Texaco Refining
and Marketing Inc

108 Cutting Boulevard
Richmond CA 94804

December 26, 1991

Mr. Tom Callaghan
California Regional Water
Quality Control Board
San Francisco Bay Area Region
2101 Webster Street, Ste. 500
Oakland, CA 94612

91 DEC 30 PM 2:12

Dear Mr. Callaghan:

Enclosed is a copy of our Quarterly Technical Report dated December 16, 1991 for our former Texaco Service Station located at 500 Grand Avenue in Oakland, California. This report covers the third quarter of 1991.

Please call me at (510) 236-1770 if you have any questions.

Best Regards,

R.R. Zielinski
Area Supervisor

RRZ:pap

Enclosure

cc: Mr. Paul Smith
Alameda County Environmental
Health Department
80 Swan Way, Room 200
Oakland, CA 94621

pr: RRZ

HP

500GA.TC2

Location:

FORMER TEXACO SERVICE STATION
500 Grand Avenue
Oakland, California
Alameda County

Consultant: **Harding Lawson Associates**

HARDING LAWSON ASSOCIATES
1355 Willow Way, Suite 109
Concord, California 94520
Attention: Jeanna S. Hudson

QUARTERLY SUMMARY REPORT - THIRD QUARTER 1991

- Investigation began in May 1988 and initially consisted of a sensitive receptor survey and a brief subsurface site investigation. Fourteen soil borings, five on-site monitoring wells, and five off-site monitoring wells have been drilled at the location. The hydraulic conductivity of shallow saturated soils was estimated from the results of slug tests. Interim remediation was implemented by pumping 5,000 gallons of hydrocarbon-bearing water from the fuel tank backfill. Waste oil was found near the underground waste oil tank, and Exxon had the tank removed.

- During the third quarter of 1991, the following tasks were accomplished:

  1. Collected water samples from all monitoring wells and analyzed them for BTEX and TPH.

  2. Measured water levels monthly.

  3. Issued the Quarterly Technical Report for the second quarter of 1991.

- The following actions are planned for the fourth quarter of 1991:

  1. Obtain monthly water-level measurements and continue quarterly groundwater sampling.

  2. Begin design of remedial system, following review and approval of Remedial Plan by Texaco.

  3. Issue the Quarterly Technical Report for the third quarter of 1991.

- Gasoline and diesel hydrocarbons have been detected both on and off site in vadose-zone soil and in the groundwater. The greatest concentrations of gasoline and diesel hydrocarbons were found on site near the underground tanks and the southern pump island. Waste oil hydrocarbons have been found in soil near the service building. The extent of the fuel hydrocarbons in soil and groundwater has been fairly well delineated.

- No soil or groundwater remediation has yet begun other than the interim measure of removing groundwater from the fuel tank backfill material.

A Report Prepared for

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

QUARTERLY TECHNICAL REPORT
THIRD QUARTER OF 1991
FORMER TEXACO STATION NO. 6248800235
500 GRAND AVENUE
OAKLAND, CALIFORNIA

HLA Job No. 2251,169.03
December 16, 1991
1991 Report No. 3

by

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## INTRODUCTION

This Quarterly Technical Report (QTR) presents the results of investigation activities by Harding Lawson Associates (HLA) during the third quarter of 1991 at the former site of Texaco service station No. 6248800235, 500 Grand Avenue, Oakland, California (Plate 1). This site is currently operated by Exxon Company U.S.A. (Exxon). This report summarizes previous work at the site, presents third quarter activities, and describes planned activities for the fourth quarter of 1991.

## SUMMARY OF PREVIOUS WORK

Texaco Refining and Marketing Inc. retained HLA to conduct a sensitive receptor survey at the subject location in May 1988. In June 1988, Texaco Refining and Marketing Inc. requested that HLA proceed with a subsurface investigation to evaluate whether hydrocarbons had affected shallow soil or groundwater. By the end of the second quarter of 1991, HLA had completed the following tasks in the site investigation:

- Conducted a soil-gas survey consisting of 18 soil-gas probe locations on or near the site (survey performed by Tracer Research Corporation).
- Installed and developed four 2-inch-diameter groundwater monitoring wells (MW-8A, MW-8B, MW-8C, and MW-8D) and six 4-inch-diameter monitoring wells (MW-8E, MW-8F, MW-8G, MW-8H, MW-8I, and MW-8J). Locations are shown on Plate 2.
- Obtained groundwater samples from each well on a quarterly basis and analyzed them for benzene, toluene, ethylbenzene, and total xylenes (BTEX), and total

petroleum hydrocarbons (TPH) as gasoline and as diesel fuel.

- Gauged water levels and estimated the direction of groundwater flow.
- Performed slug tests in MW-8C and MW-8E to estimate hydraulic conductivity.
- Drilled and sampled 15 soil borings to delineate the extent of hydrocarbons in the vadose zone (Plate 2).
- Analyzed soil samples for BTEX and TPH as gasoline.
- Analyzed soil samples from B-6, B-7, B-8, B-9, B-10, B-11, B-12, B-13, B-14, and B-8K for TPH as diesel fuel.
- Analyzed soil sample from B-13 for halogenated volatile organics, semivolatile organics, oil and grease, and selected metals.
- Pumped and disposed of 5,000 gallons of water from the tank backfill as an interim remedial measure.
- Submitted an Environmental Assessment Report, dated September 22, 1989, to Texaco.
- Issued an Interim Remedial Plan, dated December 7, 1990, in lieu of a Third Quarter Technical Report.
- Excavated the clay sewer pipes and contaminated soil from an abandoned utility trench near the former waste oil tank location. Analyzed soil and water for hydrocarbons.

## RESULTS OF PREVIOUS WORK

The results of the soil-gas survey indicated petroleum hydrocarbon vapors in the unsaturated zone near the underground storage tanks and dispenser islands. Analyses of water samples from the four observation wells in the storage tank backfill showed the presence of dissolved petroleum hydrocarbons in groundwater adjacent to the underground tanks.

Soil samples and drill cuttings indicate that the subsurface materials at the site consist of clay and minor amounts of interbedded clayey sand. Analysis of slug test data obtained from MW-3C and MW-3E indicate a hydraulic conductivity of 0.02 to 0.03 foot/day. Groundwater would be expected to move through the soils relatively slowly.

Local groundwater flow is to the south and southeast, toward Lake Merritt (Plate 3). Historical water-level data from monitoring wells across the site show that, in most wells, the water table has fluctuated 2.5 to 3.0 feet since early 1988. Water levels in MW-8A fluctuated as much as 8 feet; those data are suspect and are often not used in contouring the potentiometric groundwater surface.

Results of Soil Analyses

Samples from 15 soil borings and seven monitoring well locations were chemically analyzed to evaluate the horizontal and vertical extent of petroleum hydrocarbons in the subsurface. The analytical data are summarized in Tables 1 and 2. A contour map showing concentrations of TPH as gasoline in the vadose-zone soil is presented on Plate 4. For this map, the vadose zone was defined by comparing sample depths to static water levels at the time of sampling.

Plate 4 depicts a vadose-zone hydrocarbon plume that apparently originates near the underground tanks and extends off site to MW-8J. Significant concentrations of TPH as gasoline are

also found in the area of the dispenser islands. The highest concentration, 2900 parts per million (ppm), was found in a soil sample collected at a depth of 1.5 foot in B-11. In general, BTEX concentrations in the soil are either below detection limits or very low.

The results of soil analyses for TPH as diesel fuel indicate concentrations ranging from nondetectable to 460 ppm (B-9); most of the soil samples with detectable concentrations contained less than 100 ppm TPH as diesel fuel.

One soil sample collected at 2.5 feet below grade in B-13 was analyzed for semi-volatile organic compounds, halogenated volatile organics, total oil and grease, and selected metals. A summary of the analytical results are presented in Table 2.

Results of Groundwater Analyses

Table 3 presents the results of groundwater analyses obtained since 1988. Groundwater from monitoring wells MW-8E, MW-8H, MW-8I, and MW-8J, and observation wells OB-3 and OB-4 contained benzene in concentrations that exceed the Department of Health Services Drinking Water Action Levels (DWALs). In groundwater samples from wells MW-8A, MW-8B, and MW-8C, BTEX concentrations have typically been either nondetectable or below the DWALs.

A contour map showing benzene concentrations in groundwater is presented on Plate 5; Plate 6 is a contour map showing concentrations of TPH as gasoline. These maps suggest that

hydrocarbons in groundwater may have originated near the dispenser islands. Water from monitoring well MW-8E, cross-gradient and down-gradient of the dispenser islands, has the highest concentrations of BTEX, TPH as gasoline, and TPH as diesel fuel.

TPH as gasoline was detected in groundwater downgradient of MW-8E in samples from MW-8H, MW-8I, and MW-8J. Samples from MW-8F and MW-8G typically contained nondetectable concentrations of BTEX and TPH as gasoline. However, TPH as diesel fuel and "heavy" hydrocarbons, above the range of diesel fuel, have been detected in groundwater from these downgradient locations since the second quarter 1990.

In the third quarter 1990, workers installing overfill containment devices on the underground storage tanks discovered floating hydrocarbons around the waste oil tank. Exxon removed this tank in September 1990. Waste oil and water were pumped from the tank backfill and disposed of by Exxon. Tank backfill material and affected soil were also excavated and disposed of by Exxon. Two vitrified clay sewer lines, apparently containing petroleum hydrocarbon products, were discovered adjacent to the tank pit during the excavation process. Texaco excavated the clay lines and contaminated soil from the surrounding utility trench during the first quarter of 1991.

## ACCOMPLISHMENTS DURING THIRD QUARTER OF 1991

During the third quarter of 1991, HLA accomplished the following tasks at the 500 Grand Avenue site:

- Purged and sampled four on-site monitoring wells, and five off-site monitoring wells. Water samples were analyzed for BTEX, TPH as gasoline, TPH as diesel fuel, and TPH as motor oil.
- Measured water levels in nine monitoring wells (Table 4).

### Groundwater Sampling

HLA continued to monitor water levels and groundwater quality at the subject location during the third quarter of 1991. Each well was purged while monitoring temperature, conductivity, and pH of the water. The water samples were collected and transported, under chain-of-custody, to NET Pacific, Inc. in Santa Rosa, California. The water samples were analyzed for BTEX, TPH as gasoline, TPH as diesel fuel, and TPH as motor oil.

### Results of Analyses

Table 3 and Plates 5 and 6 summarize results of the third quarter groundwater analyses. Benzene concentrations exceeded the DWAL (1.0 parts per billion [ppb]) in groundwater from MW-8E, MW-8H, MW-8I, and MW-8J. Groundwater from monitoring wells MW-8E and MW-8I contained the highest concentrations of benzene, 16,000 ppb and 1,600 ppb, respectively. Groundwater from MW-8H contained 21 ppb benzene. TPH as gasoline was detected in groundwater from monitoring wells MW-8E, MW-8H, and MW-8I.

Concentrations ranged from 270 ppb in MW-8H to 47,000 ppb in MW-8E.

TPH as diesel fuel was detected in groundwater from three of the nine monitoring wells sampled. We are not aware of records of diesel fuel being sold at the site in the past. Some of the heavier hydrocarbons detected may therefore result from the presence of aged gasoline, or from hydrocarbons originating in the area of the former waste oil tank. Laboratory reports, included in the Appendix, indicate that the petroleum hydrocarbons quantified as diesel fuel in groundwater from MW-8E appear to be light hydrocarbons.

Plate 3 is the most recent contour map of the potentiometric groundwater surface, based on water levels measured on August 22, 1991. No significant changes in groundwater flow direction are apparent from the results of the last quarterly water level measurements.

## ANTICIPATED ACTIVITIES FOR FOURTH QUARTER, 1991

Quarterly groundwater samples will be collected and analyzed for BTEX and TPH as gasoline, as diesel fuel, and as motor oil. Water levels will be measured on a monthly basis.

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LABORATORY RESULTS OF GROUNDWATER ANALYSES

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)

Semivolatile Organics; EPA Test Method 8270

- Analyses for 55 semivolatile 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 3. Results of Groundwater Analyses
Concentrations in µg/l (ppb)

| Well | Date Sampled | Benzene | Toluene | Ethyl-benzene | Xylenes | TPH as Gasoline | TPH as Diesel | TPH Other[2] |
|---|---|---|---|---|---|---|---|---|
| MW-8A | 06/14/88 | <0.5[1] | 1.5 | <2 | 6.6 | -- | -- | -- |
| | 10/28/88 | <0.5 | <1 | <2 | <1 | -- | -- | -- |
| | 09/28/89 | <0.5 | <0.5 | <0.5 | <3 | <50 | -- | -- |
| | 11/29/89 | <0.5 | 1.0 | <0.5 | <0.5 | <50 | 1,200 | <50 |
| | 01/24/90 | <0.5 | <0.5 | <0.5 | <0.5 | <100 | -- | 2,800 |
| | 04/26/90 | <0.5 | <0.5 | <0.5 | <0.5 | <2,500 | <50 | 890 |
| | 07/26/90 | 6.0 | <0.5 | <0.5 | <0.5 | <50 | <50 | <50 |
| | 10/18/90 | <0.5 | <0.5 | <0.5 | <0.5 | <50 | <50 | <50 |
| | 01/08/91 | <0.3 | <0.3 | <0.3 | <0.3 | <30 | <50 | 130[3] |
| | 04/23/91 | <0.5 | <0.5 | <0.5 | <0.5 | <50 | <50 | <500 |
| | 07/23/91 | <0.5 | <0.5 | <0.5 | <0.5 | <50 | <50 | <500 |
| MW-8B | 06/14/88 | <0.5 | <1 | <2 | <1 | -- | -- | -- |
| | 10/21/88 | <0.5 | <1 | <2 | 3.1 | -- | -- | -- |
| | 09/28/89 | <0.5 | <0.5 | <0.5 | <3 | <50 | -- | -- |
| | 11/29/89 | <0.5 | <0.5 | <0.5 | <0.5 | <50 | <50 | 380 |
| | 01/24/90 | <0.5 | <0.5 | <0.5 | <0.5 | <100 | -- | 350 |
| | 04/26/90 | <0.5 | <0.5 | <0.5 | <0.5 | <50 | <50 | 110 |
| | 07/26/90 | <0.5 | <0.5 | <0.5 | <0.5 | <50 | <50 | <50 |
| | 10/18/90 | <0.5 | <0.5 | <0.5 | <0.5 | <50 | <50 | <50 |
| | 01/08/91 | <0.3 | <0.3 | <0.3 | <0.3 | <30 | <50 | 180[3] |
| | 04/23/91 | 8.4 | 2.5 | <0.5 | 5.1 | <50 | <50 | <500 |
| | 07/23/91 | <0.5 | 1.1 | <0.5 | 2.0 | <50 | <50 | <500 |
| MW-8C | 06/14/88 | 5.3 | 3.5 | 2.6 | 13.0 | -- | -- | -- |
| | 10/21/88 | <0.5 | <1 | <2 | <1 | -- | -- | -- |
| | 09/28/89 | <0.5 | <0.5 | <0.5 | <3.0 | <50 | -- | -- |
| | 11/29/89 | <0.5 | <0.5 | <0.5 | <0.5 | <50 | <50 | 190 |
| | 01/24/90 | 0.9 | <0.5 | <0.5 | <0.5 | <100 | -- | 480 |
| | 04/26/90 | <0.5 | <0.5 | <0.5 | <0.5 | <50 | <50 | 160 |
| | 07/26/90 | <0.5 | <0.5 | <0.5 | <0.5 | <50 | <50 | <50 |
| | 10/18/90 | <0.5 | <0.5 | <0.5 | <0.5 | <50 | <50 | <50 |
| | 01/08/91 | <0.3 | <0.3 | <0.3 | <0.3 | <30 | 76 | 110[3] |
| | 04/23/91 | 12 | 25 | 3.7 | 19 | 800 | <50 | <500 |
| | 07/23/91 | <0.5 | 0.6 | <0.5 | <0.5 | <50 | <50 | <500 |
| MW-8E | 10/25/88 | 1,400 | 510 | 2.9 | 420 | -- | -- | -- |
| | 09/28/89 | 5,600 | 3,100 | <500 | <3,000 | 22,000 | -- | -- |
| | 11/29/89 | 4,900 | 2,600 | <250 | 1,490 | 15,000 | 6,800 | <50 |
| | 01/24/90 | 10,100 | 3,340 | 540 | 1,790 | 36,000 | -- | 4,900 |
| | 04/26/90 | 11,000 | 5,700 | 840 | 2,900 | 48,000 | 1,400 | <50 |
| | 07/26/90 | 15,000 | 6,200 | 520 | 4,700 | 56,000 | <50 | <50 |
| | (10/18/90) | 1,500 | 1,300 | 170 | 1,800 | 15,000 | 620 | <50 |
| | 01/08/91 | 14,000 | 5,400 | 860 | 1,700 | 51,000 | 17,000 | 520[3] |
| | 04/23/91 | 19,000 | 6,100 | 750 | 4,100 | 50,000 | 4,800 | <500 |
| | 07/23/91 | 16,000 | 5,400 | 1,100 | 4,000 | 47,000 | 3,500[4] | <500 |

Table 3 (continued)

| Well | Date Sampled | Benzene | Toluene | Ethyl-benzene | Xylenes | TPH as Gasoline | TPH as Diesel | TPH Other[2] |
|---|---|---|---|---|---|---|---|---|
| MW-8F | 04/14/89 | <0.5 | <1 | <2 | <1 | -- | -- | -- |
| | 09/28/89 | <0.5 | <0.5 | <0.5 | <3 | <50 | -- | -- |
| | 11/29/89 | <0.5 | <0.5 | <0.5 | <0.5 | <50 | <50 | <50 |
| | 01/24/90 | <0.5 | <0.5 | <0.5 | <0.5 | <100 | -- | <300 |
| | 04/26/90 | <0.5 | <0.5 | <0.5 | <0.5 | <50 | <50 | 110 |
| | (07/26/90) | <0.5 | <0.5 | <0.5 | <0.5 | <50 | <50 | <50 |
| | 10/18/90 | <0.5 | <0.5 | <0.5 | <0.5 | <50 | 360 | <50 |
| | 01/08/91 | <0.3 | <0.3 | <0.3 | <0.3 | <30 | 380 | 620[3] |
| | 04/23/91 | 5.9 | 3.1 | <0.5 | 2.7 | <50 | 1,400 | 3,200 |
| | 07/23/91 | <0.5 | 0.8 | <0.5 | <0.5 | <50 | 60 | <500 |
| MW-8G | 04/14/89 | <0.5 | <1 | <2 | <1 | -- | -- | -- |
| | 09/28/89 | <0.5 | <0.5 | <0.5 | <3 | <50 | -- | -- |
| | 11/29/89 | <0.5 | <0.5 | <0.5 | <0.5 | <50 | <50 | <50 |
| | 01/24/90 | <0.5 | <0.5 | <0.5 | <0.5 | <100 | -- | 650 |
| | 04/26/90 | <0.5 | <0.5 | <0.5 | <0.5 | <50 | <50 | 120 |
| | (07/26/90) | <0.5 | <0.5 | <0.5 | <0.5 | <50 | <50 | <50 |
| | 10/18/90 | <0.5 | <0.5 | <0.5 | <0.5 | <50 | 460 | <50 |
| | 01/08/91 | <0.3 | <0.3 | <0.3 | <0.3 | <30 | 220 | 260[3] |
| | 04/23/91 | 0.9 | 0.9 | <0.5 | <0.5 | <50 | 1,100 | <500 |
| | 07/23/91 | 0.5 | 1.5 | <0.5 | 3.0 | <50 | <50 | <500 |
| MW-8H | 01/24/90 | 14.8 | 14.8 | 10.8 | 38.8 | 460 | -- | <300 |
| | 04/26/90 | 67 | 19 | 43 | 64 | 830 | <50 | 820 |
| | (07/26/90) | 45 | 1.3 | 12 | 8.2 | 190 | <50 | <50 |
| | 10/18/90 | 17 | 2.5 | 14 | 8.5 | 300 | <50 | <50 |
| | 01/08/91 | 12 | 2.2 | 6.4 | 4.0 | 320 | 180 | 89[3] |
| | 04/23/91 | 1.5 | <0.5 | <0.5 | <0.5 | <50 | 730 | <500 |
| | 07/23/91 | 21 | 1.8 | 9.7 | 2.6 | 270 | <50 | <500 |
| MW-8I | 01/24/90 | 116 | 2.9 | 13 | 30.5 | 580 | -- | 440 |
| | 04/26/90 | 2,400 | 100 | 230 | 350 | 4,400 | <50 | 1,400 |
| | (07/26/90) | <0.5 | <0.5 | <0.5 | <0.5 | <50 | <50 | <50 |
| | 10/18/90 | 92 | 4.1 | 37 | 21 | 530 | <50 | <50 |
| | 01/08/91 | 500 | 4.3 | 36 | 26 | 1,300 | 710 | 210[3] |
| | 04/23/91 | 1,600 | 17 | 100 | 86 | 1,500 | 1,100 | 900 |
| | 07/23/91 | 1,600 | 30 | 140 | 63 | 1,700 | 260 | <500 |
| MW-8J | 01/24/90 | 2.7 | <0.5 | 1 | 2.6 | <100 | -- | <300 |
| | 04/26/90 | 28 | 7.7 | 19 | 24 | 160 | <50 | 320 |
| | (07/26/90) | <0.5 | <0.5 | <0.5 | <0.5 | <50 | <50 | <50 |
| | 10/18/90 | 8.3 | <0.5 | 2.6 | 1.5 | <50 | <50 | <50 |
| | 01/08/91 | 0.41 | <0.3 | <0.3 | 0.52 | 71 | <50 | 69[3] |
| | 04/23/91 | 16 | 2.2 | 9.3 | 4.6 | 300 | 550 | <500 |
| | 07/23/91 | 4.6 | <0.5 | 3.1 | <0.5 | <50 | <50 | <500 |

Table 3 (continued)

| Well | Date Sampled | Benzene | Toluene | Ethyl-benzene | Xylenes | TPH as Gasoline | TPH as Diesel | TPH Other[2] |
|---|---|---|---|---|---|---|---|---|
| OB-3 | 11/06/89 | 420 | 8 | 6 | 64 | 4,000 | -- | -- |
| | 04/26/90 | 160 | 19 | 5 | 8.6 | 1,000 | 3,200 | <50 |
| | (07/26/90) | <0.5 | <0.5 | <0.5 | 0.9 | 68 | 1,200 | <50 |
| | 10/18/90 | 260 | 69 | 35 | 490 | 3,200 | 2,100 | <50 |
| | 01/08/91 | -- | -- | -- | -- | -- | -- | -- |
| | 04/23/91 | -- | -- | -- | -- | -- | -- | -- |
| | 07/23/91 | -- | -- | -- | -- | -- | -- | -- |
| OB-4 | 11/06/89 | 500 | 11 | 10 | 24 | 4,000 | -- | -- |
| | 04/26/90 | 360 | 10 | 10 | 18 | 460 | 3,900 | <50 |
| | (07/26/90) | 23 | 3.7 | 1.6 | 5.9 | 200 | 1,600 | <50 |
| | 10/18/90 | 600 | 540 | 83 | 840 | 4,300 | 330 | <50 |
| | 01/08/91 | -- | -- | -- | -- | -- | -- | -- |
| | 04/23/91 | -- | -- | -- | -- | -- | -- | -- |
| | 07/23/91 | -- | -- | -- | -- | -- | -- | -- |
| DWAL | | | 1.0 | 680 | 100 | 1,750 | | |

DWAL = Drinking water action levels, State of California Department of Health Services (April, 1989).

1 <0.5 indicates that concentrations are below the reporting limit of 0.5 µg/l.

2 "Heavy" petroleum hydrocarbons such as waste oil, mineral spirits, jet fuel, or fuel oil.

3 TPH as motor oil analyses; analyst did not feel that motor oil was indicted on the chromatogram.

4 Petroleum hydrocarbons quantified as diesel appear to be light hydrocarbons

(07/26/90) Sample not analyzed for BTEX and TPH as gasoline within 14-day holding time

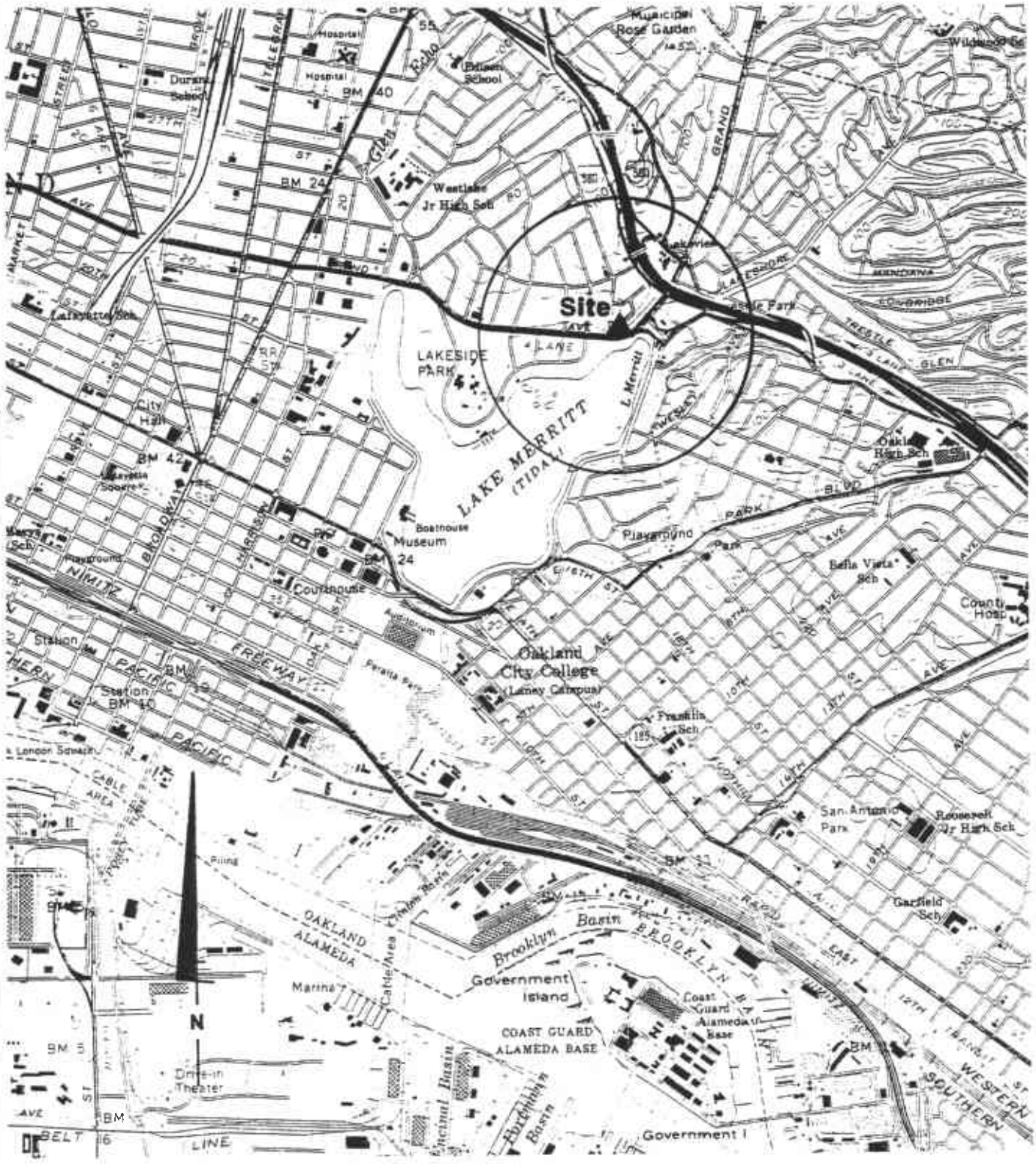
-- = Samples not collected/not analyzed for compound

Table 4. Historical Record of Depth to Groundwater

| Well | | MW-8A | MW-8B | MW-8C | MW-8E | MW-8F | MW-8G | MW-8H | MW-8I | MW-8J |
|---|---|---|---|---|---|---|---|---|---|---|
| Top of Casing Elev. | | 99.72 | 101.11 | 98.41 | 99.38 | 97.94 | 97.24 | 98.90 | 98.27 | 97.69 |
| Date | | | | | | | | | | |
| JUL 24, 90 | GW ELEV | 97.31 | 100.62 | 90.98 | 96.06 | 88.74 | 87.54 | 95.14 | 92.05 | 91.21 |
| AUG 24, 90 | GW ELEV | 94.74 | 100.60 | 90.30 | 95.90 | 87.13 | 86.08 | 92.14 | 91.93 | 93.89 |
| SEPT 25, 90 | GW ELEV | 95.24 | 100.56 | 91.05 | 95.94 | 87.25 | BLOCKED | 95.10 | 91.90 | 91.01 |
| OCT 18, 90 | GW ELEV | 96.11 | 100.55 | 90.92 | 95.86 | 86.89 | 85.62 | 95.07 | 91.85 | 90.96 |
| NOV 28, 90 | GW ELEV | 89.69 | 100.54 | 88.60 | 96.00 | 87.02 | 85.57 | 94.94 | 92.16 | 91.01 |
| JAN 08, 91 | GW ELEV | 93.63 | 100.57 | 90.81 | 95.90 | 87.98 | 86.44 | 94.91 | 92.10 | 91.30 |
| FEB 02, 91 | GW ELEV | 96.98 | 100.58 | 91.56 | 95.93 | 87.93 | 86.56 | 94.89 | 91.96 | 91.67 |
| MAR 29, 91 | GW ELEV | 97.40 | 100.85 | 91.94 | 96.10 | 89.35 | BLOCKED | 95.20 | 92.12 | 91.98 |
| APR 23, 91 | GW ELEV | 97.41 | 100.80 | 91.74 | 96.36 | 89.09 | 87.80 | 92.87 | 91.98 | 93.88 |
| JUN 10, 91 | GW ELEV | 96.90 | 100.69 | 90.33 | 96.30 | 88.36 | 86.95 | 95.22 | 92.16 | 91.52 |
| JUN 28, 91 | GW ELEV | 97.19 | 100.70 | 91.05 | 96.13 | 88.46 | 86.94 | 95.07 | 91.97 | 91.38 |
| JUN 23, 91 | GW ELEV | 97.37 | 100.59 | 91.04 | 96.14 | 88.15 | 86.50 | 95.05 | 91.86 | 91.02 |
| AUG 22, 91 | GW ELEV | 97.04 | 100.49 | 89.62 | 95.90 | 86.50 | 84.68 | 95.10 | 91.80 | 90.92 |

All measurements are in feet
TOC = Top of casing elevation relative to arbitrary datum of 100 feet
GW Elev = Groundwater elevation relative to arbitrary datum

105649




Ref: USGS, 7.5 Minute Topographic Map, Oakland West, California, Photo revised 1980.

0 2000 4000

SCALE IN FEET

**Harding Lawson Associates**
Engineers and Geoscientists

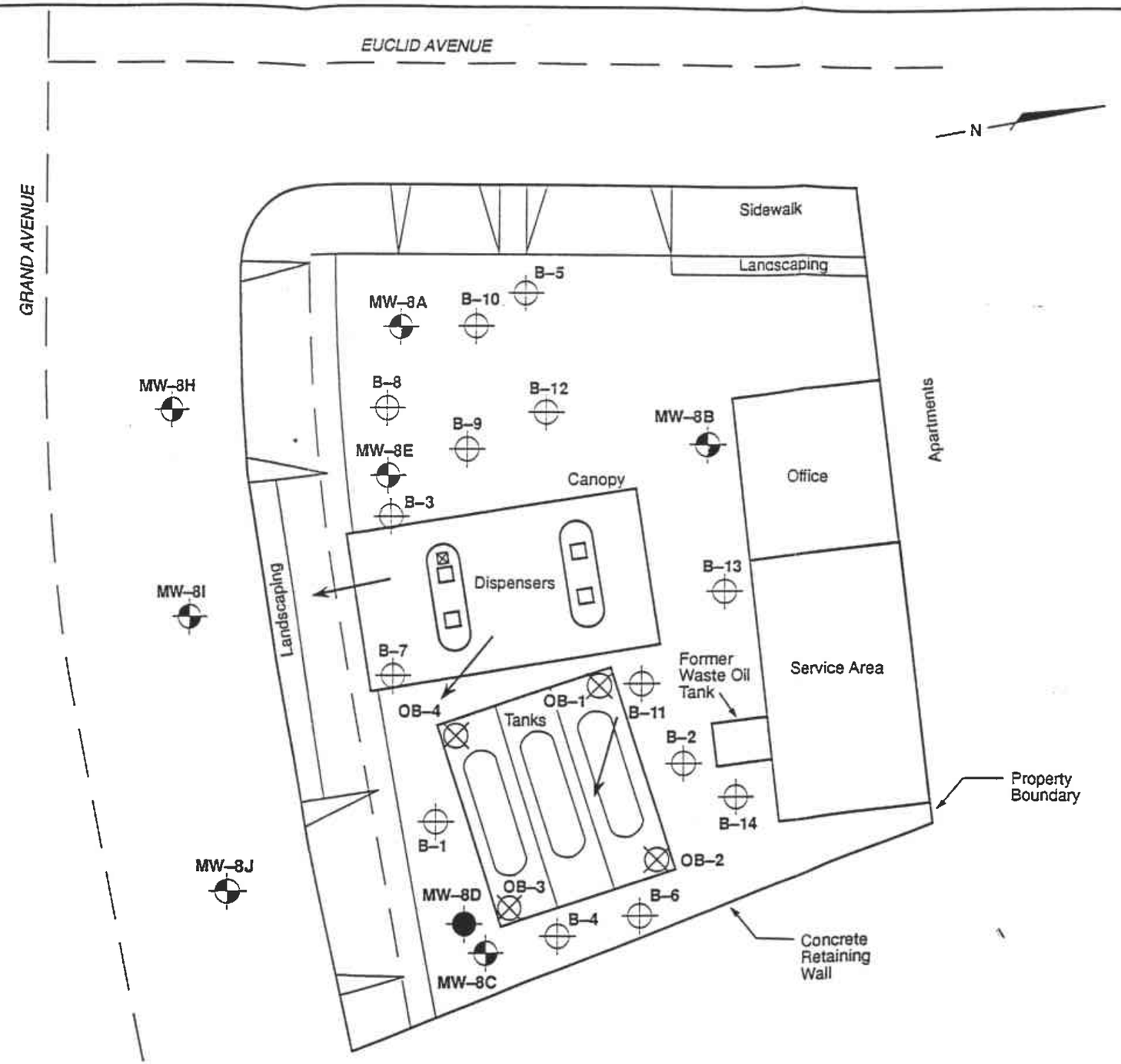
**Regional Map**
Former Texaco Service Station
500 Grand Avenue
Oakland, California

PLATE **1**

| DRAWN | JOB NUMBER | APPROVED | DATE | REVISED | DATE |
|---|---|---|---|---|---|
| YC | 2251,114.03 | AR | 5/89 | | |

LEGEND

- Monitoring Well
- Observation Well
- Soil Boring
- Decommissioned Monitoring Well
- Ground-Water flow direction
- Bench Mark (HLA datum el. = 100 Feet)




Harding Lawson Associates
Engineering and Environmental Services

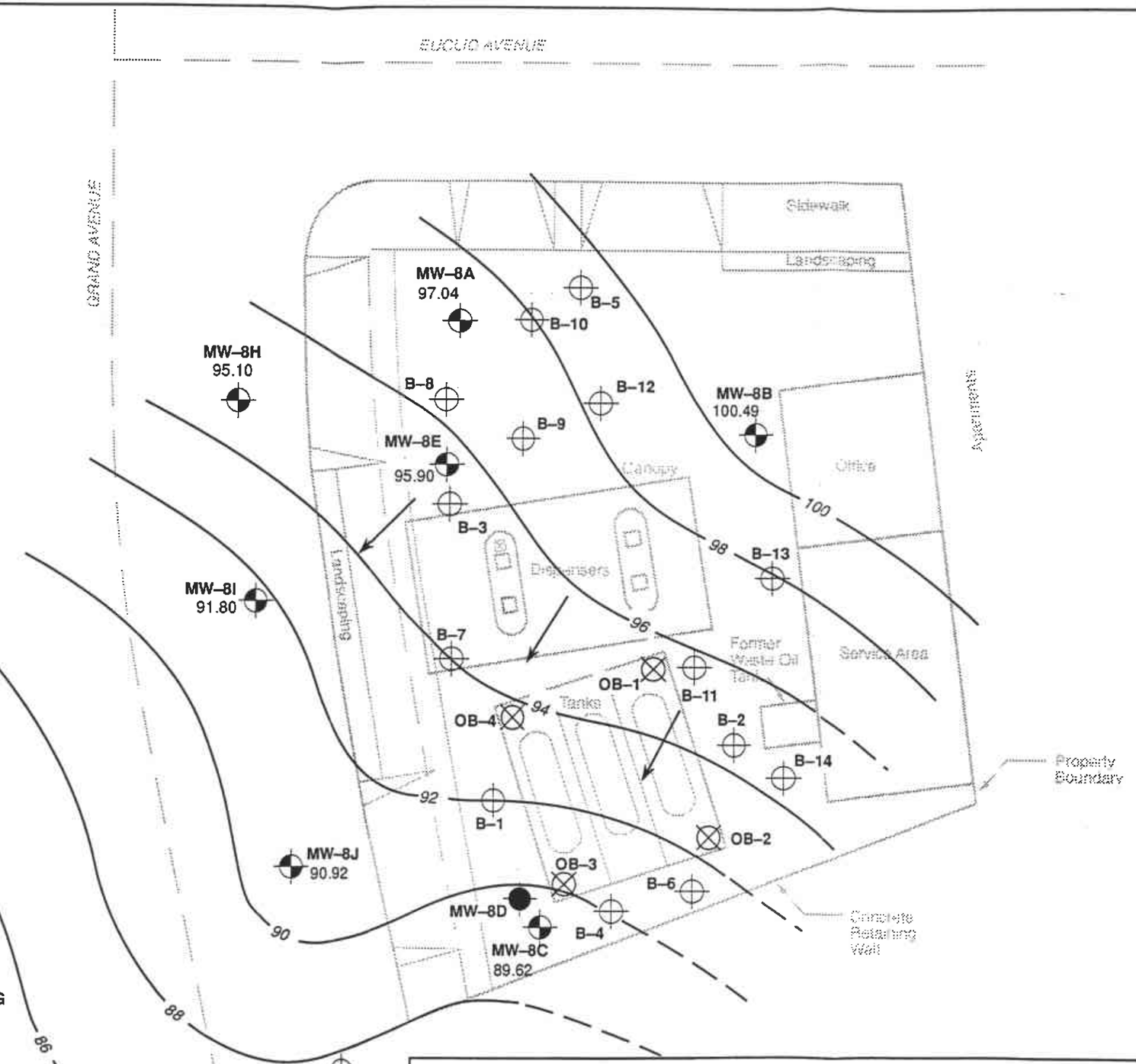
**Site Plan**
Former Texaco Station
500 Grand Avenue
Oakland, California

PLATE **2**

| DRAWN | JOB NUMBER | APPROVED | DATE | REVISED DATE |
|---|---|---|---|---|
| S. Patel | 2251.114.03 | JSH | 11/09/90 | |

**EXPLANATION**

- Monitoring well
- Observation well
- Soil boring
- Decommissioned monitoring well
- Ground-water flow direction
- Bench mark (HLA datum el. = 100 feet)
- 91.80 — Water level relative to HLA datum, 8/22/91
- 96 — Contour of potentiometric surface, contour interval 2.0 feet




Harding Lawson Associates
Engineering and Environmental Services

**Potentiometric Surface August 22, 1991**
Former Texaco Station
500 Grand Avenue
Oakland, California

PLATE **3**

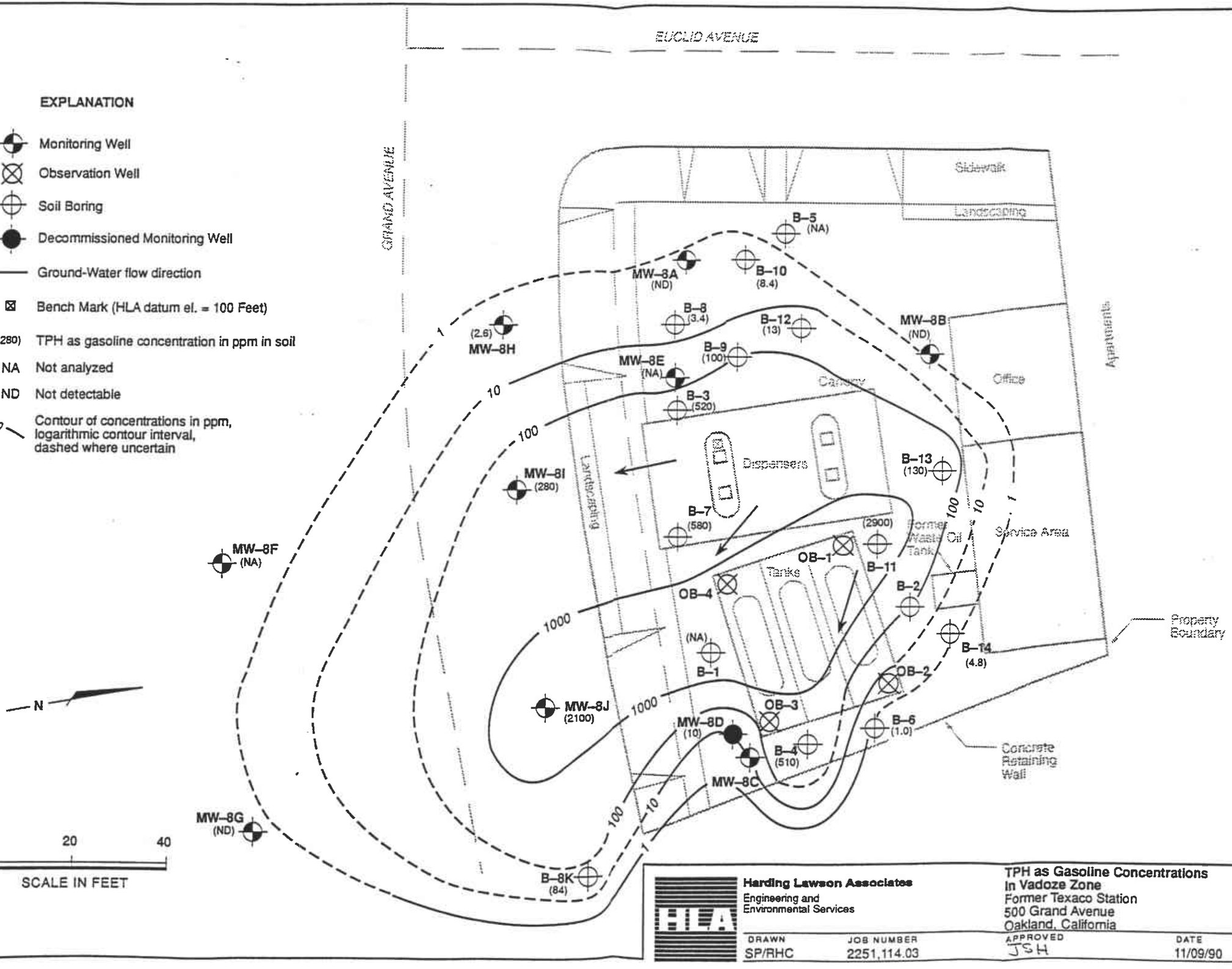
| DRAWN | JOB NUMBER | APPROVED | DATE | REVISED DATE |
|---|---|---|---|---|
| SP/RHC | 2251,169.03 | | 12/16/91 | |

EUCLID AVENUE

GRAND AVENUE

## EXPLANATION

- Monitoring Well
- Observation Well
- Soil Boring
- Decommissioned Monitoring Well
- Ground-Water flow direction
- Bench Mark (HLA datum el. = 100 Feet)
- (280) TPH as gasoline concentration in ppm in soil
- NA Not analyzed
- ND Not detectable
- 10 Contour of concentrations in ppm, logarithmic contour interval, dashed where uncertain




**Harding Lawson Associates**
Engineering and Environmental Services

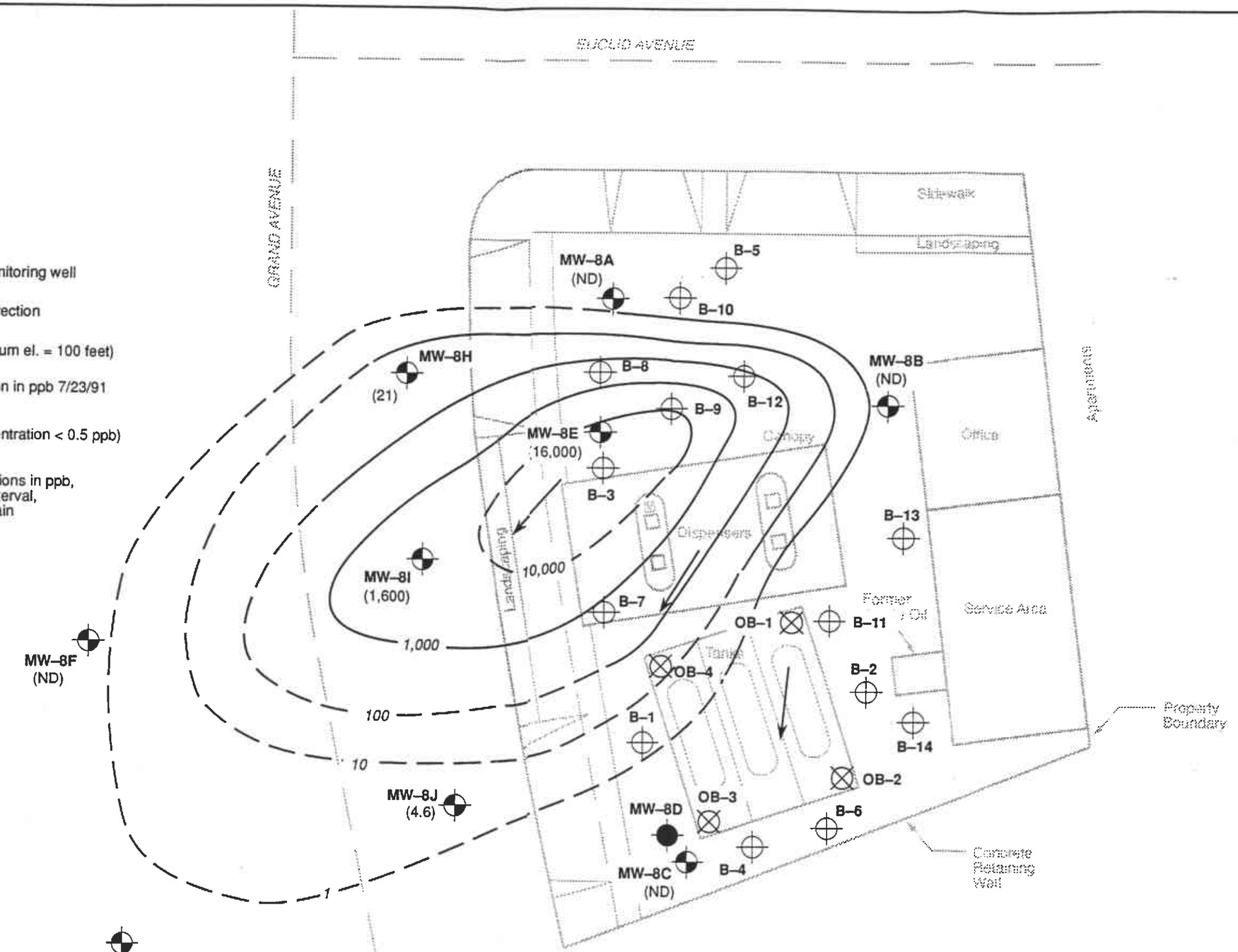
**TPH as Gasoline Concentrations In Vadoze Zone**
Former Texaco Station
500 Grand Avenue
Oakland, California

PLATE **4**

| DRAWN | JOB NUMBER | APPROVED | DATE | REVISED DATE |
|---|---|---|---|---|
| SP/RHC | 2251,114.03 | JSH | 11/09/90 | 5/10/91 |

**EXPLANATION**

- Monitoring well
- Observation well
- Soil boring
- Decommissioned monitoring well
- Ground-water flow direction
- Bench mark (HLA datum el. = 100 feet)
- (5.9) Benzene concentration in ppb 7/23/91
- ND Not detectable (concentration < 0.5 ppb)
- 10 Contour of concentrations in ppb, logarithmic contour interval, dashed where uncertain




**Harding Lawson Associates**
Engineering and Environmental Services

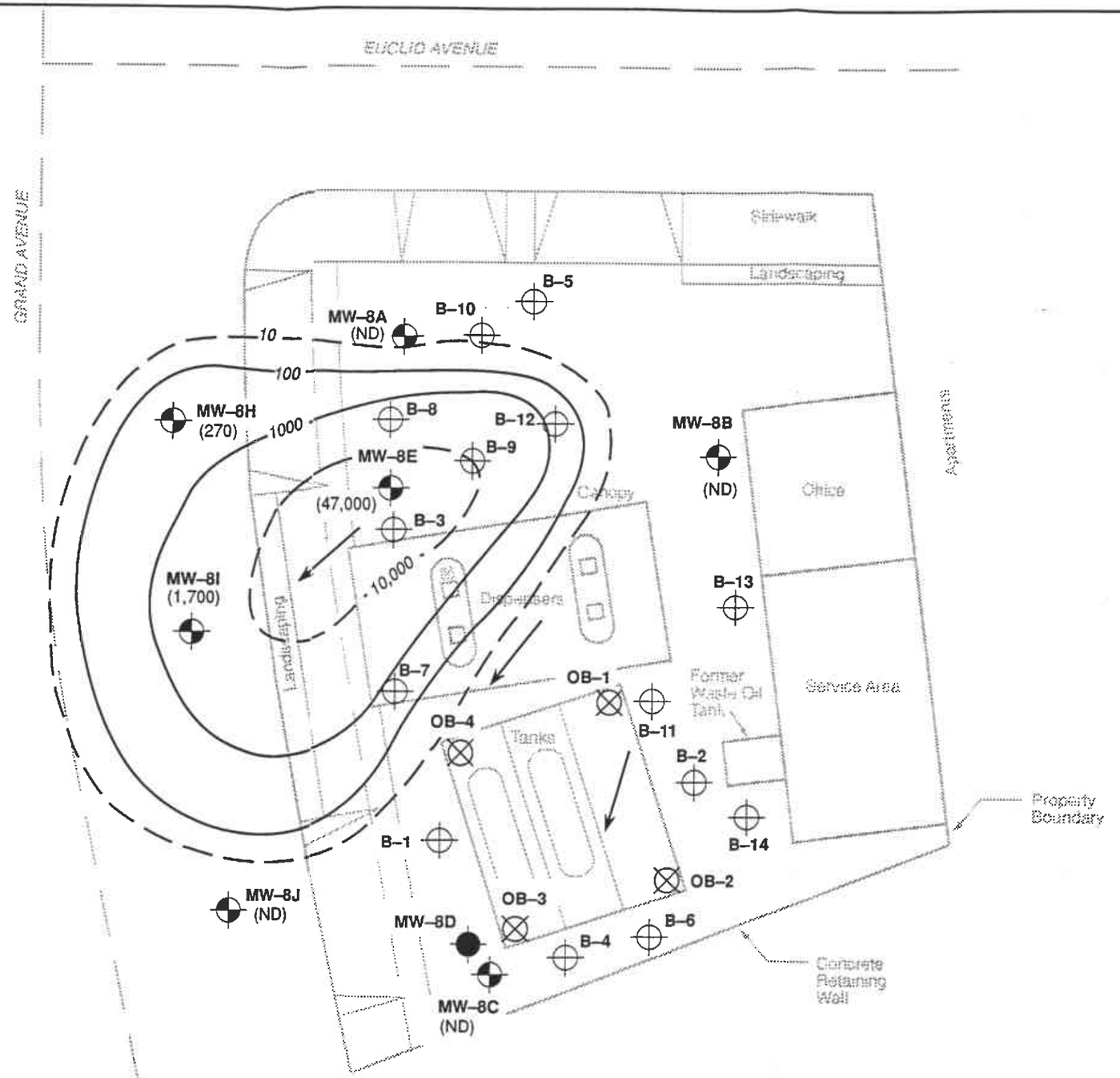
**Benzene Concentrations in Groundwater**
Former Texaco Station
500 Grand Avenue
Oakland, California

PLATE **5**

| DRAWN | JOB NUMBER | APPROVED | DATE | REVISED DATE |
|---|---|---|---|---|
| SP/RHC | 2251,169.03 | | 12/02/91 | |

**EXPLANATION**

- Monitoring well
- Observation well
- Soil boring
- Decommissioned monitoring well
- Ground-water flow direction
- Bench mark (HLA datum el. = 100 feet)
- (1,700) TPH as gasoline concentration in ppb 7/23/91
- ND Not detectable (concentration < 50 ppb)
- 10 Contour of concentrations in ppb, logarithmic contour interval, dashed where uncertain




**Harding Lawson Associates**
Engineering and Environmental Services

**TPH as Gasoline Concentrations in Groundwater**
Former Texaco Station
500 Grand Avenue
Oakland, California

PLATE **6**

| DRAWN | JOB NUMBER | APPROVED | DATE | REVISED DATE |
|---|---|---|---|---|
| SP/RHC | 2251,169.03 | | 12/02/91 | |

# APPENDIX

## LABORATORY RESULTS OF GROUNDWATER ANALYSES

NET ®
NATIONAL ENVIRONMENTAL TESTING, INC.

NET Pacific, Inc.
435 Tesconi Circle
Santa Rosa, CA 95401
Tel: (707) 526-7200
Fax: (707) 526-9623

HARDING ASSOC.

AUG 14 1991

Jeanna Hudson
Harding Lawson Associates
1355 Willow Way, Ste. 109
Concord, CA 94520

Date: 08-12-91
NET Client Acct No: 10.01
NET Pacific Log No: 8793
Received: 07-24-91 0800

Client Reference Information

TEXACO, Grand, Job: 2251,169.03

Sample analysis in support of the project referenced above has been completed and results are presented on following pages. Please refer to the enclosed "Key to Abbreviations" for definition of terms. Should you have questions regarding procedures or results, please feel welcome to contact Client Services.

Approved by:

Jules Skamarack
Laboratory Manager

Enclosure(s)

NET Pacific, Inc

Client Acct: 10.01 Date: 08-12-91
Client Name: Harding Lawson Associates Page: 2
NET Log No: 8793

Ref: TEXACO, Grand, Job: 2251,169.03

| Parameter | Reporting Limit | Descriptor, Lab No. and Results MW-8A 07-23-91 92619 | MW-8B 07-23-91 92620 | MW-8C 07-23-91 92621 | Units |
|---|---|---|---|---|---|
| PETROLEUM HYDROCARBONS | | -- | -- | -- | |
| VOLATILE (WATER) | | -- | -- | -- | |
| DILUTION FACTOR * | | 1 | 1 | 1 | |
| DATE ANALYZED | | 07-31-91 | 07-31-91 | 07-31-91 | |
| METHOD GC FID/5030 | | -- | -- | -- | |
| as Gasoline | 0.05 | ND | ND | ND | mg/L |
| METHOD 602 | | -- | -- | -- | |
| DILUTION FACTOR * | | 1 | 1 | 1 | |
| DATE ANALYZED | | 07-31-91 | 07-31-91 | 07-31-91 | |
| Benzene | 0.5 | ND | ND | ND | ug/L |
| Ethylbenzene | 0.5 | ND | ND | ND | ug/L |
| Toluene | 0.5 | ND | 1.1 | 0.6 | ug/L |
| Xylenes, total | 0.5 | ND | 2.0 | ND | ug/L |
| PETROLEUM HYDROCARBONS | | -- | -- | -- | |
| EXTRACTABLE (WATER) | | -- | -- | -- | |
| DILUTION FACTOR * | | 1 | 1 | 1 | |
| DATE EXTRACTED | | 07-30-91 | 07-30-91 | 07-30-91 | |
| DATE ANALYZED | | 07-31-91 | 07-31-91 | 07-31-91 | |
| METHOD GC FID/3510 | | -- | -- | -- | |
| as Diesel | 0.05 | ND | ND | ND | mg/L |
| as Motor Oil | 0.5 | ND | ND | ND | mg/L |

NET Pacific, Inc

Client Acct: 10.01
Client Name: Harding Lawson Associates
NET Log No: 8793

Date: 08-12-91
Page: 3

Ref: TEXACO, Grand, Job: 2251,169.03

| Parameter | Reporting Limit | Descriptor, Lab No. and Results MW-8E 07-23-91 92622 | MW-8F 07-23-91 92623 | MW-8G 07-23-91 92624 | Units |
|---|---|---|---|---|---|
| PETROLEUM HYDROCARBONS | | -- | -- | -- | |
| VOLATILE (WATER) | | -- | -- | -- | |
| DILUTION FACTOR * | | 100 | 1 | 1 | |
| DATE ANALYZED | | 08-02-91 | 07-31-91 | 07-31-91 | |
| METHOD GC FID/5030 | | -- | -- | -- | |
| as Gasoline | 0.05 | 47 | ND | ND | mg/L |
| METHOD 602 | | -- | -- | -- | |
| DILUTION FACTOR * | | 1,000 | 1 | 1 | |
| DATE ANALYZED | | 08-01-91 | 07-31-91 | 07-31-91 | |
| Benzene | 0.5 | 16,000 | ND | 0.5 | ug/L |
| Ethylbenzene | 0.5 | 1,100 | ND | ND | ug/L |
| Toluene | 0.5 | 5,400 | 0.8 | 1.5 | ug/L |
| Xylenes, total | 0.5 | 4,000 | ND | 3.0 | ug/L |
| PETROLEUM HYDROCARBONS | | -- | -- | -- | |
| EXTRACTABLE (WATER) | | -- | -- | -- | |
| DILUTION FACTOR * | | 1 | 1 | 1 | |
| DATE EXTRACTED | | 07-30-91 | 07-30-91 | 07-30-91 | |
| DATE ANALYZED | | 08-02-91 | 07-31-91 | 07-31-91 | |
| METHOD GC FID/3510 | | -- | -- | -- | |
| as Diesel | 0.05 | 3.5 a | 0.06 | ND | mg/L |
| as Motor Oil | 0.5 | ND | ND | ND | mg/L |

a: Petroleum hydrocarbons quantified as diesel appear to be light hydrocarbons.

NET Pacific, Inc

Client Acct: 10.01 Date: 08-12-91
Client Name: Harding Lawson Associates Page: 4
NET Log No: 8793

Ref: TEXACO, Grand, Job: 2251,169.03

| Parameter | Reporting Limit | Descriptor, Lab No. and Results<br>MW-8H<br>07-23-91<br>92625 | <br>MW-8I<br>07-23-91<br>92626 | <br>MW-8J<br>07-23-91<br>92627 | Units |
|---|---|---|---|---|---|
| PETROLEUM HYDROCARBONS | | -- | -- | -- | |
| VOLATILE (WATER) | | -- | -- | -- | |
| DILUTION FACTOR * | | 1 | 2 | 1 | |
| DATE ANALYZED | | 07-31-91 | 08-01-91 | 07-31-91 | |
| METHOD GC FID/5030 | | -- | -- | -- | |
| as Gasoline | 0.05 | 0.27 | 1.7 | ND | mg/L |
| METHOD 602 | | -- | -- | -- | |
| DILUTION FACTOR * | | 1 | 20 | 1 | |
| DATE ANALYZED | | 07-31-91 | 08-01-91 | 07-31-91 | |
| Benzene | 0.5 | 21 | 1,600 | 4.6 | ug/L |
| Ethylbenzene | 0.5 | 9.7 | 140 | 3.1 | ug/L |
| Toluene | 0.5 | 1.8 | 30 | ND | ug/L |
| Xylenes, total | 0.5 | 2.6 | 63 | ND | ug/L |
| PETROLEUM HYDROCARBONS | | -- | -- | -- | |
| EXTRACTABLE (WATER) | | -- | -- | -- | |
| DILUTION FACTOR * | | 1 | 1 | 1 | |
| DATE EXTRACTED | | 07-30-91 | 07-30-91 | 07-30-91 | |
| DATE ANALYZED | | 07-31-91 | 07-31-91 | 07-31-91 | |
| METHOD GC FID/3510 | | -- | -- | -- | |
| as Diesel | 0.05 | ND | 0.26 | ND | mg/L |
| as Motor Oil | 0.5 | ND | ND | ND | mg/L |

NET Pacific, Inc

Client Acct: 10.01 Date: 08-09-91
Client Name: Harding Lawson Associates Page: 5
NET Log No: 8793

Ref: TEXACO, Grand, Job: 2251,169.03

QUALITY CONTROL DATA

| Parameter | Reporting Limits | Units | Cal Verf Stand % Recovery | Blank Data | Spike % Recovery | Duplicate Spike % Recovery | RPD |
|---|---|---|---|---|---|---|---|
| Diesel | 0.05 | mg/L | 105 | ND | 62 | 64 | 3.5 |
| Motor Oil | 0.5 | mg/L | 106 | ND | N/A | N/A | N/A |
| Gasoline | 0.05 | mg/L | 115 | ND | 116 | 113 | 2.6 |
| Benzene | 0.5 | ug/L | 84 | ND | 99 | 97 | 2.0 |
| Toluene | 0.5 | ug/L | 88 | ND | 101 | 100 | 1.0 |
| Benzene | 0.5 | ug/L | 123 | ND | 102 | 119 | 15 |
| Toluene | 0.5 | ug/L | 104 | ND | 102 | 99 | 3.0 |
| Gasoline | 0.05 | mg/L | 117 | ND | 112 | 110 | 1.8 |

COMMENT: Blank Results were ND on other analytes tested.

NET Pacific, Inc.

## KEY TO ABBREVIATIONS and METHOD REFERENCES

| | | |
|---|---|---|
| < | : | Less than; When appearing in results column indicates analyte not detected at the value following. This datum supercedes the listed Reporting Limit. |
| * | : | Reporting Limits are a function of the dilution factor for any given sample. To obtain the actual reporting limits for this sample, multiply the stated Reporting Limits by the dilution factor (but do not multiply reported values). |
| ICVS | : | Initial Calibration Verification Standard (External Standard). |
| mean | : | Average; sum of measurements divided by number of measurements. |
| mg/Kg (ppm) | : | Concentration in units of milligrams of analyte per kilogram of sample, (parts per million). |
| mg/L | : | Concentration in units of milligrams of analyte per liter of sample. |
| mL/L/hr | : | Milliliters per liter per hour. |
| MPN/100 mL | : | Most probable number of bacteria per one hundred milliliters of sample. |
| N/A | : | Not applicable. |
| NA | : | Not analyzed. |
| ND | : | Not detected; the analyte concentration is less than applicable listed reporting limit. |
| NTU | : | Nephelometric turbidity units. |
| RPD | : | Relative percent difference, 100 [Value 1 - Value 2]/mean value. |
| SNA | : | Standard not available. |
| ug/Kg (ppb) | : | Concentration in units of micrograms of analyte per kilogram of sample, (parts per billion). |
| ug/L | : | Concentration in units of micrograms of analyte per liter of sample. |
| umhos/cm | : | Micromhos per centimeter. |

Method References

Methods 100 through 493: see "Methods for Chemical Analysis of Water & Wastes", U.S. EPA, 600/4-79-020, rev. 1983.

Methods 601 through 625: see "Guidelines Establishing Test Procedures for the Analysis of Pollutants" U.S. EPA, 40 CFR, Part 136, rev. 1988.

Methods 1000 through 9999: see "Test Methods for Evaluating Solid Waste", U.S. EPA SW-846, 3rd edition, 1986.

SM: see "Standard Methods for the Examination of Water & Wastewater, 17th Edition, APHA, 1989.

**Harding Lawson Associates**
1355 Willow Way, Suite 109
Concord, California 94520
415/687-9660
Telecopy: 415/687-9673

# CHAIN OF CUSTODY FORM

Lab: NET (8793)

Samplers: DPM, SBH

Job Number: 2251.169.03 TES 117-RR2

Name/Location: Texaco Grand

Project Manager: Jeanna Hudson Recorder: DMeyers (Signature Required)

| SOURCE CODE | MATRIX: Water | Sediment | Soil | Oil | #CONTAINERS & PRESERV.: Unpres. | $H_2SO_4$ | $HNO_3$ | HCl/VOA | Tl/Jar | SAMPLE NUMBER OR LAB NUMBER: Yr | Wk | Seq | DATE: Yr | Mo | Dy | Time | STATION DESCRIPTION/ NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 23 | X | | | | | | | 3 | 2 | MW | - | 8 A | 91 | 07 | 23 | | Std Turnaround |
| 23 | X | | | | | | | 3 | 2 | MW | - | 8 B | | | | | |
| 23 | X | | | | | | | 3 | 2 | MW | - | 8 C | | | | | |
| 23 | X | | | | | | | 3 | 2 | MW | - | 8 E | | | | | |
| 23 | X | | | | | | | 3 | 2 | MW | - | 8 F | | | | | |
| 23 | X | | | | | | | 3 | 2 | MW | - | 8 G | | | | | |
| 23 | X | | | | | | | 3 | 2 | MW | - | 8 H | | | | | |
| 23 | X | | | | | | | 3 | 2 | MW | - | 8 I | | | | | |
| 23 | X | | | | | | | 3 | 2 | MW | - | 8 J | | | | | |

CUSTODY SEALED 7/23/91 18:00 JW @ Test Tube

ANALYSIS REQUESTED

| EPA 601/8010 | EPA 602/8020 | EPA 624/8240 | EPA 625/8270 | ICP METALS | EPA 8015M/TPH | TPH gas BTEX | TPH diesel | Waste Oil |
|---|---|---|---|---|---|---|---|---|
| | | | | | | X | X | X |
| | | | | | | X | X | X |
| | | | | | | X | X | X |
| | | | | | | X | X | X |
| | | | | | | X | X | X |
| | | | | | | X | X | X |
| | | | | | | X | X | X |
| | | | | | | X | X | X |
| | | | | | | X | X | X |

| LAB NUMBER: Yr | Wk | Seq | DEPTH IN FEET | COL MTD CD | QA CODE | MISCELLANEOUS |
|---|---|---|---|---|---|---|
| | | | | | | |

## CHAIN OF CUSTODY RECORD

| RELINQUISHED BY: (Signature) | RECEIVED BY: (Signature) | DATE/TIME |
|---|---|---|
| DMeyers | Jeff Smith | 7/23/91 16:30 |
| RELINQUISHED BY: (Signature) 7/23 18:00 Jeff Smith | RECEIVED BY: (Signature) | DATE/TIME |
| RELINQUISHED BY: (Signature) | RECEIVED BY: (Signature) | DATE/TIME |
| RELINQUISHED BY: (Signature) | RECEIVED BY: (Signature) | DATE/TIME |
| DISPATCHED BY: (Signature) DATE/TIME | RECEIVED FOR LAB BY: (Signature) | DATE/TIME |
| METHOD OF SHIPMENT NCS | Kemple | 7/24/91 0800 |

Laboratory Copy White — Project Office Copy Yellow — Field or Office Copy Pink

6533

DISTRIBUTION

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

Attention: Mr. R. R. Zielinski

JSH/SJO/pkp 031750T/R51

QUALITY CONTROL REVIEWER

Herb W. Steffe
Staff Geologist