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Jennifer C. Sedlachek
Project Manager

ExxonMobil

December 19, 2008

Ms. Barbara Jakub
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, 2nd Floor
Alameda, California 94502

Subject: Fuel Leak Case No. RO0000445
Former Mobil Station 99105, 6301 San Pablo Avenue, Oakland, California

Dear Ms. Jakub:

Attached for your review and comment is a copy of the *Vapor Intrusion Assessment and Well Installation Work Plan* for the above-referenced site. The work plan, prepared by ETIC Engineering, Inc. of Pleasant Hill, California, is submitted in response to correspondence from the Alameda County Health Care Services Agency dated October 17, 2008.

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

If you have any questions or comments, please contact me at 510.547.8196.

Sincerely,

Jennifer C. Sedlachek
Project Manager

Attachment: ETIC Vapor Intrusion Assessment and Well Installation Work Plan

c: w/ attachment:
Ms. Connie Lam (property owner)

c: w/o attachment:
Mr. Bryan Campbell – ETIC Engineering, Inc.

Vapor Intrusion Assessment and Well Installation Work Plan

Former Mobil Station 99105
6301 San Pablo Avenue
Oakland, California

Prepared for

ExxonMobil Oil Corporation

Prepared by

ETIC Engineering, Inc.
2285 Morello Avenue
Pleasant Hill, California 94523
(925) 602-4710

12/19/08

Hamidou Barry
Project Manager

Date

PROFESSIONAL GEOLOGIST
BRYAN CAMPBELL
No. 7724
Exp. 2/28/10
STATE OF CALIFORNIA

12/19/08

Bryan Campbell, P.G. #7724
Senior Geologist

Date

December 2008

SITE CONTACTS

Station Name:	Former Mobil Station 99105
Station Address:	6301 San Pablo Avenue Oakland, California
ExxonMobil Project Manager:	Jennifer C. Sedlachek ExxonMobil Environmental Services Company 4096 Piedmont Avenue #194 Oakland, California 94611 (510) 547-8196
Consultant to ExxonMobil:	ETIC Engineering, Inc. 2285 Morello Avenue Pleasant Hill, California 94523 (925) 602-4710
ETIC Project Manager:	Hamidou Barry
Regulatory Oversight:	Barbara Jakub Alameda County Health Care Services Agency 1131 Harbor Bay Parkway, 2nd Floor Alameda, California 94502 (510) 383-1767

INTRODUCTION

At the request of ExxonMobil Environmental Services Company on behalf of ExxonMobil Oil Corporation (ExxonMobil), ETIC Engineering, Inc. (ETIC) has prepared this work plan for vapor intrusion assessment and well installation for former Mobil Station 99105, located at 6301 San Pablo Avenue, Oakland, California (Figures 1-3).

This work plan is being submitted in response to correspondence from the Alameda County Health Care Services Agency (ACHCSA) dated 17 October 2008. In the letter, the ACHCSA requested dissolved hydrocarbons characterization and vapor intrusion assessment. A copy of the correspondence is included in Appendix A.

The letter from the ACHCSA also requested the following items and responses to those items are listed below:

- **Residual Soil Contamination.** As presented in the summary of the investigation and remedial activities of this document, hydrocarbon impacted soils were excavated and removed during underground storage tank (UST) removal and redevelopment activities. Also, impacted soil has been adequately assessed and characterized through extensive sampling described below. While the concentration in soil of 1.2 milligrams per kilogram (mg/kg) of benzene (detected in MW2 and MW4) exceeds the environmental screening level (ESL) for commercial/industrial land use, the soil samples from 1 March 1996 are at 5.5 and 10 feet below ground surface (bgs), and the site occupants are not directly exposed to these soils. Also, should future work be performed at the site, the potential construction workers would fall under different ESLs for which benzene is 12 mg/kg (RWQCB 2008). As such, additional soil sampling or investigation is not currently warranted.

- **Waste Disposal Table.** A table has been created collecting data and information from previous investigation reports, quarterly progress reports, groundwater sampling field notes, and available waste manifests. The information regarding the quantity and disposal of soil generated during site investigations is not available. Only the available information on purge groundwater is presented in the waste table included in Appendix B.

This work plan outlines a proposed scope of work for the vapor intrusion assessment, which includes the collection of soil vapor samples following the installation of soil vapor wells. And it also outlines a proposed scope of work for the installation of an offsite groundwater monitoring well to further define the extent of dissolved hydrocarbon concentrations. As requested by the ACHCSA, the scope of work for the redevelopment and sampling of the existing groundwater monitoring wells is also addressed in this document.

SITE BACKGROUND

Former Mobil Station 99105 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 USTs and one 350-gallon used-oil UST were not in

use after 1980 and were removed in 1994 (Figure 2). The site is 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.

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).

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 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 to 20 feet bgs, based on geologic logging of soils during monitoring well installation activities conducted in 1996.

The average depth to groundwater at the site is approximately 7 feet bgs. Historical groundwater depths have ranged from 3.75 feet bgs (MW2 - January 1998) to 12.10 feet below top of casing (MW3 - October 2002). The groundwater flow direction has varied from the northwest to the southwest (January 1999) (TRC 2001). The groundwater gradient during the most recent groundwater monitoring event on 15 January 2004 was calculated to be 0.23 foot per foot toward the southwest (ETIC 2004). The most recent groundwater flow direction and analytical results are shown on Figure 3.

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

In March 1998, 13 soil borings (AB-1 through AB-13) were drilled to characterize the extent of soil and groundwater hydrocarbons onsite (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 (MW2 and MW3) of the three monitoring wells damaged during construction activities conducted by the current property owner in 1999 were rehabilitated and the third well (MW4) was replaced by well MW5. 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 3).

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.

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 of Total Petroleum Hydrocarbons as gasoline (TPH-g) and 0.18 mg/kg of 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 of TPH-g, 1.2 mg/kg of Total Petroleum Hydrocarbons as diesel (TPH-d), and 94 mg/kg of 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 maximum concentrations of 9.5 mg/kg of TPH-g, 44 mg/kg of TPH-d, and 0.11 mg/kg of benzene. Analysis of the soil samples from the used-oil tank excavation indicated maximum concentrations of 2.9 mg/kg of TPH-d and 10 mg/kg of 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 of TPH-g and 160 mg/kg of 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 overexcavated 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 of TPH-g, 37 mg/kg of TPH-d, and 0.30 mg/kg of 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).

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).

PROPOSED SCOPE OF WORK – WELL INSTALLATION

ETIC proposes to install one groundwater monitoring well to further investigate soil and groundwater conditions offsite. Any applicable permits or access will be obtained prior to the performance of this work. A site-specific health and safety plan will be created and used for this work. This work will be conducted under the oversight of a registered professional. The proposed well location is shown on Figure 2.

ETIC proposes to conduct the following activities:

- One offsite soil boring (MW6) will be advanced at the proposed location shown on Figure 3. The boring location was chosen based on the historical groundwater flow directions. The location may need to be modified based on property access, utilities, vehicles, traffic requirements, or other obstacles that may be encountered. The boring will be drilled with a truck-mounted rotary drill rig using hollow-stem, continuous-flight augers.

- Soil samples from the boring will be collected continuously to the total depth of the boring. Selected soil samples will be retained for laboratory analysis based on significant lithologic changes and/or photoionization detector measurements.

- The boring will be completed as a 2-inch diameter groundwater monitoring well (MW6). The well will be screened with 0.010-inch slotted screen from approximately 5 to 20 feet bgs in the first water-bearing zone. Generally, depth to groundwater at the site is first encountered around approximately 8.5 and 11 feet bgs and stabilizes between approximately 5 and 12 feet bgs. The actual depth of the screened interval will be dependent upon conditions encountered in the field. A proposed well construction diagram is shown on Figure 4.

- The boring and well installation will be completed in accordance with the drilling and well installation and sampling protocols described in Appendix C, and in accordance with local regulations.

- The well will be developed and groundwater samples collected as described in Appendix C.

- All soil and groundwater samples will be preserved, stored in an ice-filled cooler, and delivered under chain of custody to a laboratory certified by the California Department of Health Services.

- The elevation of the top of the well casing will be surveyed relative to an established datum. Survey protocols are included in Appendix C.

Selected soil samples will be analyzed for:

- TPH-g and TPH-d by EPA Method 8015B.
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 8021B.

- Methyl tertiary butyl ether (MTBE), tertiary butyl alcohol (TBA), diisopropyl ether (DIPE), ethyl tertiary butyl ether (ETBE), tertiary amyl methyl ether (TAME), 1,2-dibromoethane (EDB), and 1,2-dichloroethane (1,2-DCA) by EPA Method 8260B.

The groundwater samples will be analyzed for:

- TPH-g and TPH-d by EPA Method 8015B.
- BTEX by EPA Method 8021B.
- MTBE, TBA, DIPE, ETBE, TAME, EDB, and 1,2-DCA by EPA Method 8260B.

PROPOSED SCOPE OF WORK – VAPOR INTRUSION ASSESSMENT

The following work will be conducted and data collected to more accurately assess the potential risk to onsite and offsite occupants via vapor intrusion. The assessment will include a comparison of concentrations of chemicals of concern to relevant ESLs adopted by the California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB 2008). Any applicable permits or access will be obtained prior to the performance of this work. A site-specific health and safety plan will be created and used for this work. This work will be conducted under the oversight of a registered professional.

An advisory published by the Department of Toxic Substances Control and the California Regional Water Quality Control Board, Los Angeles Region (DTSC/LARWQCB) will be used as a guideline for the collection of the soil vapor samples proposed below (DTSC/LARWQCB 2003).

ETIC proposes to conduct the following activities:

- Soil vapor samples will be collected from a total of five locations (VW1 through VW5) (Figure 2) which will be advanced using a hand auger. The proposed boring locations were selected based on the historical hydrocarbon concentrations beneath the site, the assumed groundwater flow direction, and the location of structures. Drilling and sample collection methods are described in Appendix C.

- One soil sample will be collected from each location at approximately 5 to 5.5 feet bgs and one at approximately 5.5 to 6 feet bgs. The soil samples will be screened in the field with an organic vapor analyzer and logged. The samples will be submitted for laboratory analysis.

- The borings will be completed as vapor wells for collection of shallow soil vapor samples from 5 to 6 feet bgs. A proposed well completion diagram is shown on Figure 5.

- Soil vapor samples will be collected in 1-liter Summa canisters and will be analyzed by a state-certified laboratory. Sample collection methods are described in Appendix C.

- Guidelines by the DTSC state that every attempt should be made to collect representative vapor samples but that it may not be possible to collect soil vapor samples from the subsurface in some instances including for sites with a "saturated vadose zone due to a shallow water table or sites with clay-rich soil" (DTSC 2004). If water is encountered in

the vapor wells during the proposed sampling, attempts will not be made to remove the water as this may preclude performing the proper purging of soil vapor before sampling. It may not be possible to collect soil vapor samples due to "low-flow" or "no-flow" conditions, often caused by the presence of clayey soils (DTSC/LARWQCB 2003). If vapor samples cannot be collected from the wells, then an evaluation of vapor intrusion without vapor samples will be considered.

The soil samples collected at approximately 5 to 5.5 feet bgs will be analyzed for:

- Moisture content by ASTM D2216.
- Porosity (including dry bulk density) by API RP40 or equivalent methods.

The soil samples collected at approximately 5.5 to 6 feet bgs will be analyzed for:

- TPH-g and TPH-d by EPA Method 8015B.
- BTEX by EPA Method 8021B.
- MTBE, TBA, DIPE, ETBE, TAME, EDB, and 1,2-DCA by EPA Method 8260B.

The soil vapor samples will be analyzed for:

- TPH-g by EPA Method TO-3M.
- BTEX by EPA Method TO-15.
- MTBE, TBA, DIPE, ETBE, TAME, EDB, and 1,2-DCA by EPA Method TO-15.
- Oxygen, carbon dioxide, and methane by ASTM D1946.
- 1,1-Difluoroethane (as a tracer) by EPA Method TO-15.

CURRENT GROUNDWATER CONCENTRATIONS

To evaluate current groundwater conditions, the existing monitoring wells MW2, MW3, and MW5 will be developed and sampled. Prior to the development, the wells will be gauged for depth to water with a water level meter. The wells will be surged using a 4-inch surge block and purged until sediment is removed. Following the development, groundwater samples will be collected, preserved, stored in an ice-filled cooler, and delivered under chain of custody to a laboratory certified by the California Department of Health Services. Well development and groundwater sampling procedures are described in Appendix C.

The groundwater samples collected from the existing wells will be analyzed for:

- TPH-g and TPH-d by EPA Method 8015B.
- BTEX by EPA Method 8021B.
- MTBE, TBA, DIPE, ETBE, TAME, EDB, and 1,2-DCA by EPA Method 8260B.

SCHEDULE AND REPORTING

Completion of the field work for the vapor intrusion assessment and well installation is contingent upon approval of this work plan by the ACHCSA and upon receipt of approved permits or access. ETIC will keep the ACHCSA informed of the status of the investigation.

Additionally, in the event that the work scope must be altered significantly due to access issues and/or other unexpected issues, ETIC will notify ACHCSA personnel prior to implementing those changes to the work scope.

The report for the investigations and the results of the evaluation will be submitted within 90 days after completion of the field work. Data will be uploaded to the state GeoTracker database in accordance with AB2886.

REFERENCES

Alisto (Alisto Engineering Group). 1996. Additional Tank Closure and Preliminary Site Investigation Report, Former Mobil Oil Corporation, Station 99-105, 6301 San Pablo Avenue, Oakland, California, 15 April.

Alton (Alton Geoscience). 1998. Supplemental Site Assessment Report, Former Mobil Station 99-105, 6301 San Pablo Avenue, Oakland, California, 15 July.

Alton (Alton Geoscience). 1999. Interim Remedial Action Report, Former Mobil Station 99-105, 6301 San Pablo Avenue, Oakland, California, 18 May.

DTSC (Department of Toxic Substances Control). 2004. Guidance for the Evaluation and Mitigation of Substance Vapor Intrusion to Indoor Air – Interim Final. 15 December.

DTSC/LARWQCB (Department of Toxic Substances Control and California Regional Water Quality Control Board – Los Angeles Region). 2003. Advisory – Active Soil Gas Investigations. DTSC and LARWQCB, Glendale and Los Angeles, California. 28 January.

ETIC (ETIC Engineering, Inc.). 2004. Report of Groundwater Monitoring, First Quarter 2004, Former Mobil Station 99-105, 6301 San Pablo Avenue, Oakland, California. ETIC, Pleasant Hill, California.

RWQCB (California Regional Water Quality Control Board). 1995. Water Quality Control Plan, San Francisco Bay Basin (Region 2), June 21.

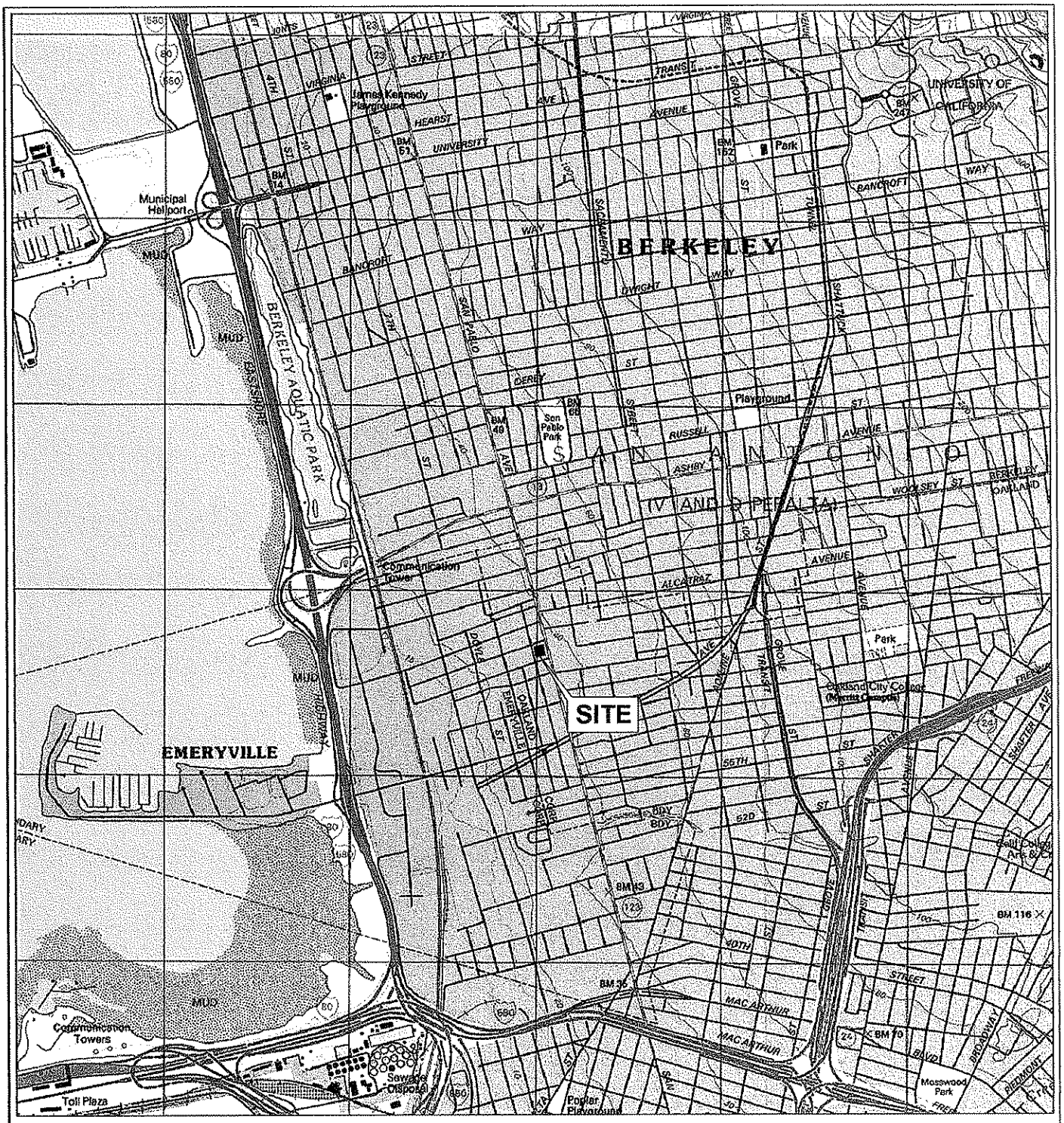
RWQCB (California Regional Water Quality Control Board). 2008. Screening For Environmental Concerns At Sites With Contaminated Soil and Groundwater - Interim Final. RWQCB, Oakland, California. May.

TRC (TRC Alton Geoscience). 1999. Progress Report and Work Plan for the Installation of One Soil Boring, Former Mobil Station 99-105, 6301 San Pablo Avenue, Oakland, California. 3 November.

TRC (TRC Alton Geoscience). 2001. Quarterly Progress Report, Former Mobil Station 99-105, 6301 San Pablo Avenue, Oakland, California. 24 July.

TRC (TRC Alton Geoscience). 2002. Risk-Based Corrective Action Report, Former Mobil Station 99-105, 6301 San Pablo Avenue, Oakland, California. October.

Figures



(Map Source: USGS Topographic Map)

N

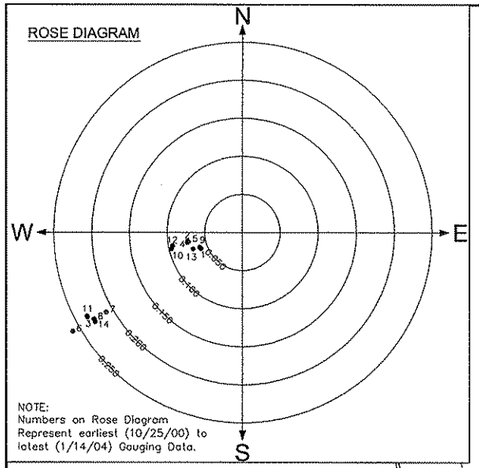
0 2,000

Scale (feet)

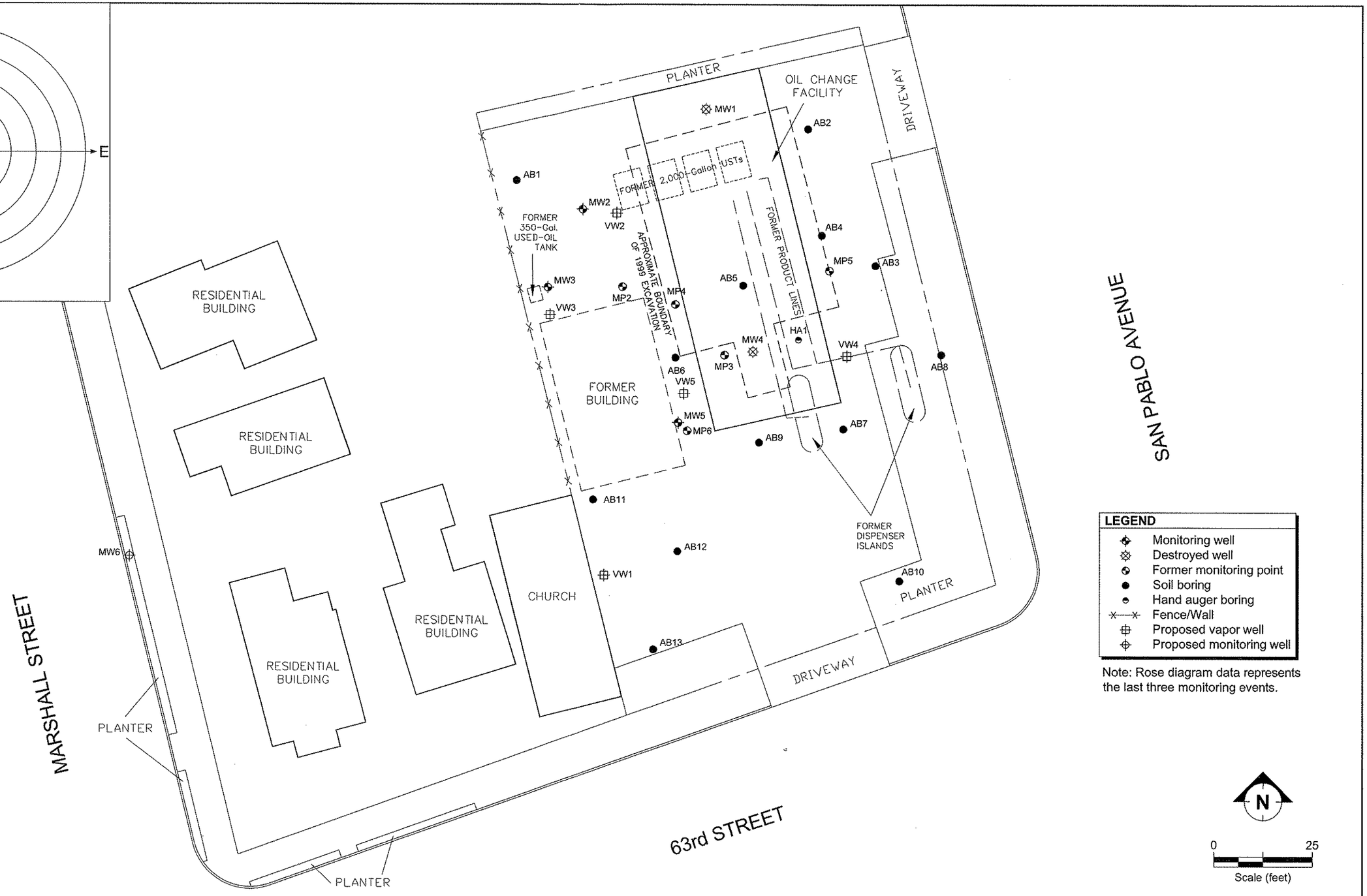
ETIC ENGINEERING	SITE LOCATION AND TOPOGRAPHIC MAP FORMER MOBIL STATION 99105 6301 SAN PABLO AVENUE OAKLAND, CALIFORNIA	FIGURE: **1**

FILENAME: TOPO0903.DWG 10/01/03

ROSE DIAGRAM



NOTE:
Numbers on Rose Diagram Represent earliest (10/25/00) to latest (1/14/04) Gauging Data.



LEGEND

- Monitoring well
- Destroyed well
- Former monitoring point
- Soil boring
- Hand auger boring
- Fence/Wall
- Proposed vapor well
- Proposed monitoring well

Note: Rose diagram data represents the last three monitoring events.

N

0 25

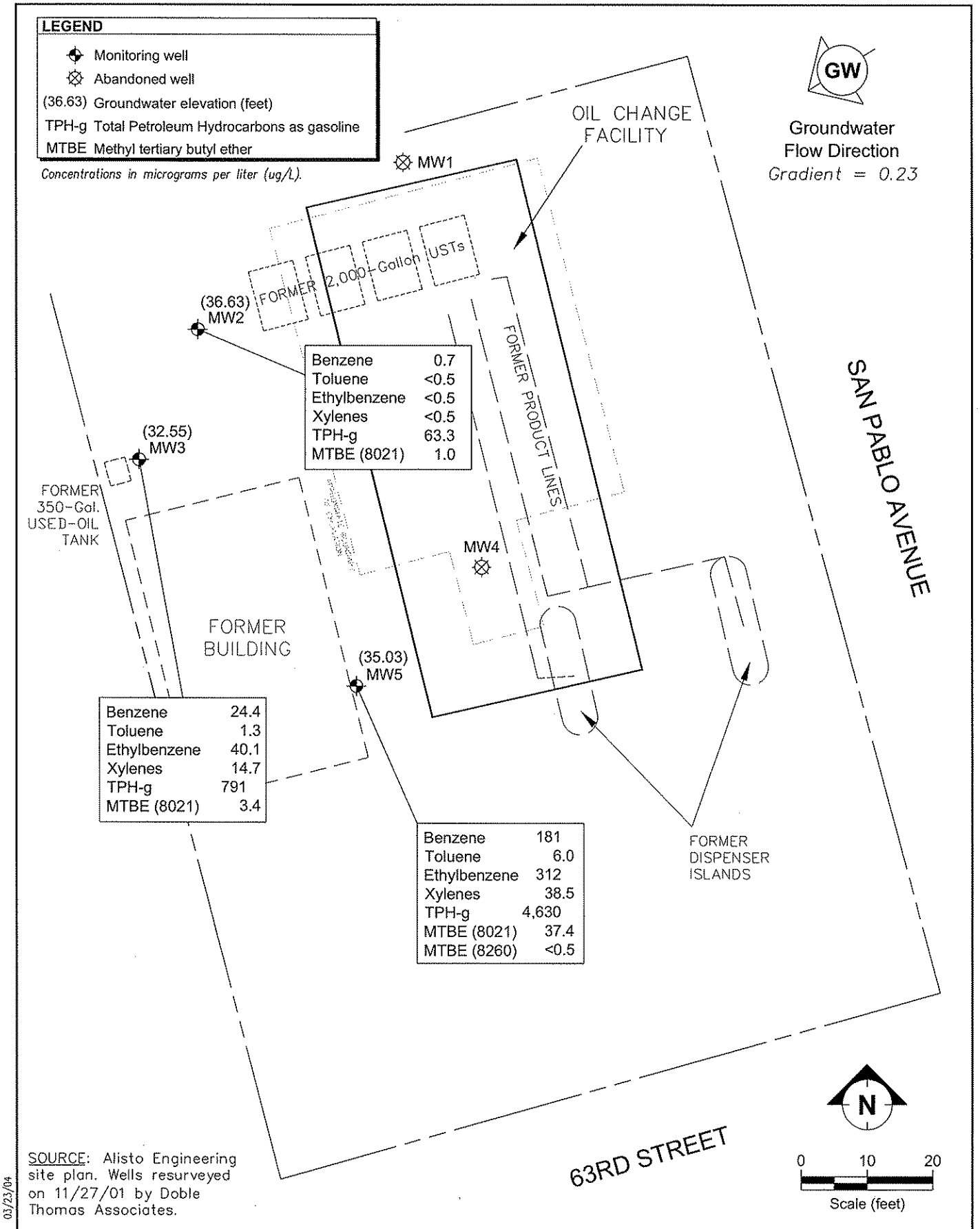
Scale (feet)

FILENAME: Proposed1108.DWG 11/10/08

ETIC ENGINEERING

SITE MAP SHOWING PROPOSED WELL LOCATIONS
FORMER MOBIL STATION 99105
6301 SAN PABLO AVENUE
OAKLAND, CALIFORNIA

FIGURE: 2



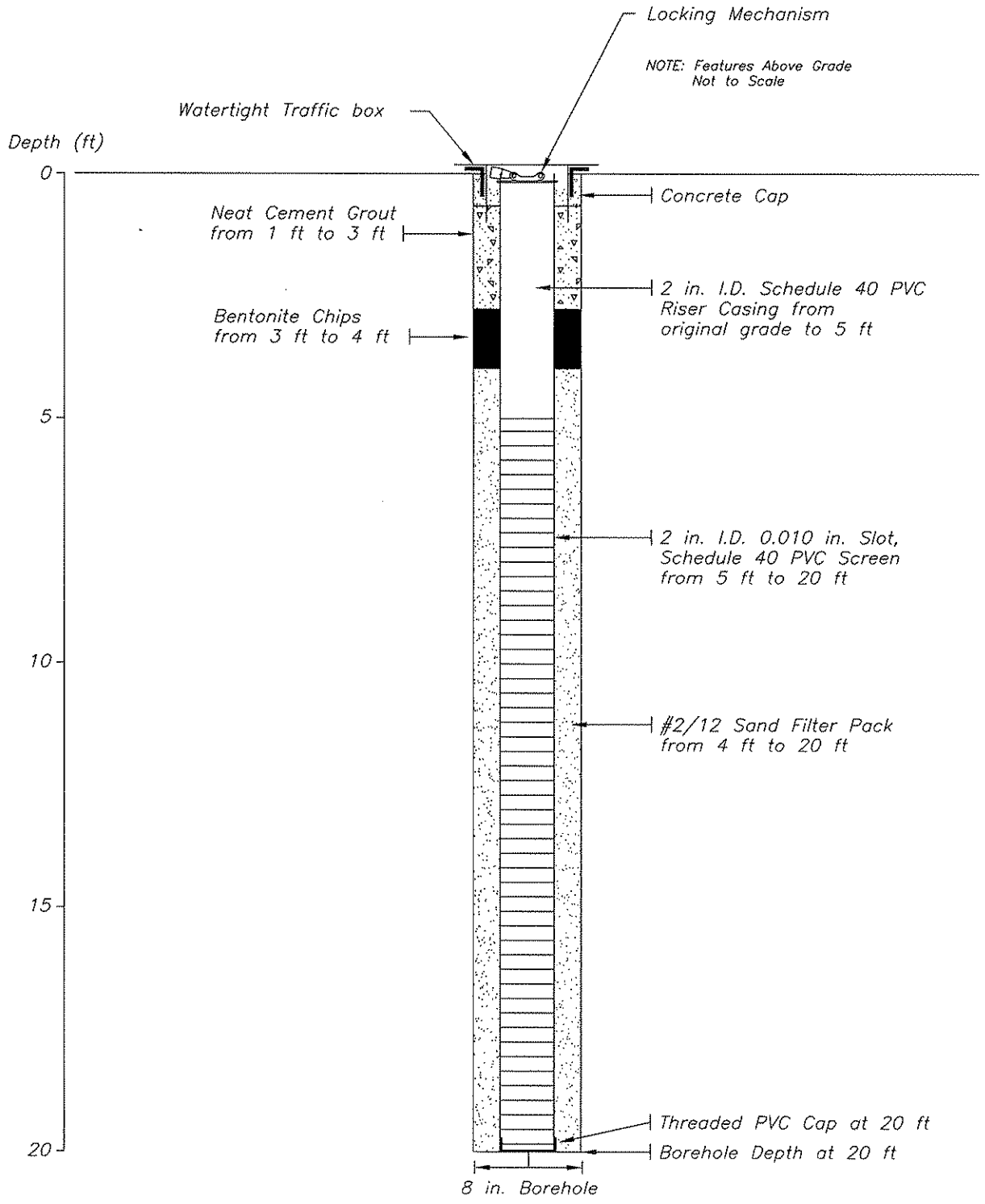
SOURCE: Alisto Engineering site plan. Wells resurveyed on 11/27/01 by Doble Thomas Associates.

ETIC ENGINEERING

SITE PLAN SHOWING GROUNDWATER ELEVATIONS AND ANALYTICAL RESULTS
FORMER MOBIL STATION 99105
6301 SAN PABLO AVENUE, OAKLAND, CALIFORNIA
15 JANUARY 2004

FIGURE: 3

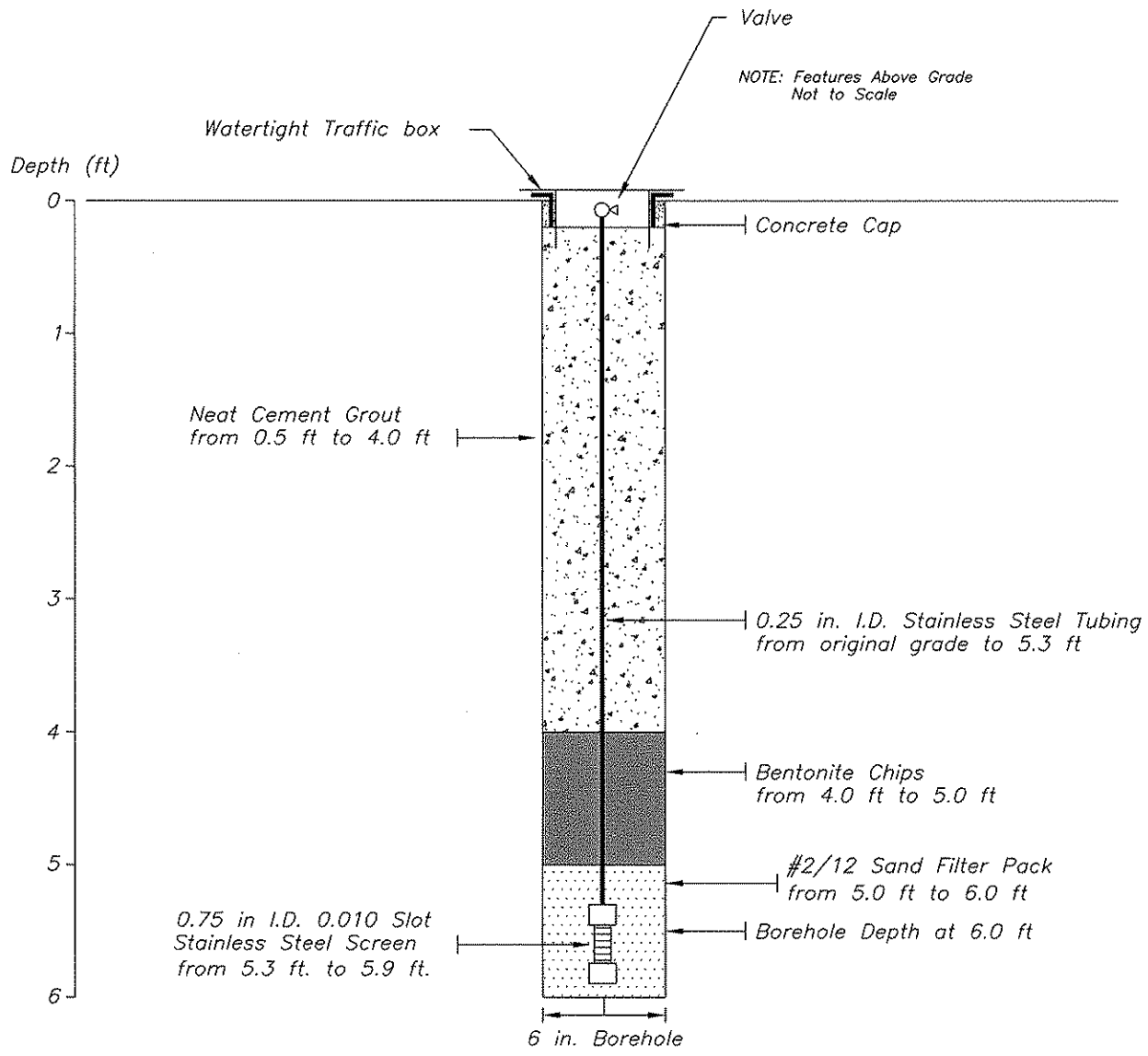
FILENAME: 1q2004.DWG 03/23/04



ETIC ENGINEERING

WELL COMPLETION DIAGRAM FOR
PROPOSED 2" GROUNDWATER EXTRACTION WELL
FORMER MOBIL STATION 99105
6301 SAN PABLO AVENUE, OAKLAND, CALIFORNIA

FIGURE: **4**



ETIC ENGINEERING

WELL COMPLETION DIAGRAM FOR
PROPOSED SOIL VAPOR MONITORING WELLS
FORMER MOBIL STATION 99105
6301 SAN PABLO AVENUE, OAKLAND, CALIFORNIA

FIGURE: 5

Tables

TABLE 1 WELL CONSTRUCTION DETAILS, FORMER MOBIL STATION 99105, 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

Notes:

a Well surveyed on 27 November 2001 by Doble Thomas Associates.
b Well destroyed.

PVC Polyvinyl chloride.
TOC Top of casing.

-- Information not available.

TABLE 2 SOIL SAMPLE ANALYTICAL RESULTS, FORMER MOBIL STATION 99105, 6301 SAN PABLO AVENUE, OAKLAND, CALIFORNIA

Sample Number	Date	Sample Depth (feet bgs)	Concentration (mg/kg)									
			Benzene	Toluene	Ethyl-benzene	Xylene	TPH-g	TPH-d	MTBE	MTBE (8260B)	TOG	Lead
MW1	03/01/96	5 - 5.5	<0.0050	<0.0050	<0.0050	<0.0050	<1.0	3.4	--	--	--	<2.5
MW1	03/01/96	10 - 10.5	<0.0050	<0.0050	<0.0050	<0.0050	<1.0	<1.0	--	--	--	<2.5
MW1	03/01/96	15 - 15.5	<0.0050	<0.0050	<0.0050	<0.0050	<1.0	4.2	--	--	--	<2.5
MW2	03/01/96	5 - 5.5	<0.0050	<0.0050	<0.0050	<0.0050	<1.0	2.4	--	--	--	<2.5
MW2	03/01/96	10 - 10.5	1.2	1.4	2.7	14	220	57	--	--	--	<2.5
MW2	03/01/96	15 - 15.5	<0.0050	<0.0050	0.0063	0.035	<1.0	<1.0	--	--	--	<2.5
MW3	03/01/96	5.5 - 6	<0.0050	<0.0050	<0.0050	<0.0050	<1.0	1.1	--	--	9	<2.5
MW3	03/01/96	10.5 - 11	0.032	0.43	0.65	0.93	53	72	--	--	290	<2.5
MW3	03/01/96	15.5 - 16	<0.0050	<0.0050	<0.0050	<0.0050	<1.0	<1.0	--	--	10	<2.5
MW4	03/01/96	5.5 - 6	1.2	1	4.1	19	280	34	--	--	--	<2.5
MW4	03/01/96	10.5 - 11	0.11	<0.0050	0.11	0.093	6	7.7	--	--	--	<2.5
MW4	03/01/96	15.5 - 16	0.076	0.023	0.083	0.07	6	2.1	--	--	--	<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	--	--	--

TABLE 2 SOIL SAMPLE ANALYTICAL RESULTS, FORMER MOBIL STATION 99105, 6301 SAN PABLO AVENUE, OAKLAND, CALIFORNIA

Sample Number	Date	Sample Depth (feet bgs)	Concentration (mg/kg)									
			Benzene	Toluene	Ethyl-benzene	Xylene	TPH-g	TPH-d	MTBE	MTBE (8260B)	TOG	Lead
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	<0.0050	<0.0050	<0.0050	<0.010	<0.50	--	<0.025	--	--	--
Comp-1	01/25/00	Composite	<0.0050	<0.0050	<0.0050	<0.010	<0.50	--	<0.025	--	--	8.04

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

bgs Below ground surface.
mg/kg Milligrams per kilogram.
MTBE Methyl tertiary butyl ether.
ND Not detected.
TOG Total Oil and Grease
TPH-d Total Petroleum Hydrocarbons as diesel.
TPH-g Total Petroleum Hydrocarbons as gasoline.

-- Not analyzed.

TABLE 3 GROUNDWATER SAMPLE ANALYTICAL RESULTS FOR TEMPORARY BORINGS, FORMER MOBIL STATION 99105, 6301 SAN PABLO AVENUE, OAKLAND, CALIFORNIA

		Concentrations (µg/L)					
Sample Number	Date	TPH-g	Benzene	Toluene	Ethylbenzene	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

Notes: 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 4 GROUNDWATER MONITORING DATA, FORMER MOBIL STATION 99105, 6301 SAN PABLO AVENUE, OAKLAND, CALIFORNIA

Well Number	Date	Elevation TOC (feet)	Depth to Water (feet)	Groundwater Elevation (feet)	LPH Thickness	Concentrations (µg/L) TPH-g	TPH-d	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE (8020/8021)	MTBE (8240/8260)
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[e]	0.84	0.95	ND	1.6	36	--
MW1[a]	10/09/97	32.79	10.46	22.33	0.00	ND	56[e]	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	--

TABLE 4 GROUNDWATER MONITORING DATA, FORMER MOBIL STATION 99105, 6301 SAN PABLO AVENUE, OAKLAND, CALIFORNIA

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

TABLE 4 GROUNDWATER MONITORING DATA, FORMER MOBIL STATION 99105, 6301 SAN PABLO AVENUE, OAKLAND, CALIFORNIA

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

TABLE 4 GROUNDWATER MONITORING DATA, FORMER MOBIL STATION 99105, 6301 SAN PABLO AVENUE, OAKLAND, CALIFORNIA

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

Notes:

a Well sampled using no-purge method.
b Diesel and unidentified hydrocarbons <C15.
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.

Appendix A

Regulatory Correspondence

TM99105

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

October 17, 2008

Jennifer Sedlachek
ExxonMobil
4096 Piedmont, Ave., #194
Oakland, CA 94611

On Dan and Nathan Lam
200 El Dorado Terrace
San Francisco, CA 94112

Subject: Fuel Leak Case No. RO0000445 and Geotracker Global ID T0600101855, Mobil#99-105 / Cars Rent A Car, 6301 San Pablo Avenue, Oakland, CA 94608

Dear Ms. Sedlachek and Messrs. Lam:

Alameda County Environmental Health (ACEH) staff has reviewed the case file for the site and the most recently submitted documents including the groundwater monitoring report dated April 14, 2004 prepared by ETIC, the *Risk-Based Corrective Action (RBCA) Report* dated October 2002 and the *Site Conceptual Model dated November 2001* both prepared by TRC. In the March 22, 2005 letter Ms. Sedlachek requests case closure stating the groundwater concentrations show a stable or decreasing trend. During our recent review of the case, ACEH has identified a few data gaps. An evaluation of the data for MW-5 indicates that benzene concentrations are increasing in this well. Also, no downgradient or off-site evaluation of groundwater or soil vapor has occurred at the site, leaving off-site residential exposure pathways unevaluated. The RBCA that was submitted did not show the data values used for specific input parameters placed into the model or the resulting calculations. Using the maximum soil concentration at the site in the ASTM RBCA model indicates that this soil concentration is above the calculated site-specific target levels (SSTLs) for this site. Therefore, ACEH cannot consider case closure for the subject site at this time. This decision to deny closure is subject to appeal to the State Water Resources Control Board (SWRCB), pursuant to Section 25299.39.2(b) of the Health and Safety Code (Thompson-Richter Underground Storage Tank Reform Act - Senate Bill 562). Please contact the SWRCB Underground Storage Tank Program at (916) 341-5851 for information regarding the appeals process.

TECHNICAL COMMENTS

1. **Dissolved Groundwater Plume Characterization.** As stated above, case closure was requested for the site based on groundwater concentrations that were stable or decreasing. It appears that contaminant concentrations have declined in well MW-3. However, total petroleum hydrocarbons as gasoline and benzene concentrations have increased in well MW-5 which is downgradient of former well MW-4. MW-4 was destroyed in April 1999 while free product was still present in this well. Neither groundwater nor soil vapor has been assessed downgradient of well MW-5 or MW-3 to determine if contaminants are migrating or have already migrated onto the adjacent

property. Also, vapor migration into the on-site building needs to be assessed since there was formerly free product beneath this area. ACEH requests that you prepare a work plan to assess off-site groundwater and soil vapor intrusion at the adjacent property and on-site vapor intrusion into the current building by the date requested below. We request that you evaluate the current concentrations of existing wells by redeveloping and sampling them.

2. **Residual Soil Contamination.** Soil from both MW-2 and MW-4 contained 1.2 milligrams per kilogram (mg/Kg) benzene which exceeds the current environmental screening level for this constituent and the SSTL generated by the ETIC RBCA. While the location of MW-4 is currently covered with a building, MW-2 is still accessible. Please submit a proposal to evaluate residual soil concentrations in this area in the work plan requested below.

3. **Waste Disposal Table.** ACEH in our letter dated December 7, 2001, requested that a list of all disposed, destroyed or reused soil and groundwater be presented in tabularized form with the date and location of disposal. ACEH does not have a copy of this table. Please include a copy in the work plan requested below.

TECHNICAL REPORT REQUEST

Please submit technical reports to Alameda County Environmental Health (Attention: Barbara Jakub), according to the schedule presented below:

- **December 19, 2008** – Soil and Water Investigation Work Plan

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

ELECTRONIC SUBMITTAL OF REPORTS

ACEH's Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of reports in electronic form. The electronic copy replaces paper copies and is expected to be used for all public information requests, regulatory review, and compliance/enforcement activities. Instructions for submission of electronic documents to the Alameda County Environmental Cleanup Oversight Program FTP site are provided on the attached "Electronic Report Upload Instructions." Submission of reports to the Alameda County FTP site is an addition to existing requirements for electronic submittal of information to the State Water Resources Control Board (SWRCB) Geotracker website. In September 2004, the SWRCB adopted regulations that require electronic submittal of information for all groundwater cleanup programs. For several years, responsible parties for cleanup of leaks from underground storage tanks (USTs) have been required to submit groundwater analytical data, surveyed locations of monitoring wells, and other data to the Geotracker database over the Internet. Beginning July 1, 2005, these same reporting requirements were added to Spills, Leaks, Investigations, and Cleanup (SLIC) sites. Beginning July 1, 2005, electronic submittal of a complete copy of all reports for all sites is required in

Geotracker (in PDF format). Please visit the SWRCB website for more information on these requirements (http://www.swrcb.ca.gov/ust/electronic_submittal/report_rqmts.shtml.

PERJURY STATEMENT

All work plans, technical reports, or technical documents submitted to ACEH must be accompanied by a cover letter from the responsible party that states, at a minimum, the following: "I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge." This letter must be signed by an officer or legally authorized representative of your company. Please include a cover letter satisfying these requirements with all future reports and technical documents submitted for this fuel leak case.

PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

The California Business and Professions Code (Sections 6735, 6835, and 7835.1) requires that work plans and technical or implementation reports containing geologic or engineering evaluations and/or judgments be performed under the direction of an appropriately registered or certified professional. For your submittal to be considered a valid technical report, you are to present site specific data, data interpretations, and recommendations prepared by an appropriately licensed professional and include the professional registration stamp, signature, and statement of professional certification. Please ensure all that all technical reports submitted for this fuel leak case meet this requirement.

UNDERGROUND STORAGE TANK CLEANUP FUND

Please note that delays in investigation, later reports, or enforcement actions may result in your becoming ineligible to receive grant money from the state's Underground Storage Tank Cleanup Fund (Senate Bill 2004) to reimburse you for the cost of cleanup.

AGENCY OVERSIGHT

If it appears as though significant delays are occurring or reports are not submitted as requested, we will consider referring your case to the Regional Board or other appropriate agency, including the County District Attorney, for possible enforcement actions. California Health and Safety Code, Section 25299.76 authorizes enforcement including administrative action or monetary penalties of up to $10,000 per day for each day of violation.

If you have any questions, please call me at (510) 639-1287 or send me an electronic mail message at barbara.jakub@acgov.org.

Sincerely,

Barbara J. Jakub, P.G.
Hazardous Materials Specialist

Enclosures: ACEH Electronic Report Upload (ftp) Instructions

cc: Bryan Campbell, ETIC Engineering, 2285 Morello Avenue, Pleasant Hill CA 94523
Leroy Griffin, Oakland Fire Department, 250 Frank H. Ogawa Plaza, Ste. 3341, Oakland, CA 94612-2032
Donna Drogos, ACEH
Barbara Jakub, ACEH
File

Alameda County Environmental Cleanup Oversight Programs (LOP and SLIC)	**ISSUE DATE:** July 5, 2005
	REVISION DATE: December 16, 2005
	PREVIOUS REVISIONS: October 31, 2005
SECTION: Miscellaneous Administrative Topics & Procedures	**SUBJECT:** Electronic Report Upload (ftp) Instructions

Effective **January 31, 2006**, the Alameda County Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of all reports in electronic form to the county's ftp site. Paper copies of reports will no longer be accepted. The electronic copy replaces the paper copy and will be used for all public information requests, regulatory review, and compliance/enforcement activities.

REQUIREMENTS

- Entire report including cover letter must be submitted to the ftp site as **a single portable document format (PDF) with no password protection**. (Please do not submit reports as attachments to electronic mail.)
- It is **preferable** that reports be converted to PDF format from their original format, (e.g., Microsoft Word) rather than scanned.
- Signature pages and perjury statements **must** be included and have either original or electronic signature.
- **Do not password protect the document.** Once indexed and inserted into the correct electronic case file, the document will be secured in compliance with the County's current security standards and a password. **Documents with password protection will not be accepted.**
- Each page in the PDF document should be rotated in the direction that will make it easiest to read on a computer monitor.
- Reports must be named and saved using the following naming convention:
  RO#_Report Name_Year-Month-Date (e.g., RO#5555_WorkPlan_2005-06-14)

Additional Recommendations

- A separate copy of the tables in the document should be submitted by e-mail to your Caseworker in **Excel** format. These are for use by assigned Caseworker only.

Submission Instructions

1) Obtain User Name and Password:
   a) Contact the Alameda County Environmental Health Department to obtain a User Name and Password to upload files to the ftp site.
      i) Send an e-mail to dehloptoxic@acgov.org
      or
      ii) Send a fax on company letterhead to (510) 337-9335, to the attention of Alicia Lam-Finneke.
   b) In the subject line of your request, be sure to include **"ftp PASSWORD REQUEST"** and in the body of your request, include the **Contact Information, Site Addresses,** and the **Case Numbers (RO# available in Geotracker) you will be posting for.**

2) Upload Files to the ftp Site
   a) Using Internet Explorer (IE4+), go to ftp://alcoftp1.acgov.org
      (i) Note: Netscape and Firefox browsers will not open the FTP site.
   b) Click on File, then on Login As.
   c) Enter your User Name and Password. (Note: Both are Case Sensitive.)
   d) Open "My Computer" on your computer and navigate to the file(s) you wish to upload to the ftp site.
   e) With both "My Computer" and the ftp site open in separate windows, drag and drop the file(s) from "My Computer" to the ftp window.

3) Send E-mail Notifications to the Environmental Cleanup Oversight Programs
   a) Send email to dehloptoxic@acgov.org notify us that you have placed a report on our ftp site.
   b) Copy your Caseworker on the e-mail. Your Caseworker's e-mail address is the entire first name then a period and entire last name at acgov.org. (e.g., firstname.lastname@acgov.org)
   c) The subject line of the e-mail must start with the RO# followed by **Report Upload**. (e.g., Subject: RO1234 Report Upload)

Appendix B

Waste Disposal Table

SITE WASTE DISPOSAL
FORMER MOBIL STATION 99105, 6301 SAN PABLO AVENUE, OAKLAND, CALIFORNIA

Material	Quantity (include Units)	Generation Date	Disposal Date	Destination
Non-Hazardous Water	5,000 gallons	2/13/1996	2/18/1996	McKittrick Waste Treatment Site, McKittrick, California
Non-Hazardous Water	5,000 gallons	2/13/1996	2/18/1996	McKittrick Waste Treatment Site, McKittrick, California
Non-Hazardous Water	3,750 gallons	2/13/1996	2/18/1996	McKittrick Waste Treatment Site, McKittrick, California
Non-Hazardous Water	2,600 gallons	2/13/1996	2/26/1996	McKittrick Waste Treatment Site, McKittrick, California
Soil/Excavation of product lines	49 cubic yards	2/14/1996	--	--
Piping	200 pounds	2/14/1996	2/14/1996	Erickson, Inc., Richmond, California
Soil cuttings/6 Geoprobe borings	4 drums*	11/16/19998	--	--
Groundwater/DPVE event	75 gallons*	11/19/19998	--	--
Purge Water	73 gallons	11/27/2001	11/27/2001	McKittrick Waste Treatment Site
Purge Water	87 gallons	1/18/2002	2/13/2002	McKittrick Waste Treatment Site
Purge Water	82 gallons	4/10/2002	5/22/2002	McKittrick Waste Treatment Site
Purge Water	57 gallons	7/12/2002	10/7/2002	McKittrick Waste Treatment Site
Purge Water	50 gallons	10/15/2002	1/23/2003	McKittrick Waste Treatment Site
Purge Water	50 gallons	1/20/2003	1/23/2003	McKittrick Waste Treatment Site
Aqueous Grade I/Purge water	100 gallons	7/15/2003	7/15/2003	Romic Environmental Tech Corporation, East Palo Alto, CA
Aqueous Grade I	45 gallons	10/8/2003	10/8/2003	Romic Environmental Tech Corporation, East Palo Alto, CA
Aqueous Grade I/Purge water	75 gallons	1/15/2004	1/15/2004	Romic Environmental Tech Corporation, East Palo Alto, CA

Notes:

DPVE Dual-phase vacuum extraction.
-- Information not available.
* Waste transported and disposed of by Integrated Waste Management. Information on the manifest and disposal facility not available.

Information on purge water generated between March 1996 and November 2001 is not available.

Appendix C

Field Protocols

PROTOCOLS FOR WELL DRILLING, COMPLETION, AND DEVELOPMENT

SUBSURFACE CLEARANCE SURVEY PROCEDURES

Prior to drilling, the proposed locations of borings will be marked with white paint. Underground Service Alert (USA) will be contacted prior to subsurface activities and a "ticket" will be issued for this investigation. USA members will mark underground utilities in the delineated areas using standard color code identifiers.

Once USA has marked the site, all proposed borehole locations will be investigated by subsurface clearance surveys to identify possible buried hazards (pipelines, drums, tanks). Subsurface clearance surveys use several geophysical methods to locate shallow buried man-made objects. The geophysical methods include electromagnetic induction (EMI) profiling, ground penetrating radar (GPR), and/or magnetic surveying. The choice of methods depends on the target object and potential interference from surrounding features.

Prior to drilling, all boreholes will be cleared of underground utilities to a depth of at least 4 feet below ground surface (bgs) in "non-critical zones" and to 8 feet bgs in "critical zones." Critical zones are defined as locations that are within 10 feet from the furthest edge of any underground storage tank (UST), within 10 feet of the product dispenser islands, the entire area between the UST field and the product dispenser islands, and within 10 feet of any suspected underground line. An 8- to 12-inch-diameter circle will be cut in the surface cover at each boring location. A hole, greater than the diameter of the drilling tool being used, will then be cleared at each boring location, using a hand auger or vacuum excavation system. The vacuum system consists of an air or water lance, used to disturb native soil by injecting water into the soil, and a vacuum, used to remove the soil.

DRILLING

Boreholes are drilled with a truck-mounted rotary drill, using hollow-stem, continuous-flight augers. The diameter of the augers is selected to provide an annular space between the boring wall and the well casing of no less than 2 inches.

All augers are pressure-washed or steam-cleaned before drilling begins and before each new borehole is drilled. All drill cuttings are either placed on and covered with plastic sheeting or contained in sealed 55-gallon drums. All fluids generated during cleaning of drilling equipment are contained in sealed 55-gallon drums. All waste generated during drilling activities is stored onsite until appropriate disposal is arranged. The drums are labeled with the site description (including owner's name) and date. The drill cuttings are disposed of at a proper facility based on results of soil sample analysis.

During drilling, an ETIC geologist generates a soil boring log for each borehole. The boring logs contain detailed geological information, including descriptions of the soils classified according to the Unified Soil Classification System (USCS), blow counts for soil sampling intervals, organic vapor analyzer (OVA) readings, relative moisture content of the soils, and initial and static water levels.

SOIL SAMPLING

Soil samples are collected using a 2-inch-diameter by 18- or 24-inch-long modified California split-spoon sampler containing three or four 6-inch-long brass or stainless steel liners. The sampler and liners are scrubbed in potable water and Alconox or equivalent detergent and rinsed with potable water after use at each sampling interval.

At each sample depth, the sampler is driven 18 or 24 inches ahead of the augers into undisturbed soil. When the sampler is retrieved, either the lowermost or the middle sample liner is removed and the ends of the tube are covered with aluminum foil or Teflon tape and sealed with plastic caps. The soil-filled liner is labeled with the borehole number, sample depth, site location, date, and time. The samples are placed in zip-lock bags and stored in a cooler containing ice.

Soil from one of the liners is removed and placed in a sealed plastic bag. The soil is scanned with an OVA equipped with a flame ionization detector (FID) or photoionization detector (PID), and the readings are noted on the soil boring logs. The soil from the remaining liner(s) is examined and classified according to the Unified Soil Classification System.

Soil samples are delivered, under chain of custody, to a laboratory certified by the California Department of Health Services (DHS) for analyses.

WELL INSTALLATION

The boreholes are completed as groundwater monitoring wells, vapor extraction wells, groundwater extraction wells, or air sparging wells. The wells are typically constructed by installing Schedule 40 polyvinyl chloride (PVC) flush-threaded casing through the inner opening of the auger. The screened interval consists of slotted casing of the appropriate slot size and length placed at depths depending on soil conditions encountered during drilling and the depth to groundwater. A threaded end plug or a slip cap secured with a stainless steel screw is placed on the bottom of the well.

A filter pack of clean sand of appropriate size is placed in the annular space around the well screen to approximately 1 to 3 feet above the top of the screen. The sand is placed through the inner opening of the augers as they are slowly removed. A transitional seal is completed above the sand pack by adding 1 to 2 feet of bentonite pellets and hydrating them with water. A surface seal is then created by placing neat cement grout containing less than 5 percent bentonite from the top of the bentonite seal to just below the ground surface.

The well is finished at the surface with a slightly raised, traffic-rated, watertight steel traffic box set in concrete. The traffic box is secured with bolts and the casing is further secured with a locking well cap.

WELL DEVELOPMENT

The wells are developed no less than 72 hours after completion or prior to establishing the bentonite seal during the drilling activities. Development typically consists of surging the screened interval of the well with a flapper valve surge block of the same diameter as the well for approximately 10 minutes. The well is then purged with a vacuum truck and a dedicated PVC stinger or disposable

tubing, an inertial pump, a submersible electric pump, a centrifugal pump, an air-lift pump, or a PVC bailer until at least 3 casing volumes are removed and the water is free of silt and apparent turbidity.

A record of the purging methods and volumes of water purged is maintained. All purge water is contained on the site in properly labeled 55-gallon drums. Purged water is transported to an appropriate treatment facility.

WELL SURVEY

The elevation of the top of the well casing is surveyed by a state licensed land surveyor. A small notch is cut in the top of the well casing to mark the survey point and establish the point used for all future water level measurements. A loop originating and ending at the datum is closed to ±0.01 feet according to standard methods.

PROTOCOLS FOR INSTALLATION AND SAMPLING OF SOIL VAPOR WELLS

SUBSURFACE CLEARANCE SURVEY PROCEDURES

Prior to drilling, the proposed locations of borings will be marked with white paint. Underground Service Alert (USA) will be contacted prior to subsurface activities and a "ticket" will be issued for this investigation. USA members will mark underground utilities in the delineated areas using standard color code identifiers.

Once USA has marked the site, all proposed borehole locations will be investigated by subsurface clearance surveys to identify possible buried hazards (pipelines, drums, tanks). Subsurface clearance surveys use several geophysical methods to locate shallow buried man-made objects. The geophysical methods include electromagnetic induction (EMI) profiling, ground penetrating radar (GPR), and/or magnetic surveying. The choice of methods depends on the target object and potential interference from surrounding features.

Prior to drilling, all boreholes will be cleared of underground utilities to a depth of at least 4 feet below ground surface (bgs) in "non-critical zones" and to 8 feet bgs in "critical zones". Critical zones are defined as locations that are within 10 feet from the furthest edge of any underground storage tank (UST), within 10 feet of the product dispenser islands, the entire area between the UST field and the product dispenser islands, and within 10 feet of any suspected underground line. An 8- to 12-inch-diameter circle will be cut in the surface cover at each boring location. A hole, greater than the diameter of the drilling tool being used, will then be cleared at each boring location, using a hand auger.

SOIL SAMPLING

Shallow soil samples are collected using a 6-inch sample barrel connected to a slide hammer and containing a 6-inch stainless steel sample sleeve. After driving the hammer 6 inches, the rods and sample barrel are withdrawn from the borehole and the sample sleeve is removed.

Soil from the hand auger is removed and placed in a sealed plastic bag. The soil is scanned with an organic vapor analyzer (OVA) equipped with a flame ionization detector (FID) or photoionization detector (PID), and the readings are noted on the soil boring logs. The remaining soil from the hand auger is examined and classified according to the Unified Soil Classification System (USCS).

Soil samples are delivered, under chain of custody, to a laboratory certified by the California Department of Health Services (DHS) for analyses.

SOIL VAPOR WELL INSTALLATION PROCEDURES

The vapor wells are constructed with 0.25-inch-diameter stainless steel tubing connected to 0.75-inch-diameter 0.010-inch machine-slotted Schedule 40 stainless steel casing. All connections are sealed with Swagelok® type fittings. A filter pack of #2/12 sand is placed at the screened interval and above and below the slotted PVC casing for each well. The wells are then sealed with hydrated

bentonite chips or granules, followed by neat cement grout to just below ground surface. The tubing is sealed at the surface with a Swagelok® valve.

The wells are finished at the surface with a slightly raised, watertight steel traffic-rated box set in concrete. The lid on the traffic-rated box is bolted to the rim of the well box.

SOIL VAPOR SAMPLING PROCEDURES

To allow for subsurface conditions to equilibrate, the wells are not disturbed for a period of at least 48 hours.

A vacuum tightness test is performed on each well. The test consists of the application of vacuum and monitoring of vacuum tightness using vacuum gauges and/or flow meter for 5 to 10 minutes.

A purge test will be conducted for one well. The selected well should be the one with the highest expected concentrations. The test consists of the collection of vapor samples using Tedlar bags after purging the well of one (1), three (3), and seven (7) purge volumes by drawing vapor using a syringe connected to a valve on the tubing or a vacuum pump. The purge volume is estimated based on the internal volume of the tubing used and the annular space around the slotted screen. The samples are collected through a particulate filter and flow controller which regulates the flow of soil gas to no more than 200 milliliters per minute. The results of the purge test are used to dictate the purge volume to be used during the sampling of subsequent wells.

The vapor samples are collected in 1-liter stainless steel Summa canisters. The samples are collected through a particulate filter and flow controller which regulates the flow of soil gas to no more than 200 milliliters per minute. To ensure air-tight connections between the tubing, sampling port, valves, and other connections, a tracer compound is applied to joints as a tracer. A leak will be evident if the tracer is detected in the analysis of the soil vapor samples.

The 1-liter Summa canisters are labeled and packaged for delivery to a state-certified laboratory for chemical analysis. The initial pressure and the final pressure readings taken from the gauges on the Summa canisters are recorded. A small vacuum of about 5 inches of mercury is left inside the sample canister and is recorded on the chain-of-custody. Upon receipt, the laboratory will check the pressure in the sample canister and compare it to the pressure recorded on the chain-of-custody for quality control purposes.

PROTOCOLS FOR QUARTERLY GROUNDWATER MONITORING

GROUNDWATER GAUGING

Wells are opened prior to gauging to allow the groundwater level in the wells to equilibrate with atmospheric pressure. The depth to groundwater and depth to liquid-phase hydrocarbons, if present, are then measured to the nearest 0.01 feet using an electronic water level meter or optical interface probe. The measurements are made from a permanent reference point at the top of the well casing. If less than 1 foot of water is measured in a well, the water is bailed from the well and, if the well does not recover, the well is considered "functionally dry." Wells with a sheen or measurable liquid-phase hydrocarbons are generally not purged or sampled.

WELL PURGING

After the wells are gauged, each well is purged of approximately 3 well casing volumes of water to provide representative groundwater samples for analysis. Field parameters of pH, temperature, and electrical conductance are measured during purging to ensure that these parameters have stabilized before groundwater in a well is sampled. Groundwater in each well is purged using an inertial pump (WaTerra), an electric submersible pump, or a bailer. After the well is purged, the water level is checked to ensure that the well has recharged to at least 80 percent of its original water level.

GROUNDWATER SAMPLING

After purging, groundwater in each well is sampled using dedicated tubing and an inertial pump (WaTerra) or a factory-cleaned disposable bailer. Samples from extraction wells are typically collected from sample ports associated with the groundwater remediation system. Samples collected for volatile organic analysis are placed in Teflon septum-sealed 40-milliliter glass vials. Samples collected for diesel analysis are placed in 1-liter amber glass bottles. Each sample bottle is labeled with the site name, well number, date, sampler's initials, and preservative. The samples are placed in a cooler with ice for delivery to a state-certified laboratory. The information for each sample is entered on a chain-of-custody form prior to transport to the laboratory.