Chevron Environmental Management Company
6001 Bollinger Canyon Rd, K2236
P.O. Box 6012
San Ramon, CA 94583-2324
Tel 925-842-9559
Fax 925-842-8370

Dana Thurman
Project Manager

ChevronTexaco

August 23, 2006
(date)

Alameda County Health Care Services
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Re: Chevron Service Station # 21-1173

Address: 500 Grand Avenue, Oakland, California

I have reviewed the attached report titled *Work Plan for Additional Site Assessment* and dated August 23, 2006.

I agree with the conclusions and recommendations presented in the referenced report. The information in this report is accurate to the best of my knowledge and all local Agency/Regional Board guidelines have been followed. This report was prepared by Cambria Environmental Technology, Inc., upon whose assistance and advice I have relied.

This letter is submitted pursuant to the requirements of California Water Code Section 13267(b)(1) and the regulating implementation entitled Appendix A pertaining thereto.

I declare under penalty of perjury that the foregoing is true and correct.

Sincerely,

Dana Thurman
Project Manager

Enclosure: Report

CAMBRIA

August 23, 2006

Mr. Barney Chan
Alameda County Health Agency
Department of Environmental Health
1131 Harbor Bay Parkway
Alameda, California 94502-6577

Re: **Work Plan for Additional Site Assessment**
Former Texaco Service Station (Chevron 21-1173)
500 Grand Avenue, Oakland, California
ACHA Site No. RO-391

Dear Mr. Chan:

On behalf of Chevron Environmental Management Company (Chevron), Cambria Environmental Technology, Inc. (Cambria) has prepared the following *Work Plan for Additional Site Assessment* for the above referenced site. This work plan is in response to a request by Alameda County Health Agency (ACHA) to perform additional assessment of the site prior to submitting a request for closure. Following is a brief discussion of the site, previous studies, a Tier 1 risk assessment, sampling rationale, and a proposed scope of work for additional site assessment.

SITE DESCRIPTION

The property is located at 500 Grand Avenue, in Oakland, California, at the intersection of Grand Avenue and Euclid Avenue. Figure 1 provides a site vicinity map. Prior to decommissioning in 1991, the site was an active service station. The site is currently used as a parking lot. No structures currently exist. The property is surfaced with asphalt and the sidewalks are concrete. The property is in a mixed commercial and residential district in the City of Oakland, in Alameda County.

The property is relatively flat and level, cut into the natural slope of the land. Dimensions are approximately 100 feet (north-south) by 135 feet (east-west). Site elevation is approximately 20 feet above mean sea level (msl). Approximately 200 feet south of the property is Lake Merritt. The local topography consists of gently rolling hills and flatland.

HISTORICAL BACKGROUND INFORMATION

The site was operated as a Texaco service station from an unknown date to 1988. From 1988 to 1991, the station was operated by Exxon Company U.S.A. (Exxon). The site was an operating service station with two fuel dispensing islands, three service bays, an office, three 10,000-gallon gasoline underground storage tanks (USTs), and one 500-gallon waste-oil UST. The service station did not dispense diesel fuel. Automotive maintenance and repair activities were also conducted at the site.

Cambria Environmental Technology, Inc.

2000 Opportunity Drive
Suite 110
Roseville, CA 95678
Tel (916) 677-3407
Fax (916) 677-3687

The Exxon service station was decommissioned in late 1991. Since December 1991, the site has not been used as a service station, and is currently used for public parking.

In June 1990, during installation of spill containment devices, Exxon personnel discovered product in backfill surrounding the waste-oil UST. In September 1990, the waste-oil UST was removed from the site and in January 1991 a clay pipe was excavated. Petroleum hydrocarbons were detected in the soil and groundwater near the former waste-oil UST and clay pipe. In April 1992, three 10,000 gallon gasoline USTs were removed from the site, along with two dispenser islands and associated piping. Additional excavation of soil occurred in 1992 and 1993.

GEOLOGY AND HYDROGEOLOGY

Below the sub-base and fill, shallow sand, silt, and clay at the site most likely belong to the Early Holocene Temescal formation, consisting of young alluvium. This formation is commonly found in the region between 1 and 50 feet thick (CRWQCB 1999). The Temescal formation is underlain by the Late Pleistocene Alameda formation, composed of a sequence of alluvial fan deposits bounded by mud deposits on the top and bottom of the formation. This formation was deposited primarily in an estuarine environment and ranges from 26 to 245 feet thick (CRWQCB 1999). The site is located in the East Bay Plain Subbasin, Ground Water Basin No. 2-9.04 (DWR 2003).

Based on previous site investigation, from the surface to approximately 6 to 10 feet below grade (fbg) is gravelly clay fill material. The fill material is underlain by sandy and gravelly clay to sandy clay and silty sand. Since 1992, groundwater levels in monitoring wells have fluctuated between 1 to 12 fbg. Historical groundwater monitoring reports show that groundwater flows to the south and southeast, toward Lake Merritt. The groundwater gradient is approximately 0.075. In 1989 (HLA 1989), hydraulic conductivities of 1.1×10^{-5} cm/sec (0.03 feet/day) and 7.1×10^{-6} cm/sec (0.02 feet/day) were calculated with slug tests for on-site silty clay and sandy clay soils.

PREVIOUS INVESTIGATIONS AND ACTIVITIES

Previous environmental investigations have been performed at the site since 1988. Selected tables and figures from previous consultant reports are presented as Attachment A. Previous reports are also identified in the reference section. The following provides a synopsis of previous environmental characterization of the site.

1988 Sensitive Receptor Survey:

In May 1988, a sensitive receptor survey was performed (HLA 1989). According to the sensitive receptor survey; there are no public water supplies wells within 2,500 feet, there are no private water supply wells within 1,000 feet, and there is no school within 1,000 feet. Lake Merritt, a estuarine urban surface water body, is located within 200 feet of the property. Local drinking water is supplied via the Mokelumne Aqueduct, from the Sierra Nevada Mountains.

1988 Soil Gas Survey:

In September 1988, a soil gas survey was performed with 19 soil gas samples (HLA 1989). Elevated levels of total hydrocarbons and benzene, toluene, ethylbenzene, and xylenes (BTEX) were detected in the soil gas survey. Based on these results, HLA concluded that off-site migration had occurred beneath a portion of Grand Avenue.

1990-1991 Removal of Waste Oil UST and Clay Sewer Pipe:

The 500-gallon waste-oil UST was excavated and removed from the site in September 1990, after finding product in backfill. The excavation was approximately 8 feet deep, 7.5 feet wide, and 9.5 feet long. The waste-oil tank had no apparent cracks or points of leakage when it was removed from the excavation. Total petroleum hydrocarbons as gasoline (TPHg), total petroleum hydrocarbons as diesel (TPHd), total oil & grease (TOG), and BTEX were detected in soil. Chlorinated hydrocarbons were not detected in soil from the tank excavation. During excavation of the waste-oil tank, two clay pipes were discovered approximately 1.5 fbg. One boring sample (B-13 at 2.5 fbg) collected near the western end of the clay pipe detected naphthalene (0.90 mg/kg), 2-methylnaphthalene (1.40 mg/kg), bis (2-ethylhexyl) phthalate (0.26 mg/kg), and trichloroethane (0.06 mg/kg). In January 1991, the clay pipe was excavated in the area of the waste-oil UST. The excavation was approximately 15 feet long, 2.5 feet wide, and 4.5 feet deep. TPHg, TPHd, TOG, BTEX, and total petroleum hydrocarbons as motor oil (TPHmo) were detected in soil from the trench, but no chlorinated hydrocarbons were detected.

1991 Decommissioning:

The service station was decommissioned in late 1991.

1991-1993 Removal of Three USTs, Excavation Activities, and Confirmation Samples:

In April 1992, three 10,000-gallon USTs were removed from the site, along with two dispenser islands and associated piping. During tank removal operations, approximately 25,000 gallons of hydrocarbon-bearing water was removed from the excavation and the site. In April and May 1992, over-excavation

at the former fuel USTs extended to a depth of approximately 10 fbg, and in the area of the former dispenser islands, excavation extended to approximately 9 fbg. Approximately 1,550 cubic yards of soil were excavated from the area of the underground tanks, pump islands, and fuel lines. The material was subsequently disposed of off-site at an appropriate disposal facility. Confirmation soil samples were collected at the bottom and sides of the excavation. Samples collected along the southern edge of the excavation identified TPHg as high as 1,000 mg/kg. The excavation pit could not be extended south without undermining Grand Avenue. In January 1993 another phase of excavation occurred in the northern portion of the site with excavation of approximately 828 cubic yards of hydrocarbon contaminated soil. Dimensions of the January 1993 excavation was 6.5 feet deep, 25 feet across by 45 feet long. Approximately 6,300 gallons of water was removed from the excavation. Clean imported fill (crushed gravel and soil) was used to backfill the excavation pit.

1988-1993 Soil and Groundwater Investigations:

In June 1988, environmental activities included an investigation on whether petroleum hydrocarbons had impacted shallow soil and groundwater. This included soil borings, along with installation and sampling of monitoring wells. Concentrations of BTEX were detected in low concentrations in shallow soil samples (HLA July 1988). BTEX was also detected in groundwater. Additional site characterization was performed between 1989 and 1993 (see references). Attachment A provides tables and figures from previous consultant reports. TPHg, TPHd, and BTEX were detected in both soil and groundwater. Groundwater monitoring continued through 2000.

1988-2000 Groundwater Monitoring:

From 1988 through 2000, monitoring wells were monitored and sampled. Analyses typically include TPHg (TPPH), Total Extractable Petroleum Hydrocarbons as diesel (TEPH / TPHd), BTEX, and methyl tert-butyl ether (MTBE). In 1999 and 2000, analyses also include Total Recoverable Petroleum Hydrocarbons as oil and grease (TRPH). The following Table 1 presents a summary of highest concentration of analytes in 2000 for on-site (MW-8K) and off-site monitoring wells (MW-8F, MW-8G, MW-8H, MW-8I, and MW-8J):

Table 1
Highest Concentrations in Groundwater (ug/L) in 2000

Well	TPPH (gasoline)	TEPH (diesel)	TRPH (oil & grease)	Benzene	Toluene	Ethyl Benzene	Xylenes	MTBE
On-Site	ND	53.2	9,100	ND	ND	ND	ND	ND
Off-Site	ND	433	35,200	ND	ND	ND	ND	ND

Note: ND = None Detected

1996 ORC Remedial Action:

In December 1996, additional remediation (beyond the three phases of excavation activities) consisted on installing oxygen-releasing compound (ORC) in selected monitoring wells to enhance biodegradation of the dissolved petroleum hydrocarbon plume. The ORC socks were removed before the second quarter 2000 groundwater monitoring event.

2001 Closure Request:

In a February 13, 2001, letter report titled *Underground Storage Tank Case Closure Request* for the site, KHM requested that ACHA close the case. They considered the case eligible for no further regulatory action based on the following conclusions:

- All petroleum hydrocarbon sources have been removed from the site. The USTs, dispenser islands, and associated piping were removed in 1990 to 1992.
- All petroleum hydrocarbon-impacted soil, with the exception of a narrow band beneath the Grand Avenue sidewalk, has been removed from the site. In 1992 and 1993, excavation activities removed approximately 2,378 cubic yards of petroleum hydrocarbon-impacted soil.
- During 1992 and 1993 remedial activities, approximately 31,300 gallons of petroleum hydrocarbon-impacted groundwater was pumped from the excavation for proper disposal.
- Soil and groundwater at the site have been adequately characterized.
- The only remaining petroleum hydrocarbons detected in groundwater are TEPH (diesel) and TRPH (oil & grease).
- Separate phase hydrocarbons (SPH) have never been observed in any groundwater monitoring wells.
- ORC has been used in site wells as a remedial action.
- Residual petroleum hydrocarbons pose a low risk to surface water quality in nearby Lake Merritt.
- Residual petroleum hydrocarbons pose a low risk to groundwater resources. Petroleum hydrocarbon-impacted groundwater is shallow and not used as a groundwater resource. There are no wells located between the site and Lake Merritt, the direction of groundwater flow.
- MTBE was not detected in any sampled monitoring wells.

ASSESSMENT OF RISK

This section presents a preliminary evaluation of potential risk and provides the rationale for the proposed scope of work. The overall goal for assessing risk and defining remedial objectives is protection of human health and the environment. The following approach presents receptors potentially impacted by known concentrations in soil and groundwater, defines chemicals of potential

concern, and applies applicable screening criteria. This level of risk assessment is defined as Tier 1, based on the use of "lookup tables" for screening criteria; specifically Regional Water Quality Control Board – San Francisco Bay Region (Regional Board) Environmental Screening Levels (Regional Board, 2005). The Tier 1 risk assessment can be overly conservative and the actual impact to a potential receptor will tend to be less.

Potential Receptors

Based on conditions at the site, the following are potential receptors that may be impacted:

- Vapor Intrusion (indoor inhalation)
- Direct Exposure
- Surface Water/Estuary Habitat
- Groundwater as a Drinking Water Resource

The site is located in a mixed commercial and residential area of Oakland; therefore, vapor intrusion environmental screening levels (ESLs) will be considered. Direct exposure may occur if industrial/commercial workers encounter impacted soil, or eventually if the property has a residential use. Estuary surface water habitat is considered because of the proximity to Lake Merritt. Lake Merritt is approximately 200 feet downgradient of the site. Even though local groundwater is not used as a current drinking water source and impacted groundwater appears to be shallow, local groundwater as a drinking water resource is considered. No wells were found within 0.5 mile of the site. Drinking water is currently supplied to the City of Oakland by East Bay Municipal Utility District (EBMUD) via the Mokelumne Aqueduct.

The identification of potential receptors provides a basis for further consideration for assessing risk. For an initial evaluation, the potential receptors are evaluated with respect to chemicals of potential concern and ESLs to determine if a potential risk exists.

Chemicals of Potential Concern

Based on characterization of the site, following are chemicals of potential concern for soil and groundwater.

Chemicals of potential concern in soil:

TPHg, TPHd, $TPH_{"heavy"}$, benzene, toluene, ethylbenzene, and xylenes.

Chemical of potential concern in groundwater:

TPHg, TPHd, $TRPH_{Oil\&Grease}$, benzene, toluene, ethylbenzene, and xylenes.

TPHd: TPHd was detected in soil and groundwater at the site. A previous consultant noted that diesel fuel had not been sold at the site (HLA 1992). They conclude that these heavier hydrocarbons may be the result of aged gasoline or from hydrocarbons originating in the area of the waste oil tanks. The laboratory indicated that the petroleum hydrocarbons quantified as diesel fuel may have been heavier than diesel hydrocarbons. The TPHd detected may be a "middle distillate" or a heavier "residual fuel" (Regional Board, 2005).

$TPH_{"heavy"}$: Defined in HLA (1992) as " 'Heavy' petroleum hydrocarbons such as waste oil, mineral spirits, jet fuel, or fuel oil."

Semivolatiles: One boring sample (B-13 at 2.5 feet bgs) collected near the western end of the clay pipe detected naphthalene (0.90 mg/kg), 2-methylnaphthalene (1.40 mg/kg), and bis (2-ethylhexyl) phthalate (0.26 mg/kg). Naphthalene and methylnaphthalene are common constituents in petroleum products. Since these constituents were only detected once, they are not included as a chemical of potential concern. This sample was collected in an area that was subsequently excavated.

Volatile Organic Compounds: Trichloroethane (0.06 mg/kg) was also detected in boring B-13 at 2.5 feet. Other samples were analyzed for chlorinated organics and none were detected. Since this constituent was only detected once, it is not included as a chemical of potential concern. As stated previously, this sample was collected in an area that was subsequently excavated.

Lead: Lead in soil is considered to have been removed during excavated activities at the site and therefore is not considered a chemical of potential concern.

Tier 1 Risk Assessment

This Tier 1 risk analysis is performed by comparing soil and groundwater concentrations to various Regional Board (2005) ESLs. Soil sampling results used in this risk assessment represent "remaining" concentrations that were not excavated. Soil samples were collected from 1988 to 1993; current concentrations are probably lower. Soil-gas results from samples collected in 1988 represent pre-excavation conditions and would not be representative of current conditions.

Summaries of analytical results and potential ESLs are presented below.

Chemicals of Potential Concern in Soil and Environmental Screening Levels

The following Tables 2 and 3 present soil results and shallow soil ESLs for chemicals of potential concern (COPC):

Table 2
Chemicals of Potential Concern in Soil and Environmental Screening Levels

COPC in Soil	Frequency of Detection "Remaining"[1] Concentrations	Highest "Remaining" Concentration (mg/kg)	Shallow Soil Residential ESL D.W. Resource[2] (mg/kg)	Residential ESL Vapor Intrusion Into Building[3] (mg/kg)	Commercial ESL Vapor Intrusion Into Building[4] (mg/kg)
TPHg	29/70 (41%)	2,100	100	NA[7]	NA[8]
TPHd	0/4 (0%)	ND	100 / 500[6]	NA[7]	NA[8]
TPH_{heavy}[5]	4/23 (17%)	83	500	NA	NA
Benzene	18/70 (26%)	22	0.044	0.18	0.51
Toluene	18/70 (26%)	28	2.9	130	310
Ethylbenzene	17/70 (24%)	30	3.3	390	390
Xylenes	20/70 (29%)	100	2.3	310	420

notes: ESL = Environmental Screening Level; D.W. =Drinking Water; ND = Not Detected; NA = Not Available
1 = "Remaining" concentrations represent conditions during 1988 to 1993 in areas not excavated. Current concentrations are probably lower.
2 = Table A (RWQCB 2005), ESL,≤3 m bgs, residential landuse, current or potential drinking water source.
3 = Table A-1 (RWQCB 2005), ESL,≤3 m bgs, residential land use, vapor intrusion into building.
4 = Table A-2 (RWQCB 2005), ESL,≤3 m bgs, commercial land use, vapor intrusion into building.
5 = TPH (residual fuels); Defined in HLA (1992) as "'Heavy' petroleum hydrocarbons such as waste oil, mineral spirits, jet fuel, or fuel oil."
6 = TPH (middle distillates) / TPH (residual fuels)
7 = Recommends using soil gas. TPHg and TPHd (middle distillates)esidential indoor screening level is 26 ug/m3 (Table E).
8 = Recommends using soil gas. TPHg and TPHd (middle distillates) commercial indoor screening level is 36 ug/m3 (Table E).

"Remaining" concentrations for areas not excavated represent conditions when the samples were originally collected, between 1988 and 1993. Based on these concentrations and ESLs, TPHg and BTEX exceed ESLs for a drinking water resource. Recent groundwater samples collected in 1999 and 2000 did not detect any TPHg or BTEX. Elevated concentrations of benzene in soil exceed residential and commercial ESLs for vapor intrusion. As stated previously, current concentrations are probably lower than concentrations detected in 1988 to 1993.

Table 3
Chemicals of Potential Concern in Soil and Direct Exposure ESLs

COPC in Soil	Frequency of Detection "Remaining" Concentrations	Highest "Remaining" Concentration (mg/kg)	Direct Exposure Residential ESL[1] (mg/kg)	Direct Exposure ESL Commercial/ Industrial Worker[2] (mg/kg)
TPHg	29/70 (41%)	2,100	400	750
TPHd	0/4 (0%)	ND	400 / 1000[3]	750 / 4,600[3]
TPH"heavy"	4/23 (17%)	83	1,000	4,600
Benzene	18/70 (26%)	22	0.18	0.38
Toluene	18/70 (26%)	28	100	340
Ethylbenzene	17/70 (24%)	30	400	400
Xylenes	20/70 (29%)	100	330	420

notes: ESL = Environmental Screening Level; D.W. = Drinking Water; ND = Not Detected; NA = Not Available
1 = Table K-1 (RWQCB 2005), ESL, residential land use, direct exposure.
2 = Table K-2 (RWQCB 2005), ESL, commercial/industrial worker, direct exposure
3 = TPH (middle distillates) / TPH (residual fuels)

Previous concentrations of TPHg and benzene exceed residential and commercial ESLs for direct exposure. Current concentrations may be less.

Chemicals of Potential Concern in Groundwater and Environmental Screening Levels

The following Table 4 presents groundwater results and ESLs for chemicals of potential concern.

Table 4
Chemicals of Potential Concern in Ground Water and Environmental Screening Levels

COPC in GW	Frequency of Detection 1999-2000	Highest Concentration 1999-2000 (ug/L)	ESL D.W. Resource[1] (ug/L)	CAL DHS Primary MCL[2] (ug/L)	Risk-Based Goal/Drinking Water Toxicity[2] (ug/L)	Res. / Com. Vapor Intrusion[3] (ug/L)	Surface Water Estuary Habitat[4] (ug/L)
TPPH/TPHg	0/26 (0%)	ND	100[5]	NA	210	NA[8] / NA[9]	500
TEPH/TPHd	27/32 (84%)	576	100[5]	NA	210[6] / 210[7]	NA[8] / NA[9]	640[6] / 640[7]
TRPHOil & Grease	9/23 (28%)	35,200	100[5]	NA	210[7]	NA	640[7]
Benzene	0/25 (0%)	ND	1.0	1.0	0.35	1,900 / 6,400	46
Toluene	0/25 (0%)	ND	40[5]	150	1,400	530,000res./com.	40
Ethylbenzene	0/25 (0%)	ND	30[5]	700	700	170,000res./com.	30
Xylenes	0/25 (0%)	ND	20[5]	1,800	1,400	160,000res./com.	100

notes: ESL = Environmental Screening Level; D.W. = Drinking Water; ND = Not Detected; NA = Not Available
CAL DHS MCL = California EPA Department of Health Services Maximum Concentration Level
1 = Table F-1a (RWQCB 2005), ESL, ground water screening level, current or potential drinking water source.
2 = Table F-3 (RWQCB 2005), ESL, drinking water screening levels for human toxicity.
3 = Table E-1a (RWQCB 2005), ESL, ground water screening level, potential vapor intrusion, indoor air; low/moderate permeability soil, residential / commercial.
4 = Table F-2c (RWQCB 2005), ESL, surface water screening level, estuary habitats
5 = (RWQCB 2005) Based on Taste and Odor Threshold (Table-II)
6 = TPH (middle distillates)
7 = TPH (residual fuel)
8 = Recommends using soil gas. TPHg and TPHd (middle distillates) residential indoor screening level is 26 ug/m3 (Table E).
9 = Recommends using soil gas. TPHg and TPHd (middle distillates) commercial indoor screening level is 36 ug/m3 (Table E).

All groundwater samples collected during 1999 and 2000 analyzed for TPHg and BTEX were non-detect (ND). Therefore, none exceeded ESLs. TPHd and $TRPH_{Oil\ \&\ Grease}$ exceed risk-based goal/drinking water toxicity screening levels. $TRPH_{Oil\ \&\ Grease}$ exceed the surface water estuary habitat screening level. These concentrations would be expected to decrease as they move downgradient.

As indicated by the soil and groundwater results, soil vapor samples are necessary to provide additional data to assess potential vapor intrusion in an area where elevated soil concentrations may exist along the southern boundary of the site. Soil samples would also provide more current results to determine conditions along the southern boundary.

PROPOSED SCOPE OF WORK

This section presents the scope of work for soil vapor and soil sampling for additional site assessment. In summary, it is currently anticipated that six borings grouped in three pairs will be advanced to collect soil vapor and soil samples. The soil vapor samples will be analyzed for TPHg and BTEX. The soil samples will be analyzed for TPHg, BTEX, TPHd, and $TRPH_{Oil\ \&\ Grease}$. Figure 2 presents the proposed borehole sampling locations. Attachment B contains Cambria's Standard Field Methods and Procedures.

Sampling Rationale

Due to the results of a soil-gas survey performed in 1988, the consultant concluded that off-site migration of hydrocarbons had occurred beneath a portion of Grand Avenue, south of the former USTs. During 1992 excavation activities, a soil sample collected from the southern edge of the excavation detected TPHg at 1,000 mg/kg. The excavation pit could not be extended to the south without undermining Grand Avenue. The results of previous studies indicate that hydrocarbons may extend beyond the south edge of the property, but because impact in this area is beneath Grand Avenue and has likely attenuated over time, it does not pose a significant risk to human health or the environment.

Previous concentrations of benzene in soil compared to the vapor intrusion ESL's indicate that soil vapor samples should be collected to assess potential vapor intrusion along the southern boundary of the site. TPHg and benzene in soil may also result in direct exposure risk. Since these samples were collected from 1988 to 1993, more recent samples should be collected along the southern boundary of the site, in areas where elevated concentrations may currently exist.

Therefore, the sampling rationale for additional characterization along the southern boundary of the property is to determine; 1) if soil gas concentrations may present a potential vapor intrusion risk, and 2) if a direct exposure risk currently exists in soil. The following is a summary of Cambria's proposed scope of work.

Underground Utility Location: Cambria will notify Underground Service Alert prior to scheduled work to clear boring locations with utility companies. Additionally, a private utility locator will be contracted to identify any potential underground utilities on-site.

Site Health and Safety Plan: Cambria will prepare a site safety plan to inform site workers of known hazards and to provide health and safety guidance. The plan will be kept on-site at all times during field activities and signed by all site workers and site visitors.

Permits: Cambria will obtain the necessary permits prior to beginning field operations. A minimum of 48 hours notice will be given to the permitting agency and ACHA prior to beginning investigative field activities.

Soil Boring Installation: Cambria proposes to advance a total of six soil borings in three pairs at the approximate locations shown on Figure 2. Borings will be advanced using a Geoprobe direct push rig. The total depth of the first boring in each pair used for soil vapor sampling will be approximately 3.5 fbg. Soil samples will be collected from the second boring in each pair, which will be located approximately five feet from the first boring, to approximately 4 fbg. The soil sample borings will be continuously logged by a Cambria geologist. The final locations of the borings will be based on site and utility constraints as evaluated in the field.

Soil Vapor Installation and Sampling: Cambria proposes to use direct push Geoprobe technology to collect soil gas samples. Once the target soil vapor depth has been reached, a disposable polyethylene tubing with a threaded adapter that screw into the bottom of the rods will be installed. Hydrated bentonite will be placed around the sampling rod and the annulus of the boring to prevent ambient air from entering the boring. The rods will then be retracted from 3.5 to 3 fbg to using an expendable drive point. The soil vapor sampling depth of approximately 3 feet bgs is based on collecting the sample above the typical shallow groundwater level at the site. Shallower soil gas samples may need to be collected if groundwater is less than 3.5 fbg. To allow for subsurface conditions to equilibrate, the soil samples will not be collected within 20 minutes following probe installation. Samples will be collected using 6-liter SUMMA™ canisters connected to the sampling tubing at each vapor point. A measured volume of air will be purged from the tubing using a purge pump. The vacuum of the SUMMA™ canister will be used to draw the soil vapor through the flow controller until a negative

pressure of approximately 5 pounds per square inch is observed on the vacuum gauge. After vapor sampling, the SUMMA™ canisters will be packaged and sent to the Air Toxics laboratory under chain-of-custody for analysis.

Following soil vapor and soil sample collection, the borings will be destroyed by extracting the tubing, hand augering to remove the bentonite, and backfilling the borings with neat cement. Each boring will be finished to match existing grade.

Soil Disposal/Recycling: Soil cuttings produced during field activities will be temporarily stored in drums on-site. Following review of laboratory analytical results, the soil will be transported to a Chevron approved facility for disposal.

Chemical Analyses: The soil vapor samples will be kept at ambient temperature and submitted under chain-of-custody to Air Toxics for analysis. The samples will be analyzed for:

- TPHg and BTEX by EPA method TO-15

Soil Chemical Analyses and Soil Parameters: Soil samples will be analyzed for:

- TPHg by N. CA LUFT Gasoline method,
- TPHd by EPA Method 8015B,
- BTEX, by EPA Method 8260B and,
- $TRPH_{Oil\ \&\ Grease}$ by EPA Method 1664A.

Reporting: After the analytical results are received, Cambria will prepare an investigation report that at a minimum contains:

- A summary of the site background and history,
- Descriptions of the drilling and sampling methods,
- A figure illustrating the boring locations,
- Boring logs,
- Tabulated soil analytical results
- Tabulated vapor analytical results,
- Analytical reports and chain-of-custody forms,
- Soil disposal methods,
- An updated SCM, and
- Cambria's conclusions and recommendations.

CAMBRIA

SCHEDULE

Cambria will proceed with this work immediately upon receiving written approval from the ACHA, and given it is during a period of dry weather. Cambria will submit an investigation report approximately six to eight weeks after receiving analytical results.

CLOSING

Please contact me at (916) 677-3407 (ext. 112) if you have any questions or comments regarding this investigation.

Sincerely,
Cambria Environmental Technology, Inc.

David W. Herzog, P.G. #7211
Senior Project Geologist

Figures: 1 – Vicinity Map
2 – Site Plan with Proposed Soil Sample Locations

Attachments: A – Figures and Tables Previous Consultant Reports
B – Standard Field Methods and Procedures

cc: Mr. Dana Thurman, Chevron Environmental Management Company, PO Box 6012, K2236, San Ramon, CA 94583

Mr. Brad Howard, Howard Tours Inc., 516 Grand Avenue, Oakland, CA 94610-3515

Cambria Environmental Technology, Inc. file copy

References

Alameda County Health Agency, 1993. Letter titled Status of the Soil and Ground water Investigation/Remediation at Former Texaco Station – 500 Grand Ave., Oakland, CA 94612. October 4.

Alameda County Health Agency, 1993. Letter titled Status of the Soil and Ground water Investigation/Remediation at Former Texaco Station – 500 Grand Ave., Oakland, CA 94612. April 1.

California Department of Water Resources, 2003. California's Ground water. Bulletin 118.

California Regional Water Quality Control Board, 1999. East Bay Plain Ground water Basin Beneficial Use Evaluation Report – Alameda and Contra Costa Counties, CA.

Converse Environmental West, 1993. Soil Excavation and Soil Sampling Report, Former Texaco Service Station, 500 Grand Avenue, Oakland, California. March 26.

Exxon Company, U.S.A., 1990. Letter to Alameda County Health Agency. December 10.

Harding Lawson Associates (HLA), 1992. Quarterly Technical Report, Second Quarter of 1992, Former Texaco Station No. 6248800235, 500 Grand Avenue, Oakland, California. September 10.

HLA, 1992. Well Destruction Reports, MW-8A and MW-8E, Permit Number 92216, Former Texaco Service Station, 500 Grand Avenue, Oakland, California.

HLA, 1992. Underground Storage Tank Removal, Former Exxon Service Station, 500 Grand Avenue, Oakland, California. June 8.

HLA, 1991. Results of Pipe Excavation, Texaco Station No. 6248800235, 500 Grand Avenue, Oakland, California. February 12.

HLA, 1991. Results of Pipe Excavation and Recent Ground water Analyses, Former Texaco Service Station, 500 Grand Avenue, Oakland, California. January 31.

HLA, 1990. Interim Remedial Plan, Former Texaco Station No. 6248800235, 500 Grand Avenue, Oakland, California. December 7.

HLA, 1990. Soil and Ground water Sampling During Waste Oil Tank Removal, Exxon Service Station, 500 Grand Avenue, Oakland, California. November 8.

HLA, 1990. Quarterly Technical Report, Second Quarter of 1990, Former Texaco Station No. 6248800235, 500 Grand Avenue, Oakland, California. August 30.

HLA, 1990. Quarterly Technical Report, First Quarter of 1990, Former Texaco Station No. 6248800235, 500 Grand Avenue, Oakland, California. June 13.

HLA, 1989. Quarterly Technical Report, First Quarter of 1999, Former Texaco Station No. 6248800235, 500 Grand Avenue, Oakland, California. May 31.

HLA, 1989. Environmental Assessment Report, Former Texaco Station No. 6248800235, 500 Grand Avenue, Oakland, California. September 22.

HLA, 1988. Subsurface Investigation, Texaco Station No. 6248800235, 500 Grand Avenue, Oakland, California. July 20.

IT, 2000. Quarterly Monitoring Report – First Quarter 2000, Former Texaco Service Station, 500 Grand Avenue at Euclid Avenue, Oakland, California. June 26.

IT, 2000. Certified List of Record Fee Title Owner for Former Texaco Service Station. February 8.

KHM Environmental Management (KHM), 2001. Underground Storage Tank Case Closure Request, Former Texaco/Former Exxon Service Station, 500 Grand Avenue, Oakland, California, Incident 88870189. June 28.

KHM, 2001. Underground Storage Tank Case Closure Request, Former Texaco/Former Exxon Service Station, 500 Grand Avenue, Oakland, California. February 13.

KHM, 2001. Quarterly Monitoring Report – Fourth Quarter 2000, Former Texaco Service Station, 500 Grand Avenue, Oakland, California. January 8.

KHM, 2000. Quarterly Monitoring Report – Third Quarter 2000. September 28.

Pacific Environmental Group, 1999. Quarterly Monitoring Report, Fourth Quarter 1998 and First Quarter 1999, Former Texaco Service Station, 500 Grand Avenue at Euclid Avenue, Oakland, California. June 18.

Pacific Environmental Group, 1993. Letter Report. July 13.

Pacific Environmental Group, 1993. First Quarter 1993 Ground water and Analytical Event. April 26.

Pacific Environmental Group, 1993. Well Completion Report. April 20.

Radbruch, D.H., 1957. Aerial and Engineering Geology of the Oakland West Quadrangle, California. U.S. Geological Survey Map I-239.

Resna, 1993. Quarterly Ground water Monitoring, Fourth Quarter 1992 at Former Texaco Station, 500 Grand Avenue, Oakland, California. February 22.

Regional Water Quality Control Board, San Francisco Bay Region (Regional Board), 2005. Screening For Environmental Concerns AT Sites With Contaminated Soil and Ground water. Interim Final, February 2005.

Texaco Refining and Marketing, 1993. Letter to Alameda County Environmental Health Department. October 12.

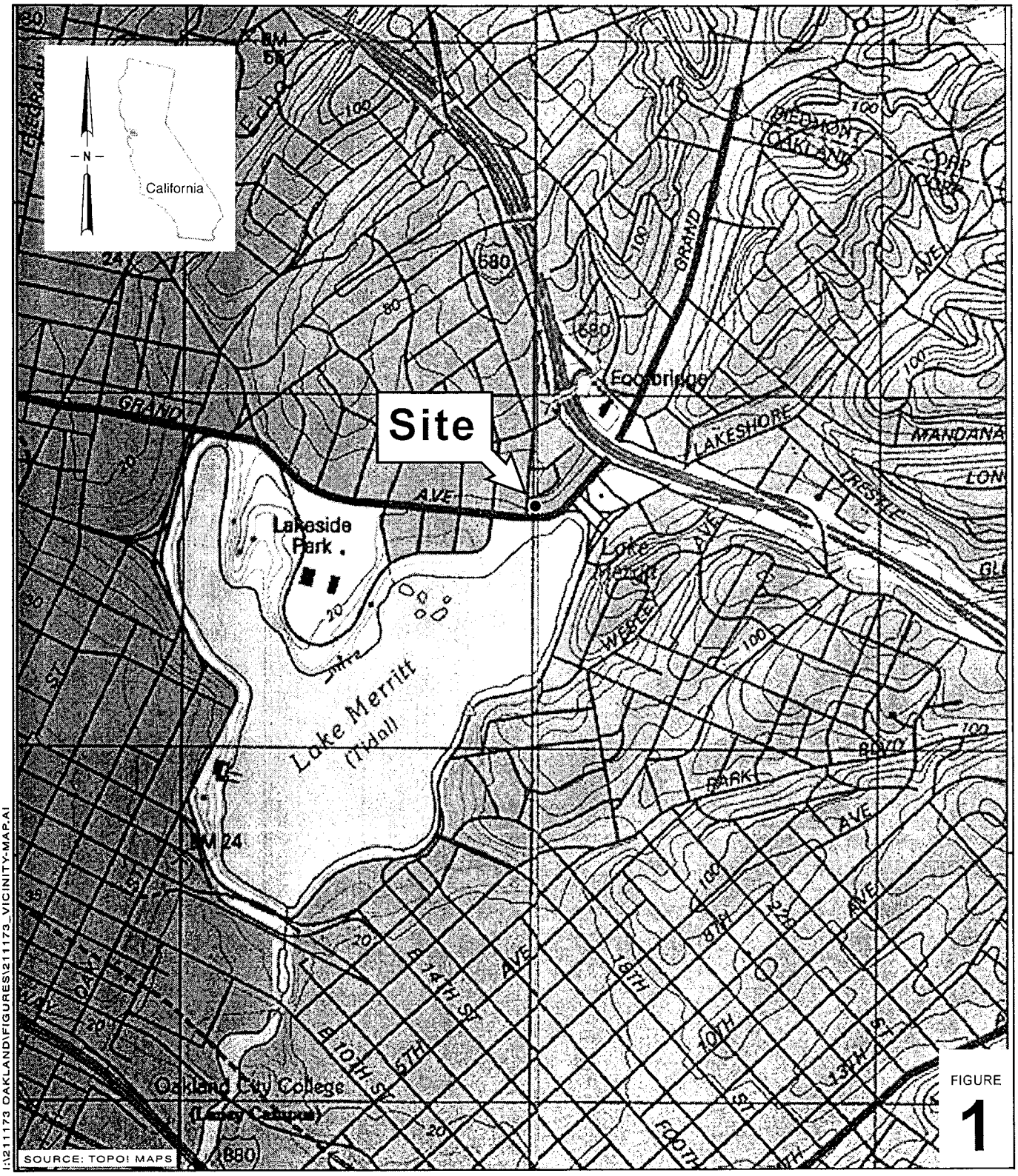
Texaco Refining and Marketing, 1993. Letter to Alameda County Environmental Health Department. April 15.

Texaco Refining and Marketing, 1993. Letter to Alameda County Environmental Health Department. February 26.

Texaco Refining and Marketing, 1991. Letter to Alameda County Environmental Health Department. January 8.

R:\21-1173 Oakland\Soil Vapor Investigation 2006\Letter Workplan.doc

04/25.06



I:\211173 OAKLAND\FIGURES\211173_VICINITY-MAP.AI

FIGURE
1

0 1/8 1/4 1/2 1

SCALE 1" = 1/4 MILE

Former Texaco Service Station

500 Grand Avenue

Oakland, California

CAMBRIA

Vicinity Map

I:\211173 OAKLAND\FIGURES\211173_SITEPLAN.DWG

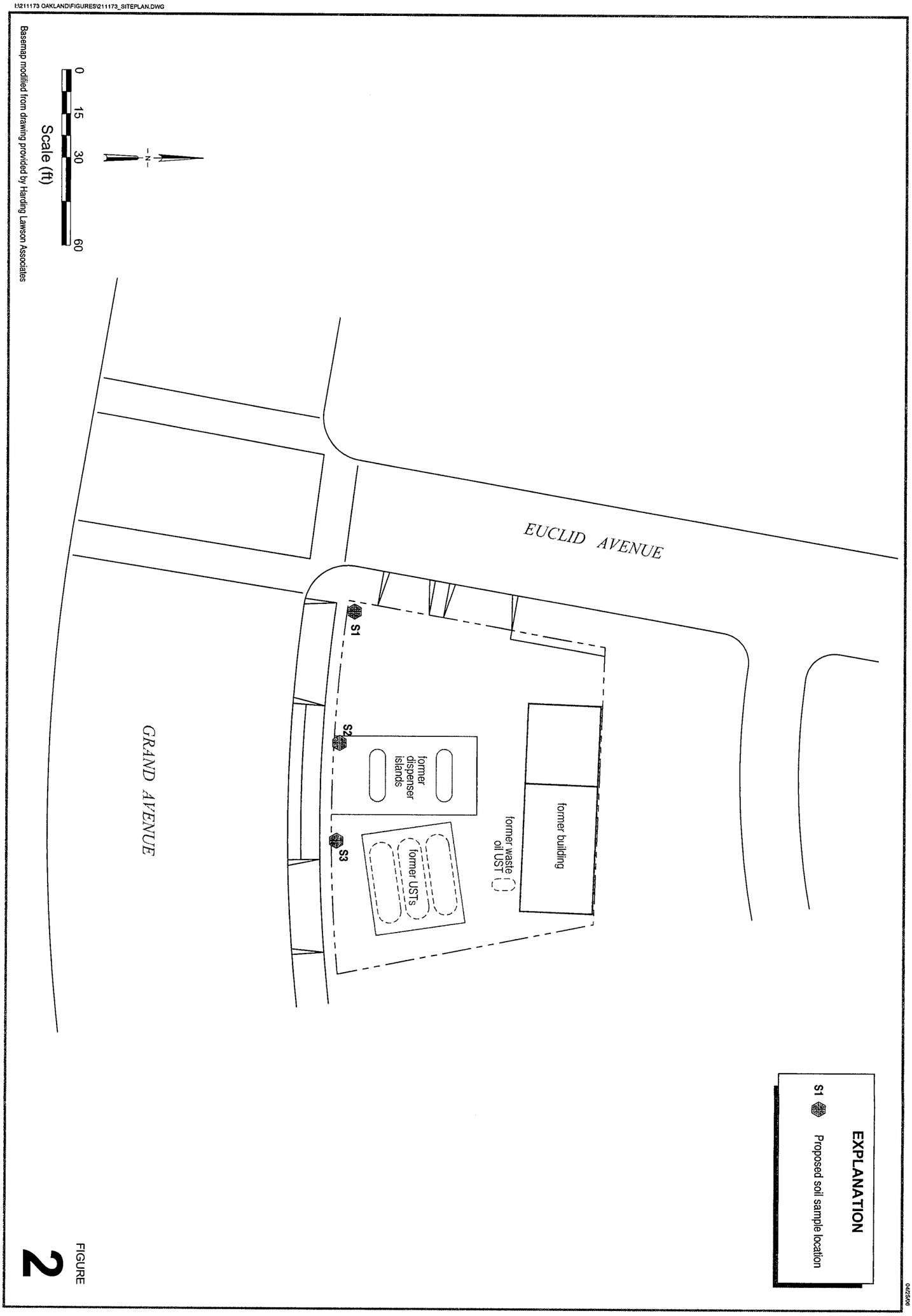


FIGURE 2

Former Texaco Service Station
500 Grand Avenue
Oakland, California

CAMBRIA

Site Plan with Proposed Soil Sample Locations

CAMBRIA

Attachment A

Figures and Tables
Previous Consultant Reports

Report Prepared for

Texaco Refining and Marketing Inc.
10 Universal City Plaza
Universal City, California 91608

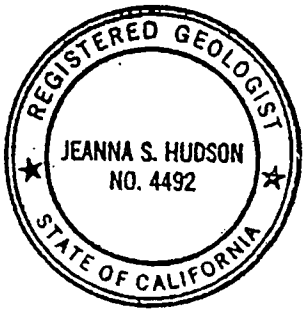
UNDERGROUND STORAGE TANK REMOVAL
500 GRAND AVENUE
OAKLAND, CALIFORNIA

HLA Job No. 10281-223

by

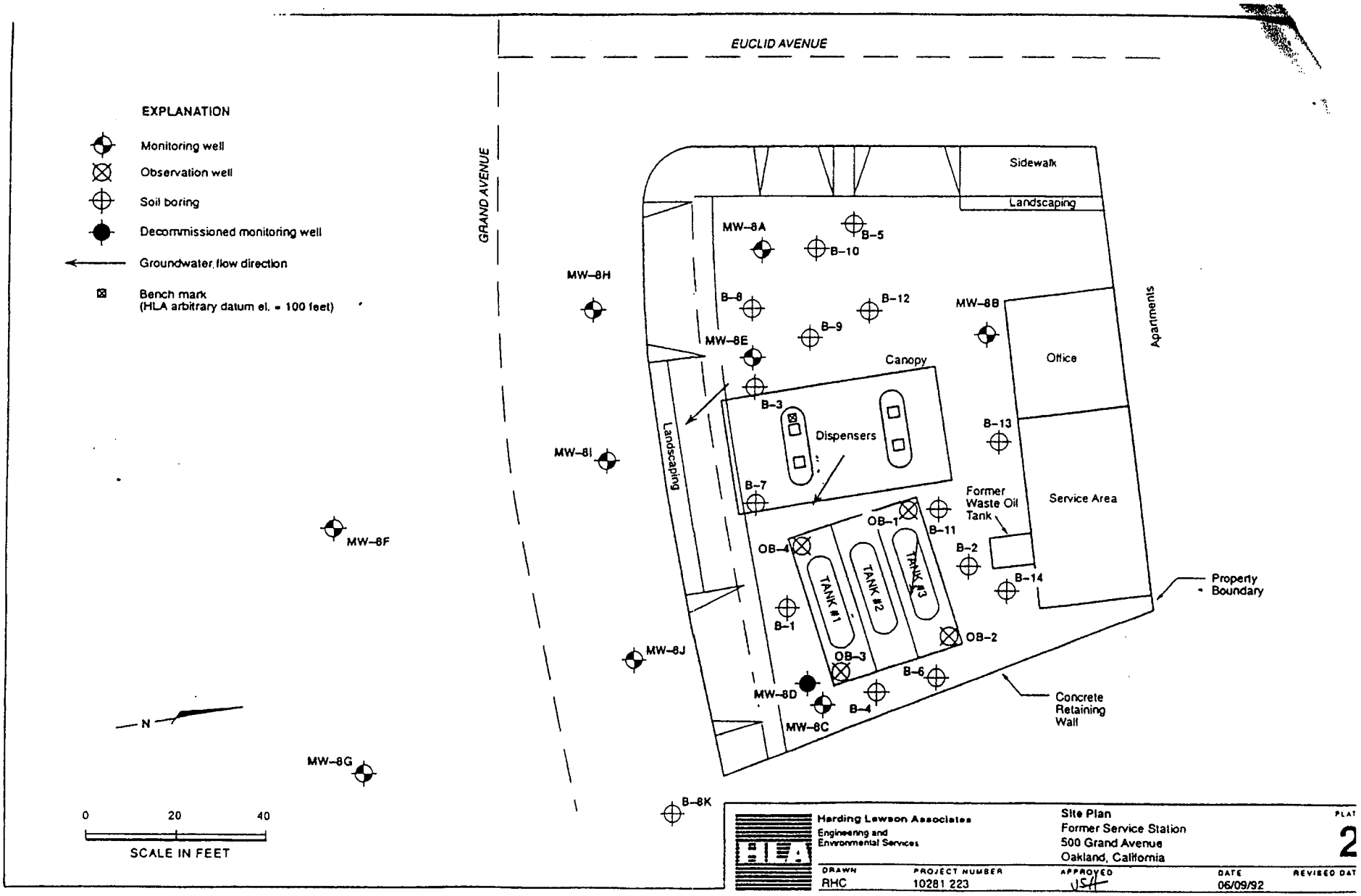
Marlene K. Watson
Marlene K. Watson
Project Engineer

Jeanna S. Hudson
Registered Geologist



Harding Lawson Associates
1355 Willow Way, Suite 109
Concord, California 94520
510/687-9660

June 8, 1992


EUCLID AVENUE
GRAND AVENUE
EXPLANATION
Monitoring well
Observation well
Soil boring
Decommissioned monitoring well
Groundwater flow direction
Bench mark
(HLA arbitrary datum el. = 100 feet)
Sidewalk
Landscaping
Apartments
Office
Canopy
Dispensers
Service Area
Former Waste Oil Tank
TANK #1
TANK #2
TANK #3
Property Boundary
Concrete Retaining Wall
MW-8A
MW-8B
MW-8C
MW-8D
MW-8E
MW-8F
MW-8G
MW-8H
MW-8I
MW-8J
B-8K
B-1
B-2
B-3
B-4
B-5
B-6
B-7
B-8
B-9
B-10
B-11
B-12
B-13
B-14
OB-1
OB-2
OB-3
OB-4
N
0
20
40
SCALE IN FEET
Harding Lawson Associates
Engineering and Environmental Services
Site Plan
Former Service Station
500 Grand Avenue
Oakland, California
PLATE
2
DRAWN
RHC
PROJECT NUMBER
10281 223
APPROVED
DATE
06/09/92
REVISED DATE

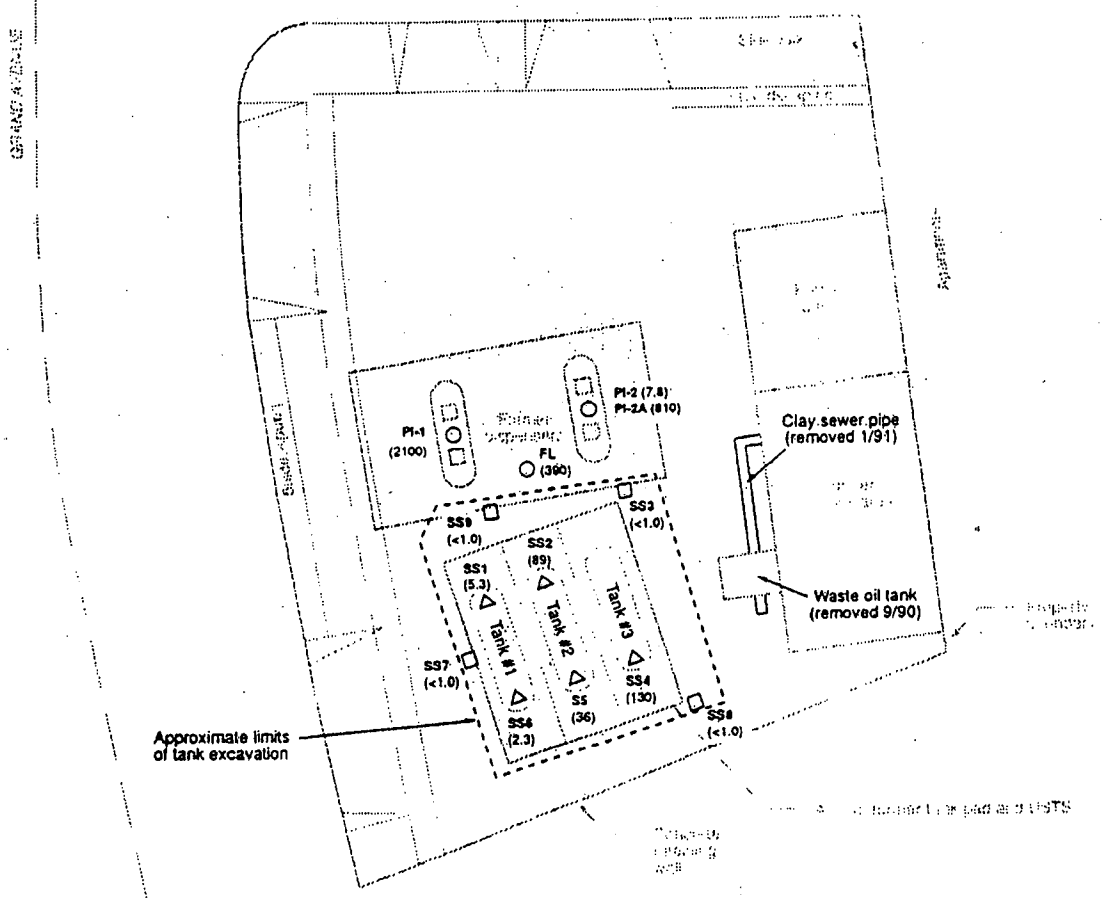
EXPLANATION

△ Soil sample from bottom of tank excavation (approximately 10 feet below grade)

□ Soil sample from wall of tank excavation (5 to 10 feet below grade)

○ Soil sample from pump island (PI) or fuel line (FL); sample depths 5-6 feet below grade

(2.3) Total petroleum hydrocarbons as gasoline, in mg/kg (ppm)



N

0 20 40

SCALE IN FEET

Harding Lawson Associates
Engineering and Environmental Services

Locations Sampled During UST Removal Operations
Former Service Station
500 Grand Avenue
Oakland, California

PLATE 3

DRAWN	PROJECT NUMBER	APPROVED	DATE	REVISED DATE
RHC	10281.223	JSH	06/09/92	

Table 1. Results of Chemical Analyses on Soil Samples
Former Service Station
500 Grand Avenue
Oakland, California

	Sample I.D.[1]	Date	Benzene	Toluene	Ethyl benzene	Xylenes	TPH as gasoline	Other
	Results Presented in mg/kg (ppm)							
Excavation	SS1/10-B	04/14/92	<0.005	0.038	0.016	0.12	5.3	--
	SS2/10-B	04/14/92	0.049	0.38	0.15	1.4	89	--
	SS3/ 5-W	04/14/92	<0.005	<0.005	<0.005	0.011	<1.0	--
	SS4/10-B	04/14/92	0.14	0.21	0.17	1.1	130	--
	SS5/10-B	04/14/92	0.20	0.028	0.040	0.15	36	--
	SS6/10-B	04/14/92	0.0057	<0.005	<0.005	0.017	2.3	--
	SS7/ 5-W	04/14/92	<0.005	<0.005	<0.005	<0.005	<1.0	--
	SS8/ 5-W	04/14/92	<0.005	<0.005	<0.005	<0.005	<1.0	--
	SS9/ 5-W	04/14/92	0.0069	<0.005	<0.005	<0.005	<1.0	--
Pump Islands and Fuel Line	PI-1/5	04/15/92	11	60	32	180	2,100	190*
	PI-2/5	04/15/92	0.019	0.013	0.035	0.077	7.8	30*
	PI-2A/6	04/15/92	1.3	1.1	2.0	11	810	6,900*
	Fuel Line/5	04/15/92	0.92	2.9	3.6	21	390	36*
Stockpile	Pea gravel-1A	04/14/92	0.031	0.054	0.023	0.12	5.4	--
	Pea gravel-1	04/14/92	0.012	0.018	<0.005	0.041	6.8	--
	Pea gravel-2	04/14/92	<0.005	<0.005	<0.005	<0.005	1.2	--
	Pea gravel-3	04/14/92	0.83	0.56	1.1	0.78	160	--
	Pea gravel-4	04/14/92	<0.005	<0.005	<0.005	0.010	<1.0	--
	Pea gravel-5	04/14/92	<0.005	<0.005	<0.005	<0.005	2.9	--
	Pea gravel-6	04/14/92	<0.005	<0.005	<0.005	0.0054	2.0	--
	Pea gravel-7	04/14/92	<0.005	0.011	<0.005	0.024	6.2	--
	Pea gravel-8	04/14/92	<0.005	<0.005	<0.005	<0.005	<1.0	--
	Pea gravel-9	04/14/92	<0.005	<0.005	<0.005	<0.005	2.4	--
	TCLP Soil Extract, Results Presented in µg/l (ppb)							
	Pea gravel-3	04/14/92	8.3	<6.0	<6.0	11	710	0.18**

[1] Sample I.D. contains the following components: SS1 = sample name
10 = depth of sample in feet
B = bottom of excavation
W = sidewall of excavation

* Total oil and grease
** STLC lead

032716M/R56

ENVIRONMENTAL MANAGEMENT, INC.

JAN 16 2001

SCIENCE&ENG-WESTCOAST

January 8, 2001
Project No. 80-000500G1

Ms. Susan Hugo
Alameda County Health Services Agency
1131 Harbor Bay Parkway, 2nd Floor
Alameda, California 94502-6577

☐ Sample Analyses ☐ Contracts
☐ Well Logs ☐ Confidential
☐ Permitting ☐ Reports
☐ Single ☐ Multiple

Re: **Quarterly Monitoring Report – Fourth Quarter 2000**
Former Texaco Service Station
500 Grand Avenue at Euclid Avenue
Oakland, California
Incident No. 88870189

Dear Ms. Hugo:

On behalf of Equiva Services LLC, Blaine Tech Services (Blaine) performed (4th quarter) groundwater monitoring and sampling at the direction of KHM Environmental Management, Inc. (KHM) at the above-referenced site on November 6, 2000.

Depth to groundwater was measured in Wells MW-8F through MW-8K. Groundwater elevation data and contours are presented on Figure 1.

Groundwater samples were collected from Wells MW-8F through MW-8K. Samples were submitted by Blaine to Sequoia Analytical in Morgan Hill, California for analysis for total extractable petroleum hydrocarbons as diesel (TEPH) with silica gel cleanup and total recoverable petroleum hydrocarbons as oil and grease (TRPH) with silica gel cleanup using EPA Method 8015 (modified) and EPA Method SM 5520 B/F, respectively. TEPH concentrations are presented on Figure 1.

Blaine's groundwater monitoring and sampling report, which includes historical and current groundwater elevation data and analytical results, and field data records, is included as Attachment A.

DISCUSSION

In a conversation with Ms. Susan Hugo of the Alameda County Health Services Agency (ACHSA) on February 29, 2000, IT Corporation (IT) recommended that the site be considered for case closure, based on declining concentrations of petroleum hydrocarbons on-site and down-gradient from the former Texaco service station location. ACHSA concurred with this recommendation; however, to determine plume stability, ACHSA requested two more consecutive quarters of monitoring and sampling of all groundwater monitoring wells. ACHSA requested that Wells MW-8F, MW-8G, and MW-8I be sampled without the oxygen-releasing compound (ORC) socks. The ORC socks were removed before the second quarter 2000 monitoring and sampling event. All groundwater monitoring wells were monitored and sampled during the second and third quarter 2000.

KHM discussed current site conditions and applying for case closure with Ms. Hugo on October 3, 2000. To further evaluate the presence of TEPH and TRPH at the site, Ms. Hugo requested that all site wells be analyzed for TEPH and TRPH using silica gel cleanup during the fourth quarter 2000. During this quarter, TEPH concentrations reported using silica gel cleanup were within historical levels, indicating that the previous results were not affected by the presence of organics. TRPH was not detected in any wells this quarter.

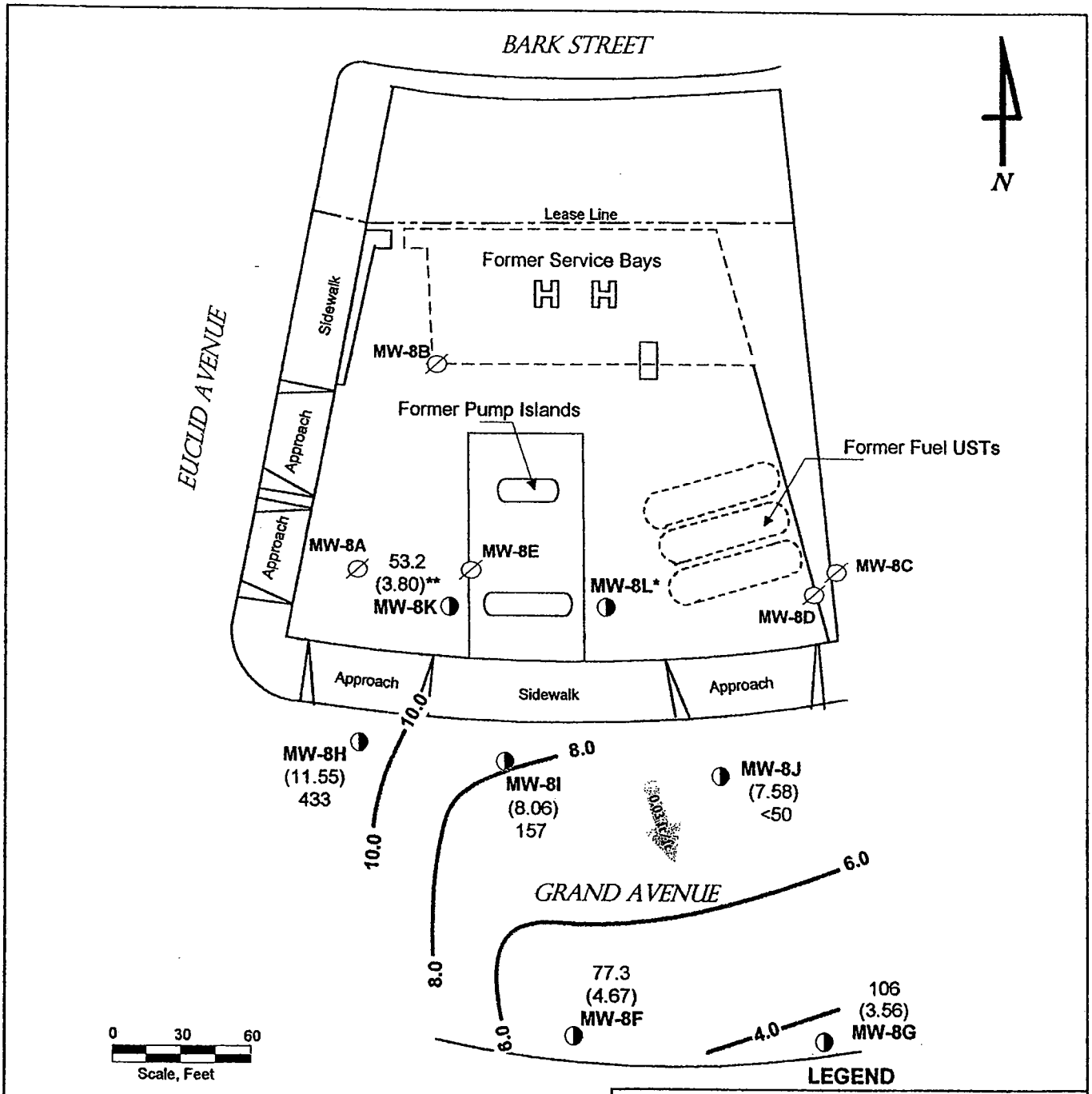
Please call if you have any questions regarding the contents of this letter.

Sincerely,
KHM Environmental Management, Inc.

R. Lee Dooley
Senior Geologist
CHG 0183

Attachments: Table 1 – Groundwater Analytical Results - TRPH
Figure 1 – Groundwater Monitoring and Sampling Map
Attachment A – Groundwater Monitoring and Sampling Report

cc: Ms. Karen Petryna, P.E., Equiva Services LLC, P.O. Box 7869, Burbank, CA 91510-7869
Mr. Richard Hiett, California Regional Water Quality Control Board, San Francisco Bay Region, 1515 Clay Street, Suite 1400, Oakland, CA 94612



MW-8K ◑	Monitoring Well Location and Designation
MW-8D ∅	Abandoned Monitoring Well Location/Designation
(4.67)	Groundwater Elevation (Feet, MSL); Measured 11/06/00
10.0	Groundwater Elevation Contour (Feet, MSL)
0.03 ft/ft	Approximate Groundwater Flow Direction/Gradient
157	TEPH with Silica Gel Cleanup Concentration (Parts Per Billion); Sampled 11/06/00
*	Removed From Gauging/Sampling Program
**	Anomalous Data; Not Used in Contouring

KHM
ENVIRONMENTAL MANAGEMENT, INC.

Groundwater Monitoring and Sampling Map

Former Texaco Service Station
500 Grand Avenue at Euclid Avenue
Oakland, California

DATE	PROJECT	FIGURE
01/03/01	C80-000500G1	1

TABLE 1
GROUNDWATER ANALYTICAL RESULTS
TRPH

Former Texaco Service Station
500 Grand Avenue at Euclid Avenue
Oakland, California

Well Number	Date Sampled	TRPH (ppb)
MW-8F	02/16/99	<1,000
	06/04/99	<1,000
	08/31/99	<5,000
	11/03/99	<5,000
	02/29/00	<5,000
	04/24/00	<5,000
	07/25/00	<5,000
	11/06/00	<5,000
MW-8G	02/16/99	<1,000
	06/04/99	23,000
	08/31/99	<5,000
	11/03/99	<5,000
	02/29/00	<5,000
	04/24/00	<5,000
	07/25/00	<5,000
	11/06/00	<5,000
MW-8H	11/03/99	24,000
	04/24/00	35,200
	07/25/00	13,200
	11/06/00	<5,000
MW-8I	11/03/99	11,000
	04/24/00	<5,000
	07/25/00	11,100
	11/06/00	<5,000
MW-8J	11/03/99	10,000
	04/24/00	<5,000
	07/25/00	6,400
	11/06/00	<5,000
MW-8K	11/03/99	<5,000
	04/24/00	<5,000
	07/25/00	9,100
	11/06/00	<5,000

TRPH = Total recoverable petroleum hydrocarbons (quantified as oil and grease)
ppb = Parts per billion
< = Less than laboratory detection limit stated to the right

WELL CONCENTRATIONS
Former Texaco Service Station
500 Grand Avenue
Oakland, CA

Well ID	Date	TPPH (ug/L)	TEPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (ug/L)	MTBE 8260 (ug/L)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	SPH Thickness (ft.)	DO Reading (ppm)
MW-8A	NA	Well abandoned	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-8B	NA	Well abandoned	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-8C	NA	Well abandoned	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-8D	NA	Well abandoned	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-8E	NA	Well abandoned	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-8F	01/23/1992	<50	1,300	4.0	1.3	<0.5	1.9	NA	NA	97.94	10.24	87.70	NA	NA
MW-8F	02/28/1992	NA	NA	NA	NA	NA	NA	NA	NA	97.94	9.93	88.01	NA	NA
MW-8F	03/26/1992	NA	NA	NA	NA	NA	NA	NA	NA	97.94	8.78	89.16	NA	NA
MW-8F	04/30/1992	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	97.94	9.36	88.58	NA	NA
MW-8F	09/28/1992	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	97.94	11.83	86.11	NA	NA
MW-8F	11/19/1992	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	97.94	11.22	86.72	NA	NA
MW-8F	02/12/1993	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	97.94	9.66	88.28	NA	NA
MW-8F	05/06/1993	<50	<100	<0.5	<0.5	<0.5	<0.5	NA	NA	97.94	8.83	89.11	NA	NA
MW-8F	08/16/1993	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	14.04	10.16	3.88	NA	NA
MW-8F	10/12/1993	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	14.04	10.60	3.44	NA	NA
MW-8F	02/03/1994	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	14.04	9.29	4.75	NA	NA
MW-8F	05/31/1994	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	14.04	9.34	4.70	NA	NA
MW-8F	08/25/1994	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	14.04	10.14	3.90	NA	NA
MW-8F	11/02/1994	<50	520	<0.5	<0.5	<0.5	<0.5	NA	NA	14.04	10.42	3.62	NA	NA
MW-8F	01/31/1995	<50	290	<0.5	<0.5	<0.5	<0.5	NA	NA	14.04	7.47	6.57	NA	NA
MW-8F	05/18/1995	<50	54	<0.5	<0.5	<0.5	<0.5	NA	NA	14.04	8.00	6.04	NA	NA
MW-8F	08/29/1995	<50	83	<0.5	<0.5	<0.5	<0.5	<10	NA	14.04	8.08	5.96	NA	NA

WELL CONCENTRATIONS
Former Texaco Service Station
500 Grand Avenue
Oakland, CA

Well ID	Date	TPPH (ug/L)	TEPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (ug/L)	MTBE 8260 (ug/L)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	SPH Thickness (ft.)	DO Reading (ppm)
MW-8F	11/02/1995	<50	51	<0.5	<0.5	<0.5	<0.5	<10	NA	14.04	8.70	5.34	NA	NA
MW-8F	02/05/1996	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	14.04	7.16	6.88	NA	NA
MW-8F	04/30/1996	<50	62	<0.5	<0.5	<0.5	<0.5	NA	NA	14.04	7.25	6.79	NA	NA
MW-8F	08/28/1996	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	14.04	8.72	5.32	NA	NA
MW-8F	12/05/1996	210	110	17	17	11	46	<30	NA	14.04	8.16	5.88	NA	NA
MW-8F	02/21/1997	<50	85	<0.5	<0.5	<0.5	<0.5	<30	NA	14.04	5.53	8.51	NA	NA
MW-8F	05/02/1997	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	14.04	7.85	6.19	NA	NA
MW-8F	07/30/1997	<50	93	<0.5	<0.5	<0.5	<0.5	<30	NA	14.04	8.87	5.17	NA	NA
MW-8F	11/05/1997	<50	140	<0.5	<0.5	<0.5	<0.5	<30	NA	14.04	9.16	4.88	NA	NA
MW-8F	01/21/1998	<50	<50	<0.5	<0.5	<0.5	<0.5	<30	NA	14.04	8.56	5.48	NA	NA
MW-8F	06/03/1998	<50	730	<0.5	<0.5	<0.5	<0.5	2.9	NA	14.04	8.30	5.74	NA	NA
MW-8F	08/04/1998	<50	210	<0.5	<0.5	<0.5	<0.5	<2.5	NA	14.04	10.67	3.37	NA	NA
MW-8F	11/05/1998	<50	210	<0.50	<0.50	<0.50	<0.50	<2.5	NA	14.04	8.72	5.32	NA	NA
MW-8F	02/16/1999	<50.0	230	<0.500	<0.500	<0.500	<0.500	<2.00	NA	14.04	8.78	5.26	NA	NA
MW-8F	06/04/1999	<50	120	<0.50	<0.50	<0.50	<0.50	<2.5	NA	14.04	8.24	5.80	NA	NA
MW-8F	08/31/1999	<50.0	176	<0.500	<0.500	<0.500	<0.500	<2.50	NA	14.04	8.87	5.17	NA	1.7/1.4
MW-8F	11/03/1999	<50.0	130	<0.500	<0.500	<0.500	<0.500	<5.00	<2.00	14.04	9.40	4.64	NA	4.6/2.0
MW-8F	02/29/2000	<50.0	59	<0.500	<0.500	<0.500	<0.500	<2.50	NA	14.04	8.00	6.04	NA	6.0/1.4
MW-8F	04/24/2000	<50.0	161	<0.500	<0.500	<0.500	<0.500	<2.50	NA	14.04	7.05	6.99	NA	1.1/2.0
MW-8F	07/25/2000	<50.0	123	<0.500	<0.500	<0.500	<0.500	<2.50	NA	14.04	8.66	5.38	NA	0.4/1.2
MW-8F	**11/06/2000**	**NA**	**77.3a**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**14.04**	**9.37**	**4.67**	**NA**	**0.7/1.3**
MW-8G**	01/23/1992	<50	980	<0.5	<0.5	<0.5	<0.5	NA	NA	97.24	11.30	85.94	NA	NA
MW-8G	02/28/1992	NA	NA	NA	NA	NA	NA	NA	NA	97.24	10.83	86.41	NA	NA
MW-8G	03/26/1992	NA	NA	NA	NA	NA	NA	NA	NA	97.24	9.20	88.04	NA	NA
MW-8G	04/30/1992	<50	<50	1.7	<0.5	<0.5	<0.5	NA	NA	97.24	9.00	88.24	NA	NA
MW-8G	09/28/1992	Well dry	NA	NA	NA	NA	NA	NA	NA	97.24	13.32	83.92	NA	NA
MW-8G	11/19/1992	Well inaccessible		NA	NA	NA	NA	NA	NA	97.24	NA	NA	NA	NA

WELL CONCENTRATIONS
Former Texaco Service Station
500 Grand Avenue
Oakland, CA

Well ID	Date	TPPH (ug/L)	TEPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (ug/L)	MTBE 8260 (ug/L)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	SPH Thickness (ft.)	DO Reading (ppm)
MW-8G	02/12/1993	Well inaccessible		NA	NA	NA	NA	NA	NA	97.24	NA	NA	NA	NA
MW-8G	05/06/1993	<50	60	<0.5	<0.5	<0.5	<0.5	NA	NA	97.24	11.18	86.06	NA	NA
MW-8G	08/16/1993	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	13.32	9.51	3.81	NA	NA
MW-8G	10/12/1993	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	13.32	10.93	2.39	NA	NA
MW-8G	02/03/1994	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	13.32	9.69	3.63	NA	NA
MW-8G	05/31/1994	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	13.32	9.24	4.08	NA	NA
MW-8G	08/25/1994	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	13.32	9.74	3.58	NA	NA
MW-8G	11/02/1994	<50	530	<0.5	<0.5	<0.5	<0.5	NA	NA	13.32	10.08	3.24	NA	NA
MW-8G	01/31/1995	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	13.32	5.75	7.57	NA	NA
MW-8G	05/18/1995	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	13.32	6.60	6.72	NA	NA
MW-8G	08/29/1995	<50	120	<0.5	<0.5	<0.5	<0.5	<10	NA	13.32	8.14	5.18	NA	NA
MW-8G	11/02/1995	<50	140	<0.5	<0.5	<0.5	<0.5	<10	NA	13.32	9.16	4.16	NA	NA
MW-8G	02/05/1996	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	13.32	7.18	6.14	NA	NA
MW-8G	04/30/1996	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	13.32	7.00	6.32	NA	NA
MW-8G	08/28/1996	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	13.32	8.94	4.38	NA	NA
MW-8G	12/05/1996	190	57	16	16	9.0	39	<30	NA	13.32	9.22	4.10	NA	NA
MW-8G	02/21/1997	<50	54	<0.5	<0.5	<0.5	<0.5	<30	NA	13.32	6.11	7.21	NA	NA
MW-8G	05/02/1997	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	13.32	7.54	5.78	NA	NA
MW-8G	07/30/1997	Well inaccessible		NA	NA	NA	NA	NA	NA	13.32	NA	NA	NA	NA
MW-8G	11/05/1997	<50	<50	<0.5	<0.5	<0.5	<0.5	<30	NA	13.32	9.65	3.67	NA	NA
MW-8G	11/05/1997	<50	<50	<0.5	<0.5	<0.5	<0.5	<30	NA	13.32	NA	NA	NA	NA
MW-8G	01/21/1998	<50	<50	<0.5	<0.5	<0.5	<0.5	<30	NA	13.32	7.57	5.75	NA	NA
MW-8G	06/03/1998	<50	570	<0.5	<0.5	<0.5	<0.5	4.0	NA	13.32	9.37	3.95	NA	NA
MW-8G	08/04/1998	<50	200	<0.5	<0.5	<0.5	<0.5	<2.5	NA	13.32	9.89	3.43	NA	NA
MW-8G	11/05/1998	<50	170	<0.50	<0.50	<0.50	<0.50	<2.5	NA	13.32	10.81	2.51	NA	NA
MW-8G	02/16/1999	<50.0	270	<0.500	<0.500	<0.500	<0.500	<2.00	NA	13.32	8.63	4.69	NA	NA
MW-8G	06/04/1999	<50	190	<0.50	<0.50	<0.50	<0.50	<2.5	NA	13.32	7.95	5.37	NA	NA
MW-8G	08/31/1999	<50.0	247	<0.500	<0.500	<0.500	<0.500	<2.50	NA	13.32	9.11	4.21	NA	4.5/1.3

WELL CONCENTRATIONS
Former Texaco Service Station
500 Grand Avenue
Oakland, CA

Well ID	Date	TPPH (ug/L)	TEPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (ug/L)	MTBE 8260 (ug/L)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	SPH Thickness (ft.)	DO Reading (ppm)
MW-8G	11/03/1999	<50.0	174	<0.500	<0.500	<0.500	<0.500	<5.00	<2.00	13.32	9.58	3.74	NA	11.6/4.8
MW-8G	02/29/2000	<50.0	90	<0.500	<0.500	<0.500	<0.500	<2.50	NA	13.32	5.43	7.89	NA	3.4/1.8
MW-8G	04/24/2000	<50.0	72.4	<0.500	<0.500	<0.500	<0.500	<2.50	NA	13.32	6.35	6.97	NA	10.1/6.5
MW-8G	07/25/2000	<50.0	79.2	<0.500	<0.500	<0.500	<0.500	<2.50	NA	13.32	8.71	4.61	NA	1.2/0.8
MW-8G	**11/06/2000**	**NA**	**106a**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**13.32**	**9.76**	**3.56**	**NA**	**1.3/1.0**
MW-8H	01/23/1992	110	<60	7.2	1.2	4.7	3.2	NA	NA	98.90	3.74	95.16	NA	NA
MW-8H	02/28/1992	NA	NA	NA	NA	NA	NA	NA	NA	98.90	4.44	94.46	NA	NA
MW-8H	03/26/1992	NA	NA	NA	NA	NA	NA	NA	NA	98.90	4.21	94.69	NA	NA
MW-8H	04/30/1992	190	90	11	1.5	5.6	3.6	NA	NA	98.90	3.46	95.44	NA	NA
MW-8H	09/28/1992	Well inaccessible		NA	NA	NA	NA	NA	NA	98.90	NA	NA	NA	NA
MW-8H	11/19/1992	130	NA	6.8	<0.5	1.1	1.5	NA	NA	98.90	3.75	95.15	NA	NA
MW-8H	02/12/1993	73	NA	5.9	<0.5	0.8	<0.5	NA	NA	98.90	4.12	94.78	NA	NA
MW-8H	05/06/1993	57	<100	1.7	<0.5	<0.5	<0.5	NA	NA	98.90	3.85	95.05	NA	NA
MW-8H	08/16/1993	<50	<50	0.5	<0.5	0.5	1.4	NA	NA	15.04	3.88	11.16	NA	NA
MW-8H	10/12/1993	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	15.04	3.80	11.24	NA	NA
MW-8H	02/03/1994	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	15.04	3.71	11.33	NA	NA
MW-8H	05/31/1994	<50	<50	0.79	<0.5	<0.5	<0.5	NA	NA	15.04	3.80	11.24	NA	NA
MW-8H	08/25/1994	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	15.04	3.89	11.15	NA	NA
MW-8H	11/02/1994	<50	760	<0.5	<0.5	<0.5	<0.5	NA	NA	15.04	3.64	11.40	NA	NA
MW-8H	01/31/1995	<50	190	<0.5	<0.5	<0.5	<0.5	NA	NA	15.04	3.58	11.46	NA	NA
MW-8H	05/18/1995	<50	370	<0.5	<0.5	<0.5	<0.5	NA	NA	15.04	3.53	11.51	NA	NA
MW-8H	08/29/1995	<50	1,000	<0.5	<0.5	<0.5	<0.5	<10	NA	15.04	3.55	11.49	NA	NA
MW-8H	11/02/1995	<50	<50	<0.5	<0.5	<0.5	<0.5	<10	NA	15.04	3.49	11.55	NA	NA
MW-8H	02/05/1996	<50	190	<0.5	<0.5	<0.5	<0.5	NA	NA	15.04	3.54	11.50	NA	NA
MW-8H	04/30/1996	<50	1,800	<0.5	<0.5	<0.5	<0.5	NA	NA	15.04	3.50	11.54	NA	NA
MW-8H	08/28/1996	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	15.04	3.62	11.42	NA	NA
MW-8H	12/05/1996	100	350	6.2	7.3	5.0	22	<30	NA	15.04	3.38	11.66	NA	NA

WELL CONCENTRATIONS
Former Texaco Service Station
500 Grand Avenue
Oakland, CA

Well ID	Date	TPPH (ug/L)	TEPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (ug/L)	MTBE 8260 (ug/L)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	SPH Thickness (ft.)	DO Reading (ppm)
MW-8H	02/21/1997	<50	900	<0.5	<0.5	<0.5	<0.5	<30	NA	15.04	3.77	11.27	NA	NA
MW-8H	05/02/1997	<50	450	<0.5	<0.5	<0.5	<0.5	NA	NA	15.04	3.64	11.40	NA	NA
MW-8H	07/30/1997	<50	180	<0.5	0.62	<0.5	<0.5	<30	NA	15.04	3.65	11.39	NA	NA
MW-8H	11/05/1997	<50	280	<0.5	<0.5	<0.5	<0.5	<30	NA	15.04	3.61	11.43	NA	NA
MW-8H	01/21/1998	<50	<50	<0.5	<0.5	<0.5	<0.5	<30	NA	15.04	3.57	11.47	NA	NA
MW-8H	06/03/1998	<50	440	<0.5	<0.5	<0.5	<0.5	<0.5	NA	15.04	3.50	11.54	NA	NA
MW-8H	08/04/1998	<50	300	<0.5	<0.5	<0.5	<0.5	<2.5	NA	15.04	3.64	11.40	NA	NA
MW-8H	11/03/1999	<50.0	576	<0.500	<0.500	<0.500	<0.500	<5.00	<2.00	15.04	3.49	11.55	NA	NA
MW-8H	04/24/2000	<50.0	53.8	<0.500	<0.500	<0.500	<0.500	<2.50	NA	15.04	3.63	11.41	NA	NA
MW-8H	07/25/2000	<50.0	90.0	<0.500	<0.500	<0.500	<0.500	<2.50	NA	15.04	3.54	11.50	NA	NA
MW-8H	**11/06/2000**	**NA**	**433a**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**15.04**	**3.49**	**11.55**	**NA**	**NA**
MW-8I	01/23/1992	820	210	420	7	27	20	NA	NA	98.27	6.33	91.94	NA	NA
MW-8I	02/28/1992	NA	NA	NA	NA	NA	NA	NA	NA	98.27	6.55	91.72	NA	NA
MW-8I	03/26/1992	NA	NA	NA	NA	NA	NA	NA	NA	98.27	6.45	91.82	NA	NA
MW-8I	04/30/1992	2,200	430	1,800	19	180	25	NA	NA	98.27	6.48	91.79	NA	NA
MW-8I	09/28/1992	Well inaccessible		NA	NA	NA	NA	NA	NA	98.27	NA	NA	NA	NA
MW-8I	11/19/1992	720	NA	120	1.1	29	13	NA	NA	98.27	6.37	91.90	NA	NA
MW-8I	02/12/1993	4,000	NA	970	9.2	52	36	NA	NA	98.27	6.44	91.83	NA	NA
MW-8I	05/06/1993	1,400	<10	370	2.4	40	8.4	NA	NA	98.27	6.36	91.91	NA	NA
MW-8I	08/16/1993	<50	<50	3.1	<0.5	6	<0.5	NA	NA	14.40	6.35	8.05	NA	NA
MW-8I	10/12/1993	<50	<50	1.4	<0.5	<0.5	<0.5	NA	NA	14.40	5.99	8.41	NA	NA
MW-8I	02/03/1994	1,000	<50	270	3.2	51	14	NA	NA	14.40	5.84	8.56	NA	NA
MW-8I	05/31/1994	1,400	<50	330	4.6	52	16	NA	NA	14.40	6.25	8.15	NA	NA
MW-8I	08/25/1994	540	<50	14	0.58	30	4.3	NA	NA	14.40	6.31	8.09	NA	NA
MW-8I	11/02/1994	310	370	5.7	0.74	20	<0.5	NA	NA	14.40	6.10	8.30	NA	NA
MW-8I	01/31/1995	840	910	290	4.5	45	1.6	NA	NA	14.40	5.83	8.57	NA	NA
MW-8I	05/18/1995	1,700	1100	390	7.8	80	10	NA	NA	14.40	6.09	8.31	NA	NA

WELL CONCENTRATIONS
Former Texaco Service Station
500 Grand Avenue
Oakland, CA

Well ID	Date	TPPH (ug/L)	TEPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (ug/L)	MTBE 8260 (ug/L)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	SPH Thickness (ft.)	DO Reading (ppm)
MW-8I	08/29/1995	300	560	81	<0.5	13	0.63	<10	NA	14.40	6.09	8.31	NA	NA
MW-8I	11/02/1995	81	160	<0.5	4.1	1.5	<0.5	<10	NA	14.40	6.26	8.14	NA	NA
MW-8I	02/05/1996	300	140	75	0.75	8.4	1.2	NA	NA	14.40	5.97	8.43	NA	NA
MW-8I	04/30/1996	350	<50	150	0.77	3.2	1.3	NA	NA	14.40	6.04	8.36	NA	NA
MW-8I	08/28/1996	1,100	380	300	2.9	3.2	2.1	NA	NA	14.40	6.20	8.20	NA	NA
MW-8I	12/05/1996	340	53	23	8.7	11	26	<30	NA	14.40	6.01	8.39	NA	NA
MW-8I	02/21/1997	<50	330	<0.5	<0.5	<0.5	<0.5	<30	NA	14.40	6.15	8.25	NA	NA
MW-8I	05/02/1997	110	<50	39	<0.5	0.92	<0.5	NA	NA	14.40	6.20	8.20	NA	NA
MW-8I	07/30/1997	<50	170	4.2	<0.5	<0.5	<0.5	<30	NA	14.40	6.12	8.28	NA	NA
MW-8I	11/05/1997	<50	<50	<0.5	<0.5	<0.5	<0.5	<30	NA	14.40	6.26	8.14	NA	NA
MW-8I	01/21/1998	<50	<50	1.5	<0.5	<0.5	<0.5	<30	NA	14.40	6.00	8.40	NA	NA
MW-8I	06/03/1998	<50	360	<0.5	<0.5	<0.5	<0.5	1.5	NA	14.40	6.74	7.66	NA	NA
MW-8I	08/04/1998	<50	83	<0.5	<0.5	<0.5	<0.5	<2.5	NA	14.40	6.16	8.24	NA	NA
MW-8I	11/05/1998	<50	67	<0.50	<0.50	<0.50	<0.50	<2.5	NA	14.40	6.14	8.26	NA	NA
MW-8I	08/31/1999	NA	NA	NA	NA	NA	NA	NA	NA	14.40	6.12	8.28	NA	NA
MW-8I	11/03/1999	<50.0	192	<0.500	<0.500	<0.500	<0.500	<5.00	<2.00	14.40	6.45	7.95	NA	7.15/9.6
MW-8I	02/29/2000	NA	NA	NA	NA	NA	NA	NA	NA	14.40	5.69	8.71	NA	11.1
MW-8I	04/24/2000	<50.0	69.2	<0.500	<0.500	<0.500	<0.500	<2.50	NA	14.40	6.25	8.15	NA	7.1/5.6
MW-8I	07/25/2000	<50.0	80.1	<0.500	<0.500	<0.500	<0.500	<2.50	NA	14.40	6.22	8.18	NA	1.4/1.2
MW-8I	**11/06/2000**	**NA**	**157a**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**14.40**	**6.34**	**8.06**	**NA**	**1.5/1.1**
MW-8J	01/23/1992	<50	<50	1	<0.5	<0.5	<0.5	NA	NA	97.69	6.31	91.38	NA	NA
MW-8J	02/28/1992	NA	NA	NA	NA	NA	NA	NA	NA	97.69	6.28	91.41	NA	NA
MW-8J	03/26/1992	NA	NA	NA	NA	NA	NA	NA	NA	97.69	6.20	91.49	NA	NA
MW-8J	04/30/1992	<50	<50	2	<0.5	<0.5	<0.5	NA	NA	97.69	6.48	91.21	NA	NA
MW-8J	09/28/1992	Well inaccessible		NA	NA	NA	NA	NA	NA	97.69	NA	NA	NA	NA
MW-8J	11/19/1992	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	97.69	6.55	91.14	NA	NA
MW-8J	02/12/1993	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	97.69	7.46	90.23	NA	NA

WELL CONCENTRATIONS
Former Texaco Service Station
500 Grand Avenue
Oakland, CA

Well ID	Date	TPPH (ug/L)	TEPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (ug/L)	MTBE 8260 (ug/L)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	SPH Thickness (ft.)	DO Reading (ppm)
MW-8J	05/06/1993	<50	<10	<0.5	<0.5	<0.5	<0.5	NA	NA	97.69	6.21	91.48	NA	NA
MW-8J	08/16/1993	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	13.82	6.29	7.53	NA	NA
MW-8J	10/12/1993	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	13.82	5.87	7.95	NA	NA
MW-8J	02/03/1994	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	13.82	5.98	7.84	NA	NA
MW-8J	05/31/1994	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	13.82	6.10	7.72	NA	NA
MW-8J	08/25/1994	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	13.82	6.01	7.81	NA	NA
MW-8J	11/02/1994	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	13.82	5.90	7.92	NA	NA
MW-8J	01/31/1995	<50	<50	3.7	<0.5	<0.5	<0.5	NA	NA	13.82	5.07	8.75	NA	NA
MW-8J	05/18/1995	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	13.82	5.33	8.49	NA	NA
MW-8J	08/29/1995	<50	250	<0.5	<0.5	<0.5	<0.5	<10	NA	13.82	3.50	10.32	NA	NA
MW-8J	11/02/1995	<50	520	<0.5	<0.5	<0.5	<0.5	<10	NA	13.82	5.94	7.88	NA	NA
MW-8J	02/05/1996	<50	65	<0.5	<0.5	<0.5	<0.5	NA	NA	13.82	5.34	8.48	NA	NA
MW-8J	04/30/1996	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	13.82	5.96	7.86	NA	NA
MW-8J	08/28/1996	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	13.82	6.38	7.44	NA	NA
MW-8J	12/05/1996	160	<50	13	14	8.9	38	<30	NA	13.82	5.94	7.88	NA	NA
MW-8J	02/21/1997	<50	<50	<0.5	<05	<0.5	<0.5	<30	NA	13.82	5.60	8.22	NA	NA
MW-8J	05/02/1997	<50	<50	<0.5	<05	<0.5	<0.5	NA	NA	13.82	6.22	7.60	NA	NA
MW-8J	07/30/1997	<50	<50	<0.5	<0.5	<0.5	<0.5	<30	NA	13.82	6.28	7.54	NA	NA
MW-8J	11/05/1997	<50	<50	<0.5	<0.5	<0.5	<0.5	<30	NA	13.82	6.03	7.79	NA	NA
MW-8J	01/21/1998	<50	<50	<0.5	<0.5	<0.5	<0.5	<30	NA	13.82	5.71	8.11	NA	NA
MW-8J	06/03/1998	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	NA	13.82	5.45	8.37	NA	NA
MW-8J	08/04/1998	<50	<50	<0.5	<0.5	<0.5	<0.5	<2.5	NA	13.82	5.93	7.89	NA	NA
MW-8J	11/05/1998	<50	<50	2.0	<0.50	<0.50	<0.50	<2.5	NA	13.82	6.05	7.77	NA	NA
MW-8J	11/03/1999	<50.0	58.9	<0.500	<0.500	<0.500	<0.500	<5.00	<2.00	13.82	5.84	7.98	NA	NA
MW-8J	04/24/2000	<50.0	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	NA	13.82	5.58	8.24	NA	NA
MW-8J	07/25/2000	<50.0	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	NA	13.82	5.89	7.93	NA	NA
MW-8J	**11/06/2000**	**NA**	**<50.0a**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**13.82**	**6.24**	**7.58**	**NA**	**NA**

WELL CONCENTRATIONS
Former Texaco Service Station
500 Grand Avenue
Oakland, CA

Well ID	Date	TPPH (ug/L)	TEPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (ug/L)	MTBE 8260 (ug/L)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	SPH Thickness (ft.)	DO Reading (ppm)
MW-8K	05/21/1993	54	<50	12	<0.5	<0.5	<0.5	NA	NA	15.18	NA	NA	NA	NA
MW-8K	08/16/1993	<50	<50	<0.5	<0.5	1.0	<0.5	NA	NA	15.18	2.08	13.10	NA	NA
MW-8K	10/12/1993	<50	<50	4.2	<0.5	<0.5	<0.5	NA	NA	15.18	1.95	13.23	NA	NA
MW-8K	01/03/1994	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	15.18	1.48	13.70	NA	NA
MW-8K	05/31/1994	<50	<50	1.0	0.57	<0.5	<0.5	NA	NA	15.18	1.59	13.59	NA	NA
MW-8K	08/25/1994	<50	<50	0.78	<0.5	<0.5	<0.5	NA	NA	15.18	2.00	13.18	NA	NA
MW-8K	11/02/1994	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	15.18	2.10	13.08	NA	NA
MW-8K	01/31/1995	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	15.18	1.35	13.83	NA	NA
MW-8K	08/18/1995	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	15.18	1.36	13.82	NA	NA
MW-8K	08/29/1995	<50	160	<0.5	<0.5	<0.5	<0.5	<10	NA	15.18	1.55	13.63	NA	NA
MW-8K	11/02/1995	<50	<50	<0.5	<0.5	<0.5	<0.5	<10	NA	15.18	1.88	13.30	NA	NA
MW-8K	02/05/1996	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	15.18	1.46	13.72	NA	NA
MW-8K	04/30/1996	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	15.18	1.43	13.75	NA	NA
MW-8K	08/28/1996	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	15.18	1.75	13.43	NA	NA
MW-8K	12/05/1996	<50	<50	<0.5	<0.5	<0.5	<0.5	<30	NA	15.18	1.42	13.76	NA	NA
MW-8K	02/21/1997	<50	<50	<0.5	<0.5	<0.5	<0.5	<30	NA	15.18	1.49	13.69	NA	NA
MW-8K	05/02/1997	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	15.18	1.60	13.58	NA	NA
MW-8K	07/30/1997	<50	<50	<0.5	<0.5	<0.5	<0.5	<30	NA	15.18	1.66	13.52	NA	NA
MW-8K	11/05/1997	<50	300	<0.5	<0.5	<0.5	<0.5	<30	NA	15.18	1.62	13.56	NA	NA
MW-8K	01/21/1998	<50	<50	<0.5	<0.5	<0.5	<0.5	<30	NA	15.18	1.29	13.89	NA	NA
MW-8K	06/03/1998	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	NA	15.18	1.17	14.01	NA	NA
MW-8K	08/04/1998	<50	<50	<0.5	<0.5	<0.5	<0.5	<2.5	NA	15.18	1.21	13.97	NA	NA
MW-8K	11/05/1998	<50	<50	<0.50	<0.50	<0.50	<0.50	<2.5	NA	15.18	2.30	12.88	NA	NA
MW-8K	11/03/1999	<50.0	270	<0.500	<0.500	<0.500	<0.500	<5.00	<2.00	15.18	1.63	13.55	NA	NA
MW-8K	04/24/2000	<50.0	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	NA	15.18	1.25	13.93	NA	NA
MW-8K	07/25/2000	<50.0	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	NA	15.18	1.38	13.80	NA	NA
MW-8K	**11/06/2000**	**NA**	**53.2a**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**15.18**	**11.38**	**3.80**	**NA**	**NA**

WELL CONCENTRATIONS
Former Texaco Service Station
500 Grand Avenue
Oakland, CA

Well ID	Date	TPPH (ug/L)	TEPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (ug/L)	MTBE 8260 (ug/L)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	SPH Thickness (ft.)	DO Reading (ppm)
MW-8L	05/21/1993	76	<50	1.1	<0.5	<0.5	6	NA	NA	14.44	NA	NA	NA	NA
MW-8L	08/16/1993	<50	<50	<0.5	<0.5	0.7	1.1	NA	NA	14.44	2.47	11.97	NA	NA
MW-8L	10/12/1993	110	<50	13	<0.5	6	<0.5	NA	NA	14.44	2.36	12.08	NA	NA
MW-8L	01/03/1994	590	<50	61	2.4	<0.5	110	NA	NA	14.44	2.82	11.62	NA	NA
MW-8L	05/31/1994	410	<50	77	<0.5	20	1.1	NA	NA	14.44	2.66	11.78	NA	NA
MW-8L	08/25/1994	260	<50	16	<0.5	2.5	<0.5	NA	NA	14.44	2.34	12.10	NA	NA
MW-8L	11/02/1994	Well inaccessible		NA	NA	NA	NA	NA	NA	14.44	NA	NA	NA	NA
MW-8L	01/31/1995	Well inaccessible		NA	NA	NA	NA	NA	NA	14.44	0.08	14.36	NA	NA
MW-8L	08/18/1995	Well inaccessible		NA	NA	NA	NA	NA	NA	14.44	0.42	14.02	NA	NA
MW-8L	08/29/1995	Well inaccessible		NA	NA	NA	NA	NA	NA	14.44	NA	NA	NA	NA
MW-8L	11/02/1995	Well inaccessible		NA	NA	NA	NA	NA	NA	14.44	NA	NA	NA	NA
MW-8L	02/05/1996	Well inaccessible		NA	NA	NA	NA	NA	NA	14.44	NA	NA	NA	NA
MW-8L	04/30/1996	Well inaccessible		NA	NA	NA	NA	NA	NA	14.44	NA	NA	NA	NA
MW-8L	08/28/1996	Well inaccessible		NA	NA	NA	NA	NA	NA	14.44	0.75	13.69	NA	NA
MW-8L	12/05/1996	Well inaccessible		NA	NA	NA	NA	NA	NA	14.44	NA	NA	NA	NA
MW-8L	02/21/1997	Well inaccessible		NA	NA	NA	NA	NA	NA	14.44	NA	NA	NA	NA
MW-8L	05/02/1997	Well inaccessible		NA	NA	NA	NA	NA	NA	14.44	0.60	13.84	NA	NA
MW-8L	07/30/1997	Well inaccessible		NA	NA	NA	NA	NA	NA	14.44	NA	NA	NA	NA
MW-8L	11/05/1997	NA	NA	NA	NA	NA	NA	NA	NA	14.44	0.67	13.77	NA	NA
MW-8L	01/21/1998	NA	NA	NA	NA	NA	NA	NA	NA	14.44	NA	NA	NA	NA

WELL CONCENTRATIONS
Former Texaco Service Station
500 Grand Avenue
Oakland, CA

Well ID	Date	TPPH (ug/L)	TEPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (ug/L)	MTBE 8260 (ug/L)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	SPH Thickness (ft.)	DO Reading (ppm)

Abbreviations:
TPPH= Total petroleum hydrocarbons as gasoline by modified EPA Method 8015
TEPH = Total petroleum hydrocarbons as diesel by modified EPA Method 8015
BTEX = benzene, toluene, ethylbenzene, xylenes by EPA Method 8020
MTBE = methyl-tertiary-butyl ether
TOC = Top of Casing Elevation
SPH = Separate-Phase Hydrocarbons
GW = Groundwater
ug/L = parts per billion
ppm = parts per million
msl = Mean sea level
ft = Feet
<n = Below detection limit
D = Duplicate sample
NA = Not Applicable
DO = Dissolved Oxygen
n/n = Pre-purge / Post-purge DO Readings

Notes:
** = Non-diesel mix >C16. The certified analytical report for sample MW-8G was revised on 10/21/93.
a = TEPH with Silica Gel Cleanup.
New well elevation survey performed at wells MW-8F through MW-8L on August 16, 1993 based on mean sea level (MSL). Prior data based on arbitrary site data.

PACIFIC
ENVIRONMENTAL
GROUP, INC.

May 6, 1993
Project 340-34.01
TES Job No. TRR251

Mr. Bob Robles
Texaco Refining and Marketing, Inc.
10 Universal City Plaza, 7th Floor
Universal City, California 91608

Re: Former Texaco Service Station
500 Grand Avenue at Euclid
Oakland, California

Dear Mr. Robles:

This letter by Pacific Environmental Group, Inc. (PACIFIC) documents the abandonment of Wells MW-8B and MW-8C at the site referenced above. Work was performed by West Hazmat Drilling Corporation, and observed by a representative of PACIFIC, on April 1, 1993.

Well destruction permits were obtained from the Alameda County Flood Control and Water Conservation District Zone 7 Water Agency prior to well abandonment (Attachment A). The Zone Water Agency verbally authorized work to proceed without a site inspector. The wells were abandoned utilizing 8- and 10-inch hollow stem augers. The well casing, sand pack, and annular seal were removed from each well by overdrilling to the total depth of each well. The boreholes were then filled with neat cement poured through a hollow stem auger.

Please do not hesitate to call with any questions you may have.

Sincerely,

Pacific Environmental Group, Inc.

Lainie Demian
Project Scientist

Steven E. Krcik
Senior Geologist
RG 4976

Attachment: Well Destruction Permits

2025 Gateway Place, Suite 440, San Jose, California 95110 (408) 441-7500 FAX (408) 441-7539
620 Contra Costa Blvd., Suite 209, Pleasant Hill, California 94523 (510) 825-0855 FAX (510) 825-0882

Table 2
Groundwater Analytical Data
Total Petroleum Hydrocarbons
(TPH as Gasoline, BTEX Compounds, TPH as Diesel, and TPH as Other*)

Former Texaco Service Station
500 Grand Avenue at Euclid Avenue
Oakland, California

Well Number	Date Sampled	TPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)	TPH as Diesel (ppb)	TPH as Other* (ppb)
MW-8A	06/14/88	NA	<0.5	1.5	<2	6.6	NA	NA
	10/25/88	NA	<0.5	<1	<2	<1	NA	NA
	09/28/89	<50	<0.5	<0.5	<0.5	<3	NA	NA
	11/29/89	<50	<0.5	1.0	<0.5	<0.5	1,200	<50
	01/24/90	<100	<0.5	<0.5	<0.5	<0.5	NA	2,800
	04/26/90	<2,500	<0.5	<0.5	<0.5	<0.5	<50	890
	07/26/90	<50	6.0	<0.5	<0.5	<0.5	<50	<50
	10/18/90	<50	<0.5	<0.5	<0.5	<0.5	<50	<50
	01/08/91	<30	<0.3	<0.3	<0.3	<0.3	<50	130
	04/23/91	<50	<0.5	<0.5	<0.5	<0.5	<50	<500
	07/23/91	<50	<0.5	<0.5	<0.5	<0.5	<50	<500
	10/24/91	<50	<0.5	<0.5	<0.5	<0.5	<50	<500
	01/23/92	<50	<0.5	<0.5	<0.5	<0.5	700	NA
	04/30/92	<50	<0.5	<0.5	<0.5	<0.5	<50	<500
	08/03/92	---------- Well Abandoned ----------						
MW-8B	06/14/88	NA	<0.5	<1	<2	<1	NA	NA
	10/21/88	NA	<0.5	<1	<2	3.1	NA	NA
	09/28/89	<50	<0.5	<0.5	<0.5	<3	NA	NA
	11/29/89	<50	<0.5	<0.5	<0.5	<0.5	<50	380
	01/24/90	<100	<0.5	<0.5	<0.5	<0.5	NA	350
	04/26/90	<50	<0.5	<0.5	<0.5	<0.5	<50	110
	07/26/90	<50	<0.5	<0.5	<0.5	<0.5	<50	<50
	10/18/90	<50	<0.5	<0.5	<0.5	<0.5	<50	<50
	01/08/91	<30	<0.3	<0.3	<0.3	<0.3	<50	180
	04/23/91	<50	8.4	2.5	<0.5	5.1	<50	<500
	07/23/91	<50	<0.5	1.1	<0.5	2.0	<50	<500
	10/24/91	<50	<0.5	<0.5	<0.5	<0.5	<50	<500
	01/23/92	<50	<0.5	<0.5	<0.5	<0.5	550	NA
	04/30/92	<50	<0.5	<0.5	<0.5	<0.5	<50	<500
	09/28/92	---------- Not Sampled ----------						
	11/19/92	---------- Not Sampled ----------						
	02/12/93	---------- Not Sampled ----------						

Table 2 (continued)
Groundwater Analytical Data
Total Petroleum Hydrocarbons
(TPH as Gasoline, BTEX Compounds, TPH as Diesel, and TPH as Other*)

Former Texaco Service Station
500 Grand Avenue at Euclid Avenue
Oakland, California

Well Number	Date Sampled	TPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)	TPH as Diesel (ppb)	TPH as Other* (ppb)
MW-8C	06/14/88	NA	5.3	3.5	2.6	13.0	NA	NA
	10/21/88	NA	<0.5	<1	<2	<1	NA	NA
	09/28/89	<50	<0.5	<0.5	<0.5	<3.0	NA	NA
	11/29/89	<50	<0.5	<0.5	<0.5	<0.5	<50	190
	01/24/90	<100	0.9	<0.5	<0.5	<0.5	NA	480
	04/26/90	<50	<0.5	<0.5	<0.5	<0.5	<50	160
	07/26/90	<50	<0.5	<0.5	<0.5	<0.5	<50	<50
	10/18/90	<50	<0.5	<0.5	<0.5	<0.5	<50	<50
	01/08/91	<30	<0.3	<0.3	<0.3	<0.3	76	110
	04/23/91	800	12	25	3.7	19	<50	<500
	07/23/91	<50	<0.5	0.6	<0.5	<0.5	<50	<500
	10/24/91	<50	<0.5	<0.5	<0.5	<0.5	<50	<500
	01/23/92	<50	1.2	<0.5	<0.5	<0.5	840	NA
	04/30/92	<50	<0.5	<0.5	<0.5	<0.5	150	<500
	09/28/92	---------- Not Sampled ----------						
	11/19/92	---------- Not Sampled ----------						
	02/12/93	---------- Not Sampled ----------						
MW-8E	10/25/88	NA	1,400	510	2.9	420	NA	NA
	09/28/89	22,000	5,600	3,100	<500	<3,000	NA	NA
	11/29/89	15,000	4,900	2,600	<250	1,490	6,800	<50
	01/24/90	36,000	10,100	3,340	540	1,790	NA	4,900
	04/26/90	48,000	11,000	5,700	840	2,800	1,400	<50
	07/26/90	56,000	15,000	6,200	520	4,700	<50	<50
	10/18/90	15,000	1,500	1,300	170	1,800	620	<50
	01/08/91	51,000	14,000	5,400	860	1,700	17,000	520
	04/23/91	50,000	19,000	6,100	750	4,100	4,800	<500
	07/23/91	47,000	16,000	5,400	1,100	4,000	3,500	<500
	10/24/91	40,000	19,000	6,100	1,100	4,900	9,400	<500
	01/23/92	38,000	3,800	2,800	610	4,800	9,800	NA
	04/23/92	41,000	20,000	3,700	500	3,900	9,600	<500
	08/03/92	---------- Well Abandoned ----------						

Table 2 (continued)

Groundwater Analytical Data
Total Petroleum Hydrocarbons
(TPH as Gasoline, BTEX Compounds, TPH as Diesel, and TPH as Other*)

Former Texaco Service Station
500 Grand Avenue at Euclid Avenue
Oakland, California

Well Number	Date Sampled	TPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)	TPH as Diesel (ppb)	TPH as Other* (ppb)
MW-8F	04/14/88	NA	<0.5	<1	<2	<1	NA	NA
	09/28/89	<50	<0.5	<0.5	<0.5	<3.0	NA	NA
	11/29/89	<50	<0.5	<0.5	<0.5	<0.5	<50	<50
	01/24/90	<100	<0.5	<0.5	<0.5	<0.5	NA	<300
	04/26/90	<50	<0.5	<0.5	<0.5	<0.5	<50	110
	07/26/90	<50	<0.5	<0.5	<0.5	<0.5	<50	<50
	10/18/90	<50	<0.5	<0.5	<0.5	<0.5	360	<50
	01/08/91	<30	<0.3	<0.3	<0.3	<0.3	380	620
	04/23/91	<50	5.9	3.1	<0.5	2.7	1,400	3,200
	07/23/91	<50	<0.5	0.8	<0.5	<0.5	60	<500
	10/24/91	<50	<0.5	<0.5	<0.5	<0.5	<50	<500
	01/23/92	<50	4.0	1.3	<0.5	1.9	1,300	NA
	04/30/92	<50	<0.5	<0.5	<0.5	<0.5	<50	<500
	09/28/92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	11/19/92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	02/12/93	<50	<0.5	<0.5	<0.5	<0.5	<0.5	NA
MW-8G	04/14/88	NA	<0.5	<1	<2	<1	NA	NA
	09/28/89	<50	<0.5	<0.5	<0.5	<3.0	NA	NA
	11/29/89	<50	<0.5	<0.5	<0.5	<0.5	<50	<50
	01/24/90	<100	<0.5	<0.5	<0.5	<0.5	NA	650
	04/26/90	<50	<0.5	<0.5	<0.5	<0.5	<50	120
	07/26/90	<50	<0.5	<0.5	<0.5	<0.5	<50	<50
	10/18/90	<50	<0.5	<0.5	<0.5	<0.5	460	<50
	01/08/91	<30	<0.3	<0.3	<0.3	<0.3	220	260
	04/23/91	<50	0.9	0.9	<0.5	<0.5	1,100	<500
	07/23/91	<50	0.5	1.5	<0.5	3.0	<50	<500
	10/24/91	<50	0.6	<0.5	<0.5	<0.5	NA	NA
	01/24/92	<50	<0.5	<0.5	<0.5	<0.5	980	NA
	04/30/92	<50	1.7	<0.5	<0.5	<0.5	<50	<500
	09/28/92	---------- Well Dry ----------						
	11/19/92	---------- Well Inaccessible ----------						
	02/12/93	---------- Well Inaccessible ----------						

Table 2 (continued)
Groundwater Analytical Data
Total Petroleum Hydrocarbons
(TPH as Gasoline, BTEX Compounds, TPH as Diesel, and TPH as Other*)

Former Texaco Service Station
500 Grand Avenue at Euclid Avenue
Oakland, California

Well Number	Date Sampled	TPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)	TPH as Diesel (ppb)	TPH as Other* (ppb)
MW-8H	01/24/90	460	14.8	14.8	10.8	38.8	NA	<300
	04/26/90	830	67	19	43	64	<50	820
	07/26/90	190	45	1.3	12	8.2	<50	<50
	10/18/90	300	17	2.5	14	8.5	<50	<50
	01/08/91	320	12	2.2	6.4	4.0	180	89
	04/23/91	<50	1.5	<0.5	<0.5	<0.5	730	<500
	07/23/91	270	21	1.8	9.7	2.6	<50	<500
	10/24/91	120	7.6	1.0	3.5	2.4	70	<500
	01/23/92	110	7.2	1.2	4.7	3.2	<60	NA
	04/30/92	190	11	1.5	5.6	3.6	90	<500
	09/28/92	---------- Well Inaccessible ----------						
	11/19/92	130	6.8	<0.5	1.1	1.5	NA	NA
	02/12/93	73	5.9	<0.5	0.8	<0.5	NA	NA
MW-8I	01/24/90	580	116	2.9	13	30.5	NA	440
	04/26/90	4,400	2,400	100	230	350	<50	1,400
	07/26/90	<50	<0.5	<0.5	<0.5	<0.5	<50	<50
	10/18/90	530	92	4.1	37	21	<50	<50
	01/08/91	1,300	500	4.3	36	26	710	210
	04/23/91	1,500	1,600	17	100	86	1,100	900
	07/23/91	1,700	1,600	30	140	63	260	<500
	10/25/91	760	470	6.0	76	13	230	<500
	01/23/92	820	420	7.2	27	20	210	NA
	04/30/92	2,200	1,800	19	180	25	430	<500
	09/28/92	---------- Well Inaccessible ----------						
	11/19/92	720	120	1.1	29	13	NA	NA
	02/12/93	4,000	970	9.2	52	36	NA	NA
MW-8J	01/24/90	<100	2.7	<0.5	1	2.6	NA	<300
	04/26/90	160	28	7.7	19	24	<50	320
	07/26/90	<50	<0.5	<0.5	<0.5	<0.5	<50	<50
	10/18/90	<50	8.3	<0.5	2.6	1.5	<50	<50
	01/08/91	71	0.41	<0.3	<0.3	0.52	<50	69
	04/23/91	300	16	2.2	9.3	4.6	550	<500
	07/23/91	<50	4.6	<0.5	3.1	<0.5	<50	<500

Table 2 (continued)
Groundwater Analytical Data
Total Petroleum Hydrocarbons
(TPH as Gasoline, BTEX Compounds, TPH as Diesel, and TPH as Other*)

Former Texaco Service Station
500 Grand Avenue at Euclid Avenue
Oakland, California

Well Number	Date Sampled	TPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)	TPH as Diesel (ppb)	TPH as Other* (ppb)
MW-8J	10/24/91	<50	0.8	<0.5	<0.5	<0.5	<50	<500
(cont.)	01/23/92	<50	0.8	<0.5	<0.5	<0.5	<50	NA
	04/30/92	<50	2.3	<0.5	<0.5	<0.5	<50	<500
	09/28/92	---------- Well Inaccessible ----------						
	11/19/92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
	02/12/93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
OB-3	11/06/89	4,000	420	8	6	64	NA	NA
	04/26/90	1,000	160	19	5	8.6	3,200	<50
	07/26/90	68	<0.5	<0.5	<0.5	0.9	1,200	<50
	10/18/90	3,200	260	69	35	490	2,100	<50
OB-4	11/06/89	4,000	500	11	10	24	NA	NA
	04/26/90	460	360	10	10	18	3,900	<50
	07/26/90	200	23	3.7	1.6	5.9	1,600	<50
	10/18/90	4,300	600	540	83	840	330	<50

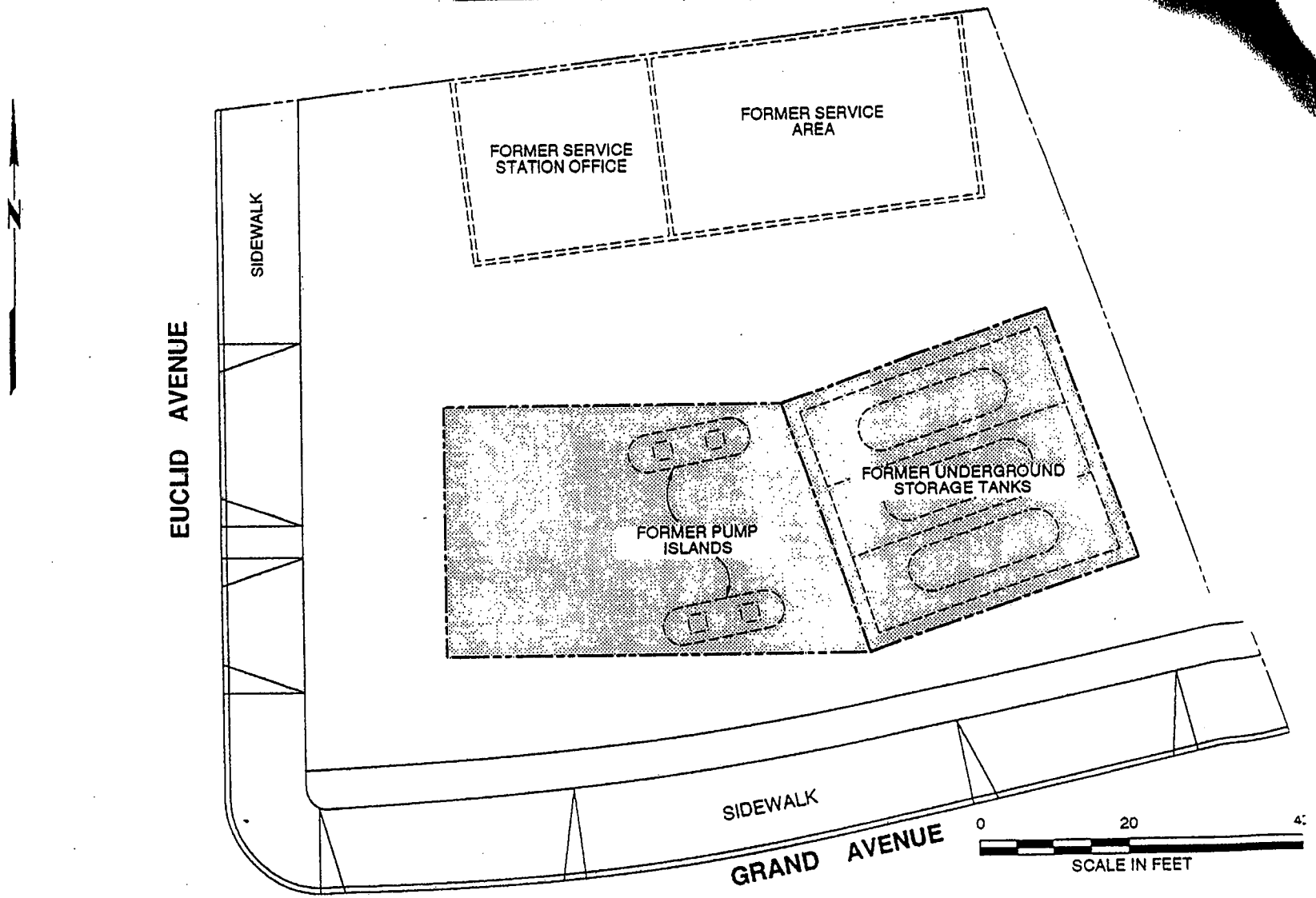
NA = Not analyzed/sample not collected
ppb = parts per billion
* = Includes "heavy" petroleum hydrocarbons such as waste oil, mineral spirits, jet fuel, or fuel oil.

CONVERSE
ENVIRONMENTAL WEST

SOIL EXCAVATION AND SOIL SAMPLING REPORT FOR FORMER TEXACO SERVICE STATION 500 GRAND AVENUE OAKLAND, CALIFORNIA

prepared for
TEXACO ENVIRONMENTAL SERVICES

March 1993



PLOT PLAN

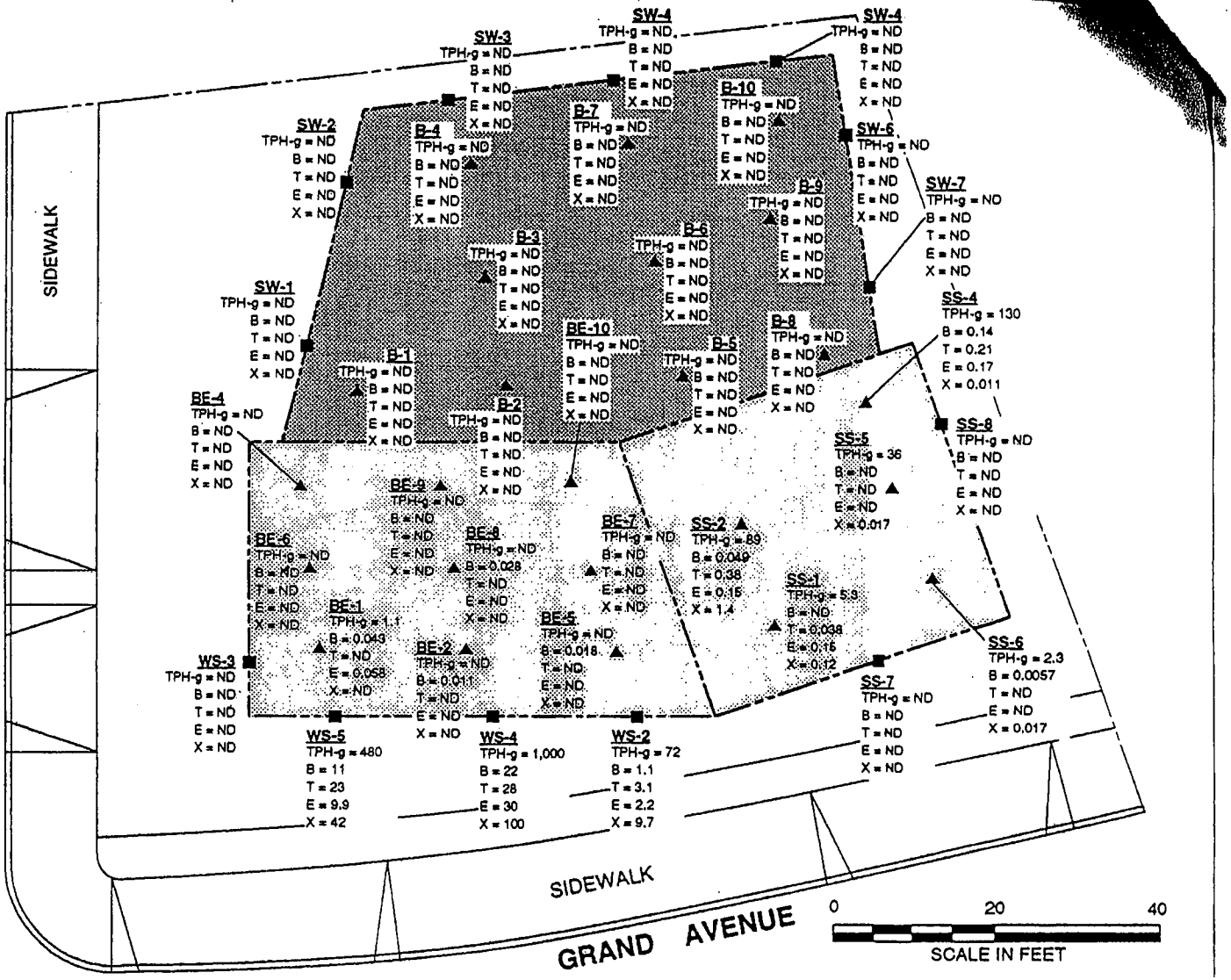
LEGEND

FORMER EXCAVATION AREAS

TEXACO OIL COMPANY
500 Grand Avenue
Oakland, California

Converse Environmental West

Scale	AS SHOWN
Prepared by	TNW
Checked by	GLM
Approved by	PAF
Project No.	93-44-[illegible]97-02
Date	3/1[illegible]/93
Drawing No.	2



LEGEND

- ▲ PIT SAMPLE LOCATION
- ■ SIDEWALL SAMPLE LOCATION
- TPH-g = TOTAL PETROLEUM HYDROCARBONS AS GASOLINE (in milligrams per kilogram)
- B = BENZENE (in milligrams per kilogram)
- T = TOLUENE (in milligrams per kilogram)
- E = ETHYLBENZENE (in milligrams per kilogram)
- X = XYLENES (in milligrams per kilogram)
- ND = NOT DETECTED AT METHOD DETECTION LIMIT
- EXCAVATIONS (April/May 1992)
- EXCAVATION (January 1993)

PLAN: EXCAVATION LIMITS, SAMPLE LOCATIONS and ANALYTICAL RESULTS

TEXACO OIL COMPANY
500 Grand Avenue
Oakland, California

Converse Environmental West

Scale	AS SHOWN
Project No.	93-44-197-02
Prepared by	TNW
Date	3/11/93
Checked by	GLM
Drawing No.	3
Approved by	PAF

TABLE 1. SOIL ANALYTICAL RESULTS - EXCAVATION

Former Texaco Service Station
500 Grand Avenue
Oakland, California

Sample I.D.	Type	TPH-g (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)
SW-1	Sidewall	ND(1)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
SW-2	Sidewall	ND(1)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
SW-3	Sidewall	ND(1)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
SW-4	Sidewall	ND(1)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
SW-5	Sidewall	ND(1)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
SW-6	Sidewall	ND(1)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
SW-7	Sidewall	ND(1)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
B-1	Pit Bottom	ND(1)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
B-2	Pit Bottom	ND(1)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
B-3	Pit Bottom	ND(1)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
B-4	Pit Bottom	ND(1)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
B-5	Pit Bottom	ND(1)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
B-6	Pit Bottom	ND(1)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
B-7	Pit Bottom	ND(1)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
B-8	Pit Bottom	ND(1)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
B-9	Pit Bottom	ND(1)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)
B-10	Pit Bottom	ND(1)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)

NOTES:
ND Not detected. Detection limits in parentheses
mg/kg Milligrams per kilogram

TABLE 2. SOIL ANALYTICAL RESULTS - STOCKPILE (Preliminary Composites)

Former Texaco Service Station
500 Grand Avenue
Oakland, California

Sample Numbers	Sample I.D.	TPH (mg/kg)	TPH-gas (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Xylenes (mg/kg)	Soluble Lead (mg/L)
1A, 1B, 1C, 1D	Composite #1	20	3.5	ND(0.005)	ND(0.005)	0.006	0.040	0.3
2A, 2B, 2C, 2D	Composite #2	50	ND(1)	ND(0.005)	ND(0.005)	ND(0.005)	ND(0.005)	0.4
3A, 3B, 3C, 3D	Composite #3	60	5.4	ND(0.005)	ND(0.005)	ND(0.005)	0.011	0.3
4A, 4B, 4C, 4D	Composite #4	70	3.6	ND(0.005)	ND(0.005)	ND(0.005)	0.030	0.3
5A, 5B, 5C, 5D	Composite #5	30	6.3	0.010	ND(0.005)	ND(0.005)	0.10	0.4

TPH Total petroleum hydrocarbons
ND Not detected. Detection limits in parentheses

TABLE 3. SOIL ANALYTICAL RESULTS - STOCKPILE
Final Composite

Former Texaco Service Station
500 Grand Avenue
Oakland, California

Sample I.D.	Priority Pollutant Volatile Organics (mg/kg)	Semi-Volatile Priority Pollutants (mg/kg)	Flash Point	pH	Cyanide (mg/kg)	Sulfide (mg/kg)
#6, #7, #8, #10	ND[1]	ND[2]	>200°F	6.0	ND[3]	ND[4]

NOTES:

* All the sample IDs refer to single composite made from composite sample 1, 2, 3, 4, and 5
ND[1] Compounds not detected at detection limits ranging from 0.1 to 0.005 mg/kg
ND[2] Compounds not detected at detection limits ranging from 1 to 0.05 mg/kg
ND[3] Compound not detected at detection limit of 0.5 mg/kg
ND[4] Compound not detected at detection limit of 0.1 mg/kg

TABLE 4. SOIL ANALYTICAL RESULTS - STOCKPILE
Final Composite Metals
Composite Sample #9 and #10*

Former Texaco Service Station
500 Grand Avenue
Oakland, California

Title 22 Metals	Units	Results
Antimony	mg/kg	ND(0.5)
Arsenic	mg/kg	2.6
Barium	mg/kg	110
Beryllium	mg/kg	0.7
Cadmium	mg/kg	ND(0.5)
Chromium	mg/kg	48
Chromium (H)	mg/kg	ND(50)
Cobalt	mg/kg	17
Copper	mg/kg	27
Lead	mg/kg	4.4
Lead (O)	mg/kg	ND(0.1)
Mercury	mg/kg	0.10
Nickel	mg/kg	65
Molybdenum	mg/kg	ND(3)
Selenium	mg/kg	ND(0.5)
Silver	mg/kg	1.0
Thallium	mg/kg	ND(3)
Vanadium	mg/kg	48
Zinc	mg/kg	61

* Composite samples #9 and #10 are both composited from composite sample 1, 2, 3, 4, and 5
(H) Hexavalent
(O) Organic
ND Not detected. Detection limits in parentheses

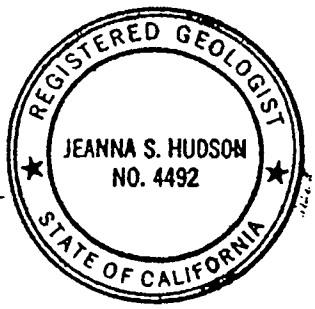
A Report Prepared for

Texaco Refining and Marketing, Inc.
10 Universal City Plaza
Universal City, California 91608

QUARTERLY TECHNICAL REPORT
SECOND QUARTER OF 1992
FORMER SERVICE STATION
500 GRAND AVENUE
OAKLAND, CALIFORNIA

HLA Job No. 10262.169
September 10, 1992
1992 Report No. 2

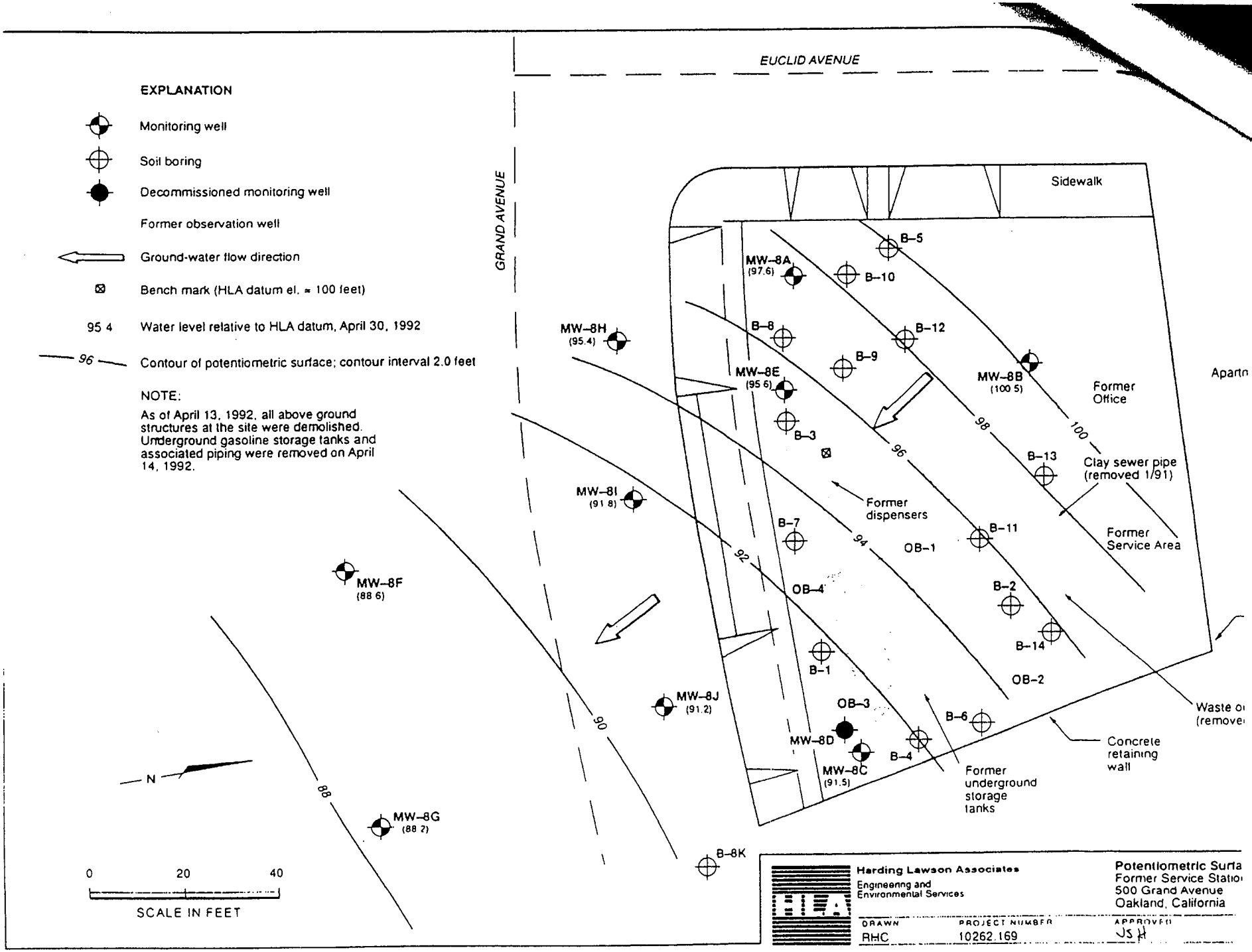
by

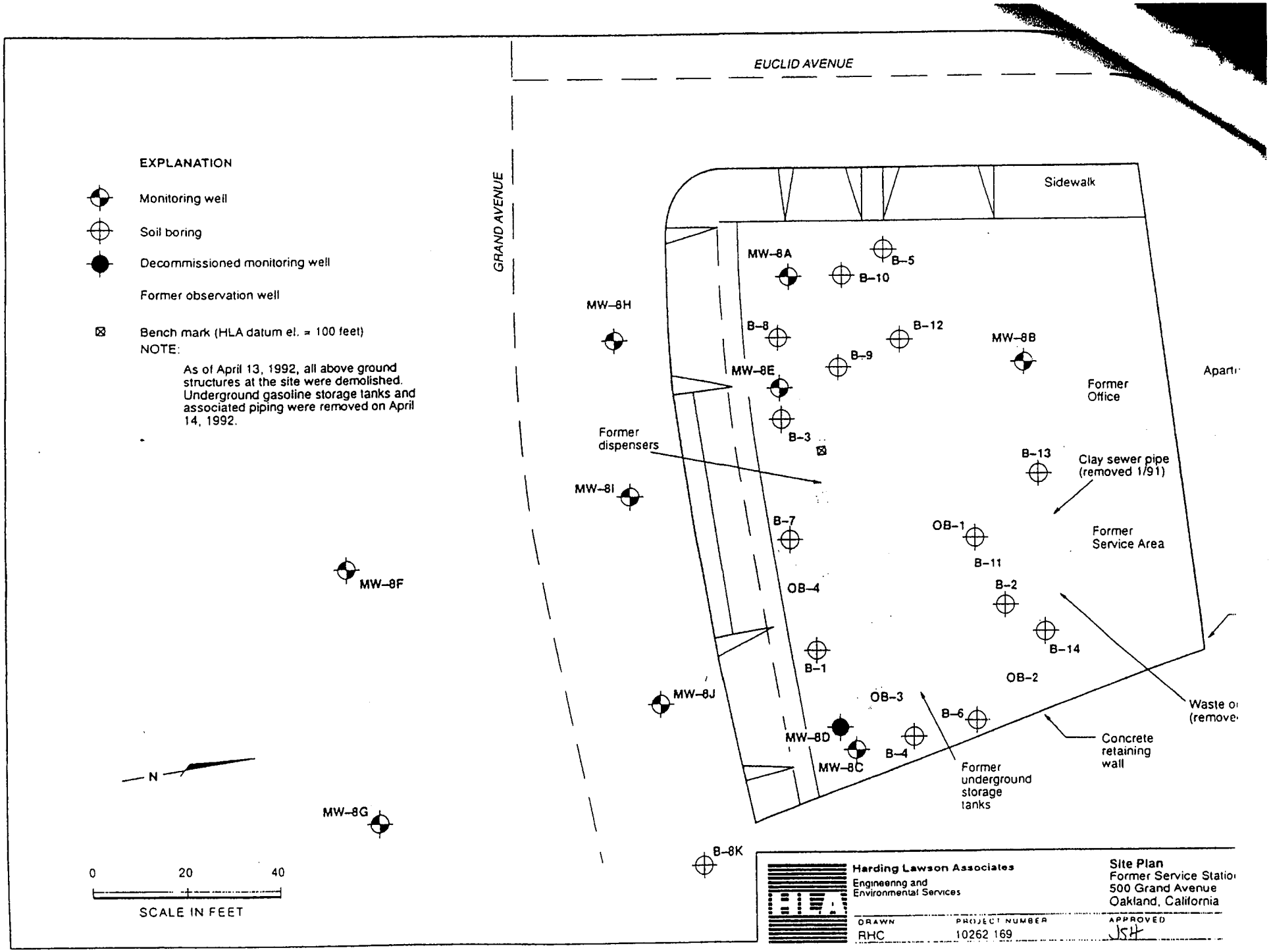


Jeanna S. Hudson
Registered Geologist

Christian P. Muller
Associate Engineer

Harding Lawson Associates
1355 Willow Way, Suite 109
Concord, California 94520
510/687-9660


EXPLANATION
Monitoring well
Soil boring
Decommissioned monitoring well
Former observation well
Ground-water flow direction
Bench mark (HLA datum el. = 100 feet)
95 4 Water level relative to HLA datum, April 30, 1992
96 Contour of potentiometric surface; contour interval 2.0 feet
NOTE:
As of April 13, 1992, all above ground structures at the site were demolished. Underground gasoline storage tanks and associated piping were removed on April 14, 1992.
EUCLID AVENUE
GRAND AVENUE
Sidewalk
MW-8A (97.6)
MW-8H (95.4)
MW-8E (95 6)
MW-8B (100 5)
MW-8I (91 8)
MW-8F (88 6)
MW-8J (91.2)
MW-8D
MW-8C (91.5)
MW-8G (88 2)
B-8K
B-5
B-10
B-8
B-12
B-9
B-3
B-13
B-7
B-11
OB-1
OB-4
B-2
B-14
B-1
OB-2
OB-3
B-6
B-4
Former Office
Clay sewer pipe (removed 1/91)
Former dispensers
Former Service Area
Former underground storage tanks
Concrete retaining wall
Waste o
(remove
Aparti
98
100
96
94
92
90
88
N
0
20
40
SCALE IN FEET
Harding Lawson Associates
Engineering and Environmental Services
Potentiometric Surfa
Former Service Statio
500 Grand Avenue
Oakland, California
DRAWN
RHC
PROJECT NUMBER
10262.169
APPROVED
JSH


EUCLID AVENUE
GRAND AVENUE
Sidewalk
EXPLANATION
Monitoring well
Soil boring
Decommissioned monitoring well
Former observation well
Bench mark (HLA datum el. = 100 feet)
NOTE:
As of April 13, 1992, all above ground structures at the site were demolished. Underground gasoline storage tanks and associated piping were removed on April 14, 1992.
MW-8A
B-5
B-10
MW-8H
B-8
B-12
MW-8B
B-9
MW-8E
Former Office
B-3
Former dispensers
B-13
Clay sewer pipe (removed 1/91)
MW-8I
B-7
OB-1
Former Service Area
B-11
MW-8F
OB-4
B-2
B-14
B-1
OB-2
MW-8J
OB-3
B-6
Waste o
(remove
MW-8D
B-4
Concrete retaining wall
MW-8C
Former underground storage tanks
N
MW-8G
B-8K
0
20
40
SCALE IN FEET
Harding Lawson Associates
Engineering and Environmental Services
Site Plan
Former Service Statio
500 Grand Avenue
Oakland, California
DRAWN
RHC
PROJECT NUMBER
10262 169
APPROVED
JSH

EXPLANATION

— — Approximate boundary of excavation at the time of tank removal (April 14 and 15, 1992)

△ Soil sample (SS) from bottom of tank excavation (approximately 10 feet below grade)

□ Soil sample (SS) from wall of tank excavation (5 to 10 feet below grade)

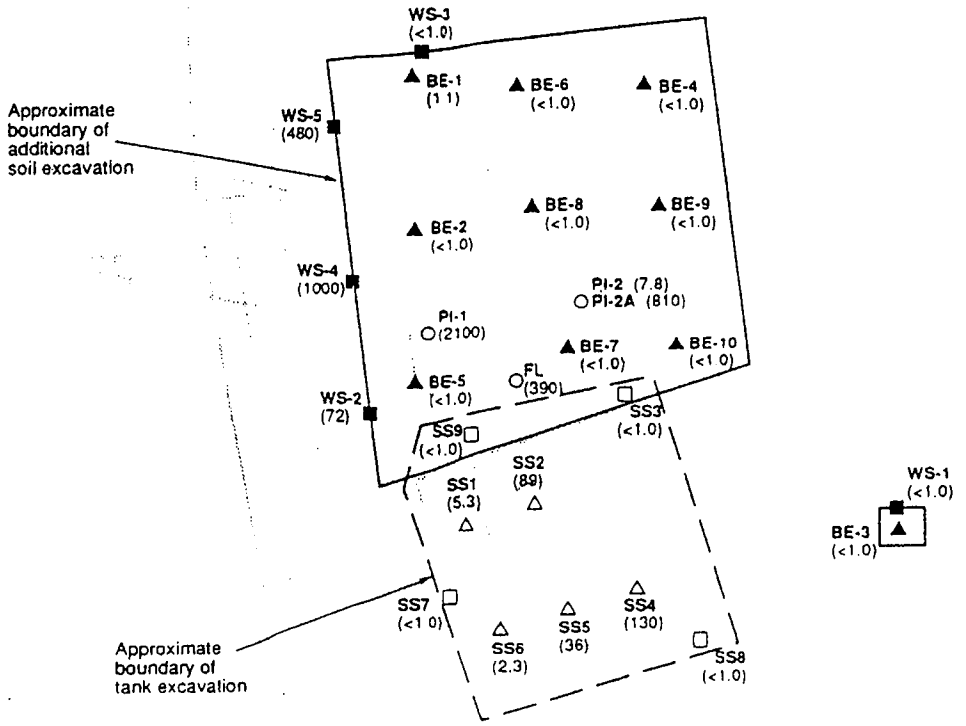
——— Approximate boundary of soil excavation (May 5 and 6, 1992)

○ Soil sample from pump island (PI) of fuel line (FL) prior to excavation (5 to 6 feet below grade)

▲ Soil sample (BE) from bottom of evcavation (4.5 to 9 feet below grade)

■ Soil sample (WS) from wall of excavation (5 to 7.5 feet below grade)

(2.3) Total petroleum hydrocarbons as gasoline, in mg/kg (ppm)



N

0 20 40

SCALE IN FEET

Harding Lawson Associates
Engineering and Environmental Services

Locations Sampled D
Excavation Operation
Former Service Station
500 Grand Avenue
Oakland, California

DRAWN SRG | JOB NUMBER 10262 169 | APPROVED

Table 1. Results of Soil Sample Analyses
(concentrations in mg/kg [ppm])

Boring/ Well Number	Sample Depth (feet)	Benzene	Toluene	Ethyl-benzene	Xylenes	TPH as Gasoline	TPH as Diesel	TPH Other**
B-1	6.5	ND	ND	ND	ND	12	NA	
B-3	4.0	ND	ND	ND	5	520	NA	
B-4	3.5	ND	1	3.5	13	510	NA	
B-5	5.5	ND	ND	ND	ND	<10	NA	
B-5	10.5	ND	ND	ND	ND	ND	NA	
B-5	16.0	ND	ND	ND	ND	ND	NA	
B-6	2.0	ND	0.08	ND	ND	1.0	<100*	<100*
B-6	4.5	ND	0.09	ND	ND	ND	<10	<10
B-7	3.0	ND	6.7	5.1	50	580	<100*	<100*
B-8	2.0	0.05	ND	ND	0.34	3.4	<10	<10
B-9	2.5	0.05	0.32	0.81	6.4	100	460	<100*
B-8K	1.5	ND	ND	ND	ND	2.1		ND
	3.0	ND	0.05	ND	ND	6.6		ND
	5.5	ND	ND	0.08	0.05	84		20
B-10	1.5	0.28	ND	0.20	0.18	8.4		ND
	2.5	0.09	ND	ND	ND	ND		ND
	5.5	ND	ND	ND	ND	ND		ND
	8.5	ND	ND	ND	ND	ND		ND
B-11	1.5	ND	ND	5.4	1.6	2,900		30
	2.5	ND	ND	0.31	0.12	62		11
	5.5	ND	ND	0.06	ND	17		ND
	8.5	ND	ND	ND	ND	ND		ND
B-12	1.0	0.22	0.11	0.18	0.42	13		ND
	2.5	ND	ND	0.19	0.83	49		ND
	4.5	ND	ND	1.27	0.67	1,200		94
	6.0	ND	0.06	ND	ND	ND		ND
B-13	1.5	ND	ND	ND	ND	ND	ND	ND
	2.5	ND	ND	1.7	5.4	130	ND	1,000
	3.5	ND	0.06	0.06	0.30	26	ND	250
B-14	1.5	ND	ND	ND	ND	4.8	ND	85
	3.5	ND	ND	ND	ND	2.3	ND	62
MW-8D	1.3	ND	0.40	ND	0.50	10	NA	
MW-8E	5.5	0.82	6.5	5.5	26	750	NA	
MW-8F	11.0	ND	ND	ND	ND	ND	NA	
MW-8G	6.0	ND	ND	ND	ND	ND	NA	
MW-8H	1.5	ND	0.07	ND	ND	ND		ND
	3.0	ND	0.24	ND	ND	2.6		ND
	5.5	ND	ND	0.30	0.83	550		66
	10.5	ND	ND	ND	ND	ND		ND
MW-8I	1.5	0.10	ND	ND	ND	3.0		ND
	3.5	0.06	ND	ND	0.02	ND		ND
	5.5	ND	ND	2.7	9.2	280		ND
	10.5	ND	ND	ND	ND	ND		ND
MW-8J	1.5	0.18	0.09	0.06	0.05	24		ND
	3.0	0.08	0.14	0.04	ND	13		33
	5.5	ND	ND	25	9.2	2,100		83
	10.5	ND	0.02	ND	ND	8		ND

ND = Not detected
NA = Not analyzed
* Laboratory increased reporting limits because of matrix interference.
** "Heavy" petroleum hydrocarbons such as waste oil, mineral spirits, jet fuel, or fuel oil.

Table 2. Summary of Chemical Analyses Soil Sample B-13
(2.5 feet deep)

Semi-volatile Organics; EPA Test Method 8270

- Analyses for 55 semi-volatile organic compounds
- Results were below reporting limit on all except:

Naphthalene	0.90 ppm
2 Methylnapthalene	1.40 ppm
Bis (2-ethylhexyl) phthalate	0.26 ppm

Halogenated Volatile Organics; EPA Test Method 8010

- Analyses for 29 compounds
- Results were below reporting limits on all except:

Trichloroethane	0.06 ppm

Total Oil and Grease (IR); EPA Test Method 413.2 — 5600 ppm

Selected heavy metals - EPA Test Method 6010

Cadmium	Below reporting limit
Chromium	36 ppm
Lead	Below reporting limit
Zinc	41 ppm

Table 5. Results of Analyses on Soil Samples
from Tank Excavation and Dispenser Islands
500 Grand Avenue
Oakland, California

Results Presented in mg/kg (ppm)

Sample I.D.*	Date	Benzene	Toluene	Ethyl benzene	Xylenes	TPH as gasoline	Total Oil and Grease
SS1/10-B	04/14/92	<0.005	0.038	0.016	0.12	5.3	--
SS2/10-B	04/14/92	0.049	0.38	0.15	1.4	89	--
SS3/ 5-W	04/14/92	<0.005	<0.005	<0.005	0.011	<1.0	--
SS4/10-B	04/14/92	0.14	0.21	0.17	1.1	130	--
SS5/10-B	04/14/92	0.20	0.028	0.040	0.15	36	--
SS6/10-B	04/14/92	0.0057	<0.005	<0.005	0.017	2.3	--
SS7/ 5-W	04/14/92	<0.005	<0.005	<0.005	<0.005	<1.0	--
SS8/ 5-W	04/14/92	<0.005	<0.005	<0.005	<0.005	<1.0	--
SS9/ 5-W	04/14/92	0.0069	<0.005	<0.005	<0.005	<1.0	--
PI-1/5	04/15/92	11	60	32	180	2,100	190
PI-2/5	04/15/92	0.019	0.013	0.035	0.077	7.8	30
PI-2A/6	04/15/92	1.3	1.1	2.0	11	810	6,900
Fuel Line/5	04/15/92	0.92	2.9	3.6	21	390	36

* Sample I.D. contains the following components: SS1 = sample name
10 = depth of sample in feet
B = bottom of excavation
W = sidewall of excavation

Table 6. Results of Analyses on Soil Samples
from Site Excavation
500 Grand Avenue
Oakland, California

Results Presented in mg/kg (ppm)

Sample I.D.*	Date	Benzene	Toluene	Ethyl benzene	Xylenes	TPH as Gasoline
BE-1-8.0	05/05/92	0.043	<0.005	0.058	<0.005	1.1
BE-2-8.0	05/05/92	0.011	<0.005	<0.005	<0.005	<1.0
BE-3-4.0	05/05/92	<0.005	<0.005	<0.005	<0.005	<1.0
BE-4-4.5	05/05/92	<0.005	<0.005	<0.005	<0.005	<1.0
BE-5-7.5	05/05/92	0.018	<0.005	<0.005	<0.005	<1.0
BE-6-7.5	05/05/92	<0.005	<0.005	<0.005	<0.005	<1.0
BE-7-8.0	05/05/92	<0.005	<0.005	<0.005	<0.005	<1.0
BE-8-8.0	05/05/92	0.028	<0.005	<0.005	<0.005	<1.0
BE-9-9.0	05/05/92	<0.005	<0.005	<0.005	<0.005	<1.0
BE-10-9.0	05/05/92	<0.005	<0.005	<0.005	<0.005	<1.0
WS-1-3.0	05/05/92	<0.005	<0.005	<0.005	<0.005	<1.0
WS-2-5.0	05/05/92	1.1	3.1	2.2	9.7	72
WS-3-7.5	05/05/92	<0.005	<0.005	<0.005	<0.005	<1.0
WS-4-5.0	05/05/92	22	28	30	100	1,000
WS-5-5.0	05/05/92	11	23	9.9	42	480

* Sample I.D. contains the following components:

BE-1	= Sample name
8.0	= Sample depth (in feet)
BE	= Bottom of excavation
WS	= Wall of excavation

January 31, 1991
Revised February 12, 1991

2251,114.03

Texaco Refining and Marketing, Inc.
108 Cutting Boulevard
Richmond, California 94804

Attention: Mr. Ron Zielinski

Gentlemen:

Results of Pipe Excavation and
Recent Groundwater Analyses
Former Texaco Service Station
500 Grand Avenue
Oakland, California

INTRODUCTION

Harding Lawson Associates (HLA) presents this summary of work performed for Texaco Refining and Marketing, Inc. (Texaco) at 500 Grand Avenue in Oakland, California. This letter summarizes the results of soil and water analyses obtained as a result of the excavation and removal of a clay pipe at the site. In addition, laboratory results from the most recent groundwater sampling are presented. With respect to this recently obtained information, it is our opinion that Texaco should re-evaluate plans for installing additional monitoring well(s) at the site.

PROJECT HISTORY

The subject location is a former Texaco service station which is now operated by Exxon Company, USA (Exxon). Since 1988, HLA has conducted soil and groundwater investigations at the site on behalf of Texaco. Results of those investigations are presented in the following documents:

- Environmental Assessment Report, September 22, 1989
- Interim Remedial Plan, December 7, 1990
- Quarterly Technical Reports

In June 1990, waste oil was discovered in the backfill around the waste oil tank as workers prepared to install overfill containment devices for Exxon. Mr. Gil Wistar, of the Alameda County Department of Environmental Health, recommended on July 17, 1990 that the waste oil tank be removed and that the contaminated soil around the tank be excavated. He also recommended that at least one monitoring well be installed downgradient of the former waste oil tank after all contaminated soil had been removed.

Exxon arranged for a general contractor to pull the tank on September 25, 1990. Representatives of Exxon, HLA, the Alameda County Department of Environmental Health (Gil Wistar), and the Oakland Fire Department were present. Fluids were pumped from the excavation, the tank was pulled, and contaminated soil was overexcavated.

During the process of overexcavating, two clay pipes were discovered approximately 1.5 foot below grade in the northwest and northeast corners of the excavation. The pipes appeared to have petroleum hydrocarbon products in them. A verbal request was made by Mr. Wistar that the clay pipes be excavated and that Texaco afterwards proceed with installation of the monitoring well(s). Mr. Wistar also requested removal of the clay pipes in written correspondence dated October 25, 1990.

RECENT WORK

Clay Pipe Excavation

On behalf of Texaco, HLA arranged to have the clay pipes removed and the soil overexcavated on January 8, 1991. A trench approximately 15 feet long, 2.5 feet wide, and 4.5 feet deep was excavated on the west side of the former tank location (Plate 1).

Two water samples and four soil samples were obtained. A small excavation was made on the east side of the former tank location and one additional soil sample was collected.

The clay pipe on the west side of the former waste oil tank was intact for approximately 10 feet. However, in the area where the pipe crossed under a utility trench, the pipe was crushed (Plate 1). Pieces of clay pipe were found around the utility

cluster, suggesting that the clay line may have been broken during installation of the utilities. A utilities locater determined that the remainder of the pipe runs under the corner of the building and toward Euclid Avenue, where it apparently terminates on-site.

Water in the clay pipe and surrounding trench backfill was analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX) and total petroleum hydrocarbons (TPH) as gasoline, as diesel fuel, and as motor oil. The water sample collected nearest the former waste oil tank (EP-01) contained the highest concentrations of TPH, as shown in Table 1. Results of laboratory analyses indicate 100,000 parts per billion (ppb) TPH as motor oil in water sample EP-01 and 17,000 ppb TPH as motor oil in water sample WP-01, which was collected from the backfill in the western end of the excavation.

Results of soil analyses are shown in Table 2. In general, soil samples contained less than 100 parts per million (ppm) TPH as gasoline, less than 200 ppm TPH as diesel fuel, and less than 700 ppm total oil and grease. Three soil samples from the excavation were analyzed for chlorinated hydrocarbons, and all three contained non-detectable concentrations of the 28 compounds analyzed.

On January 8, Mr. Wistar requested that the excavation be continued up to the door of the first service bay. On January 9 and 10, HLA completed the required soil removal, removed water from the trench, completed sampling, and began to backfill the excavation.

Quarterly Groundwater Sampling

Concurrent with the excavation work, HLA conducted quarterly groundwater sampling of four on-site and five off-site monitoring wells. The samples were analyzed for BTEX and TPH as gasoline, as diesel fuel, and as motor oil (Table 3). As Table 3 indicates, heavy hydrocarbons other than diesel fuel were detected in some of the past groundwater analyses. The samples collected on January 8 were analyzed specifically for TPH as motor oil, and analytical results indicate that all of the samples contained heavy hydrocarbons identified as motor oil. Groundwater concentrations range from 69 ppb in MW-8J to 620 ppb in MW-8F (Plate 1).

DISCUSSION

The recent excavations of the waste oil tank and the clay pipe have lead to the following observations and conclusions:

- The waste oil tank appeared in tact, but the tank backfill contained hydrocarbon-bearing water
- The clay line discovered during excavation of the waste oil tank is associated with hydrocarbon-bearing water, both in the fractured pipe and in the surrounding trench backfill
- The water sample collected closest to the former waste oil tank contained the highest concentrations of TPH as motor oil
- Other utility trenches on-site may have provided preferential flow paths for hydrocarbon-bearing water, given the relative impermeability of near surface strata

In addition, recent analytical results indicate that heavy hydrocarbons are present in groundwater from all of the monitoring wells, both on-site and off-site. It is likely that one source of the heavy hydrocarbons was near the former waste oil tank.

HLA believes that a monitoring well drilled immediately downgradient of the former waste oil tank is unnecessary because:

- Water samples from existing monitoring wells indicate that heavy hydrocarbons are widespread in groundwater, both on-site and off-site.
- The available space for downgradient monitoring well(s) is limited; any such well would have to be very carefully located between the main tank field backfill and the backfill of the former waste oil tank excavation.

HLA has tentatively scheduled the drilling for February 19, 1990. We will proceed with obtaining permits and planning the

work, pending notification from Texaco that the work is still deemed necessary. Please contact the undersigned if you have questions regarding this matter.

We are pleased to be of continued service to Texaco Refining and Marketing, Inc.

Sincerely,

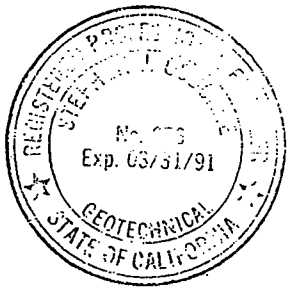
HARDING LAWSON ASSOCIATES

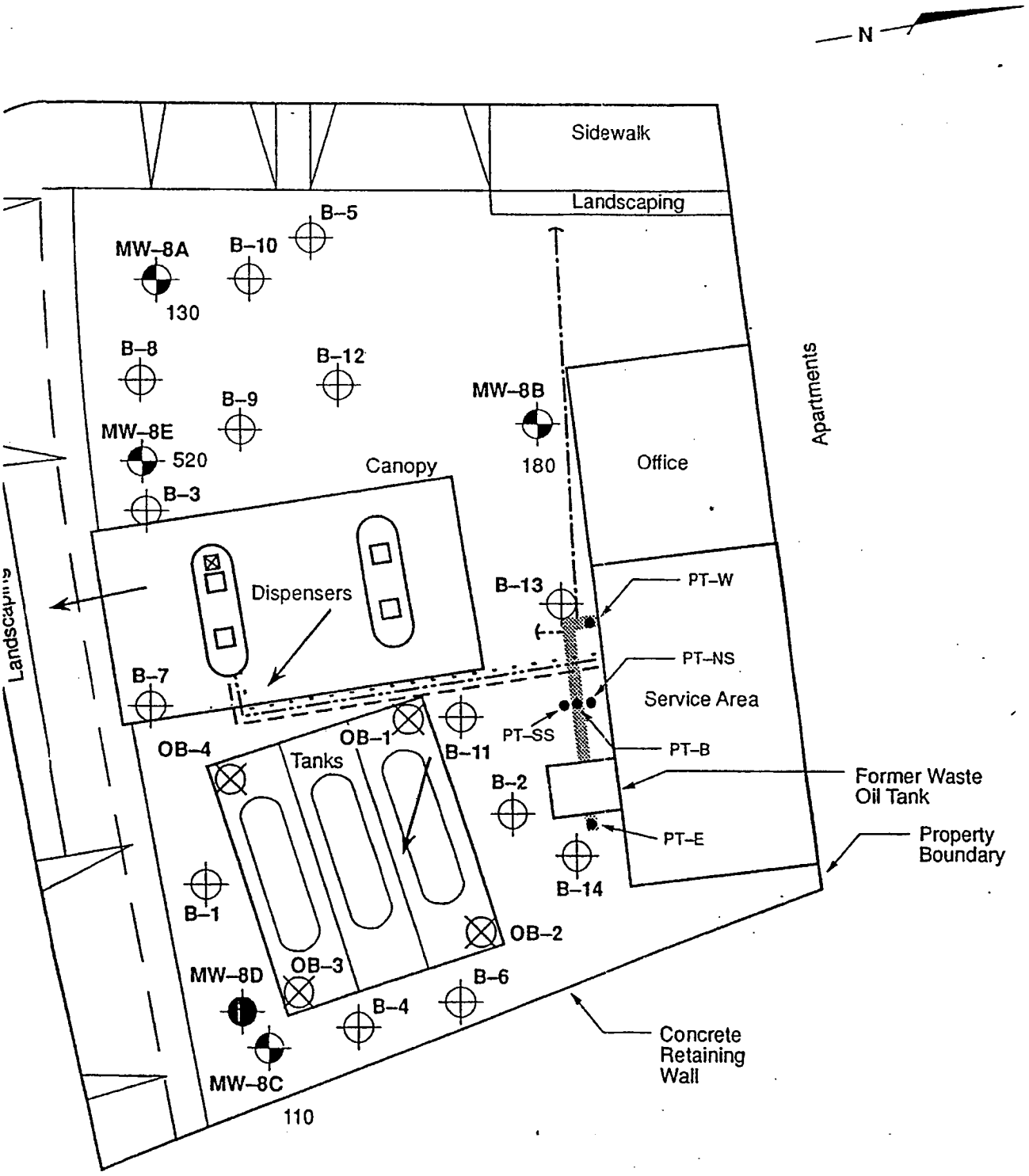
Jeanna S. Hudson
Senior Geologist

Stephen J. Osborne
Geotechnical Engineer

JSH/SJO/mlw 031447B/L28

Attachments: Tables 1, 2 and 3





Harding Lawson Associates
Engineering and
Environmental Services

Site Plan Showing TPH as Motor Oil Concentrations in Groundwater
Former Texaco Station
500 Grand Avenue
Oakland, California

PLATE
1

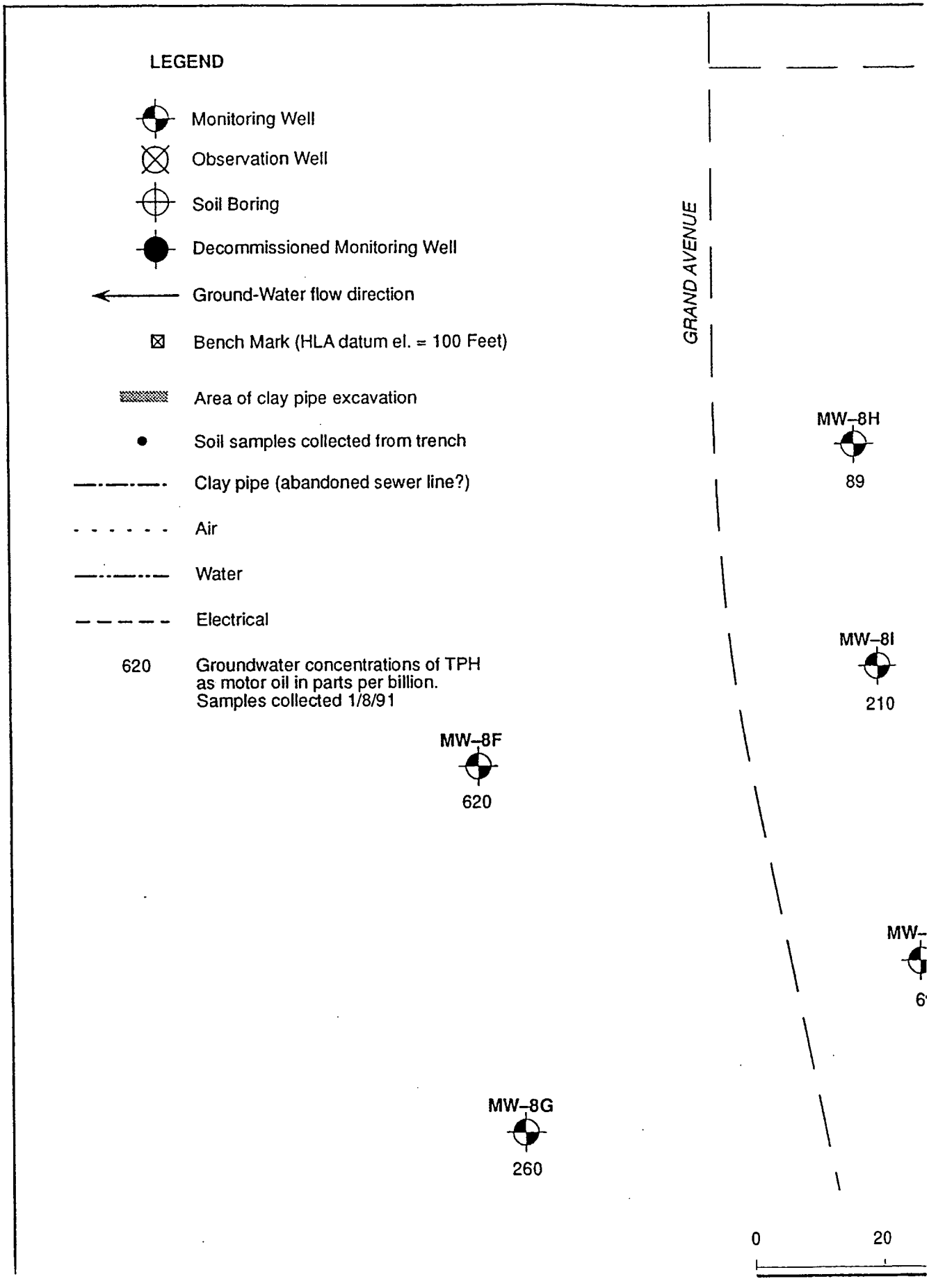

LEGEND
Monitoring Well
Observation Well
Soil Boring
Decommissioned Monitoring Well
Ground-Water flow direction
Bench Mark (HLA datum el. = 100 Feet)
Area of clay pipe excavation
Soil samples collected from trench
Clay pipe (abandoned sewer line?)
Air
Water
Electrical
620
Groundwater concentrations of TPH as motor oil in parts per billion. Samples collected 1/8/91
GRAND AVENUE
MW-8H
89
MW-8I
210
MW-8F
620
MW-
6
MW-8G
260
0
20

Table 1. Results of Analyses of Excavation Water
(concentrations in parts per billion [ppb])

Sample	Depth (feet)	Benzene	Toluene	Ethyl-benzene	Xylenes	TPH as Gasoline	TPH as Diesel	TPH as Motor Oil	Total oil and Grease	Chlorinated Hydrocarbons
EP-01	west trench, east end	280	300	120	860	5,200	31,000	100,000	NA	NA
WP-01	west trench, west end	320	73	95	48	3,900	13,000	17,000	NA	NA

Table 2. Results of Soil Analyses from Pipe Excavation
(concentrations in parts per million [ppm])

Sample	Depth (feet)	Benzene	Toluene	Ethyl-benzene	Xylenes	TPH as Gasoline	TPH as Diesel	TPH as Motor Oil	Total oil and Grease	Chlorinated Hydrocarbons
PT-NS-7.5	2.5	0.020	ND	0.055	0.13	22	28	330	110	ND on all
PT-B-7.5	4.5	ND	ND	ND	ND	5.7	8.1	93	150	ND on all
PT-SS-7.5	2.5	0.071	0.071	0.30	0.63	100	17	160	630	ND on all
PT-E-1.5	1.5	<0.005	<0.005	<0.005	<0.005	1.1	110	NA	780	NA
PT-W-1.5	1.5	<0.005	0.014	<0.005	0.024	3.8	190	NA	370	NA

NA = Compounds not analyzed
ND = Concentrations were below the detectable limit

Harding Lawson Associates

November 8, 1990

HLA Job No. 04167,352.03
Exxon Job No. 90112204

Exxon Company, USA
2300 Clayton Road, Suite 1250
Concord, California 94542-2032

Attention: Ms. Jo Beth Folger

Dear Ms. Folger:

Soil and Groundwater Sampling
During Waste Oil Tank Removal
Exxon Service Station
500 Grand Avenue
Oakland, California

Harding Lawson Associates (HLA) is pleased to present this summary of work performed for Exxon Company USA (Exxon) at the Exxon Service Station, 500 Grand Avenue, Oakland, California. HLA was retained by Exxon on August 15, 1990 to provide soil and water sampling in association with the removal of the waste oil tank at the site. HLA is presently providing remedial engineering services at this service station for Texaco Refining and Marketing Inc., previous lessee of the site.

In June 1990, free product was discovered in the backfill around the waste oil tank as workers prepared to install overfill containment devices. Mr. Gil Wistar, of the Alameda County Department of Environmental Health, recommended on July 17, 1990, that the waste oil tank be removed and that the contaminated soil around the tank be excavated.

Exxon arranged for a general contractor to pull the tank on September 25, 1990. Representatives of Exxon, HLA, the Alameda County Department of Environmental Health, and the Oakland Fire Department were present. The single wall fiberglass tank, approximately 6.5 feet long and 4.5 feet in diameter, had no apparent cracks or points of leakage when it was removed from the excavation. Exxon arranged for the off-hauling of the tank, as well as for the disposal of soil and water as hazardous

materials. Exxon provided the Hazardous Waste Manifest for the disposal.

The excavated area was approximately 8 feet deep, 7.5 feet wide, and 9.5 feet long (Plates 1 and 2). The excavation contained about 6.5 feet of liquids consisting of a 1/8 inch layer of waste oil floating on discolored water. One water sample, W.O.T. #1, was collected prior to pumping the liquids out of the excavation. The water was analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX), total petroleum hydrocarbons (TPH) as gasoline, TPH as diesel fuel, oil and grease, and chlorinated hydrocarbons (Table 1). The number of soil and water samples taken and the analyses performed on each sample were approved by Mr. Wistar prior to sample collection. The chemical analyses were performed by Mobile Chem Labs, Inc. in Martinez, California.

Four soil samples (W.O. #2 through W.O. #5) were collected and analyzed for the compounds mentioned above (Table 2). The four samples were taken from approximately 1.5 feet below grade on the walls of the excavation (W.O. #2 and W.O. #5 from the south wall, W.O. #4 from the east wall, and W.O. #3 from the west wall, Plate 2).

The excavation was secured until laboratory analyses of soil samples could be obtained. Oil and grease content of the soil samples ranged from 100 parts per million (ppm) in W.O. #5 to 2,600 ppm in W.O. #3. Mr. Wistar requested additional excavation on the west wall where the soil sample with the highest oil and grease content was collected (Plate 2).

On October 3, 1990 overexcavation of the west wall was conducted while keeping a safe distance from known utilities. The upper three feet of the west wall were excavated three feet further westward. Three additional soil samples were collected at that time. Sample W.O. #7 was collected at 1.5 feet below grade on the west wall and W.O. #6 was collected approximately 0.5 foot below W.O. #7. Sample W.O. #8 was collected from the bottom of the excavation on the south side. Samples W.O. #6 and W.O. #7 contained 100 ppm and 850 ppm oil and grease, respectively. Sample W.O. #8 was analyzed for BTEX, TPH as gasoline, TPH as diesel fuel, and oil and grease. Only 0.016 ppm toluene were detected. According the Exxon, the excavation was backfilled and compacted on October 8, 1990.

On September 25, 1990 two clay pipes were discovered approximately 1.5 feet below grade in the northwest and northeast corners of the excavation. Mr. Gil Wistar, of the Alameda County Department of Environmental Health, verbally requested that the clay pipes be excavated in the near future. HLA is currently arranging the excavation of the pipes, and overexcavation and disposal of soil containing oil and grease.

Please contact us if you have questions regarding the work described in this summary. We appreciate the opportunity to be of service to Exxon.

Yours very truly,

HARDING LAWSON ASSOCIATES

Jeanna S. Hudson
Senior Geologist

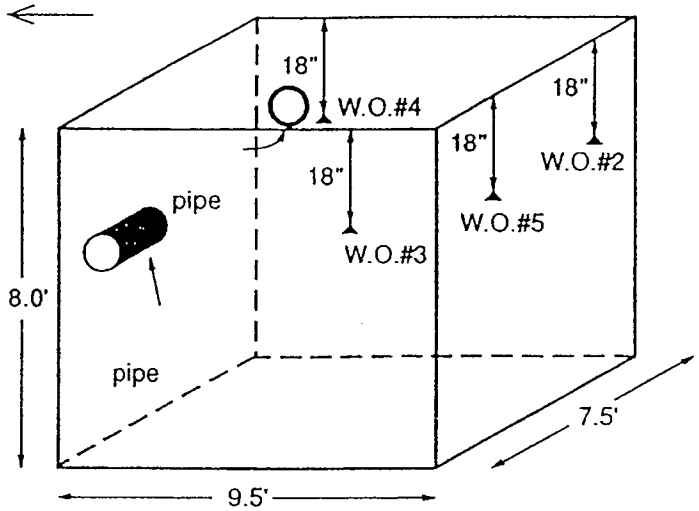
Randolph Stone
Associate Hydrogeologist

JSH/RS/bb 031348D/L27

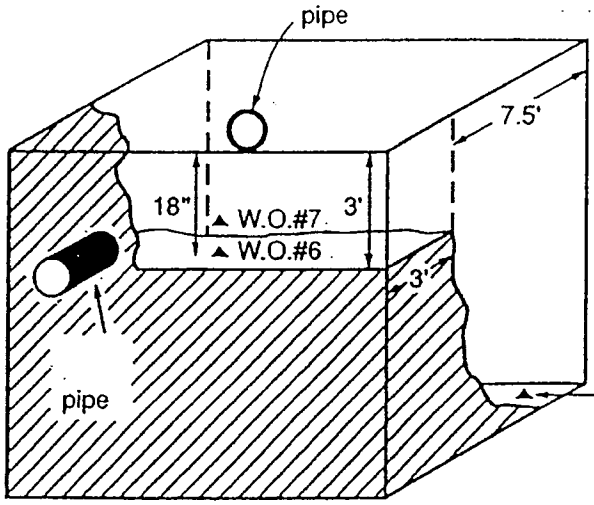
Attachments: Tables 1 and 2
Plates 1 and 2
Laboratory Reports

Garage

September 25, 1990
Excavation



October 3, 1990
Excavation



West wall

LEGEND

▲ approxiamate soil sample location
diagram not drawn to scale

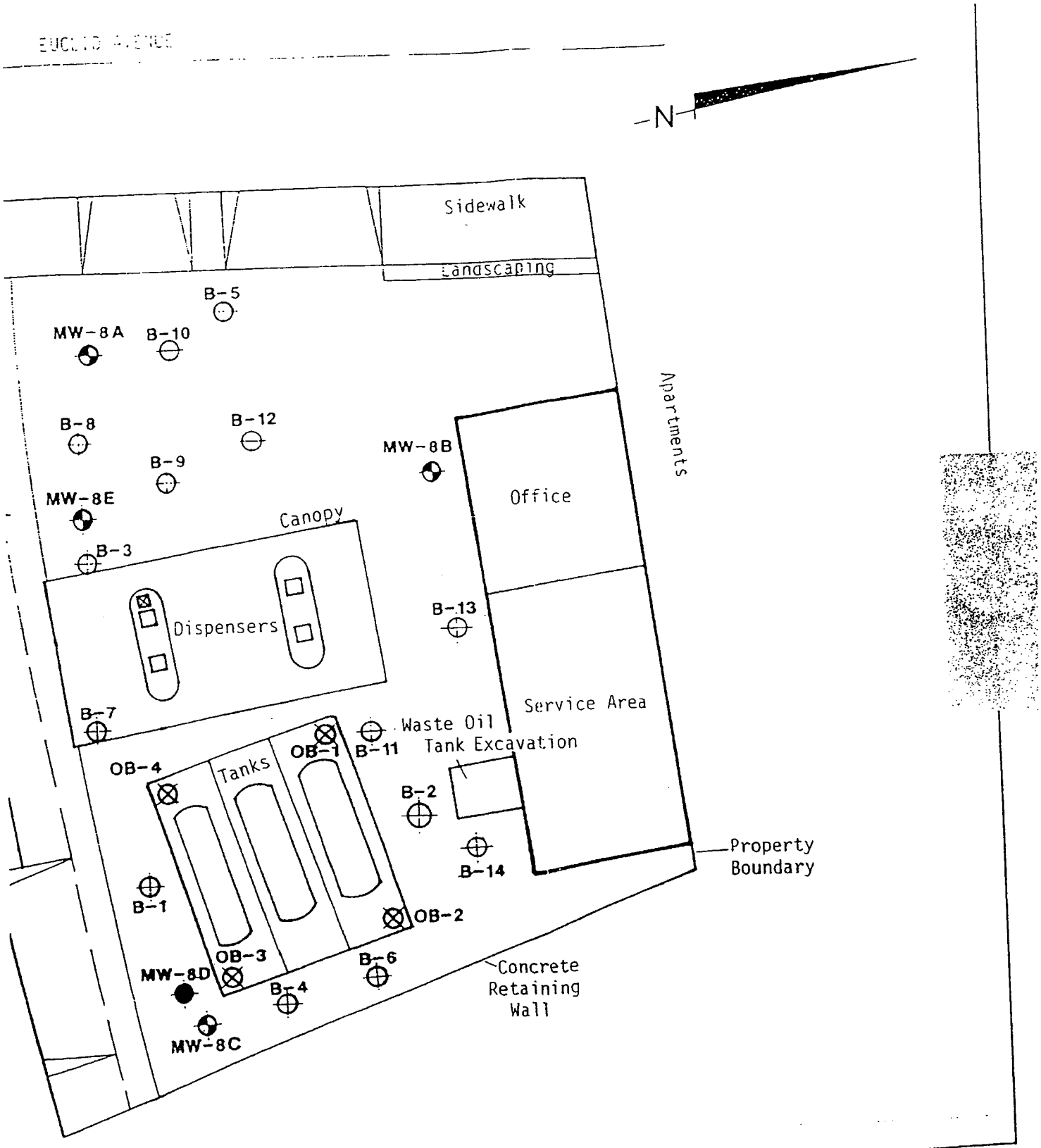
Harding Lawson Associates
Engineering and Environmental Services

Excavation Diagram & Sample Locations

Exxon Tank Pull
500 Grand Avenue
Oakland, California

PLATE
2

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
S. Patel	4167,352.03		10/90	



PLATE

1

Site Plan
Exxon Service Station
500 Grand Avenue
Oakland, California

Harding Lawson Associates
Engineering and
Environmental Services

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
YC	4167,352.03	RL	10/90	

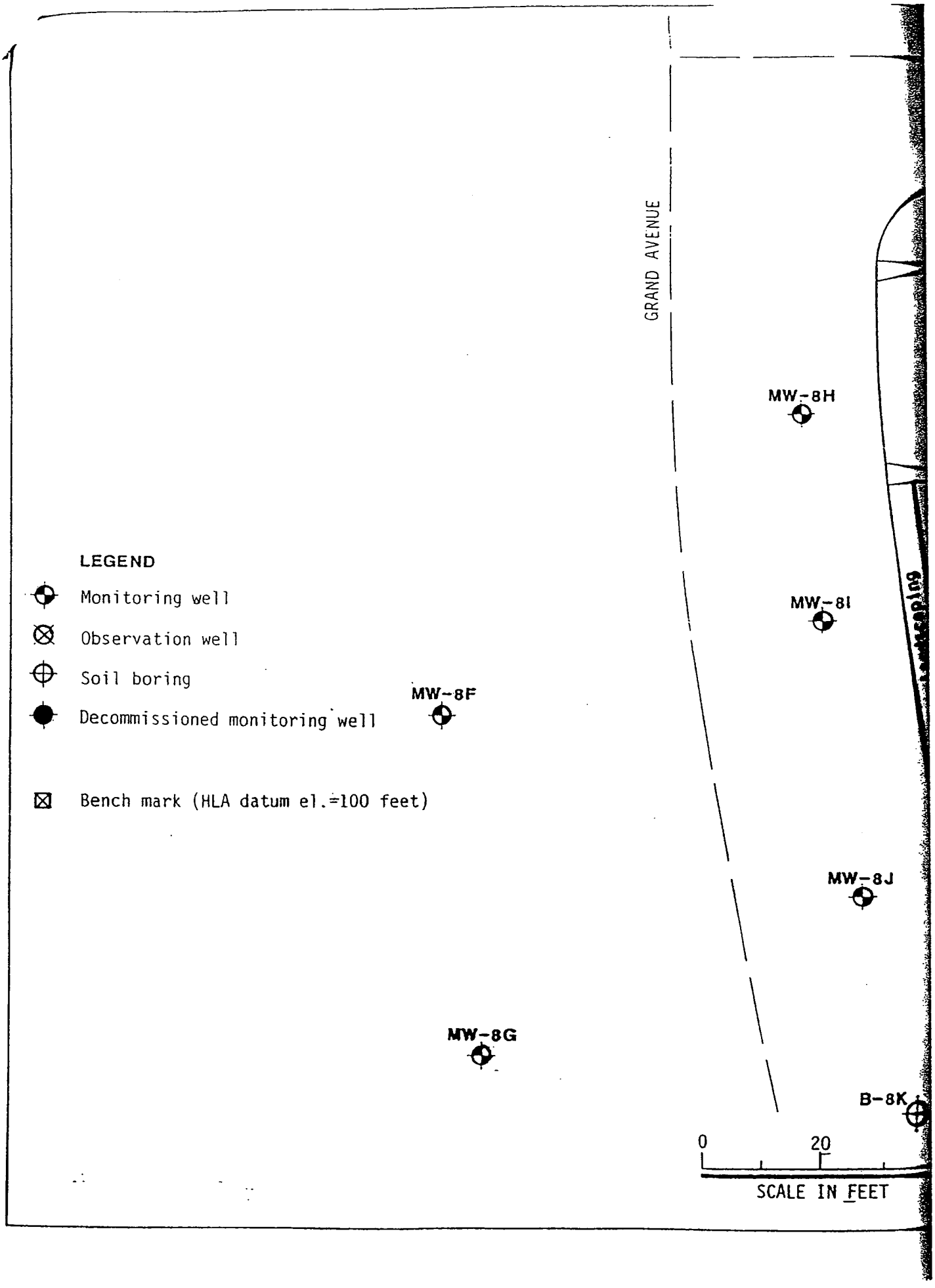

GRAND AVENUE
MW-8H
MW-8I
MW-8J
MW-8F
MW-8G
B-8K
LEGEND
Monitoring well
Observation well
Soil boring
Decommissioned monitoring well
Bench mark (HLA datum el.=100 feet)
0
20
SCALE IN FEET

Table 1. Results of Analyses on Water Sample W.O.T. # 1
(in µg/liter)

Sample	Benzene	Toluene	Ethyl-benzene	Xylenes	TPH(g)	TPH(d)	Oil and Grease	Chlorinated Hydrocarbons
W.O.#1	320	180	2.1	300	1,900	1,400	70	All <1 ppb

NA Compounds not analyzed
Chlorinated hydrocarbon analysis detects 26 compounds.
All were below detection limits on the water sample submitted.

BTEX	EPA Test Method 8020
TPH(g)	EPA Test Method 5030
TPH(d)	EPA Test Method 3550
Oil and Grease	EPA Test Method 5520 D + F
Chlorinated Hydrocarbons	EPA Test Method 8010

Table 2. Results of Soil Analyses
(in mg/kg)

Sample	Benzene	Toluene	Ethyl-benzene	Xylenes	TPH(g)	TPH(d)	Oil and Grease	Chlorinated Hydrocarbons
W.O.#2	0.048	<0.005	0.007	0.013	<1.0	<5.0	200	All <0.005
W.O.#3	0.53	0.06	0.75	1.5	15	220	2,600	All <0.005
W.O.#4	0.054	0.012	0.062	0.29	1.9	17	500	All <0.005
W.O.#5	<.0.005	0.017	<0.005	<0.005	<1.0	21	100	All <0.005
W.O.#6	NA	NA	NA	NA	NA	NA	100	NA
W.O.#7	NA	NA	NA	NA	NA	NA	850	NA
W.O.#8	<0.005	0.016	<0.005	<0.005	<1.0	<5.0	<50	NA

NA Compounds not analyzed
Chlorinated hydrocarbon analysis detects 26 compounds.
All were below detection limits on the soil samples submitted.

BTEX	EPA Test Method 8020
TPH(g)	EPA Test Method 5030
TPH(d)	EPA Test Method 3550
Oil and Grease	EPA Test Method 5520 D + F
Chlorinated Hydrocarbons	EPA Test Method 8010

A Report Prepared for

Texaco Refining and Marketing Inc.
100 Cutting Boulevard
Richmond, California 94804

ENVIRONMENTAL ASSESSMENT REPORT
FORMER TEXACO STATION NO. 6248800235
500 GRAND AVENUE
OAKLAND, CALIFORNIA

HLA Job No. 2251,081.03

by

Andrea A. Karoff
Senior Engineer

Randolph Stone
Associate Hydrogeologist

REGISTERED GEOLOGIST
RANDOLPH STONE
NO. 1214
CERTIFIED
ENGINEERING
GEOLOGIST
STATE OF CALIFORNIA

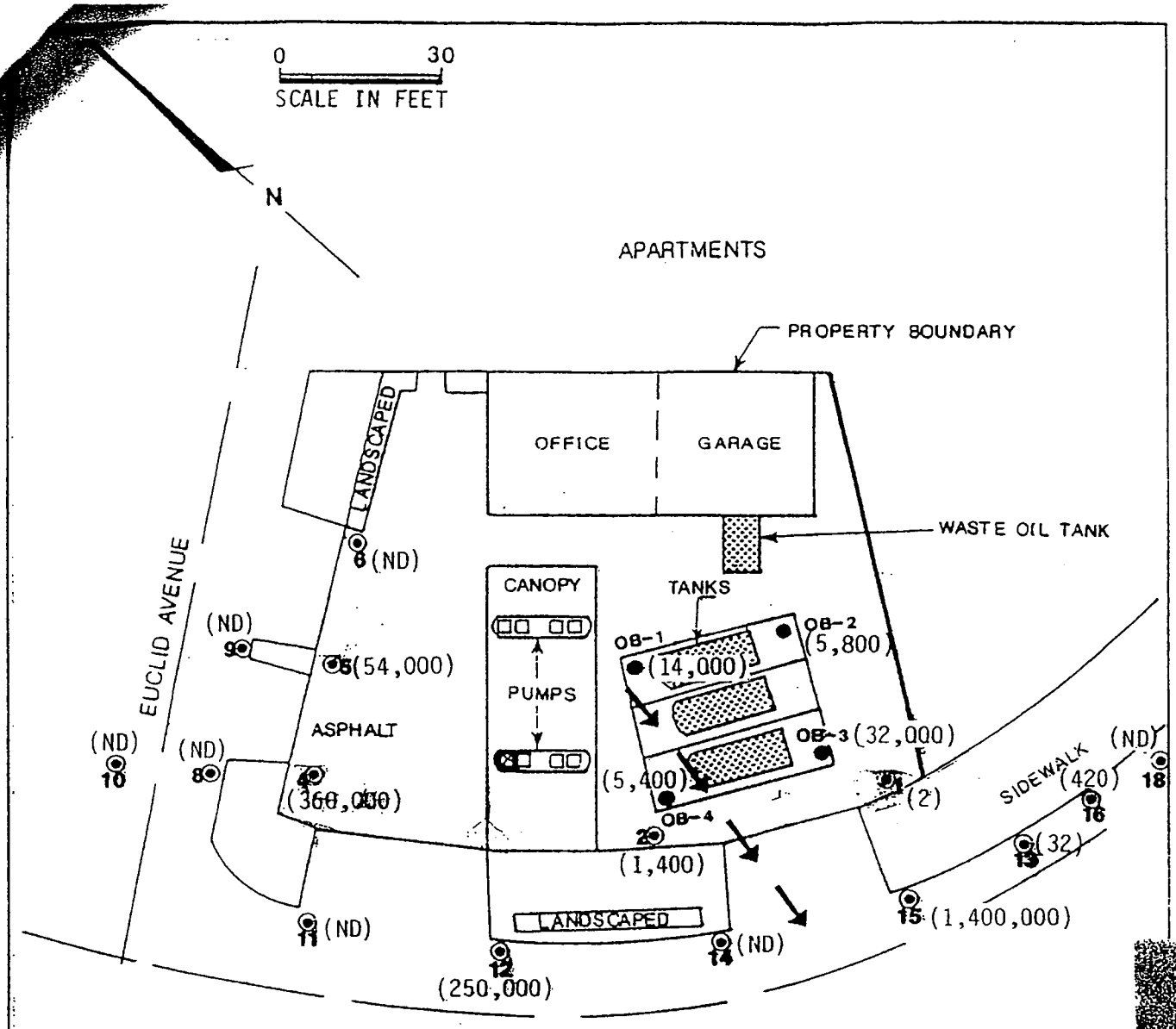
Harding Lawson Associates
1355 Willow Way, Suite 109
Concord, California 94520
415/687-9660

September 22, 1989

Harding Lawson Associates

Aerial Photograph/Vicinity Map
Former Texaco Service Station
[illegible] Grand Avenue
Oakland, California

2



LEGEND

OB-1 ● Observation Well and Number

← Ground-water Flow Direction

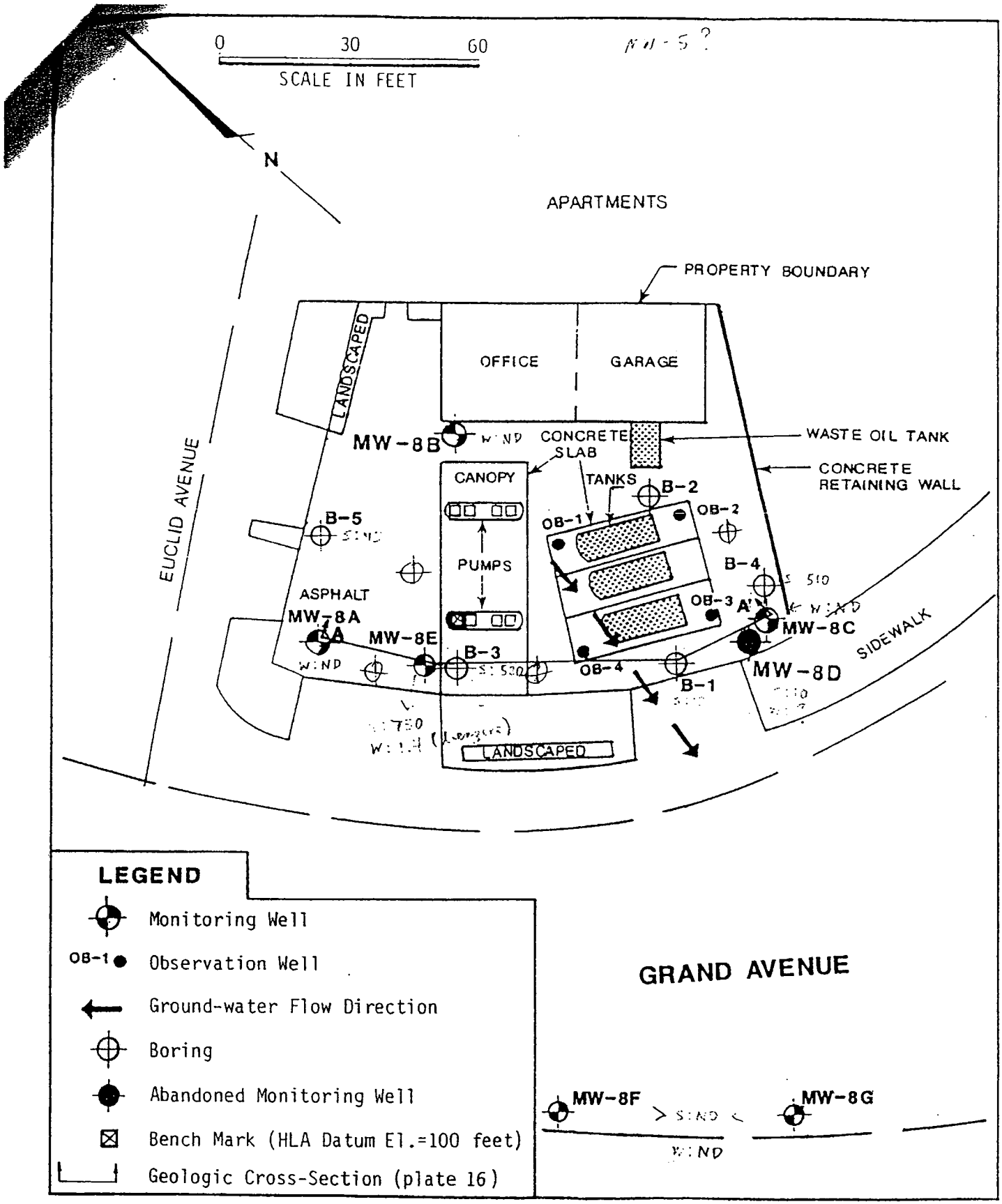
◎12: Soil-gas Probe Location and Number
(250,000) (total hydrocarbon concentration ug/l)

Harding Lawson Associates
Engineers and Geoscientists

Soil-Gas Probe Locations
Former Texaco Service Station
500 Grand Avenue
Oakland, California

PLATE **3**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
YC	2251,081.03	AK	5/89		

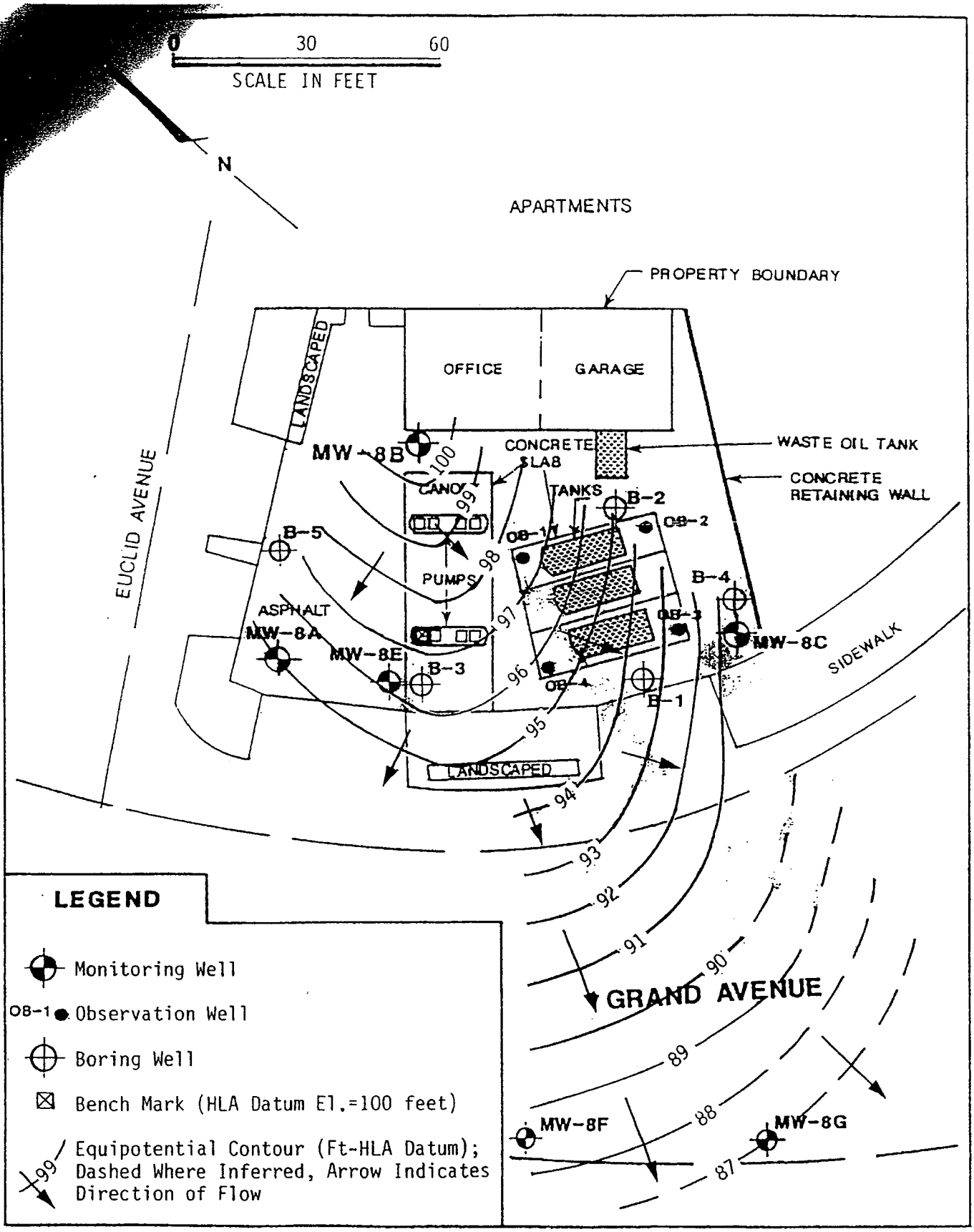


Harding Lawson Associates
Engineers and Geoscientists

Site Plan
Former Texaco Service Station
500 Grand Avenue
Oakland, California

PLATE **4**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
YC	2251,081.03	ak	5/89		

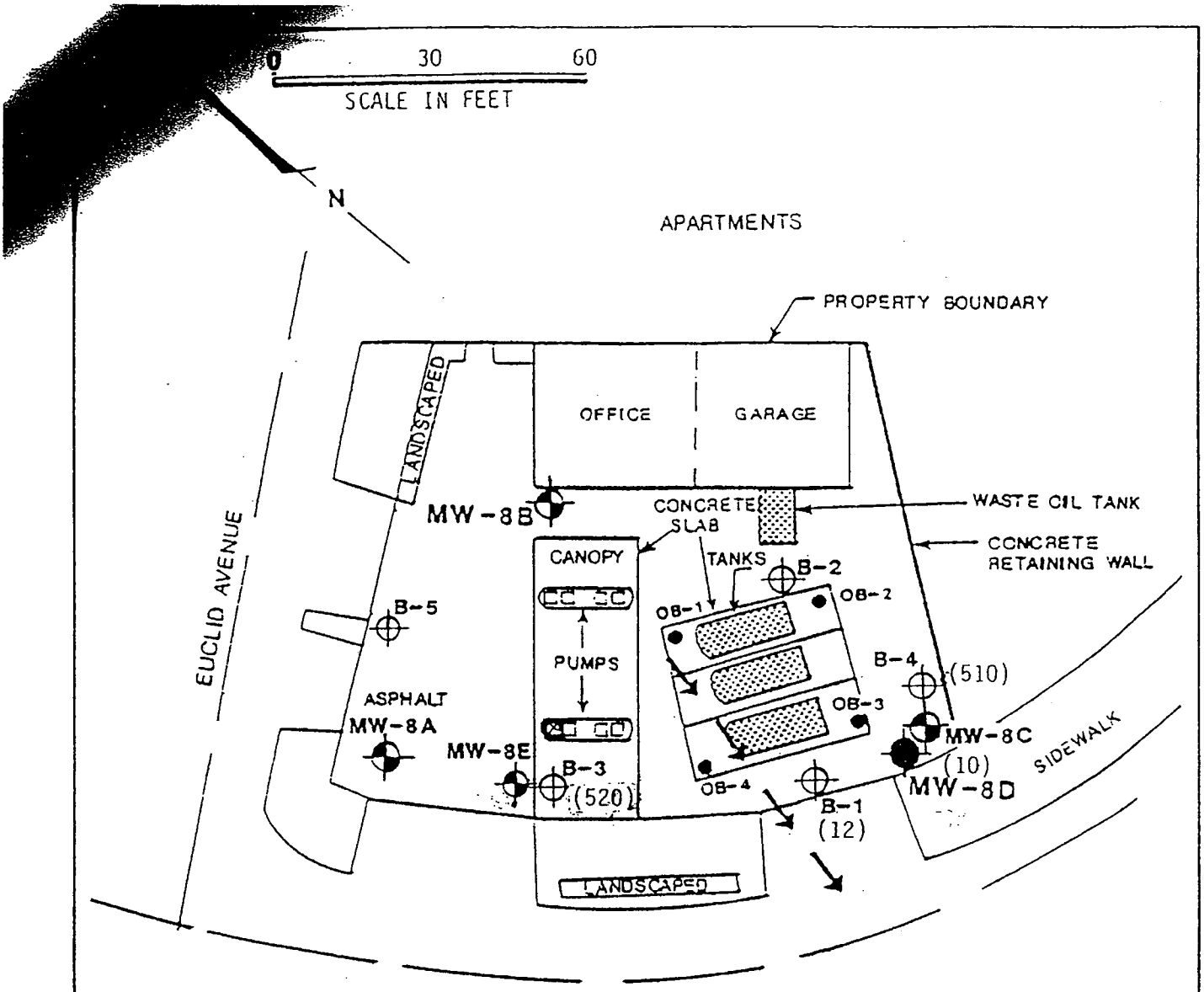


Harding Lawson Associates
Engineers and Geoscientists

Phreatic Surface - May 1989
Former Texaco Service Station
500 Grand Avenue
Oakland, California

PLATE
17

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
YC	2251,081.03	AK	5/89		



LEGEND

- Monitoring Well
- OB-1 ● Observation Well
- Ground-water Flow Direction
- Boring Well
- Abandoned Monitoring Well
- Bench Mark (HLA Datum El.=100 feet)
- (750) TPH Concentration (ppm) in Soil

GRAND AVENUE

MW-8F MW-8G

Distribution of Hydrocarbons in Vadose Soils Between 3.5 and 6.5 Feet Below Grade

500 Grand Avenue
Oakland, California

PLATE **18**

Harding Lawson Associates
Engineering and Environmental Services

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
KH	2251,081.03	STD	7/89	

HARDING LAWSON ASSOCIATES/GRAND AVENUE/OAKLAND, CALIFORNIA

Sample	Depth	Date	Benzene (ug/l)	Toluene (ug/l)	Ethyl Benzene (ug/l)	Xylenes (ug/l)	Total Hydroc. (ug/l)
Air		09/21	<0.8	<0.8	<0.9	<0.9	<0.8
SG-01	3'	09/21	<0.8	<0.8	<0.9	<0.9	<0.8
SG-01	6'	09/21	0.4	0.4	<0.2	0.4	2
SG-02	3'	09/21	320	280	120	23	1,400
SG-04	4'	09/21	86,000	40,000	26,000	3,300	360,000
SG-05	2'	09/21	42,000	8,600	86	86	54,000
SG-06	4'	09/21	<0.8	<0.8	<0.9	<0.9	<0.8
OB-1		09/21	7,700	1,400	260	<9	14,000
OB-2		09/21	5,600	320	180	<9	5,800
OB-3		09/21	6,600	3,000	120	<9	32,000
OB-4		09/21	3,600	780	61	<9	5,400
Air		09/21	<0.8	<0.8	<0.9	<0.9	<0.8

Notations:
I interference with adjacent peaks
NA not analyzed

Tracer Research Corporation

d by K. Tolman

by R. Sheldrake

by K. Kipperman

HARDING LAWSON ASSOCIATES/GRAND AVENUE/OAKLAND, CALIFORNIA

Sample	Depth	Date	Benzene (ug/l)	Toluene (ug/l)	Ethyl Benzene (ug/l)	Xylenes (ug/l)	Total Hydroc. (ug/l)
Air		09/28	<0.4	<0.4	<0.5	<0.4	<0.4
SG-08	5'	09/28	<0.4	<0.4	<0.5	<0.4	<0.4
SG-09	4'	09/28	<0.4	<0.4	<0.5	<0.4	<0.4
SG-10	4'	09/28	<0.4	<0.4	<0.5	<0.4	<0.4
SG-11	3.5'	09/28	<0.4	<0.4	<0.5	<0.4	<0.4
SG-12	4'	09/28	38,000	16,000	180	170	250,000
SG-13	3'	09/28	<0.4	<0.4	<0.5	<0.4	32
SG-14	4'	09/28	<0.4	<0.4	<0.5	<0.4	<0.4
SG-15	3'	09/28	300,000	90,000	27,000	22,000	1,400,000
SG-16	4'	09/28	120	63	14	14	420
SG-17	4'	09/28	<0.4	<0.4	<0.5	<0.4	<0.4
SG-18	4'	09/28	<8	<7	<9	<9	<8

Notations:
I interference with adjacent peaks
NA not analyzed

Analyzed by K. Tolman

Checked by R. Sheldrake

Tracer Research Corporation

CAMBRIA

Attachment B

Standard Field Methods and Procedures

STANDARD FIELD PROCEDURES FOR SOIL VAPOR SAMPLING
SOIL VAPOR PROBE

This document describes Cambria Environmental Technology's standard field methods for soil vapor sampling. These procedures are designed to comply with Federal, State and local regulatory guidelines. Specific field procedures are summarized below.

Objectives

Soil vapor samples are collected and analyzed to assess whether vapor-phase subsurface contaminants pose a threat to human health or the environment.

Soil Vapor Probe Installation

Soil vapor probes are installed in the vadose zone to check for hydrocarbon vapor migration. The wells are typically constructed with short screens to target horizons through which hydrocarbon vapor migration could occur. These wells can be constructed in borings drilled with hand auger equipment or using push technologies such as the Geoprobe and using non-collapsible Teflon tubing set in small sand packed regions overlain by grout.

Soil Vapor Sampling

The required volume of soil vapor is purged through the polyethylene tubing using a standard vacuum pump. The soil vapor can then be sampled by attaching a vacuum sealed summa canister to the tubing. The summa canister should be attached to an air flow regulator which will regulate the rate that air can fill the summa canister. Once the canister is appropriately connected and a pressure test has been performed the canister can be opened and air allowed to flow in under vacuum pressure. Once the pressure valve reads -5 pounds per square inch the vacuum canister can be closed and sampling ended. Once collected, the vapor sample is transported under chain-of-custody to a state-certified laboratory. The ground surface immediately adjacent to the boring is used as a datum to measure sample depth. Drilling and sampling equipment is washed between samples with trisodium phosphate or an equivalent EPA-approved detergent.

Sample Storage, Handling and Transport

Samples are stored out of direct sunlight in coolers and transported under chain-of-custody to a state-certified analytic laboratory.

Field Screening

After collecting a vapor sample for laboratory analysis, Cambria often collects an additional vapor sample for field screening using a portable photo-ionization detector (PID), flame-ionization detector (FID), or GasTech® combustible gas detector to measure volatile hydrocarbon vapor concentrations. These measurements are used along with the field observations, odors, stratigraphy and ground water depth to help select the best location for additional borings to be advanced during the field mobilization.

Grouting

The borings are filled to the ground surface with neat cement.

STANDARD FIELD PROCEDURES FOR GEOPROBE® SOIL AND GROUNDWATER SAMPLING

This document describes Cambria Environmental Technology, Inc.'s standard field methods for GeoProbe® soil and groundwater sampling. These procedures are designed to comply with Federal, State and local regulatory guidelines. Specific field procedures are summarized below.

Objectives

Soil samples are collected to characterize subsurface lithology, assess whether the soils exhibit obvious hydrocarbon or other compound vapor odor or staining, estimate ground water depth and quality and to submit samples for chemical analysis.

Soil Classification/Logging

All soil samples are classified according to the Unified Soil Classification System by a trained geologist or engineer working under the supervision of a California Professional Geologist (PG) or a Certified Engineering Geologist (CEG). The following soil properties are noted for each soil sample:

- Principal and secondary grain size category (i.e., sand, silt, clay or gravel)
- Approximate percentage of each grain size category,
- Color,
- Approximate water or separate-phase hydrocarbon saturation percentage,
- Observed odor and/or discoloration, and
- Other significant observations (i.e., cementation, presence of marker horizons, mineralogy)

Soil Sampling

GeoProbe® soil samples are collected from borings driven using hydraulic push technologies. A minimum of one and one half ft of the soil column is collected for every five ft of drilled depth. Additional soil samples can be collected near the water table and at lithologic changes. Samples are collected using samplers lined with polyethylene or brass tubes driven into undisturbed sediments at the bottom of the borehole. The ground surface immediately adjacent to the boring is used as a datum to measure sample depth. The horizontal location of each boring is measured in the field relative to a permanent on-site reference using a measuring wheel or tape measure.

Drilling and sampling equipment is steam-cleaned or washed prior to drilling and between borings to prevent cross-contamination. Sampling equipment is washed between samples with trisodium phosphate or an equivalent EPA-approved detergent.

Sample Storage, Handling and Transport

Sampling tubes chosen for analysis are trimmed of excess soil and capped with Teflon® tape and plastic end caps. Soil samples are labeled and stored at or below 4°C on either crushed or dry ice, depending upon local regulations. Samples are transported under chain-of-custody to a State-certified analytic laboratory.

Field Screening

After a soil sample has been collected, soil from the remaining tubing is placed inside a sealed plastic bag and set aside to allow hydrocarbons to volatilize from the soil. After ten to fifteen minutes, a portable GasTech® or photoionization detector measures volatile hydrocarbon vapor concentrations in the bag's headspace, extracting the vapor through a slit in the plastic bag. The measurements are used along with the field observations, odors, stratigraphy and ground water depth to select soil samples for analysis.

Grab Groundwater Sampling

Groundwater samples are collected from the open borehole using bailers, advancing disposable Tygon® tubing into the borehole and extracting ground water using a diaphragm pump, or using a hydro-punch style sampler with a bailer or tubing. The ground water samples are decanted into the appropriate containers supplied by the analytic laboratory. Samples are labeled, placed in protective foam sleeves, stored on crushed ice at or below 4° C, and transported under chain-of-custody to the laboratory.

Duplicates and Blanks

Blind duplicate water samples are usually collected only for monitoring well sampling programs, at a rate of one blind sample for every 10 wells sampled. Laboratory-supplied trip blanks accompany samples collected for all sampling programs to check for cross-contamination caused by sample handling and transport. These trip blanks are analyzed if the internal laboratory quality assurance/quality control (QA/QC) blanks contain the suspected field contaminants. An equipment blank may also be analyzed if non-dedicated sampling equipment is used.

Grouting

If the borings are not completed as wells, the borings are filled to the ground surface with cement grout poured or pumped through a tremie pipe.

F:\TEMPLATE\SOPS\GEOPROBE.DOC