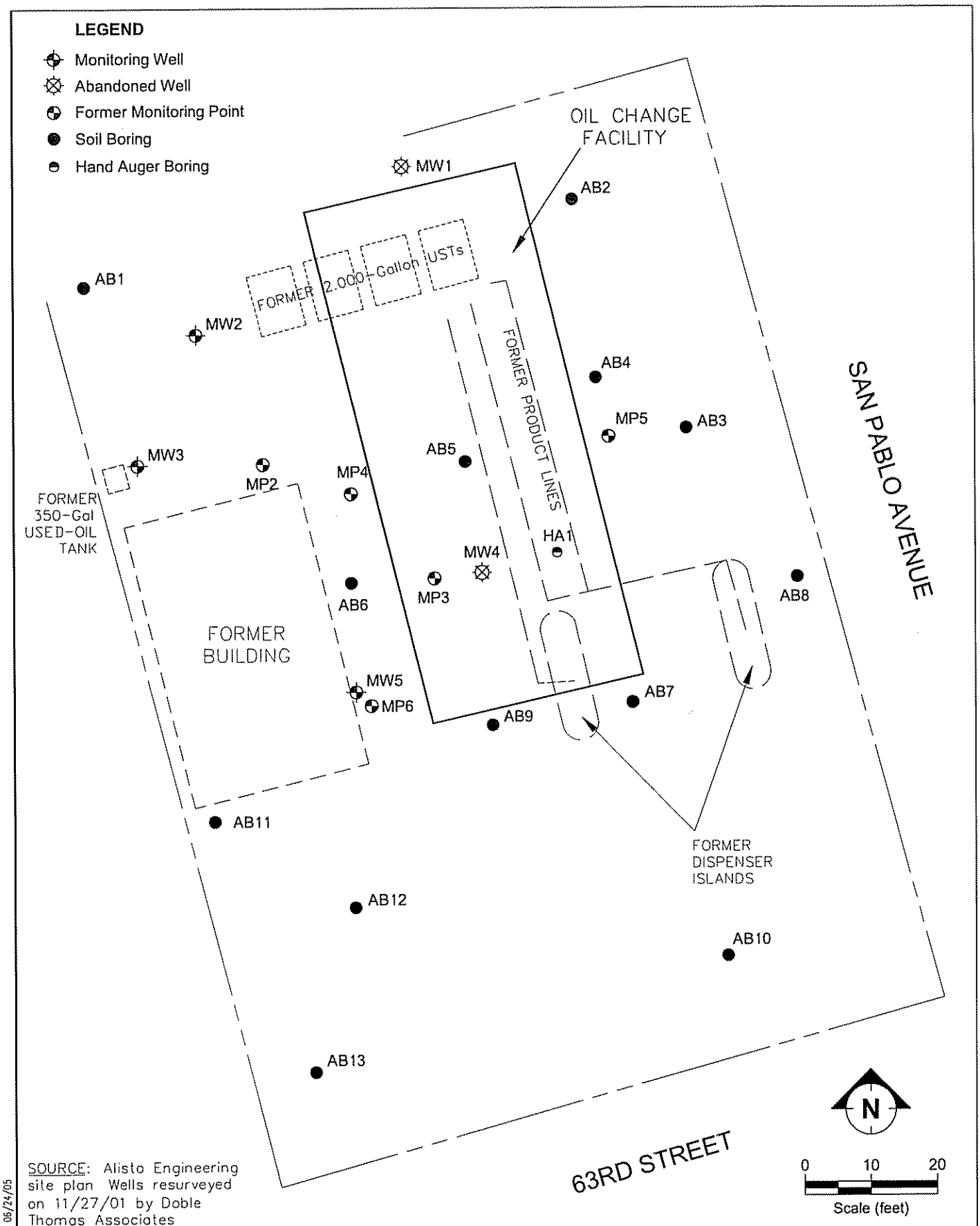


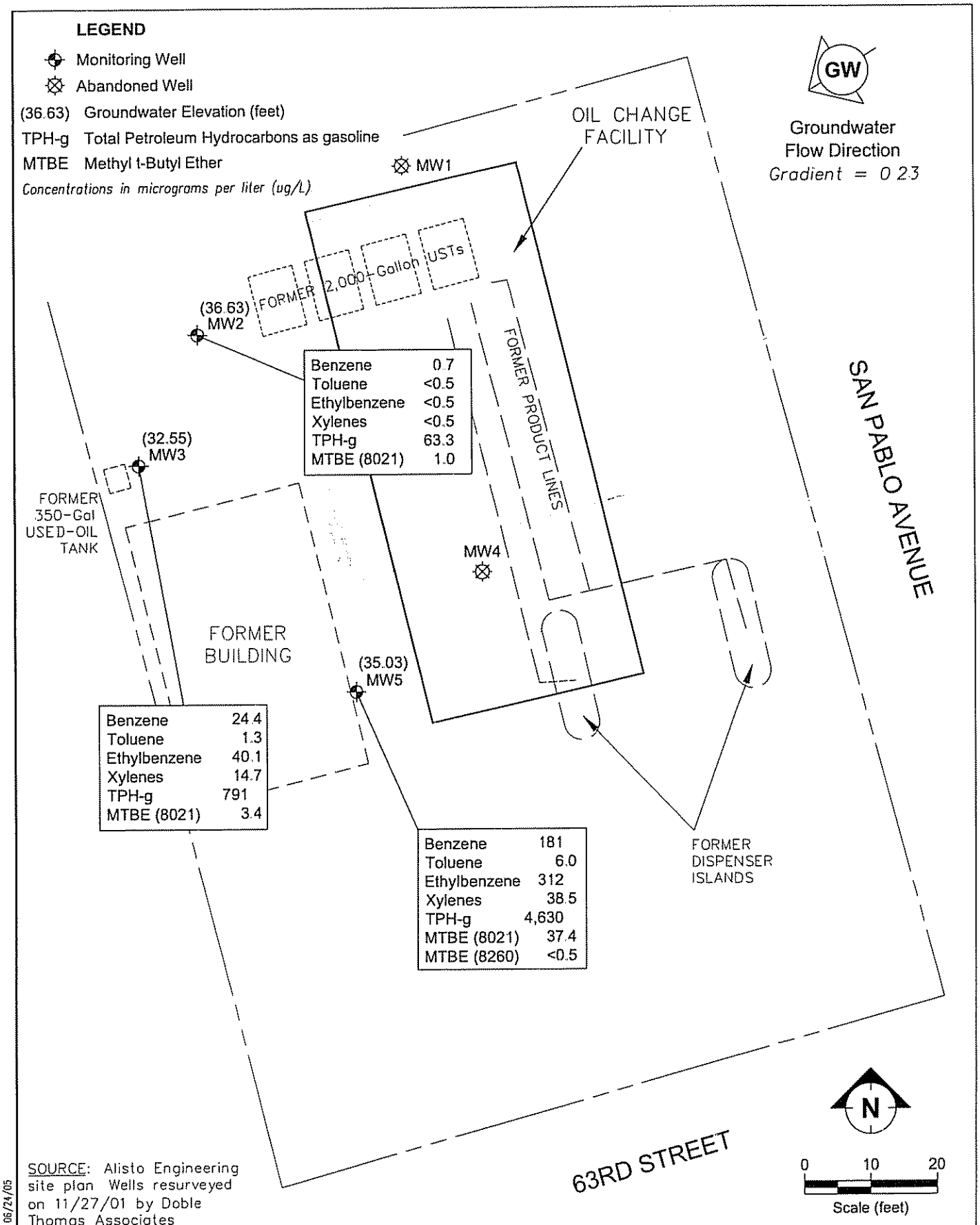
SOURCE: Alisto Engineering site plan Wells resurveyed on 11/27/01 by Doble Thomas Associates

ETIC ENGINEERING

SITE PLAN SHOWING SOIL BORING AND MONITORING WELL LOCATIONS
FORMER MOBIL STATION 99-105
6301 SAN PABLO AVENUE
OAKLAND, CALIFORNIA

FIGURE: 2

FILENAME: SITE0605.DWG 06/24/05



SOURCE: Alisto Engineering site plan Wells resurveyed on 11/27/01 by Doble Thomas Associates

ETIC ENGINEERING

SITE PLAN SHOWING GROUNDWATER ELEVATIONS AND ANALYTICAL RESULTS
FORMER MOBIL STATION 99-105
6301 SAN PABLO AVENUE, OAKLAND, CALIFORNIA
15 JANUARY 2004

FIGURE: 3

FILENAME: SITE0605.DWG 06/24/05

Tables

TABLE 1 WELL CONSTRUCTION DETAILS, FORMER MOBIL STATION 99-105, 6301 SAN PABLO AVENUE, OAKLAND, CALIFORNIA

Well Number		Well Installation Date	Elevation TOC (feet)	Casing Material	Total Depth (feet)	Well Depth (feet)	Borehole Diameter (inches)	Casing Diameter (inches)	Screened Interval (feet)	Slot Size (inches)	Filter Pack Interval (feet)	Filter Pack Material
MW1	b	03/01/96	--	PVC	21.5	20	10	4	5 - 20	0.010	4.5 - 21.5	#12 Sand
MW2	a	03/01/96	41.99	PVC	21.5	20	10	4	5 - 20	0.010	4.5 - 21.5	#12 Sand
MW3	a	03/01/96	41.71	PVC	21.5	20	10	4	5 - 20	0.010	4.5 - 21.5	#12 Sand
MW4	b	03/01/96	--	PVC	26.5	25	10	4	5 - 25	0.010	4.5 - 21.5	#12 Sand
MW5	a	09/06/00	41.59	PVC	21.5	20	10	4	5 - 20	0.010	4 - 21.5	#2/12 Sand

a Well surveyed on 11/27/01 by Doble Thomas Associates.
b Well destroyed.

PVC Polyvinyl chloride.
TOC Top of casing.

-- Information not available.

TABLE 2 GROUNDWATER MONITORING DATA, FORMER MOBIL STATION 99-105, 6301 SAN PABLO AVENUE, OAKLAND, CALIFORNIA

Well ID	Date	TOC Elevation (feet)	Depth to Water (feet)	Groundwater Elevation (feet)	LPH Thickness (feet)	Concentrations (µg/L) TPH-g	TPH-d	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE (8020 or 8021)	MTBE (8240 or 8260)
TW1	01/04/96	--	6.00	--	0.00	ND	700	ND	ND	ND	ND	--	--
WW1	01/04/96	--	3.00	--	0.00	ND	--	ND	ND	ND	ND	--	--
MW1	03/14/96	32.79	4.50	28.29	0.00	610	450	0.75	0.54	1.5	59	--	--
MW1	05/21/96	32.79	5.64	27.15	0.00	ND	ND	ND	ND	ND	ND	--	--
MW1	08/13/96	32.79	9.76	23.03	0.00	ND	ND	ND	ND	ND	ND	--	--
MW1	11/08/96	32.79	10.24	22.55	0.00	ND	ND	ND	0.92	ND	2.1	ND	--
MW1	01/31/97	32.79	3.83	28.96	0.00	ND	ND	ND	0.85	ND	ND	2.6	ND
MW1	04/22/97	32.79	9.14	23.65	0.00	ND	ND	ND	ND	ND	ND	ND	--
MW1[a]	07/29/97	32.79	10.18	22.61	0.00	ND	60[c]	0.84	0.95	ND	1.6	36	--
MW1[a]	10/09/97	32.79	10.46	22.33	0.00	ND	56[c]	ND	ND	ND	ND	ND	--
MW1[a]	01/23/98	32.79	3.95	28.84	0.00	ND	33	ND	ND	ND	ND	ND	--
MW1	04/22/98	32.79	5.33	27.46	0.00	ND	ND	ND	ND	ND	ND	ND	--
MW1	07/21/98	32.79	9.17	23.62	0.00	ND	--	ND	ND	ND	ND	ND	--
MW1	10/20/98	32.79	10.41	22.38	0.00	ND	--	ND	ND	ND	ND	ND	--
MW1	01/27/99	32.79	5.51	27.28	0.00	ND	--	ND	ND	ND	ND	ND	--
MW1	Destroyed during construction activities in April 1999												
MW2	03/14/96	32.80	4.51	28.29	0.00	560	250	2.0	0.96	4.3	11	--	--
MW2	05/21/96	32.80	5.65	27.15	0.00	730	560	5.1	1.4	6.7	5.9	--	--
MW2	08/13/96	32.80	10.14	22.66	0.00	490	380[b]	25	3.5	7.2	13	--	--
MW2	11/08/96	32.80	10.70	22.10	0.00	520	160[d]	80	2.7	14	66	6.1	--
MW2	01/31/97	32.80	3.84	28.96	0.00	74	130[b]	ND	ND	ND	ND	ND	--
MW2	04/22/97	32.80	9.61	23.19	0.00	260	430	2.7	ND	2.5	ND	ND	--
MW2[a]	07/29/97	32.80	10.53	22.27	0.00	320	150[d]	28	1.2	10	ND	ND	--
MW2[a]	10/09/97	32.80	10.87	21.93	0.00	460	160[b]	43	2.8	2.0	2.6	2.6	--
MW2[a]	01/23/98	32.80	3.75	29.05	0.00	ND	54	ND	ND	ND	ND	ND	--
MW2	04/22/98	32.80	5.36	27.44	0.00	180	540	1.2	0.3	0.4	ND	ND	--
MW2	07/21/98	32.80	9.55	23.25	0.00	80	--	8.9	2.1	0.6	2.5	ND	--
MW2	10/20/98	32.80	10.75	22.05	0.00	50	--	0.8	0.7	ND	0.8	ND	--
MW2	01/27/99	32.80	5.53	27.27	0.00	ND	--	0.6	ND	ND	ND	ND	--
MW2	07/27/99	32.80	6.20	26.60	0.00	ND	--	ND	0.6	ND	ND	ND	--
MW2	12/08/99	32.80	9.98	22.82	0.00	ND	--	1.2	0.43	ND	ND	ND	--
MW2	10/25/00	39.34	11.30	28.04	0.00	<20	--	2.0	0.59	0.46	1.3	<0.30	--
MW2	01/15/01	39.34	9.41	29.93	0.00	<20	--	<0.20	0.46	<0.20	<0.60	<0.30	--
MW2	04/10/01	39.34	6.16	33.18	0.00	23	--	0.28	<0.20	<0.20	<0.60	<1.0	--

TABLE 2 GROUNDWATER MONITORING DATA, FORMER MOBIL STATION 99-105, 6301 SAN PABLO AVENUE, OAKLAND, CALIFORNIA

Well ID	Date	TOC Elevation (feet)	Depth to Water (feet)	Groundwater Elevation (feet)	LPH Thickness (feet)	Concentrations (µg/L) TPH-g	TPH-d	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE (8020 or 8021)	MTBE (8240 or 8260)
MW2	07/24/01	39.34	10.70	28.64	0.00	<50	--	<0.20	0.93	<0.20	0.82	<0.30	--
MW2	11/27/01	39.34	10.15	29.19	0.00	<50	--	1.2	0.22	<0.20	<0.60	<0.30	--
MW2	01/18/02	41.99	5.46	36.53	0.00	<50.0	--	<0.50	<0.50	<0.50	<0.50	1.40	--
MW2	04/10/02	41.99	6.48	35.51	0.00	<50.0	--	<0.50	<0.50	<0.50	<0.50	1.80	--
MW2	07/12/02	41.99	10.45	31.54	0.00	<50.0	--	<0.50	<0.50	<0.50	<0.50	<0.50	--
MW2	10/14/02	41.99	11.46	30.53	0.00	<50.0	--	<0.5	4.1	0.6	4.0	<0.5	--
MW2	01/20/03	41.99	5.39	36.60	0.00	<50.0	--	<0.50	<0.50	<0.50	<0.50	0.6	--
MW2	04/28/03	41.99	5.87	36.12	0.00	<50.0	--	<0.50	<0.50	<0.50	<0.50	<0.50	--
MW2	07/15/03	41.99	10.31	31.68	0.00	<50	--	<0.5	<0.5	<0.5	<0.5	<0.5	--
MW2	10/08/03	41.99	11.20	30.79	0.00	<50	--	<0.5	<0.5	<0.5	<0.5	<0.5	--
MW2	01/15/04	41.99	5.36	36.63	0.00	63.3	--	0.70	<0.5	<0.5	<0.5	1.0	--
MW3	03/14/96	32.80	9.55	23.25	0.00	4,200	1,200	220	30	140	520	--	--
MW3	05/21/96	32.80	10.16	22.64	0.00	8,500	2,800	710	110	440	1,700	--	--
MW3	08/13/96	32.80	11.18	21.62	0.00	5,000	2,300[c]	430	ND	200	360	--	--
MW3	11/08/96	32.80	11.51	21.29	0.00	8,400	2,900[b]	890	82	790	1,700	73	ND
MW3	01/31/97	32.80	7.90	24.90	0.00	16,000	7,500[b]	660	85	960	1,800	ND	--
MW3	04/22/97	32.80	10.64	22.16	0.00	8,000	2,700	340	33	400	490	200	ND
MW3[a]	07/29/97	32.80	11.36	21.44	0.00	9,800	2,300[b]	330	ND	530	530	ND	--
MW3[a]	10/09/97	32.80	11.52	21.28	0.00	7,300	2,600[b]	300	ND	430	460	270	ND
MW3[a]	01/23/98	32.80	7.50	25.30	0.00	6,100	2,300	190	23	330	320	ND	--
MW3	04/22/98	32.80	6.81	25.99	0.00	4,900	2,600	140	12	250	230	ND	ND
MW3	07/21/98	32.80	10.65	22.15	0.00	7,400	--	250	16	400	370	74	ND
MW3	10/20/98	32.80	11.57	21.23	0.00	6,700	--	200	18	350	350	ND	ND
MW3	01/27/99	32.80	9.11	23.69	0.00	3,100	--	74	4	94	39	13	--
MW3	07/27/99	32.80	7.27	25.53	0.00	8,900	--	170	21	360	440	ND	--
MW3	12/08/99	32.80	10.63	22.17	0.00	4,800	--	94	13	170	210	ND	--
MW3	10/25/00	39.27	12.08	27.19	0.00	3,800	--	63	2.9	100	65	<50	<5
MW3	01/15/01	39.27	10.29	28.98	0.00	4,300	--	76	9.5	47	76	<5.0	--
MW3	04/10/01	39.27	10.11	29.16	0.00	2,700	--	55	4.4	100	37	<20	--
MW3	07/24/01	39.27	11.57	27.70	0.00	3,100	--	110	6.9	110	81	<1.0	--
MW3	11/27/01	39.27	10.93	28.34	0.00	2,400	--	47	8.9	25	35	<0.30	--
MW3	01/18/02	41.71	9.47	32.24	0.00	1,130	--	15.3	2.30	42.0	24.6	13.6	--
MW3	04/10/02	41.71	10.14	31.57	0.00	916	--	35.1	3.00	22.5	13.8	11.2	--
MW3	07/12/02	41.71	11.34	30.37	0.00	2,330	--	60.5	2.90	39.8	50.9	15.4	--
MW3	10/14/02	41.71	12.10	29.61	0.00	2,550	--	36.9	3.8	20.3	48.0	<0.5	--
MW3	01/20/03	41.71	9.20	32.51	0.00	1,750	--	20.4	304.0	60.7	22.0	10.7	--

TABLE 2 GROUNDWATER MONITORING DATA, FORMER MOBIL STATION 99-105, 6301 SAN PABLO AVENUE, OAKLAND, CALIFORNIA

Well ID	Date	TOC Elevation (feet)	Depth to Water (feet)	Groundwater Elevation (feet)	LPH Thickness (feet)	Concentrations (µg/L) TPH-g	TPH-d	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE (8020 or 8021)	MTBE (8240 or 8260)
MW3	04/28/03	41.71	9.37	32.34	0.00	2,730	--	10.0	2.7	42.7	20.1	11.2	--
MW3	07/15/03	41.71	11.15	30.56	0.00	1,790	--	68.8	3.6	39.0	44.7	5.6	--
MW3	10/08/03	41.71	11.89	29.82	0.00	1,320	--	35.1	4.0	23.6	31.8	7.1	--
MW3	01/15/04	41.71	9.16	32.55	0.00	791	--	24.4	1.3	40.1	14.7	3.4	--
MW4	03/14/96	31.50	4.92	26.58	0.00	12,000	3,500	2,200	140	880	2,000	--	--
MW4	05/21/96	31.50	8.60	22.90	0.00	11,000	4,200	1,700	ND	930	470	--	--
MW4	08/13/96	31.50	10.02	21.50	0.02	--	--	--	--	--	--	--	--
MW4	11/08/96	31.50	10.28	21.33	0.15	--	--	--	--	--	--	--	--
MW4	01/31/97	31.50	7.88	23.62	0.00	23,000	8,200[b]	980	68	1,100	1,400	ND	--
MW4	04/22/97	31.50	7.40	24.10	0.00	8,800	4,500	950	ND	610	130	ND	--
MW4	07/29/97	31.50	9.85	21.74	0.12	--	--	--	--	--	--	--	--
MW4	10/09/97	31.50	10.35	21.38	0.30	--	--	--	--	--	--	--	--
MW4	01/23/98	31.50	4.68	27.51	0.92	--	--	--	--	--	--	--	--
MW4	04/22/98	31.50	6.39	25.22	0.14	--	--	--	--	--	--	--	--
MW4	07/21/98	31.50	7.10	24.55	0.20	--	--	--	--	--	--	--	--
MW4	10/20/98	31.50	9.03	22.60	0.17	--	--	--	--	--	--	--	--
MW4	01/27/99	31.50	5.37	26.18	0.07	--	--	--	--	--	--	--	--
MW4	Destroyed during construction activities in April 1999												
MW5	10/25/00	39.18	10.92	28.26	0.00	2,500	--	79	3.8	66	<20	<20	--
MW5	01/15/01	39.18	8.32	30.86	0.00	3,900	--	120	7.9	280	52	<5.0	--
MW5	04/10/01	39.18	7.21	31.97	0.00	8,000	--	280	4.4	410	100	<50	<5
MW5	07/24/01	39.18	9.54	29.64	0.00	7,000	--	360	7.4	380	67	<1.0	--
MW5	11/27/01	39.18	8.84	30.34	0.00	5,000	--	64	11	340	52	8.9	<2
MW5	01/18/02	41.59	6.52	35.07	0.00	6,330	--	99.1	2.30	103	19.6	21.8	--
MW5	04/10/02	41.59	7.20	34.39	0.00	2,140	--	275	8.00	183	24.5	<2.50	--
MW5	07/12/02	41.59	8.83	32.76	0.00	3,940	--	350	<0.50	268	14	20	<0.50
MW5	10/14/02	41.59	10.74	30.85	0.00	4,040	--	98.5	9.0	169	29.0	<2.5	--
MW5	01/20/03	41.59	6.45	35.14	0.00	7,660	--	421	10.0	743	96.0	59	<0.50
MW5	04/28/03	41.59	6.68	34.91	0.00	7,510	--	403	5.5	524	50.5	47	<0.50
MW5	07/15/03	41.59	8.68	32.91	0.00	6,080	--	406	19.8	412	34.7	52.9	<2.5
MW5	10/08/03	41.59	10.56	31.03	0.00	2,460	--	160	12.8	173	31.7	54.3	<0.5
MW5	01/15/04	41.59	6.56	35.03	0.00	4,630	--	181	6.0	312	38.5	37.4	<0.5

a Well sampled using no-purge method.

b Diesel and unidentified hydrocarbons <C15

TABLE 2 GROUNDWATER MONITORING DATA, FORMER MOBIL STATION 99-105, 6301 SAN PABLO AVENUE, OAKLAND, CALIFORNIA

Well ID	Date	TOC Elevation (feet)	Depth to Water (feet)	Groundwater Elevation (feet)	LPH Thickness (feet)	Concentrations (µg/L) TPH-g	TPH-d	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE (8020 or 8021)	MTBE (8240 or 8260)

c Diesel and unidentified hydrocarbons <C15>C25
d Diesel and unidentified hydrocarbons >C20
e Unidentified hydrocarbons >C18

LPH Liquid-phase hydrocarbons.
MTBE Methyl tertiary butyl ether.
ND Not detected at or above laboratory reporting limit.
TOC Top of casing.
TPH-d Total Petroleum Hydrocarbons as diesel.
TPH-g Total Petroleum Hydrocarbons as gasoline.

-- Not measured/not analyzed.
µg/L Micrograms per liter.

TABLE 3 SOIL SAMPLE ANALYTICAL RESULTS,
FORMER MOBIL STATION 99-105, 6301 SAN PABLO AVENUE, OAKLAND, CALIFORNIA

Sample ID	Date	Sample Depth (feet bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Xylenes (mg/kg)	TPH-g (mg/kg)	TPH-d (mg/kg)	MTBE (mg/kg)	MTBE (8260B) (mg/kg)	TOG (mg/kg)	Lead (mg/kg)
MW1	03/01/96	5-5 5'	ND<0 0050	ND<0 0050	ND<0 0050	ND<0 0050	ND<1 0	3 4	—	—	—	ND<2 5
MW1	03/01/96	10-10 5'	ND<0.0050	ND<0.0050	ND<0 0050	ND<0 0050	ND<1 0	ND<1 0	—	—	—	ND<2.5
MW1	03/01/96	15-15 5'	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	ND<1 0	4 2	—	—	—	ND<2 5
MW2	03/01/96	5-5 5'	ND<0 0050	ND<0.0050	ND<0.0050	ND<0 0050	ND<1.0	2 4	—	—	—	ND<2 5
MW2	03/01/96	10-10 5'	1.2	1 4	2 7	14	220	57	—	—	—	ND<2 5
MW2	03/01/96	15-15 5'	ND<0 0050	ND<0 0050	0.0063	0.035	ND<1.0	ND<1.0	—	—	—	ND<2 5
MW3	03/01/96	5 5-6'	ND<0 0050	ND<0.0050	ND<0.0050	ND<0 0050	ND<1 0	1.1	—	—	9	ND<2.5
MW3	03/01/96	10 5-11'	0.032	0 43	0 65	0 93	53	72	—	—	290	ND<2 5
MW3	03/01/96	15 5-16'	ND<0 0050	ND<0 0050	ND<0.0050	ND<0 0050	ND<1 0	ND<1 0	—	—	10	ND<2 5
MW4	03/01/96	5 5-6'	1 2	1	4 1	19	280	34	—	—	—	ND<2.5
MW4	03/01/96	10 5-11'	0 11	ND<0 0050	0.11	0 093	6	7 7	—	—	—	ND<2.5
MW4	03/01/96	15 5-16'	0 076	0 023	0 083	0 07	6	2 1	—	—	—	ND<2 5
AB-1	03/05/98	5-6'	ND	ND	ND	ND	ND	—	ND	—	—	—
AB-2	03/05/98	4-5'	ND	ND	ND	ND	ND	—	ND	—	—	—
AB-3	03/05/98	5 5'	ND	ND	ND	ND	ND	—	ND	—	—	—
AB-4	03/05/98	5-6'	ND	ND	ND	ND	18	—	ND	—	—	—
AB-5	03/05/98	3-4'	ND	ND	0 65	ND	170	—	ND	—	—	—
AB-6	03/05/98	5'	ND	ND	ND	ND	230	—	ND	—	—	—
AB-7	03/05/98	4-5'	ND	ND	0 032	ND	19	—	ND	—	—	—
AB-8	03/05/98	5'	ND	ND	ND	ND	ND	—	ND	—	—	—
AB-9	03/05/98	4'	0 006	ND	0 028	ND	16	—	ND	—	—	—
AB-10	03/05/98	4'	ND	ND	ND	ND	ND	—	ND	—	—	—
AB-11	03/05/98	5-6'	ND	ND	ND	ND	3 9	—	ND	—	—	—
AB-12	03/16/98	5-6'	ND	ND	ND	ND	ND	—	ND	—	—	—
AB-13	03/16/98	5-6'	ND	ND	ND	ND	ND	—	ND	—	—	—
MP-1	11/16/98	7 5'	ND	0.007	0.013	ND	10	—	ND	—	—	—
MP-2	11/16/98	7'	ND	0 03	0 29	2 1	270	—	ND	—	—	—
MP-2	11/16/98	10 5'	0 08	ND	0 31	ND	140	—	0 15	—	—	—
MP-3	11/16/98	7 5'	ND	0 1	1 6	ND	230	—	0 28	—	—	—
MP-4	11/16/98	5'	ND	ND	0 35	ND	120	—	0 19	—	—	—
MP-4	11/16/98	10'	ND	0 013	0 07	0 086	18	—	ND	—	—	—
MP-5	11/16/98	6 5'	ND	ND	0 015	0 022	6 4	—	ND	—	—	—
MP-5	11/16/98	10 5'	ND	ND	1 4	3	220	—	0 52	—	—	—
MP-6	11/16/98	7'	ND	ND	ND	ND	ND	—	ND	—	—	—
MP-6	11/16/98	10'	ND	ND	1 6	4 2	240	—	0 92	ND	—	—
HA-1	01/25/00	5'	ND<0.0050	ND<0.0050	ND<0 0050	ND<0.010	ND<0.50	—	ND<0.025	—	—	—
Comp-1	01/25/00	Composite	ND<0.0050	ND<0 0050	ND<0 0050	ND<0.010	ND<0 50	—	ND<0 025	—	—	8.04

TABLE 3 SOIL SAMPLE ANALYTICAL RESULTS,
FORMER MOBIL STATION 99-105, 6301 SAN PABLO AVENUE, OAKLAND, CALIFORNIA

Sample ID	Date	Sample Depth (feet bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Xylenes (mg/kg)	TPH-g (mg/kg)	TPH-d (mg/kg)	MTBE (mg/kg)	MTBE (8260B) (mg/kg)	TOG (mg/kg)	Lead (mg/kg)

This table was adapted from the Risk- Based Corrective Action Report, Table 1, dated October 2002 by TRC.

TPH-g Total Petroleum Hydrocarbons as gasoline.
TPH-d Total Petroleum Hydrocarbons as diesel
TOG Total Oil and Grease
MTBE Methyl tertiary butyl ether.
ND Not detected.
-- Not analyzed.

bgs Below ground surface.
mg/kg Milligrams per kilogram.

TABLE 4 GROUNDWATER SAMPLE ANALYTICAL RESULTS FOR TEMPORARY BORINGS, FORMER MOBIL STATION 99-105, 6301 SAN PABLO AVENUE, OAKLAND, CALIFORNIA

Sample ID	Date	Concentrations (µg/L) TPH-g	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE (8020 or 8021)
AB1	03/05/98	1,600	31	5.3	79	130	ND
AB2	03/05/98	ND	ND	2.9	0.9	5.7	ND
AB3	03/05/98	6,800	680	100	1,500	2,300	230
AB4	03/05/98	8,500	240	ND	260	720	ND
AB6	03/05/98	12,000	350	ND	310	100	ND
AB9	03/05/98	1,000	57	12	44	93	ND
AB10	03/05/98	200	3.0	1.2	3.2	2.8	ND
AB11	03/05/98	ND	ND	ND	ND	ND	ND
AB12	03/05/98	8,800	660	50	630	940	37
AB13	03/05/98	210	11	0.8	10	15	ND
HA1	01/25/00	<500	<0.3	<0.3	<0.3	<0.6	<5.0

This table was adapted from the Risk Based Corrective Action Report, Table 2, dated October 2002 by TRC.

MTBE Methyl tertiary butyl ether.

ND Not detected at or above laboratory reporting limit.

TPH-g Total Petroleum Hydrocarbons as gasoline.

-- Not measured/not analyzed.

µg/L Micrograms per liter.

TABLE 5 TIER 1 ENVIRONMENTAL SCREENING LEVELS FOR SHALLOW SOIL (DIRECT EXPOSURE)
FORMER MOBIL STATION 99-105, 6301 SAN PABLO AVENUE, OAKLAND, CALIFORNIA

				Concentration (mg/kg)			
					Tier 1 Environmental Screening Levels for Shallow Direct Exposure		
Chemical	Sample ID	Date	Depth (feet)	Maximum Reported Concentration *	Commercial/Industrial Land Use	Construction/Trench Worker Scenario	Carcinogenic Risk based on ESL and Maximum Soil Concentration for Commercial/Industrial Land Use
Benzene	Multiple	03/01/96	5.5 and 10	**1.2**	0.38	16	3.16E-06
Toluene	MW2	03/01/96	10	1.4	340	650	4.12E-09
Ethylbenzene	MW4	03/01/96	5.5	4.1	400	400	1.03E-08
Total Xylenes	MW4	03/01/96	5.5	19	420	420	4.52E-08
TPH-g	MW4	03/01/96	5.5	280	750	6,000	3.73E-07
TPH-d	MW2	03/01/96	10	57	750	6,000	7.60E-08
MTBE	MP6	11/16/98	10	0.92	68	2,500	1.35E-08
						Total cumulative Risk:	**3.68E-06**

TPH-g Total Petroleum Hydrocarbons as gasoline.
TPH-d Total Petroleum Hydrocarbons as diesel.
MTBE Methyl tert butyl ether.

mg/kg Milligrams per kilogram.

Note: Tier 1 Environmental Screening Levels adopted by RWQCB correspond to a 1 X 10^{-6} Target Risk Level and a target Hazard Quotient of 0.2.

From Tables K-2 and K-3: Direct Exposure Screening Levels, Commercial/Industrial Worker Exposure Scenario, Final Screening Level (RWQCB 2005).

* Historical maximum concentrations are from soil samples collected from 0-10 feet below ground surface in non-excavated soil.

TABLE 6 TIER 1 ENVIRONMENTAL SCREENING LEVELS FOR SOIL (POTENTIAL VAPOR INTRUSION CONCERNS)
FORMER MOBIL STATION 99-105, 6301 SAN PABLO AVENUE, OAKLAND, CALIFORNIA

				Concentration (mg/kg)				
					Tier 1 Environmental Screening Levels for Soil			
					Indoor Air Impacts			
Chemical	Sample ID	Date	Depth (feet)	Maximum Reported Concentration *	Cancer Endpoint-Commercial/Industrial Land Use	Non-Cancer Endpoint-Commercial/Industrial Land Use	Carcinogenic Risk based on ESL and Maximum Soil Concentration	Non-Carcinogenic Hazard based on ESL and Maximum Soil Concentration
Benzene	Multiple	03/01/96	5.5 and 10	**1.2**	0.51	NV	2.35E-06	NA
Toluene	MW2	03/01/96	10	1.4	NA	310	NV	9.03E-04
Ethylbenzene	MW4	03/01/96	5.5	4.1	NA	390	NV	2.10E-03
Total Xylenes	MW4	03/01/96	5.5	19	NA	420	NV	9.05E-03
TPH-g	MW4	03/01/96	5.5	280	NA	NV	NV	NV
TPH-d	MW2	03/01/96	10	57	NA	NV	NV	NV
MTBE	MP6	11/16/1998	10	0.92	5.6	NV	1.64E-07	NV
						Total cumulative Risk/Hazard:	**2.52E-06**	**1.21E-02**

TPH-g Total Petroleum Hydrocarbons as gasoline.
TPH-d Total Petroleum Hydrocarbons as diesel.
MTBE Methyl tert butyl ether.

NA Not Applicable
NV No Value.
mg/kg Milligrams per kilogram.

Bold values represent exceedance of environmental screening level.

Note: Tier 1 Environmental Screening Levels adopted by RWQCB correspond to a 1 X 10^{-6} Target Risk Level and a target Hazard Quotient of 0.2.

From Table E-1b: Soil Screening Levels for Evaluation of Potential Indoor Air Impacts, Commercial/Industrial Exposure (RWQCB 2005).

* Historical maximum concentrations are from soil samples collected >10 feet below ground surface in non-excavated soil.

TABLE 7 TIER 1 ENVIRONMENTAL SCREENING LEVELS FOR GROUNDWATER (POTENTIAL VAPOR INTRUSION CONCERNS)
FORMER MOBIL STATION 99-105, 6301 SAN PABLO AVENUE, OAKLAND, CALIFORNIA

			Concentration (µg/L)		
				Tier 1 Environmental Screening Levels for Groundwater	
				Indoor Air Impacts [1]	
				Commercial/Industrial Land Use	
Chemical	Well ID	Date	Maximum Reported Concentration *	(Onsite)	Residential Land Use (offsite)
Benzene	MW5	07/15/03	406	1,800	540
Toluene	MW5	07/15/03	19.8	530,000	380,000
Ethylbenzene	MW5	04/28/03	524	170,000	170,000
Total Xylenes	MW5	04/28/03	50.5	160,000	160,000
TPH-g	MW5	04/28/03	7,510	NV	NV
MTBEa	MW5	01/15/04	<0.5	80,000	24,000

TPH-g Total Petroleum Hydrocarbons as gasoline.
MTBE Methyl tert butyl ether.

a Analyzed by EPA Method 8260B.

NV No value.
µg/L Micrograms per liter.

Note: Tier 1 Environmental Screening Levels adopted by RWQCB correspond to a 1 X 10^{-6} Target Risk Level and a target Hazard Quotient of 0.2.

1 From Table E-1a: Groundwater Screening Levels for Evaluation of Potential Indoor-Air Impacts, Residential and Commercial/Industrial Land Use, High Permeability Vadose-Zone Soil Type (RWQCB 2005).

* Data reflect maximum concentration reported over last four quarters (April 2003 to January 2004) of sampling.

Appendix A

Regulatory Correspondence

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

FILE COPY

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

December 7, 2001
StID 1683/RO0000445

Mr. Gene Ortega
ExxonMobil Remediation Services
2400 San Ramon Valley Blvd.
San Ramon, CA 94583

Re: Former Mobil Station 99-105, 6301 San Pablo Ave., Oakland CA 94608

Dear Mr. Otega:

Our office has received and reviewed the November 2001 TRC Conceptual Site Model Report for the referenced site. Included in the report is a site description, a summary of site investigations, an evaluation of soil and groundwater findings and a proposal for future work. Based upon the data presented our office does not recommend the installation of the proposed monitoring well. Please prepare a risked-based corrective action (RBCA) evaluation for the site. You should use the City of Oakland Technical Background Document as a guide for determining health risk.

In addition, please provide in a tabular form a list of all soil and groundwater disposed, destroyed or reused from the site, including the date and location of disposal. In the meanwhile, please continue quarterly groundwater monitoring.

You may contact me at (510) 567-6765 if you have any questions.

Sincerely,

Barney M Chan

Barney M. Chan
Hazardous Materials Specialist

C: B Chan, files
Ms. Connie Lamb, 200 Dorado Terrace, San Francisco, CA 94112
Mr. J. Scheiner, TRC, 5052 Commercial Circle, Concord, CA 94520

RBCArq6301SanPablo

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

FILE COPY

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

September 7, 2001
StID 1683/ RO0000445

Mr. Gene Ortega
ExxonMobil Remediation Services
2400 San Ramon Valley Blvd.
San Ramon, CA 94583

Re: Former Mobil Station 99-105, 6301 San Pablo Ave., Oakland CA 94608

Dear Mr. Ortega:

Our office has received and reviewed the Third Quarter 2001 Progress Report for the referenced former Mobil station. At this time, in order to determine if site closure is warranted, our office requests that a Site Conceptual Model (SCM) be performed. This model should include a brief site history, historical site investigation results, monitoring well logs, cross-sectional diagrams, a sensitive receptor and utility survey and provide a work plan to determine the extent of the petroleum hydrocarbon plume. In addition, please include similar time, concentration, groundwater elevation plots for MW-5 for benzene and for gasoline in the existing wells.

Please submit your SCM to our office within 45 days or no later than October 25, 2001.

You may contact me at (510) 567-6765 if you have any questions.

Sincerely,

Barney M. Chan

Barney M. Chan
Hazardous Materials Specialist

C: B. Chan, files
Ms. Connie Lamb, 200 Dorado Terrace, San Francisco, CA 94112
Mr. J. Scheiner, TRC, 5052 Commercial Circle, Concord, CA 94520

SCM6301SanPablo

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway
Alameda, CA 94502-6577
(510) 567-6700
Fax (510) 337-9335

April 28, 2005

99-105

Ms. Jennifer C. Sedlachek
ExxonMobil Corporation
4096 Peidmont Ave. #194
Oakland, CA 94611

Re: Fuel Leak Case No. RO0000445 Environmental Investigation at 6301 San Pablo Ave., Oakland CA 94608

Dear Ms. Sedlachek:

It has come to our attention that you and/or your consultant have requested the review of the above subject site for closure. Please be advised that the following State Water Board "low risk" criteria must be met prior to your case being considered for closure. If you feel that your site meets the following state requirements for a "low risk" site, then submit a stand-alone document specified below for our office review.

LOW RISK requirements:

1. Leak stopped, on-going source, including free product removed
2. Site adequately characterized
3. Plume not migrating
4. No sensitive receptors impacted
5. No significant risk to human health
6. No significant risk to environment
7. Water quality objectives to be achieved within a reasonable time frame

Please be advised that a **stand-alone document** must include a site conceptual model (SCM), which incorporates the following items:

- Summary Figures
    - Site vicinity map showing the site location and identification of any nearby sensitive receptors.
    - Plot plan showing all historical sampling locations. Differentiation between sample types (i.e. excavation soil samples, soil boring locations, monitoring wells, soil vapor sampling points, etc.) is required. This figure also needs to include any former and existing UST system components, delineation of excavation areas, areas targeted by active remediation, building locations, potential preferential pathways such as utilities, property boundaries and public right-of-way locations.

- Depth-specific contaminant isoconcentration maps for soil and groundwater. If active remediation was performed, separate pre-remediation and post-remediation isoconcentration maps are required.

- Summary Tables

  - Table of all historical soil data. Sample ID, date, depth, and results for all analytes are required. Please refer to the Tri-Regional Guidelines to confirm that chemical analysis was performed for all relevant contaminants of concern (CoCs). Pre- and post-remediation concentrations should be clearly identified or presented in separate tables.

  - Table of all historical groundwater data. Chemical concentrations in monitoring well(s) concentrations along with depth to water should be tabulated.

  - The tables need to compare the detected CoC concentrations with the Regional Board's ESLs or other appropriate cleanup levels and to the water quality objectives identified in the Regional Board's Basin Plan.

- Complete set of all boring logs generated during site investigation.

- Geologic cross-sections showing soil borings, monitoring wells with screened intervals, UST locations, any preferential pathways, excavation boundaries, water table elevations (historical and current) and extent of residual contamination.

The above stand-alone document will help to expedite the review of your case. Please contact Amir K. Gholami at 510-567-6876 or amir.gholami@acgov.org to receive document samples to help you prepare the stand-alone doucment, if you are requesting a closure review.

Sincerely,

Amir K. Gholami, REHS

Hazardous Materials Specialist

C: D. Drogos, A. Gholami
√Bryan Campbell, ETIC Engineering Inc., 2285 Morello Ave., Pleasant Hill, CA 94523
Connie & Nathan Lam 200 Dorado Ter, San Francisco, CA 94112-1757

Appendix B

Conceptual Site Model (TRC 2001a)

TRC

Customer-Focused Solutions

CONCEPTUAL SITE MODEL REPORT

ExxonMobil Oil Corporation
Site No. 99-105
Oakland, California

TRC
Concord, California

November 2001

CONCEPTUAL SITE MODEL REPORT
November 26, 2001

FORMER MOBIL STATION 99-105
6301 San Pablo Avenue
Oakland, California

TRC Project No. 41-0123

Prepared For:

EXXONMOBIL OIL CORPORATION

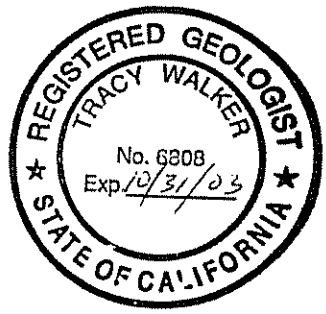
By:

Kristie Wilkie
Project Engineer

Jonathan Scheiner
Associate

Reviewed by

Tracy Walker, R.G.
Associate



TRC
5052 Commercial Circle
Concord, California 94520
(925) 688-1200

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1.0 INTRODUCTION

On behalf of ExxonMobil Oil Corporation, TRC is pleased to submit this Site Conceptual Model (SCM) Report for the former Mobil Station 99-105, located at 6301 San Pablo Avenue, Oakland, California (Figure 1). This report has been prepared pursuant to requirements of the Alameda County Environmental Health Services (ACEHS), as specified in a letter dated September 7, 2001 (Appendix A).

The objective of this report is to evaluate available soil and groundwater data to determine if further assessment activities are necessary at the site to refine our understanding of the nature and extent of petroleum hydrocarbon impacts.

2.0 SITE DESCRIPTION

2.1 OVERVIEW

Present Site Use: The property is currently being used as an automobile oil change facility. A Site Plan is presented in Figure 2.

Past Site Uses: The site was a Mobil service station from 1951 until 1980 after which it was used as a car rental lot. The former underground storage tanks (USTs) were not in use after 1980, and were removed in 1994. Methyl tertiary butyl ether (MTBE) has not been reported to have ever been used at the Site.

Adjacent Property And Site Uses: The site is located on the northwest corner of San Pablo Avenue and 63rd Street in Oakland, California (Figure 1). Commercial properties are situated to the north along San Pablo Avenue. To the east, across San Pablo Avenue, is an elementary school, and to the west and south are residential properties.

Geography: San Francisco Bay is located approximately 5,000 feet to the west of the site. Topography in the vicinity of the site is relatively flat but slopes gently west toward the bay. The site has an elevation of approximately 22 feet above mean sea level (USGS, 1959).

Soil Lithology: Soils encountered beneath the site generally consist of clayey sand, sandy clay, gravely silts, and minor fine gravels and sand lenses from the surface to approximately 18 feet below grade (fbg) (Alton Geoscience, 1999b) (see Section 2.2, Geology). Inorganic silts, clayey sands, and inorganic clays of low to medium plasticity extend beneath the Site to a depth of

approximately 10-20 fbg, based on geologic logging of soils during monitoring well installation activities conducted in 1996. Monitoring well boring logs are presented in Appendix B. Geologic cross sections prepared based on boring logs for these monitoring wells are presented in Figures 3 and 4.

Regional Geology

The site is underlain by the Quaternary Temescal Formation, which consists of interfingering layers of clayey gravel, sandy silty clay, and various clay-silt-sand mixtures. The formation varies in thickness to a maximum of approximately 60 feet. Underlying the Temescal Formation is the Quaternary Alameda Formation, which consists of unconsolidated continental and marine gravels, sands, silts, and clays, with some shells and organic material in places. The formation has a maximum known thickness of 1,050 feet (Radbruck, 1957).

Regional Hydrogeology:

The site is located in the East Bay Plain Groundwater Basin. Groundwater generally flows westward toward the San Francisco Bay (RWQCB, 1995). A groundwater elevation contour map is presented in Figure 5.

Sensitive Receptors:

A sensitive receptor survey conducted in September 2001 indicated that no supply wells are located within a 1/2-mile radius of the site. San Francisco Bay is located approximately 5,000 feet to the west of the site. To the east, across San Pablo Avenue, is an elementary school. See Section 2.3, Sensitive Receptor Survey and Appendix C for a detailed discussion of survey findings.

2.2 BACKGROUND SITE CONDITIONS

- Four gasoline USTs and one waste oil UST were excavated and removed from the Site in 1994 (Figure 2). The product piping was removed from the site in February 1996. An estimated total of 367 cubic yards of soil was excavated and removed from the site during the UST and piping removals (Alisto, 1996).

- Four groundwater monitoring wells (MW-1 through MW-4) were installed in March 1996 (Figure 2) (Alisto, 1996).

- Thirteen soil borings (AB-1 through AB-13) were drilled at the Site in March 1998 (Figure 2) (Alton Geoscience, 1998).

- On November 19, 1998, a dual-phase vacuum extraction (DPVE) event was conducted. Six temporary monitoring points (MP-1 through MP-6) were advanced to further characterize the extent of hydrocarbon-impacted vadose zone soil and to obtain vacuum readings and groundwater depths during the DPVE event. Groundwater and vapors were extracted from wells MW-3 and MW-4. Vacuum response and groundwater depths were measured in the temporary monitoring points and monitoring wells during the DPVE event. Approximately 21 pounds of vapor-phase hydrocarbons and 75 gallons of hydrocarbon-impacted groundwater were recovered during the event (Alton Geoscience, 1999b). Following the extraction event, monitoring points MP-1 through MP-6 were abandoned in place.

- In early 1999, over 200 cubic yards of soil were removed from the north area of the Site during redevelopment activities conducted by the current property owner (i.e., as part of the construction of the current oil change facility - See Figure 2 for location of facility). Monitoring well MW-4 was inadvertently destroyed during these construction activities.

- MW-1 was properly abandoned during July 1999 in preparation of the construction activities (TRC Alton Geoscience, 1999).

- In January 2000, one soil boring (HA-1) was advanced in the footprint area of the oil change facility (i.e., prior to construction of the building) to confirm the absence of hydrocarbon impacts in this area (Figure 2).

2.3 CURRENT SITE CONDITIONS

- Two of the three monitoring wells damaged during construction activities conducted by the current property owner in 1999 (MW-2 and MW-3) were rehabilitated in Fall 2000, and the third (MW-4) was replaced by newly installed MW-5 at this time. As indicated above, monitoring well MW-1 was properly abandoned in place. The remaining three wells (MW-2, -3, -5) constitute the current monitoring well network and have been monitored on a quarterly basis (Figure 2).

- Twenty quarters of groundwater monitoring and sampling have been conducted at the Site since the initial installation of MW-1 through MW-4 in March 1996. Elevated levels of hydrocarbons have been reported in monitoring well MW-3. Free product hydrocarbons have been reported in MW-4 since the third quarter of 1996. On January 27, 1999, 0.07 foot of free product was measured in MW-4 (Alton Geoscience, 1999a), prior to destruction of the monitoring well during construction activities at the Site. To date, no detectable levels of MTBE have been reported in any of the monitoring wells by EPA Method 8020, nor by confirmation analyses using EPA Method 8260.

- The average depth to groundwater at the Site is approximately 10.60 fbg, based on water level monitoring conducted on July 24, 2001 (TRC, 2001). Historical groundwater depths have ranged from 3.83 fbg (MW-1: January 31, 1997) to 11.57 fbg (MW-3: October 20, 1998). The groundwater gradient was calculated to be 0.07 foot per foot (ft/ft) toward the west in July 2001. The groundwater flow direction has varied from the northwest (April, 1997) to the southwest (January, 1999) (Alton Geoscience, 1997; 1999a).

2.4 SENSITIVE RECEPTOR SURVEY

A sensitive receptor survey was conducted in September 2001 to determine the existence and location of sensitive receptors in the Site vicinity. The survey consisted of researching the location of nearby municipal water wells, private water wells, ecological resources, utility vaults and lines, storm and sanitary sewers, building basements, and subways/tunnels. Several local and state agencies were contacted in determining the location of nearby sensitive receptors.

Municipal water wells and private water wells were not identified within 2,000 feet of the Site. Agencies contacted to locate nearby municipal and private water wells included the California Department of Water Resources, Regional Water Quality Control Board, and the City of Oakland.

Applicable forms and research documentation associated with the Sensitive Receptor Survey are included in Appendix C.

2.4.1 Utility Survey

A utility survey was conducted to identify nearby utilities as part of the Sensitive Receptor Survey. The sanitary sewer and a six-inch water main have been identified south of the property beneath 63rd Street (in an east/west direction). A sanitary sewer, storm sewer, and 4-inch and 6-inch water mains have been identified east of the site, beneath San Pablo Avenue (i.e., in north/south directions). In addition, three PG&E vaults are located along the east side of the Site.

Information regarding sanitary and storm sewer locations was obtained from the City of Oakland Public Works Department. Information regarding the locations of water mains was provided by the East Bay Municipal Utility District.

3.0 SUMMARY RESULTS OF SITE INVESTIGATIONS

The following sections include a summary of assessment activities conducted at the Site and a discussion of associated analytical results for soil and groundwater samples collected during

these investigations. The locations of soil borings and monitoring wells are provided in Figure 2.

3.1 SUMMARY OF SITE ASSESSMENT ACTIVITIES

Four groundwater monitoring wells (MW-1 through MW-4) were installed in March, 1996 followed by quarterly groundwater monitoring and sampling. Following Site redevelopment activities in 1999, three monitoring wells (MW-2, MW-3 and MW-5) remain at the Site and constitute the current monitoring network. Twenty groundwater monitoring quarterly events have been performed since March 1996. Quarterly groundwater samples have been analyzed for total petroleum hydrocarbons as gasoline (TPH-G), benzene, toluene, ethylbenzene, total xylenes (BTEX) and MTBE.

Thirteen soil borings were advanced in March 1998 (AB-1 through AB-13). Groundwater samples from ten of the borings were obtained and analyzed for TPH-G, BTEX, and MTBE.

Six temporary monitoring points (MP-1 through MP-6) were installed as part of a dual-phase vapor extraction (DPVE) event conducted in November 1998 using a mobile treatment system (MTS). Selected soil samples were collected during drilling and analyzed for TPH-G, BTEX, and MTBE. The DPVE event (lasting 6.75 hours) was conducted to remediate petroleum hydrocarbon-impacted soil and groundwater at the Site as well as to characterize the extent of residual hydrocarbons in shallow soils. Soil vapor samples collected from the influent vapor stream (MW-4) were analyzed in the field using a Horiba portable monitoring instrument measuring hydrocarbon concentration. In addition, vapor samples were collected at the beginning and end of the test period from the flow stream of former MW-4 and analyzed at a state-certified laboratory for TPH-G, BTEX, and Calderon inert gases.

On January 25, 2000, one soil boring (HA-1) was advanced east of MW-4 (Figure 2). In response to the ACHCSA (letter dated November 8, 1999), a grab-groundwater sample and soil sample were collected to confirm the absence of hydrocarbon impacts in this area.

3.2 ANALYTICAL RESULTS

The following subsections summarize available analytical results for soil, groundwater and vapor samples collected during various Site assessment activities, including quarterly groundwater monitoring and sampling, monitoring well installation, and installation of soil borings. The soil, groundwater and vapor samples were appropriately preserved and submitted to a California-certified laboratory under chain-of-custody protocol. In general, soil and groundwater samples were analyzed for the following constituents:

- TPH-G using EPA Method 8015 modified for gasoline,
- BTEX using EPA Method 8020,

- MTBE using EPA Method 8020A; the highest reported detection of MTBE was typically confirmed by EPA Method 8260.

Laboratory soil and groundwater analytical results are summarized in Tables 1 and 2, respectively. Vapor samples were analyzed for TPH-G, and are summarized in Table 3.

3.2.1 Soil Analytical Results

Available analytical results of soil sampling conducted to date are illustrated in Figure 6. A discussion of these results is provided below, in approximately chronological order.

Soil samples were collected during the installation of MW-1 through MW-4 in March 1996 at depths of approximately 5 fbg, 10 fbg, and 15 fbg. Gasoline-range hydrocarbons were detected in soil samples collected at 10 fbg in MW-2 and MW-3, and at 5, 10, and 15 fbg in the former MW-4. The highest TPH-G concentration (280 ppm) was detected at 5 fbg in MW-4. Diesel-range hydrocarbons were detected at various depths, the highest concentration (72 ppm) being reported in MW-3 at 10 fbg. Benzene was detected at 10 fbg in MW-2 and MW-3 and at 5, 10, and 15 fbg in MW-4. The highest benzene concentration (1.2 ppm) was detected in MW-2 and MW-4 at 10 and 5 fbg, respectively.

Soil samples were collected from each of the thirteen soil borings advanced in March 1998 at depths between 3 and 16 fbg. Gasoline-range hydrocarbons were detected in soil samples collected from approximately 3 to 6 fbg. The highest TPH-G concentration (230 ppm) was detected at 5 fbg in AB-6, located near the center of the Site (west of the former dispenser lines). Benzene was detected in only one soil sample, 0.006 ppm at 4 fbg in AB-9. MTBE was not detected in soil samples collected from these 13 borings based on EPA Method 8260 confirmation analyses.

Soil samples were also collected during the installation of monitoring points MP-1 through MP-6 in November 1998. Gasoline-range hydrocarbons were detected in soil samples collected from approximately 6.5 to 10.5 fbg. The highest TPH-G concentration was 240 ppm in MP-6 (10 fbg) located west of the former dispenser islands. Benzene was detected in only one soil sample (MP-2) at 0.08 ppm (10.5 fbg). MTBE was not detected in soil samples collected from these six monitoring points based on EPA Method 8260 confirmation analyses.

A soil sample was collected from boring HA-1 at a depth of 5 fbg in January 2000. No detectable concentrations of TPH-G, BTEX, and MTBE were reported in this sample.

3.2.2 Groundwater Analytical Results

Test Borings: Grab groundwater samples were collected from ten of the thirteen soil borings advanced in March 1998 (i.e., only 10 of the 13 borings yielded groundwater). TPH-G and benzene concentrations were detected in groundwater samples collected from eight of the ten

borings (AB-1, AB-3, AB-4, AB-6, AB-9, AB-10, AB-12, and AB-13). A maximum TPH-G concentration of 12,000 ppb was detected in a grab sample from AB-6. A maximum benzene concentration of 680 ppb was detected in a grab sample from AB-3. MTBE was detected in borings AB-3 and AB-12 using EPA Method 8020, however confirmation analysis by EPA Method 8260 failed to confirm the presence of MTBE. Since detectable levels of MTBE have not been reported to date using EPA Method 8260 (i.e., during normal quarterly sampling), and no record of historical use of MTBE has been indicated, it is likely the detections reported in the two soil borings were spurious.

A grab-groundwater sample was collected from boring HA-1 in January 2000, located east of MW-4. No detectable levels of TPH-G, BTEX, or MTBE were reported in this sample.

Monitoring Wells: Quarterly groundwater monitoring and sampling data have been collected since the installation of MW-1 through MW-4 in March 1996. Elevated levels of TPH-G and BTEX have been reported in MW-3 at varying levels over this time period, however benzene levels have steadily diminished over the same period. Free product hydrocarbons were detected in MW-4 in January 1997 (0.07 feet), at which time the highest concentration of TPH-G (23,000 ppm) was also reported. MTBE has not been detected by EPA Methods 8020 nor by confirmation analysis 8260. The highest concentrations of TPH-G (7,000 ppm) and benzene (360 ppm) were reported in MW-5 (Figure 7).

No detectable concentrations of benzene were reported in MW-1 and MW-2 during the recent quarterly monitoring and sampling event, however concentrations of 110 ppm and 360 ppm were reported in MW-3 and MW-5, respectively at this time (7/24/01). A graph of benzene levels versus groundwater elevation over time in MW-2 and MW-3 is presented in Appendix D. Due to the limited amount of data for MW-5, a graph is not included for this well.

3.2.3 Vapor Analytical Results

Vapor samples were collected during the DPVE conducted on November 18, 1998. As discussed above, influent vapor samples were collected at the beginning and at the end of the test from the flow stream of MW-4 and submitted to a state-certified laboratory for analysis. A TPH-G concentration of 2,400 parts per million by volume (ppmv) was reported 30 minutes into the test while a concentration of 7,400 ppmv was reported at system shutdown. Field measurements indicated vapor concentrations between 2,430 and 8,590 ppmv. TPH concentrations and total hydrocarbons recovered versus time are presented in Appendix E.

Minimal vacuum responses were observed in the observation wells. The low vacuum readings were probably due to the low permeability of the clay layer (see geologic cross sections A-A' and B-B' in Figures 3 and 4, respectively). It was not possible to determine an effective radius-of-influence based on the available results.

4.0 EVALUATION OF FINDINGS

4.1 SOIL

For nearly 30 years the Site was operated as a gas station with USTs situated along the northern margin and product lines oriented north-south through the central area of the Site to dispenser islands near the east-central area. The USTs and associated piping were removed in 1994 and 1996, respectively (including approximately 367 cubic yards of soil). Environmental assessment activities have been conducted at the Site since 1994 to evaluate the nature and extent of contamination in soil and groundwater.

Elevated levels of hydrocarbons in the soil were reported in the central area of the Site, suggesting potential historic releases of hydrocarbons from the former product lines. Site development activities conducted by the current property owner in 1999 resulted in the removal of an additional 200 cubic yards of soil from this central area (i.e., up to a depth of 6 fbg). These activities included the removal of monitoring well MW-4. A confirmation boring advanced approximately 12 feet east of MW-4 in January 2000 was reported to be free of detectable levels of hydrocarbons in the soil at a depth of 5 fbg and in the underlying groundwater. Residual hydrocarbons in Site soil (i.e., in the central area of the Site) may have been removed during Site development activities. The approximate extent of soil removed during the 1999 redevelopment activities is illustrated in Figure 6.

Based on the above considerations, it is believed that impacts to soil have been adequately characterized and that residual hydrocarbons in the soil were likely removed during one or both soil removal operations conducted at the Site (i.e., during tank/piping removal [1994, 1996] and Site redevelopment [1999]).

4.2 GROUNDWATER

Groundwater assessment activities, including quarterly monitoring indicate only minimal hydrocarbon impacts to groundwater in the area immediately downgradient of the former gasoline USTs (north area of Site). Dissolved-phase hydrocarbons reported in monitoring well MW-3 may be the result of releases from the former USTs and/or the former product lines. There is no evidence of historic or current impacts upgradient of the former USTs or product lines (north/east area of Site).

Detectable levels of hydrocarbons in the recently installed monitoring well MW-5 may be indicative of historic releases from the former product lines. The southern extent of hydrocarbon impacts has not been defined at the western downgradient end of the Site (i.e., south of MW-5).

Based on the above observations, one additional monitoring well at the southwestern margin of the Site is recommended to further delineate the extent of impacts in the area downgradient of identified sources (e.g., former USTs, product lines). Details associated with the installation of the additional monitoring well are described in the following section.

5.0 PROPOSED FURTHER ACTION AND WORKPLAN

5.1 WELL INSTALLATION WORKPLAN

TRC proposes to install one groundwater monitoring well southwest of MW-5 (Figure 2). The objective of the well installation is to further characterize the extent of on-site hydrocarbon impacts in the southwest (downgradient) direction. Procedures for installing the proposed additional well are described in the following subsections.

5.1.1 Pre-Field Work Activities

A well installation permit will be acquired from ACEHS prior to drilling. A geophysical survey will be conducted and Underground Service Alert (USA) will be notified approximately 4 days prior to field activities. Prior to installing the monitoring well, a pilot hole will be hand-augured to five fbg to identify potential underground utilities at the proposed drilling location.

5.1.2 Drilling and Soil Sampling

One monitoring well will be drilled to a depth of approximately 20 fbg at the approximate location shown on Figure 2. Drilling will be performed using a hollow-stem auger drill rig. Soil samples will be collected at five-foot depth intervals during drilling. Samples will be collected for lithologic description, field hydrocarbon vapor testing, and analysis at a state-certified laboratory. Refer to Appendix F for general field procedures.

The approximate location of the monitoring well has been selected based on the assessment of groundwater impacts and the observed gradient, as presented in this report. The actual location of the monitoring well may be field adjusted based on access considerations and other field observations.

Selected soil samples will be analyzed for the following:

- TPH-G using EPA Methods 8015 modified for gasoline;
- BTEX using EPA Method 8020;
- MtBE using EPA Method 8260

5.1.3 Groundwater Well Installation and Sampling

The proposed monitoring well will be constructed of 4-inch diameter PVC blank (riser) and slotted (screen) casing. The well will be screened from approximately 5 to 20 fbg using 0.02-inch slotted screen. The screen-formation annulus will be filled with an appropriate filter pack material. The riser formation annulus will be properly sealed with hydrated bentonite chips and cement grout. The wellhead will be sealed with a water-tight, lockable well cap, and a flush-mounted wellbox will be installed over the wellhead. Groundwater is anticipated to be encountered at approximately 9 to 11 fbg.

Following installation, the well will be developed (surged and bailed) to improve hydraulic communication between the geologic formation and the well, and the wellhead elevation will be surveyed relative to the surrounding wells at the Site. Refer to the attached General Field Procedures for well installation, soil and groundwater sampling, and equipment decontamination procedures.

Following well development, the well will be incorporated into the existing network and sampled and analyzed for the following constituents:

- TPH-G using EPA Method 8015 modified for gasoline;
- BTEX using EPA Method 8020; and
- MTBE using EPA Method 8260.

5.1.4 Soil and Groundwater Disposal

Soil and water generated during Site investigation activities will be stored onsite in DOT-approved drums pending disposal at an approved disposal/recycling facility. Waste manifests will be prepared for proper transport and disposal of the waste.

5.1.5 Work Schedule

Proposed field activities can be completed within six weeks of agency approval of this workplan.

A supplemental site assessment report summarizing field installation activities can be prepared and submitted within six weeks of completion of field work.

5.1.6 Site Health and Safety Plan

A site health and safety plan (HSP) has been prepared to ensure project personnel safety and preparedness during the activities described in this Workplan. A copy of the HSP is included in Appendix G.

5.2 NATURAL ATTENUATION AND CONTINUED MONITORING

TRC recommends the continuation of quarterly groundwater monitoring and sampling of the three existing and one additional onsite wells. The hydrocarbon-impacted groundwater should be re-evaluated at a later date based on quarterly groundwater monitoring results accumulated from the 4-well network.

6.0 CONCLUSIONS

The work presented in this report meets the requirements of the ACEHS letter (Appendix A) requesting an SCM be performed.

Previous site assessment activities indicated that soil impacts associated with historic Site activities have been adequately characterized. The evaluation of these activities herein further indicates that residual impacts to Site soils have been removed during recent soil removal activities. Therefore, residual sources of contamination are no longer present in Site soils which could potentially pose a threat to underlying groundwater.

Hydrocarbon impacts to groundwater have been adequately characterized on the north, northwest, and east portions of the Site. Further assessment of the extent of impacts in the southwest area of the Site (downgradient from the former dispenser islands) is recommended herein. TRC proposes the installation of one groundwater monitoring well in this southwestern area.

TRC further proposes to continue monitoring and sampling onsite monitoring wells, in addition to the proposed well following agency approval and installation.

7.0 REFERENCES

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TABLES

Table 1

Summary of Soil Sample Analysis

Former Mobil Station 99-105

Sample ID	Depth (feet)	Date	TPH-G (ppm)	TPH-D (ppm)	Benzene (ppm)	Toluene (ppm)	Ethyl-benzene (ppm)	Total Xylenes (ppm)	TOG (ppm)	Lead (ppm)	MTBE (ppm)	MTBE 8260 (ppm)
MW-1	5-5.5'	03/01/96	ND<1.0	3.4	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	—	ND<2.5	—	—
MW-1	10-10.5'	03/01/96	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	—	ND<2.5	—	—
MW-1	15-15.5'	03/01/96	ND<1.0	4.2	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	—	ND<2.5	—	—
MW-2	5-5.5'	03/01/96	ND<1.0	2.4	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	—	ND<2.5	—	—
MW-2	10-10.5'	03/01/96	220	57	1.2	1.4	2.7	14	—	ND<2.5	—	—
MW-2	15-15.5'	03/01/96	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	0.0063	0.035	—	ND<2.5	—	—
MW-3	5.5-6'	03/01/96	ND<1.0	1.1	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	9.0	ND<2.5	—	—
MW-3	10.5-11'	03/01/96	53	72	0.032	0.43	0.65	0.93	290	ND<2.5	—	—
MW-3	15.5-16'	03/01/96	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	10	ND<2.5	—	—
MW-4	5.5-6'	03/01/96	280	34	1.2	1.0	4.1	19	—	ND<2.5	—	—
MW-4	10.5-11'	03/01/96	5.8	7.7	0.11	ND<0.0050	0.11	0.093	—	ND<2.5	—	—
MW-4	15.5-16'	03/01/96	5.6	2.1	0.076	0.023	0.083	0.070	—	ND<2.5	—	—
AB-1	5-6'	03/05/98	ND	—	ND	ND	ND	ND	—	—	ND	—
AB-2	4-5'	03/05/98	ND	—	ND	ND	ND	ND	—	—	ND	—
AB-3	5.5'	03/05/98	ND	—	ND	ND	ND	ND	—	—	ND	—
AB-4	5-6'	03/05/98	18	—	ND	ND	ND	ND	—	—	ND	—
AB-5	3-4'	03/05/98	170	—	ND	ND	0.65	ND	—	—	ND	—
AB-6	5'	03/05/98	230	—	ND	ND	ND	ND	—	—	ND	—
AB-7	4-5'	03/05/98	19	—	ND	ND	0.032	ND	—	—	ND	—
AB-8	5'	03/05/98	ND	—	ND	ND	ND	ND	—	—	ND	—
AB-9	4'	03/05/98	16	—	0.006	ND	0.028	ND	—	—	ND	—

Table 1
Summary of Soil Sample Analysis
Former Mobil Station 99-105

Sample ID	Depth (feet)	Date	TPH-G (ppm)	TPH-D (ppm)	Benzene (ppm)	Toluene (ppm)	Ethyl-benzene (ppm)	Total Xylenes (ppm)	TOG (ppm)	Lead (ppm)	MTBE (ppm)	MTBE 8260 (ppm)
AB-10	4'	03/05/98	ND	—	ND	ND	ND	ND	—	—	ND	—
AB-11	5-6'	03/05/98	3.9	—	ND	ND	ND	ND	—	—	ND	—
AB-12	5-6'	03/16/98	ND	—	ND	ND	ND	ND	—	—	ND	—
AB-13	5-6'	03/16/98	ND	—	ND	ND	ND	ND	—	—	ND	—
MP-1	7.5'	11/16/98	10	—	ND	0.007	0.013	ND	—	—	ND	—
MP-2	7'	11/16/98	270	—	ND	0.03	0.29	2.1	—	—	ND	—
MP-2	10.5'	11/16/98	140	—	0.08	ND	0.31	ND	—	—	0.15	—
MP-3	7.5'	11/16/98	230	—	ND	0.10	1.6	ND	—	—	0.28	—
MP-4	5'	11/16/98	120	—	ND	ND	0.35	ND	—	—	0.19	—
MP-4	10'	11/16/98	18	—	ND	0.013	0.070	0.086	—	—	ND	—
MP-5	6.5'	11/16/98	6.4	—	ND	ND	0.015	0.022	—	—	ND	—
MP-5	10.5'	11/16/98	220	—	ND	ND	1.4	3.0	—	—	0.52	—
MP-6	7'	11/16/98	ND	—	ND	ND	ND	ND	—	—	ND	—
MP-6	10'	11/16/98	240	—	ND	ND	1.6	4.2	—	—	0.92	ND
HA-1	5'	01/25/00	ND<0.50	—	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	—	—	ND<0.025	—
Comp-1	Composite	01/25/00	ND<0.50	—	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	—	8.04	ND<0.025	—

NOTES:
ppm = parts per million
TPH-G = total petroleum hydrocarbons as gasoline
TPH-D = total petroleum hydrocarbons as diesel
TOG = total oil and grease
MTBE = methyl tert butyl ether
— = not measured/not analyzed
ND = not detected at or above method detection limit

Table 2

Summary of Groundwater Levels and Chemical Analysis

Former Mobil Station 99-105

Well ID	Date	Top of Casing Elevation (feet)	Depth to Water (feet)	Groundwater Elevation (feet)	Product Thickness (feet)	TPH-G (ppb)	TPH-D (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Total Xylenes (ppb)	MTBE 8020 (ppb)	MTBE 8240 or 8260 (ppb)	TOG (ppb)	Lead (ppb)	Dissolved Oxygen (mg/L)
TW-1	01/04/96	—	6.00	—	0.00	ND	700	ND	ND	ND	ND	—	—	—	—	—
WW-1	01/04/96	—	3.00	—	0.00	ND	—	ND	ND	ND	ND	—	—	ND	—	—
MW-1	03/14/96	32.79	4.50	28.29	0.00	610	450	0.75	0.54	1.5	59	—	—	—	ND	—
MW-1	05/21/96	32.79	5.64	27.15	0.00	ND	ND	ND	ND	ND	ND	—	—	—	—	—
MW-1	08/13/96	32.79	9.76	23.03	0.00	ND	ND	ND	ND	ND	ND	—	—	—	—	—
MW-1	11/08/96	32.79	10.24	22.55	0.00	ND	ND	ND	0.92	ND	2.1	ND	—	—	—	—
MW-1	01/31/97	32.79	3.83	28.96	0.00	ND	ND	ND	0.85	ND	ND	2.6	ND	—	—	—
MW-1	04/22/97	32.79	9.14	23.65	0.00	ND	ND	ND	ND	ND	ND	ND	—	—	—	—
MW-1†	07/29/97	32.79	10.18	22.61	0.00	ND	60****	0.84	0.95	ND	1.6	36	—	—	—	—
MW-1†	10/09/97	32.79	10.46	22.33	0.00	ND	56****	ND	ND	ND	ND	ND	—	—	—	—
MW-1†	01/23/98	32.79	3.95	28.84	0.00	ND	33	ND	ND	ND	ND	ND	—	—	—	—
MW-1	04/22/98	32.79	5.33	27.46	0.00	ND	ND	ND	ND	ND	ND	ND	—	—	—	1.25
MW-1	07/21/98	32.79	9.17	23.62	0.00	ND	—	ND	ND	ND	ND	ND	—	—	—	4.34
MW-1	10/20/98	32.79	10.41	22.38	0.00	ND	—	ND	ND	ND	ND	ND	—	—	—	2.49
MW-1	01/27/99	32.79	5.51	27.28	0.00	ND	—	ND	ND	ND	ND	ND	—	—	—	5.25
MW-1	Destroyed during construction activities in April 1999															
MW-2	03/14/96	32.80	4.51	28.29	0.00	560	250	2.0	0.96	4.3	11	—	—	—	ND	—
MW-2	05/21/96	32.80	5.65	27.15	0.00	730	560	5.1	1.4	6.7	5.9	—	—	—	—	—
MW-2	08/13/96	32.80	10.14	22.66	0.00	490	380*	25	3.5	7.2	13	—	—	—	—	—
MW-2	11/08/96	32.80	10.70	22.10	0.00	520	160***	80	2.7	14	66	6.1	—	—	—	—
MW-2	01/31/97	32.80	3.84	28.96	0.00	74	130*	ND	ND	ND	ND	ND	—	—	—	—
MW-2	04/22/97	32.80	9.61	23.19	0.00	260	430	2.7	ND	2.5	ND	ND	—	—	—	—
MW-2†	07/29/97	32.80	10.53	22.27	0.00	320	150***	28	1.2	10	ND	ND	—	—	—	—
MW-2†	10/09/97	32.80	10.87	21.93	0.00	460	160*	43	2.8	2.0	2.6	2.6	—	—	—	—
MW-2†	01/23/98	32.80	3.75	29.05	0.00	ND	54	ND	ND	ND	ND	ND	—	—	—	—
MW-2	04/22/98	32.80	5.36	27.44	0.00	180	540	1.2	0.3	0.4	ND	ND	—	—	—	0.85
MW-2	07/21/98	32.80	9.55	23.25	0.00	80	—	8.9	2.1	0.6	2.5	ND	—	—	—	1.04
MW-2	10/20/98	32.80	10.75	22.05	0.00	50	—	0.8	0.7	ND	0.8	ND	—	—	—	1.12
MW-2	01/27/99	32.80	5.53	27.27	0.00	ND	—	0.6	ND	ND	ND	ND	—	—	—	0.99
MW-2	07/27/99	32.80	6.20	26.60	0.00	ND	—	ND	0.6	ND	ND	ND	—	—	—	0.30
MW-2	12/08/99	32.80	9.98	22.82	0.00	ND	—	1.2	0.43	ND	ND	ND	—	—	—	1.83
MW-2	Sep-00	39.34	Well resurveyed after repair by Alisto Engineering													
MW-2	10/25/00	39.34	11.30	28.04	0.00	<20	—	2.0	0.59	0.46	1.3	<0.30	—	—	—	0.35
MW-2	01/15/01	39.34	9.41	29.93	0.00	<20	—	<0.20	0.46	<0.20	<0.60	<0.30	—	—	—	—
MW-2	04/10/01	39.34	6.16	33.18	0.00	23	—	0.28	<0.20	<0.20	<0.60	<1.0	—	—	—	1.72
MW-2	07/24/01	39.34	10.70	28.64	0.00	<50	—	<0.20	0.93	<0.20	0.82	<0.30	—	—	—	3.39

Summary of Groundwater Levels and Chemical Analysis

Former Mobil Station 99-105

Well ID	Date	Top of Casing Elevation (feet)	Depth to Water (feet)	Groundwater Elevation (feet)	Product Thickness (feet)	TPH-G (ppb)	TPH-D (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Total Xylenes (ppb)	MTBE 8020 (ppb)	MTBE 8240 or 8260 (ppb)	TOG (ppb)	Lead (ppb)	Dissolved Oxygen (mg/L)
MW-3	03/14/96	32.80	9.55	23.25	0.00	4,200	1,200	220	30	140	520	—	—	ND	ND	—
MW-3	05/21/96	32.80	10.16	22.64	0.00	8,500	2,800	710	110	440	1,700	—	—	—	—	—
MW-3	08/13/96	32.80	11.18	21.62	0.00	5,000	2,300**	430	ND	200	360	—	—	—	—	—
MW-3	11/08/96	32.80	11.51	21.29	0.00	8,400	2,900*	890	82	790	1,700	73	ND	—	—	—
MW-3	01/31/97	32.80	7.90	24.90	0.00	16,000	7,500*	660	85	960	1,800	ND	—	—	—	—
MW-3	04/22/97	32.80	10.64	22.16	0.00	8,000	2,700	340	33	400	490	200	ND	—	—	—
MW-3†	07/29/97	32.80	11.36	21.44	0.00	9,800	2,300*	330	ND	530	530	ND	—	—	—	—
MW-3†	10/09/97	32.80	11.52	21.28	0.00	7,300	2,600*	300	ND	430	460	270	ND	—	—	—
MW-3†	01/23/98	32.80	7.50	25.30	0.00	6,100	2,300	190	23	330	320	ND	—	—	—	—
MW-3	04/22/98	32.80	6.81	25.99	0.00	4,900	2,600	140	12	250	230	ND	ND	—	—	0.45
MW-3	07/21/98	32.80	10.65	22.15	0.00	7,400	—	250	16	400	370	74	ND	—	—	0.78
MW-3	10/20/98	32.80	11.57	21.23	0.00	6,700	—	200	18	350	350	ND	ND	—	—	0.69
MW-3	01/27/99	32.80	9.11	23.69	0.00	3,100	—	74	4	94	39	13	—	—	—	1.20
MW-3	07/27/99	32.80	7.27	25.53	0.00	8,900	—	170	21	360	440	ND	—	—	—	0.33
MW-3	12/08/99	32.80	10.63	22.17	0.00	4,800	—	94	13	170	210	ND	—	—	—	1.12
MW-3	Sep-00	39.27	Well resurveyed after repair by Alisto Engineering													
MW-3	10/25/00	39.27	12.08	27.19	0.00	3,800	—	63	2.9	100	65	<50	<5	—	—	0.96
MW-3	01/15/01	39.27	10.29	28.98	0.00	4,300	—	76	9.5	47	76	<5.0	—	—	—	0.60
MW-3	04/10/01	39.27	10.11	29.16	0.00	2,700	—	55	4.4	100	37	<20	—	—	—	1.63
MW-3	07/24/01	39.27	11.57	27.70	0.00	3,100	—	110	6.9	110	81	<1.0	—	—	—	4.25
MW-4	03/14/96	31.50	4.92	26.58	0.00	12,000	3,500	2,200	140	880	2,000	—	—	—	ND	—
MW-4	05/21/96	31.50	8.60	22.90	0.00	11,000	4,200	1,700	ND	930	470	—	—	—	—	—
MW-4	08/13/96	31.50	10.02	21.50	0.02	—	—	—	—	—	—	—	—	—	—	—
MW-4	11/08/96	31.50	10.28	21.33	0.15	—	—	—	—	—	—	—	—	—	—	—
MW-4	01/31/97	31.50	7.88	23.62	0.00	23,000	8,200*	980	68	1,100	1,400	ND	—	—	—	—
MW-4	04/22/97	31.50	7.40	24.10	0.00	8,800	4,500	950	ND	610	130	ND	—	—	—	—
MW-4	07/29/97	31.50	9.85	21.74	0.12	—	—	—	—	—	—	—	—	—	—	—
MW-4	10/09/97	31.50	10.35	21.38	0.30	—	—	—	—	—	—	—	—	—	—	—
MW-4	01/23/98	31.50	4.68	27.51	0.92	—	—	—	—	—	—	—	—	—	—	—
MW-4	04/22/98	31.50	6.39	25.22	0.14	—	—	—	—	—	—	—	—	—	—	—
MW-4	07/21/98	31.50	7.10	24.55	0.20	—	—	—	—	—	—	—	—	—	—	—
MW-4	10/20/98	31.50	9.03	22.60	0.17	—	—	—	—	—	—	—	—	—	—	—
MW-4	01/27/99	31.50	5.37	26.18	0.07	—	—	—	—	—	—	—	—	—	—	—
MW-4	Destroyed during construction activities in April 1999															
MW-5	Sep-00	39.18	Well surveyed after installation by Alisto Engineering													
MW-5	10/25/00	39.18	10.92	28.26	0.00	2,500	—	79	3.8	66	<20	<20	—	—	—	0.50
MW-5	01/15/01	39.18	8.32	30.86	0.00	3,900	—	120	7.9	280	52	<5.0	—	—	—	0.69
MW-5	04/10/01	39.18	7.21	31.97	0.00	8,000	—	280	4.4	410	100	<50	<5	—	—	1.90

Summary of Groundwater Levels and Chemical Analysis

Former Mobil Station 99-105

Well ID	Date	Top of Casing Elevation (feet)	Depth to Water (feet)	Groundwater Elevation (feet)	Product Thickness (feet)	TPH-G (ppb)	TPH-D (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Total Xylenes (ppb)	MTBE 8020 (ppb)	MTBE 8240 or 8260 (ppb)	TOG (ppb)	Lead (ppb)	Dissolved Oxygen (mg/L)
MW-5	07/24/01	39.18	9.54	29.64	0.00	7,000	—	360	7.4	380	67	<1.0	—	—	—	5.91
AB-1	03/05/98	—	—	—	—	1,600	—	31	5.3	79	130	ND	—	—	—	—
AB-2	03/05/98	—	—	—	—	ND	—	ND	2.9	0.9	5.7	ND	—	—	—	—
AB-3	03/05/98	—	—	—	—	6,800	—	680	100	1,500	2,300	230	—	—	—	—
AB-4	03/05/98	—	—	—	—	8,500	—	240	ND	260	720	ND	—	—	—	—
AB-6	03/05/98	—	—	—	—	12,000	—	350	ND	310	100	ND	—	—	—	—
AB-9	03/05/98	—	—	—	—	1,000	—	57	12	44	93	ND	—	—	—	—
AB-10	03/05/98	—	—	—	—	200	—	3.0	1.2	3.2	2.8	ND	—	—	—	—
AB-11	03/05/98	—	—	—	—	ND	—	ND	ND	ND	ND	ND	—	—	—	—
AB-12	03/05/98	—	—	—	—	8,800	—	660	50	630	940	37	—	—	—	—
AB-13	03/05/98	—	—	—	—	210	—	11	0.8	10	15	ND	—	—	—	—
HA-1	01/25/00	—	—	—	—	ND<500	—	ND<0.3	ND<0.3	ND<0.3	ND<0.6	ND<5.0	—	—	—	—

NOTES:

ppb = parts per billion
mg/L = milligrams per liter
TPH-G = total petroleum hydrocarbons as gasoline
TPH-D = total petroleum hydrocarbons as diesel
TOG = total oil and grease
MTBE = methyl tert-butyl ether

— = not measured/not analyzed
ND = not detected at or above method detection limit
* = diesel and unidentified hydrocarbons <C15
** = diesel and unidentified hydrocarbons <C15>C25
*** = diesel and unidentified hydrocarbons >C20
**** = unidentified hydrocarbons >C18

† = well sampled using no-purge method

Table 3

DUAL PHASE VAPOR EXTRACTION RESPONSE AND ANALYTICAL RESULTS

Former Mobil Station 99-105 11/19/98

Time	Inlet Blower Vacuum (Inches of H20) At Extraction System	Observation Wells: Wellhead Vacuum (Inches of H20)									Well Hydrocarbon Concentration (ppmv)		COMMENTS
		MW-1	MW-2	MW-3	MP-1	MP-2	MP-3	MP-4	MP-5	MP-6	MW-3	MW-4	
8:30	354.12	*	*	*	*	*	*	*	*	*	*	2430	* = Indicates readings not taken.
9:00	354.12	0.00	0.00	0.00	0.02	0.02	0.01	0.01	0.02	0.01	*	4780	
9:30	354.12	0.01	0.00	0.01	0.02	0.02	0.02	0.01	0.02	0.01	*	6520	
10:00	333.69	0.01	0.01	0.02	0.02	0.01	0.02	0.00	0.02	0.01	*	8530	
10:30	340.50	0.01	0.01	0.02	0.03	0.02	0.02	0.00	0.02	0.01	*	8590	
11:00	333.69	0.01	0.01	0.03	0.03	0.02	0.02	0.02	0.02	0.02	*	7730	
11:30	333.69	0.02	0.02	0.04	0.03	0.01	0.02	0.04	0.02	0.02	*	7240	
12:00	354.12	0.02	0.02	0.03	0.035	0.01	0.02	0.04	0.02	0.02	*	7350	
12:30	340.50	0.02	0.01	0.03	0.03	0.01	0.02	0.04	0.02	0.015	*	7870	
13:00	340.50	0.02	0.01	*	0.08	0.00	0.03	0.01	0.02	0.015	1290	8030	
13:30	333.69	0.02	0.01	*	0.08	0.00	0.03	0.01	0.02	0.015	1130	6560	
14:00	326.88	0.02	0.01	0.01	0.08	0.00	0.03	0.01	0.02	0.015	*	6440	
14:30	320.07	0.01	0.02	0.02	0.04	0.02	0.02	0.01	0.02	0.01	*	7360	
15:00	320.07	0.01	0.01	0.02	0.04	0.02	0.02	0.01	0.02	0.01	*	8060	
15:15	320.07	*	*	*	*	*	*	*	*	*	*	7950	

ppmv = parts per million by volume

FIGURES

SOURCE:

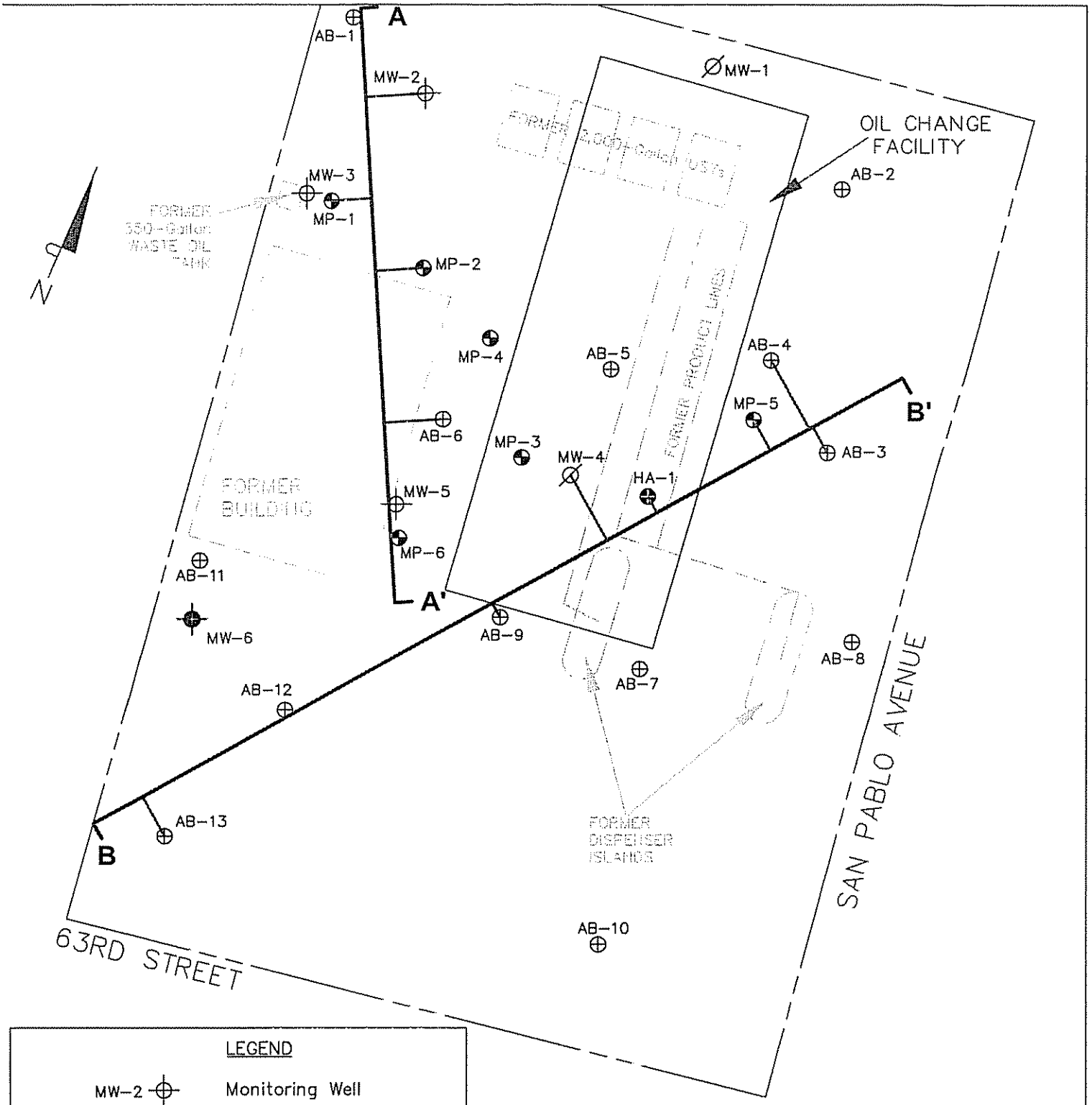
United States Geological Survey
7.5 Minute Topographic Maps:
Oakland West Quadrangle

VICINITY MAP

Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

TRC

FIGURE 1



LEGEND

MW-2 ⊕	Monitoring Well
MW-4 ∅	Abandoned Well
AB-10 ⊕	Soil Boring
HA-1 ⊕	Hand Auger Boring
MP-6 ⊕	Former Monitoring Point
MW-6 ⊕	Proposed Monitoring Well
----------	Property Line
A — A'	Cross Section Line

SCALE (FEET)

0 20

Source: ALISTO Engineering

SITE PLAN

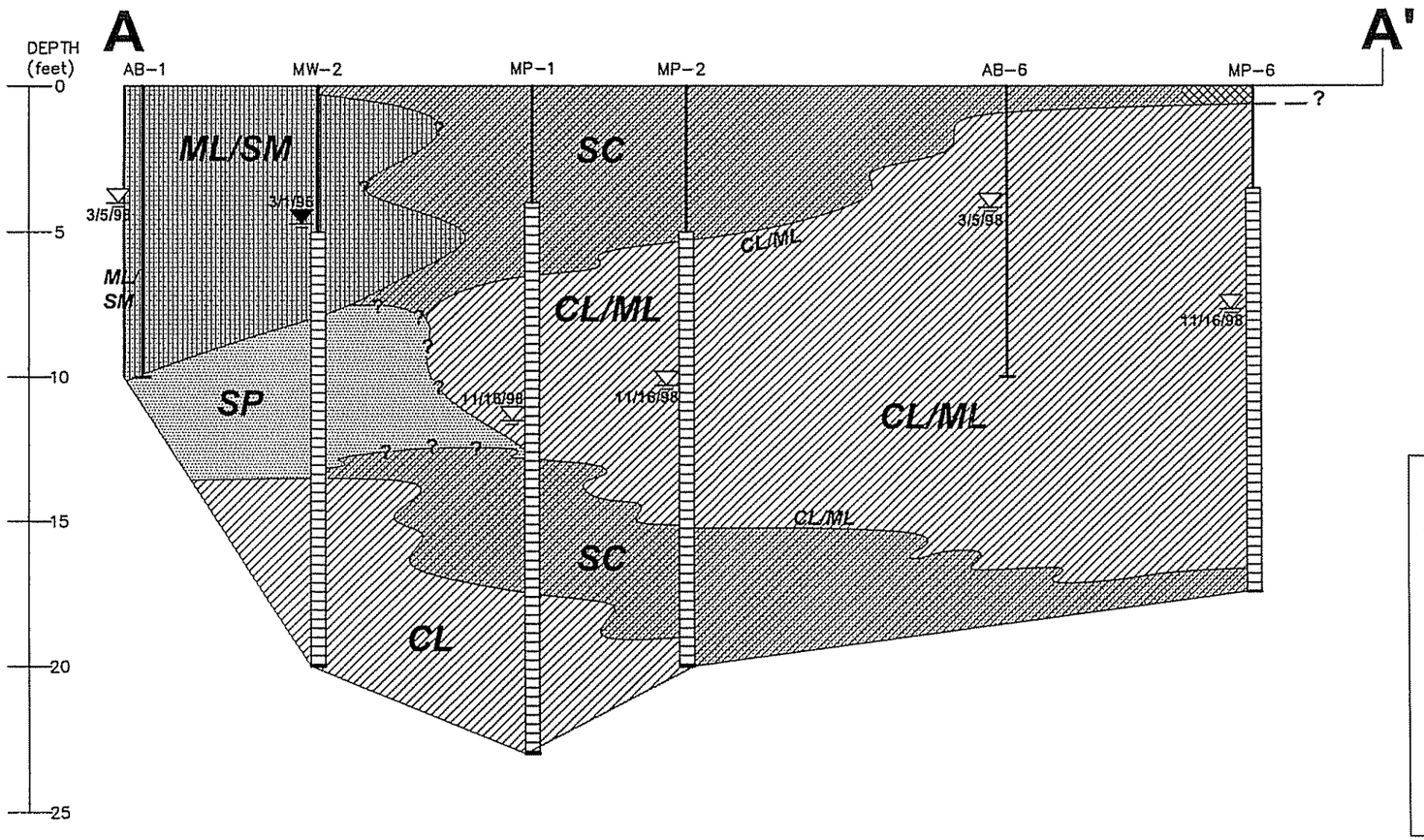
Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

TRC

FIGURE 2

← APPROXIMATE NORTH

APPROXIMATE SOUTH →



LEGEND

CL	Inorganic clays of low to medium plasticity		Blank
ML	Inorganic silts		Screened interval
SC	Clayey sands		Total boring depth
SM	Silty sands	11/16/98	Groundwater level as measured on stated date
SP	Poorly graded sands		Stabilized groundwater level on 3/1/96
	Fill		

SCALE (FEET) 0 5 10

Source: ALISTO Engineering

5 SCALE (feet) 5

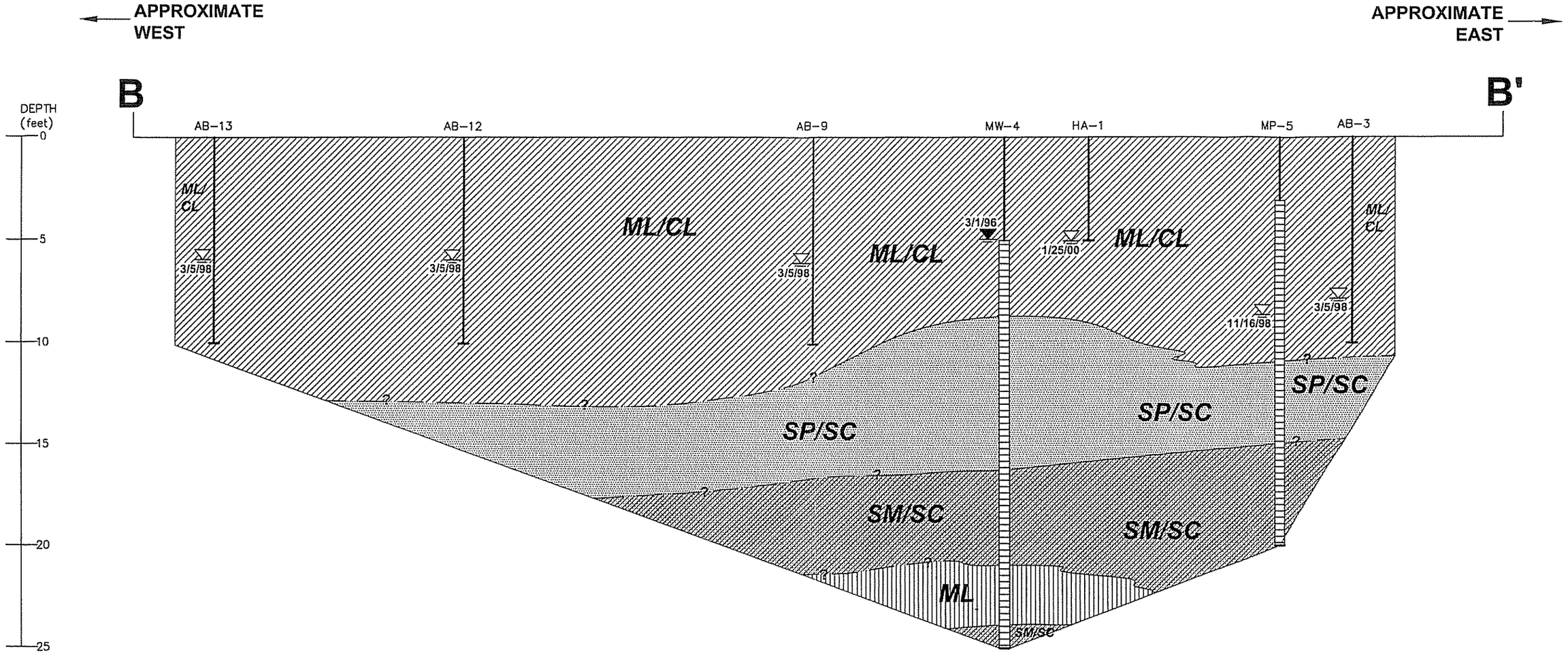
VERTICAL EXAGGERATION = 2:1

NOTE: See Figure 2 for location of cross section.

CROSS SECTION A-A'

Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

TRC | **FIGURE 3**



LEGEND

CL	Inorganic clays of low to medium plasticity		Blank
ML	Inorganic silts		Screened interval
SC	Clayey sands		Total boring depth
SM	Silty sands	3/5/98	Groundwater level as measured on stated date
SP	Poorly graded sands		Stabilized groundwater level on 3/1/96
	Fill		

5 SCALE (feet)
5
VERTICAL EXAGGERATION = 2:1

SCALE (FEET)
0 5 10

Source: ALISTO Engineering

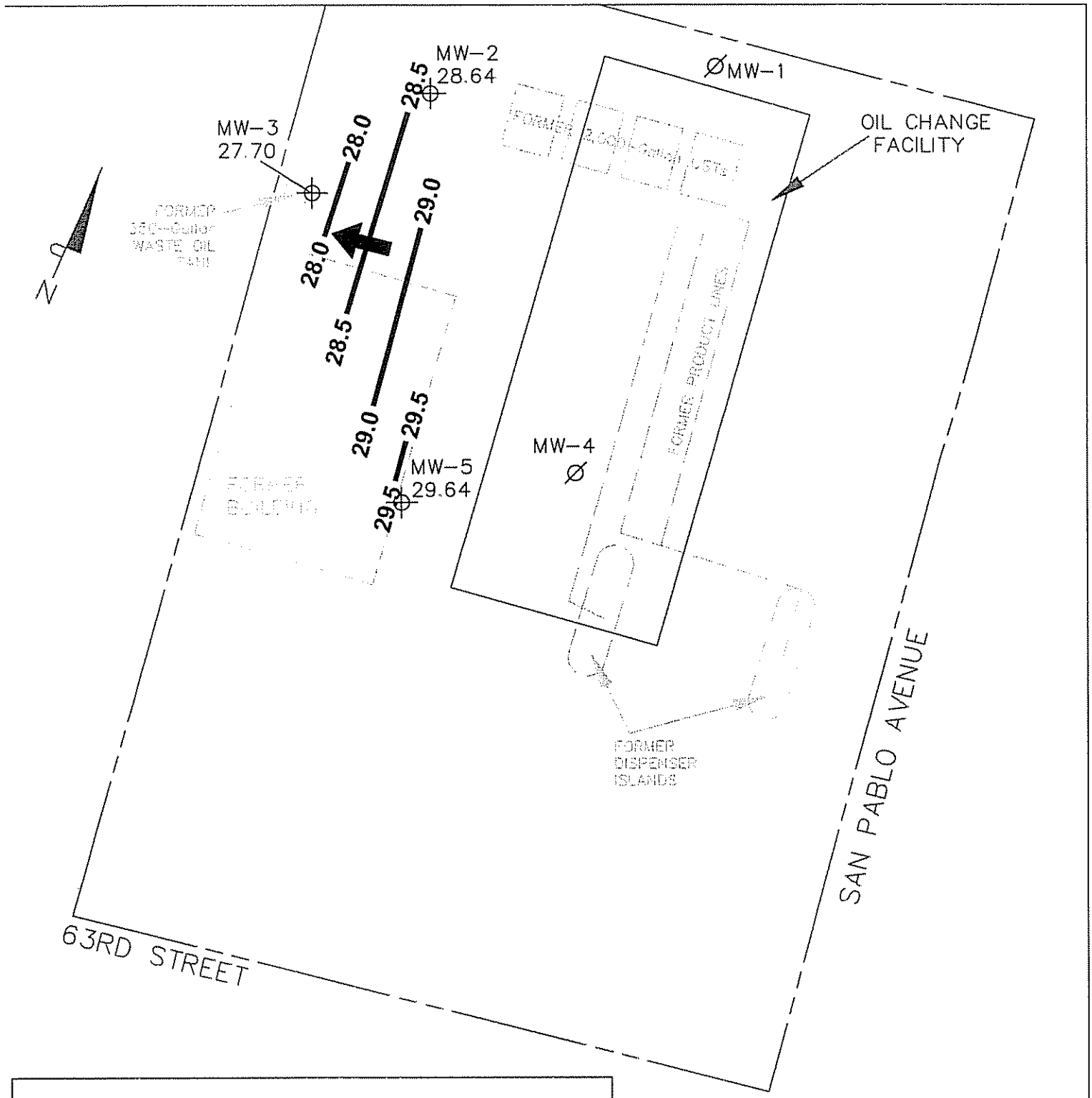
NOTE: See Figure 2 for location of cross section.

CROSS SECTION B-B'

Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

TRC

FIGURE 4



LEGEND

MW-2 28.64 — Monitoring Well Showing Groundwater Elevation (Feet Relative to Mean Sea Level – NGVD-1929)

Ø — Destroyed Well

29.0 — Groundwater Elevation Contour Line

General Direction of Groundwater Gradient

NOTES: Contour lines are interpretive based on fluid-level measurements taken on July 24, 2001. Contour interval = 0.5 foot.

SCALE (FEET)

0 20

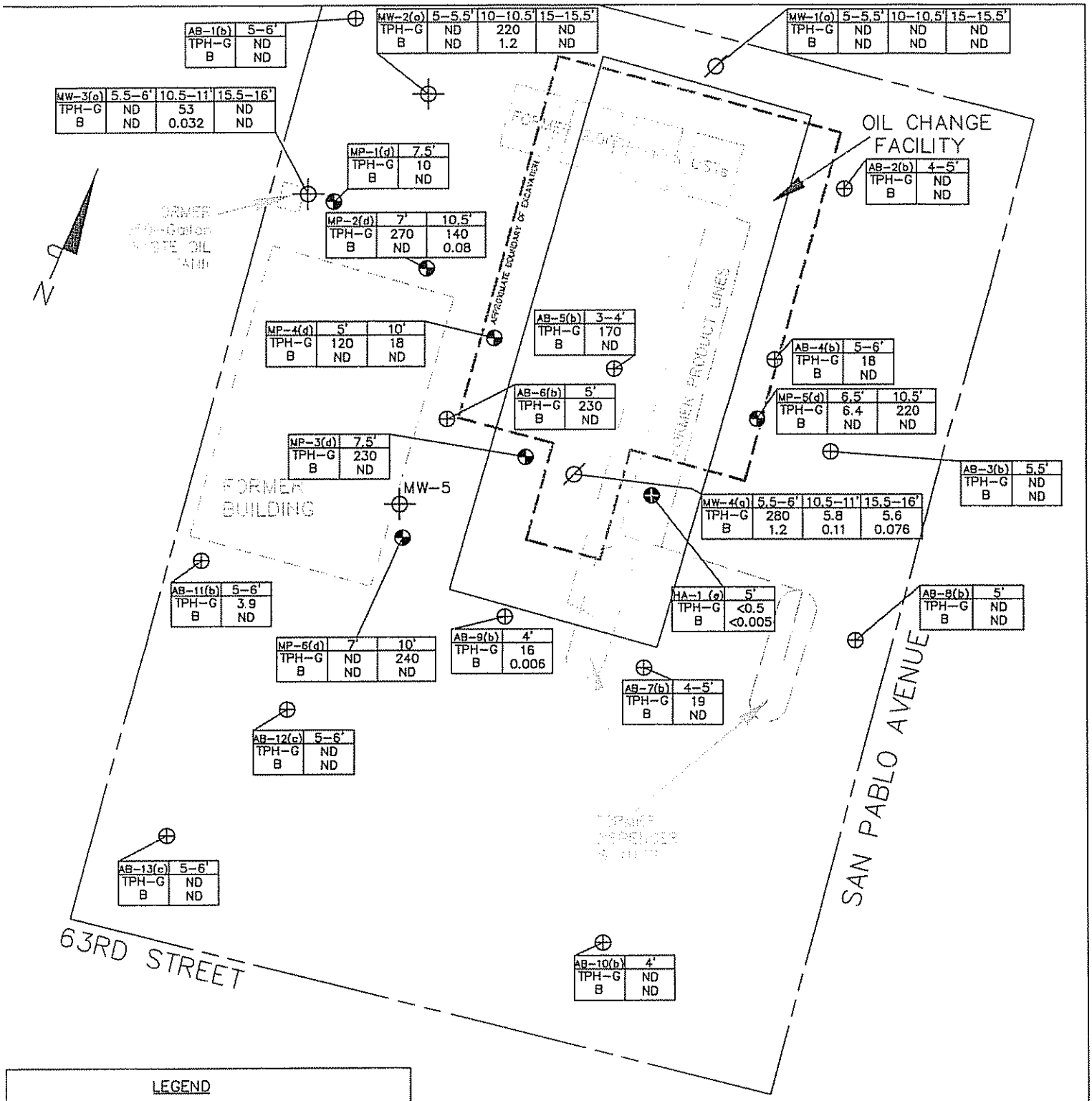
Source: ALISTO Engineering

GROUNDWATER ELEVATION CONTOUR MAP
July 24, 2001

Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

TRC

FIGURE 5

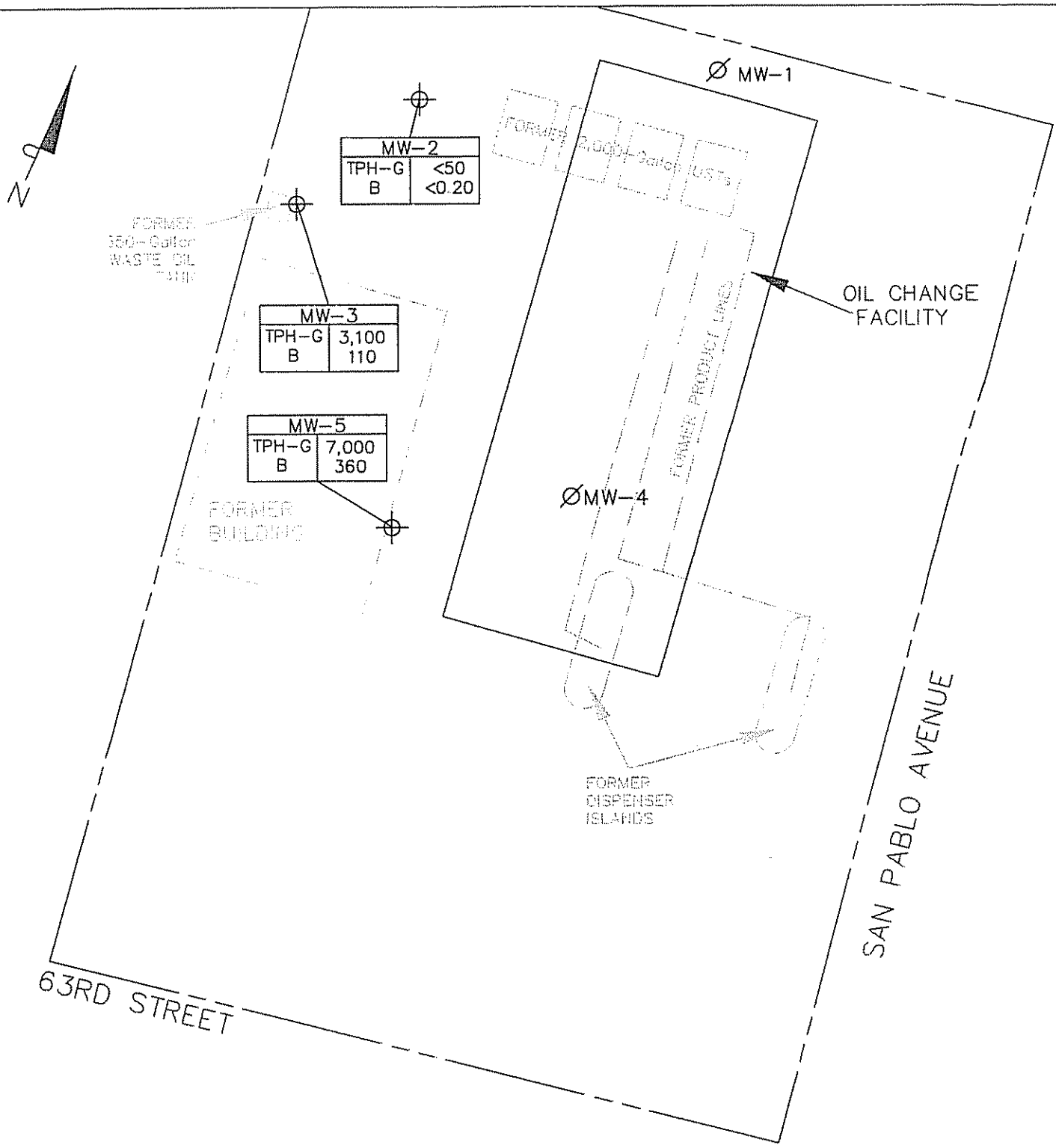


HISTORICAL HYDROCARBON CONCENTRATIONS IN SOIL

Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

TRC

FIGURE 6



LEGEND

MW-3
TPH-G 3,100
B 110

Monitoring Well Showing Dissolved-Phase Hydrocarbon Concentrations for TPH-G and Benzene (ppb)

SCALE (FEET)
0 20

Source: ALISTO Engineering

NOTES:
Hydrocarbon concentrations are based on results of laboratory samples collected July 24, 2001. TPH-G = total petroleum hydrocarbons as gasoline; B = benzene; ppb = parts per billion; < = not detected at or above the stated method detection limit.

HYDROCARBON CONCENTRATIONS IN GROUNDWATER
July 24, 2001

Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

TRC | **FIGURE 7**

APPENDIX A
Alameda County Health Care Services Letter Dated September 7, 2000

TRC

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

September 7, 2001
StID 1683/ RO0000445

Mr. Gene Ortega
ExxonMobil Remediation Services
2400 San Ramon Valley Blvd.
San Ramon, CA 94583

Re: Former Mobil Station 99-105, 6301 San Pablo Ave., Oakland CA 94608

Dear Mr. Ortega:

Our office has received and reviewed the Third Quarter 2001 Progress Report for the referenced former Mobil station. At this time, in order to determine if site closure is warranted, our office requests that a Site Conceptual Model (SCM) be performed. This model should include a brief site history, historical site investigation results, monitoring well logs, cross-sectional diagrams, a sensitive receptor and utility survey and provide a work plan to determine the extent of the petroleum hydrocarbon plume. In addition, please include similar time, concentration, groundwater elevation plots for MW-5 for benzene and for gasoline in the existing wells.

Please submit your SCM to our office within 45 days or no later than October 25, 2001.

You may contact me at (510) 567-6765 if you have any questions.

Sincerely,

Barney M. Chan

Barney M. Chan
Hazardous Materials Specialist

C: B. Chan, files
Ms. Connie Lamb, 200 Dorado Terrace, San Francisco, CA 94112
Mr. J. Scheiner, TRC, 5052 Commercial Circle, Concord, CA 94520

SCM6301SanPablo

APPENDIX B
Soil Borings and Monitoring Well Logs

TRC

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

LOG OF BORING MW-1

SEE SITE PLAN

ALISTO PROJECT NO: 10-309-01 DATE DRILLED: 03/01/96

CLIENT: Mobil Oil Corporation

LOCATION: 6301 San Pablo Avenue, Oakland, California

DRILLING METHOD: Hollow-Stem Auger (10")

DRILLING COMPANY: V & W Drilling CASING ELEVATION: 32.79 'MSL

LOGGED BY: C. Ladd APPROVED BY: Al Sevilla

BLOWS/6 IN.	PID VALUES	WELL DIAGRAM	DEPTH feet	SAMPLES	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION
							2.5" asphalt
						ML	
10,12,14			5				sandy SILT: light brown mottled Fe oxide stain, damp to moist, very stiff; fine-grained sand.
10,11,13			10				Same: reddish brown, damp to moist, very stiff; very fine-grained sand; some fill gravels (pea gravel)
						SM	
9,12,13			15				silty SAND: tan occasional black mottling, damp to moist, medium dense; fine-grained sand.
						ML	clayey SILT: reddish brown mottled tan, damp, very stiff; minor fines; occasional rootlets.
10,12,15			20				
							Stabilized water level measured on March 14, 1996.
			25				
			30				

WELL DIAGRAM: 4" Sch. 40 PVC; Neat Cement; 4" 0.010" Slotted PVC Screen; #12 Sand; Bentonite Seal

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

LOG OF BORING MW-2

SEE SITE PLAN

ALISTO PROJECT NO: 10-309-01 DATE DRILLED: 03/01/96

CLIENT: Mobil Oil Corporation

LOCATION: 6301 San Pablo Avenue, Oakland, California

DRILLING METHOD: Hollow-Stem Auger (10")

DRILLING COMPANY: V & W Drilling CASING ELEVATION: 32.80 'MSL

LOGGED BY: C. Ladd APPROVED BY: Al Sevilla

BLOWS/6 IN.	PID VALUES	WELL DIAGRAM	DEPTH feet	SAMPLES	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION
							2.5" asphalt
14,15,16			5			SM	silty SAND: reddish brown mottled blue green, damp to moist, dense; fine- to medium-grained sand; occasional pea gravels.
5,7,10			10				sandy SILT: brownish tan, damp to moist, medium stiff; fine-grained sand; some Fe oxide stain
17,35,35			15			SP	gravelly SAND: brown, moist, very dense; fine- to medium-grained sand; gravels to 3/4"-diameter
11,17,22			20			CL	silty CLAY: reddish brown mottled tan, damp, hard; some rootlets and Fe oxide staining
			25				Stabilized water level measured on March 14, 1996.
			30				

WELL DIAGRAM: 4" Sch. 40 PVC; Neat Cement; Bentonite Seal; #12 Sand; 4" 0.010" Slotted PVC Screen

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

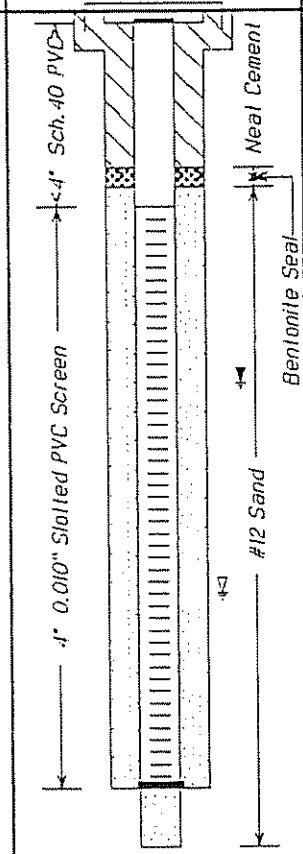
LOG OF BORING MW-3

SEE SITE PLAN

ALISTO PROJECT NO: 10-309-01 DATE DRILLED: 03/01/96
CLIENT: Mobil Oil Corporation
LOCATION: 6301 San Pablo Avenue, Oakland, California
DRILLING METHOD: Hollow-Stem Auger (10")
DRILLING COMPANY: V & W Drilling CASING ELEVATION: 32.80 'MSL
LOGGED BY: C. Ladd APPROVED BY: Al Sevilla

BLOWS/6 IN.	PID VALUES	DEPTH feet	SAMPLES	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION
					SM	Native soil with some pea gravel
						silty SAND: dark brown, damp; some pea gravel. Observed from cuttings
27.50		5			CL	silty CLAY: tan. damp. hard; minor pea gravel and sand.
4,10,24		10			SM	silty SAND: grey, damp to moist, dense; fine-grained sand; Fe oxide stain to approximately 5%; 3% gravels to 1/4"-diameter
17.23.24		15			SP	gravelly SAND: reddish brown with Fe oxide stain, wet. dense; medium-grained sand; subrounded gravels to 1"-diameter
					SM	sandy SILT: reddish brown. damp to moist, hard; fine-grained sand; Fe oxide stain.
13,21.45		20			SP	gravelly SAND: reddish brown, wet, very dense; medium-grained sand; subrounded gravels to 1"-diameter; Fe oxide stain.
		25				Stabilized water level measured on March 14, 1996
		30				

WELL DIAGRAM



ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

LOG OF BORING MW-4

SEE SITE PLAN

ALISTO PROJECT NO: 10-309-01 DATE DRILLED: 03/01/96

CLIENT: Mobil Oil Corporation

LOCATION: 6301 San Pablo Avenue, Oakland, California

DRILLING METHOD: Hollow-Stem Auger (10")

DRILLING COMPANY: V & W Drilling CASING ELEVATION: 31.50 'MSL

LOGGED BY: C. Ladd APPROVED BY: Al Sevilla

BLOWS/6 IN.	PID VALUES	WELL DIAGRAM	DEPTH feet	SAMPLES	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION
							2.5" aspnalt
10.15.21		4" Sch.40 PVC; Neat Cement; Bentonite Seal; 4" 0.010" Slotted PVC Screen; #12 Sand	5			CL	CLAY: gray, dry, hard.
7,10,10			10			SC	clayey SAND: gray mottled brown, damp, medium dense; fine- to medium-grained sand; some silt.
7,23,25			15				Same: wet to saturated lense at 15 feet.
						SM	silty SAND: reddish brown mottled with some clay, wet, dense; fine-grained sand.
5,7,13			20				Same: wet to saturated lense at 19.7 feet.
						ML	clayey SILT: reddish brown mottled tan, damp to moist, very stiff; some fines.
7,12,25			25			SC	clayey SAND: reddish brown mottled tan, moist, dense; fine-grained sand.
			30				Stabilized water level measured on March 14, 1996.

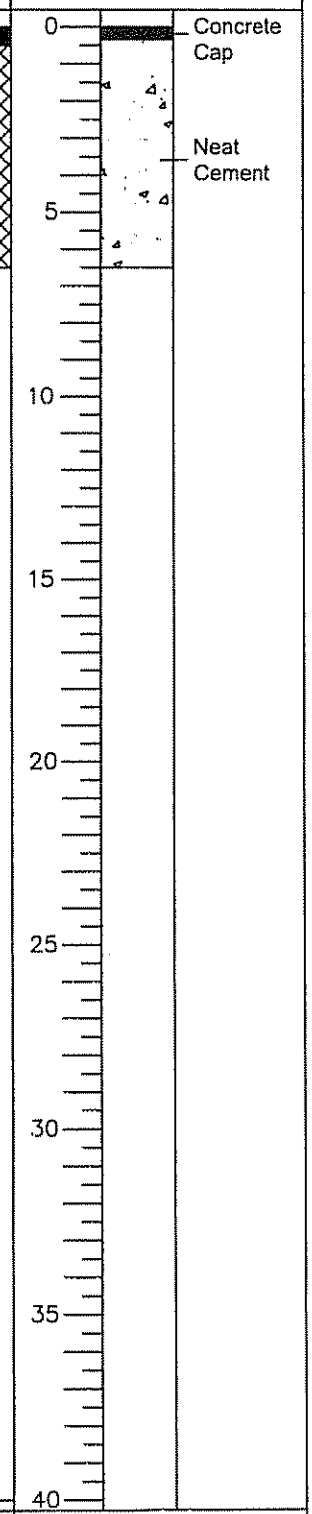
PROJECT NO.: 41-0123
LOCATION: Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

DATE DRILLED: 1/25/00
LOGGED BY: S. Pasek
APPROVED BY: T. Walker, RG
DRILLING CO.: N/A

DRILLING METHOD: Hand Auger
SAMPLER TYPE: Slide Hammer
TOTAL DEPTH: 6.5 feet
DEPTH TO WATER: 5.0 feet

BLOWS PER 6 INCHES	PID / FID (ppm)	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY
	0			0	6 inches concrete. Hand-augered to 6.5 feet.	Concrete	
					FILL: Silty sand with gravel, light brown, loose, dry.	Fill	
	0						
	0	ND		5	- @ 5': becomes wet.		
	0						
				10			
				15		CL	
				20		ML	
				25			
				30			
				35			
				40			

BORING BACKFILL DETAIL



ALTON GEOSCIENCE
Northern California

LOG OF EXPLORATORY BORING

HA-1
PAGE 1 OF 1

PROJECT NO : 41-0123

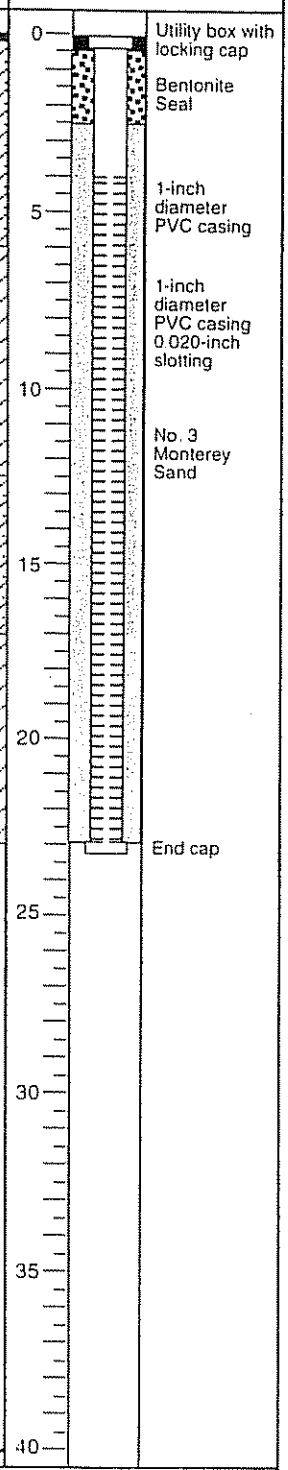
LOCATION: Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

DATE DRILLED: 11/16/98
LOGGED BY: K. Racke
APPROVED BY: M. Katen, RG
DRILLING CO : V&W Drilling

DRILLING METHOD:1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 1-inch Macro-Core Sampler
TOTAL DEPTH: 23.0 feet DEPTH TO WATER: 10.8 feet

BLOWS PER 6 INCHES	CGI (ppm)	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY
				0	3 inches of concrete CLAYEY SAND: dark grayish-brown, hard. moist. medium plasticity	SC	
	100			5			
	150	10			SANDY CLAY: dark gray. firm, moist. medium plasticity, moderate petroleum odor	CL	
	700				CLAY: olive gray. firm. moist. medium plasticity. strong petroleum odor		
	80			10			
					CLAYEY SAND: olve gray. weak cementation. moist, fine-grained. strong hydrocarbon odor	SC	
	30			15	Yellowish brown. moderate cementation, moist. medium-grained. fine gravels. slight hydrocarbon odor		
					SANDY CLAY: yellowish brown. firm consistency. fine gravels. no petroleum odor	CL	
	40			20			
	10						
				25			
				30			
				35			
				40			

MONITORING POINT CONSTRUCTION DETAIL



ALTON GEOSCIENCE
Livermore, California

LOG OF EXPLORATORY BORING

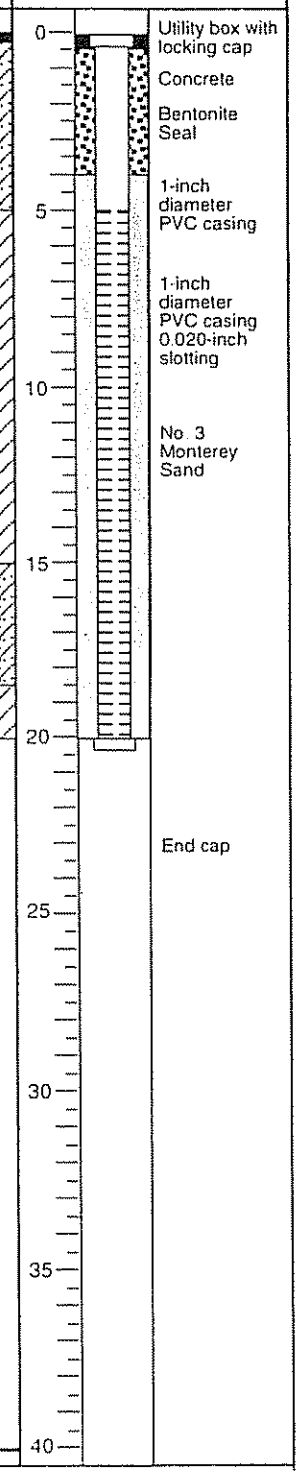
MP-1

PROJECT NO.: 41-0123	DATE DRILLED: 11/16/98
LOCATION: Former Mobil Station 99-105	LOGGED BY: K. Racke
6301 San Pablo Avenue	APPROVED BY: M. Katen, RG
Oakland, California	DRILLING CO.: V&W Drilling

DRILLING METHOD: 1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 1-inch Macro-Core Sampler
TOTAL DEPTH: 20.0 feet DEPTH TO WATER: 10.2 feet

BLOWS PER 6 INCHES	CGI (ppm)	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY
				0	Hand augured to 5 feet. 3 inches of concrete CLAYEY SAND: dark grayish-brown. hard, moist. medium plasticity	SC	
				5	SANDY CLAY: dark gray. firm, moist, medium plasticity, moderate petroleum odor	CL	
	100	270			Olive gray.		
	150	140		10			
				15	CLAYEY SAND: yellowish brown. weak cementation. moist. medium-grained, slight petroleum odor	SC	
	0						
					SANDY CLAY: reddish brown. soft, moist. low plasticity, no petroleum odor.	CL	
				20			
				25			
				30			
				35			
				40			

MONITORING POINT CONSTRUCTION DETAIL



ALTON GEOSCIENCE
Livermore, California

LOG OF EXPLORATORY BORING

MP-2

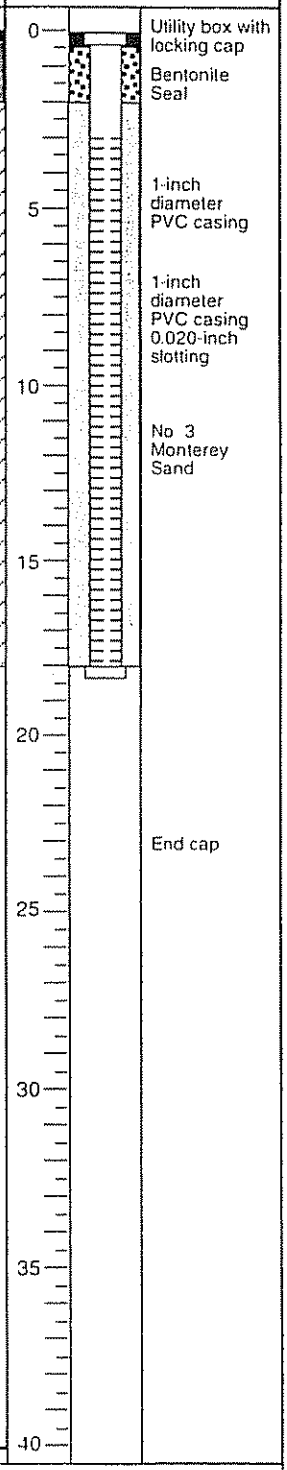
PROJECT NO.: 41-0123
LOCATION: Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

DATE DRILLED: 11/16/98
LOGGED BY: K. Racke
APPROVED BY: M. Katen, RG
DRILLING CO.: V&W Drilling

DRILLING METHOD: 1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 1-inch Macro-Core Sampler
TOTAL DEPTH: 18.0 feet DEPTH TO WATER: 8.5 feet

BLOWS PER 6 INCHES	CGI (ppm)	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY
				0	Hand augured to 5 feet Gravelly fill	Fill	
	50			5	CLAY: dark gray. hard. moist. medium plasticity, moderate petroleum odor.	CL	
		230			Very hard. strong petroleum odor		
	20			10	Fine gravels.		
	25 80			15	GRAVELLY CLAY: yellowish brown. firm, medium-grained sand		
					SANDY CLAY: yellowish brown.		
				20			
				25			
				30			
				35			
				40			

MONITORING POINT CONSTRUCTION DETAIL



ALTON GEOSCIENCE
Livermore, California

LOG OF EXPLORATORY BORING

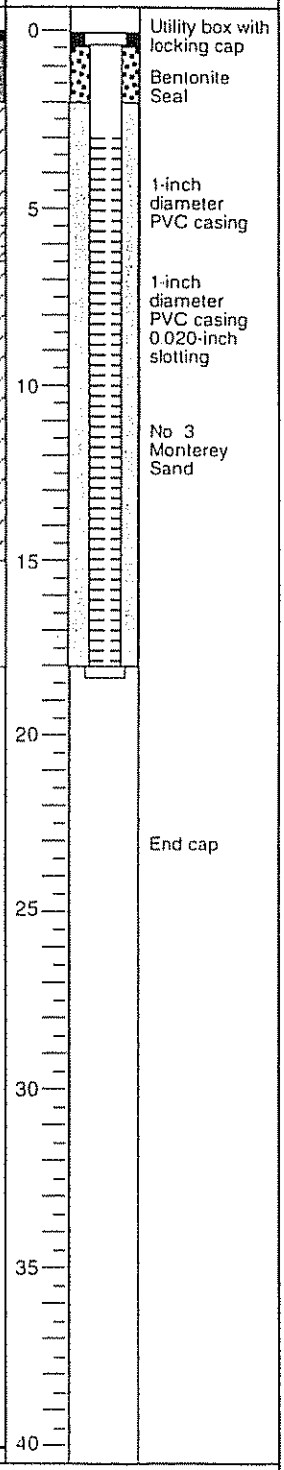
MP-3
PAGE 1 OF 1

PROJECT NO.: 41-0123	DATE DRILLED: 11/16/98
LOCATION: Former Mobil Station 99-105	LOGGED BY: K. Racke
6301 San Pablo Avenue	APPROVED BY: M. Katen, RG
Oakland, California	DRILLING CO.: V&W Drilling

DRILLING METHOD: 1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 1-inch Macro-Core Sampler
TOTAL DEPTH: 18.0 feet DEPTH TO WATER: 8 8 feet

BLOWS PER 6 INCHES	CGI (ppm)	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY
				0	Hand augured to 5 feet. Gravelly fill	Fill	
					CLAY: dark gray, hard, moist. medium plasticity, moderate petroleum odor	CL	
	400	120		5	CLAYEY SAND: olive gray. soft. moist, fine-grained, strong hydrocarbon odor.	SC	
	375				SANDY CLAY: olive gray, firm. moist. medium plasticity	CL	
		18		10	Fine gravels		
	200						
	70			15	SAND: brownish yellow. weak cementation. moist, medium-grained. no petroleum odor.	SW	
				20			
				25			
				30			
				35			
				40			

MONITORING POINT CONSTRUCTION DETAIL



ALTON GEOSCIENCE
Livermore, California

LOG OF EXPLORATORY BORING

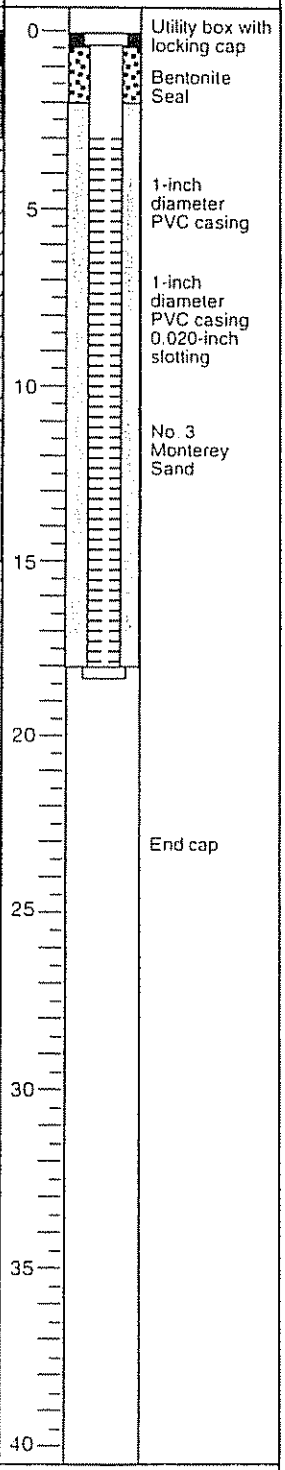
MP-4

PROJECT NO.: 41-0123	DATE DRILLED: 11/16/98
LOCATION: Former Mobil Station 99-105	LOGGED BY: K. Racke
6301 San Pablo Avenue	APPROVED BY: M. Katen, RG
Oakland, California	DRILLING CO.: V&W Drilling

DRILLING METHOD: 1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 1-inch Macro-Core Sampler
TOTAL DEPTH: 18.0 feet DEPTH TO WATER: 8.2 feet

BLOWS PER 6 INCHES	CGI (ppm)	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY
				0	Hand augured to 5 feet. 1 foot of concrete. Gravelly fill.	Fill	
	200	64		5	SANDY CLAY: dark gray, firm, moist, medium plasticity.	CL	
	800	220		10	SAND: dark gray, weak cementation, moist. fine-grained. poorly graded. moderate hydrocarbon odor.	SP	
	45			15	CLAYEY SAND: brownish yellow. weak cementation. moist. well graded with fine gravels. no hydrocarbon odor	SC	
				20			
				25			
				30			
				35			
				40			

MONITORING POINT CONSTRUCTION DETAIL



ALTON GEOSCIENCE
Livermore, California

LOG OF EXPLORATORY BORING

MP-5
PAGE 1 OF 1

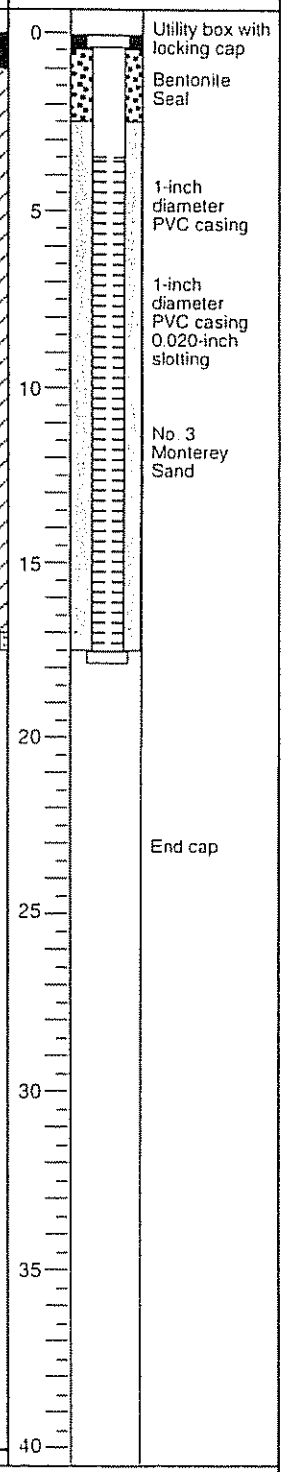
PROJECT NO : 41-0123
LOCATION: Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

DATE DRILLED: 11/16/98
LOGGED BY: K. Racke
APPROVED BY: M. Katen, RG
DRILLING CO.: V&W Drilling

DRILLING METHOD:1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 1-inch Macro-Core Sampler
TOTAL DEPTH: 17.5 feet DEPTH TO WATER: 7.95 feet

BLOWS PER 6 INCHES	CGI (ppm)	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY
				0	Hand augured to 5 feet. 6 inches asphalt Gravelly fill to 1 foot	Fill	
					GRAVELLY CLAY: dark grayish brown, firm, moist, medium plasticity. no petroleum odor	CL	
	0	ND		5			
	110	240		10			
	0			15	SILTY SAND: reddish brown. moderate cementation, moist. fine gravels. no petroleum odor.	SM	
				20			
				25			
				30			
				35			
				40			

MONITORING POINT CONSTRUCTION DETAIL



ALTON GEOSCIENCE
Livermore, California

LOG OF EXPLORATORY BORING

MP-6
PAGE 1 OF 1

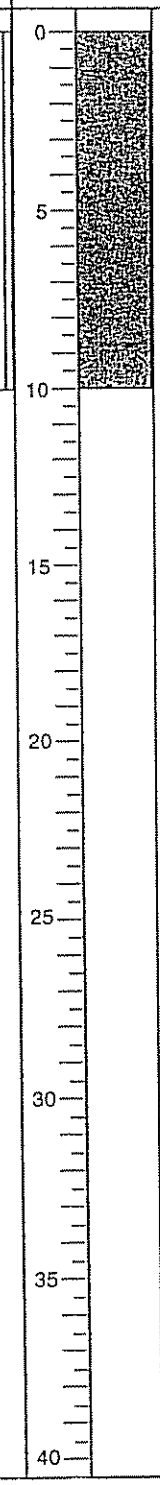
PROJECT NO.: 41-0123
LOCATION: Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

DATE DRILLED: 3/5/98
LOGGED BY: J. Madden
APPROVED BY: M. Katen, RG
DRILLING CO.: V & W Drilling

DRILLING METHOD: 1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 4-inch Macro-Core Sampler
TOTAL DEPTH: 10.0 feet DEPTH TO WATER: 4.0 feet

BLOWS PER 6 INCHES	TLV	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY
	0	ND		0	CLAYEY SILT WITH GRAVEL: brownish yellow, moist, low plasticity	ML	
	20			5			
				10			
				15			
				20			
				25			
				30			
				35			
				40			

BORING DETAIL



ALTON GEOSCIENCE
Livermore, California

LOG OF EXPLORATORY BORING

AB-1
PAGE 1 OF 1

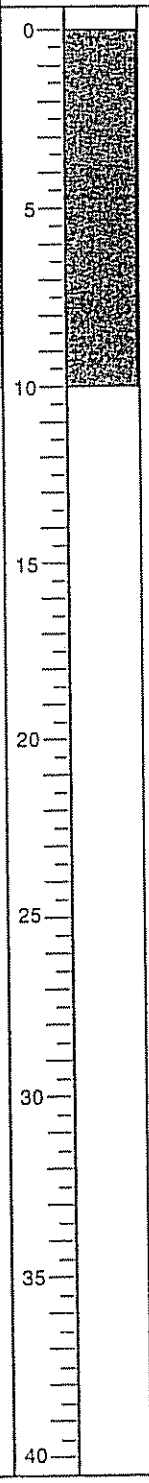
41-0123/99-105 Boring Log AB-1

PROJECT NO.: 41-0123	DATE DRILLED: 3/5/98
LOCATION: Former Mobil Station 99-105	LOGGED BY: J. Madden
6301 San Pablo Avenue	APPROVED BY: M. Katen, RG
Oakland, California	DRILLING CO.: V & W Drilling

DRILLING METHOD: 1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 4-inch Macro-Core Sampler
TOTAL DEPTH: 10.0 feet DEPTH TO WATER: 6.0 feet

BLOWS PER 6 INCHES	TLV	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY
	0	ND		0	CLAYEY SILT WITH GRAVEL: brown, stiff, moist, low plasticity	ML	
				5	SANDY GRAVEL LENS: medium brown, loose, wet, fine-grained, poorly graded	GP	
				10	CLAYEY SILT	ML	
				15			
				20			
				25			
				30			
				35			
				40			

BORING DETAIL



ALTON GEOSCIENCE
Livermore, California

LOG OF EXPLORATORY BORING

AB-2
PAGE 1 OF 1

41-0123/99-105 Boring Log AB-2

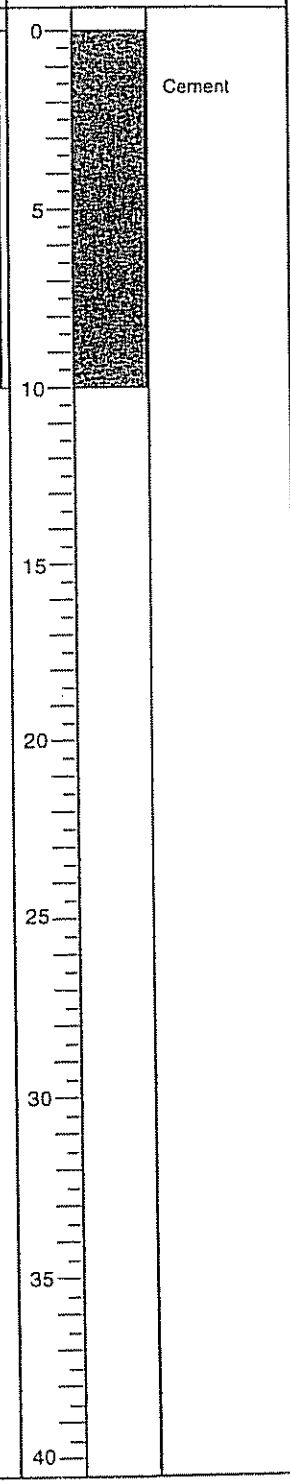
PROJECT NO.: 41-0123
LOCATION: Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

DATE DRILLED: 3/5/98
LOGGED BY: J. Madden
APPROVED BY: M. Katen, RG
DRILLING CO.: V & W Drilling

DRILLING METHOD: 1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 4-inch Macro-Core Sampler
TOTAL DEPTH: 10.0 feet DEPTH TO WATER: 5.5 feet

BLOWS PER 6 INCHES	TLV	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY
	10 150 1,000	ND		0 5 10 15 20 25 30 35 40	CLAYEY SILT WITH GRAVEL: olive green, stiff, wet, low plasticity.	ML	

BORING DETAIL



ALTON GEOSCIENCE
Livermore, California

LOG OF EXPLORATORY BORING

AB-3
PAGE 1 OF 1

41-0123/99-105 Boring Log AB-3

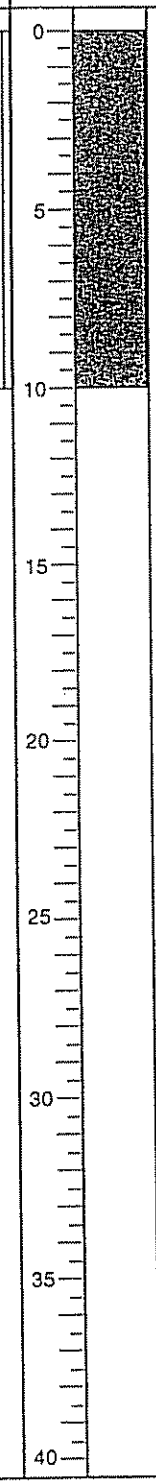
PROJECT NO.: 41-0123
LOCATION: Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

DATE DRILLED: 3/5/98
LOGGED BY: J. Madden
APPROVED BY: M. Katen, RG
DRILLING CO.: V & W Drilling

DRILLING METHOD: 1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 4-inch Macro-Core Sampler
TOTAL DEPTH: 10.0 feet DEPTH TO WATER: 4.0 feet

BLOWS PER 6 INCHES	TLV	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY
	20			0	CLAYEY SILT: mottled brown and green, stiff, moist, low plasticity, 5-10% minor sand	ML	
	100	18		5			
				10			
				15			
				20			
				25			
				30			
				35			
				40			

BORING DETAIL



ALTON GEOSCIENCE
Livermore, California

LOG OF EXPLORATORY BORING

AB-4
PAGE 1 OF 1

41-0123/99-105 Boring Log AB-4

PROJECT NO.: 41-0123	DATE DRILLED: 3/5/98
LOCATION: Former Mobil Station 99-105	LOGGED BY: J. Madden
6301 San Pablo Avenue	APPROVED BY: M. Katen, RG
Oakland, California	DRILLING CO.: V & W Drilling

DRILLING METHOD: 1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 4-inch Macro-Core Sampler
TOTAL DEPTH: 10.0 feet DEPTH TO WATER: 6.0 feet

BLOWS PER 6 INCHES	TLV	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY	BORING DETAIL
	20 100 500 1,000	170		0 5 10 15 20 25 30 35 40	CLAYEY SILT WITH GRAVEL: brown to 3 feet below grade and green from 3 to 10 feet below grade, hard, moist to wet, low plasticity, less than 6 inches minor sandy gravel lenses.	ML		0 5 10 15 20 25 30 35 40 Cement

ALTON GEOSCIENCE
Livermore, California

LOG OF EXPLORATORY BORING

AB-5
PAGE 1 OF 1

41-0123/99-105 Boring Log AB-5

PROJECT NO.: 41-0123

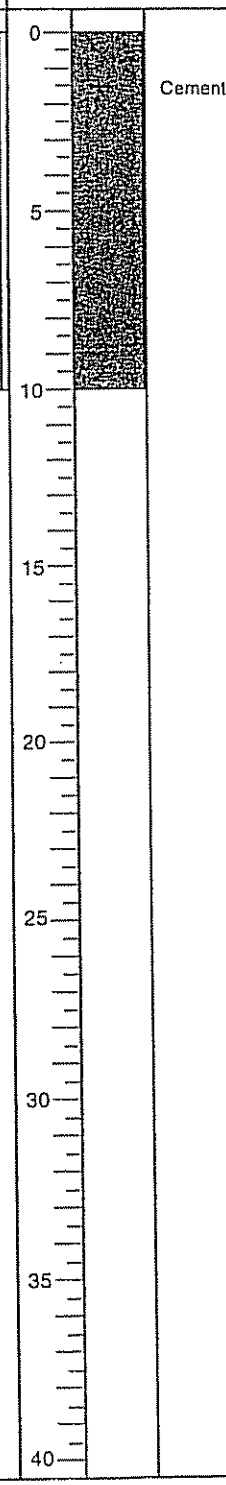
LOCATION: Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

DATE DRILLED: 3/5/98
LOGGED BY: J. Madden
APPROVED BY: M. Katen, RG
DRILLING CO.: V & W Drilling

DRILLING METHOD: 1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 4-inch Macro-Core Sampler
TOTAL DEPTH: 10.0 feet DEPTH TO WATER: 4.5 feet

BLOWS PER 6 INCHES	TLV	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY
				0	CLAYEY SILT WITH GRAVEL: mottled green and brown, stiff, moist, low plasticity, less than 5% minor sand.	ML	
	30	230		5			
	7,000			10			
				15			
				20			
				25			
				30			
				35			
				40			

BORING DETAIL



ALTON GEOSCIENCE
Livermore, California

LOG OF EXPLORATORY BORING

AB-6
PAGE 1 OF 1

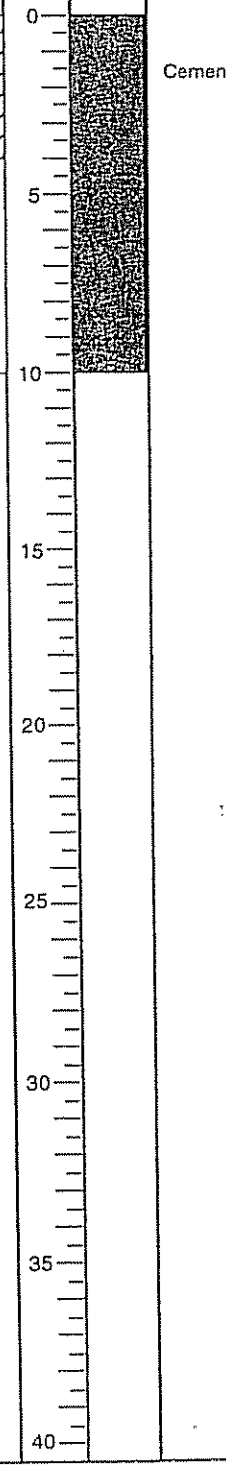
41-0123/99-105 Boring Log AB-6

PROJECT NO.: 41-0123	DATE DRILLED: 3/5/98
LOCATION: Former Mobil Station 99-105	LOGGED BY: J. Madden
6301 San Pablo Avenue	APPROVED BY: M. Katen, RG
Oakland, California	DRILLING CO.: V & W Drilling

DRILLING METHOD: 1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 4-inch Macro-Core Sampler
TOTAL DEPTH: 10.0 feet DEPTH TO WATER: 5.0 feet

BLOWS PER 6 INCHES	TLV	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY
				0	SILTY CLAY: dark brown, soft, wet, high plasticity.	CL	
	100	19		5	CLAYEY SILT WITH GRAVEL: mottled brown and green, hard, wet, low plasticity.	ML	
				10			
				15			
				20			
				25			
				30			
				35			
				40			

BORING DETAIL



ALTON GEOSCIENCE
Livermore, California

LOG OF EXPLORATORY BORING

AB-7
PAGE 1 OF 1

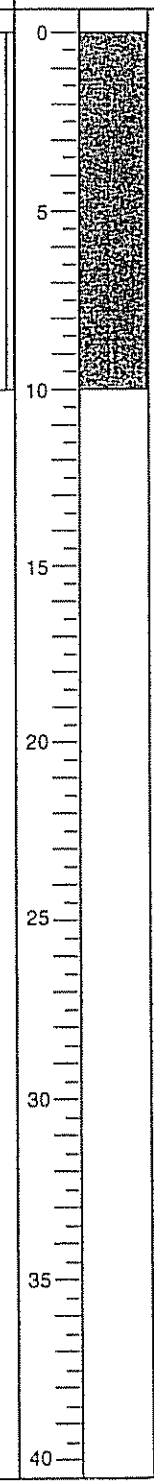
41-0123/99-105 Boring Log AB-7

PROJECT NO.: 41-0123	DATE DRILLED: 3/5/98
LOCATION: Former Mobil Station 99-105	LOGGED BY: J. Madden
6301 San Pablo Avenue	APPROVED BY: M. Katen, RG
Oakland, California	DRILLING CO.: V & W Drilling

DRILLING METHOD: 1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 4-inch Macro-Core Sampler
TOTAL DEPTH: 10.0 feet DEPTH TO WATER: 4.5 feet

BLOWS PER 6 INCHES	TLV	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY
	100	ND		0	CLAYEY SILT: mottled reddish brown and green, soft, moist, low plasticity, minor sandy gravel lenses	ML	
	7,000			5			
				10			
				15			
				20			
				25			
				30			
				35			
				40			

BORING DETAIL



ALTON GEOSCIENCE
Livermore, California

LOG OF EXPLORATORY BORING

AB-8
PAGE 1 OF 1

41-0123/99-105 Borng Log AB-8

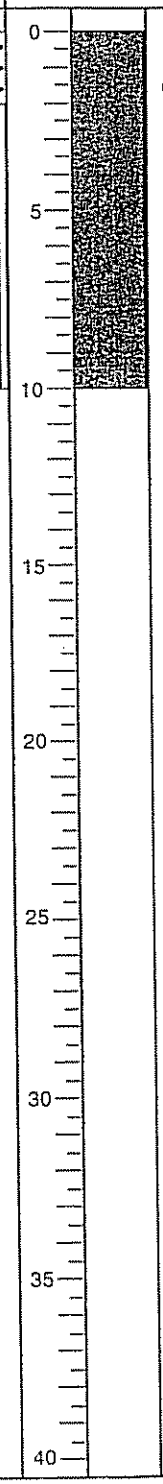
PROJECT NO.: 41-0123
LOCATION: Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

DATE DRILLED: 3/5/98
LOGGED BY: J. Madden
APPROVED BY: M. Katen, RG
DRILLING CO.: V & W Drilling

DRILLING METHOD: 1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 4-inch Macro-Core Sampler
TOTAL DEPTH: 10.0 feet DEPTH TO WATER: 6.0 feet

BLOWS PER 6 INCHES	TLV	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY
				0	GRAVEL FILL to 2 feet below grade.	Fill	
	5,000	16		5	CLAYEY SILT WITH GRAVEL: light reddish brown, hard, moist, low plasticity, 70% clay, 30% gravel.	ML	
				10			
				15			
				20			
				25			
				30			
				35			
				40			

BORING DETAIL



ALTON GEOSCIENCE
Livermore, California

LOG OF EXPLORATORY BORING

AB-9
PAGE 1 OF 1

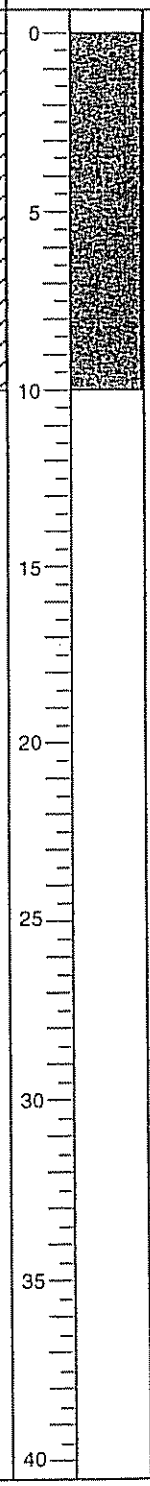
41-0123/99-105 Boring Log AB-9

PROJECT NO.: 41-0123	DATE DRILLED: 3/5/98
LOCATION: Former Mobil Station 99-105	LOGGED BY: J. Madden
6301 San Pablo Avenue	APPROVED BY: M. Katen, RG
Oakland, California	DRILLING CO.: V & W Drilling

DRILLING METHOD: 1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 4-inch Macro-Core Sampler
TOTAL DEPTH: 10.0 feet DEPTH TO WATER: 2.0 feet

BLOWS PER 6 INCHES	TLV	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY
	150	ND		0	SILTY CLAY: light brown, soft, wet, medium plasticity, 5-10% minor gravel.	CL	
				5			
				10			
				15			
				20			
				25			
				30			
				35			
				40			

BORING DETAIL



ALTON GEOSCIENCE
Livermore, California

LOG OF EXPLORATORY BORING

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PAGE 1 OF 1

41-0123/99-105 Boring Log AB-10

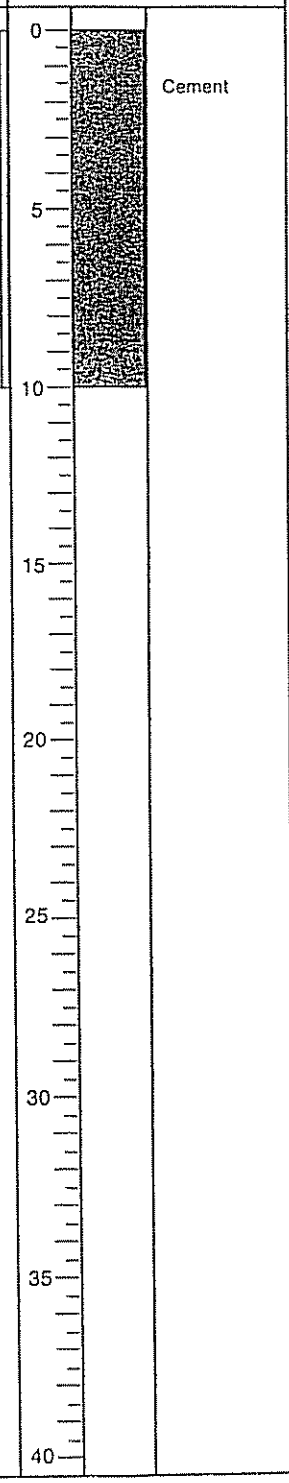
PROJECT NO.: 41-0123
LOCATION: Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

DATE DRILLED: 3/5/98
LOGGED BY: J. Madden
APPROVED BY: M. Katen, RG
DRILLING CO.: V & W Drilling

DRILLING METHOD: 1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 4-inch Macro-Core Sampler
TOTAL DEPTH: 10.0 feet DEPTH TO WATER: 8.5 feet

BLOWS PER 6 INCHES	TLV	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY
	500	3.9		0	CLAYEY SILT: mottled greenish brown, stiff, moist, low plasticity, <5% minor gravel.	ML	

BORING DETAIL



ALTON GEOSCIENCE
Livermore, California

LOG OF EXPLORATORY BORING

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PAGE 1 OF 1

41-0123/99-105 Boring Log AB-11

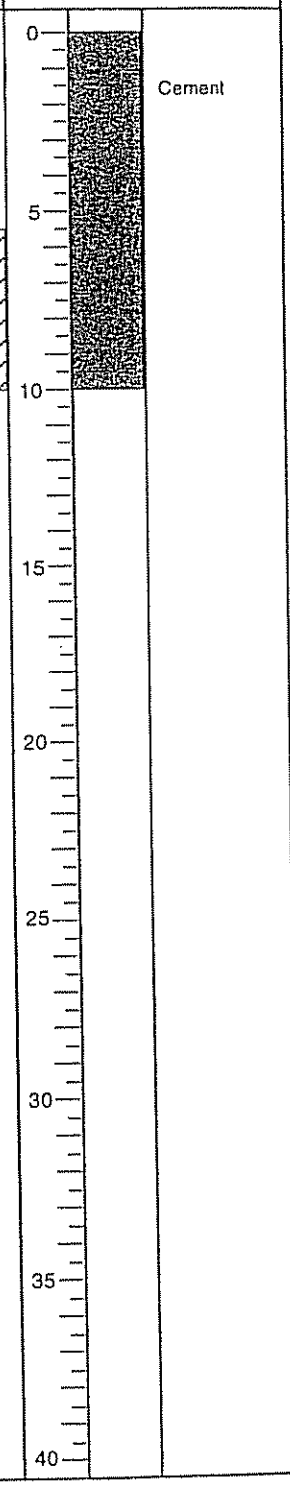
PROJECT NO.: 41-0123

LOCATION: Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

DATE DRILLED: 3/5/98
LOGGED BY: J. Madden
APPROVED BY: M. Katen, RG
DRILLING CO.: V & W Drilling

DRILLING METHOD: 1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 4-inch Macro-Core Sampler
TOTAL DEPTH: 10.0 feet DEPTH TO WATER: 6.0 feet

BLOWS PER 6 INCHES	TLV	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS
	100	ND		0	CLAYEY SILT: mottled greenish brown. soft, moist, low plasticity.	ML
				5	SILTY CLAY: dark brown, soft, wet, high plasticity (Bay mud).	CL
				10		
				15		
				20		
				25		
				30		
				35		
				40		



ALTON GEOSCIENCE
Livermore, California

LOG OF EXPLORATORY BORING

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PAGE 1 OF 1

41-0123/99-105 Boring Log AB-12

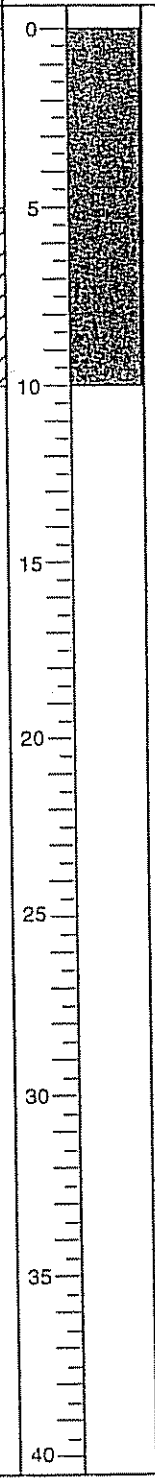
PROJECT NO.: 41-0123
LOCATION: Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

DATE DRILLED: 3/5/98
LOGGED BY: J. Madden
APPROVED BY: M. Katen, RG
DRILLING CO.: V & W Drilling

DRILLING METHOD: 1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 4-inch Macro-Core Sampler
TOTAL DEPTH: 10.0 feet DEPTH TO WATER: 6.0 feet

BLOWS PER 6 INCHES	TLV	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY
	10	ND		0	CLAYEY SILT: light brown, moist, low plasticity	ML	
				5	SILTY CLAY: dark brown, soft, wet, high plasticity (Bay mud). ▽	CL	
				10			
				15			
				20			
				25			
				30			
				35			
				40			

BORING DETAIL



ALTON GEOSCIENCE
Livermore, California

LOG OF EXPLORATORY BORING

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41-0123/99-105 Boring Log AB-13

APPENDIX C
Sensitive Receptor Survey

TRC

SITE: FORMER MOBIL STATION 99-105
6301 SAN PABLO AVE
OAKLAND, CALIFORNIA

Sensitive Receptor Survey

TRC has performed a sensitive receptor survey for the former Mobil Station No. 99-105, located at 6301 San Pablo Avenue in Oakland, California. The survey includes assessment of public and municipal wells within 2,000 ft of the subject site. Also included is an evaluation of possible sensitive receptors such as utility vaults, basements and nearby bodies of surface water. The contents of this report include:

Findings

Conclusions

Figure: (1) 1:24,000 scale topographic map showing locations of municipal and private wells within 2,000 ft of subject site.

Form: OIMS Sensitive Receptor Survey

Findings

Oakland Water Supply: According to information provided by the Alameda County Water District (ACWD), Oakland uses water obtained from the Hetch Hetchy reservoir the Sacramento-San Joaquin Delta, and several East Bay Hills reservoirs.

Water Well Survey: A survey of Well Completion Reports performed by California Department of Water Resources indicates that no municipal or domestic wells exist within 2,000 ft of 6301 San Pablo Ave, Oakland.

Additional Findings: Four utility vaults were discovered adjacent to the subject site. These are Pacific Gas and Electric Company vaults and they are all located on the sidewalk along San Pablo Ave, just east of the subject site. A sanitary sewer system exists adjacent to the subject site. The sewer lines run north-south beneath San Pablo Ave, north-south beneath Marshall Ave and east-west beneath 63rd Street.

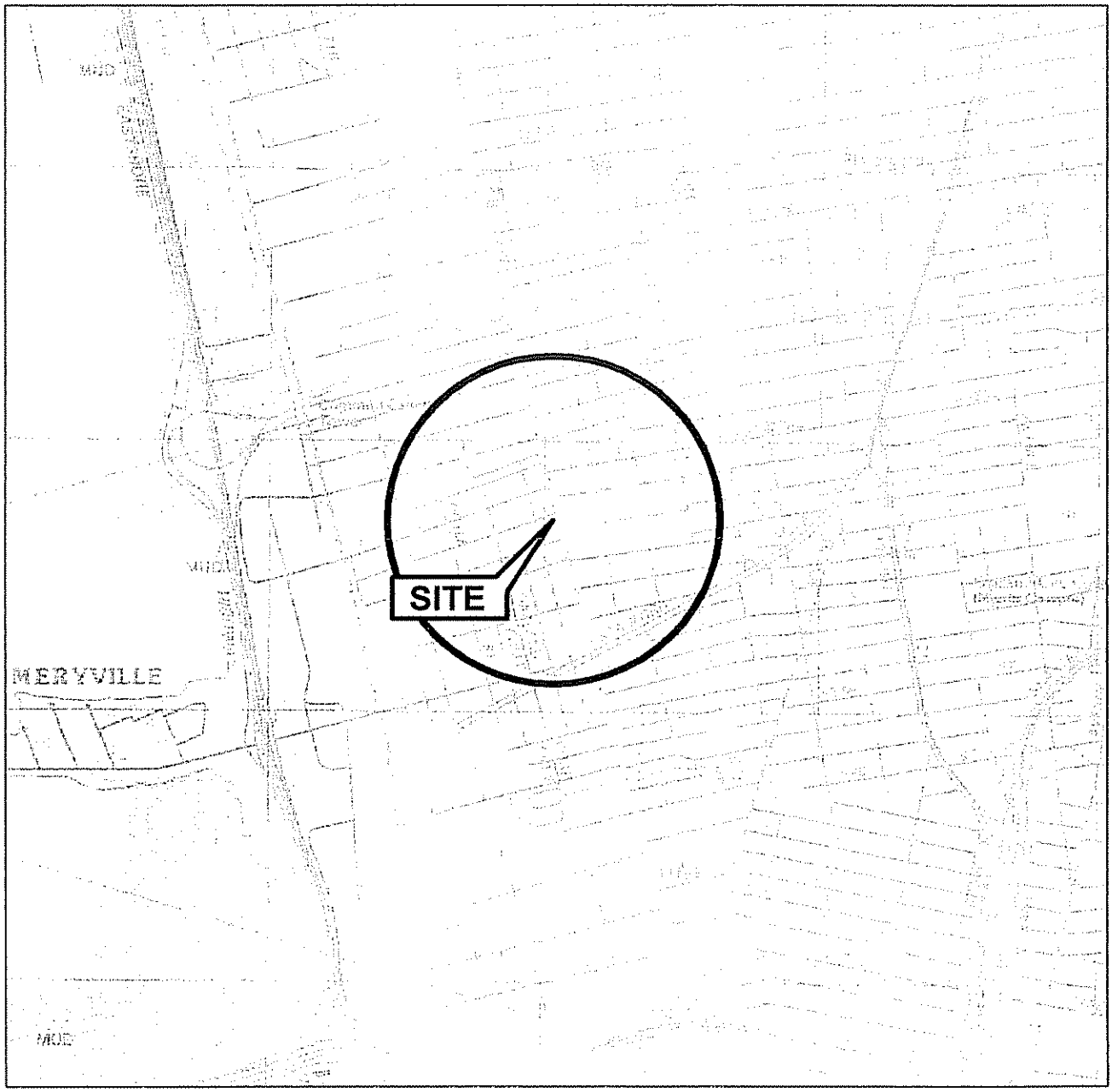
No buildings with basements were observed adjacent to the subject site. However, the subject site has been converted to an oil-change station. This station has an ~ 8ft deep basement beneath the garage portion of the building.

Groundwater at the subject site is generally between 6-12 feet below grade and flows to the west with an approximate gradient of 0.07 ft/ft.

Conclusions

The nearest potential sensitive receptor for exposure to contaminated groundwater identified through this assessment is the below grade inspection pit located within the oil change facility at the subject site. Given the previous soil excavation (i.e., to an approximate depth of 6 feet below grade) by the current property owner during construction of the existing facility, it is likely that residual impacts in this area have been mitigated.

Adjacent to the subject site, four PG&E utility vaults are located immediately south of the subject site. The depth of the vaults are unknown, although it is unlikely that they are deeper than 36 inches below grade. Depth to groundwater in the vicinity of the site ranges from 5-12 feet below grade and averages approximately 8 fbg. Therefore it is doubtful, but possible that these vaults could act as conduits for the migration of contaminated groundwater. No other current or potential sensitive receptors were identified within 2,000 feet of the subject site.



1 MILE 3/4 1/2 1/4 0 1 MILE

SCALE 1 : 24,000

N

SOURCE:
United States Geological Survey
7.5 Minute Topographic Maps:
Oakland West Quadrangle

2000-FT. RADIUS OF INFLUENCE

Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

TRC

FIGURE 1

1. Site Location and Identifying Number: Oakland, 99-105

Global Remediation Site Name: Former Mobil Station 99-105

Address: 6301 San Pablo Ave
Oakland, CA

2. Regional Data

a. Is Groundwater in Region Used for Drinking Water?

Yes _____ No __X___

b. Is Groundwater in Region Used for Irrigation?

Yes _____ No __ X ___

c. If Yes to **a** or **b**, Estimated Depth to "Used" Regional Aquifer

<20ft (<6m) _____: 20 -100ft (6 - 30m) _____: 100 - 300ft (30 - 90m) _____:
>300ft (>90m)_____: Unknown _____

d. Estimated Depth to First Groundwater

<20ft (<6m) __ X __: 20 -100ft (6 - 30m) _____: 100 - 300ft (30 - 90m) _____:
>300ft (>90m)_____: Unknown _____

e. Is Surface Water in Region Used for Drinking Water

Yes _____ No __ X ___

f. If Yes to **e**, Distance to Surface Water Source:

_____ ft or m (Select Units)

g. Is Construction in the Region "Slab on Grade" or Are Basements Common?

Slab on Grade ___ X __ Basements _____

If a and b are no and d is less than 20ft (6m) or unknown, then complete Step 5-9.

If a and b are no and d is greater than 20ft (6m), then complete Step 5, only.

If a or b are yes and d is less than 20ft (6m). or unknown then complete Steps 3-9.

If a or b are yes and d is greater than 20 ft. then complete Steps 3-5.

3. Municipal Water Wells

STEPS 3-4: NOT APPLICABLE

5. Surface Body Of Water, Wetland, Significant Ecological Resource

a. Is There A Surface Body of Water, Wetland, Or Significant Ecological Resource Located Within 1,000ft (300m) of the Site?

Yes _____ No __ **X** __

If "yes", then complete the following information for each body of water:

b. Name: _____
Lake: _____ River: _____ Creek: _____ Pond: _____ Flood Control Ditch: _____
Wetland _____ Other _____ (If Other, Describe _____)

c. Closest Distance Between Site and Water:

<100ft (30m) ___: 100 to 500ft (30 to 150m) ___:
500 to 1,000ft (150 to 300m) ___: 1,000 to 2,000ft (300 to 600m) ___:
>2,000ft (600m): ___

d. Direction from Site to Water:

N: _____ N/E: _____ E: _____ S/E: _____ S: _____ S/W: _____ W: _____ N/W: _____

6. Utility Vaults

a. Are There Any Utility Vaults Located On or Adjacent to the Site?

Yes __ **X** __ No _____

If yes, answer b-d for each vault.

b. Type of Vault? **Four PG&E vaults** are present along the eastern property boundary.

Electric / Gas: __ **X** __ Water: _____ Unknown: _____

c. Near Which Property Boundary?

N _____: E __ **X** __: S _____: W _____

d. Depth of Vault?

Depth _____ft or m (Select Units), or Unknown: ___ **X** __

7. Basements

a. Do Any of the Buildings Within 1,000ft (300m) of the Site Have Basements?

Yes__ X __ No__ __ Unknown_____

b. If "Yes," Check Types Of Buildings Which Have Basements

Residence: _____ Office Building: _____ Commercial: ___ X ___
Other (Describe): _____

c. Is It Likely That The Buildings Contain Sumps?

Yes _____ No _____ Unknown __ X ___

d. Distance to Nearest Basement:

<100ft (30m) _ X __: 100 to 500ft (30 to 150m) ___:
500 to 1,000ft (150 to 300m) ___: 1,000 to 2,000ft (300 to 600m) ___:
>2,000ft (600m): ___

e. Direction from Site: On site

8. Storm and Sanitary Sewer

a. Are There Any Storm Sewer Drains Located On or Adjacent to the Site?

Yes _ X ___ No ____

b. Describe Location(s): North-south beneath San Pablo Ave

c. Are There Any Sanitary Sewer Lines On or Adjacent to the Site?

Yes __ X __ No ____

d. Describe Location(s): North-south beneath San Pablo Ave, east-west beneath 63rd St, and north-south beneath Marshall Ave.

9. Subway/Tunnel

a. Is There a Subsurface Mass Transit System or Tunnel Located Within 1,000ft (300m) of the Site?

Yes ____ No __ X __

If "yes," then complete the following information.

b. Describe: _____

c. Minimum Distance between Site and Subway/Tunnel:

<100ft (30m) ___: 100 to 500ft (30 to 150m) ___:
500 to 1,000ft (150 to 300m) ___: 1,000 to 2,000ft (300 to 600m) ___:
>2,000ft (600m): ___

d. Direction from Site to Subway/Tunnel:

N ____: N/E ____: E ____: S/E ____: S ____: S/W ____: W ____: N/W ____

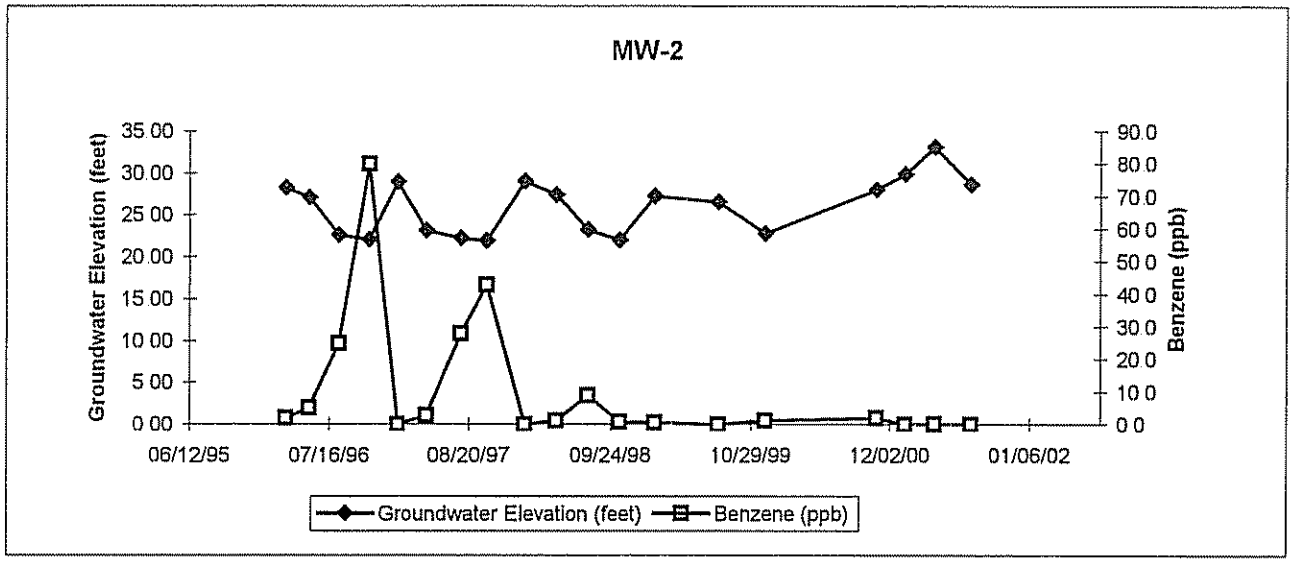
e. Topographically Downgradient?

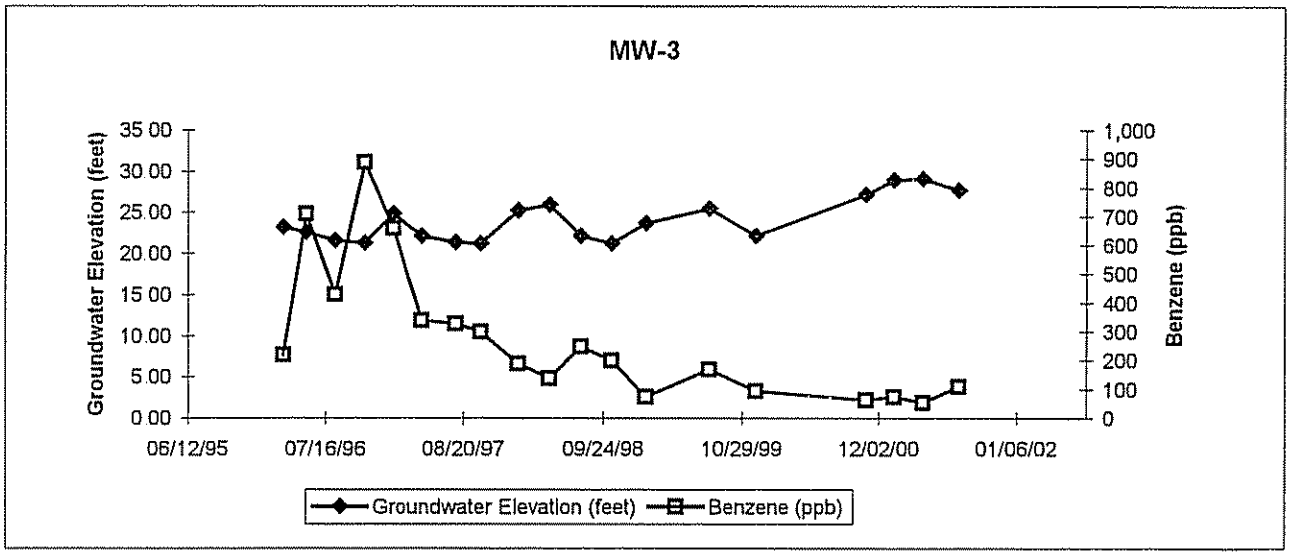
Yes _____ No _____

APPENDIX D
Benzene vs. Groundwater Elevation Graphs

TRC

Benzene vs. Groundwater Elevation Graphs





NOTE: ND values are plotted as zero.

NOTE: ND values are plotted as zero.

APPENDIX E

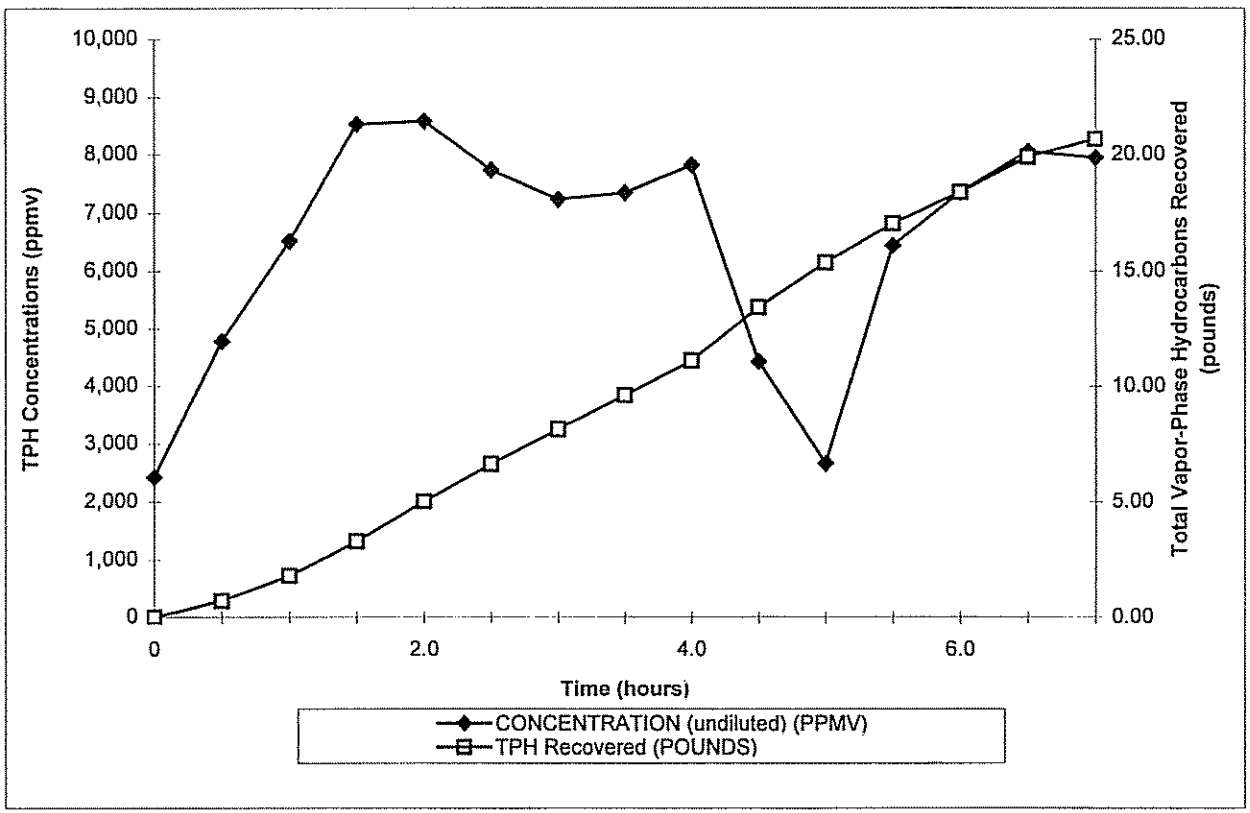
Influent TPH Concentrations and Total Vapor-Phase Hydrocarbons Recovered vs. Time

TRC

Mobile Treatment System

Influent TPH Concentrations and Total Vapor-Phase Hydrocarbons Recovered versus Time

Former Mobil Station 99-105 11/19/98



APPENDIX F
General Field Procedures

TRC

GENERAL FIELD PROCEDURES

A description of the general field procedures used during site investigation and monitoring activities is presented below. For an overview of protocol, refer to the appropriate section(s).

DRILLING AND SOIL SAMPLING

Soil borings are drilled using continuous-flight, hollow-stem augers. Borings that are not completed as monitoring wells are grouted to within 5 feet of the ground surface with a cement/bentonite slurry. The remaining 5 feet is filled with concrete.

Soil samples are obtained for soil description, field hydrocarbon vapor screening, and possible laboratory analysis. Soil samples are retrieved from the borings by one of two methods: 1) continuously, using a 5-foot-long, continuous-core barrel sampler advanced into the soil with the lead auger; sample tubes are driven into the core with a mallet, or 2) at 2.5- or 5-foot intervals, using a standard split-spoon sampler lined with four 1.5-inch-diameter stainless steel or brass sample inserts. The split-spoon sampler is driven approximately 18 inches beyond the lead auger with a 140-pound hammer dropped from a height of 30 inches.

For hand auger borings and hand-held, power-driven auger borings, soil samples are retrieved using a hand-driven slide hammer lined with a 1.5-inch-diameter stainless steel sample tube.

During drilling activities, soil adjacent to the laboratory sample is screened for combustible vapors using a combustible gas indicator (CGI) or equivalent field instrument. For each hydrocarbon vapor screening event, a 6-inch-long by 2.5-inch-diameter sample insert is filled approximately 1/3 full with the soil sample, capped at both ends, and shaken. The probe is then inserted through a small opening in the cap, and a reading is taken after approximately 15 seconds and recorded on the boring log. The remaining soil recovered is removed from the sample insert or sampler, and described in accordance with the Unified Soil Classification System. For each sampling interval, field estimates of soil type, density/consistency, moisture, color, and grading are recorded on the boring logs.

SOIL SAMPLE HANDLING

Upon retrieval, soil samples are immediately removed from the sampler, sealed with Teflon sheeting and polyurethane caps, and wrapped with tape. Each sample is labeled with the project number, boring/well number, sample depth, geologist's initials, and date of collection. After the samples have been labeled and documented in the chain of custody record, they are placed in a cooler with ice at approximately 4 degrees Celsius (°C) prior to and during transport to a state-certified laboratory for analysis. Samples not selected for immediate analysis may be transported in a cooler with ice and archived in a frostless refrigerator at approximately 4°C for possible future testing.

MONITORING WELL INSTALLATION

Monitoring wells are constructed of 4-inch-diameter, flush-threaded Schedule 40 PVC blank and screened (0.020-inch slot size) casing. Where possible, the screened interval will extend at least 10 feet above, and 10 to 20 feet below, the top of the groundwater table. The annular space surrounding the screened casing is backfilled with No. 3 Monterey sand (filter pack) to approximately 2 feet above the top of the screened section.

During well construction, the filter pack is completed by surging with a rig-mounted surge block. A 3-foot-thick bentonite annular seal is placed above the filter pack. The remaining annular space is grouted with Portland cement and/or bentonite grout to the surface. Utility access boxes are installed slightly above grade. Locking, watertight caps are installed to prevent unauthorized access to the well, and limit infiltration of surface fluids.

FLUID LEVEL MONITORING

Fluid levels are monitored in the wells using an electronic interface probe with conductance sensors. The presence of liquid-phase hydrocarbons is verified using a hydrocarbon-reactive paste. The depth to liquid-phase hydrocarbons and water is measured relative to the well box top or top of casing. Well boxes or casing elevations are surveyed to within 0.02 foot relative to a county or city bench mark.

GROUNDWATER PURGING AND SAMPLING

Groundwater monitoring wells are purged and sampled in accordance with standard regulatory protocol. Typically, monitoring wells that contain no liquid-phase hydrocarbons are purged of groundwater prior to sampling so that fluids sampled are representative of fluids within the formation. Temperature, pH, and specific conductance are typically measured after each well casing volume has been removed. Purging is considered complete when these parameters vary less than 10% from the previous readings, or when four casing volumes of fluid have been removed. Samples are collected without further purging if the well does not recharge within 2 hours to 80% of its volume before purging.

The purged water is either pumped directly into a licensed vacuum truck or temporarily stored in labeled drums prior to transport to an appropriate treatment or recycling facility. If an automatic recovery system (ARS) is operating at the site, purged water may be pumped into the ARS for treatment.

Groundwater samples are collected by lowering a 1.5-inch-diameter, bottom-fill, disposable polyethylene bailer just below the static water level in the well. The samples are carefully transferred from the check-valve-equipped bailer to 1-liter and 40-milliliter glass containers. The sample containers are filled to zero headspace and fitted with Teflon-sealed caps. Each

sample is labeled with the project number, well number, sample date, and sampler's initials. Samples remain chilled at approximately 4□C prior to analysis by a state-certified laboratory.

CHAIN OF CUSTODY PROTOCOL

Chain of custody protocol is followed for all soil and groundwater samples selected for laboratory analysis. The chain of custody form(s) accompanies the samples from the sampling locality to the laboratory, providing a continuous record of possession prior to analysis.

DECONTAMINATION

Drilling and Soil Sampling

Drilling equipment is decontaminated by steam cleaning before being brought onsite. The augers are also steam cleaned before each new boring is commenced. Prior to use, the sampler and sampling tubes are brush-scrubbed in a Liqui-nox and potable water solution and rinsed twice in clean potable water. Sampling equipment and tubes are also decontaminated before each sample is collected to avoid cross-contamination between borings.

Groundwater Sampling

Purging and sampling equipment that could contact well fluids is either dedicated to a particular well or cleaned prior to each use in a Liqui-nox solution followed by two tap water rinses.
A description of the general field procedures used during the site investigation is presented below. For an overview of protocol, refer to the appropriate section(s).

APPENDIX G
Health and Safety Plan

TRC

SITE HEALTH AND SAFETY PLAN

For
Monitoring Well Installation
Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

1.0 PLAN SUMMARY

This Site Health and Safety Plan (SHSP) establishes responsibilities, requirements, and procedures for the protection of personnel while performing activities at the above-referenced site. This site-specific plan conforms with the TRC Corporate Health and Safety Plan, Hazard Communication Program, and Injury and Illness Prevention Program (IIPP).

During site work, the use of proper health and safety procedures, in accordance with applicable Cal/OSHA regulations shall be required. Site-specific conditions may necessitate modification of the SHSP; however, except in emergency situations no deviations from the plan may be implemented without the prior notification and approval of the Site Safety Officer (SSO).

2.0 SITE INFORMATION

This SHSP considers the physical, chemical, and environmental hazards that may be encountered during work activities at the site. Operations associated with this SHSP will be conducted in accordance with an approved workplan. Any changes required or made to the planned activities will be immediately communicated to site personnel by the SSO. Summary information for this project is provided in the following table.

Workplan dated:	November 2001
Principal activities:	Monitoring Well Installation
Site description (see Attachment A for site map):	Oil change facility.
Approximate depth to groundwater:	8-12 feet
Contaminants of concern (see Attachment B):	Gasoline Hydrocarbons

3.0 SITE SAFETY AUTHORITY

Contact information and names of authorized personnel are listed below. A description of responsibilities follows.

Role	Name	Company	Telephone
Site Safety Officer	Jeff Hunter	TRC	(925) 260-9285 cell
Alternate Site Safety Officer	Kristie Wilkie	TRC	(925) 260-6339 cell
Project Manager	Jonathan Scheiner	TRC	(925) 688-2473 (925) 260-4809 cell
Supervisor/Offsite Coordinator	Jonathan Scheiner	TRC	(925) 688-2473 (925) 260-4809 cell
Local IIPP Coordinator	Jeff Hunter	TRC	(925) 260-9285
Client Contact	Gene Ortega	Exxon/Mobil Engineer	(925) 246-8747

Site Safety Officer: The SSO is responsible for briefing site personnel on potential physical and chemical hazards prior to work start-up, during operations, and whenever other health and safety matters need to be addressed. The SSO will be in charge of conducting the daily Tailgate Safety Meetings. The SSO will see that this SHSP is available onsite and is understood and signed by personnel entering the site. The SSO is also responsible for implementing emergency response procedures when necessary. In the event the SSO is unable to perform these duties, the Alternate SSO will be responsible.

Project Manager: The Project Manager (PM), in coordination with the SSO, is responsible for implementing health and safety requirements, including seeing that the SHSP is prepared and available onsite. The PM is the central point of contact for the SSO, Client, and Field Personnel, and has overall responsibility for site operations.

Field Personnel: Field Personnel are responsible for understanding and complying with this SHSP. Field Personnel include both TRC employees and Subcontractors hired by TRC. Field Personnel are required to participate in briefings prior to commencement of site work; attend

daily Tailgate Safety Meetings; and acknowledge receipt and understanding of the SHSP by signing the Compliance Log at the end of this plan.

Supervisor/Offsite Coordinator: The Supervisor/Offsite Coordinator, typically the TRC branch manager, should be contacted when mobilization of support from the TRC office is needed, and in case of an emergency requiring offsite assistance.

4.0 SITE CONTROL

Site control requires the establishment of a regulated area with designated work zones, evacuation protocol, location of medical assistance, site security, and communication guidelines that include a "Buddy System."

4.1 REGULATED AREA(S)

Each site will have an established Exclusion Zone with controlled access, and a Support Zone. Supervision and strict control of access to regulated areas is necessary to protect site personnel as well as the public.

Exclusion Zone: *(a.k.a. "Hot Zone")* This is the area where personnel may be subject to chemical or physical hazards. It is the zone of known or suspected contamination, where equipment operation and/or environmental sampling will take place. The Exclusion Zone is to be clearly identified and isolated with cones, barricades, or high visibility caution tape. Personnel working in the Exclusion Zone will at a minimum use Level D personal protective equipment as described in **Section 7.0.**

The outer boundary of the Exclusion Zone *("Hot Line")* will be established by the SSO, so that sufficient area is available to conduct operations while providing a protective buffer for persons and property outside the zone.

Support Zone: *(a.k.a. "Safe Zone")* This is the area outside the Exclusion Zone where administrative and other support functions are located. Adverse exposure to contaminants and physical hazards are unlikely in the Support Zone.

4.2 EVACUATION PROTOCOL

Evacuation protocol and routes from the site will be established by the SSO, and communicated to Field Personnel during the Tailgate Safety Meeting(s) prior to initiating work. Evacuation protocol will be implemented as needed in emergency situations. In the event of an evacuation, personnel will meet at a pre-established location and the SSO will do a "head count" to see that everyone has left the hazard area.

Emergency Response procedures are outlined in **Section 12.0.** Directions to the nearest medical facilities are provided in **ATTACHMENT C.**

4.3 SITE SECURITY

Appropriate security measures will be established in coordination with the site owner/operator and communicated to site personnel. The objective of these measures is to (1) protect the public from potential exposure to physical/chemical hazards; (2) avoid public interference with personnel and safe work practices; and (3) prevent theft or vandalism of equipment at the site.

4.4 COMMUNICATION

Communication is an important aspect of the site control program as well as the entire SHSP. Personnel should keep in mind that hazard assessment is a continuous process, and any potentially unsafe condition must be reported immediately to the SSO.

Onsite personnel will use the "Buddy System" and maintain communication or visual contact between team members during site operations. The Buddy System is used to provide assistance, monitor for chemical exposure and heat stress, and obtain emergency assistance for coworkers when necessary. Site personnel will be familiar with the following emergency hand signals:

Hand gripping throat:	Can't breathe. Respirator problems.
Grip team member's wrist or both hands on team member's waist:	Leave site immediately, no debate!
Thumbs up:	Yes. I'm alright. I understand.
Thumbs down:	No. Negative.

5.0 HAZARD ASSESSMENT

Hazard assessment is essential for establishing hazard reduction measures. Hazard assessment will consist primarily of site inspections and monitoring. Known operational hazards (heavy equipment, overhead lines, etc.) and site characterization data (contaminant location, concentration, etc.) are also considered in the assessment. The following is a list of potential hazards associated with the activities planned for this site:

Physical Hazards	Tripping, slipping, and falling Head, foot, eye, and back injuries Sharp objects
Chemical Hazards	Gasoline / benzene, toluene, ethylbenzene, xylenes (BTEX) Diesel
Environmental Hazards	Noise exposure Weather - heat, cold, rain, fog Biological - plants, animals/insects, pathogens

Walk-though safety inspections will be conducted by the SSO daily and as conditions change. Inspection results will be communicated to the work crews during the morning Tailgate Safety Meetings and as needed.

6.0 HAZARD REDUCTION

Personnel are required to exercise reasonable caution at all times during work activities. Failure to follow safety protocols and/or continued negligence of health and safety policies will result in expulsion of a crewmember from the site and may result in termination of employment. In general, the potential for hazardous situations will be reduced by the following activities:

Implementing engineering controls

Using personal protective equipment

Performing air monitoring

Engineering Controls, corresponding to the hazard assessment for work at this site, are outlined below in **Sections 6.1 through 6.4**. Personal protective equipment (PPE) and air monitoring guidelines are outlined in **Sections 7.0 and 8.0**, respectively.

6.1 PHYSICAL HAZARDS AND CONTROLS

Explosion and Fire

Liquid petroleum products readily vaporize from standing pools or saturated soil. Ignition sources pose an explosion and fire hazard (e.g., engines, impact sparking, and heat or arc from inappropriate equipment or instrumentation). A direct-reading combustible gas indicator (CGI) will be used to evaluate the possible formation of flammable atmospheres in and around the work area. **See Section 8.0: Air Monitoring.**

Emergency services (911) are to be called immediately in case of a fire or explosion. A portable fire extinguisher will be kept onsite for use on small fires only. Only personnel trained in the proper use of fire extinguishers are authorized to use the onsite fire extinguisher.

Tripping, Slipping, and Falling

Personnel will be reminded daily to maintain sure footing on all surfaces. Use of safety harnesses is required for personnel working ***6 feet or more*** above any surface that does not have handrails (includes riding on manlifts). Work surfaces of unknown or suspect integrity will be strengthened or overlaid with a work platform capable of supporting personnel and equipment working in the area. To minimize tripping hazards caused by construction and other debris, material will be removed daily from the work areas and stockpiled in appropriate designated storage areas. This "housekeeping" effort will be enforced by the SSO at the end of each day.

Head, Foot, Eye, and Back Injuries

Hard hats, steel toe boots, and safety glasses will be worn during site operations. To avoid back injuries, personnel will be trained in and required to use proper equipment and lifting techniques for manual material handling.

Sharp Objects

Nails, wires, saws, and cutting equipment pose potential hazards such as cuts and punctures during site work. *Only appropriate work tools are to be used.* Personnel are required to exercise caution, and should wear leather work gloves when handling or operating cutting tools, saws,

and other sharp objects. A consistent housekeeping effort at the site will also help to reduce hazards from sharp objects.

6.2 CHEMICAL HAZARDS AND CONTROLS

Chemical Characteristics

Hazardous chemicals that may be encountered at this site include gasoline, diesel, stove oil, hydraulic oil hydrocarbons. These chemicals may be volatile, flammable, moderately to extremely toxic, or carcinogenic when inhaled, ingested, or absorbed above certain concentrations. See **ATTACHMENT B** for specific exposure limits and basic toxicology information.

Personnel will use engineering controls and PPE (based on hazard assessment) to prevent chemical exposure.

Sample Collection

Workers who must come in direct contact with known or suspected contaminated soil or groundwater to collect samples are required to wear protective gloves and other PPE, as needed, to reduce the potential for exposure. Safety glasses will be worn to avoid potential splashing of chemicals into the eyes.

Soil Cuttings, Decontamination Water, and Dust

As with sample collection, precautions are to be followed for handling materials such as soil cuttings and cleaning/decontamination water. Exposure and potential inhalation of dust (nuisance, silica) will be minimized by wearing dust masks or other appropriate PPE/respiratory protection.

Disposition of Materials

Excavated soil will be stockpiled and covered, or stored in closed drums or roll-off bins. Purged water will be stored in closed drums or tanks. Drums, tanks, and/or roll-off bins containing soil or water will be labeled in accordance with the hazard communication standard and removed from the site in accordance with client-approved protocol.

Hygiene

Eating, smoking, and drinking is NOT ALLOWED in the work area. Site personnel will wash their hands, arms, and faces thoroughly prior to eating or drinking, and at the end of their shift. Food should never be stored where it may come into contact with, or be contaminated by, petroleum products, pesticides, or other toxic materials.

6.3 ENVIRONMENTAL HAZARDS AND CONTROLS

Noise Exposure

Hearing protection (earplugs or earmuffs) will be worn when project personnel enter high-noise areas. The SSO should see that extra earplugs are available onsite.

Heat Stress

Heat stress may be caused by the combination of ambient factors such as high air temperature, high relative humidity, and low air movement. This condition can result in heat rash, heat cramps, heat exhaustion, and/or heat stroke. It can impair worker coordination and judgement and directly impact health and safety. Heat stress is more likely when PPE is worn. Personnel are to drink plenty of water and take breaks (in shaded rest areas) as needed to help prevent heat stress. As part of the Buddy System, personnel should watch for signs and symptoms of heat stress in coworkers as well as themselves.

Cold Exposure

To guard against cold injury (frostbite and hypothermia), which is a danger when the temperature and wind-chill factor are low, employees will wear appropriate clothing, have warm shelter readily available, and maintain carefully scheduled work and rest periods.

Biological Hazards

Personnel will assess their surroundings for potential biological hazards, which may be posed by poisonous plants, insects, animals, and indigenous pathogens. Protective clothing and respiratory equipment can help reduce the chances of exposure. Thorough washing of any exposed body parts and equipment will help protect against infection from biological hazards. ***"Universal Precautions"*** (e.g., wearing latex gloves) must be taken any time there is potential for exposure to human blood, such as when an employee renders first aid to a coworker.

6.4 CONFINED SPACE HAZARDS

Confined space entry is NOT ANTICIPATED during the course of these operations. However, if such a situation is encountered, workers are prohibited from entering confined spaces until the company plan dealing with confined spaces has been implemented.

7.0 PERSONAL PROTECTIVE EQUIPMENT

7.1 LEVEL OF PROTECTION

Personnel are required to wear PPE appropriate for the task and anticipated exposure to known contaminants. Selection of PPE will be based on hazard assessment, task performance, and air monitoring. Based on the history of this site, the initial level of protection will be Level D. At a minimum, Level D PPE will consist of the following:

- Hardhat
  at all times in work area
- Boots: chemical-resistant, steel toe and shank
  at all times in work area
- Safety glasses, splash goggles, or hardhat with face shield
  when there is risk of hazardous substances (sampling) or flying particles (drilling, excavation, etc.) getting into eyes
- Ear plugs / hearing protection
  when high-noise equipment/drill rig is in operation
- Gloves: chemical-resistant
  when handling soil cuttings or soil/water samples

Site personnel also are required to *be prepared* with the following items:

- Respirators: half-face, air-purifying with appropriate cartridges
- Dust masks
- Tyvek coveralls and other suitable protective clothing

- Traffic safety vest
- Leather work gloves and back brace/lifting belt

Air monitoring information will dictate when and if a site will be upgraded to Modified Level D (Level D plus respirator).

7.2 RESPIRATOR SELECTION

For operations that require the use of a respirator, the SSO must verify that Field Personnel are medically approved to use respiratory equipment, fit tested, and trained in the proper use of air-purifying respirators. Site personnel are required have their respirator available and ready to use onsite. Only respirators that are NIOSH/MSHA approved are to be used.

Air monitoring will be performed to assess airborne contaminant levels onsite, and to evaluate suitable respiratory protection. Workers will be required to wear half-face, air-purifying respirators with organic vapor cartridges under the following circumstances, as indicated by onsite air monitoring:

- If volatile organic compound (VOC) vapors in the work area continuously exceed the threshold limit value - time-weighted average (TLV-TWA) for gasoline (300 parts per million [ppm]).

- If, at any time, VOC vapors in the work area exceed the threshold limit value - short-term exposure limit (TLV-STEL) for gasoline (500 ppm).

TLV values for gasoline are derived from American Conference of Governmental Industrial Hygienists (ACGIH) standards. Similar precautions will be taken with regard to other toxic chemicals, such as BTEX components. See **ATTACHMENT B** for additional information and regulatory exposure limits.

7.3 REASSESSMENT OF PPE

The levels of protection listed above will be upgraded (or downgraded) based on changes in activities, changes in site conditions, measurements of direct-reading instruments (compared to action levels for contaminants), or other findings. Changes in the level of protection require the approval of the SSO.

8.0 AIR MONITORING

Monitoring will be conducted as needed to characterize airborne contaminant levels. The potential hazards associated with the presence of hydrocarbons include (1) personnel exposure to chemicals, and (2) possible formation of flammable atmospheres in and around the work area. Air sampling will be conducted in accordance with NIOSH, OSHA, or EPA methods. The SSO will check to see that air monitoring equipment brought onsite is properly calibrated prior to operation and recalibrated during the course of the day, as necessary.

8.1 FLAME IONIZATION DETECTOR

A flame ionization detector (FID) will be used for the monitoring of VOCs in the work area in accordance with the requirements outlined in Title 8 CCR 5192. Air monitoring will be conducted in the breathing zone of workers, and the data collected will be used to evaluate suitable respiratory protection against chemicals encountered. Refer to the Respirator Selection guidelines in **Section 7.2** for personal protection measures. Measurements will also be obtained periodically at the top of boreholes or excavation cavities, and during any construction activities in which hydrocarbon-affected soil is encountered; however, only breathing zone measurements will be used to determine whether PPE should be used or discontinued.

8.2 COMBUSTIBLE GAS INDICATOR

A direct-reading, portable CGI that measures VOC concentrations in ppm, or as a percentage of the lower explosive limit (LEL), will be used to monitor airborne concentrations of VOCs and evaluate the possible formation of flammable atmospheres in and around the work area. Data will be used to monitor and evaluate vapor concentrations within or emanating from well bores, excavations, and contaminated soil that is stockpiled, moved, or loaded on or about the site. Measurements will be obtained periodically at the top of boreholes or excavation cavities throughout drilling or excavation operations, and during any construction activities in which hydrocarbon-affected soil is encountered. Periodic measurements also will be taken in areas that may contain an accumulation of combustible vapors.

In the event that CGI readings on the site exceed 10 percent of the LEL, work will be suspended, monitoring will be continued as needed to isolate the area of concern, and the following applicable environmental controls will be implemented:

1. Vapors from pooled petroleum product will be suppressed (if necessary) by spraying with foam, appropriate chemical suppressant, or carbon dioxide in gas form or dry ice.

2. Air movers will be used to ventilate the areas of concentration to below 10 percent LEL.

3. Contaminated soil will be covered with clean soil and/or sprayed with water or deodorizing chemicals in order to reduce vaporization of VOCs.

9.0 DECONTAMINATION

Due to the expected low levels and types of contaminants at the site, it is anticipated that personnel will not perform routine decontamination procedures when leaving the Exclusion Zone. Project activities will be initially conducted in Level D PPE. When decontamination is necessary, it will consist of the following:

- Removal of contaminated garments in an "inside out" manner at a designated decontamination station located at the step-off location where personnel routinely enter/exit the Exclusion Zone.

- Placement of contaminated garments in designated plastic bags or drums prior to disposal or transfer offsite. Labels in compliance with the hazard communication standard will be affixed to containers of contaminated debris and clothing.

10.0 PERSONNEL TRAINING

Personnel who will perform field activities shall meet the training requirements specified in the OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER) Standard [29 CFR 1910.120 (e)]. Prior to commencement of work, the SSO will discuss the potential physical and chemical hazards associated with site operations, and review safe work practices with personnel. Personnel are required to acknowledge their understanding and willingness to comply with this SHSP before admission to the site by signing the Compliance Log at the end of the SHSP.

Other job-specific training required to perform tasks within this operation will be verified by the SSO. This training may include, but is not be limited to respirator fit testing, safe lifting techniques, confined spaces, hearing conservation, and proper fire fighting procedures.

11.0 MEDICAL PROGRAM

The site medical program has two main components: a baseline medical surveillance program, and emergency medical assistance procedures.

11.1 BASELINE MEDICAL SURVEILLANCE

TRC has established a medical surveillance program to assess, monitor, and help protect the health of employees, in particular, employees who may be exposed to potentially hazardous substances during site work. Personnel will undergo medical examinations as follows:

Initial: Pre-employment / prior to any assignment involving work in a hazardous or potentially hazardous environment. The initial examination is used to establish a baseline picture of health against which future changes can be measured, and to identify any underlying illnesses or conditions that might be aggravated by chemical exposures or job activities.

Periodic: At least once every 12 months to measure changes in health status.

Upon notification: As soon as possible upon notification by an employee that they have developed signs or symptoms indicating possible overexposure to hazardous substances, or in response to an injury or exposure during an emergency situation.

Exit: At termination of employment.

11.2 EMERGENCY MEDICAL ASSISTANCE

An emergency medical assistance network will be established prior to work start-up. The nearest fire department, police, ambulance service, and hospital with an *emergency room* will be identified. **See ATTACHMENT C** for Emergency Services contact information. A vehicle shall be available onsite during work activities to transport injured personnel to the identified emergency medical facilities, if necessary. Company vehicles are to be equipped with a fire extinguisher and first aid kit.

12.0 EMERGENCY RESPONSE PLAN

The SSO will have controlling authority during an emergency. In the SSO's absence, the Alternate SSO will be in charge. See ATTACHMENT C for the name, location, and telephone number of emergency response organizations in the vicinity of the project site, and a map to the nearest hospital(s).

12.1 EMERGENCY PROCEDURES

In the event of an accident, injury, or other emergency, remember to:

Stop work and REMAIN CALM.

Move personnel to a safe location (evacuation plan).

Call 911 or notify other emergency facilities.

Address medical emergencies and apply first aid, if necessary.

Contain physical hazards. (NOTE: Act only if hazard is minimal and you are trained to deal with the situation. Otherwise evacuate and wait for emergency services to arrive.)

Notify offsite supervisor and client, and initiate accident reporting procedures.

12.2 ACCIDENT REPORTING

In case of an accident, the SSO (or Alternate) will immediately notify the Supervisor/Offsite Coordinator at the nearest TRC office and later provide a report to the PM describing the following:

1. A description of the event (including date and time) that required notification of offsite personnel (i.e., medical facilities, fire department, police department) and the basis for that decision.

2. Date, time, and names of persons/agencies notified, and their response.

3. Details regarding personal injury and property damage, if any.

4. Resolution of incident and the corrective action involved.

All incidents and near misses are to be investigated in accordance with TRC's IIPP. The Supervisor's Report of Accident is to be completed and submitted to the Human Resources department within 24 hours following any accident or injury.

SITE HEALTH AND SAFETY PLAN
COMPLIANCE LOG

I have reviewed this Site Health and Safety Plan and understand the contents of the plan. I hereby agree to comply with all safety requirements outlined herein.

Signature: _____ Date:
Site Safety Officer, TRC

Signature: _____ Date:
Alternate Safety Officer, TRC

Signature: _____ Date:
Print Name:
Company:

Signature: _____ Date:
Print Name:
Company:

Signature: _____ Date:
Print Name:
Company:

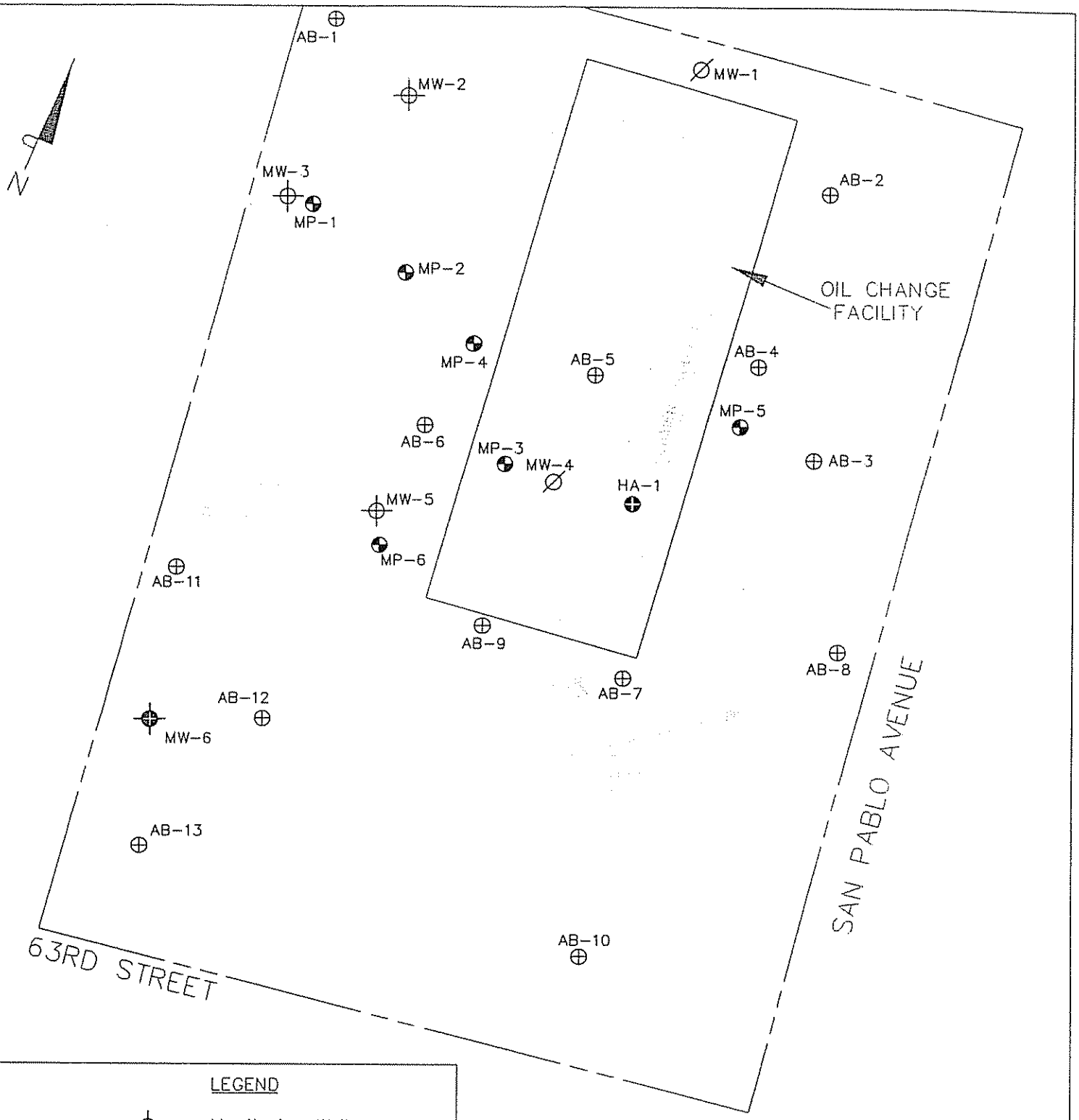
Signature: _____ Date:
Print Name:
Company:

Signature: _____ Date:
Print Name:
Company:

Signature: _____ Date:
Print Name:
Company:

ATTACHMENT A

SITE PLAN



LEGEND

MW-2	⊕	Monitoring Well
MW-4	∅	Abandoned Well
AB-10	⊕	Soil Boring
HA-1	⊕	Hand Auger Boring
MP-6	◔	Former Monitoring Point
MW-6	⊕	Proposed Monitoring Well
		Property Line

SCALE (FEET)

0 20

Source: ALISTO Engineering

SITE PLAN SHOWING PROPOSED MONITORING WELL

Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

TRC | FIGURE

ATTACHMENT B

OCCUPATIONAL HEALTH GUIDELINES AND TOXICOLOGICAL INFORMATION

Table B-1

OCCUPATIONAL HEALTH GUIDELINES AND TOXICOLOGICAL INFORMATION

Contaminant	ACGIH TLV-TWA (ppm)	NIOSH REL (ppm)	STEL (ppm)	OSHA PEL (ppm)	IDLH (ppm)	Routes of Exposure	Known or Suspected Carcinogen	Symptoms
Diesel (as Stoddard solvent)	for Diesel fuel/ Kerosene 14.4 (skin only)	Approx. 60-98	250-500 (NIOSH ceiling)	500	Approx 3000-5600	Inhalation, Ingestion, Contact	No	Irritation to eyes, skin, mucous membrane; dermatitis, headache, fatigue, blurred vision, dizziness, slurred speech, confusion, convulsions, aspiration, weakness, restlessness, incoordination
Gasoline	300	n/a	500	n/a	n/a	Inhalation, Absorption, Ingestion, Contact	Yes	Irritation to eyes, skin, mucous membrane; dermatitis, headache, fatigue, blurred vision, dizziness, slurred speech, confusion, convulsions, aspiration
Benzene	0.5	0.1	1	1	500	Inhalation, Absorption, Ingestion, Contact	Yes	Irritation to eyes, skin, nose, resp system, giddiness, headache, nausea, staggered gait, fatigue, anorexia, weakness/exhaustion, dermatitis
Toluene	50	100	150	200	500	Inhalation, Absorption, Ingestion, Contact	No	Irritation to eyes, nose; fatigue, weakness, confusion, euphoria, dizziness, headache, dilated pupils, tears, nervousness, muscle fatigue, insomnia, dermatitis
Ethylbenzene	100	100	125	100	800	Inhalation, Ingestion, Contact	No	Irritation to eyes, skin, mucous membranes; headache, dermatitis, narcosis, coma
Xylenes (o,m,p,)	100	100	150	100	900	Inhalation, Absorption, Ingestion, Contact	No	Irritation to eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait, nausea, vomiting, abdominal pain, dermatitis
Methyl tert butyl ether (MTBE)	40	n/a	n/a	n/a	n/a	n/a	n/a	n/a

DEFINITIONS

ACGIH TLV-TWA	American Conference of Governmental Industrial Hygienists, Threshold Limit Value-Time Weighted Average
NIOSH REL	National Institute of Occupational Safety & Health, Recommended Exposure Limit
STEL	Short Term Exposure Limit (Gasoline STEL is by ACGIH; BTEX STELs are by NIOSH)
OSHA PEL	Occupational Safety and Health Administration, Permissible Exposure Limit
IDLH	Immediately Dangerous to Life and Health
ppm	parts per million
CNS	Central Nervous System
n/a	not available (i.e., no value has been established)

Threshold Limit Value: Threshold limit values (TLVs) refer to airborne concentrations of substances and represent conditions under which it is believed nearly all workers may be repeatedly exposed, day after day, without adverse health effects.

Threshold Limit Value - Time Weighted Average: The time weighted average (TWA) is a concentration for a normal 8-hour workday and a 40-hour workweek, to which nearly all workers may be repeatedly exposed, day after day, without adverse effect. TLV-TWAs are established by the ACGIH.

Recommended Exposure Limit: Unless otherwise noted, the recommended exposure limit (REL) is a TWA concentration for up to a 10-hour workday during a 40-hour workweek. RELs are established by NIOSH to reduce or eliminate adverse occupational health effects.

Short Term Exposure Limit: A short term exposure limit (STEL) is defined as a 15-minute TWA exposure that should not be exceeded at any time during a workday. When compared to the REL (or TLV-TWA for ACGIH standards), the STEL allows the worker to be exposed to a higher concentration, BUT for a shorter period of time. Exposures above the REL up to the STEL should not be longer than 15 minutes and should not occur more than four times per day.

Permissible Exposure Limit: Permissible exposure limits (PELs) are TWA concentrations that must not be exceeded during any 8-hour work shift of a 40-hour workweek. PELs are established by OSHA (29 CFR 1910.1000).

Immediately Dangerous to Life and Health: Immediately dangerous to life and health (IDLH) values are established as concentrations from which a worker can escape within 30 minutes without suffering loss of life, irreversible health effects, or other deleterious effects that could prevent him/her from escaping the hazardous environment. The purpose of establishing an IDLH exposure concentration is to ensure that workers can escape from a given contaminated environment in the event of failure of respiratory protection equipment.

ATTACHMENT C

EMERGENCY SERVICES
PHONE NUMBERS, DIRECTIONS, AND LOCAL AREA MAP

EMERGENCY SERVICES

FACILITY / LOCATION	TELEPHONE
Emergency Situation	**911**

Medical Facilities:

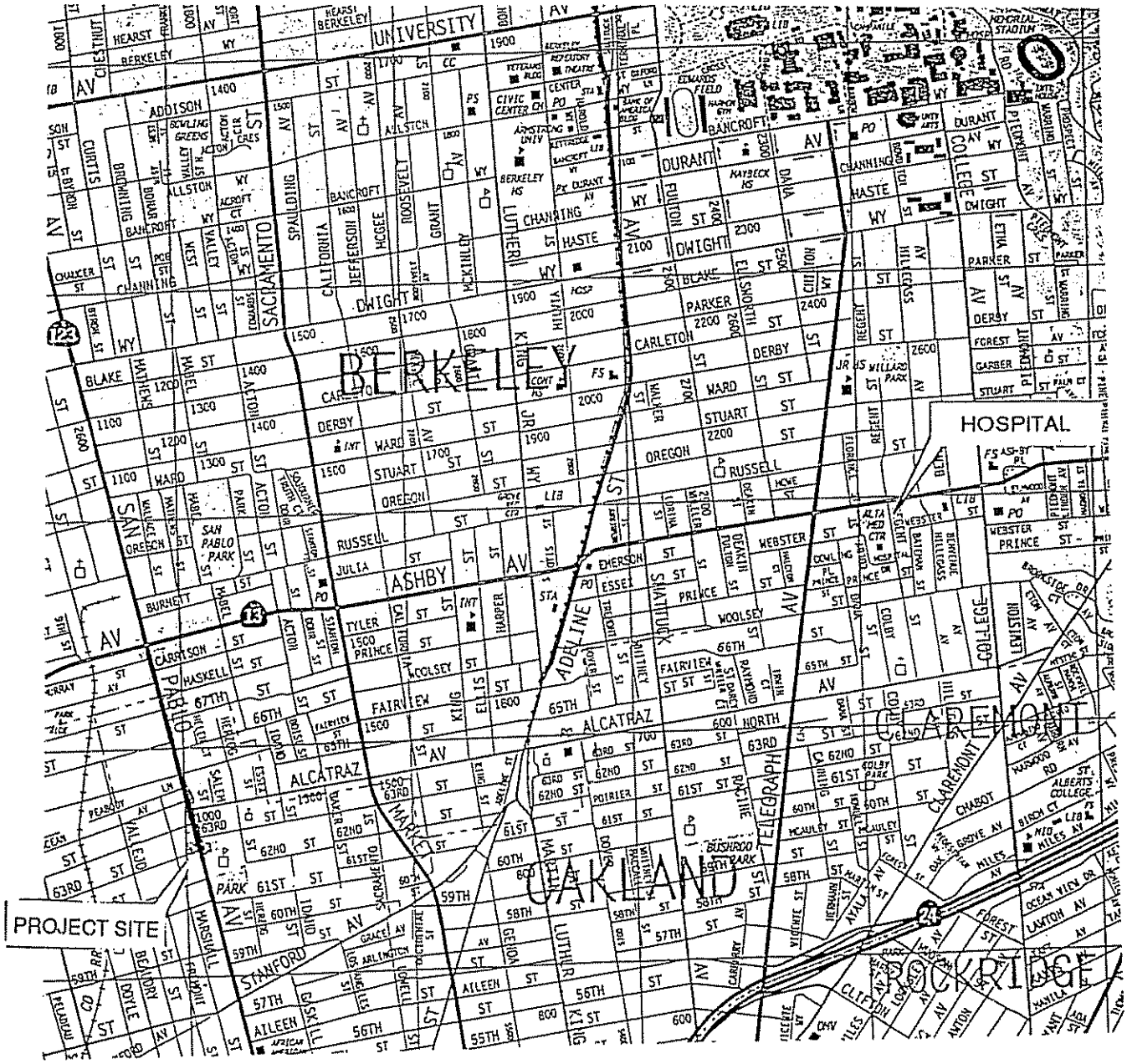
Alta Bates Medical Center 2450 Ashby Avenue Berkeley, California	(510) 204-4444

Directions: From the site, turn left onto San Pablo Avenue and drive one mile and make a right onto Ashby Avenue. Drive 3 miles, Alta Bates is on the right at 2450 Ashby Avenue.

Fire Department	
Oakland Fire Department	911 or (510) 238-6957
Police Department	
Oakland Police Department	911 or (510) 777-3333
Poison Center - Regional (24-hour)	(800) 523-2222
Office of Emergency Services:	(800) 852-7550
USA North:	(800) 227-2600

LOCAL AREA MAP
with route to hospital

LOCAL AREA MAP
with routes to hospital



TAILGATE SAFETY MEETING CHECKLIST

Topics Covered

(Check off as discussed)

____ **Personnel training/qualifications:** Check cards for OSHA HAZWOPER 40-hour certification/8-hour-refresher training (other if appropriate).

____ **Supplies:** Indicate location of first aid kit, fire extinguisher, clean water supply (drinking, eye wash), and Site Health and Safety Plan (SHSP).

____ **Emergency services:** Discuss location of nearest telephone and directions to hospital. Map, directions, phone numbers provided at end of SHSP (Attachment C).

____ **Site background:** Discuss types, locations, and concentrations of chemicals found onsite, presence of free product, depth to groundwater, etc.

____ **Work activities:** Discuss scope of work for the day and activities to be performed.

____ **Potential hazards:** Discuss physical hazards (lifting, pinch points, traffic, working around machinery, etc.); chemical hazards (exposure limits, symptoms, air monitoring); and environmental hazards (heat stress, etc.).

____ **Air monitoring:** Necessary equipment is onsite and calibrated. Circle: CGI PID

____ **Personal protective equipment (PPE):** Discuss required level of protection. See that workers have appropriate PPE onsite; includes, but is not limited to, hardhat, steel-toe boots, safety glasses, ear plugs / hearing protection, respirator (with cartridges), gloves, traffic safety vest (other _____).

____ **Utilities:** Utilities have been cleared/marked by appropriate divisions.

____ **Traffic control** (vehicular and pedestrian): Work area is properly delineated and cordoned off from traffic.

____ **Compliance log:** SHSP has been reviewed and signed by site personnel.

Appendix C

Risk-Based Corrective Action Report (TRC 2002)

COPY

TRC

Customer-Focused Solutions

RISK-BASED CORRECTIVE ACTION REPORT

FORMER MOBIL STATION 99-105
6301 San Pablo Avenue
Oakland, California

Prepared For:

EXXONMOBIL OIL CORPORATION

By:

TRC
5052 Commercial Circle
Concord, California 94520
(925) 688-1200

October 2002

LOGGED IN
SPREADSHEET

ExxonMobil
Refining & Supply Company
Global Remediation

2300 Clayton Road, Suite 1250
Concord, CA 94524-4032
(925) 246-8747 Telephone
(925) 246-8798 Facsimile
gene.n.ortega@exxon.com

Gene N. Ortega
Territory Manager
Global Remediation

FILE COPY

ExxonMobil
Refining & Supply

November 15, 2002

Mr. Barney Chan
Alameda County Environmental Health Services Agency
1131 Harbor Bay Parkway
Alameda, California 94502

Subject: **Former Mobil Station 99-105, 6301 San Pablo Avenue, Oakland, California**

Dear Mr. Chan:

In accordance with your request, please find enclosed a copy of the Risk-Based Corrective Action Report for the above-referenced site. The report was prepared by TRC of Concord, California to determine if additional remedial activities are warranted to address residual hydrocarbons in the soil and groundwater at the site.

If you have any questions or comments, please call me at (925) 246-8747 or Mr. Jonathan Scheiner at (925) 688-2473.

Sincerely,

Gene N. Ortega
Territory Manager

Enclosure

cc: Ms. Connie Lam, Property Owner
Mr. Jonathan Scheiner, TRC

TRC

Customer-Focused Solutions

August 15, 2002

Project No. 41-0123-76

ExxonMobil Refining & Supply Company
2300 Clayton Road, Suite 1250
Concord, California 94524-4032

ATTN: MR. GENE ORTEGA

SITE: FORMER MOBIL STATION 99-105
6301 SAN PABLO AVENUE
OAKLAND, CALIFORNIA

RE: DRAFT RISK-BASED CORRECTIVE ACTION REPORT

Dear Mr. Ortega:

Please find enclosed a draft copy of our Risk-Based Corrective Action report for your review for the former Mobil Station 99-105, located at 6301 San Pablo Avenue Oakland, California. This report has been prepared pursuant to requirements of Alameda County Environmental Health Services (ACEHS), as specified in a letter dated December 7, 2001. Upon your approval, copies will be sent to the following parties:

1. Mr. Barney Chan
   Alameda County
   Environmental Health Services
   1131 Harbor Bay Parkway
   Alameda, California 94502-6577

2. Ms. Connie Lam
   200 Dorado Terrace
   San Francisco, California 94112

Please call Jonathan Scheiner at (925) 688-2473 if you have any questions regarding this report.

Sincerely,

Kristie Wilkie
Project Engineer

Enclosure

5052 Commercial Circle • Concord, California 94520-1248
Telephone 925-688-1200 • Fax 925-688-0388

TRC

Customer-Focused Solutions

RISK-BASED CORRECTIVE ACTION REPORT

FORMER MOBIL STATION 99-105
6301 San Pablo Avenue
Oakland, California

TRC Project No. 41-0123

Prepared For:

EXXONMOBIL OIL CORPORATION

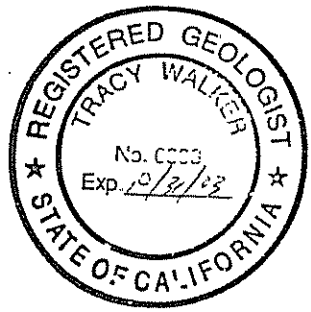
By:

Kristie Wilkie
Project Engineer

Jonathan Scheiner
Associate

Reviewed by

Tracy Walker, R.G.
Associate



TRC
5052 Commercial Circle
Concord, California 94520
(925) 688-1200

RISK-BASED CORRECTIVE ACTION REPORT

FORMER MOBIL STATION 99-105
6301 San Pablo Avenue
Oakland, California

Prepared For:

EXXONMOBIL OIL CORPORATION

By:

TRC
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October 2002

RISK-BASED CORRECTIVE ACTION REPORT

FORMER MOBIL STATION 99-105
6301 San Pablo Avenue
Oakland, California

TRC Project No. 41-0123

Prepared For:

EXXONMOBIL OIL CORPORATION

By:

Kristie Wilkie
Project Engineer

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Associate

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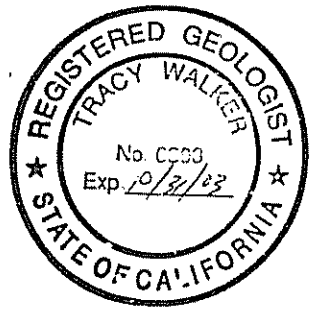
Associate



TRC
5052 Commercial Circle
Concord, California 94520
(925) 688-1200

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1.0 INTRODUCTION

On behalf of ExxonMobil Oil Corporation, TRC has prepared this Risk-Based Corrective Action (RBCA) Report for the former Mobil Station 99-105, located at 6301 San Pablo Avenue, Oakland, California (Figure 1). This report has been prepared pursuant to requirements of Alameda County Environmental Health Services (ACEHS), as specified in a letter dated December 7, 2001 (Appendix A). The findings presented in this report demonstrate that there are no significant risks to human health or the environment due to existing site conditions. TRC, therefore, recommends continuation of quarterly monitoring and sampling for four quarters followed by site closure.

The purpose of this RBCA evaluation is to determine if additional remedial actions are warranted to address residual hydrocarbons present in the soil and groundwater at the site. This evaluation was performed in accordance with the procedures of the American Society for Testing and Materials standard guide for *Risk-Based Corrective Action Applied to Petroleum Hydrocarbon Sites* (ASTM, 1995) as modified by the City of Oakland for the Oakland region (Oakland, 2001). The 3-tiered Oakland RBCA uses Oakland-specific input parameters in the ASTM equations where appropriate, and is analogous to the 3-tiered format of the ASTM RBCA guide. Tier 1 uses generic information applicable to all sites in the Oakland area (Oakland, 2001). Tier 1 established risk-based screening levels (RBSLs) which can be used to determine if further evaluation is necessary. Tier 2 allows for the incremental addition of site specific information and is accompanied by a checklist of criteria as a guide to ensure matching of site conditions to the Tier 2 parameter values. If a site does not match all of the Tier 2 checklist requirements, then site specific information must be used for those items that do not match the checklist requirements. A Tier 3 evaluation involves analyses of site specific conditions, including but not limited to site investigations to collect information for use in site specific analytical models.

The RBCA evaluation presented herein includes Tier 1 and Tier 2 screening procedures; a Tier 3 evaluation was not warranted. As described below, the screening procedures involve the following components:

- Identification of Constituents of Potential Concern (COPCs)
- Identification of Potential Human Receptors
- Evaluation of Potential Exposure Pathways (i.e., by which COPCs may impact identified receptors)

Both commercial and residential indoor air exposure scenarios were identified as areas of focus in the RBCA evaluation. Specifically, the following have been evaluated: (1) the Oakland RBCA Tier 1 RBSLs; and (2) the Oakland RBCA Tier 2 Site Specific Target Levels (SSTLs) for Oakland Merritt Sands, silty sands, and clayey sands.

2.0 SITE DESCRIPTION

2.1 OVERVIEW

Present Site Use: The property is currently being used as an automobile oil change facility. A Site Plan is presented in Figure 2.

Past Site Uses: The site was a Mobil service station from 1951 until 1980 after which it was used as a car rental lot. The former underground storage tanks (USTs) were not in use after 1980, and were removed in 1994. Methyl tertiary butyl ether (MTBE) has not been reported to have ever been used at the site.

Adjacent Property And Site Uses: The site is located on the northwest corner of San Pablo Avenue and 63rd Street in Oakland, California (Figure 1). Commercial properties are situated to the north along San Pablo Avenue. To the east, across San Pablo Avenue, is an elementary school, and to the west and south are residential properties.

Geography: San Francisco Bay is located approximately 5,000 feet to the west of the site. Topography in the vicinity of the site is relatively flat but slopes gently west. The site has an elevation of approximately 22 feet above mean sea level (USGS, 1959).

Soil Lithology: Soils encountered beneath the site generally consist of clayey sand, sandy clay, gravely silts, and minor fine gravels and sand lenses from the surface to approximately 18 feet below grade (fbg) (Alton Geoscience, 1999b). Inorganic silts, clayey sands, and inorganic clays of low to medium plasticity extend beneath the Site to a depth of approximately 10-20 fbg, based on geologic logging of soils during monitoring well installation activities conducted in 1996. Monitoring well boring logs are presented in Appendix B. Geologic cross sections based on boring logs for these monitoring wells are presented in Figures 3 and 4.

Regional Geology The site is underlain by the Quaternary Temescal Formation, which consists of interfingering layers of clayey gravel, sandy silty clay, and various clay-silt-sand mixtures. The formation varies in thickness to a maximum of approximately 60 feet. Underlying the Temescal Formation is the Quaternary Alameda Formation, which consists of unconsolidated continental and marine gravels, sands, silts, and clays, with some shells and organic material in places. The formation has a maximum known thickness

of 1,050 feet (Radbruck, 1957).

Regional Hydrogeology: The site is located in the East Bay Plain Groundwater Basin. Groundwater generally flows westward toward the San Francisco Bay (RWQCB, 1995). A groundwater elevation contour map is presented in Figure 5.

Sensitive Receptors: A sensitive receptor survey conducted in September 2001 indicated that no supply wells are located within a 1/2-mile radius of the site. San Francisco Bay is located approximately 5,000 feet to the west of the site. To the east, across San Pablo Avenue, is an elementary school.

2.2 BACKGROUND AND CURRENT SITE CONDITIONS

- Four gasoline USTs and one used oil UST were excavated and removed from the site in 1994 (Figure 2). The product piping was removed from the site in February 1996. An estimated 367 cubic yards of soil was excavated and removed from the site during the UST and piping removals (Alisto, 1996).

- Four groundwater monitoring wells (MW-1 through MW-4) were installed in March 1996 (Figure 2) (Alisto, 1996).

- Thirteen soil borings (AB-1 through AB-13) were drilled at the site in March 1998 (Figure 2) (Alton Geoscience, 1998).

- On November 19, 1998, a dual-phase vacuum extraction (DPVE) event was conducted. Six temporary monitoring points (MP-1 through MP-6) were advanced to further characterize the extent of hydrocarbon-impacted vadose zone soil and to obtain vacuum readings and groundwater depths during the DPVE event. Groundwater and vapors were extracted from wells MW-3 and MW-4. Vacuum response and groundwater depths were measured in the temporary monitoring points and monitoring wells during the DPVE event. Approximately 21 pounds of vapor-phase hydrocarbons and 75 gallons of hydrocarbon-impacted groundwater were recovered during the event (Alton Geoscience, 1999b). Following the extraction event, monitoring points MP-1 through MP-6 were abandoned in place.

- In early 1999, over 200 cubic yards of soil were removed from the north area of the Site during redevelopment activities conducted by the current property owner (i.e., as part of the construction of the current oil change facility - See Figure 2 for location of facility). Monitoring well MW-4 was inadvertently destroyed during these construction activities.
- During and shortly after soil excavation and site development activities were completed,

communications between responsible parties and ACEHS were conducted to determine the disposition of excavated soil and to ensure the absence of residual hydrocarbons in soils following excavation activities. Copies of these communications which are included in Appendix C, document discussions regarding sampling of soils excavated by the property owner and associated confirmation analyses, and include the following letters:

- ACEHS to Mobil Oil Company (Mobil) and Ms. Connie Lam[b] (property owner), dated July 9, 1999.
- ACEHS to Mobil and Ms. Connie Lam[b], dated October 28, 1999.
- ACEHS to Mobil and Ms. Connie Lam[b], dated January 25, 2000.
- ACEHS to Mobil and Ms. Connie Lam[b], dated March 3, 2000.

- MW-1 was properly abandoned during July 1999 in preparation of the construction activities (TRC Alton Geoscience, 1999).

- In January 2000, one soil boring (HA-1) was advanced in the footprint area of the oil change facility (i.e., prior to construction of the building) to confirm the absence of hydrocarbon impacts in this area (Figure 2).

- Two of the three monitoring wells damaged during construction activities conducted by the current property owner in 1999 (MW-2 and MW-3) were rehabilitated in Fall 2000, and the third (MW-4) was replaced by newly installed MW-5 at this time. As indicated above, monitoring well MW-1 was properly abandoned in place. The remaining three wells (MW-2, -3, -5) constitute the current monitoring well network and have been monitored on a quarterly basis (Figure 2).

- Twenty quarters of groundwater monitoring and sampling have been conducted at the Site since the initial installation of MW-1 through MW-4 in March 1996. Elevated levels of hydrocarbons have been reported in monitoring well MW-3. Free product hydrocarbons have been reported in MW-4 since the third quarter of 1996. On January 27, 1999, 0.07 foot of free product was measured in MW-4 (Alton Geoscience, 1999a), prior to destruction of the monitoring well during construction activities at the site. To date, no detectable levels of MTBE have been reported in any of the monitoring wells by EPA Method 8020, nor by confirmation analyses using EPA Method 8260.

- The average depth to groundwater at the site is approximately 7.15 fbg, based on water level monitoring conducted on January 18, 2002 (TRC, 2002). Historical groundwater depths have ranged from 3.83 fbg (MW-1: January 31, 1997) to 11.57 fbg (MW-3: October 20, 1998). The groundwater gradient was calculated to be 0.25 foot per foot (ft/ft) toward the west in January 2002. The groundwater flow direction has varied from the northwest (April, 1997) to the southwest (January, 1999) (Alton Geoscience, 1997; 1999a).

3.0 RISK-BASED CORRECTIVE ACTION EVALUATION

3.1 CONCEPTUAL MODEL

Results of previous site assessment and groundwater monitoring and sampling activities indicate the presence of hydrocarbons in the vicinity of the former gasoline USTs and dispenser island. Petroleum hydrocarbons detected in onsite soil borings were generally encountered at depths between 5 and 10 fbg. Measurable levels of free-phase hydrocarbons were detected onsite in MW-4 prior to the destruction of the well in 1999. Free-phase hydrocarbons have not been detected in the other wells.

3.2 CHEMICALS OF POTENTIAL CONCERN, POTENTIAL EXPOSURE PATHWAYS, EXPOSURE SCENARIOS, AND POTENTIAL PREFERENTIAL PATHWAYS

3.2.1 Chemicals of Potential Concern

Consistent with a gasoline release, BTEX and MTBE represent the COPCs for the RBCA analysis.

3.2.2 Potential Exposure Pathways

There are two secondary sources of COPCs: (1) impacted subsurface soils, and (2) impacted shallow subsurface groundwater. Potential exposure pathways by which current workers or future building occupants could be impacted by these contaminant sources include:

- Ingestion of Impacted Soils
- Dermal Contact with Impacted Soils
- Inhalation of Dust Containing COPCs
- Ingestion of Impacted Shallow Groundwater
- Dermal Contact with Impacted Shallow Groundwater
- Indoor Inhalation of Volatile Components in Shallow Soils and/or Shallow Groundwater

Since the site is paved, exposure pathways involving direct contact with shallow soils are not viable or complete for the purposes of this analysis. Similarly, exposure pathways involving direct contact with shallow groundwater are not viable, since the shallow groundwater beneath the site is not potable and potable water is available from surface water sources obtained from regional providers. Therefore, the only viable exposure pathways involve indirect contact with COPCs in shallow soils or groundwater (i.e., via inhalation of volatile components in indoor air emanating from sources in the shallow soil or groundwater).

Based on the absence of utilized municipal or domestic groundwater wells, the potential ingestion of groundwater from an offsite groundwater well is not considered a complete exposure pathway and will not be quantitatively evaluated.

3.2.3 Exposure Scenarios

Sensitive Receptors

The nearest potential sensitive receptor for exposure to contaminated groundwater is the inspection pit located below grade within the oil change facility onsite. Workers at the oil change facility could be exposed to vapors migrating into the inspection pit or building. Given the previous soil excavation (to an approximate depth of six feet below grade) by the current property owner during construction of the existing facility, it is likely that residual impacts to subsurface soil in this area have been mitigated.

Potential future occupants of structures built directly above impacted areas of the site are considered sensitive receptors due to the potential for indoor air inhalation of volatile hydrocarbon components.

Sensitive receptors may also include occupants of the church located adjacent to and down-gradient of the Site. Since the gradient is defined to be in the westerly direction, low levels of volatile hydrocarbon components could potentially migrate through the vadose zone and into overlying structures.

Land Use

The site is currently being used as an oil change facility and is surrounded by other commercial properties and residences. Both San Pablo Avenue and 63rd Street are highly traveled and busy streets. It is likely that land use on the site will remain commercial. The current oil change facility was constructed in 1999, and there are no plans for future site construction or redevelopment.

3.2.4 Potential Preferential Migration Pathways

Preferential pathways for the migration of free- and dissolved-phase chemicals may occur where either natural (i.e., stream beds) or man-made (i.e., subsurface utilities) features exist. Of primary concern are features which are more permeable or transmissive than the native soil conditions. Generally, the presence of man-made features can be determined by completing a survey of nearby subsurface utilities. Specific details regarding these features that are important in evaluating the potential influence of a preferential pathway include the depth and dimensions of the feature.

Subsurface utility research has been performed for features adjacent to the site. Specifically, north-south trending subsurface public utilities in the vicinity of San Pablo Avenue and east-west trending subsurface public utilities beneath 63rd Street were investigated. The utilities servicing the site originate beneath San Pablo Avenue. Utility vaults are located adjacent to the site along San Pablo Avenue.

Previous site investigations reveal low to non-detectable levels of hydrocarbons in groundwater east and south of the site, adjacent to San Pablo Avenue and 63rd Street. Specifically, borings AB-8, AB-10, and AB-13 (March, 1998) indicate low to non-detectable levels of petroleum hydrocarbons in the groundwater in these areas. In addition, San Pablo Avenue and 63rd Street are up-gradient from the area impacted by hydrocarbons. Therefore, utilities servicing the onsite facility and nearby public utilities are not considered to be a complete pathway.

Groundwater beneath the site is generally present at depths between 5 and 12 fbg in site monitoring wells. Subsurface utilities at depths shallower than 5 fbg would therefore not serve as preferential pathways for the migration of groundwater.

3.3 DEFAULT AND SITE SPECIFIC PARAMETERS

This evaluation incorporates ASTM default parameter values, except where the Oakland RBCA has modified those default values or site specific information is available. The following assumptions are made in this evaluation:

- Available laboratory results of soil samples collected and analyzed since 1996 are considered reliable and appropriate for the purpose of evaluating the indoor air exposure risk.
- To evaluate the indoor air exposure risk to workers at the current oil change facility and residents or workers in a potential future building onsite, analytical results from soil borings MW-1 through MW-4, AB-1 through AB-13, MP-1 through MP-6, and HA-1 have been evaluated. The highest concentration of hydrocarbons in soil was reported in two samples collected from MW-2 and MW-4 at 5-10 fbg.
- Volatile secondary soil sources may not be continuously exposed to soil pores in the vadose zone due to fluctuating groundwater levels at the site. Nonetheless, in this evaluation, volatile components of secondary soil sources are assumed to be continuously available to propagate through the vadose zone.
- The Site consists predominantly of sandy silts based on boring and monitoring well logs from previous onsite drilling activities. However, to be conservative, Tier 2 analyses compare site concentrations with a range of Oakland area soil conditions.

3.4 EVALUATION OF INDOOR AIR EXPOSURE RISKS

The BTEX and MTBE compounds in the soil and groundwater are compared to the Oakland RBCA RBSLs and SSTLs for both commercial and residential scenarios to (Tables 3 and 4). This conservative approach includes the evaluation of health risks associated with potential exposures to (maximum reported) BTEX and MTBE concentrations in soil and groundwater.

Use of the Oakland RBCA default values requires matching site conditions to the default values therein. The Oakland RBCA Eligibility Checklist is included in Appendix D. As indicated in the checklist, the site meets the listed criteria, and therefore, the Oakland default RBSLs and SSTLs are applicable (included in Appendix E).

3.4.1 Tier 1 Analysis

Maximum soil and groundwater concentrations of BTEX and MTBE were compared to the Oakland RBCA Tier 1 residential and commercial target levels. Of the COPCs, only benzene in the soil and groundwater exceeds the residential or commercial RBSL. Toluene, ethylbenzene, total xylenes, and MTBE in the soil and groundwater are not present at concentrations great enough to present health risks via the identified exposure pathways above thresholds established by the City of Oakland (see Tables 3 and 4). Therefore, these chemical compounds are excluded from further consideration.

3.4.2 Tier 2 Analysis

Maximum soil and groundwater concentrations of BTEX and MTBE were compared to the Oakland RBCA Tier 2 residential and commercial SSTLs (Tables 3 and 4). The maximum concentrations of benzene in the groundwater detected at the site are below the applicable Oakland SSTLs over a wide range of Oakland area soil conditions. Therefore, the dissolved-phase benzene at the site is not considered to pose health risks above thresholds established by the City of Oakland (see Table 4), and is excluded from further consideration.

The maximum benzene concentration in soil (1.2 ppm [MW-2 @ 10 fbg and MW-4 @ 5 fbg]) exceeds the Oakland RBCA residential SSTL for Merritt Sands (0.07 ppm) and Sandy Silts (1.1 ppm).

In assessing the potential human health risk associated with exposure to benzene in the shallow soil, it is important to note the following:

- Site development activities in 1999 resulted in the removal of approximately 200 cubic yards of soil in the central area of the site (i.e., including impacted soils in the vicinity of MW-4). Therefore, although the reported benzene concentration in a soil sample collected from MW-4 in 1996 exceeded the Oakland RBCA residential SSTLs, current soil conditions likely have lower levels of benzene and other COPCs.
- Comparisons are based on maximum soil concentrations of benzene at the Site. Average benzene concentrations are likely lower than the maximum levels.
- Boring logs of MW-2 indicate predominantly sandy silts. The maximum benzene concentration in soil (1.2 ppm from MW-2 in 1996) exceeds the Oakland RBCA residential SSTL of 1.1 ppm for sandy silts by 0.1 ppm.

- The site was recently redeveloped and is currently commercially operated. Maximum benzene concentrations in soil are below the Oakland RBCA commercial/industrial SSTLs for the wide range of Oakland soil conditions considered.
- The maximum benzene soil concentration cited above was obtained during drilling activities in March 1996. Natural attenuation processes have been in effect for six years and have likely resulted in reduced soil benzene concentrations.

4.0 CONCLUSIONS AND RECOMMENDATIONS

The COPCs identified in this evaluation are BTEX and MTBE in the soil and groundwater beneath the Site. Although a number of potential exposure pathways were evaluated for the COPCs (e.g., groundwater ingestion, dermal contact), only the pathway involving indoor inhalation of volatile components is considered complete. Potential receptors associated with this vapor migration pathway include: (1) current workers at the existing onsite oil change facility; and (2) potential future occupants of a structure built in the central area of the site. The results of the evaluation of the potential indoor air exposure risks to these sensitive receptors can be summarized as follows:

1. Toluene, ethylbenzene, total xylenes, and MTBE concentrations in the soil and groundwater are below the respective Oakland RBCA RBSLs (Tier 1).
2. The maximum benzene concentration in the groundwater is below the Oakland RBCA SSTLs (Tier 2) for a wide range of soil conditions (Merritt Sands, sandy silts, and clayey sands).
3. The maximum benzene concentration in the soil is below the Oakland commercial RBCA SSTLs for the wide range of soil conditions evaluated.
4. The maximum benzene concentration in the soil (1.2 ppm) is above the Oakland residential RBCA SSTL for sandy silts (1.1 ppm), the predominant site soil type.

This evaluation has assumed a non-diminishing secondary source and a constant vapor flux rate over the entire potential exposure duration assessed. However, historical monitoring and sampling has demonstrated that the dissolved-phase hydrocarbons have decreased over time, and the hydrocarbons are expected to continue to decrease in the future.

Based on these findings and the issues addressed in Section 3.4.2, Tier 2 Analysis, potential health risks posed to either current site workers or future residents/workers are likely not significant.

TRC requests that quarterly monitoring and sampling be continued for one additional year to confirm observed long term trends in hydrocarbon concentrations. Pending regulatory approval, TRC recommends site closure.

5.0 REFERENCES

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TABLES

Table 1
Summary of Soil Sample Analysis
Former Mobil Station 99-105

Sample ID	Depth (feet)	Date	TPH-G (ppm)	TPH-D (ppm)	Benzene (ppm)	Toluene (ppm)	Ethyl-benzene (ppm)	Total Xylenes (ppm)	TOG (ppm)	Lead (ppm)	MTBE (ppm)	MTBE 8260 (ppm)
MW-1	5-5.5'	03/01/96	ND<1.0	3.4	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	—	ND<2.5	—	—
MW-1	10-10.5'	03/01/96	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	—	ND<2.5	—	—
MW-1	15-15.5'	03/01/96	ND<1.0	4.2	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	—	ND<2.5	—	—
MW-2	5-5.5'	03/01/96	ND<1.0	2.4	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	—	ND<2.5	—	—
MW-2	10-10.5'	03/01/96	220	57	1.2	1.4	2.7	14	—	ND<2.5	—	—
MW-2	15-15.5'	03/01/96	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	0.0063	0.035	—	ND<2.5	—	—
MW-3	5.5-6'	03/01/96	ND<1.0	1.1	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	9.0	ND<2.5	—	—
MW-3	10.5-11'	03/01/96	53	72	0.032	0.43	0.65	0.93	290	ND<2.5	—	—
MW-3	15.5-16'	03/01/96	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	10	ND<2.5	—	—
MW-4	5.5-6'	03/01/96	280	34	1.2	1.0	4.1	19	—	ND<2.5	—	—
MW-4	10.5-11'	03/01/96	5.8	7.7	0.11	ND<0.0050	0.11	0.093	—	ND<2.5	—	—
MW-4	15.5-16'	03/01/96	5.6	2.1	0.076	0.023	0.083	0.070	—	ND<2.5	—	—
AB-1	5-6'	03/05/98	ND	—	ND	ND	ND	ND	—	—	ND	—
AB-2	4-5'	03/05/98	ND	—	ND	ND	ND	ND	—	—	ND	—
AB-3	5.5'	03/05/98	ND	—	ND	ND	ND	ND	—	—	ND	—
AB-4	5-6'	03/05/98	18	—	ND	ND	ND	ND	—	—	ND	—
AB-5	3-4'	03/05/98	170	—	ND	ND	0.65	ND	—	—	ND	—
AB-6	5'	03/05/98	230	—	ND	ND	ND	ND	—	—	ND	—
AB-7	4-5'	03/05/98	19	—	ND	ND	0.032	ND	—	—	ND	—
AB-8	5'	03/05/98	ND	—	ND	ND	ND	ND	—	—	ND	—
AB-9	4'	03/05/98	16	—	0.006	ND	0.028	ND	—	—	ND	—
AB-10	4'	03/05/98	ND	—	ND	ND	ND	ND	—	—	ND	—

Table 1
Summary of Soil Sample Analysis
Former Mobil Station 99-105

Sample ID	Depth (feet)	Date	TPH-G (ppm)	TPH-D (ppm)	Benzene (ppm)	Toluene (ppm)	Ethyl-benzene (ppm)	Total Xylenes (ppm)	TOG (ppm)	Lead (ppm)	MTBE (ppm)	MTBE 8260 (ppm)
AB-11	5-6'	03/05/98	3.9	—	ND	ND	ND	ND	—	—	ND	—
AB-12	5-6'	03/16/98	ND	—	ND	ND	ND	ND	—	—	ND	—
AB-13	5-6'	03/16/98	ND	—	ND	ND	ND	ND	—	—	ND	—
MP-1	7.5'	11/16/98	10	—	ND	0.007	0.013	ND	—	—	ND	—
MP-2	7'	11/16/98	270	—	ND	0.03	0.29	2.1	—	—	ND	—
MP-2	10.5'	11/16/98	140	—	0.08	ND	0.31	ND	—	—	0.15	—
MP-3	7.5'	11/16/98	230	—	ND	0.10	1.6	ND	—	—	0.28	—
MP-4	5'	11/16/98	120	—	ND	ND	0.35	ND	—	—	0.19	—
MP-4	10'	11/16/98	18	—	ND	0.013	0.070	0.086	—	—	ND	—
MP-5	6.5'	11/16/98	6.4	—	ND	ND	0.015	0.022	—	—	ND	—
MP-5	10.5'	11/16/98	220	—	ND	ND	1.4	3.0	—	—	0.52	—
MP-6	7'	11/16/98	ND	—	ND	ND	ND	ND	—	—	ND	—
MP-6	10'	11/16/98	240	—	ND	ND	1.6	4.2	—	—	0.92	ND
HA-1	5'	01/25/00	ND<0.50	—	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	—	—	ND<0.025	—
Comp-1	Composite	01/25/00	ND<0.50	—	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.010	—	8.04	ND<0.025	—

NOTES:

ppm = parts per million
TPH-G = total petroleum hydrocarbons as gasoline
TPH-D = total petroleum hydrocarbons as diesel
TOG = total oil and grease
MTBE = methyl tert butyl ether

— = not measured/not analyzed
ND = not detected at or above method detection limit

Table 2

Summary of Groundwater Levels and Chemical Analysis

Former Mobil Station 99-105

Well ID	Date	Top of Casing Elevation (feet)	Depth to Water (feet)	Groundwater Elevation (feet)	Product Thickness (feet)	TPH-G (ppb)	TPH-D (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Total Xylenes (ppb)	MTBE 8020 (ppb)	MTBE 8240 or 8260 (ppb)	TOG (ppb)	Lead (ppb)	Dissolved Oxygen (mg/L)
TW-1	01/04/96	—	6.00	—	0.00	ND	700	ND	ND	ND	ND	—	—	—	—	—
WW-1	01/04/96	—	3.00	—	0.00	ND	—	ND	ND	ND	ND	—	—	ND	—	—
MW-1	03/14/96	32.79	4.50	28.29	0.00	610	450	0.75	0.54	1.5	59	—	—	—	ND	—
MW-1	05/21/96	32.79	5.64	27.15	0.00	ND	ND	ND	ND	ND	ND	—	—	—	—	—
MW-1	08/13/96	32.79	9.76	23.03	0.00	ND	ND	ND	ND	ND	ND	—	—	—	—	—
MW-1	11/08/96	32.79	10.24	22.55	0.00	ND	ND	ND	0.92	ND	2.1	ND	—	—	—	—
MW-1	01/31/97	32.79	3.83	28.96	0.00	ND	ND	ND	0.85	ND	ND	2.6	ND	—	—	—
MW-1	04/22/97	32.79	9.14	23.65	0.00	ND	ND	ND	ND	ND	ND	ND	—	—	—	—
MW-1†	07/29/97	32.79	10.18	22.61	0.00	ND	60****	0.84	0.95	ND	1.6	36	—	—	—	—
MW-1†	10/09/97	32.79	10.46	22.33	0.00	ND	56****	ND	ND	ND	ND	ND	—	—	—	—
MW-1†	01/23/98	32.79	3.95	28.84	0.00	ND	33	ND	ND	ND	ND	ND	—	—	—	—
MW-1	04/22/98	32.79	5.33	27.46	0.00	ND	ND	ND	ND	ND	ND	ND	—	—	—	1.25
MW-1	07/21/98	32.79	9.17	23.62	0.00	ND	—	ND	ND	ND	ND	ND	—	—	—	4.34
MW-1	10/20/98	32.79	10.41	22.38	0.00	ND	—	ND	ND	ND	ND	ND	—	—	—	2.49
MW-1	01/27/99	32.79	5.51	27.28	0.00	ND	—	ND	ND	ND	ND	ND	—	—	—	5.25
MW-1	Destroyed during construction activities in April 1999															
MW-2	03/14/96	32.80	4.51	28.29	0.00	560	250	2.0	0.96	4.3	11	—	—	—	ND	—
MW-2	05/21/96	32.80	5.65	27.15	0.00	730	560	5.1	1.4	6.7	5.9	—	—	—	—	—
MW-2	08/13/96	32.80	10.14	22.66	0.00	490	380*	25	3.5	7.2	13	—	—	—	—	—
MW-2	11/08/96	32.80	10.70	22.10	0.00	520	160***	80	2.7	14	66	6.1	—	—	—	—
MW-2	01/31/97	32.80	3.84	28.96	0.00	74	130*	ND	ND	ND	ND	ND	—	—	—	—
MW-2	04/22/97	32.80	9.61	23.19	0.00	260	430	2.7	ND	2.5	ND	ND	—	—	—	—
MW-2†	07/29/97	32.80	10.53	22.27	0.00	320	150***	28	1.2	10	ND	ND	—	—	—	—
MW-2†	10/09/97	32.80	10.87	21.93	0.00	460	160*	43	2.8	2.0	2.6	2.6	—	—	—	—
MW-2†	01/23/98	32.80	3.75	29.05	0.00	ND	54	ND	ND	ND	ND	ND	—	—	—	—
MW-2	04/22/98	32.80	5.36	27.44	0.00	180	540	1.2	0.3	0.4	ND	ND	—	—	—	0.85
MW-2	07/21/98	32.80	9.55	23.25	0.00	80	—	8.9	2.1	0.6	2.5	ND	—	—	—	1.04
MW-2	10/20/98	32.80	10.75	22.05	0.00	50	—	0.8	0.7	ND	0.8	ND	—	—	—	1.12
MW-2	01/27/99	32.80	5.53	27.27	0.00	ND	—	0.6	ND	ND	ND	ND	—	—	—	0.99
MW-2	07/27/99	32.80	6.20	26.60	0.00	ND	—	ND	0.6	ND	ND	ND	—	—	—	0.30
MW-2	12/08/99	32.80	9.98	22.82	0.00	ND	—	1.2	0.43	ND	ND	ND	—	—	—	1.83
MW-2	Sep-00	39.34	Well resurveyed after repair by Alisto Engineering													
MW-2	10/25/00	39.34	11.30	28.04	0.00	<20	—	2.0	0.59	0.46	1.3	<0.30	—	—	—	0.35
MW-2	01/15/01	39.34	9.41	29.93	0.00	<20	—	<0.20	0.46	<0.20	<0.60	<0.30	—	—	—	—
MW-2	04/10/01	39.34	6.16	33.18	0.00	23	—	0.28	<0.20	<0.20	<0.60	<1.0	—	—	—	1.72
MW-2	07/24/01	39.34	10.70	28.64	0.00	<50	—	<0.20	0.93	<0.20	0.82	<0.30	—	—	—	3.39
MW-2	11/27/01	39.34	10.15	29.19	0.00	<50	—	1.2	0.22	<0.20	<0.60	<0.30	—	—	—	—
MW-2	11/27/01	42.02	Well resurveyed													
MW-2	01/18/02	39.34	5.46	33.88	0.00	<50.0	—	<0.50	<0.50	<0.50	<0.50	1.40	—	—	—	—
MW-3	03/14/96	32.80	9.55	23.25	0.00	4,200	1,200	220	30	140	520	—	—	ND	ND	—
MW-3	05/21/96	32.80	10.16	22.64	0.00	8,500	2,800	710	110	440	1,700	—	—	—	—	—
MW-3	08/13/96	32.80	11.18	21.62	0.00	5,000	2,300**	430	ND	200	360	—	—	—	—	—
MW-3	11/08/96	32.80	11.51	21.29	0.00	8,400	2,900*	890	82	790	1,700	73	ND	—	—	—
MW-3	01/31/97	32.80	7.90	24.90	0.00	16,000	7,500*	660	85	960	1,800	ND	—	—	—	—

Table 2

Summary of Groundwater Levels and Chemical Analysis

Former Mobil Station 99-105

Well ID	Date	Top of Casing Elevation (feet)	Depth to Water (feet)	Groundwater Elevation (feet)	Product Thickness (feet)	TPH-G (ppb)	TPH-D (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Total Xylenes (ppb)	MTBE 8020 (ppb)	MTBE 8240 or 8260 (ppb)	TOG (ppb)	Lead (ppb)	Dissolved Oxygen (mg/L)
MW-3	04/22/97	32.80	10.64	22.16	0.00	8,000	2,700	340	33	400	490	200	ND	—	—	—
MW-3†	07/29/97	32.80	11.36	21.44	0.00	9,800	2,300*	330	ND	530	530	ND	—	—	—	—
MW-3†	10/09/97	32.80	11.52	21.28	0.00	7,300	2,600*	300	ND	430	460	270	ND	—	—	—
MW-3†	01/23/98	32.80	7.50	25.30	0.00	6,100	2,300	190	23	330	320	ND	—	—	—	—
MW-3	04/22/98	32.80	6.81	25.99	0.00	4,900	2,600	140	12	250	230	ND	ND	—	—	0.45
MW-3	07/21/98	32.80	10.65	22.15	0.00	7,400	—	250	16	400	370	74	ND	—	—	0.78
MW-3	10/20/98	32.80	11.57	21.23	0.00	6,700	—	200	18	350	350	ND	ND	—	—	0.69
MW-3	01/27/99	32.80	9.11	23.69	0.00	3,100	—	74	4	94	39	13	—	—	—	1.20
MW-3	07/27/99	32.80	7.27	25.53	0.00	8,900	—	170	21	360	440	ND	—	—	—	0.33
MW-3	12/08/99	32.80	10.63	22.17	0.00	4,800	—	94	13	170	210	ND	—	—	—	1.12
MW-3	Sep-00	39.27	Well resurveyed after repair by Alisto Engineering													
MW-3	10/25/00	39.27	12.08	27.19	0.00	3,800	—	63	2.9	100	65	<50	<5	—	—	0.96
MW-3	01/15/01	39.27	10.29	28.98	0.00	4,300	—	76	9.5	47	76	<5.0	—	—	—	0.60
MW-3	04/10/01	39.27	10.11	29.16	0.00	2,700	—	55	4.4	100	37	<20	—	—	—	1.63
MW-3	07/24/01	39.27	11.57	27.70	0.00	3,100	—	110	6.9	110	81	<1.0	—	—	—	4.25
MW-3	11/27/01	39.27	10.93	28.34	0.00	2,400	—	47	8.9	25	35	<0.30	—	—	—	—
MW-3	11/27/01	41.74	Well resurveyed													
MW-3	01/18/02	39.27	9.47	29.80	0.00	1,130	—	15.3	2.30	42.0	24.6	13.6	—	—	—	—
MW-4	03/14/96	31.50	4.92	26.58	0.00	12,000	3,500	2,200	140	880	2,000	—	—	—	ND	—
MW-4	05/21/96	31.50	8.60	22.90	0.00	11,000	4,200	1,700	ND	930	470	—	—	—	—	—
MW-4	08/13/96	31.50	10.02	21.50	0.02	—	—	—	—	—	—	—	—	—	—	—
MW-4	11/08/96	31.50	10.28	21.33	0.15	—	—	—	—	—	—	—	—	—	—	—
MW-4	01/31/97	31.50	7.88	23.62	0.00	23,000	8,200*	980	68	1,100	1,400	ND	—	—	—	—
MW-4	04/22/97	31.50	7.40	24.10	0.00	8,800	4,500	950	ND	610	130	ND	—	—	—	—
MW-4	07/29/97	31.50	9.85	21.74	0.12	—	—	—	—	—	—	—	—	—	—	—
MW-4	10/09/97	31.50	10.35	21.38	0.30	—	—	—	—	—	—	—	—	—	—	—
MW-4	01/23/98	31.50	4.68	27.51	0.92	—	—	—	—	—	—	—	—	—	—	—
MW-4	04/22/98	31.50	6.39	25.22	0.14	—	—	—	—	—	—	—	—	—	—	—
MW-4	07/21/98	31.50	7.10	24.55	0.20	—	—	—	—	—	—	—	—	—	—	—
MW-4	10/20/98	31.50	9.03	22.60	0.17	—	—	—	—	—	—	—	—	—	—	—
MW-4	01/27/99	31.50	5.37	26.18	0.07	—	—	—	—	—	—	—	—	—	—	—
MW-4	Destroyed during construction activities in April 1999															
MW-5	Sep-00	39.18	Well surveyed after installation by Alisto Engineering													
MW-5	10/25/00	39.18	10.92	28.26	0.00	2,500	—	79	3.8	66	<20	<20	—	—	—	0.50
MW-5	01/15/01	39.18	8.32	30.86	0.00	3,900	—	120	7.9	280	52	<5.0	—	—	—	0.69
MW-5	04/10/01	39.18	7.21	31.97	0.00	8,000	—	280	4.4	410	100	<50	<5	—	—	1.90
MW-5	07/24/01	39.18	9.54	29.64	0.00	7,000	—	360	7.4	380	67	<1.0	—	—	—	5.91
MW-5	11/27/01	39.18	8.84	30.34	0.00	5,000	—	64	11	340	52	8.9	<2	—	—	—
MW-5	11/27/01	57.77	Well resurveyed													
MW-5	01/18/02	39.18	6.52	32.66	0.00	6,330	—	99.1	2.30	103	19.6	21.8	—	—	—	—
AB-1	03/05/98	—	—	—	—	1,600	—	31	5.3	79	130	ND	—	—	—	—
AB-2	03/05/98	—	—	—	—	ND	—	ND	2.9	0.9	5.7	ND	—	—	—	—
AB-3	03/05/98	—	—	—	—	6,800	—	680	100	1,500	2,300	230	—	—	—	—

Table 2
Summary of Groundwater Levels and Chemical Analysis
Former Mobil Station 99-105

Well ID	Date	Top of Casing Elevation (feet)	Depth to Water (feet)	Groundwater Elevation (feet)	Product Thickness (feet)	TPH-G (ppb)	TPH-D (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Total Xylenes (ppb)	MTBE 8020 (ppb)	MTBE 8240 or 8260 (ppb)	TOG (ppb)	Lead (ppb)	Dissolved Oxygen (mg/L)
AB-4	03/05/98	—	—	—	—	8,500	—	240	ND	260	720	ND	—	—	—	—
AB-6	03/05/98	—	—	—	—	12,000	—	350	ND	310	100	ND	—	—	—	—
AB-9	03/05/98	—	—	—	—	1,000	—	57	12	44	93	ND	—	—	—	—
AB-10	03/05/98	—	—	—	—	200	—	3.0	1.2	3.2	2.8	ND	—	—	—	—
AB-11	03/05/98	—	—	—	—	ND	—	ND	ND	ND	ND	ND	—	—	—	—
AB-12	03/05/98	—	—	—	—	8,800	—	660	50	630	940	37	—	—	—	—
AB-13	03/05/98	—	—	—	—	210	—	11	0.8	10	15	ND	—	—	—	—
HA-1	01/25/00	—	—	—	—	ND<500	—	ND<0.3	ND<0.3	ND<0.3	ND<0.6	ND<5.0	—	—	—	—

NOTES:

ppb = parts per billion
mg/L = milligrams per liter
TPH-G = total petroleum hydrocarbons as gasoline
TPH-D = total petroleum hydrocarbons as diesel
TOG = total oil and grease
MTBE = methyl tert-butyl ether

— = not measured/not analyzed
ND = not detected at or above method detection limit
* = diesel and unidentified hydrocarbons <C15
** = diesel and unidentified hydrocarbons <C15>C25
*** = diesel and unidentified hydrocarbons >C20
**** = unidentified hydrocarbons >C18

† = well sampled using no-purge method

Table 3
Comparison of Maximum Site Subsurface Soil Concentrations
to Oakland Tier 1 RBSLs and Tier 2 SSTLs
(Residential = R and Commercial = C)
Former Mobil Station 99-105

		RBCA TARGET LEVELS			
		RBSL	SSTLs		
	Maximum Concentration Reported (mg/kg)	Tier 1	Tier 2 Merrit Sands	Tier 2 Sandy Silts	Tier 2 Clayey Silts
Benzene	1.2 (MW-2 @ 10' MW-4 @ 5')	**R = 0.069 C = 1.1**	**R = 0.70** C = 11	**R = 1.1** C = 17	R = 1.9 C= 30
Toluene	1.4 (MW-2 @ 10')	R =360 C = SAT	R = 370 C = SAT	R = 570 C = SAT	R = 930 C = SAT
Ethylbenzene	4.1 (MW-4 @ 5')	R = SAT C = SAT	R = SAT C = SAT	R = SAT C = SAT	R = SAT C = SAT
Xylene	19 (MW-4 @ 5')	R = SAT C = SAT	R = SAT C = SAT	R = SAT C = SAT	R = SAT C = SAT
MTBE	0.5 (MW-5 @ 10')	R = 4,400 C = SAT	R = 4,800 C = SAT	R = 8,100 C = SAT	R = 14,000 C = SAT

Notes: **Bold** indicates RBSL or SSTL value less than maximum onsite concentration.

SAT = Value exceeds solubility of chemical in water.

Values represent carcinogenic levels (most conservative) of COPCs for residential and commerical land use via exposure pathway of inhalation of indoor air vapors.
(see Section 3.2.2, Potential Exposure Pathways)

Table 4
Comparison of Maximum Site Groundwater Concentrations
to Oakland Tier 1 RBSLs and Tier 2 SSTLs
(Residential = R and Commercial = C)
Former Mobil Station 99-105

		RBCA TARGET LEVELS			
		RBSL	SSTLs		
	Maximum Concentration Reported (mg/L)	Tier 1	Tier 2 Merrit Sands	Tier 2 Sandy Silts	Tier 2 Clayey Silts
Benzene	0.064 (MW-5, 11/27/01)	R = 0.11 C = 1.8	R = 1.4 C = 22	R =3.4 C = 53	R = 5.6 C = 89
Toluene	0.011 (MW-5, 11/27/01)	R = 210 C = >SOL	R = 280 C = >SOL	R = >SOL C = >SOL	R = >SOL C = >SOL
Ethylbenzene	0.340 (MW-5, 11/27/01)	R = >SOL C = >SOL	R = >SOL C = >SOL	R = >SOL C = >SOL	R = >SOL C = >SOL
Xylene	0.052 (MW-5, 11/27/01)	R = >SOL C = >SOL	R = >SOL C = >SOL	R = >SOL C = >SOL	R = >SOL C = >SOL
MTBE	<2 (MW-5, 11/27/01)	R =24,000 C = >SOL	R = 25,000 C = >SOL	R =30,000 C = >SOL8	R =36,000 C = >SOL

Note: **Bold** indicates RBSL or SSTL value less than maximum onsite concentration.

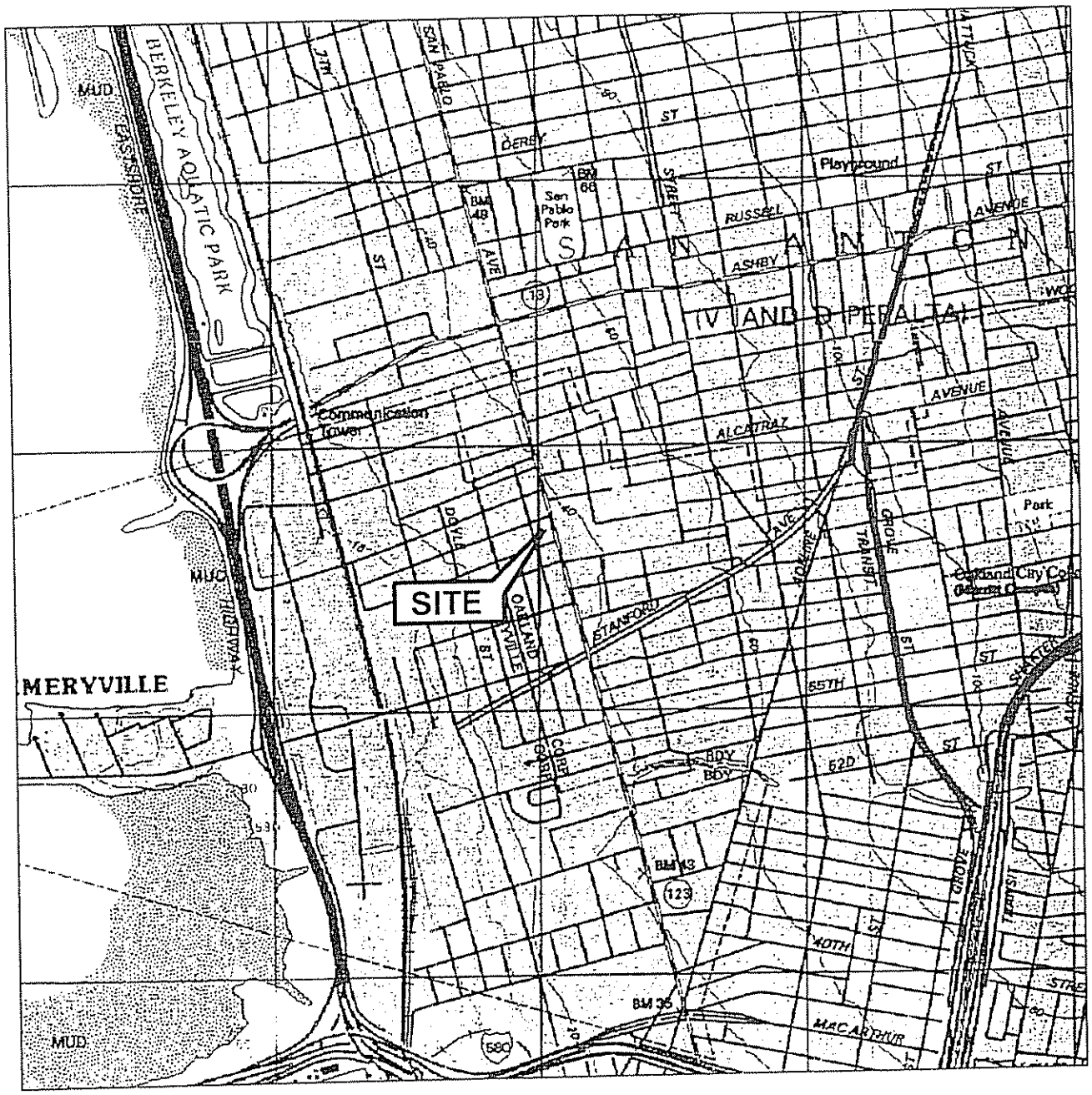
SOL = < value exceeds solubility of chemical in water.

Values represent carcinogenic levels (most conservative) of COPCs for residential and commerical land use via exposure pathway of inhalation of indoor air vapors.
(see Section 3.2.2, Potential Exposure Pathways)

8/15/02Tbl 4 GW/rdb

FIGURES

TRC



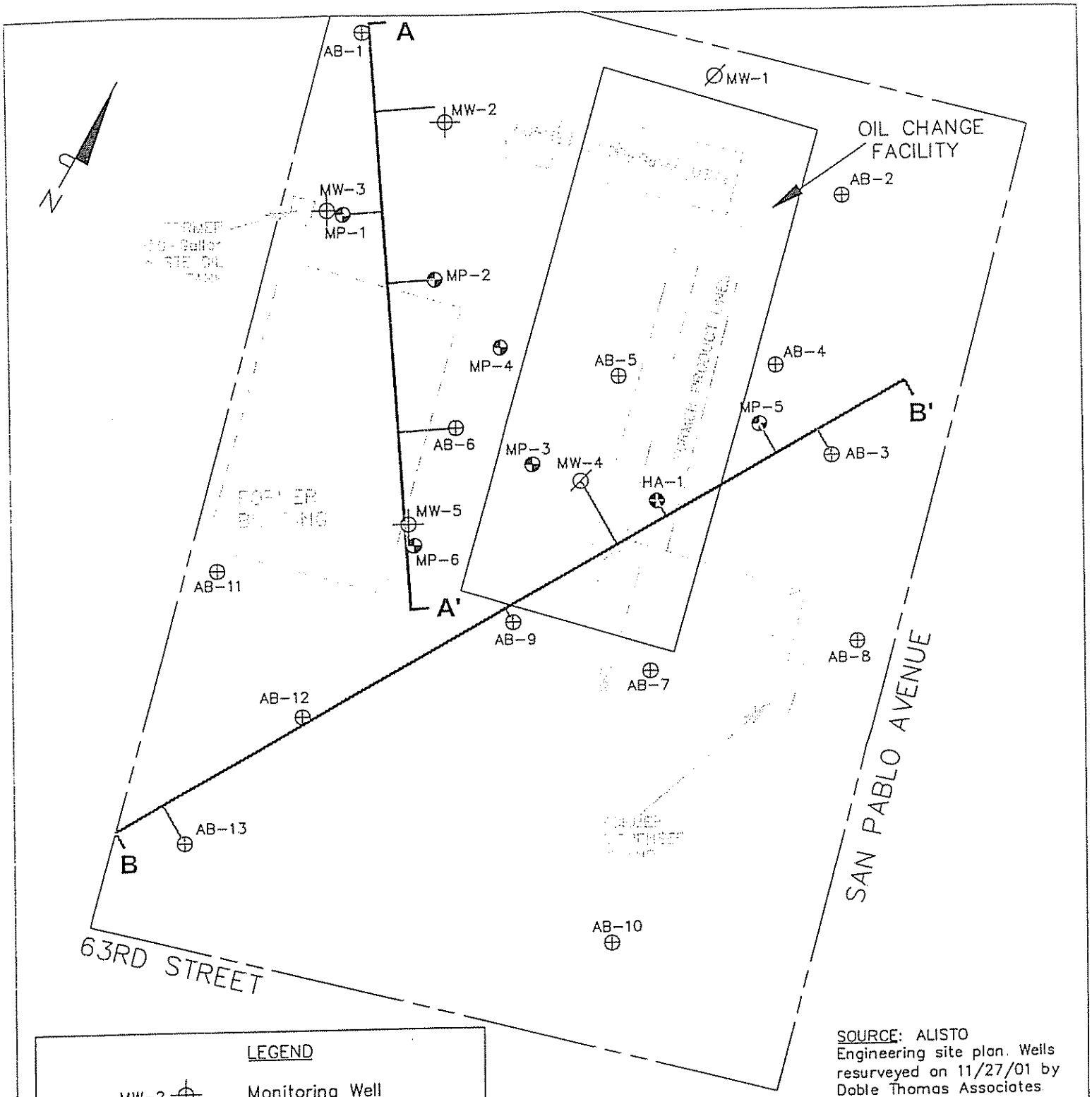
SOURCE:
United States Geological Survey
7.5 Minute Topographic Maps:
Oakland West Quadrangle

VICINITY MAP

Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

TRC

FIGURE 1



LEGEND

MW-2 ⊕	Monitoring Well
MW-4 ∅	Abandoned Well
AB-10 ⊕	Soil Boring
HA-1 ⊕	Hand Auger Boring
MP-6 ◔	Former Monitoring Point
MW-6 ⊕	Proposed Monitoring Well
.....	Property Line
A — A'	Cross Section Line

SOURCE: ALISTO Engineering site plan. Wells resurveyed on 11/27/01 by Doble Thomas Associates

SCALE (FEET)

0 20

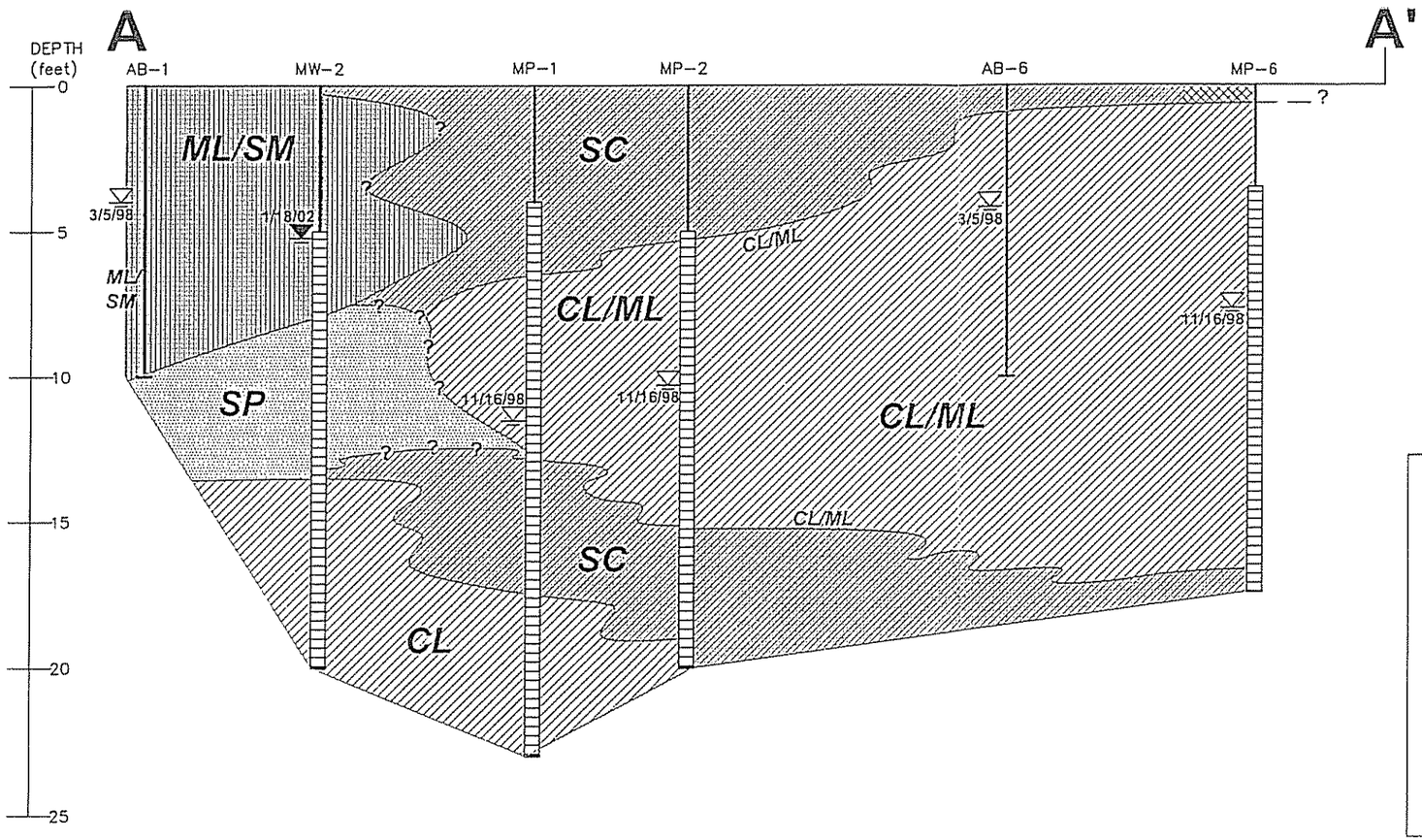
SITE PLAN SHOWING CROSS SECTIONS

Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

TRC | FIGURE 2

← APPROXIMATE NORTH

APPROXIMATE SOUTH →



LEGEND

CL	Inorganic clays of low to medium plasticity		Blank
ML	Inorganic silts		Screened interval
SC	Clayey sands		Total boring depth
SM	Silty sands	11/16/98	First encountered water during drilling
SP	Poorly graded sands		Stabilized groundwater level on 1/18/02
	Fill		

SCALE (FEET) 0 5 10

Source: ALISTO Engineering

5 SCALE (feet) 5

VERTICAL EXAGGERATION = 2:1

NOTE. See Figure 2 for location of cross section.

CROSS SECTION A-A'

Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

TRC

FIGURE 3

APPROXIMATE WEST

APPROXIMATE EAST

B

B'

DEPTH (feet)

0

5

10

15

20

25

AB-13 AB-12 AB-9 MW-4 HA-1 MP-5 AB-3

ML/CL

SP/SC

SM/SC

ML

3/5/98

1/27/99

1/25/00

11/16/98

LEGEND

CL Inorganic clays of low to medium plasticity

ML Inorganic silts

SC Clayey sands

SM Silty sands

SP Poorly graded sands

Fill

Blank

Screened interval

Total boring depth

3/5/98 First encountered water during drilling

Stabilized groundwater level on 1/27/99

5 SCALE (feet) 5

VERTICAL EXAGGERATION = 2:1

SCALE (FEET) 0 5 10

Source: ALISTO Engineering

NOTE: See Figure 2 for location of cross section.

CROSS SECTION B-B'

Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

TRC

FIGURE 4

APPENDIX A
ALAMEDA COUNTY HEALTH CARE SERVICES LETTER DATED DECEMBER 7, 2001

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J KEARS, Agency Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

December 7, 2001
StID 1683/RO0000445

Mr. Gene Ortega
ExxonMobil Remediation Services
2400 San Ramon Valley Blvd
San Ramon, CA 94583

Re: Former Mobil Station 99-105, 6301 San Pablo Ave., Oakland CA 94608

Dear Mr. Otega:

Our office has received and reviewed the November 2001 TRC Conceptual Site Model Report for the referenced site. Included in the report is a site description, a summary of site investigations, an evaluation of soil and groundwater findings and a proposal for future work. Based upon the data presented our office does not recommend the installation of the proposed monitoring well. Please prepare a risked-based corrective action (RBCA) evaluation for the site. You should use the City of Oakland Technical Background Document as a guide for determining health risk.

In addition, please provide in a tabular form a list of all soil and groundwater disposed, destroyed or reused from the site, including the date and location of disposal. In the meanwhile, please continue quarterly groundwater monitoring.

You may contact me at (510) 567-6765 if you have any questions

Sincerely,

Barney M Chan

Barney M. Chan
Hazardous Materials Specialist

C: B Chan, files
Ms. Connie Lamb, 200 Dorado Terrace, San Francisco, CA 94112
Mr. J Scheiner, TRC, 5052 Commercial Circle, Concord, CA 94520

RBCArq6301SanPablo

APPENDIX B
SOIL BORING AND MONITORING WELL LOGS

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

LOG OF BORING MW-1

SEE SITE PLAN

ALISTO PROJECT NO: 10-309-01 DATE DRILLED: 03/01/96
CLIENT: Mobil Oil Corporation
LOCATION: 6301 San Pablo Avenue, Oakland, California
DRILLING METHOD: Hollow-Stem Auger (10")
DRILLING COMPANY: V & W Drilling CASING ELEVATION: 32.79 MSL
LOGGED BY: C Ladd APPROVED BY: Al Sevilla

BLOWS/6 IN.	PID VALUES	WELL DIAGRAM	DEPTH feet	SAMPLES	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION
							2.5" asphalt
						ML	
10.12.14			5				sandy SILT: light brown mottled Fe oxide stain, damp to moist, very stiff; fine-grained sand
10.11.13			10				Same: reddish brown, damp to moist, very stiff; very fine-grained sand; some fill gravels (pea gravel)
						SM	
9.12.13			15				silt / SAND: tan occasional black mottling, damp to moist, medium dense; fine-grained sand
						ML	
10.12.15			20				clayey SILT: reddish brown mottled tan, damp, very stiff; minor lines; occasional rootlets
							Stabilized water level measured on March 14, 1998
			25				
			30				

WELL DIAGRAM: 4" Sch. 40 PVC; Neat Cement; Bentonite Seal; #12 Sand; 5' 0.010" Slotted PVC Screen

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

LOG OF BORING MW-2

SEE SITE PLAN

ALISTO PROJECT NO: 10-309-01 DATE DRILLED: 03/01/96
CLIENT: Mobil Oil Corporation
LOCATION: 6301 San Pablo Avenue, Oakland, California
DRILLING METHOD: Hollow-Stem Auger (10")
DRILLING COMPANY: V & W Drilling CASING ELEVATION: 32.80 MSL
LOGGED BY: C. Ladd APPROVED BY: Al Sevilla

BLOWS/6 IN.	PID VALUES	WELL DIAGRAM	DEPTH feet	SAMPLES	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION
							2.5" asphalt
14.15.18		4" Sch.40 PVC; Neat Cement; Bentonite Seal; #12 Sand; 4" 0.010" Slotted PVC Screen	5			SM	silty SAND: reddish brown mottled blue green, damp to moist, dense; fine- to medium-grained sand; occasional pea gravels
5.7.10			10				sandy SILT: brownish tan, damp to moist, medium stiff; fine-grained sand; some Fe oxide stain
17.35.35			15			SP	gravelly SAND: brown, moist, very dense; fine- to medium-grained sand; gravels to 3/4"-diameter
11.17.22			20			CL	silty CLAY: reddish brown mottled tan, damp, hard; some rootlets and Fe oxide staining
			25				Stabilized water level measured on March 14, 1996
			30				

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

LOG OF BORING MW-3

SEE SITE PLAN

ALISTO PROJECT NO: 10-309-01 DATE DRILLED: 03/01/96
CLIENT: Mobil Oil Corporation
LOCATION: 6301 San Pablo Avenue, Oakland, California
DRILLING METHOD: Hollow-Stem Auger (10")
DRILLING COMPANY: V & W Drilling CASING ELEVATION: 32.80 MSL
LOGGED BY: C. Ladd APPROVED BY: Al Sevilla

BLOWS/6 IN.	PID VALUES	WELL DIAGRAM	DEPTH feet	SAMPLES	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION
						SM	Native soil with some pea gravel
							silty SAND: dark brown, damp; some pea gravel. Observed from cuttings
27.50			5			CL	silty CLAY: tan, damp, hard; minor pea gravel and sand
4.10.24			10			SM	silty SAND: grey, damp to moist, dense; fine-grained sand; Fe oxide stain to approximately 5%; 3% gravels to 1/4"-diameter
17.23.24			15			SP	gravelly SAND: reddish brown with Fe oxide stain, wet, dense; medium-grained sand; subrounded gravels to 1"-diameter
						SM	sandy SILT: reddish brown, damp to moist, hard; fine-grained sand; Fe oxide stain
13.21.45			20			SP	gravelly SAND: reddish brown, wet, very dense; medium-grained sand; subrounded gravels to 1"-diameter; Fe oxide stain.
							Stabilized water level measured on March 14, 1996.
			25				
			30				

WELL DIAGRAM:
- 4" Sch. 40 PVC
- 4" 0.010" Slotted PVC Screen
- Neat Cement
- Bentonite Seal
- #12 Sand

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

LOG OF BORING MW-4

SEE SITE PLAN

ALISTO PROJECT NO: 10-309-01 DATE DRILLED: 03/01/96

CLIENT: Mobil Oil Corporation

LOCATION: 6301 San Pablo Avenue, Oakland, California

DRILLING METHOD: Hollow-Stem Auger (10")

DRILLING COMPANY: V & W Drilling CASING ELEVATION: 31.50 MSL

LOGGED BY: C. Ladd APPROVED BY Al Sevilla

BLOWS/6 IN.	PID VALUES	WELL DIAGRAM	DEPTH feet	SAMPLES	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION
						CL	2.5" asphalt
10.15.21		4" Sch.40 PVC; Neat Cement; Bentonite Seal; 4" 0.010" Slotted PVC Screen; #12 Sand	5				CLAY: gray, dry, hard
7.10.10			10			SC	clayey SAND: gray mottled brown, damp, medium dense; fine- to medium-grained sand; some silt
7.23.25			15				Same: wet to saturated lense at 15 feet
						SM	silty SAND: reddish brown mottled with some clay, wet, dense; fine-grained sand.
5.7.13			20				Same: wet to saturated lense at 19.7 feet
						ML	clayey SILT: reddish brown mottled tan, damp to moist, very stiff; some fines
						SC	
7.12.25			25				clayey SAND: reddish brown mottled tan, moist dense; fine-grained sand.
							Stabilized water level measured on March 14, 1998
			30				

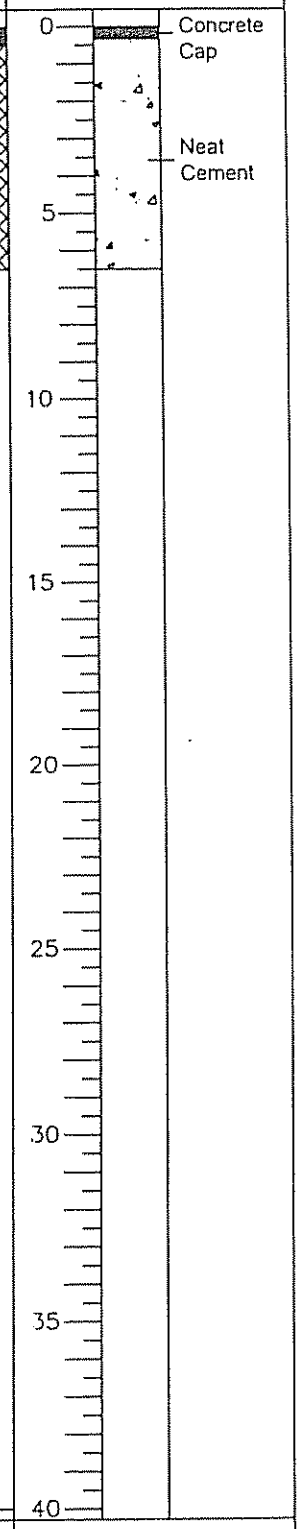
PROJECT NO.: 41-0123
LOCATION: Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

DATE DRILLED: 1/25/00
LOGGED BY: S. Pasek
APPROVED BY: T. Walker, RG
DRILLING CO.: N/A

DRILLING METHOD: Hand Auger
SAMPLER TYPE: Slide Hammer
TOTAL DEPTH: 6.5 feet
DEPTH TO WATER: 5.0 feet

BLOWS PER 6 INCHES	PID / FID (ppm)	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY
	0			0	6 inches concrete. Hand-augered to 6.5 feet.		
					FILL: Silty sand with gravel, light brown, loose, dry	Fill	
	0	ND		5	- @ 5': becomes wet		
	0						
				10			
				15		CL	
				20		ML	
				25			
				30			
				35			
				40			

BORING BACKFILL DETAIL



ALTON GEOSCIENCE
Northern California

LOG OF EXPLORATORY BORING

HA-1
PAGE 1 OF 1

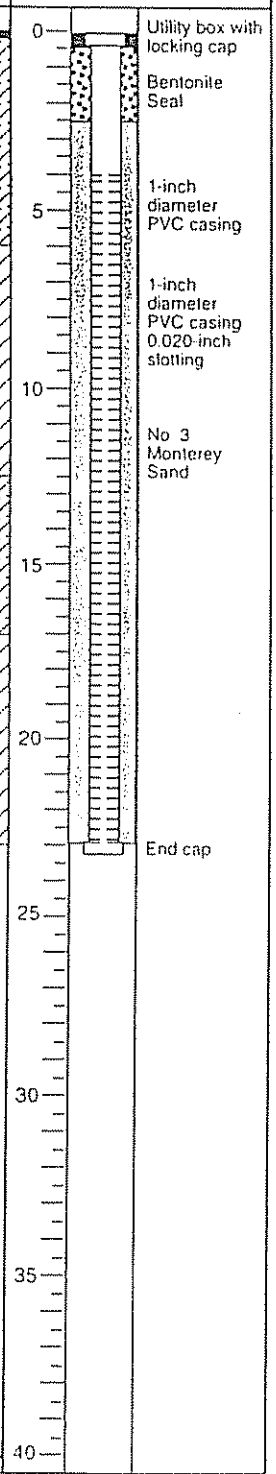
PROJECT NO.: 41-0123
LOCATION: Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

DATE DRILLED: 11/16/98
LOGGED BY: K Racke
APPROVED BY: M Katen, RG
DRILLING CO.: V&W Drilling

DRILLING METHOD: 1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 1-inch Macro-Core Sampler
TOTAL DEPTH: 23.0 feet DEPTH TO WATER: 10.8 feet

BLOWS PER 6 INCHES	CGI (ppm)	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY
				0	3 inches of concrete		
					CLAYEY SAND: dark grayish-brown, hard, moist, medium plasticity	SC	
				5			
	100				SANDY CLAY: dark gray, firm, moist, medium plasticity, moderate petroleum odor	CL	
	150	10			CLAY: olive gray, firm, moist, medium plasticity, strong petroleum odor		
	700			10			
	80						
					CLAYEY SAND: olve gray, weak cementation, moist, fine-grained, strong hydrocarbon odor	SC	
				15			
	30				Yellowish brown, moderate cementation, moist, medium-grained, fine gravels, slight hydrocarbon odor		
					SANDY CLAY: yellowish brown, firm consistency, fine gravels, no petroleum odor	CL	
	40			20			
	10						
				25			
				30			
				35			
				40			

MONITORING POINT CONSTRUCTION DETAIL



ALTON GEOSCIENCE
Livermore, California

LOG OF EXPLORATORY BORING

MP-1
PAGE 1 OF 1

PROJECT NO.: 41-0123

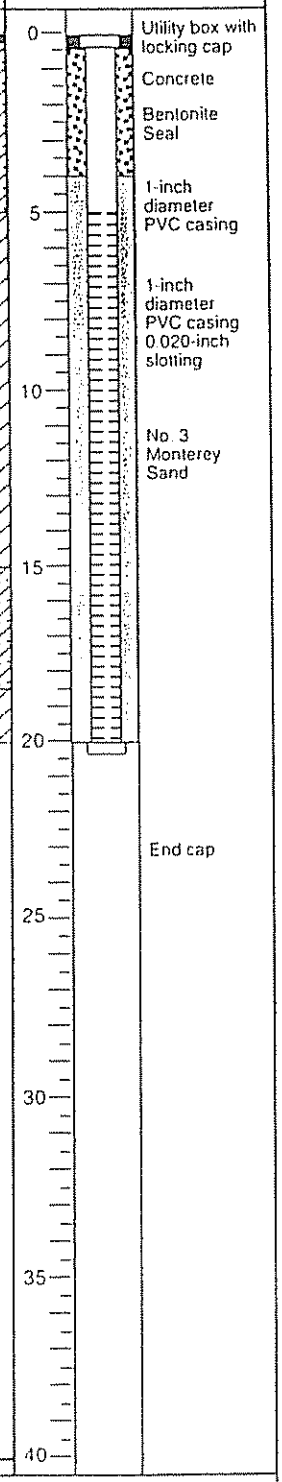
LOCATION: Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

DATE DRILLED: 11/16/98
LOGGED BY: K Racke
APPROVED BY: M. Katen, RG
DRILLING CO : V&W Drilling

DRILLING METHOD:1 5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 1-inch Macro-Core Sampler
TOTAL DEPTH: 20 0 feet DEPTH TO WATER: 10.2 feet

BLOWS PER 6 INCHES	CGI (ppm)	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY
				0	Hand augured to 5 feet 3 inches of concrete CLAYEY SAND: dark grayish-brown. hard. moist medium plasticity	SC	
				5	SANDY CLAY: dark gray. firm. moist. medium plasticity, moderate petroleum odor	CL	
	100	270			Olive gray.		
	150	140		10			
	0			15	CLAYEY SAND: yellowish brown. weak cementation moist. medium-grained. slight petroleum odor	SC	
				20	SANDY CLAY: reddish brown. soft. moist. low plasticity no petroleum odor.	CL	
				25			
				30			
				35			
				40			

MONITORING POINT CONSTRUCTION DETAIL



ALTON GEOSCIENCE
Livermore California

LOG OF EXPLORATORY BORING

MP-2
PAGE 1 OF 1

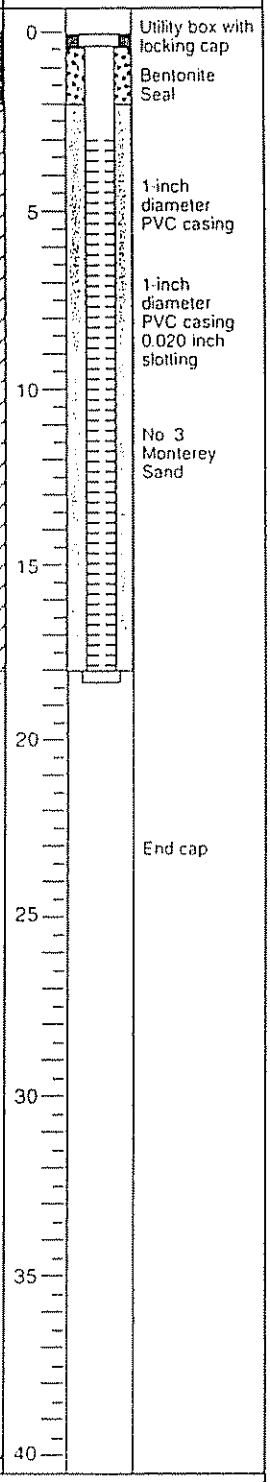
PROJECT NO : 41-0123
LOCATION: Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

DATE DRILLED: 11/16/98
LOGGED BY: K Racke
APPROVED BY: M Katen, RG
DRILLING CO : V&W Drilling

DRILLING METHOD:1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 1-inch Macro-Core Sampler
TOTAL DEPTH: 18.0 feet DEPTH TO WATER: 8 5 feet

BLOWS PER 6 INCHES	CGI (ppm)	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY
				0	Hand augured to 5 feet Gravelly fill	Fill	
	50			5	CLAY: dark gray, hard, moist, medium plasticity, moderate petroleum odor	CL	
		230			Very hard, strong petroleum odor		
	20			10	Fine gravels		
	25 80			15	GRAVELLY CLAY: yellowish brown, firm, medium-grained sand		
					SANDY CLAY: yellowish brown.		
				20			
				25			
				30			
				35			
				40			

MONITORING POINT CONSTRUCTION DETAIL



ALTON GEOSCIENCE
Livermore, California

LOG OF EXPLORATORY BORING

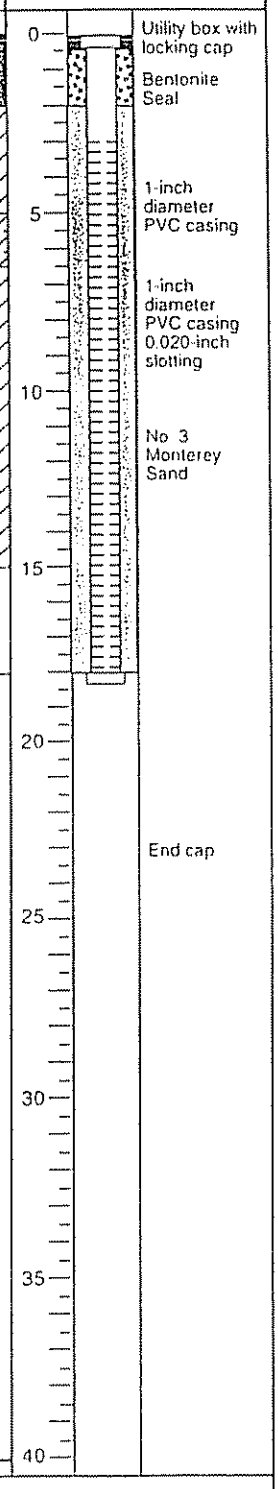
MP-3
PAGE 1 OF 1

PROJECT NO.: 41-0123	DATE DRILLED: 11/16/98
LOCATION: Former Mobil Station 99-105	LOGGED BY: K Racke
6301 San Pablo Avenue	APPROVED BY: M Katen, RG
Oakland, California	DRILLING CO : V&W Drilling

DRILLING METHOD:1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 1-inch Macro-Core Sampler
TOTAL DEPTH: 18.0 feet DEPTH TO WATER: 8 8 feet

BLOWS PER 6 INCHES	CGI (ppm)	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY
				0	Hand augured to 5 feet Gravelly fill	Fill	
					CLAY: dark gray, hard, moist medium plasticity moderate petroleum odor	CL	
	400	120		5	CLAYEY SAND: olive gray, soft, moist, fine-grained, strong hydrocarbon odor.	SC	
	375				SANDY CLAY: olive gray, firm, moist, medium plasticity	CL	
		18		10	Fine gravels		
	200						
				15	SAND: brownish yellow, weak cementation, moist medium-grained, no petroleum odor	SW	
	70						
				20			
				25			
				30			
				35			
				40			

MONITORING POINT CONSTRUCTION DETAIL



ALTON GEOSCIENCE
Livermore California

LOG OF EXPLORATORY BORING

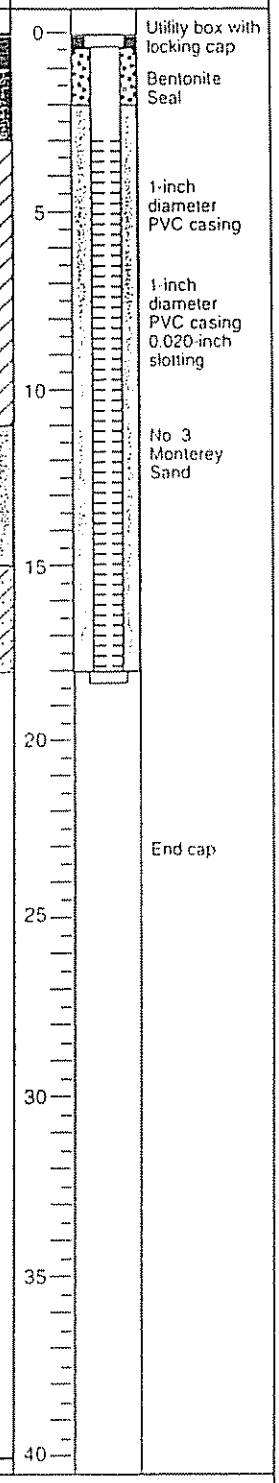
MP-4
PAGE 1 OF 1

PROJECT NO : 41-0123	DATE DRILLED: 11/16/98
LOCATION: Former Mobil Station 99-105	LOGGED BY: K Racke
6301 San Pablo Avenue	APPROVED BY: M. Katen, RG
Oakland, California	DRILLING CO : V&W Drilling

DRILLING METHOD:1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 1-inch Macro-Core Sampler
TOTAL DEPTH: 18.0 feet DEPTH TO WATER: 8.2 feet

BLOWS PER 6 INCHES	CGI (ppm)	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY
				0	Hand augured to 5 feet 1 foot of concrete Gravelly fill	Fill	
	200	6.4		5	SANDY CLAY: dark gray, firm, moist, medium plasticity	CL	
	800	220		10	SAND: dark gray, weak cementation, moist, fine-grained, poorly graded, moderate hydrocarbon odor	SP	
	45			15	CLAYEY SAND: brownish yellow, weak cementation, moist, well graded with fine gravels, no hydrocarbon odor	SC	
				20			
				25			
				30			
				35			
				40			

MONITORING POINT CONSTRUCTION DETAIL



ALTON GEOSCIENCE
Livermore, California

LOG OF EXPLORATORY BORING

MP-5
PAGE 1 OF 1

PROJECT NO : 41-0123

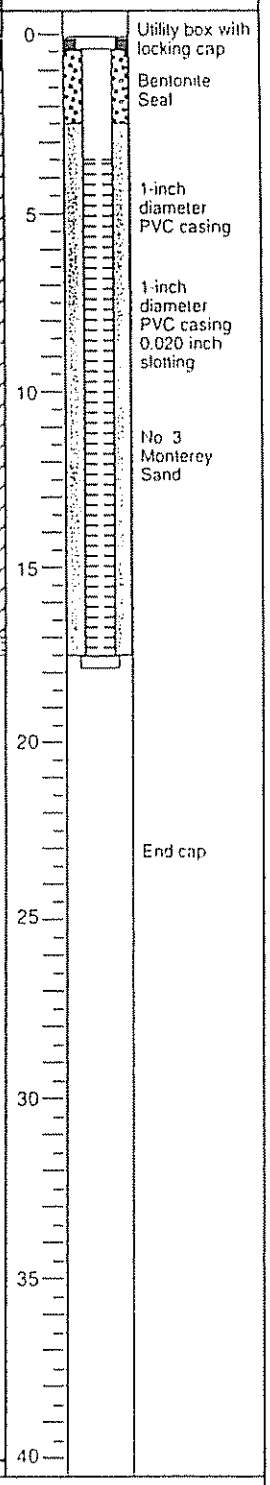
LOCATION: Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

DATE DRILLED: 11/16/98
LOGGED BY: K. Racke
APPROVED BY: M. Katen, RG
DRILLING CO : V&W Drilling

DRILLING METHOD:1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 1-inch Macro-Core Sampler
TOTAL DEPTH: 17.5 feet DEPTH TO WATER: 7.95 feet

BLOWS PER 6 INCHES	CGI (ppm)	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY
				0	Hand augured to 5 feet. 6 inches asphalt. Gravelly fill to 1 foot.	Fill	
					GRAVELLY CLAY: dark grayish brown, firm, moist, medium plasticity, no petroleum odor	CL	
	0			5			
		ND					
	110	240		10			
				15			
	0				SILTY SAND: reddish brown, moderate cementation, moist, fine gravels, no petroleum odor.	SM	
				20			
				25			
				30			
				35			
				40			

MONITORING POINT CONSTRUCTION DETAIL



ALTON GEOSCIENCE
Livermore California

LOG OF EXPLORATORY BORING

MP-6

PROJECT NO.: 41-0123
LOCATION: Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

DATE DRILLED: 3/5/98
LOGGED BY: J. Madden
APPROVED BY: M. Katen, RG
DRILLING CO.: V & W Drilling

DRILLING METHOD: 1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 4-inch Macro-Core Sampler
TOTAL DEPTH: 10 0 feet DEPTH TO WATER: 4.0 feet

BLOWS PER 6 INCHES	TLV	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY	BORING DETAIL
	0	ND		0	CLAYEY SILT WITH GRAVEL: brownish yellow. moist. low plasticity	ML		Cement
	20			5				
				10				
				15				
				20				
				25				
				30				
				35				
				40				

ALTON GEOSCIENCE
Livermore, California

LOG OF EXPLORATORY BORING

AB-1
PAGE 1 OF 1

41-0123/99-105 Boring Log AB-1

PROJECT NO.: 41-0123

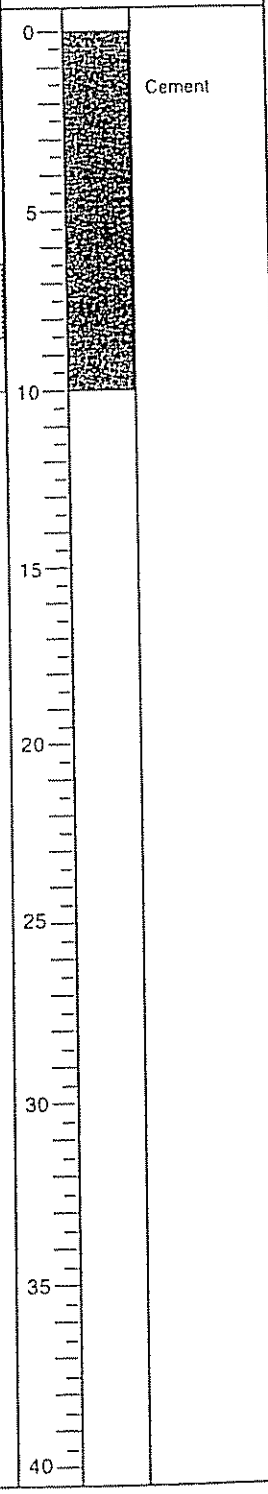
LOCATION: Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

DATE DRILLED: 3/5/98
LOGGED BY: J. Madden
APPROVED BY: M. Katen, RG
DRILLING CO.: V & W Drilling

DRILLING METHOD: 1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 4-inch Macro-Core Sampler
TOTAL DEPTH: 10.0 feet DEPTH TO WATER: 6.0 feet

BLOWS PER 6 INCHES	TLV	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY
	0	ND		0	CLAYEY SILT WITH GRAVEL: brown, stiff, moist, low plasticity	ML	
				5	SANDY GRAVEL LENS: medium brown, loose, wet, fine-grained, poorly graded	GP	
				10	CLAYEY SILT	ML	
				15			
				20			
				25			
				30			
				35			
				40			

BORING DETAIL



ALTON GEOSCIENCE
Livermore, California

LOG OF EXPLORATORY BORING

AB-2
PAGE 1 OF 1

41-0123/99-105 Boring Log AB-2

PROJECT NO.: 41-0123

LOCATION: Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

DATE DRILLED: 3/5/98
LOGGED BY: J. Madden
APPROVED BY: M. Katen, RG
DRILLING CO.: V & W Drilling

DRILLING METHOD: 1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 4-inch Macro-Core Sampler
TOTAL DEPTH: 10.0 feet DEPTH TO WATER: 5.5 feet

BLOWS PER 6 INCHES	TLV	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY	BORING DETAIL
	10 150 1,000	ND		0 5 10	CLAYEY SILT WITH GRAVEL: olive green, stiff, wet, low plasticity	ML		Cement

0
5
10
15
20
25
30
35
40

ALTON GEOSCIENCE
Livermore, California

LOG OF EXPLORATORY BORING

AB-3
PAGE 1 OF 1

41-0123/99-105 Borng Log AB-3

PROJECT NO.: 41-0123

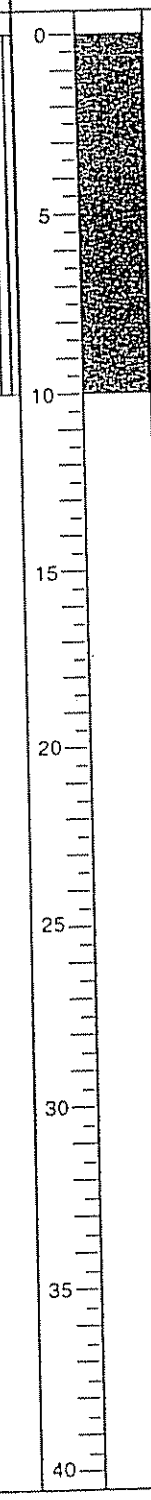
LOCATION: Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

DATE DRILLED: 3/5/98
LOGGED BY: J. Madden
APPROVED BY: M. Katen, RG
DRILLING CO.: V & W Drilling

DRILLING METHOD: 1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 4-inch Macro-Core Sampler
TOTAL DEPTH: 10.0 feet DEPTH TO WATER: 4.0 feet

BLOWS PER 6 INCHES	TLV	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY
	20			0	CLAYEY SILT: mottled brown and green, stiff, moist, low plasticity, 5-10% minor sand	ML	
	100	18		5			
				10			
				15			
				20			
				25			
				30			
				35			
				40			

BORING DETAIL



ALTON GEOSCIENCE
Livermore, California

LOG OF EXPLORATORY BORING

AB-4
PAGE 1 OF 1

41-0123/99-105 Boring Log AB-4

PROJECT NO.: 41-0123

LOCATION: Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

DATE DRILLED: 3/5/98
LOGGED BY: J. Madden
APPROVED BY: M. Katen, RG
DRILLING CO.: V & W Drilling

DRILLING METHOD: 1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 4-inch Macro-Core Sampler
TOTAL DEPTH: 10.0 feet DEPTH TO WATER: 6.0 feet

BLOWS PER 6 INCHES	TLV	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY	BORING DETAIL
	20 100 500 1,000	170		0 5 10	CLAYEY SILT WITH GRAVEL: brown to 3 feet below grade and green from 3 to 10 feet below grade, hard, moist to wet, low plasticity, less than 6 inches minor sandy gravel lenses.	ML		0 5 10 Cement

15 20 25 30 35 40

ALTON GEOSCIENCE
Livermore, California

LOG OF EXPLORATORY BORING

AB-5
PAGE 1 OF 1

41-0123/99-105 Boring Log AB-5

PROJECT NO.: 41-0123

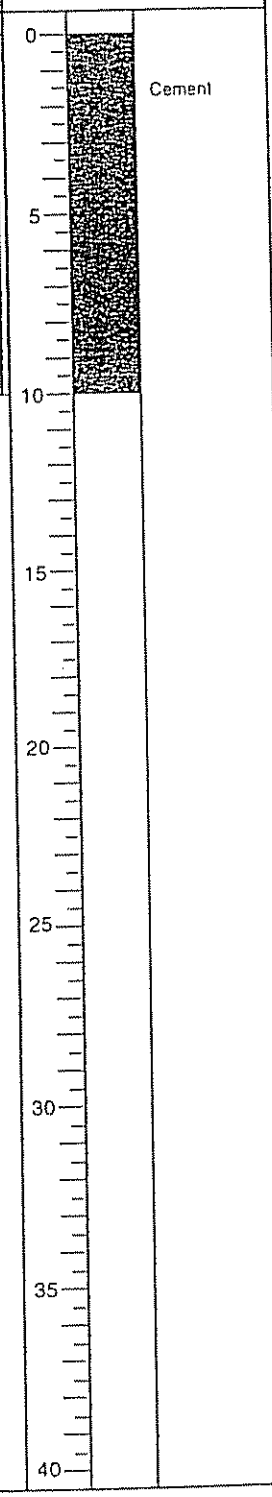
LOCATION: Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

DATE DRILLED: 3/5/98
LOGGED BY: J. Madden
APPROVED BY: M. Katen, RG
DRILLING CO.: V & W Drilling

DRILLING METHOD: 1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 4-inch Macro-Core Sampler
TOTAL DEPTH: 10.0 feet DEPTH TO WATER: 4.5 feet

BLOWS PER 6 INCHES	TLV	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY
	30 7.000	230		0–10	CLAYEY SILT WITH GRAVEL: mottled green and brown, stiff, moist, low plasticity. less than 5% minor sand	ML	

BORING DETAIL



ALTON GEOSCIENCE
Livermore, California

LOG OF EXPLORATORY BORING

AB-6
PAGE 1 OF 1

41-0123/99-105 Boring Log AB-6

PROJECT NO : 41-0123

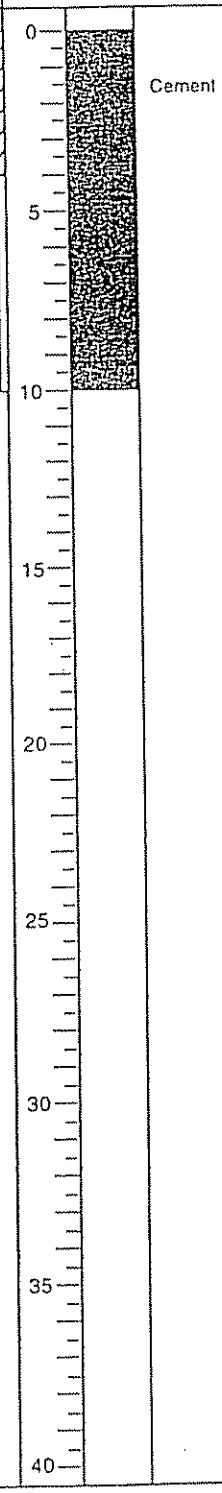
LOCATION: Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

DATE DRILLED: 3/5/98
LOGGED BY: J. Madden
APPROVED BY: M. Katen, RG
DRILLING CO.: V & W Drilling

DRILLING METHOD: 1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 4-inch Macro-Core Sampler
TOTAL DEPTH: 10.0 feet DEPTH TO WATER: 5.0 feet

BLOWS PER 6 INCHES	TLV	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY
				0	SILTY CLAY: dark brown, soft, wet, high plasticity	CL	
	100	19		5	CLAYEY SILT WITH GRAVEL: mottled brown and green, hard. wet. low plasticity	ML	
				10			
				15			
				20			
				25			
				30			
				35			
				40			

BORING DETAIL



ALTON GEOSCIENCE
Livermore, California

LOG OF EXPLORATORY BORING

AB-7
PAGE 1 OF 1

41-0123/99-105 Boring Log AB-7

PROJECT NO.: 41-0123

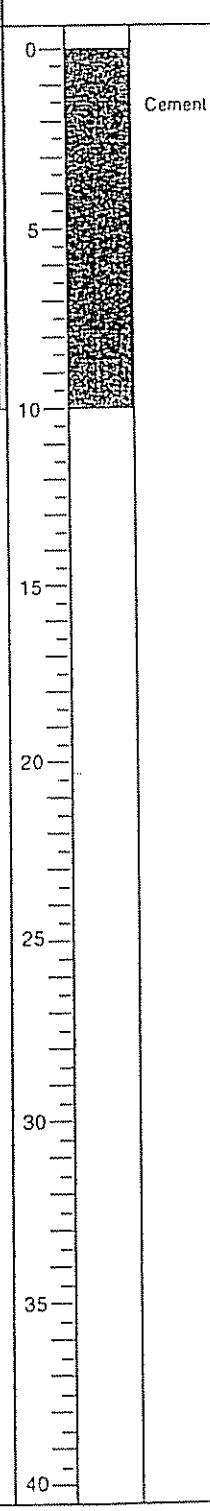
LOCATION: Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

DATE DRILLED: 3/5/98
LOGGED BY: J Madden
APPROVED BY: M Katen, RG
DRILLING CO.: V & W Drilling

DRILLING METHOD: 1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 4-inch Macro-Core Sampler
TOTAL DEPTH: 10.0 feet DEPTH TO WATER: 4.5 feet

BLOWS PER 6 INCHES	TLV	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY
	100	ND		0	CLAYEY SILT: mottled reddish brown and green, soft, moist, low plasticity, minor sandy gravel lenses	ML	
	7.000			5			
				10			
				15			
				20			
				25			
				30			
				35			
				40			

BORING DETAIL



ALTON GEOSCIENCE
Livermore, California

LOG OF EXPLORATORY BORING

AB-8
PAGE 1 OF 1

41-0123/99-105 Boring Log AB-8

PROJECT NO.: 41-0123

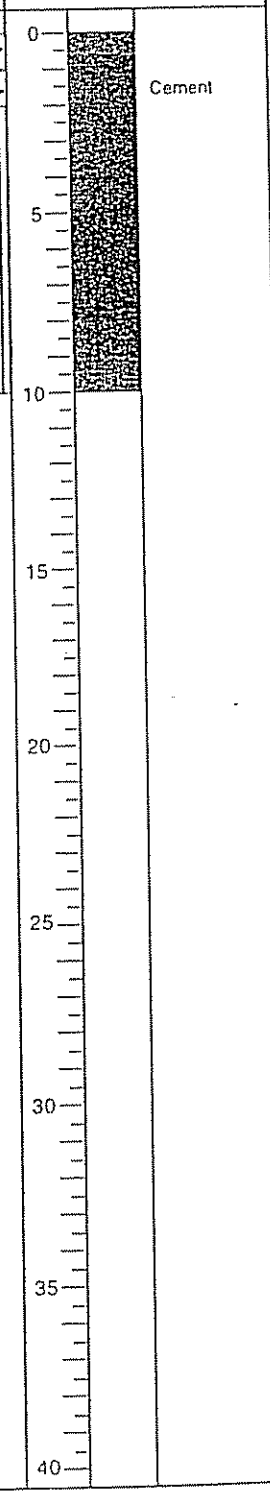
LOCATION: Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

DATE DRILLED: 3/5/98
LOGGED BY: J. Madden
APPROVED BY: M. Katen, RG
DRILLING CO.: V & W Drilling

DRILLING METHOD: 1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 4-inch Macro-Core Sampler
TOTAL DEPTH: 10.0 feet DEPTH TO WATER: 6.0 feet

BLOWS PER 6 INCHES	TLV	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY
				0	GRAVEL FILL to 2 feet below grade	Fill	
	5.000	16		5	CLAYEY SILT WITH GRAVEL: light reddish brown, hard, moist, low plasticity, 70% clay, 30% gravel	ML	
				10			
				15			
				20			
				25			
				30			
				35			
				40			

BORING DETAIL



ALTON GEOSCIENCE
Livermore, California

LOG OF EXPLORATORY BORING

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PAGE 1 OF 1

41-0123/99-105 Boring Log AB-9

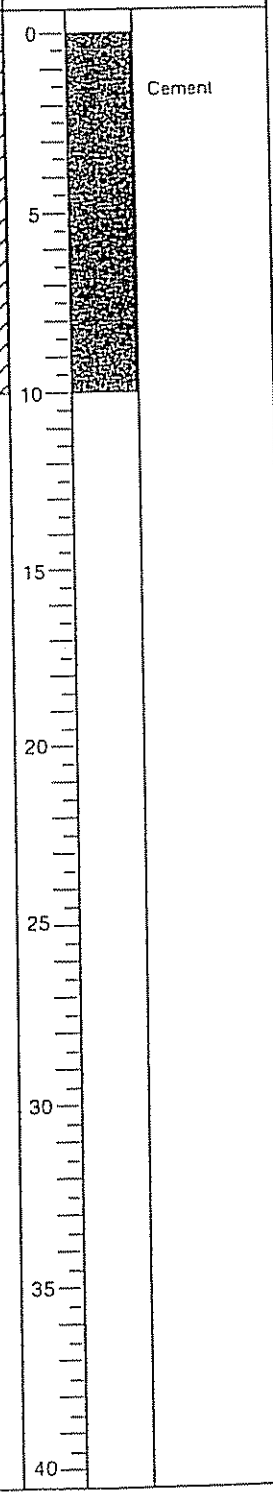
PROJECT NO.: 41-0123
LOCATION: Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

DATE DRILLED: 3/5/98
LOGGED BY: J. Madden
APPROVED BY: M. Katen, RG
DRILLING CO.: V & W Drilling

DRILLING METHOD: 1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 4-inch Macro-Core Sampler
TOTAL DEPTH: 10.0 feet DEPTH TO WATER: 2.0 feet

BLOWS PER 6 INCHES	TLV	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY
	150	ND		0	SILTY CLAY: light brown, soft, wet, medium plasticity. 5-10% minor gravel.	CL	

BORING DETAIL



ALTON GEOSCIENCE
Livermore, California

LOG OF EXPLORATORY BORING

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PAGE 1 OF 1

PROJECT NO.: 41-0123

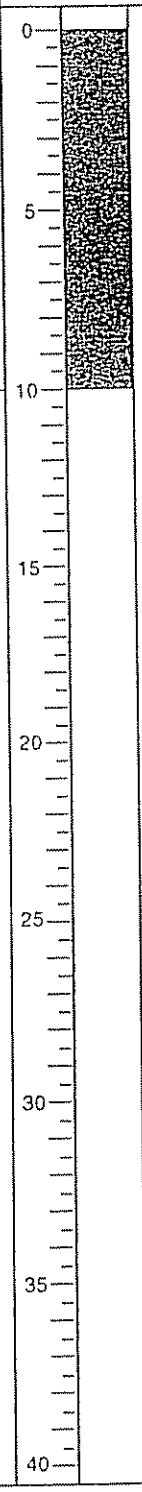
LOCATION: Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

DATE DRILLED: 3/5/98
LOGGED BY: J. Madden
APPROVED BY: M. Katen, RG
DRILLING CO.: V & W Drilling

DRILLING METHOD: 1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 4-inch Macro-Core Sampler
TOTAL DEPTH: 10.0 feet DEPTH TO WATER: 8.5 feet

BLOWS PER 6 INCHES	TLV	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY
	500	3.9		0	CLAYEY SILT: mottled greenish brown, stiff, moist, low plasticity. <5% minor gravel	ML	
				5			
				10			
				15			
				20			
				25			
				30			
				35			
				40			

BORING DETAIL



ALTON GEOSCIENCE
Livermore, California

LOG OF EXPLORATORY BORING

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PAGE 1 OF 1

41-0123/99-105 Boring Log AB-11

PROJECT NO.: 41-0123

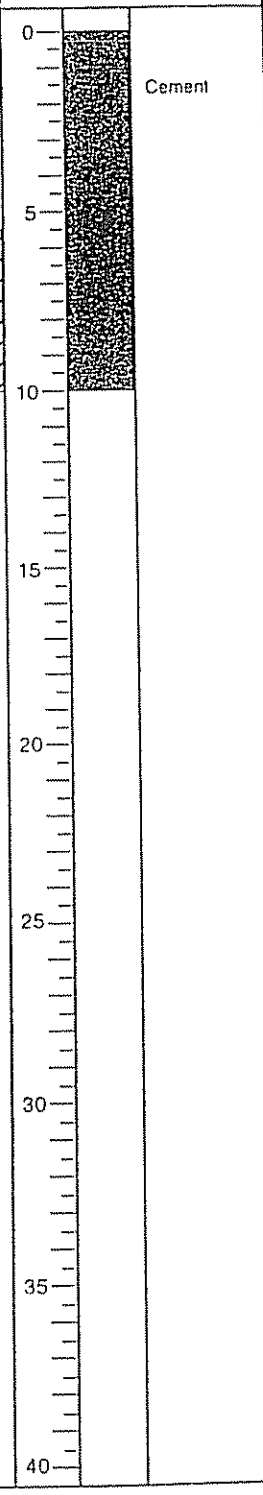
LOCATION: Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

DATE DRILLED: 3/5/98
LOGGED BY: J. Madden
APPROVED BY: M. Katen, RG
DRILLING CO.: V & W Drilling

DRILLING METHOD: 1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 4-inch Macro-Core Sampler
TOTAL DEPTH: 10.0 feet DEPTH TO WATER: 6.0 feet

BLOWS PER 6 INCHES	TLV	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY
	100	ND		0	CLAYEY SILT: mottled greenish brown, soft, moist, low plasticity.	ML	
				5	SILTY CLAY: dark brown, soft, wet, high plasticity (Bay mud)	CL	
				10			
				15			
				20			
				25			
				30			
				35			
				40			

BORING DETAIL



ALTON GEOSCIENCE
Livermore, California

LOG OF EXPLORATORY BORING

AB-12
PAGE 1 OF 1

41-0123/99-105 Boring Log AB-12

PROJECT NO.: 41-0123

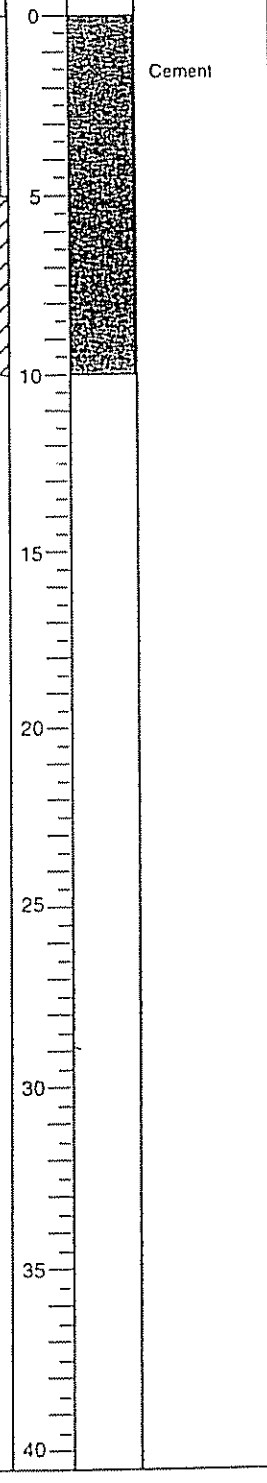
LOCATION: Former Mobil Station 99-105
6301 San Pablo Avenue
Oakland, California

DATE DRILLED: 3/5/98
LOGGED BY: J. Madden
APPROVED BY: M. Katen, RG
DRILLING CO.: V & W Drilling

DRILLING METHOD: 1.5-inch Diameter Direct-Push Geoprobe
SAMPLER TYPE: 4-inch Macro-Core Sampler
TOTAL DEPTH: 10.0 feet DEPTH TO WATER: 6.0 feet

BLOWS PER 6 INCHES	TLV	TPH (ppm)	SAMPLE	DEPTH (feet below grade)	DESCRIPTION	USCS	LITHOLOGY
	10	ND		0	CLAYEY SILT: light brown, moist, low plasticity.	ML	
				5	SILTY CLAY: dark brown, soft, wet, high plasticity (Bay mud).	CL	
				10			
				15			
				20			
				25			
				30			
				35			
				40			

BORING DETAIL



ALTON GEOSCIENCE
Livermore, California

LOG OF EXPLORATORY BORING

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PAGE 1 OF 1

41-0123/99-105 Boring Log AB-13

APPENDIX C
REGULATORY COMMUNICATIONS – EXCAVATED SITE SOILS AND SITE DEVELOPMENT ACTIVITIES

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J KEARS, Agency Director

ENVIRONMENTAL HEALTH SERVICES
1131 Harbor Bay Parkway Suite 250
Alameda CA 94502-6577
(510) 567-6700
(510) 337-9335 (FAX)

July 9, 1999
StID # 1683

Ms Cherine Foutch
Mobil Oil Co
2063 Main St
Oakley, CA 95641

Ms Connie Lamb
200 Dorado Terrace
San Francisco, CA 94112

1999

Re: Health and Safety Plan for Field Activities at 6301 San Pablo Ave., Oakland CA 94608

Dear Ms Foutch and Ms Lamb.

Our office has received and reviewed the June 28, 1999 report submitted by Alisto Engineering Group in your behalf responding to my May 5, 1999 letter, which requested an appropriate Risk Management Plan prior to continuing development at the above referenced site I have also spoke with Mr Brady Nagle of Alisto

My letter was primarily concerned with providing a health and safety plan for the construction workers, providing a soil and groundwater management plan and the proper closure of monitoring wells It was agreed that a health risk evaluation would not be required at this time and would be more appropriate in the later stage of investigation The report received included a health and safety plan, documentation of proper closure of MW-1 and reference to the sampling of the soil stockpiles Additional clarification was provided on the sampling of the stockpiled soils, which verify that it is okay to reuse onsite Because no further excavation is anticipated, a specific soil and management plan is not necessary for further construction

I requested that a plot plan be submitted that showed the original site overlaid by that of the newly proposed building Please also indicate the depth of the current construction I was also informed that during excavation, monitoring well MW-4 was buried and thus lost Please be aware that if this well cannot be located and properly closed, its location must be included in your deed notice In addition, future site investigation will require the replacement of all wells needed to properly characterize the site

Before additional construction continues, you will need to obtain at a minimum, two vadose soil and two groundwater samples in the general location of former product lines (near MW-4) and near the fore dispenser areas These locations are within the proposed mezzanine and may be within a gasoline plume It is then recommended that a Tier 1 or Tier 2 risk-based corrective action (RBCA) evaluation be done to estimate human health risk The need for future remediation in this area will be determined by the results of the RBCA evaluation You may want to collect geotechnical data from additional borings outside this area to use in your RBCA

To expedite the proposed construction, please provide the plot plan and a work plan for the requested soil and groundwater sampling as soon as possible You should also propose the installation of your replacement wells

You may contact me at (510) 567-6765 if you have any questions

Sincerely,

Barney M Chan
Hazardous Materials Specialist

C: B Chan, files
Mr B Nagle, Alisto Engineering, 1575 Treat Boulevard, Suite 201, Walnut Creek, CA 94598
Mr T Seeliger, Alton Geoscience, 30A Lindbergh Ave , Livermore, CA 94550-9503

Rmp6301SPAve

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J KEARS, Agency Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700

October 28, 1999
StID # 1683

Ms Cherine Foutch
Mobil Oil Co
2063 Main St
Oakley, CA 95641

Ms Connie Lamb
200 Dorado Terrace
San Francisco, CA 94112

Re: Request for Technical Report for 6301 San Pablo Ave., Oakland CA 94608

Dear Ms Foutch and Ms Lamb:

Our office has received and reviewed the October 20, 1999 Third Quarter 1999 Progress Report for the above site prepared by TRC Alton Geoscience Please be aware that I, not Ms Susan Hugo, am your contact for oversight of this site This report gives some indication of the subsurface conditions, however, as you are aware, our office is still waiting for a work plan for the installation of replacement wells for those destroyed during the recent development of the site

In addition, my prior July 9, 1999 letter requested additional soil and groundwater sampling near the location of well MW-4 Such information would be used to estimate human health risk through a risk-based corrective action (RBCA) evaluation A subsequent conversation with your consultant, provided evidence that soil contamination was not significant, therefore, only groundwater samples would be necessary Please resolve the need to obtain this groundwater sampling

Please update our office on the construction of the proposed building Were all the excavated soils reused? What type of vapor barrier was installed during the construction?

Please provide your work plan and response to this letter within 30 days or no later than November 29, 1999.

You may contact me at (510) 567-6765 if you have any questions

Sincerely,

Barney M Chan

Barney M Chan
Hazardous Materials Specialist

C: B Chan, files
Mr T Seeliger, TRC Alton Geoscience, 5052 Commercial Circle, Concord, CA 94520
Mr B Nagle, Alisto Engineering, 1575 Treat Blvd, Suite 201, Walnut Creek, CA 94598

2stat6301

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION (LOP)
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

March 3, 2000
StID # 1683

Ms. Connie Lam
200 Dorado Terrace
San Francisco, CA 94112

Re: Work Plan for Monitoring Well Destruction and/or Replacement, 6301 San Pablo Ave., Oakland CA 94608

Dear Ms. Lamb:

This letter serves to comment on the February 28, 2000 work plan referenced above and also on past activities at this site. As you are aware, this work plan responds to the County's request to repair or reinstall monitoring wells. It is unclear whether any of the former wells can be repaired, therefore, the number of new wells may vary from one to three. Our office concurs that former well MW-1 will not require replacement.

Our office, however, requests that the location(s) of the monitoring wells be reconsidered based on past and current information. Previous and new soil and groundwater information near former well MW4 indicates that the petroleum contamination has been defined east of this well, therefore, the replacement well should be located to the west of MW-4, as close to the new building as possible. In addition, if MW-2 is not able to be repaired, a better location for this well would be the west of the new MW-4 location, as close to the property boundary as possible. The location proposed for the replacement well for MW-3 is appropriate. Please have your consultant comment on these observations prior to scheduling this work.

Our office has received the re-analysis of the accumulated water within the garage bay and concur that this water can be used on-site for watering or dust control.

You may contact me at (510) 567-6765 if you have any questions.

Sincerely,

Barney M Chan

Barney M. Chan
Hazardous Materials Specialist

C: B. Chan, files
Mr. B. Nagle, Alisto Engineering, 1575 Treat Blvd., Suite 201, Walnut Creek, CA 94598
Mr. B. Ledesma, ExxonMobil Corp. Remediation Services, 3700 W. 190th St., TPT 2, Torrance, CA 90509-2929
Mr. T. Seeliger, TRC Alton Geoscience, 5052 Commercial Circle, Concord, CA 94520

Wells6301SP

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION (LOP)
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

January 25, 2000
StID # 1683

Ms. Cherine Foutch
Mobil Oil Co
2063 Main St.
Oakley, CA 95641

Ms. Connie Lamb
200 Dorado Terrace
San Francisco, CA 94112

Re: Activities and Site Investigation at 6301 San Pablo Ave., Oakland CA 94608

Dear Ms. Foutch and Ms. Lamb:

Our office has been made aware of recent activities at the above site, which our office should have but was not informed as they were happening. As you are aware, the construction of the oil change facility has caused some concern. This project was initiated without any concern of it environmental or public health consequence. Neither our office nor Mobil Oil was made aware of this activity. During the initial work, two monitoring wells were destroyed, of which have yet to be replaced. Over 200 cubic yards of potentially contaminated soil was excavated without any precaution taken to monitor petroleum concentrations. When our office finally was informed of these activities, our request for a soil and groundwater management plan, a health and safety plan for construction workers, the proper closure of monitoring wells and a health risk assessment was, as we now know, not adequately addressed.

It was believed that all excavation activities had been concluded in mid 1999, therefore, a health risk evaluation for construction workers was not necessary. However, our office learned from an outside party, additional construction activities including the removal of hydraulic lift reservoir and piping recently occurred. During this time, apparent hydraulic oil contaminated soil was encountered. What happened to this material? Was any sampling or testing done?

Our office was again informed that the remaining two monitoring wells had been damaged or destroyed without permit, permission and without using proper abandonment procedures. It appears that all wells at the site are no longer viable. The monitoring wells should be properly abandoned according to Alameda County Public Works guidelines. What will be done to locate and close the formerly remaining wells? In addition, you must replace a minimum of three wells at this site, one of which has been previously approved by our office. **Please submit your well replacement work plan within 30 days, or no later than February 28, 2000.**

We were also notified that a great deal of water, either groundwater and/or rainwater had entered the sump within the new oil change building. There appeared be an attempt to dispose of this water improperly. Be aware, this water must be properly characterized and disposed with documentation. It cannot be directly discharged to the storm or sanitary sewers without the appropriate permit.

It would appear that construction activities require additional supervision and regulatory agency notification to avoid these situations Please have an environmental consultant oversee all future construction activities and notify our office of future activities

You may contact me at (510) 567-6765 if you have any questions

Sincerely,

Barney M Chan

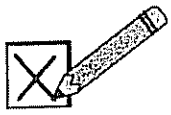
Barney M Chan
Hazardous Materials Specialist

C: B. Chan, files
Mr. T. Seeliger, TRC Alton Geoscience, 5052 Commercial Circle, Concord CA 94520
Mr. B. Nagle, Alisto Engineering, 1575 Treat Blvd., Suite 201, Walnut Creek, CA 94598
Mr. H Gomez, City of Oakland OES, 1605 Martin Luther King Dr., Oakland CA 94612

constr6301San Pablo

APPENDIX D
OAKLAND RBCA ELIGIBILITY CHECKLIST

Oakland RBCA Eligibility Checklist



The Oakland Tier 1 RBSLs and Tier 2 SSTLs are intended to address human health concerns at the majority of sites in Oakland where commonly-found contaminants are present. Complicated sites—especially those with continuing releases, ecological concerns or unusual subsurface conditions—will likely require a Tier 3 analysis. The following checklist is designed to assist you in determining your site's eligibility for the Oakland RBCA levels.

CRITERIA	YES	NO
1. Is there a continuing, *primary* source of a chemical of concern, such as a leaking container, tank or pipe? (This does *not* include residual sources.)	☐	☒
2. Is there any mobile or potentially-mobile free product?	☐	☒
3. Are there more than five chemicals of concern at the site at a concentration greater than the lowest applicable Oakland RBCA level?	☐	☒
4. Are there any preferential vapor migration pathways—such as gravel channels or utility corridors—that are potential conduits for the migration, on-site or off-site, of a volatilized chemical of concern?	☐	☒
5. Do both of the following conditions exist? (a) Groundwater is at depths less than 300 cm (10 feet) (b) Inhalation of volatilized chemicals of concern from groundwater in indoor or outdoor air is a pathway of concern but groundwater ingestion is *not**	☐	☒
6. Are there any existing on-site or off-site structures intended for future use where exposure to indoor air vapors from either soil or groundwater is of concern *and* one of the following three conditions is present? (a) A slab-on-grade foundation that is less than 15 cm (6 inches) thick (b) An enclosed, below-grade space (e.g., a basement) that has floors or walls less than 15 cm (6 inches) thick (c) A crawl space that is not ventilated	☐	☒
7. Are there any immediate, acute health risks to humans associated with contamination at the site, including explosive levels of a chemical?	☐	☒
8. Are there any complete exposure pathways to nearby ecological receptors, such as endangered species, wildlife refuge areas, wetlands, surface water bodies or other protected areas?	☐	☒

*If groundwater ingestion *is* a pathway of concern, the associated Oakland RBCA levels will be more stringent than those for any groundwater-related inhalation scenario, rendering depth to groundwater irrelevant in the risk analysis

If you answer "no" to all questions, your site is eligible for the Oakland RBCA levels. If you answer "yes" to any of the questions, your site is *not* eligible for the Oakland RBCA levels at this time.

APPENDIX E
OAKLAND TIER 1 RBSLS AND TIER 2 SSTLS

Oakland Tier 1 RBSLs

Medium	Exposure Pathway	Land Use	Type of Risk	Benzene	Ethyl-benzene	MTBE	Toluene	Xylenes
Surficial Soil (mg/kg)	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic	2.7E+00				
			Hazard	8.1E+01	5.1E+03	2.6E+02	9.0E+03	5.4E+04
		Commercial/ Industrial	Carcinogenic	8.5E+00				
			Hazard	5.1E+02	3.3E+04	1.7E+03	5.6E+04	3.0E+05
Subsurface Soil (mg/kg)	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	6.9E-02				
			Hazard	2.3E+00	SAT	4.4E+03	3.6E+02	SAT
		Commercial/ Industrial	Carcinogenic	1.1E+00				
			Hazard	6.6E+01	SAT	SAT	SAT	SAT
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	1.9E-01				
			Hazard	7.6E+00	SAT	SAT	SAT	SAT
		Commercial/ Industrial	Carcinogenic	7.3E-01				
			Hazard	4.4E+01	SAT	SAT	SAT	SAT
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic	*2.1E-03*	*8.0E+00*	*7.6E-03*	*8.8E-01*	*1.3E+01*
			Hazard	*2.1E-03*	*8.0E+00*	*7.6E-03*	*8.8E-01*	*1.3E+01*
		Commercial/ Industrial	Carcinogenic	*2.1E-03*	*8.0E+00*	*7.6E-03*	*8.8E-01*	*1.3E+01*
			Hazard	*2.1E-03*	*8.0E+00*	*7.6E-03*	*8.8E-01*	*1.3E+01*
Groundwater (mg/l)	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	1.1E-01				
			Hazard	3.7E+00	>SOL	2.4E+04	2.1E+02	>SOL
		Commercial/ Industrial	Carcinogenic	1.8E+00				
			Hazard	1.1E+02	>SOL	>SOL	>SOL	>SOL
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	5.6E+00				
			Hazard	2.2E+02	>SOL	>SOL	>SOL	>SOL
		Commercial/ Industrial	Carcinogenic	2.1E+01				
			Hazard	1.3E+03	>SOL	>SOL	>SOL	>SOL
	Ingestion of Groundwater	Residential	Carcinogenic	*1.0E-03*	*7.0E-01*	*1.3E-02*	*1.5E-01*	*1.8E+00*
			Hazard	*1.0E-03*	*7.0E-01*	*1.3E-02*	*1.5E-01*	*1.8E+00*
		Commercial/ Industrial	Carcinogenic	*1.0E-03*	*7.0E-01*	*1.3E-02*	*1.5E-01*	*1.8E+00*
			Hazard	*1.0E-03*	*7.0E-01*	*1.3E-02*	*1.5E-01*	*1.8E+00*
Water Used for Recreation (mg/l)	Ingestion/ Dermal	Residential	Carcinogenic	6.3E-03				
			Hazard	1.8E-01	3.6E+00	1.5E+00	1.1E+01	6.6E+01

Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Note: Recreated from Table 5, Oakland Urban Land Development Program: Guidance Document, City of Oakland, Public Works Agency, Jan 1, 2000.

Oakland Tier 2 SSTLs for Merrit Sands

Medium	Exposure Pathway	Land Use	Type of Risk	Benzene	Ethyl-benzene	MTBE	Toluene	Xylenes
Surficial Soil (mg/kg)	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic	3.7E+01				
			Hazard	9.9E+01	6.3E+03	3.3E+02	1.1E+04	6.0E+04
		Commercial/ Industrial	Carcinogenic	1.5E+02				
			Hazard	9.2E+02	6.3E+04	3.4E+03	9.4E+04	3.8E+05
Subsurface Soil (mg/kg)	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	7.0E-01				
			Hazard	2.3E+00	SAT	4.8E+03	3.7E+02	SAT
		Commercial/ Industrial	Carcinogenic	1.1E+01				
			Hazard	6.7E+01	SAT	SAT	SAT	SAT
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	3.9E+00				
			Hazard	1.6E+01	SAT	SAT	SAT	SAT
		Commercial/ Industrial	Carcinogenic	1.5E+01				
			Hazard	9.1E+01	SAT	SAT	SAT	SAT
	Inhalation of Groundwater Impacted by Leachate	Residential	Carcinogenic	*1.0E-02*	*3.8E+01*	*4.0E-02*	*4.2E+00*	*6.4E+01*
			Hazard	*1.0E-02*	*3.8E+01*	*4.0E-02*	*4.2E+00*	*6.4E+01*
		Commercial/ Industrial	Carcinogenic	*1.0E-02*	*3.8E+01*	*4.0E-02*	*4.2E+00*	*6.4E+01*
			Hazard	*1.0E-02*	*3.8E+01*	*4.0E-02*	*4.2E+00*	*6.4E+01*
Groundwater (mg/l)	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	1.4E+00				
			Hazard	4.7E+00	>SOL	2.5E+04	2.8E+02	>SOL
		Commercial/ Industrial	Carcinogenic	2.2E+01				
			Hazard	1.4E+02	>SOL	>SOL	>SOL	>SOL
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	1.8E+02				
			Hazard	7.2E+02	>SOL	>SOL	>SOL	>SOL
		Commercial/ Industrial	Carcinogenic	6.9E+02				
			Hazard	>SOL	>SOL	>SOL	>SOL	>SOL
	Ingestion of Groundwater	Residential	Carcinogenic	*1.0E-03*	*7.0E-01*	*1.3E-02*	*1.5E-01*	*1.8E+00*
			Hazard	*1.0E-03*	*7.0E-01*	*1.3E-02*	*1.5E-01*	*1.8E+00*
		Commercial/ Industrial	Carcinogenic	*1.0E-03*	*7.0E-01*	*1.3E-02*	*1.5E-01*	*1.8E+00*
			Hazard	*1.0E-03*	*7.0E-01*	*1.3E-02*	*1.5E-01*	*1.8E+00*
Water Used for Recreation (mg/l)	Ingestion/ Dermal	Residential	Carcinogenic	6.3E-02				
			Hazard	1.8E-01	3.6E+00	1.5E+00	1.1E+01	6.6E+01

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Note: Recreated from Table 6, Oakland Urban Land Development Program: Guidance Document, City of Oakland, Public Works Agency, Jan 1, 2000.

Oakland Tier 2 SSTLs for Sandy Silts

Medium	Exposure Pathway	Land Use	Type of Risk	Benzene	Ethyl-benzene	MTBE	Toluene	Xylenes
Surficial Soil (mg/kg)	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic	2.7E+01				
			Hazard	8.2E+01	5.1E+03	2.6E+02	9.0E+03	5.6E+04
		Commercial/ Industrial	Carcinogenic	8.5E+01				
			Hazard	5.2E+02	3.3E+04	1.7E+03	5.6E+04	3.1E+05
Subsurface Soil (mg/kg)	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	1.1E+00				
			Hazard	3.6E+00	SAT	8.1E+03	5.7E+02	SAT
		Commercial/ Industrial	Carcinogenic	1.7E+01				
			Hazard	1.1E+02	SAT	SAT	SAT	SAT
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	2.0E+01				
			Hazard	8.0E+01	SAT	SAT	SAT	SAT
		Commercial/ Industrial	Carcinogenic	7.7E+01				
			Hazard	4.7E+02	SAT	SAT	SAT	SAT
	Inhalation of Groundwater Impacted by Leachate	Residential	Carcinogenic	*6.5E-03*	*2.4E+01*	*2.7E-02*	*2.7E+00*	*4.0E+01*
			Hazard	*6.5E-03*	*2.4E+01*	*2.7E-02*	*2.7E+00*	*4.0E+01*
		Commercial/ Industrial	Carcinogenic	*6.5E-03*	*2.4E+01*	*2.7E-02*	*2.7E+00*	*4.0E+01*
			Hazard	*6.5E-03*	*2.4E+01*	*2.7E-02*	*2.7E+00*	*4.0E+01*
Groundwater (mg/l)	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	3.4E+00				
			Hazard	1.1E+01	>SOL	3.0E+04	>SOL	>SOL
		Commercial/ Industrial	Carcinogenic	5.3E+01				
			Hazard	3.2E+02	>SOL	>SOL	>SOL	>SOL
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	1.0E+03				
			Hazard	>SOL	>SOL	>SOL	>SOL	>SOL
		Commercial/ Industrial	Carcinogenic	>SOL				
			Hazard	>SOL	>SOL	>SOL	>SOL	>SOL
	Ingestion of Groundwater	Residential	Carcinogenic	*1.0E-03*	*7.0E-01*	*1.3E-02*	*1.5E-01*	*1.8E+00*
			Hazard	*1.0E-03*	*7.0E-01*	*1.3E-02*	*1.5E-01*	*1.8E+00*
		Commercial/ Industrial	Carcinogenic	*1.0E-03*	*7.0E-01*	*1.3E-02*	*1.5E-01*	*1.8E+00*
			Hazard	*1.0E-03*	*7.0E-01*	*1.3E-02*	*1.5E-01*	*1.8E+00*
Water Used for Recreation (mg/l)	Ingestion/ Dermal	Residential	Carcinogenic	6.3E-02				
			Hazard	1.8E-01	3.6E+00	1.5E+00	1.1E+01	6.6E+01

*Italicized concentrations based on California MCLs

SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Note: Recreated from Table 7, Oakland Urban Land Development Program: Guidance Document, City of Oakland, Public Works Agency, Jan 1, 2000.

Oakland Tier 2 SSTLs for Clayey Silts

Medium	Exposure Pathway	Land Use	Type of Risk	Benzene	Ethyl-benzene	MTBE	Toluene	Xylenes
Surficial Soil (mg/kg)	Ingestion/ Dermal/ Inhalation	Residential	Carcinogenic	1.9E+00				
			Hazard	6.3E+01	3.9E+03	2.0E+02	7.1E+03	5.3E+04
		Commercial/ Industrial	Carcinogenic	4.9E+01				
			Hazard	3.0E+02	1.8E+04	9.3E+02	3.4E+04	2.6E+05
Subsurface Soil (mg/kg)	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	1.9E+00				
			Hazard	6.2E+00	SAT	1.4E+04	9.3E+02	SAT
		Commercial/ Industrial	Carcinogenic	3.0E+01				
			Hazard	1.8E+02	SAT	SAT	SAT	SAT
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	1.6E+02				
			Hazard	6.5E+02	SAT	SAT	SAT	SAT
		Commercial/ Industrial	Carcinogenic	6.2E+02				
			Hazard	SAT	SAT	SAT	SAT	SAT
	Ingestion of Groundwater Impacted by Leachate	Residential	Carcinogenic	*4.5E-03*	*1.6E+01*	*2.1E-02*	*1.8E+00*	*2.7E+01*
			Hazard	*4.5E-03*	*1.6E+01*	*2.1E-02*	*1.8E+00*	*2.7E+01*
		Commercial/ Industrial	Carcinogenic	*4.5E-03*	*1.6E+01*	*2.1E-02*	*1.8E+00*	*2.7E+01*
			Hazard	*4.5E-03*	*1.6E+01*	*2.1E-02*	*1.8E+00*	*2.7E+01*
Groundwater (mg/l)	Inhalation of Indoor Air Vapors	Residential	Carcinogenic	5.6E+00				
			Hazard	1.9E+01	>SOL	3.6E+04	>SOL	>SOL
		Commercial/ Industrial	Carcinogenic	8.9E+01				
			Hazard	5.4E+02	>SOL	>SOL	>SOL	>SOL
	Inhalation of Outdoor Air Vapors	Residential	Carcinogenic	>SOL				
			Hazard	>SOL	>SOL	>SOL	>SOL	>SOL
		Commercial/ Industrial	Carcinogenic	>SOL				
			Hazard	>SOL	>SOL	>SOL	>SOL	>SOL
	Ingestion of Groundwater	Residential	Carcinogenic	*1.0E-03*	*7.0E-01*	*1.3E-02*	*1.5E-01*	*1.8E+00*
			Hazard	*1.0E-03*	*7.0E-01*	*1.3E-02*	*1.5E-01*	*1.8E+00*
		Commercial/ Industrial	Carcinogenic	*1.0E-03*	*7.0E-01*	*1.3E-02*	*1.5E-01*	*1.8E+00*
			Hazard	*1.0E-03*	*7.0E-01*	*1.3E-02*	*1.5E-01*	*1.8E+00*
Water Used for Recreation (mg/l)	Ingestion/ Dermal	Residential	Carcinogenic	6.3E-02				
			Hazard	1.8E-01	3.6E+00	1.5E+00	1.1E+01	6.6E+01

Italicized concentrations based on California MCLs

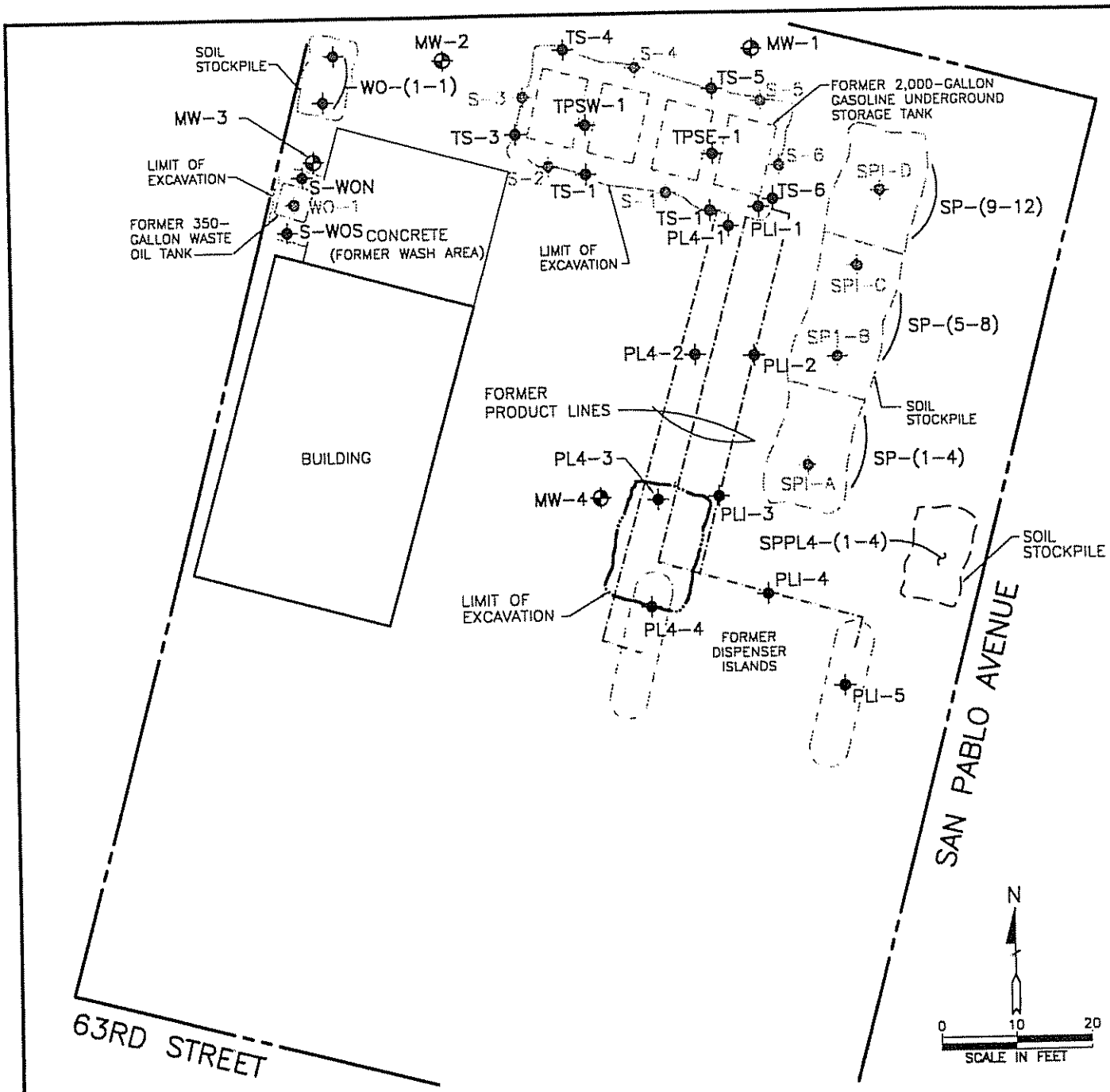
SAT = RBSL exceeds saturated soil concentration of chemical

>SOL = RBSL exceeds solubility of chemical in water

Note: Recreated from Table 8, Oakland Urban Land Development Program: Guidance Document, City of Oakland, Public Works Agency, Jan 1, 2000.

Appendix D

Site Maps and Analytical Data for UST Removals



LEGEND

- GROUNDWATER MONITORING WELL
- SOIL SAMPLE COLLECTED BY ALISTO ENGINEERING GROUP
- SOIL SAMPLE COLLECTED BY TANK PROTECT ENGINEERING

FIGURE 2

SITE PLAN

MOBIL OIL CORPORATION
FORMER MOBIL STATION NO. 99-105
6301 SAN PABLO AVENUE
OAKLAND, CALIFORNIA

PROJECT NO. 10-309

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

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TABLE 1 - SUMMARY OF RESULTS OF SOIL SAMPLING
FORMER MOBIL OIL STATION 99-105
6301 SAN PABLO AVENUE, OAKLAND, CALIFORNIA

ALISTO PROJECT NO. 10-309

BORING ID	SAMPLE DEPTH (Feet)	DATE OF SAMPLING	TPH-G (mg/kg)	TPH-D (mg/kg)	B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)	TOG (mg/kg)	LEAD (mg/kg)	LAB
Tank Excavation Samples											
S-1	11	08/05/94	6.5	---	0.180	0.082	0.370	1.2	---	---	---
S-2	11	08/05/94	3.2	---	0.11	ND<0.050	0.16	0.21	---	---	---
S-3	11	08/05/94	540	---	ND<1.5	4.1	24	72	---	---	---
S-4	11	08/05/94	73	---	ND<0.067	0.21	1.5	6.8	---	---	---
S-5	11	08/05/94	0.84	---	ND<0.050	ND<0.050	ND<0.050	0.031	---	---	---
S-6	11	08/05/94	40	---	ND<0.014	0.059	0.25	0.6	---	---	---
TS-1	4	01/04/96	3.8	21	ND<0.005	0.0085	ND<0.005	ND<0.005	---	ND<2.5	SEQ
TS-2	4	01/04/96	ND<1.0	20	ND<0.005	ND<0.005	ND<0.005	0.0053	---	ND<2.5	SEQ
TS-3	4	01/04/96	9.5	44	0.11	0.28	0.019	0.021	---	160	SEQ
TS-4	5	01/04/96	1.7	1.8	ND<0.005	0.014	0.0081	0.0086	---	ND<2.5	SEQ
TS-5	5	01/04/96	ND<1.0	2.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	---	ND<2.5	SEQ
TS-6	4	01/04/96	ND<1.0	2.0	ND<0.005	0.0095	ND<0.005	0.015	---	86	SEQ
TPSW-1	---	02/14/96	640	160	ND<0.0050	0.32	6.5	36	---	5.3	SEQ
TPSE-1	---	02/14/96	93	160	ND<0.0050	ND<0.0050	0.43	2.7	---	5.8	SEQ
Tank Excavation Samples, Waste Oil											
WO-1	6	08/05/94	21	1.2	ND<0.015	0.11	0.34	1.5	94	4.3	---
S-WON	3	01/04/96	ND<1.0	2.9	ND<0.005	ND<0.005	ND<0.005	ND<0.005	8.5	30	SEQ
S-WOS	3	01/04/96	ND<1.0	1.6	ND<0.005	ND<0.005	ND<0.005	0.0095	10	28	SEQ

TABLE 2 - SUMMARY OF RESULTS OF GROUNDWATER SAMPLING
FORMER MOBIL OIL STATION 99-105
6301 SAN PABLO AVENUE, OAKLAND, CALIFORNIA

ALISTO PROJECT NO. 10-309

WATER ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a) (Feet)	DEPTH TO WATER (Feet)	GROUNDWATER ELEVATION (b) (Feet)	TPH-G (ug/l)	TPH-D (ug/l)	B (ug/l)	T (ug/l)	E (ug/l)	X (ug/l)	TOG (ug/l)	LEAD	LAB
TW-1	01/04/96	---	6.0	---	ND<50	700	ND<0.50	ND<0.50	ND<0.50	ND<0.50	---	---	SEQ
WW-1	01/04/96	---	3.0	---	ND<50	---	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	---	SEQ
MW-1	03/14/96	32.79	4.50	28.29	610	450	0.75	0.54	1.5	59	---	ND<0.010	SEQ
MW-2	03/14/96	32.80	4.51	28.29	560	250	2.0	0.96	4.3	11	---	ND<0.010	SEQ
MW-3	03/14/96	32.80	9.55	23.25	4200	1200	220	30	140	520	ND<1.0	ND<0.010	SEQ
QC-1 (c)	03/14/96	---	---	---	4100	---	200	27	120	480	---	---	SEQ
MW-4	03/14/96	31.50	4.92	26.58	12000	3500	2200	140	880	2000	---	ND<0.010	SEQ
QC-2 (d)	03/14/96	---	---	---	ND<50	---	ND<0.50	ND<0.50	ND<0.50	ND<0.50	---	---	SEQ

ABBREVIATIONS:

TPH-G	Total petroleum hydrocarbons as gasoline
TPH-D	Total petroleum hydrocarbons as diesel
B	Benzene
T	Toluene
E	Ethylbenzene
X	Total xylenes
TOG	Total oil and grease
ug/l	Micrograms per liter
---	Not measured/analyzed/applicable
ND	Not detected above reported detection limit
SEQ	Sequoia Analytical

NOTES:

(a) Top of casing elevations surveyed in reference to Benchmark: cut square at the midpoint of the return, NE corner of San Pablo Avenue and 61st Street. Elevation = 31.784, City of Oakland Datum or 28.784 mean sea level).

(b) Groundwater elevations in feet above mean sea level.

(c) Blind duplicate.

(d) Travel blank.

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TABLE 1 - SUMMARY OF RESULTS OF SOIL SAMPLING
FORMER MOBIL OIL STATION 99-105
6301 SAN PABLO AVENUE, OAKLAND, CALIFORNIA

ALISTO PROJECT NO. 10-309

BORING ID	SAMPLE DEPTH (Feet)	DATE OF SAMPLING	TPH-G (mg/kg)	TPH-D (mg/kg)	B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)	TOG (mg/kg)	LEAD (mg/kg)	LAB
Stockpile Samples, Waste Oil Tank											
WO-(1-2)	---	01/04/96	ND<1.0	38	ND<0.005	ND<0.005	ND<0.005	ND<0.005	240	30	SEQ
Product Line Samples											
PL1-1	3	02/14/96	ND<1.0	14	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	---	11	SEQ
PL1-2	2.5	02/14/96	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	---	5.0	SEQ
PL1-3	2.5	02/15/96	240	37	0.24	0.59	1.1	1.3	---	6.5	SEQ
PL1-5	2	02/15/96	63	4.9	0.30	0.42	0.31	0.41	---	8.2	SEQ
PL4-1	3	02/14/96	1.4	7.7	0.056	0.078	0.0073	0.042	---	9.9	SEQ
PL4-2	2.5	02/15/96	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	---	5.5	SEQ
PL4-3	5	02/15/96	4.3	3.0	0.0086	0.0075	0.040	0.058	---	6.3	SEQ
PL4-4	5	02/15/96	ND<1.0	3.2	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	---	4.6	SEQ
Stockpile Samples, Product Lines											
SPPL4-(1-4)	---	03/01/96	9.0	11	0.013	0.030	0.13	0.054	---	ND<2.5	SEQ
Groundwater Monitoring Well Samples											
MW-1	5-5.5	03/01/96	ND<1.0	3.4	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	---	ND<2.5	SEQ
MW-1	10-10.5	03/01/96	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	---	ND<2.5	SEQ
MW-1	15-15.5	03/01/96	ND<1.0	4.2	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	---	ND<2.5	SEQ
MW-2	5-5.5	03/01/96	ND<1.0	2.4	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	---	ND<2.5	SEQ
MW-2	10-10.5	03/01/96	220	57	1.2	1.4	2.7	14	---	ND<2.5	SEQ
MW-2	15-15.5	03/01/96	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	0.0063	0.035	---	ND<2.5	SEQ

TABLE 1 - SUMMARY OF RESULTS OF SOIL SAMPLING
FORMER MOBIL OIL STATION 99-105
6301 SAN PABLO AVENUE, OAKLAND, CALIFORNIA

ALISTO PROJECT NO. 10-309

BORING ID	SAMPLE DEPTH (Feet)	DATE OF SAMPLING	TPH-G (mg/kg)	TPH-D (mg/kg)	B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)	TOG (mg/kg)	LEAD (mg/kg)	LAB
MW-3	5.5-6	03/01/96	ND<1.0	1.1	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	9.0	ND<2.5	SEQ
MW-3	10.5-11	03/01/96	53	72	0.32	0.43	0.65	0.93	290	ND<2.5	SEQ
MW-3	15.5-16	03/01/96	ND<1.0	ND<1.0	ND<0.0050	ND<0.0050	ND<0.0050	ND<0.0050	10	ND<2.5	SEQ
MW-4	5.5-6	03/01/96	280	34	1.2	1.0	4.1	19	---	ND<2.5	SEQ
MW-4	10.5-11	03/01/96	5.8	7.7	0.11	ND<0.0050	0.11	0.093	---	ND<2.5	SEQ
MW-4	15.5-16	03/01/96	5.6	2.1	0.076	0.023	0.083	0.070	---	ND<2.5	SEQ

ABBREVIATIONS:

TPH-G	Total petroleum hydrocarbons as gasoline
TPH-D	Total petroleum hydrocarbons as diesel
B	Benzene
T	Toluene
E	Ethylbenzene
X	Total xylenes
TOG	Total oil and grease
mg/kg	Milligrams per kilogram
ND	Not detected above reported detection limit
---	Not analyzed/available
SEQ	Sequoia Analytical

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Appendix E

Hydrographs

Figure 1: MW1 Groundwater Levels with MTBE, TPH-g, TPH-d and Benzene Concentration Trends
FORMER MOBIL STATION 99-105, 6301 San Pablo Avenue, Oakland, California

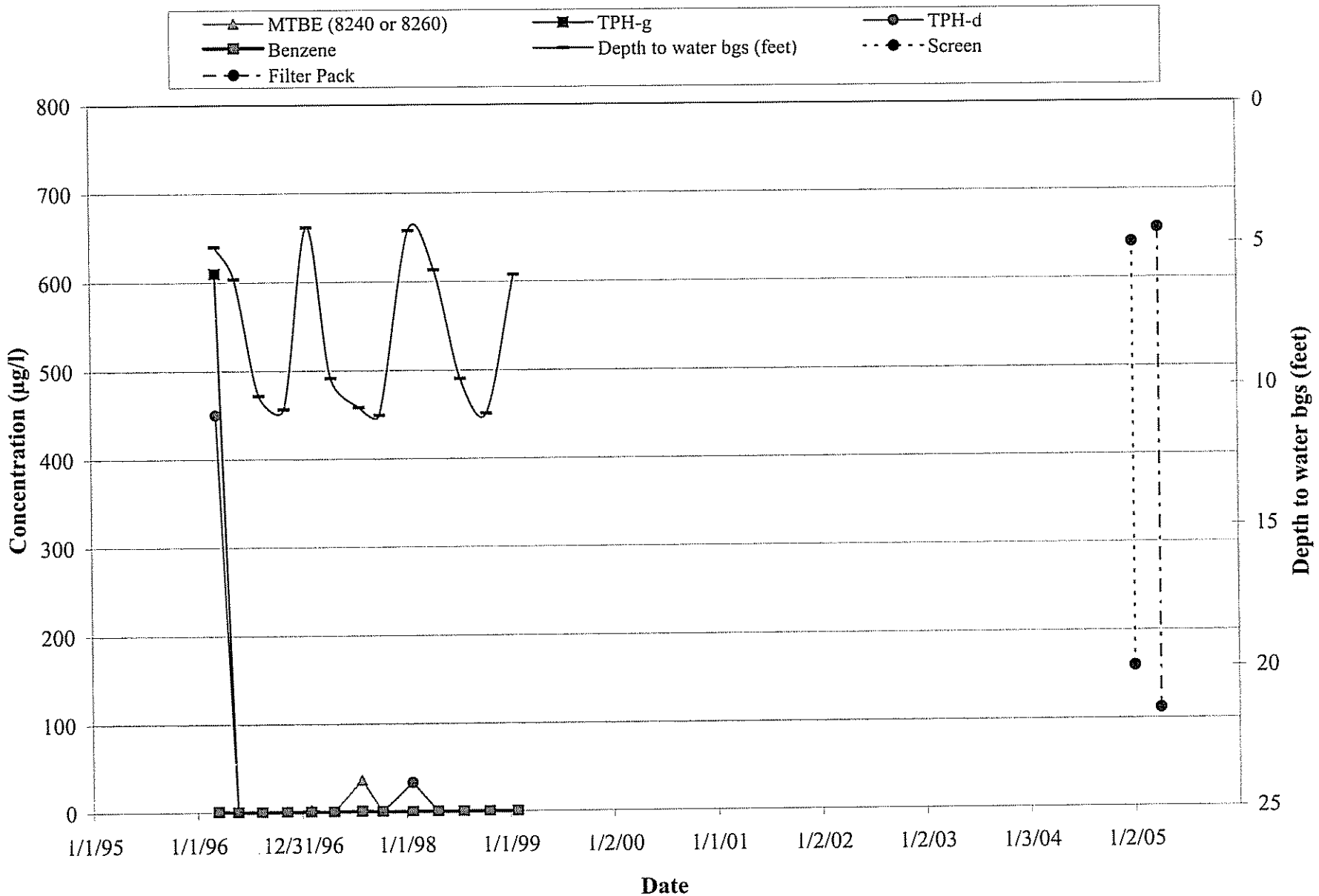

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Figure 2: MW2 Groundwater Levels with MTBE, TPH-g, TPH-d and Benzene Concentration Trends
FORMER MOBIL STATION 99-105, 6301 San Pablo Avenue, Oakland, California

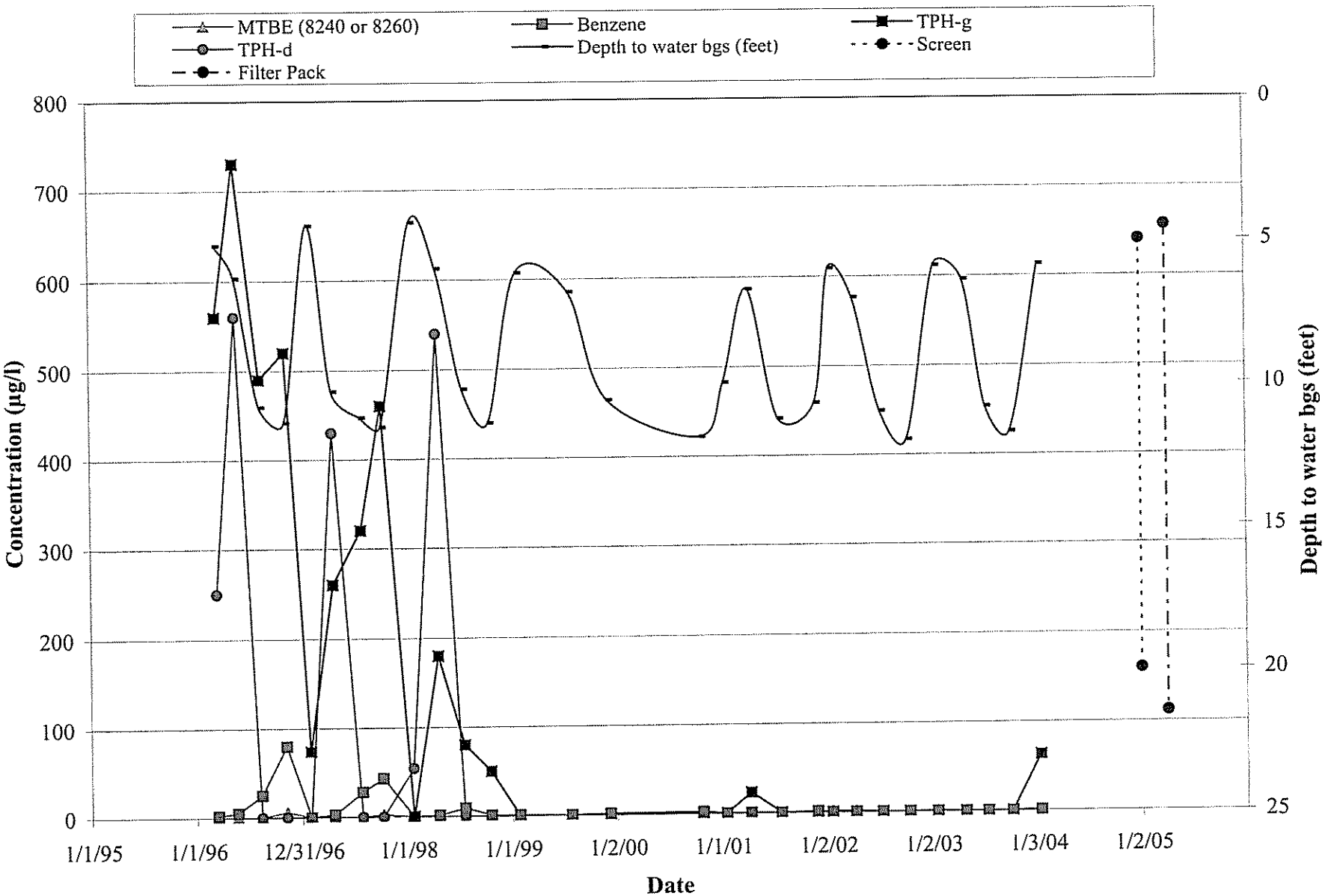

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Figure 3: MW3 Groundwater Levels with MTBE, TPH-g, TPH-d and Benzene Concentration Trends FORMER MOBIL STATION 99-105, 6301 San Pablo Avenue, Oakland, California

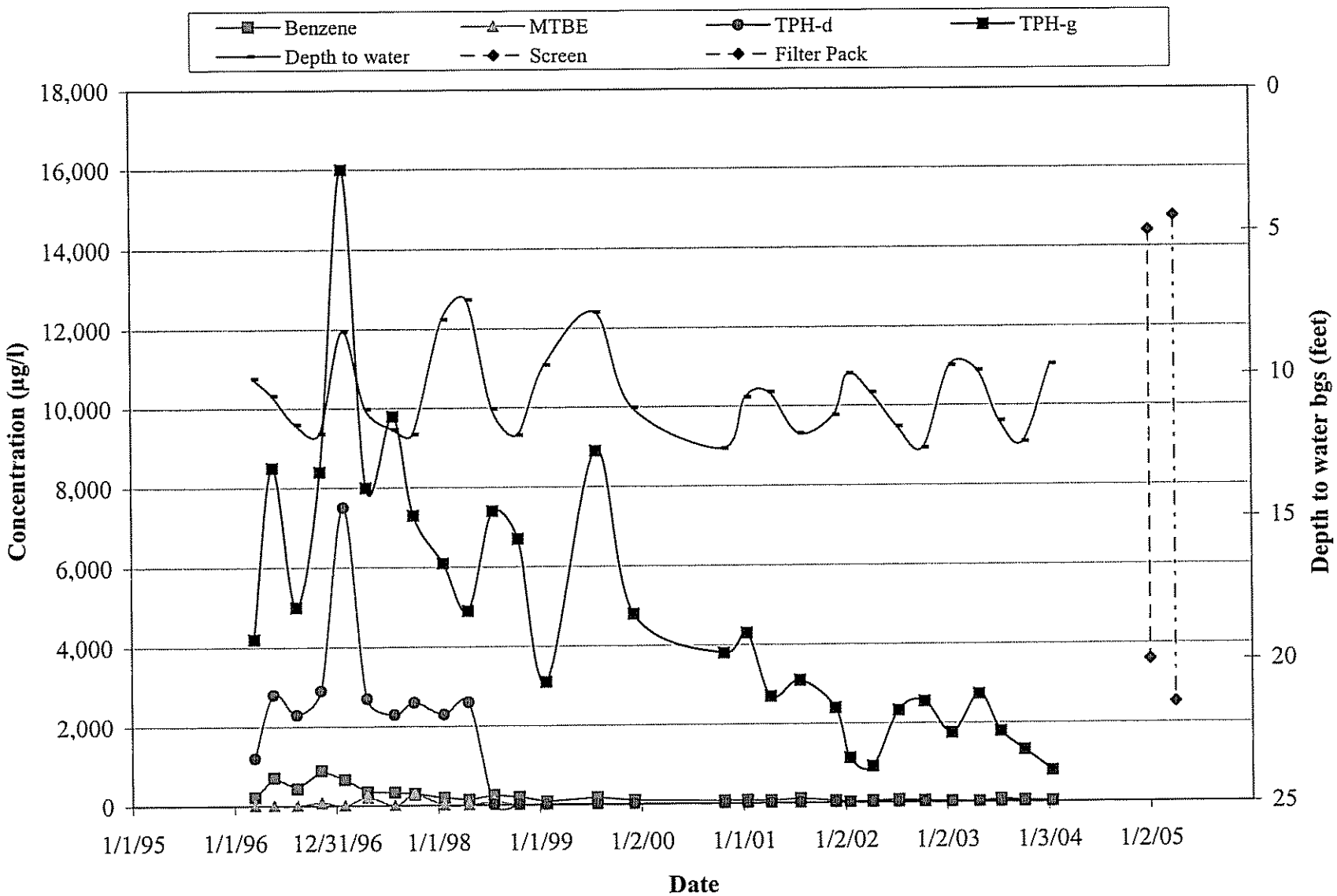

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Figure 4: MW4 Groundwater Levels with MTBE, TPH-g, TPH-d and Benzene Concentration Trends
FORMER MOBIL STATION 99-105, 6301 San Pablo Avenue, Oakland, California

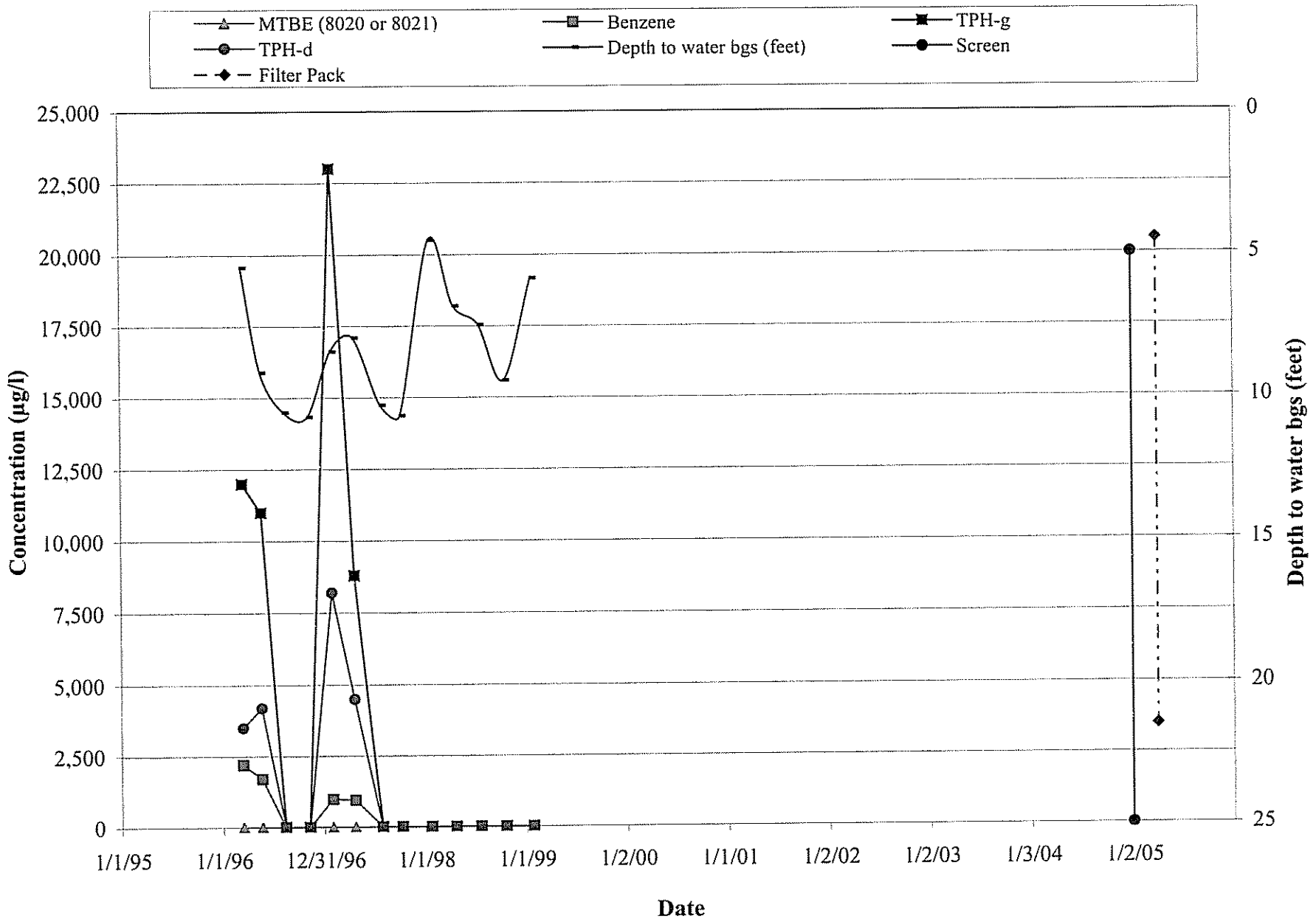

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Figure 5: MW5 Groundwater Levels with MTBE, TPH-g and Benzene Concentration Trends
FORMER MOBIL STATION 99-105, 6301 San Pablo Avenue, Oakland, California